

FISH AND SHELLFISH DIVERSITY AND ITS SUSTAINABLE MANAGEMENT IN **CHILIKA LAKE**



- V.R. Suresh • S. K. Mohanty • R.K. Manna • K.S. Bhatta
- M. Mukherjee • S.K. Karna • A.P. Sharma • B.K. Das
- A.K. Pattnaik • S. Nanda • S. Lenka



ICAR-Central Inland Fisheries Research Institute

Barrackpore, Kolkata - 700 120 (India)

&

Chilika Development Authority

C - 11, BJB Nagar, Bhubaneswar - 751 014 (India)

FISH AND SHELLFISH DIVERSITY AND ITS SUSTAINABLE MANAGEMENT IN CHILIKA LAKE

V. R. Suresh, S. K. Mohanty, R. K. Manna, K. S. Bhatta
M. Mukherjee, S. K. Karna, A. P. Sharma, B. K. Das
A. K. Pattnaik, Susanta Nanda & S. Lenka

2018



ICAR- Central Inland Fisheries Research Institute

Barrackpore, Kolkata - 700 120 (India)

&

Chilika Development Authority

C- 11, BJB Nagar, Bhubaneswar- 751 014 (India)

FISH AND SHELLFISH DIVERSITY AND ITS SUSTAINABLE MANAGEMENT IN CHILIKA LAKE

V. R. Suresh, S. K. Mohanty, R. K. Manna, K. S. Bhatta, M. Mukherjee, S. K. Karna, A. P. Sharma, B. K. Das, A. K. Pattnaik, Susanta Nanda & S. Lenka

Photo editing: Sujit Choudhury and Manavendra Roy

ISBN: 978-81-938914-0-7

Citation: Suresh, *et al.* 2018. Fish and shellfish diversity and its sustainable management in Chilika lake, ICAR- Central Inland Fisheries Research Institute, Barrackpore, Kolkata and Chilika Development Authority, Bhubaneswar. 376p.

Copyright: © 2018. ICAR-Central Inland Fisheries Research Institute (CIFRI), Barrackpore, Kolkata and Chilika Development Authority, C-11, BJB Nagar, Bhubaneswar.

Reproduction of this publication for educational or other non-commercial purposes is authorized without prior written permission from the copyright holders provided the source is fully acknowledged. Reproduction of this publication for resale or other commercial purposes is prohibited without prior written permission from the copyright holders.

Photo credits: Sujit Choudhury, Manavendra Roy, S. K. Mohanty, R. K. Manna, V. R. Suresh, S. K. Karna, M. Mukherjee and Abdul Rasid

Published by:

Chief Executive

Chilika Development Authority

C-11, BJB Nagar, Bhubaneswar-751 014 (Odisha)

Cover design by: **S. K. Mohanty**

Designed and printed by: S J Technotrade Pvt. Ltd. , Bhubaneswar, Odisha

Disclaimer: The findings, interpretations and conclusions expressed in this document are the views of the authors and do not necessarily represent the views of ICAR-Central Inland Fisheries Research Institute, Barrackpore and Chilika Development Authority, Bhubaneswar.



डॉ. जे. के. जेना

उप महानिदेशक (मत्स्य विज्ञान)

Dr. J. K. Jena

Deputy Director General (Fisheries Science)



भारतीय कृषि अनुसंधान परिषद्

कृषि अनुसंधान भवन- II, पूसा, नई दिल्ली - 110 012

INDIAN COUNCIL OF AGRICULTURE RESEARCH

KRISHI ANUSANDHN BHAVAN-II, PUSA, NEW DELHI - 110 012

Ph.: 91-11-25846738 (o), Fax: 91-11-25841955

E-mail: ddgfs.icar@gov.in

FOREWORD

Chilika Lake, a highly sensitive coastal ecosystem and a designated Ramsar site along the east coast of India, is the largest brackishwater lagoon in Asia and the second largest in the world. Known to be highly productive ecosystem, the Lake has been supporting diverse fish species, besides rich fishery. The hydrological changes took place due to gradual closure of the sea-mouth of the Lake turned it towards a freshwater ecosystem and as a consequence it influenced fisheries of major brackishwater and marine fish species. This had severe impact on migration of several valuable fish species that frequented the Lake for breeding and feeding. Restoration measures like opening of a new sea-mouth during the year 2000 have rejuvenated the ecosystem, resulting in measurable improvement in the fish diversity and catch.

Although study of fish diversity of the Lake has long been of great interest to researchers and substantial amount of literature on this aspect exist on the subject, bringing out a comprehensive document on the updated list of fish and shellfish species, including a number of new records, by the ICAR-Central Inland Fisheries Research Institute through the project 'Post restoration assessment of ecology and fisheries diversity of Chilika lake' funded by the Chilika Development Authority, Odisha, is a good initiative. The book contains elaborate taxonomical accounts, habitat information, distribution, conservation status, fisheries and economic importance of fish and shellfish species of the Lake.

I am sure the information provided in this book will be of immense help to those involved in studies on fish diversity, besides to the students, researchers and those interested in fisheries. I congratulate the authors and the project team for bringing out this document.

(J. K. Jena)

PREFACE

Chilika is a coastal lake situated along the east coast of India, spread over the Puri, Khurda and Ganjam districts of Odisha; between latitude 19° 28' and 19° 54' N and longitude 85° 05' and 85° 38' E. The lake has distinct marine, brackish and freshwater zones due to seawater ingress through the sea-mouth and freshwater brought in by rivers and surface run off. This zonation has resulted in diverse flora and fauna adapted to such situations, especially fin fishes and shell fishes. In the aftermath of the gradual closure of the sea-mouth of the Chilika, towards the 1990s, the lake had turned in to more of a freshwater ecosystem, resulting in substantial change in species composition, with significant enhancement in freshwater forms. Restoration measures like opening of a new mouth, rehabilitation of link canals during the year 2000, has rejuvenated the ecosystem with significant improvement in the fish diversity and catch, which is attributed to restoration of original salinity gradients, augmentation of auto recruitment, besides facilitation of free migration of fishes, prawns and crabs from the sea into the lake and vice-à-versa. It is expected that the fish diversity of the dynamic lake ecosystem might have undergone changes, since the restoration, which needed to be documented. To study the ecology and fisheries diversity of the Chilika Lake, the Chilika Development Authority, Odisha, through the Integrated Coastal Zone Management Project funded by World Bank, invited competitive bids for conducting long term studies on the lake ecosystem. The ICAR- Central Inland Fisheries Research Institute, Barrackpore won the bid and signed an agreement with the Chilika Development Authority, on 21st October 2011, to study the lake through a project titled 'Post restoration assessment of ecology and fisheries diversity of Chilika Lake'. As part of the deliverables under the contract agreement, preparation of a book, documenting the fin fish and shell fish diversity of the lake has been agreed upon. In compliance to that, this book has been prepared jointly by ICAR-CIFRI and Chilika Development Authority (CDA). This book embodies a brief introduction, followed by revised checklist of fin fishes and shell fishes of the lake, which has been updated till date by eliminating miss identifications, following internationally accepted nomenclature (As updated in www.fishbase.org by May, 2018). Information on systematic accounts, diagnostic features, habitat, distribution, conservation status, fisheries, economic importance, utilization, information with reference to Chilika Lake etc. of 225 important finfish species out of total inventory of 286 species and 11 shellfish species including 8 prawn and 3 crab species out of total inventory of 34 species (14 crabs, 18 prawns and 2 lobsters) recorded by the project team during the project period and CDA during the post-restoration period, including new records to the lake, are included, besides species index and related references. The remaining 60 finfish species and 23 shellfish species from the inventory list which do not contribute significantly to the commercial landing and do not have ornamental value are furnished in Table 4 & 5. Although a wealth of information is available on the lake fisheries, an updated compendium of fish and shell fish diversity has been in great demand. The book has been prepared in easy-to-read manner, supported by images (monograph of fish and shellfish species). For the first time the fish biodiversity assessment in Chilika has been presented alongwith the suggested measures for sustainable management of fish and shellfish diversity. The contents are based on extensive field studies and mining of available literature in the public domain. We hope the book will be highly useful for researchers, fisheries / wetland managers, teachers, students and common man, besides adding value to the information on Chilika lake ecosystem.

Authors



ACKNOWLEDGMENTS

The authors gratefully acknowledge the funding support from World Bank through the State Project Management Unit (SPMU) of the Integrated Coastal Zone Management Project (ICZMP) of Odisha (Cr. No. 4765 – IN) to ICAR-Central Inland Fisheries Research Institute, West Bengal for the project ‘Post restoration assessment of the ecology and fisheries diversity of Chilika Lake’. Dr. B. C. Jha, former Head of Division; Dr. Debabrata Panda, Mr. Roshith, C. M., Scientists, Dr. M. K. Mukhopadhaya, former Scientist of ICAR-CIFRI have helped at different stages of preparation of the book. The technical and field support received from Mr. Y. Ali, Mr. S. Mandal, Mr. A. Raichoudhury technical officers CIFRI; Dr. Surajit Banik, Mr. Sanjib Kumar Pradhan, Mr. Apurba Raut, Project Staff, is deeply acknowledged. The authors also acknowledge the help received from the Staff of Wetland Research and Training Center of CDA, Barkul (Balugaon) and unstinted help of Sri Ganesh Behera, Data Entry Operator of CDA, Bhubaneswar in computerizing the document to bring to its final form.

- Authors

ABBREVIATIONS

A	: Anal fin
C	: Caudal fin
CAMP	: Conservation Assessment and Management Plan
CDA	: Chilika Development Authority
CIFRI	: Central Inland Fisheries Research Institute
CR	: Critically Endangered
D	: Dorsal fin
DD	: Data Deficient
EN	: Endangered
ICAR	: Indian Council of Agriculture Research
ICZMP	: Integrated Coastal Zone Management Project
INR	: Indian Rupees
IUCN	: International Union for Conservation of Nature
LC	: Least Concern
LI	: Lateral line
Ls	: Lateral line scale
N/n	: Number
NBFGR	: National Bureau of Fish Genetic Resources
NE	: Not Evaluated
NT	: Near Threatened
P	: Pectoral fin
SL	: Standard length
TL	: Total length
V	: Ventral fin
Vr	: Vertebrae
VU	: Vulnerable
WISA	: Wetlands International - South Asia
ZSI	: Zoological Survey of India

INTRODUCTION

Situated along the east coast of India, the Chilika lagoon is a designated Ramsar site of International importance and the largest brackish water lake in Asia. It lies between latitudes 19°28' and 19° 54' North and longitude 85° 05' and 85° 38' East; extends from the south west corner of Puri and Khurda districts to adjoining Ganjam district of Odisha. The water-spread area of the lake fluctuates from 906 km² (during summer) to 1165 km² (during monsoon). Its linear axis is 64.3 km in length and has an average mean width of 20.1 km. In the eastern part, the main lagoon is connected with the Bay of Bengal through a long outer channel and at the southern end a 14 km long channel (called Palur canal) connects to the sea through Rushikulya river mouth. In the northern and western part, 7 rivers and 45 rivulets drain freshwater into the lagoon. The sea mouth along the eastern side of the lagoon act as a gateway between the main lake and the sea, through which flood water along with sediment loads from the north-western catchment of the lake is released to the sea during monsoon and facilitates entry of sea water into the lagoon. This dynamic hydrology of fresh to saline water on a temporal, seasonal and geographical scale support unique assemblage of freshwater, brackish water and marine life, especially finfishes and shellfishes. Chilika lagoon is the most important source of capture fisheries of Odisha, which supports food and livelihood security of more than 2 lakh fishers living around the lagoon. It also provides employment opportunities to large number of local artisans and traders. As one of the direct use benefits of Chilika ecosystem, fisheries output shares substantial economic value. A wealth of information is available on the lake finfish and shellfish diversity, but are spread out in various publications and records. A comprehensive and complete document, in the form of a book, has thus been planned through the CIFRI-CDA-ICZM project 'Post restoration assessment of ecology and fisheries diversity of Chilika Lake'. The book entitled 'Fish and Shellfish Diversity and its Sustainable Management in Chilika Lake' presents an updated systematic checklist of 336 finfish species, 29 prawn and shrimp species and 35 brachyuran crab species of Chilika Lake. The species descriptions include available information on the salient diagnostic features, geographic distributions, habitat/environment and other vital information specific to Chilika Lake for 225 finfish species and 11 shellfish species (8 prawn/shrimp and 3 portunid crabs) and assessment of conservation status, which will be useful for general to professional readers.

CONTENTS

Subject	Page
Foreword	I
Preface	II
Acknowledgments	III
Abbreviations	IV
Introduction	V
Background	01-02
Collection and documentation	02-03
Checklist of finfishes	03-13
Checklist of shellfishes	13-15
Conservation status	15-19
List of fishes under updated inventory of finfish species but not included in the list of described fishes (monograph)	20-22
Sustainable management of fish and shellfish diversity	23-26
Management needs of Chilika Lake for sustainable fisheries and follow up action initiated by Chilika Development Authority	27-32
Species descriptions	33-350
Species Index	351-358
References	359-368

BACKGROUND

First major fisheries investigation in Chilika was carried out during 1914-23 by Zoological Survey of India and recorded 112 fish species, 24 prawn and 26 brachyuran crabs (Chaudhuri, 1916a, b,c; Hora, 1923). The ICAR-Central Inland Fisheries Research Institute, Barrackpore, West Bengal, in its early explorations of the lagoon, recorded 55 more species during 1957-60 (Jhingran and Natarajan, 1966). During 1954-86, another 46 fish species were added to the Chilika fish diversity (Jones and Sujansinghani, 1954; Menon, 1961; Misra, 1969; 1976a, b; Rajan *et al.*, 1968; Roy and Sahoo, 1957; Mohanty, 1973; Talwar and Jhingran, 1991). During the Chilika expedition (1985-87), the Zoological Survey of India recorded another 4 species of fish and 2 species of crabs. Thus, by 1987, a total of 217 fish species (Rama Rao, 1995), 28 crab species (Mayadeb, 1995) and 24 prawn species were listed. Later, Bhatta *et al.* (2001) added 8 new records of fish, bringing the total to 225 species of fishes, 24 species of prawns and 28 crab species. During the 1990's, Chilika lagoon had faced eco-degradation and the ecological characteristics of the lagoon greatly altered due to gradual closure of the sea mouth. As a consequence, the floral and faunal composition, especially that of fishes changed drastically. A classic hydrological intervention by opening an artificial lake mouth at a strategic place nearer to the main water body was implemented by Chilika Development Authority in September 2000 for eco-restoration of the lake. Opening of the new lake mouth rejuvenated the ecological characteristics of the lagoon ecosystem which witnessed the spectacular enhancement of fisheries output and species diversity. In the post-restoration period (2000-04), the Chilika Development Authority documented an inventory of fishes of Chilika lagoon. A total of 221 species have been collected from the lagoon up to March 2004, comprising 187 species of finfish, 18 species of prawn, 14 species of crab and 2 species of lobsters (Mohapatra *et al.*, 2007). The faunal inventory included 56 new records (43 species of fishes, 4 prawns, 7 crabs and 2 lobsters) during the period. In 2009, Chilika Development Authority published a 'Fish Atlas of Chilika' and updated all the published fish diversity in which 318 species comprising of 83 families among 20 orders (Satpathy and Panda, 2009). Further, Wetlands International, South Asia (WISA, 2012) published a list of fishes, comprising 314 species from the pre-restoration to the post-restoration period. Mohapatra *et al.* (2015) added another fish species to the list, bringing the total number of fish species to 315. The recent publication on the ichthyofauna of Chilika Lake (Mohanty *et al.*, 2015) provided the updated comprehensive systematic checklist of 317 fish species (1916-2014), inventory, faunal characteristics and assessment of fish biodiversity status for the first time. One species *Thryssa kammalensis* (Bleeker, 1849) under Engraulidae family was earlier recorded from Chilika Lake (Rama Rao, 1995), which was later synonymized and hence the species was not included in the comprehensive checklist provided by Mohanty *et al.* (2015). Now the same species has become an accepted valid species (<http://www.fishbase.org/Nomenclature/ScientificName/SearchList.php?> visited on June 28, 2016), which has been included in the latest checklist totaling to 318 species. ICAR-CIFRI, Barrackpore, documented 16 new records while conducting the five year long study on

post-restoration assessment of the ecology and fisheries diversity of Chilika Lake during 2011-2016 under the ICAR-CIFRI/CDA-ICZMP Consultancy Project, were added to the latest published ichthyofaunal record. Thus the present updated systematic checklist of fish fauna of Chilika Lake includes 336 species distributed under 217 genera, in 92 families and 23 orders (Table 1), which include 1 new order (Torpediniformes), 4 new families (Narcinidae, Synanceiidae, Lethrinidae and Apogonidae) and 17 new species (*Narcine timlei*, *Pachypterus atherinoides*, *Trachicephalus uranoscopus*, *Carangoides ferdau*, *Carangoides oblongus*, *Caranx papuensis*, *Trachinotus baillonii*, *Trachinotus botla*, *Lethrinus lentjan*, *Lutjanus rivulatus*, *Johnius borneensis*, *Taeniamia macroptera*, *Favonigobius reichei*, *Taenioides anguillaris*, *Zebrias synapturoides*, *Sphyræna obtusata* and *Arothron immaculatus*) reported through the study conducted by ICAR-Central Inland Fisheries Research Institute, through the World Bank funded CIFRI/CDA-ICZM Consultancy Project 'Post restoration assessment of ecology and fisheries diversity of Chilika lake' operationalized during October, 2011 to April, 2017.

The Decapod crustaceans collected from Chilika Lake during 1914 were studied and the results were published by Kemp (1915) which listed prawn and shrimp species numbering twenty four. During the period 1985-87, Zoological Survey of India (ZSI) conducted intensive surveys of Chilika Lake fauna. The prawn and shrimp material collected during these surveys were studied and added one prawn species as new record of prawn and shrimp fauna totaling to 25 species. During the post-restoration (2001-02 to 2014-15) period, four new records were documented by Mohapatra *et al.* (2015). The updated systematic checklist of 29 prawn and shrimp species belonging to 17 genera and 10 families under Decapoda order is presented in Table 2. Kemp (1915) dealt thoroughly with crab fauna of Chilika Lake and reported 26 species. A total collection of 28 species of brachyuran crabs distributed under 22 genera and 9 families from Chilika Lake including 2 new records were reported by Maya Deb (1995). During the post-restoration period (2001-02 to 2014-15) 7 species were documented as new records (Mohapatra *et al.*, 2015). Thus the updated systematic checklist of 35 brachyuran crabs distributed under 27 genera and 15 families and 2 species of Indian spiny lobsters under Palinuridae family (Table 2).

COLLECTION AND DOCUMENTATION

Extensive surveys were conducted to record the finfish and shellfish diversity of the lake during 2011 to 2016. Samples were collected through experimental netting in all possible ecological zones of the lake. Samples were also collected from fishing boats while being fished and from designated fish landing centers of the lake. Specimens were collected from all the major fishing gears generally operated in the lake, like gill nets (8-260 mm mesh), trammel nets, screen barrier net (4-38 mm mesh), seine nets, cast nets and hook and line. Soon after collection the samples were washed, wiped off and photographed. Preliminary identification of the specimens was made

following Rao (2009). Both the identified and un-identified specimens were preserved in 10 % formaline solution with proper labeling (precies name; date, place, gear used, photograph number, etc.) and brought to the laboratory for confirmation. The species were identified following Day (1986), Talwar and Jhingran (1991), Jayaram (1999), Amaoka and Hensley (2001), Jayaram (2010), Rao (2009), Fischer and Bianchi (1984), Carpenter and Niem (1998). The species descriptions were based on the Code of Zoological Nomenclature and all species names were checked against Eschmeyer *et al.* (2018) and FishBase (2018).

CHECKLIST OF FIN FISHES

The updated checklist of finfishes recorded from Chilika lake consists of 336 species belonging to 217 genera of 92 families and 23 orders (Table 1). The list includes 17 new records to the lake recorded under the under the CIFRI/CDA-ICZM project.

Table 1. Updated checklist of finfish species of Chilika Lake 1916-2016

Order	Family	Sl. No.	Species	Conservation status
Orectolobiformes	Hemiscyllidae	1	<i>Chiloscyllium indicum</i> (Gmelin, 1789)**	NT ^Δ
Carcharhiniformes	Carcharhinidae	2	<i>Carcharhinus leucas</i> (Müller & Henle, 1839)**	NT ^Δ
		3	<i>Carcharhinus limbatus</i> (Müller & Henle, 1839)	NT ^Δ
		4	<i>Carcharhinus melanopterus</i> (Quoy & Gaimard, 1824)	NT ^Δ
		5	<i>Glyphis gangeticus</i> (Müller & Henle, 1839)	CR ^Δ
		6	<i>Scoliodon laticaudus</i> Müller & Henle, 1838*	NT ^Δ
	Sphyrnidae	7	<i>Eusphyrna blochii</i> (Cuvier, 1816)**	NT ^Δ
		8	<i>Sphyrna lewini</i> (Griffith & Smith, 1834)**	EN ^Δ
Rhinopristiformes	Pristidae	9	<i>Pristis clavata</i> Garman, 1906	EN ^Δ
	Rhinidae	10	<i>Rhynchobatus djiddensis</i> (Forsskål, 1775)**	VU ^{ΔB}
Torpediniformes*	Narcinidae*	11	<i>Narcine timplei</i> (Bloch & Schneider, 1801)***	DD ^Δ
Myliobatiformes	Dasyatidae	12	<i>Brevitrygon imbricata</i> (Bloch & Schneider, 1801)*	DD ^Δ
		13	<i>Brevitrygon walga</i> (Müller & Henle, 1841)*	NT ^Δ
		14	<i>Himantura marginata</i> (Blyth, 1860)**	DD ^Δ
		15	<i>Himantura uarnak</i> (Gmelin, 1789)*	VU ^Δ
		16	<i>Pastinachus sephen</i> (Forsskål, 1775)*	DD ^Δ
	Myliobatidae	17	<i>Aetobatus flagellum</i> (Bloch & Schneider, 1801)*	EN ^Δ
		18	<i>Aetobatus ocellatus</i> (Kuhl, 1823)*	NE
		19	<i>Aetomylaeus nichofii</i> (Bloch & Schneider, 1801)*	VU ^{ΔB}
Osteoglossiformes	Notopteridae	20	<i>Chitala Chitala</i> (Hamilton, 1822)*	EN ^{CAMP}
		21	<i>Notopterus notopterus</i> (Pallas, 1769)*	LC ^Δ

Order	Family	Sl. No.	Species	Conservation status
Elopiformes	Elopidae	22	<i>Elops machnata</i> (Forsskål, 1775)*	LC ^Δ
	Megalopidae	23	<i>Megalops cyprinoides</i> (Broussonet, 1782)*	DD ^Δ
Anguilliformes	Anguillidae	24	<i>Anguilla bengalensis</i> (Gray, 1831)*	NT ^Δ
		25	<i>Anguilla bicolor</i> McClelland, 1844*	NT ^Δ
	Muraenidae	26	<i>Strophidon sathete</i> (Hamilton, 1822)*	NE
	Ophichthidae	27	<i>Lamnostoma orientalis</i> (McClelland, 1844)	LC ^Δ
		28	<i>Pisodonophis boro</i> (Hamilton, 1822)*	LC ^Δ
		29	<i>Pisodonophis cancrivorus</i> (Richardson, 1848)	NE
	Muraenesocidae	30	<i>Congresox talabonoides</i> (Bleeker, 1853)*	VU ^{M,B}
		31	<i>Muraenesox bagio</i> (Hamilton, 1822)**	NE
		32	<i>Muraenesox cinereus</i> (Forsskål, 1775)*	VU ^{M,B}
Clupeiformes	Dussumieriidae	33	<i>Dussumieria acuta</i> Valenciennes, 1847	NE
		34	<i>Dussumieria elopoides</i> Bleeker, 1849**	NE
	Clupeidae	35	<i>Amblygaster leiogaster</i> (Valenciennes, 1847)**	NE
		36	<i>Amblygaster sirm</i> (Walbaum, 1792)	NE
		37	<i>Anodontostoma chacunda</i> (Hamilton, 1822)*	NE
		38	<i>Corica soborna</i> Hamilton, 1822*	LC ^Δ
		39	<i>Ehirava fluviatilis</i> Deraniyagala, 1929**	NE
		40	<i>Escualosa thoracata</i> (Valenciennes, 1847)*	NE
		41	<i>Gonialosa manmina</i> (Hamilton, 1822)*	VU ^{CAMP}
		42	<i>Gudusia chapra</i> (Hamilton, 1822)*	LC ^Δ
		43	<i>Hilsa kelee</i> (Cuvier, 1829)*	NE
		44	<i>Nematalosa nasus</i> (Bloch, 1795)*	LC ^Δ
		45	<i>Sardinella fimbriata</i> (Valenciennes, 1847)**	NE
		46	<i>Sardinella longiceps</i> Valenciennes, 1847**	LC ^Δ
		47	<i>Sardinella melanura</i> (Cuvier, 1829)	NE
		48	<i>Tenuulosa ilisha</i> (Hamilton, 1822)*	VU ^{INBFR,B}
		49	<i>Tenuulosa toli</i> (Valenciennes, 1847)**	NE
	Engraulidae	50	<i>Setipinna phasa</i> (Hamilton, 1822)	LC ^Δ
		51	<i>Stolephorus baganensis</i> Hardenberg, 1933*	NE
		52	<i>Stolephorus commersonnii</i> Lacepède, 1803*	NE
		53	<i>Stolephorus dubiosus</i> Wongratana, 1983*	NE
		54	<i>Stolephorus indicus</i> (van Hasselt, 1823)*	NE
		55	<i>Thryssa gautamiensis</i> Babu Rao, 1971**	DD ^Δ
		56	<i>Thryssa hamiltonii</i> Gray, 1835*	NE
		57	<i>Thryssa kammalensis</i> (Bleeker, 1849)	NE

Order	Family	Sl. No.	Species	Conservation status
		58	<i>Thryssa kammalensooides</i> Wongratana, 1983	NE
		59	<i>Thryssa malabarica</i> (Bloch, 1795)*	NE
		60	<i>Thryssa mystax</i> (Bloch & Schneider, 1801)*	LC ^Δ
		61	<i>Thryssa polybranchialis</i> Wongratana, 1983*	NE
		62	<i>Thryssa purava</i> (Hamilton, 1822)*	NE
		63	<i>Thryssa setirostris</i> (Broussonet, 1782)**	NE
		64	<i>Thryssa vitrirostris</i> (Gilchrist & Thompson, 1908)**	NE
	Chirocentridae	65	<i>Chirocentrus dorab</i> (Forsskål, 1775)	NE
	Pristigasteridae	66	<i>Ilisha elongata</i> (Anonymous [Bennett], 1830)**	NE
		67	<i>Ilisha megaloptera</i> (Swainson, 1839)*	EN ^{NBFG}
		68	<i>Ilisha melastoma</i> (Bloch & Schneider, 1801)	NE
		69	<i>Opisthopterus tardoore</i> (Cuvier, 1829)**	NE
Gonorynchiformes	Chanidae	70	<i>Chanos chanos</i> (Forsskål, 1775)*	NE
Cypriniformes	Cyprinidae	71	<i>Amblypharyngodon mola</i> (Hamilton, 1822)*	LC ^Δ
		72	<i>Bangana ariza</i> (Hamilton, 1807)	LC ^Δ
		73	<i>Gibelion catla</i> (Hamilton, 1822)*	VU ^{CAMP}
		74	<i>Chela cachius</i> (Hamilton, 1822)*	LC ^Δ
		75	<i>Cirrhinus mrigala</i> (Hamilton, 1822)*	LC ^Δ
		76	<i>Cirrhinus reba</i> (Hamilton, 1822)*	VU ^{CAMP}
		77	<i>Crossocheilus latius</i> (Hamilton, 1822)*	VU ^{NBFG}
		78	<i>Danio rerio</i> (Hamilton, 1822)	LC ^Δ
		79	<i>Esomus danrica</i> (Hamilton, 1822)*	LC ^Δ
		80	<i>Labeo boga</i> (Hamilton, 1822)**	LC ^Δ
		81	<i>Labeo calbasu</i> (Hamilton, 1822)*	LC ^Δ
		82	<i>Labeo gonius</i> (Hamilton, 1822)**	LC ^Δ
		83	<i>Labeo rohita</i> (Hamilton, 1822)*	LC ^Δ
		84	<i>Laubuka laubuca</i> (Hamilton, 1822)*	LC ^Δ
		85	<i>Osteobrama peninsularis</i> Silas, 1952**	DD ^Δ
		86	<i>Osteobrama vigorsii</i> (Sykes, 1839)	LC ^Δ
		87	<i>Pethia ticto</i> (Hamilton, 1822)*	LC ^Δ
		88	<i>Puntius chola</i> (Hamilton, 1822)*	LC ^Δ
		89	<i>Puntius sophore</i> (Hamilton, 1822)*	LC ^Δ
		90	<i>Puntius vittatus</i> Day, 1865	LC ^Δ

Order	Family	Sl. No.	Species	Conservation status
		91	<i>Rasbora daniconius</i> (Hamilton, 1822)*	LC ^Δ
		92	<i>Rasbora rasbora</i> (Hamilton, 1822)*	LC ^Δ
		93	<i>Salmostoma bacaila</i> (Hamilton, 1822)*	LC ^Δ
		94	<i>Systomus sarana</i> (Hamilton, 1822)*	LC ^Δ
	Cobitidae	95	<i>Lepidocephalichthys guntea</i> (Hamilton, 1822)♦	LC ^Δ
Siluriformes	Bagridae	96	<i>Mystus cavasius</i> (Hamilton, 1822)*	LC ^Δ
		97	<i>Mystus gulio</i> (Hamilton, 1822)*	LC ^Δ
		98	<i>Mystus vittatus</i> (Bloch, 1794)*	VU ^{CAMPB}
		99	<i>Sperata seenghala</i> (Sykes, 1839)*	LC ^Δ
	Siluridae	100	<i>Ompok bimaculatus</i> (Bloch, 1794)*	EN ^{CAMPB}
		101	<i>Ompok pabda</i> (Hamilton, 1822)*	VU ^{NBFR}
		102	<i>Wallago attu</i> (Bloch & Schneider, 1801)*	NT ^Δ
	Schilbeidae	103	<i>Ailia coila</i> (Hamilton, 1822)*	VU ^{CAMPB}
		104	<i>Eutropiichthys vacha</i> (Hamilton, 1822)	EN ^{CAMPB}
		105	<i>Pachypterus atherinoides</i> (Bloch, 1794)***	LC ^Δ
		106	<i>Silonia silondia</i> (Hamilton, 1822)♦	VU ^{NBFR}
	Pangasiidae	107	<i>Pangasius pangasius</i> (Hamilton, 1822)*	VU ^{NBFR,B}
	Sisoridae	108	<i>Bagarius bagarius</i> (Hamilton, 1822)*	VU ^{NBFR}
		109	<i>Bagarius yarrelli</i> (Sykes, 1839)**	EN ^{NBFR}
	Clariidae	110	<i>Clarias magur</i> (Hamilton, 1822)*	EN ^Δ
	Heteropneustidae	111	<i>Heteropneustes fossilis</i> (Bloch, 1794)*	VU ^{NBFR}
	Ariidae	112	<i>Arius arius</i> (Hamilton, 1822)*	LC ^Δ
		113	<i>Arius maculatus</i> (Thunberg, 1792)	NE
		114	<i>Nemapteryx caelata</i> (Valenciennes, 1840)*	NE
		115	<i>Osteogeneiosus militaris</i> (Linnaeus, 1758)*	NE
		116	<i>Plicofollis layardi</i> (Günther, 1866)	NE
	Plotosidae	117	<i>Plotosus canius</i> Hamilton, 1822*	NE
		118	<i>Plotosus lineatus</i> (Thunberg, 1787)*	NE
Aulopiformes	Synodontidae	119	<i>Saurida tumbil</i> (Bloch, 1795)**	NE
		120	<i>Synodus myops</i> (Forster, 1801)**	NE
Mugiliformes	Mugilidae	121	<i>Planiliza macrolepis</i> (Smith, 1846)*	LC ^Δ
		122	<i>Planiliza melinopterus</i> (Valenciennes, 1836)*	LC ^Δ
		123	<i>Chelon parsia</i> (Hamilton, 1822)*	NE
		124	<i>Chelon planiceps</i> (Valenciennes, 1836)*	DD
		125	<i>Planiliza subviridis</i> (Valenciennes, 1836)*	NE
		126	<i>Ellochelon vaigiensis</i> (Quoy & Gaimard, 1825)	LC ^Δ

Order	Family	Sl. No.	Species	Conservation status
		127	<i>Osteomugil cunnesius</i> (Valenciennes, 1836)*	NE
		128	<i>Crenimugil seheli</i> (Forsskål, 1775)*	NE
		129	<i>Mugil cephalus</i> Linnaeus, 1758*	LC ^A
		130	<i>Rhinomugil corsula</i> (Hamilton, 1822)*	VU ^{NBFGRB}
		131	<i>Valamugil speigleri</i> (Bleeker, 1858)*	NE
Atheriniformes	Atherinidae	132	<i>Atherinomorus duodecimalis</i> (Valenciennes, 1835)**	NE
		133	<i>Atherinomorus lacunosus</i> (Forster, 1801)**	NE
Cyprinodontiformes	Aplocheilidae	134	<i>Aplocheilus panchax</i> (Hamilton, 1822)*	LC ^A
Beloniformes	Belonidae	135	<i>Strongylura leiura</i> (Bleeker, 1850)*	NE
		136	<i>Strongylura strongylura</i> (van Hasselt, 1823)*	NE
		137	<i>Xenentodon cancila</i> (Hamilton, 1822)*	LC ^A
	Hemiramphidae	138	<i>Hemiramphus far</i> (Forsskål, 1775)**	NE
		139	<i>Hyporhamphus limbatus</i> (Valenciennes, 1847)*	LC ^A
	Adrianichthyidae	140	<i>Oryzias dancena</i> (Hamilton, 1822)*	LC ^A
Syngnathiformes	Syngnathidae	141	<i>Hippichthys cyanospilos</i> (Bleeker, 1854)**	NE
		142	<i>Hippocampus fuscus</i> Rüppell, 1838*	VU ^B
		143	<i>Ichthyocampus carce</i> (Hamilton, 1822)*	LC ^A
Synbranchiformes	Synbranchidae	144	<i>Ophisternon bengalense</i> McClelland, 1844**	LC ^A
	Mastacembelidae	145	<i>Macrogathus aral</i> (Bloch & Schneider, 1801)*	LC ^A
		146	<i>Macrogathus pancalus</i> Hamilton, 1822*	LC ^A
		147	<i>Mastacembelus armatus</i> (Lacepède, 1800)*	LC ^A
Scorpaeniformes	Scorpaenidae	148	<i>Pterois radiata</i> Cuvier, 1829*	NE
	Tetrarogidae	149	<i>Tetraroge niger</i> (Cuvier, 1829)**	LC ^A
	Synanceiidae*	150	<i>Trachicephalus uranoscopus</i> (Bloch & Schneider, 1801)***	NE
	Platycephalidae	151	<i>Cociella crocodilus</i> (Cuvier, 1829)**	NE
		152	<i>Kumococius rodericensis</i> (Cuvier, 1829)**	NE
		153	<i>Platycephalus indicus</i> (Linnaeus, 1758)*	DD ^A
Perciformes	Ambassidae	154	<i>Ambassis ambassis</i> (Lacepède, 1802)*	LC ^A
		155	<i>Ambassis gymnocephalus</i> (Lacepède, 1802)*	LC ^A
		156	<i>Chanda nama</i> Hamilton, 1822*	LC ^A
		157	<i>Parambassis ranga</i> (Hamilton, 1822)*	LC ^A
	Latidae	158	<i>Lates calcarifer</i> (Bloch, 1790)*	VU ^P
	Serranidae	159	<i>Epinephelus coioides</i> (Hamilton, 1822)**	NT ^A
		160	<i>Epinephelus lanceolatus</i> (Bloch, 1790)♦	VU ^{A,B}
		161	<i>Epinephelus malabaricus</i> (Bloch & Schneider, 1801)**	NT ^A
		162	<i>Epinephelus tauvina</i> (Forsskål, 1775)*	DD ^A

Order	Family	Sl. No.	Species	Conservation status
	Sillaginidae	163	<i>Sillaginopsis panijus</i> (Hamilton, 1822) ♦	NE
		164	<i>Sillago sihama</i> (Forsskål, 1775)*	NE
		165	<i>Sillago vincenti</i> McKay, 1980**	NE
	Lactariidae	166	<i>Lactarius lactarius</i> (Bloch & Schneider, 1801)**	NE
	Rachycentridae	167	<i>Rachycentron canadum</i> (Linnaeus, 1766)*	NE
	Echeneidae	168	<i>Echeneis naucrates</i> Linnaeus, 1758*	NE
	Carangidae	169	<i>Alectis indica</i> (Rüppell, 1830)*	NE
		170	<i>Alepes djedaba</i> (Forsskål, 1775)*	NE
		171	<i>Atule mate</i> (Cuvier, 1833)*	NE
		172	<i>Carangoides ferdau</i> (Forsskål, 1775)***	NE
		173	<i>Carangoides gymnostethus</i> (Cuvier, 1833)	NE
		174	<i>Carangoides oblongus</i> (Cuvier, 1833)***	NE
		175	<i>Carangoides praeustus</i> (Anonymous [Bennett], 1830)*	NE
		176	<i>Caranx ignobilis</i> (Forsskål, 1775)	NE
		177	<i>Caranx melampygus</i> Cuvier, 1833	NE
		178	<i>Caranx papuensis</i> Alleyne & MacLeay, 1877***	NE
		179	<i>Caranx sexfasciatus</i> Quoy & Gaimard, 1825*	LC ^Δ
		180	<i>Megalaspis cordyla</i> (Linnaeus, 1758)*	NE
		181	<i>Parastromateus niger</i> (Bloch, 1795)	NE
		182	<i>Scomberoides commersonnianus</i> Lacepède, 1801**	NE
		183	<i>Scomberoides lysan</i> (Forsskål, 1775) ♦	NE
		184	<i>Scomberoides tala</i> (Cuvier, 1832)*	NE
		185	<i>Scomberoides tol</i> (Cuvier, 1832)**	NE
		186	<i>Selar boops</i> (Cuvier, 1833)**	NE
		187	<i>Selar crumenophthalmus</i> (Bloch, 1793)**	NE
		188	<i>Selaroides leptolepis</i> (Cuvier, 1833)*	NE
		189	<i>Trachinotus baillonii</i> (Lacepède, 1801)***	NE
		190	<i>Trachinotus blochii</i> (Lacepède, 1801)	NE
		191	<i>Trachinotus botla</i> (Shaw, 1803)***	NE
		192	<i>Trachinotus mookalee</i> Cuvier, 1832**	NE
	Leiognathidae	193	<i>Aurigequula fasciata</i> (Lacepède, 1803)**	NE
		194	<i>Secutor insidiator</i> (Bloch, 1787)*	NE
		195	<i>Secutor ruconius</i> (Hamilton, 1822)**	NE
		196	<i>Eubleekeria splendens</i> (Cuvier, 1829)	LC ^Δ
		197	<i>Gazza minuta</i> (Bloch, 1795)*	LC ^Δ
		198	<i>Karalla daura</i> (Cuvier, 1829)	NE

Order	Family	Sl. No.	Species	Conservation status
		199	<i>Karalla dussumieri</i> (Valenciennes, 1835)*	NE
		200	<i>Leiognathus equulus</i> (Forsskål, 1775)*	LC ^Δ
		201	<i>Nuclequula blochii</i> (Valenciennes, 1835)*	NE
		202	<i>Nuclequula gerreoides</i> (Bleeker, 1851)**	NE
		203	<i>Photopectoralis bindus</i> (Valenciennes, 1835)**	NE
	Lethrinidae*	204	<i>Lethrinus lentjan</i> (Lacepede, 1802)***	NE
	Lutjanidae	205	<i>Lutjanus argentimaculatus</i> (Forsskål, 1775)*	NE
		206	<i>Lutjanus indicus</i> Allen, White & Erdmann 2013*	NE
		207	<i>Lutjanus johnii</i> (Bloch, 1792)*	NE
		208	<i>Lutjanus kasmira</i> (Forsskål, 1775)*	NE
		209	<i>Lutjanus rivulatus</i> (Cuvier, 1828)***	NE
	Datnioididae	210	<i>Datnioides polota</i> (Hamilton, 1822)*	LC ^Δ
	Gerreidae	211	<i>Gerres erythrouros</i> (Bloch, 1791)**	NE
		212	<i>Gerres filamentosus</i> Cuvier, 1829*	LC ^Δ
		213	<i>Gerres limbatus</i> Cuvier, 1830*	NE
		214	<i>Gerres macracanthus</i> Bleeker, 1854♦	NE
		215	<i>Gerres oyena</i> (Forsskål, 1775)*	NE
		216	<i>Gerres phaiya</i> Iwatsuki & Heemstra, 2001*	NE
		217	<i>Gerres setifer</i> (Hamilton, 1822)*	NE
	Haemulidae	218	<i>Plectorhinchus gibbosus</i> (Lacepède, 1802)	LC ^Δ
		219	<i>Pomadasys argenteus</i> (Forsskål, 1775)*	VU ^B
		220	<i>Pomadasys kaakan</i> (Cuvier, 1830)**	NE
		221	<i>Pomadasys multimaculatus</i> (Playfair, 1867)**	NE
	Sparidae	222	<i>Acanthopagrus berda</i> (Forsskål, 1775)*	NE
		223	<i>Acanthopagrus longispinnis</i> (Valenciennes 1830)♦	NE
		224	<i>Argyrops spinifer</i> (Forsskål, 1775)	NE
		225	<i>Crenidens crenidens</i> (Forsskål, 1775)*	NE
		226	<i>Rhabdosargus sarba</i> (Forsskål, 1775)*	NE
	Nemipteridae	227	<i>Nemipterus japonicus</i> (Bloch, 1791)**	NE
	Sciaenidae	228	<i>Daysciaena albida</i> (Cuvier, 1830)*	NE
		229	<i>Dendrophysa russelii</i> (Cuvier, 1829)*	NE
		230	<i>Johnius amblycephalus</i> (Bleeker, 1855)♦	NE
		231	<i>Johnius belangerii</i> (Cuvier, 1830)*	NE
		232	<i>Johnius borneensis</i> (Bleeker, 1851)***	NE
		233	<i>Johnius carutta</i> Bloch, 1793**	NE
		234	<i>Johnius coitor</i> (Hamilton, 1822)	LC ^Δ

Order	Family	Sl. No.	Species	Conservation status
		235	<i>Johnius dussumieri</i> (Cuvier, 1830)	NE
		236	<i>Johnius macropterus</i> (Bleeker, 1853)*	NE
		237	<i>Nibea maculata</i> (Bloch & Schneider, 1801)**	NE
		238	<i>Otolithes ruber</i> (Bloch & Schneider, 1801)**	NE
		239	<i>Otolithoides biauritus</i> (Cantor, 1849)	VU ^{M,B}
		240	<i>Otolithoides pama</i> (Hamilton, 1822)*	NE
		241	<i>Paranibea semiluctuosa</i> (Cuvier, 1830)*	NE
		242	<i>Protonibea diacanthus</i> (Lacepède, 1802)*	VU ^{M,B}
	Polynemidae	243	<i>Eleutheronema tetradactylum</i> (Shaw, 1804)*	NE
		244	<i>Leptomelanosoma indicum</i> (Shaw, 1804)*	VU ^{M,B}
		245	<i>Polydactylus plebeius</i> (Broussonet, 1782)**	NE
		246	<i>Polydactylus sextarius</i> (Bloch & Schneider, 1801)*	NE
	Mullidae	247	<i>Upeneus sulphureus</i> Cuvier, 1829**	NE
	Drepaneidae	248	<i>Drepane punctata</i> (Linnaeus, 1758)*	NE
	Monodactylidae	249	<i>Monodactylus argenteus</i> (Linnaeus, 1758)*	NE
		250	<i>Monodactylus kottelati</i> Pethiyagoda, 1991**	NE
	Nandidae	251	<i>Nandus nandus</i> (Hamilton, 1822)*	LC ^A
	Terapontidae	252	<i>Pelates quadrilineatus</i> (Bloch, 1790) ♦	NE
		253	<i>Terapon jarbua</i> (Forsskål, 1775)*	LC ^A
		254	<i>Terapon puta</i> Cuvier, 1829*	NE
		255	<i>Terapon theraps</i> Cuvier, 1829*	LC ^A
	Apogonidae*	256	<i>Taeniamia macroptera</i> (Cuvier, 1828)***	NE
	Cichlidae	257	<i>Etroplus suratensis</i> (Bloch, 1790)*	LC ^A
		258	<i>Oreochromis mossambicus</i> (Peters, 1852)**	NT ^A
	Uranoscopidae	259	<i>Ichthyoscopus lebeck</i> (Bloch & Schneider, 1801)*	NE
	Blenniidae	260	<i>Omobranchus zebra</i> (Bleeker, 1868)*	NE
	Eleotridae	261	<i>Butis butis</i> (Hamilton, 1822) ♦	LC ^A
		262	<i>Eleotris fusca</i> (Forster, 1801) ♦	LC ^A
		263	<i>Eleotris melanosoma</i> (Bleeker, 1852)**	LC ^A
	Gobiidae	264	<i>Acentrogobius cyanomos</i> (Bleeker, 1849)*	NE
		265	<i>Acentrogobius griseus</i> (Day, 1876)	NE
		266	<i>Acentrogobius masoni</i> (Day, 1873) ♦	NE
		267	<i>Acentrogobius nebulosus</i> (Forsskål, 1775)**	NE
		268	<i>Acentrogobius viridipunctatus</i> (Valenciennes, 1837)	NE
		269	<i>Amoya madraspatensis</i> (Day, 1868)	NE
		270	<i>Bathygobius fuscus</i> (Rüppell, 1830)	LC ^A

Order	Family	Sl. No.	Species	Conservation status
		271	<i>Bathygobius osteicola</i> (Chaudhuri, 1916)	DD ^Δ
		272	<i>Brachygobius nunus</i> (Hamilton, 1822)	NE
		273	<i>Drombus globiceps</i> (Hora, 1923)*	LC ^Δ
		274	<i>Favonigobius reichei</i> (Bleeker, 1843)***	LR/nt
		275	<i>Glossogobius giuris</i> (Hamilton, 1822)*	LC ^Δ
		276	<i>Gobiopterus chuno</i> (Hamilton, 1822)	DD ^Δ
		277	<i>Oligolepis acutipennis</i> (Valenciennes, 1837)♦	DD ^Δ
		278	<i>Oligolepis cylindriceps</i> (Hora, 1923)*	NE
		279	<i>Oxyurichthys microlepis</i> (Bleeker, 1849)*	NE
		280	<i>Oxyurichthys tentacularis</i> (Valenciennes, 1837)*	NE
		281	<i>Parapocryptes rictuosus</i> (Valenciennes, 1837)	NE
		282	<i>Periophthalmus kalolo</i> Lesson, 1831*	NE
		283	<i>Psammogobius biocellatus</i> (Valenciennes, 1837)*	LC ^Δ
		284	<i>Pseudapocryptes elongatus</i> (Cuvier, 1816)	LC ^Δ
		285	<i>Pseudogobiopsis oligactis</i> (Bleeker, 1875)	LC ^Δ
		286	<i>Pseudogobius javanicus</i> (Bleeker, 1856)	NE
		287	<i>Stigmatogobius minima</i> (Hora, 1923)	NE
		288	<i>Taenioides anguillaris</i> (Linnaeus, 1758)***	NE
		289	<i>Taenioides buchanani</i> (Day, 1873)	NE
		290	<i>Trypauchen vagina</i> (Bloch & Schneider, 1801)*	NE
		291	<i>Yongeichthys criniger</i> (Valenciennes, 1837)♦	NE
	Ephippidae	292	<i>Ephippus orbis</i> (Bloch, 1787)**	NE
		293	<i>Platax orbicularis</i> (Forsskål, 1775)**	NE
	Scatophagidae	294	<i>Scatophagus argus</i> (Linnaeus, 1766)*	LC ^Δ
	Siganidae	295	<i>Siganus canaliculatus</i> (Park, 1797)**	NE
		296	<i>Siganus javus</i> (Linnaeus, 1766)*	NE
		297	<i>Siganus vermiculatus</i> (Valenciennes, 1835)*	LC ^Δ
	Acanthuridae	298	<i>Acanthurus mata</i> (Cuvier, 1829)**	LC ^Δ
		299	<i>Acanthurus triostegus</i> (Linnaeus, 1758)**	LC ^Δ
	Sphyrinaeidae	300	<i>Sphyræna jello</i> Cuvier, 1829**	NE
		301	<i>Sphyræna putnamae</i> Jordan & Seale, 1905**	NE
		302	<i>Sphyræna obtusata</i> Cuvier, 1829***	NE
	Trichiuridae	303	<i>Eupleurogrammus glossodon</i> (Bleeker, 1860)**	NE
		304	<i>Lepturacanthus savala</i> (Cuvier, 1829)**	NE
		305	<i>Trichiurus lepturus</i> Linnaeus, 1758**	NE

Order	Family	Sl. No.	Species	Conservation status
	Scombridae	306	<i>Euthynnus affinis</i> (Cantor, 1849)**	LC ^Δ
		307	<i>Rastrelliger kanagurta</i> (Cuvier, 1816)**	DD ^Δ
		308	<i>Scomberomorus lineolatus</i> (Cuvier, 1829)*	LC ^Δ
	Anabantidae	309	<i>Anabas cobojius</i> (Hamilton, 1822)*	DD ^Δ
		310	<i>Anabas testudineus</i> (Bloch, 1792)*	DD ^Δ
	Osphronemidae	311	<i>Trichogaster fasciata</i> Bloch & Schneider, 1801*	LC ^Δ
		312	<i>Trichogaster lalius</i> (Hamilton, 1822)*	LC ^Δ
	Channidae	313	<i>Channa gachua</i> (Hamilton, 1822)**	LC ^Δ
		314	<i>Channa marulius</i> (Hamilton, 1822)**	LC ^Δ
		315	<i>Channa punctata</i> (Bloch, 1793)*	LC ^Δ
		316	<i>Channa striata</i> (Bloch, 1793)*	LC ^Δ
Pleuronectiformes	Paralichthyidae	317	<i>Pseudorhombus arsius</i> (Hamilton, 1822)*	NE
		318	<i>Pseudorhombus micrognathus</i> Norman, 1927**	NE
		319	<i>Pseudorhombus triocellatus</i> (Bloch & Schneider, 1801)**	NE
	Soleidae	320	<i>Brachirus orientalis</i> (Bloch & Schneider, 1801)*	NE
		321	<i>Solea ovata</i> Richardson, 1846*	NE
		322	<i>Zebrias synapturoides</i> (Jenkins, 1910)***	NE
	Cynoglossidae	323	<i>Cynoglossus lida</i> (Bleeker, 1851)**	NE
		324	<i>Cynoglossus lingua</i> Hamilton, 1822*	NE
		325	<i>Cynoglossus puncticeps</i> (Richardson, 1846)*	NE
Tetraodontiformes	Triacanthidae	326	<i>Triacanthus biaculeatus</i> (Bloch, 1786)*	NE
	Balistidae	327	<i>Abalistes stellaris</i> (Bloch & Schneider, 1801)**	NE
	Tetraodontidae	328	<i>Arothron immaculatus</i> (Bloch & Schneider, 1801)***	NE
		329	<i>Arothron reticularis</i> (Bloch & Schneider, 1801)	NE
		330	<i>Arothron stellatus</i> (Anonymous, 1798)	NE
		331	<i>Chelonodon patoca</i> (Hamilton, 1822)*	NE
		332	<i>Dichomyctere fluviatilis</i> (Hamilton, 1822)*	NE
		333	<i>Takifugu oblongus</i> (Bloch, 1786)*	NE
		334	<i>Lagocephalus lunaris</i> (Bloch & Schneider, 1801)	NE
		335	<i>Leiodon cutcutia</i> (Hamilton, 1822)*	LC ^Δ
	Diodontidae	336	<i>Diodon hystrix</i> Linnaeus, 1758**	NE

*** New records from Chilika Lake under ICAR-CIFRI/CDA-ICZM Consultancy project (2011-2016)

** New records documented by CDA (Mohapatra et al., 2007; Mohanty et al., 2008; Mohanty et al., 2015; Mohapatra et al., 2015)

* Fish diversity inventory by CDA (Mohapatra et al., 2007; Mohanty et al., 2008; Mohanty et al., 2015; Mohapatra et al., 2015)

• Fish diversity inventory by ICAR-CIFRI under ICAR-CIFRI/CDA-ICZM Consultancy Project (2011-16) which were not collected by CDA earlier.

Δ - IUCN Red List Status

NBFG - National Bureau of Fish Genetic Resources (2010)

P - Pooniah (1993)

B - Barman et al. (2007)

M - Menon (2004)

CAMP - Conservation Assessment and Management Plan Workshops (1998)

CHECKLIST OF SHELLFISHES

The shellfish (prawns and shrimps, brachyuran crabs and lobsters) species recorded from the Chilika lake stands at 66 (29 prawn species, 35 brachyuran crab species and 2 lobster species) distributed among 26 families. The updated checklist of prawns and shrimps has 29 species belonging to 17 genera and 10 families under the order, decapoda; while there are 35 brachyuran crabs species belonging to 27 genera, 15 families and under the order Decapoda. Two lobster species belonging to the genus *Panulirus* and under the family Palinuridae are presented. The details checklist is presented in Table 2.

Table 2. Updated checklist of shell fishes of Chilika Lake

Family	Sl. No.	Species	Conservation status
Prawns and shrimps			
Penaeidae	1	<i>Fenneropenaeus indicus</i> (H. milne Edwards, 1837)	NE
	2	<i>Metapenaeus affinis</i> (H. milne Edwards, 1837)	NE
	3	<i>Metapenaeus dobsoni</i> (Miers, 1878)	NE
	4	<i>Metapenaeus ensis</i> (De Haan, 1844)	NE
	5	<i>Metapenaeus monoceros</i> (Fabricius, 1798)	NE
	6	<i>Penaeus canaliculatus</i> (Oliver, 1811)	NE
	7	<i>Penaeus monodon</i> Fabricius, 1798	NE
	8	<i>Penaeus semisulcatus</i> De Haan, 1844	NE
Luciferidae	9	<i>Lucifer hansenii</i> Nobili, 1905	NE
Palaemonidae	10	<i>Cuapetes demani</i> (Kemp, 1915)	NE
	11	<i>Exopalaemon styliferus</i> (H. milne Edwards, 1840)	NE
	12	<i>Macrobrachium equidens</i> (Dana, 1852)	LC
	13	<i>Macrobrachium lamarrei lamarrei</i> (H. milne Edwards, 1837)	LC
	14	<i>Macrobrachium malcolmsonii</i> (H. milne Edwards, 1844)	LC
	15	<i>Macrobrachium rosenbergii</i> (D. Man, 1879)	LC
	16	<i>Macrobrachium rude</i> (Heller, 1862)	LC
	17	<i>Macrobrachium scabriculum</i> (Heller, 1862)	LC

Family	Sl. No.	Species	Conservation status
	18	<i>Phycomenes indicus</i> (Kemp, 1915)	NE
Alpheidae	19	<i>Alpheus lobidens</i> De Haan, 1849	NE
	20	<i>Alpheus malabaricus</i> (Fabricius, 1775)	NE
	21	<i>Alpheus paludicola</i> Kemp, 1915	NE
	22	<i>Athanas polymorphus</i> Kemp, 1915	NE
Ogyrididae	23	<i>Ogyrides striaticauda</i> Kemp, 1915	NE
Atyidae	24	<i>Caridina nilotica</i> (Roux, 1833)	NE
	25	<i>Caridina propinqua</i> De Mann, 1908	NE
Crangonidae	26	<i>Philocheras hendersoni</i> (Kemp, 1915)	NE
Pasiphaeidae	27	<i>Leptochela aculeocaudata</i> Paulson, 1875	NE
Callianassidae	28	<i>Neocallichirus maxima</i> (A. Milne-Edwards, 1870)	NE
Upogebiidae	29	<i>Wolffogebia heterocheir</i> (Kemp, 1915)	NE
Brachyuran crabs			
Calappidae	1	<i>Ashtoret lunaris</i> (Forsskal, 1775)	NE
	2	<i>Matuta planipes</i> Fabricius, 1798	NE
Gecarcinucidae	3	<i>Cardisoma carnifex</i> (Herbst, 1796)	NE
Leucosiidae	4		NE
	5	<i>Philyra malefactorix</i> (Kemp, 1915)	NE
Hymenosomatidae	6	<i>Philyra alcocki</i> Kemp, 1915	NE
Epialtidae	7	<i>Elamena (Trigonoplax) cimex</i> Kemp, 1915	NE
Pilumnidae	8	<i>Doclea muricata</i> (Herbst, 1788)	NE
Portunidae	9	<i>Benthopanope indica</i> (de Man, 1887)	NE
	10	<i>Charybdis callianassa</i> (Herbst, 1789)	NE
	11	<i>Charybdis feriatus</i> (Linnaeus, 1758)	NE
	12	<i>Podophthalmus vigil</i> (Fabricius, 1798)	NE
	13	<i>Portunus pelagicus</i> (Linnaeus, 1758)	NE
	14	<i>Portunus sanguinolentus</i> (Herbst, 1783)	NE
	15	<i>Scylla serrata</i> (Forsskal, 1775)	NE
	16	<i>Scylla tranquebarica</i> (Fabricius, 1798)	NE
Grapsidae	17	<i>Thalamita crenata</i> (Milne-Edwards, 1834)	NE
	18	<i>Metopograpsus messor</i> (Forsskal, 1775)	NE
	19	<i>Metopograpsus quadridentatus</i> Stimpson, 1858	NE
	20	<i>Neosarmatium meinerti</i> (de Man, 1887)	NE

Family	Sl. No.	Species	Conservation status
Plagusiidae	21	<i>Pachygrapsus propinquus</i> de Man, 1908	NE
Sesarmidae	22	<i>Plagusia squamosa</i> (Herbst, 1790)	NE
	23	<i>Nanosesarma batavicum</i> (Moreira, 1903)	NE
Varunidae	24	<i>Parasesarma plicatum</i> (Latreille, 1806)	NE
	25	<i>Ptychognathus onyx</i> Alcock, 1900	NE
Camptandriidae	26	<i>Varuna litterata</i> (Fabricius, 1798)	NE
	27	<i>Baruna socialis</i> Stebbing, 1904	NE
Dotillidae	29	<i>Camptandrium sexdentatum</i> Stimpson, 1858	NE
	30	<i>Dotilla intermedia</i> de Man, 1888	NE
	28	<i>Dotilla myctiroides</i> (Milne-Edwards, 1852)	NE
Macrophthalmidae	31	<i>Dotilla pertinax</i> Kemp, 1915	NE
Ocypodidae	32	<i>Euplax leptophthalmus</i> H. Milne Edwards, 1852	NE
	33	<i>Ocypode ceratophthalmus</i> (Pallas, 1772)	NE
	34	<i>Ocypode macrocera</i> H. Milne Edwards, 1852	NE
	35	<i>Ocypode platytarsis</i> H. Milne Edwards, 1852	NE
Spiny lobsters		<i>Uca annulipes</i> (Milne-Edwards, 1837)	
Palinuridae		<i>Panulirus ornatus</i> (Fabricius, 1798)	LC ^Δ
		<i>Panulirus polyphagus</i> (Herbst, 1793)	LC ^Δ

CONSERVATION STATUS

Review of literature on the biodiversity status of fishes and threatened fishes of India based on IUCN criteria (Ponniah, 1993; Molur and Walker, 1998; Menon, 2004; Barman *et al.*, 2007; NBFGR, 2010; IUCN., 2018; Froese and Pauly, 2015) documented a total list of 156 species under 62 families from Chilika Lake which were assessed for biodiversity status. In total, 35 species in 25 families were recorded as threatened and categorized under Critically Endangered (CR), Endangered (EN), Vulnerable (VU) (Table 3). Further, 14 more species in nine families are categorized as Near Threatened (NT) that need conservation measures unless they may slip to threatened category very soon. Only 91 species forming 27.08% of the total ichthyofaunal record of 336 were assessed as Least Concern (LC), whereas 16 species (4.76%) were categorized as Data Deficient (DD). Most importantly, 180 species (53.57%) of fishes of Chilika Lake were Not Evaluated (NE) for their conservation status. In other words, status of 53.57% of fishes is unknown, and need to be evaluated at least at the national level. There has not been assessment for penaeid prawn and shrimps species recorded from Chilika for conservation status except for 6 freshwater prawn species (*Macrobrachium* sp.) among shellfish group.

Table 3. Assessment of conservation status of fishes and shellfishes of Chilika Lake (Families alphabetically arranged)

Sl. No	Family	Conservation status (Number of species by family)								
		CR	EN	VU	Total threat-ened species	NT	LC	DD	Total	Total species assessed
Finfishes										
1	Acanthuridae (Surgeon fishes)						2		2	2
2	Adrianichthyidae (Rice fish)						1		1	1
3	Ambassidae (Perchlets, glass fishes)						4		4	4
4	Anabantidae (Climbing perches)							2	2	2
5	Anguillidae (Freshwater eels)					2			2	2
6	Aplocheilidae (Asian revulines)						1		1	1
7	Ariidae (Sea catfish)						1		1	1
8	Bagridae (Bagrid catfishes)			1	1		3		3	4
9	Belonidae (Needle fishes)						1		1	1
10	Carangidae (Jacks, Trevallies, Pompanos & Scads)						1		1	1
11	Carcharinidae (Requiem sharks)	1			1	4			4	5
12	Channidae (Snakeheads, Murrels)						4		4	4
13	Cichlidae (Cichlids)					1	1		2	2
14	Clariidae (Air-breathing catfish)		1		1					1
15	Clupeidae (Herrings & allies)			2	2		4		4	6
16	Cobitidae (Loaches)						1		1	1

Sl. No	Family	Conservation status (Number of species by family)								
		CR	EN	VU	Total threat-ened species	NT	LC	DD	Total	Total species assessed
17	Cyprinidae (Carps & minnows)			3	3		20	1	21	24
18	Dasyatidae (Stingrays)			1	1	1		3	4	5
19	Danioiidae (Freshwater triple tails)						1		1	1
20	Eleotridae (Gudgeons)						3		3	3
21	Elopidae (Tenpounders)						1		1	1
22	Engraulidae (Anchovies)						2	1	3	3
23	Gerreidae (Silver biddies)						2		2	2
24	Gobiidae (Gobies)					1	6	3	10	10
25	Haemulidae (Grunts & Rubberlips)			1	1		1		1	2
26	Hemiramphidae (Halfbeaks)						1		1	1
27	Hemiscyllidae (Bamboo sharks)					1			1	1
28	Heteropneustidae (Airsac catfish)			1	1					1
29	Latidae (Lates perches/Asian Seabass)			1	1					1
30	Leiognathidae (Pony fishes, Silverbellies)						3		3	3
31	Lethrinidae (Emperors or scavengers)						1		1	1
32	Lutjanidae						1		1	1
33	Mastacembelidae (Spiny eels)						3		3	3
34	Megalopidae (Tarpons)							1	1	1
35	Mugilidae (Mulletts)			1	1		4	1	5	6

Sl. No	Family	Conservation status (Number of species by family)								
		CR	EN	VU	Total threat-ened species	NT	LC	DD	Total	Total species assessed
36	Muraenesocidae (Pike congers)			2	2					2
37	Myliobatidae (Eaglerays)		1	1	2					2
38	Nandidae (Leaf fishes)						1		1	1
39	Narcinidae*							1	1	1
40	Notopteridae (Featherbacks)		1		1		1		1	2
41	Ophichthidae (Snake eels)						2		2	2
42	Osphronemidae (Gouramies)						2		2	2
43	Pangasiidae (Shark catfish)			1	1					1
44	Platycephalidae (Flatheads)							1	1	1
45	Polynemidae (Threadfin fishes)			1	1					1
46	Pristidae (Saw fish)		1		1					1
47	Pristigasteridae (Pellonas)		1		1					1
48	Rhinobatidae (Guitar fishes)			1	1					1
49	Scatophagidae (Scats)						1		1	1
50	Schilbeidae (Schilbid catfishes)		1	2	3		1		1	4
51	Sciaenidae (Croakers)			2	2		1		1	3
52	Scombridae (Mackerels, Seerfishes, Tunas, Albacores)						2	1	3	3
53	Serranidae (Groupers, Rock-cods)			1	1	2		1	3	4
54	Siganidae (Spinsfoots, Rabbitfishes)						1		1	1

Sl. No	Family	Conservation status (Number of species by family)							
		CR	EN	VU	Total threat-ened species	NT	LC	DD	Total
55	Siluridae (Eurasian catfishes)		1	1	2	1			1
56	Sisoridae (Sisorid catfish)		1	1	2				
57	Sphyrnaenidae (Hammerheaded shark)		1		1	1			1
58	Synbranchidae (Swamp eels)						1		1
59	Syngnathidae (Pipe fishes & Sea horses)			1	1		1		1
60	Terapontidae (Terapon perches)						2		2
61	Tetraodontidae (Puffers)						1		1
62	Tetrarogidae (Waspfishes)						1		1
	Total	1	9	25	35	14	91	16	121
	% to the total assessment of species	0.64	5.77	16.03	22.44	8.97	58.33	10.26	77.56
	Shellfishes								
1	Palaemonidae: <i>Macrobrachium</i> sp. (Freshwater prawns)						6		6

CR-Critically Endangered; EN- Endangered; VU-Vulnerable; NT-Near Threatened; LC-Least Concern; DD-Data Deficient

Table 4 Finfishes of updated inventory list not included in the monograph book

Order	Family	Sl. No.	Species
Orectolobiformes	Hemiscyllidae	1	<i>Chiloscyllium indicum</i> (Gmelin, 1789)**
Carcharhiniformes	Carcharhinidae	2	<i>Carcharhinus leucas</i> (Müller & Henle, 1839)**
Myliobatiformes	Dasyatidae	3	<i>Himantura marginata</i> (Blyth, 1860)**
	Myliobatidae	4	<i>Aetobatus flagellum</i> (Bloch & Schneider, 1801)*
		5	<i>Aetobatus ocellatus</i> (Kuhl, 1823)*
		6	<i>Aetomylaeus nichofii</i> (Bloch & Schneider, 1801)*
Osteoglossiformes	Notopteridae	7	<i>Chitala Chitala</i> (Hamilton, 1822)*
Anguilliformes	Muraenidae	8	<i>Strophidon sathete</i> (Hamilton, 1822)*
	Ophichthidae	9	<i>Pisodonophis boro</i> (Hamilton, 1822)*
Clupeiformes	Clupeidae	10	<i>Ehirava fluviatilis</i> Deraniyagala, 1929**
		11	<i>Sardinella fimbriata</i> (Valenciennes, 1847)**
		12	<i>Sardinella longiceps</i> Valenciennes, 1847**
	Engraulidae	13	<i>Stolephorus baganensis</i> Hardenberg, 1933*
		14	<i>Thryssa gautamiensis</i> Babu Rao, 1971**
Cypriniformes	Cyprinidae	15	<i>Crossocheilus latius</i> (Hamilton, 1822)*
		16	<i>Labeo calbasu</i> (Hamilton, 1822)*
		17	<i>Rasbora rasbora</i> (Hamilton, 1822)*
Siluriformes	Bagridae	18	<i>Sperata seenghala</i> (Sykes, 1839)*
	Sisoridae	19	<i>Bagarius bagarius</i> (Hamilton, 1822)*
		20	<i>Bagarius yarrelli</i> (Sykes, 1839)**
	Plotosidae	21	<i>Plotosus lineatus</i> (Thunberg, 1787)*
Aulopiformes	Synodontidae	22	<i>Saurida tumbil</i> (Bloch, 1795)**
		23	<i>Synodus myops</i> (Forster, 1801)**
Beloniformes	Belonidae	24	<i>Strongylura leiura</i> (Bleeker, 1850)*
Syngnathiformes	Syngnathidae	25	<i>Hippichthys cyanospilos</i> (Bleeker, 1854)**
Synbranchiformes	Synbranchidae	26	<i>Ophisternon bengalense</i> McClelland, 1844**
Scorpaeniformes	Platycephalidae	27	<i>Kumococius rodericensis</i> (Cuvier, 1829)**
Perciformes	Lactariidae	28	<i>Lactarius lactarius</i> (Bloch & Schneider, 1801)**
	Carangidae	29	<i>Atule mate</i> (Cuvier, 1833)*
	Leiognathidae	30	<i>Secutor insidiator</i> (Bloch, 1787)*
		31	<i>Secutor ruconius</i> (Hamilton, 1822)**
		32	<i>Gazza minuta</i> (Bloch, 1795)*
		33	<i>Karalla dussumieri</i> (Valenciennes, 1835)*

		34	<i>Nuchequula gerreoides</i> (Bleeker, 1851)**
	Haemulidae	35	<i>Pomadasys multimaculatus</i> (Playfair, 1867)**
	Nemipteridae	36	<i>Nemipterus japonicus</i> (Bloch, 1791)**
	Sciaenidae	37	<i>Nibea maculata</i> (Bloch & Schneider, 1801)**
		38	<i>Otolithes ruber</i> (Bloch & Schneider, 1801)**
		39	<i>Otolithoides pama</i> (Hamilton, 1822)*
		40	<i>Paranibea semiluctuosa</i> (Cuvier, 1830)*
		41	<i>Protonibea diacanthus</i> (Lacepède, 1802)*
	Polynemidae	42	<i>Leptomelanosoma indicum</i> (Shaw, 1804)*
		43	<i>Polydactylus plebeius</i> (Broussonet, 1782)**
		44	<i>Polydactylus sextarius</i> (Bloch & Schneider, 1801)*
	Uranoscopidae	45	<i>Ichthyscopus lebeck</i> (Bloch & Schneider, 1801)*
	Blenniidae	46	<i>Omobranchus zebra</i> (Bleeker, 1868)*
	Gobiidae	47	<i>Acentrogobius cyanomos</i> (Bleeker, 1849)*
		48	<i>Acentrogobius nebulosus</i> (Forsskål, 1775)**
		49	<i>Oligolepis cylindriceps</i> (Hora, 1923)*
		50	<i>Oxyurichthys tentacularis</i> (Valenciennes, 1837)*
	Trichiuridae	51	<i>Eupleurogrammus glossodon</i> (Bleeker, 1860)**
		52	<i>Lepturacanthus savala</i> (Cuvier, 1829)**
		53	<i>Trichiurus lepturus</i> Linnaeus, 1758**
	Scombridae	54	<i>Euthynnus affinis</i> (Cantor, 1849)**
		55	<i>Rastrelliger kanagurta</i> (Cuvier, 1816)**
		56	<i>Scomberomorus lineolatus</i> (Cuvier, 1829)*
	Anabantidae	57	<i>Anabas cobojus</i> (Hamilton, 1822)*
	Channidae	58	<i>Channa gachua</i> (Hamilton, 1822)**
Pleuronectiformes	Soleidae	59	<i>Brachirus orientalis</i> (Bloch & Schneider, 1801)*
	Tetraodontidae	60	<i>Dichotomyctere fluviatilis</i> (Hamilton, 1822)*
		61	<i>Takifugu oblongus</i> (Bloch, 1786)*

Table 5 Shellfishes of updated inventory list not included in the monograph book

Order	Family	Sl. No.	Species
Shell fish Crabs			
Decapoda	Calappidae (Box crabs)	1	<i>Matuta planipes</i> (Fabricius, 1798)*
		2	<i>Ashtoret lunaris</i> (Forsskål, 1775)**
	Leucosiidae (Nut crabs)	3	<i>Philyra alcocki</i> (Kemp, 1915)*
	Ocypodidae (Ghost crabs and Fiddler crabs)	4	<i>Ocypode macrocera</i> (Edwards, 1852)*
	Grapsidae (Marsh crabs)	5	<i>Varuna litterata</i> (Fabricius, 1798)*
		6	<i>Sesarma quadrata</i> (Fabricius, 1798)**
	Portunidae (Swimming crabs)	7	<i>Portunus (Portunus) sanguinolentus</i> (Herbst, 1783)**
		8	<i>Thalamita crenata</i> (Rüppell, 1830)*
		9	<i>Charybdis (Charybdis) feriata</i> (Linnaeus, 1758)**
		10	<i>Charybdis (Charybdis) callianassa</i> (Herbst, 1789)**
		11	<i>Podophthalmus vigil</i> (Fabricius, 1798)**
Shrimp and Prawns			
	Penaeidae (Penaeid shrimp)	12	<i>Melicertus canaliculatus</i> (Olivier, 1811)**
		13	<i>Metapenaeus affinis</i> (H. Milne Edwards, 1837)*
		14	<i>Metapenaeus ensis</i> (De Haan, 1844)**
	Palaemonidae (Palaemonid shrimps)	15	<i>Macrobrachium lamarrei lamarrei</i> (Edwards, 1837)*
		16	<i>Macrobrachium equidens</i> (Dana, 1852)**
		17	<i>Exopalaemon styliferus</i> (H. Milne Edwards, 1840)*
		18	<i>Cuapetes demani</i> (Kemp, 1915)*
	Atyidae (Basket shrimp)	19	<i>Caridina propinqua</i> (De Man, 1908)*
	Callianassidae (Ghost shrimp)	20	<i>Neocallichirus maxima</i> (A. Milne-Edwards, 1870)*
	Upogebidae (Mud shrimps)	21	<i>Wolffogebia heterocheir</i> (Kemp, 1915)*
Lobsters			
	Palinuridae (Spiny lobsters)	22	<i>Panulirus polyphagus</i> (Herbst, 1793)**
		23	<i>Panulirus ornatus</i> (Fabricius, 1798)**

SUSTAINABLE MANAGEMENT OF FISH AND SHELLFISH DIVERSITY

It is important that the ambient living world is a result of the long-term biological diversification through evolution. For a long time, all levels of biodiversity (genetic, specific and ecosystem) forms had interacted naturally without human involvement (Hiddink *et al.*, 2008). Biodiversity affects the capacity of living ecosystems to respond to changes in the environment and is essential for ecosystem goods and services and sustainability of aquatic natural resources that include commercial fisheries. Fishers who exploit a larger range of species have more stable and regular catches than fishes who exploit a single species. A high genetic diversity within a fish population ensure more resilience against environmental stressors. The effects of changes in biodiversity on ecosystem functioning are becoming more evident; although there is uncertainty, many fishing induced changes in species and size composition of fish communities are now well documented (<http://europa.eu/scadplus/leg/en/lvb/128023.htm> (2005)). Fisheries managers and policy makers must therefore take a precautionary approach in managing exploitation of fish diversity (Hiddink *et al.*, 2008). The biodiversity of Chilika Lake is very high due to complicated and long history of its formation, which has been estimated to be over 3500-4000 years ago (https://en.wikipedia.org/wiki/Chilika_Lake#Geology). Based on its rich biodiversity, unique ecological characters and socio-economic importance, Chilika Lake has been designated as Ramsar Site in 1981, first in India. The Ministry of Environment, Forest and Climate Change, Government of India included the lake in the list of wetlands selected for intensive conservation and management. The shallow lake with freshwater, brackish and marine characters is a highly productive eco-system with rich fishery resources providing livelihood to over 0.2 million fishers. Chilika Lake's aquatic environment being dynamic mix of fresh, brackish and marine characters, support highly diverse aquatic lives in general and fish and shellfish in particular. Hence, fish and shellfish species of fresh, brackish and marine origin constitute the fish stocks in the lake. It is estimated that 85.49% of fin fish diversity of the lake are migratory species, which move between sea, lake, rivers and vice versa (Mohanty *et al.*, 2015). Therefore, access of these finfish and shellfish to the diverse habitats associated with the lake is very important. In other words management of Chilika fish stocks calls for free movement of fin fishes and shell fishes through the sea mouth at the outer channel and at the Palur canal as well as access to rivers. During the last few decades, Chilika Lake, like several other coastal lagoons in the country and elsewhere in the world, has undergone environmental changes owing to various anthropogenic activities, climatic as well as natural processes. Geologically, ancient ecosystem of Chilika exhibited high diversity of fish and shell fish species, which has been subjected to multi-dimensional stress impacting its overall biodiversity, particularly that of fishes (Mohanty, 2002).

The ecology of the lake witnessed drastic changes during the 1990s and 2000s. The 32 km long, narrow outer channel, which used to connect the lagoon with the Bay of Bengal, near village Motto, gradually filled up due to shoal formation along the

lead channel. This caused considerable reduction in the tidal influx into the lagoon leading to significant change in salinity regime, which in turn had adversely affected the brackish water flora and fauna. In the aftermath of the gradual closure of the sea mouth, the lagoon had turned more towards a freshwater ecosystem from its original brackish water type, resulting in substantial change in species composition. There was significant increase in freshwater flora and fauna, causing drastic change in the fishery of the lagoon. Blockage of sea water ingress prevented recruitment of valuable marine fish species into the lagoon, on which thousands of fishers depended for livelihood. As a consequence, the fish production from the lagoon declined to less than half. The lake had turned into a threatened ecosystem; the situation aggravated due to siltation, eutrophication, proliferation of freshwater macrophytes, increased aquaculture activities along the periphery of the lake, changes in species composition, depletion of bio-resources and decrease in fish production. These changes had adversely affected the livelihood of the community who depended on the lake. The lagoon was placed in the Montoux record in the year 1993 by Ramsar bureau due to the drastic change in its ecological characters. In order to restore the salinity profile of the lagoon, creation of an artificial mouth was thought of after detailed hydrological investigations. Consequently, on 23rd September 2000, a new mouth was opened, reducing the length of the inlet channel by 18 km. This hydrological intervention resulted in a spectacular enhancement of fisheries including fish diversity in the lake (Mohapatra *et al.*, 2007).

The fish and shellfish diversity of Chilika Lake was studied during pre-restoration period (Ramaraao, 1995; Reddy, 1995; Deb, 1995). Ichthyofaunal diversity inventory and biodiversity status were studied comprehensively by Mohanty *et al.* (2015) and reported 317 fish species, 29 prawn species and 35 brachyuran crab species. The long term investigation 'Post restoration assessment of ecology and fisheries diversity of Chilika Lake' under the World Bank funded ICAR-CIFRI/CDA-ICZM Consultancy Project, added 17 new records of finfish species to the checklist, raising the finfish diversity to 336 and shellfish diversity to 66 (29 prawn species, 35 brachyuran crabs and 2 species of spiny lobsters). The latest assessment of fish diversity status in Chilika Lake (Mohanty *et al.*, 2015) has reported that 48 fin fishes from Chilika Lake have been categorized as threatened and none of the shellfish species known from Chilika have been evaluated yet. After five years long term study on the post restoration assessment of the ecology and fisheries diversity of Chilika Lake by ICAR-CIFRI, Barrackpore, Kolkata, a total of 35 threatened species were documented besides 14 number species under Near Threatened category, 91 species under Least Concern category, 16 species under Data Deficient category have been documented.

Threats to finfish and shellfish diversity

The main factor that threatens fish diversity, particularly in marine and estuarine ecosystems, is excessive fishing pressure. Globally several local populations of fish species have become extinct as result of over exploitation. Moreover, stresses due to other factors such as habitat loss, invasive species, eutrophication, climate change impacts, etc. can accentuate fishing induced declines and inhibit or prevent recoveries.

Natural process

Siltation from river discharge and inflow from catchments have been contributing substantially to altering spawning grounds of several resident and anadromous fish species at the river confluence points and other areas in the lake, which are considered

potential spawning grounds of several fishes. Rapid siltation at Magarmukh and outer channel areas of the lake over the years and slow shifting of lake mouth towards northward direction are also contributing negatively to fish diversity as the ingress of sea water through semi-diurnal flow tides are gradually getting impaired. The outer channel sector is considered to be more important so far as species richness is concerned and frequenting of marine species to this sector of the lake is more intense. Invasive macrophytes like *Phragmites karka* in the northern sector decrease open water areas fishing; decomposition of aquatic weeds at several locations of the lake also cause water quality issues.

Anthropogenic factors

Factors arising out of anthropogenic activities have contributed to the biodiversity loss more significantly, than any other in the recent past. Some of such threat perceptions impacting the lake are outlined as below.

- Encroachment of almost 13.75% fishable area of the lake by the illegal man made enclosures 'Ghery' for fish culture operators has largely damaged the potential nursery ground in the lake and reduced fishable open water area depriving traditional fishers.
- Changes in hydrological regime due to modifications in river up streams for flood control structures, power generation, etc. resulted in altered environmental flow of the lake.
- Catchment degradation due to large-scale deforestation resulted in inflow of huge quantity of silt in to the lake.
- Illegal aquaculture development on the lake shore line, particularly culturing of exotic fish species like *Clarias gariepinus*, Tilapia, *Litopenaeus vernalis*, etc. has escaped into the lake during flood incidents, which has been recorded during the cyclone *Phailin* in October 2013.
- Overexploitation of fish stocks due to ever increasing fishing effort and increasing number of fishing boats and gear.
- Rampant use of small meshed (zero mesh) fishing nets causing wanton killing of juveniles of economically and ecologically important fish species and large quantities of by-catches impact diversity.
- Fishery of the lagoon depends to a large extent on species migration into the lagoon through the sea mouth. Dense deployment of barrier nets (*Khanda*) of varying mesh sizes, including small size along the mouths of the lagoon capture all size groups of these species, including broods and also block free movement of larvae, juveniles and adults.
- Large scale destruction (mostly as by catch) of post larvae and juveniles of commercially important fishes and shrimps happen year round due to the use of small mesh nets in *Khanda* fishing and small mesh seine nets in the lagoon, which affect recruitment of these species into fishery.
- Increasing destructive fishing practices (intensive use of *Alimi jaal*, bag nets and *Khanda*) in the outer channel sector and complete blockage of Palur canal by putting up of *Khanda* nets round the clock at several points prevent fish migration and large scale capture of brooders and juveniles.

- Deterioration of water quality due to inflow of agricultural pollutants through river discharge.
- Obstacles put up by fishers in the outer channel and Palur canal as *Khanda* fishing, operating *Alimi jaal* (large boats seine nets and large size bag nets) in spite of these channels being lifelines of the lake for its fishery and ecology.

Measures for sustainable management

Keeping in view the above mentioned facts, the following management measures are suggested for sustainable management of fish and shellfish diversity of the lake. Promulgations of appropriate legislation with penal provisions for illegal fishing and destructive activities in the lake. Most of the human-induced factors contributing to fish biodiversity loss in the lake could be controlled / regulated effectively if the legislation is enforced in Chilika in the right earnest. The suggested management measures are outlined as below.

- Chilika Lake may be freed from illegal prawn culture operations through *gheries* and any other type of aquaculture operations.
- *Khanda* fishing in the strategic fish migration routes, particularly at Magarmukh, need to be regulated to facilitate unhindered migration and movement of brood fishes and juveniles from sea to lake and *vice versa*.
- The breeding period of most of the commercially important species falls between June-August and November-January; any fishing regulation for protection of brooders to be planned during these months.
- Awareness generation and capacity building of the fishers for practice and promotion of responsible fisheries.
- The main water course from the outer channel, with at least 100-150 m width, Magarmukh to lake mouth, may be made free from any kind of fishing operation, as free corridor, round the year, with physical visible channel indicators.
- Identified spawning grounds for resident species in the lake need to be protected with active participation of local fishing communities and adequate awareness campaign.
- The 14 km long Palur canal, connecting the southern sector of the lake with the Bay of Bengal through Rushikulya river mouth, be dredged and deepened for free flow of tidal water and made free of any physical obstructions, so as to help free migration brooders of finfish, prawns and crabs.
- Declaration of fishing within 1 km radius of the new lake mouth (both lake-ward and sea-ward areas) to be declared as 'Prohibited Fishing Zone'.
- Attempt should be made to prevent entry of any non-native species into the lake by all means.
- Regular and effective implementation of regulations and constant monitoring.

A holistic management and conservation plan needs to be implemented for Chilika Lake, taking care of the livelihood of fishing communities, sustainable fisheries and biodiversity of the lake. Regular maintenance measures of hydrological intervention should continue along with dredging of major river mouths in the northern sector of the lake. Maintaining topographic and hydrographic characters of outer channel sector and sea mouth.

MANAGEMENT NEEDS OF CHILIKA LAKE FOR SUSTAINABLE FISHERIES AND FOLLOW UP ACTION INITIATED BY CHILIKA DEVELOPMENT AUTHORITY

ICAR-Central Inland Fisheries Research Institute (CIFRI), Barrackpore, Kolkata was awarded by Chilika Development Authority (CDA), Bhubaneswar a five years research project entitled “**Post-restoration assessment of the ecology and fisheries diversity of Chilika Lake**” through a competitive bidding under the World Bank funded Integrated Coastal Zone Management Project (ICZMP), Odisha during October, 2011. ICAR-CIFRI, after completion of five years study in Chilika Lake in April, 2017 indicated the crucial lake management needs for sustainable fisheries in the final study report which are outlined as under;

Observations on lake management needs

Capture of immature and juvenile fin fishes and shell fishes is rampant in the lake in all the sectors. By catch is another serious problem causing loss of biodiversity and destruction of non targeted species. Set barrier nets using small mesh collection boxes and seine nets catch huge amount of juveniles and non-targeted species. As there is no quantified information on the above, targeted studies are needed to estimate the loss due to juvenile catch and by catch to devise ways and means to reduce this loss.





Capture of immature ones of commercially important fish species, increased fishing effort on crabs and catch of low value species

Consideration of fishing ban / closed fishing period

Majority of the commercially important fishes are caught at sizes below first maturity, causing serious growth overfishing and concern on the sustainability of their fishery. Brood fishes migrating to the lake for breeding are also caught in large numbers resulting on serious recruitment overfishing.

Breeding period of commercially important fin fish species in the lake (Shadows indicate breeding period)

Species	Reference	Months											
		J	F	M	A	M	J	J	A	S	O	N	D
<i>Etroplus suratensis</i>	Current study												
	Jhingran and Natrajan (1969)												
	Bhatta et al.(2009)												
<i>Mystus gulio</i>	Current study												
	Jhingran and Natrajan (1969)												
<i>Osteogeneiosus militaris</i>	Current study												
<i>Plotosus canius</i>	Current study												
<i>Daysciaena albida</i>	Current study												
	Jhingran and Natrajan (1969)												
	Bhatta et al.(2009)												
<i>Nematalosa nasus</i>	Current study												
	Jhingran and Natrajan (1969)												
<i>Lates calcarifer</i>	Current study												
	Jhingran and Natrajan (1969)												
	Kotwal (1977)												
	Bhatta et al.(2009)												
<i>Eleutheronema tetradactylum</i>	Jhingran and Natrajan (1969)												
	Bhatta et al.(2009)												
<i>Gerres setifer</i>	Jhingran and Natrajan (1969)												
<i>Mugil cephalus</i>	Jhingran and Natrajan (1969)												
	Bhatta et al.(2009)												

Common breeding period

Knowledge on the breeding period is essential for protection of these brooders. Regulated fishing/ closed fishing period needs to be promulgated during the breeding period to avoid capture of brooders. As these measures will affect fishers' livelihoods, the fishing closures needs to be as short as possible, considering all the important species to reduce livelihood issues to fishers. Alternate livelihood provision also needs to be thought of to tide over the closed fishing period. In the current project, six commercially important fin fish species have been studied for reproductive biology and their breeding periods have been identified. Current study also recorded substantial abundance of fish eggs and larvae in plankton samples during pre and post monsoon period. Breeding period of other important fishes of the lake, as available from published literature, have been compiled. In order to identify the breeding period common to all these species and to keep it as short as possible, the breeding periods were pooled month wise and breeding months common to all the species identified. April to June is the peak breeding period common to all these species and can be considered for fishing ban/ closed fishing period to protect brooders in the lake. Incidentally, the 61-day fishing ban along the east coast during 15 April to 14 June for conservation of marine fishery resources (Government of Odisha Notification No. 4038/FARD, BBSR, dated 25 March 2017), coincides with the peak breeding period of important fin fish species in the lake (April to June). Hence, a fishing ban for at least motorized boats in the lake may be considered along with this fishing ban for marine fishing.

Species of *Thryssa* and *Stoliphorous* are the highest contributor to catch, although of low value but of importance to fishers nutritional requirement. High market demand for crabs cause large scale fishing effort on these species without any size considerations and cause large-scale spoilage. Specific studies are required to understand the stock structure and exploitation pattern of these species.

Fishing prohibition in Palur canal and outer channel

Palur canal is another important route for highly priced mullets and other migratory species. However, the canal is almost choked with barrier nets for fishing and all size groups of fishes are caught before gaining entry to the lake neither allows them to reach sea for breeding in the case of the highly priced mullet, *Mugil cephalus*. The canal is also auctioned for fishing by the local communities without considering the need for fish migration and free exchange to saline water to maintain the salinity regime of the lake. At several places, this channel is filled up due to sedimentation and manmade obstructions, bridges, etc. Farming and use of pesticides and chemicals along the banks of the channel allow entry of these substances in to the lake. Construction of bridges and foundation structures of these bridges are made above the floor level of the channel as in the case of bridge constructed in Gokharkuda village that obstructs movement of water and biota during low tide. Therefore, Palur canal which plays critical role in augmenting breeding of catadromous fishes and recruitment of juveniles needs to be kept free of any type of fishing throughout the year.

Ban of rampant use of small and zero mesh size nets

Rampant use of small and zero mesh size nets of various types are being used in the lake to catch all size groups of fishes and shell fishes. This cause serious biodiversity loss besides destruction of larval and juvenile stages of a number of commercial fish species, affecting their recruitment to fishery. Fishery of the lake depends to a large extent on species migrating in to the lagoon through the sea mouth. Dense deployment of barrier nets (*Khanda*) of varying mesh sizes, including small size, along the mouths of the lagoon capture all size groups of these species, including broods and also block free movement of larvae, juveniles and adults. These nets also accumulate thick algae growth and other fouling organisms creating stagnant water condition causing localized water quality deterioration.

Illegal Gheries

Almost 11.3% of the lake water area is under man made enclosures (*Ghery*), for aquaculture of prawns, more so near the sea mouth and Palur canal, decreasing fishable area and also obstruct free movement of migratory fish species and water circulation. Quite often hatchery produced prawn and fish seeds are used for stocking in these *Ghery*. During cyclones and rough water conditions these enclosures break and the captive stock escape in to the lake, making the lake biota vulnerable to transmission of diseases as well as genetic contamination. These *Ghery* are learned to be illegal and needs to be cleared to protect the sanctity of ecology and biodiversity of the lake.

Management of prolific growth of macrophytes

Prolific growth of macrophytes and their death and decay, particularly in the northern and near shore central sector areas, results in localized water quality problems. Dense growth of the macrophytes also block free water circulation, obstruction to movement of fishes and fishing operations. The deteriorated water quality, low water circulation and formation of anoxic conditions are noted to be serious problem that can affect fish breeding, growth and survival. These also create conditions for increased water temperature, accumulation of organic load and localized eutrophication. Excessive consumption of dissolved oxygen by the macrophytes during night cause stress and in extreme cases death of biota including fishes. There is need for clearing of these excessive growths of vegetation and facilitating water circulation. Selective clearing of these vegetation in patches and inter connecting these patches through clearing channels can help in a large extend in restoring good ecological conditions in such macrophyte dominated areas.

Regulation of proliferation of motorized boats

Proliferation of motorized boats and consequent use of fossil fuel is a potential threat to the lake due to oil pollution, especially in ecologically sensitive central and outer sectors. Frequent movement of boats for fishing and tourism also cause disturbance to the ecosystem, cause re-suspension of bottom sediments, leakage of oil, noise and vibration from propellers are potential disturbance to fishes and other biota.

Control of parasitic infection of fishes

Parasitic infection of fishes, mostly fin fishes, is a serious issue recorded during the study. Being a potential threat to fisheries, proper attention needs to be placed on investigations on fish parasites, extend of damage to fishery and fish diversity due to parasitic infections.

Indicator species for ecosystem health assessment

During the project study period, two finfish species (*Eleutheronema tetradactylum* "Chilika Sahala" and *Etroplus suratensis* "Chilika Kundala") were identified as indicator species in Chilika Lake from ecosystem health assessment perspectives.

FOLLOW UP ACTION INITIATED BY CHILIKA DEVELOPMENT AUTHORITY

ICAR-Central Inland Fisheries Research Institute (CIFRI), Barrackpore, Kolkata documented several lake management needs in the final report during the five years study on **Post-restoration assessment of the ecology and fisheries diversity of Chilika Lake** under the World Bank assisted Integrated Coastal Zone Management Project (ICZMP), Odisha during 2011-17. Chilika Development Authority realized the importance of identified management needs and initiated appropriate follows up actions immediately as indicated below:

Reduction of immature and juvenile finfish catch and by catch loss

A specific research study on the assessment of by catch loss in Chilika was initiated by CDA during March, 2017 and has been completed in September, 2018. Compilation are in progress for quantification of the annual by catch loss. Catching of small juveniles by using small and zero mesh size nets were banned in Chilika Lake under Govt. Order No. 9639 / FARD Dt.27.05.2004 following the Clauses (c) (d) of sub-section (1) of Section 4 of the Odisha Marine Fishing Regulation Act, 1982. It was not possible to implement the ban order due to lack of logistic support and field manpower in the past as a result capture of immature and juvenile fishes and by catch loss was rampant. However, Chilika Development Authority (CDA) worked in association and hand in hand with the authorized officer (District Fishery Officer (B&T), Balugaon) under OMFR Act and provided adequate logistic support, funds and field manpower to implement the aforesaid order strictly to evict small and zero mesh size nets, particularly set barrier net (**Khanda**) with zero mesh net from the entire lake. During April-August 2018 small and zero mesh size nets, particularly set barrier net (**Khandas**) with zero meshed nets have been evicted from the lake almost to the extent of about 90%, as a result capture of immature and juvenile fishes has been significantly reduced.

Fishing prohibition in Palur Canal

State Government have authorized the Chief Executive and the Addl. Chief Executive of CDA as authorized officer under OMFR Act, 1982 for Chilika Lake vide Govt. Notification No. 6724 / FARD Dt. 3rd June 2017 under clause (a) of Section 3 of Odisha Marine Fishing Regulation Act, 1982. Now, Chilika Development Authority empowered in association with the authorized officer of Department of Fisheries (DFO (B&T), Balugaon) fully evicted un-authorized set barrier net fishing (**Khandas**) from Palur canal through repeated eviction operations during January – August, 2018 achieving a remarkable success. Now Palur canal is free from un-authorized set barrier net fishing which facilitates auto recruitment and seaward breeding migration of mullets and other catadromous fishes.

Eviction of illegal Gheries

CDA authority after being authorized by State Government to act as authorized officer for Chilika Lake under OMFRA, 1982 as stated above, initiated a massive eviction operation to evict all illegal net Gheries from Chilika Lake which had encroached 151.47 sq. km. potential nursery and fishable water areas, accounting for 16.41% of water spread area of the lake. The Ghery eviction operation was started from June, 2017 and is almost complete in August, 2018 with complete eviction of 151.47 sq. km. net Gheries from the lake and now the entire lake is completely free from massive encroachment of illegal Gheries.



SPECIES DESCRIPTIONS



List of finfish and shellfish species described

Finfishes

Sl. No.	Species
1	<i>Scoliodon laticaudus</i> (Elasmobranchii: Carcharhiniformes: Carcharhinidae)
2	<i>Eusphyra blochii</i> (Elasmobranchii: Carcharhiniformes: Sphyrnidae)
3	<i>Sphyrna lewini</i> (Elasmobranchii: Carcharhiniformes: Sphyrnidae)
4	<i>Rhynchobatus djiddensis</i> (Elasmobranchii: Rajiformes: Rhinobatidae)
5	<i>Narcine timlei</i> * (Elasmobranchii : Torpediniformes: Narcinidae)
6	<i>Brevitrygon imbricata</i> (Elasmobranchii: Myliobatiformes: Dasyatidae)
7	<i>Brevitrygon walga</i> (Elasmobranchii: Myliobatiformes: Dasyatidae)
8	<i>Himantura uarnak</i> (Elasmobranchii: Myliobatiformes: Dasyatidae)
9	<i>Pastinachus sephen</i> (Elasmobranchii: Myliobatiformes: Dasyatidae)
10	<i>Notopterus notopterus</i> (Actinopterygii: Osteoglossiformes: Notopteridae)
11	<i>Elops machnata</i> (Actinopterygii: Elopiformes: Elopidae)
12	<i>Megalops cyprinoides</i> (Actinopterygii: Elopiformes: Megalopidae)
13	<i>Anguilla bengalensis</i> (Actinopterygii: Anguliformes: Anguillidae)
14	<i>Anguilla bicolor</i> (Actinopterygii: Anguliformes: Anguillidae)
15	<i>Congresox talabonoides</i> (Actinopterygii: Anguilliformes: Muraenesocidae)
16	<i>Muraenesox bagio</i> (Actinopterygii: Anguilliformes: Muraenesocidae)
17	<i>Muraenesox cinereus</i> (Actinopterygii: Anguilliformes: Muraenesocidae)
18	<i>Dussumieria elopsoides</i> (Actinopterygii: Clupeiformes: Dussumieriidae)
19	<i>Amblygaster leiogaster</i> (Actinopterygii: Clupeiformes: Clupeidae)
20	<i>Anodontostoma chacunda</i> (Actinopterygii: Clupeiformes: Clupeidae)
21	<i>Corica soborna</i> (Actinopterygii: Clupeiformes: Clupeidae)
22	<i>Escualosa thoracata</i> (Actinopterygii: Clupeiformes: Clupeidae)
23	<i>Gonialosa manmina</i> (Actinopterygii: Clupeiformes: Clupeidae)
24	<i>Gudusia chapra</i> (Actinopterygii: Clupeiformes: Clupeidae)
25	<i>Hilsa kelee</i> (Actinopterygii: Clupeiformes: Clupeidae)
26	<i>Nematalosa nasus</i> (Actinopterygii: Clupeiformes: Clupeidae)
27	<i>Tenuialosa ilisha</i> (Actinopterygii: Clupeiformes: Clupeidae)
28	<i>Tenuialosa toli</i> (Actinopterygii: Clupeiformes: Clupeidae)
29	<i>Stolephorus commersonnii</i> (Actinopterygii: Clupeiformes: Engraulidae)
30	<i>Stolephorus dubiosus</i> (Actinopterygii: Clupeiformes: Engraulidae)
31	<i>Stolephorus indicus</i> (Actinopterygii: Clupeiformes: Engraulidae)
32	<i>Thryssa hamiltonii</i> (Actinopterygii: Clupeiformes: Engraulidae)
33	<i>Thryssa malabarica</i> (Actinopterygii: Clupeiformes: Engraulidae)

34	<i>Thryssa mystax</i> (Actinopterygii: Clupeiformes: Engraulidae)
35	<i>Thryssa polybranchialis</i> (Actinopterygii: Clupeiformes: Engraulidae)
36	<i>Thryssa purava</i> (Actinopterygii: Clupeiformes: Engraulidae)
37	<i>Thryssa setirostris</i> (Actinopterygii: Clupeiformes: Engraulidae)
38	<i>Thryssa vitrirostris</i> (Actinopterygii: Clupeiformes: Engraulidae)
39	<i>Ilisha elongata</i> (Actinopterygii: Clupeiformes: Pristigasteridae)
40	<i>Ilisha megaloptera</i> (Actinopterygii: Clupeiformes: Pristigasteridae)
41	<i>Opisthopterus tardoore</i> (Actinopterygii: Clupeiformes: Pristigasteridae)
42	<i>Chanos chanos</i> (Actinopterygii: Gonorynchiformes: Chanidae)
43	<i>Amblypharyngodon mola</i> (Actinopterygii: Cypriniformes: Cyprinidae)
44	<i>Gibelion catla</i> (Actinopterygii: Cypriniformes: Cyprinidae)
45	<i>Chela cachius</i> (Actinopterygii: Cypriniformes: Cyprinidae)
46	<i>Cirrhinus mrigala</i> (Actinopterygii: Cypriniformes: Cyprinidae)
47	<i>Cirrhinus reba</i> (Actinopterygii: Cypriniformes: Cyprinidae)
48	<i>Esomus danrica</i> (Actinopterygii: Cypriniformes: Cyprinidae)
49	<i>Labeo boga</i> (Actinopterygii: Cypriniformes: Cyprinidae)
50	<i>Labeo gonius</i> (Actinopterygii: Cypriniformes: Cyprinidae)
51	<i>Labeo rohita</i> (Actinopterygii: Cypriniformes: Cyprinidae)
52	<i>Laubuka laubuka</i> (Actinopterygii: Cypriniformes: Cyprinidae)
53	<i>Osteobrama peninsularis</i> (Actinopterygii: Cypriniformes: Cyprinidae)
54	<i>Pethia ticto</i> (Actinopterygii: Cypriniformes: Cyprinidae)
55	<i>Puntius chola</i> (Actinopterygii: Cypriniformes: Cyprinidae)
56	<i>Puntius sophore</i> (Actinopterygii: Cypriniformes: Cyprinidae)
57	<i>Rasbora daniconius</i> (Actinopterygii: Cypriniformes: Cyprinidae)
58	<i>Salmostoma bacaila</i> (Actinopterygii: Cypriniformes: Cyprinidae)
59	<i>Systemus sarana</i> (Actinopterygii: Cypriniformes: Cyprinidae)
60	<i>Lepidocephalichthys guntea</i> (Actinopterygii: Cypriniformes: Cobitidae)
61	<i>Mystus cavasius</i> (Actinopterygii: Siluriformes: Bagridae)
62	<i>Mystus gulio</i> (Actinopterygii: Siluriformes: Bagridae)
63	<i>Mystus vittatus</i> (Actinopterygii: Siluriformes: Bagridae)
64	<i>Ompok bimaculatus</i> (Actinopterygii: Siluriformes: Siluridae)
65	<i>Ompok pabda</i> (Actinopterygii: Siluriformes: Siluridae)
66	<i>Wallago attu</i> (Actinopterygii: Siluriformes: Siluridae)
67	<i>Ailia coila</i> (Actinopterygii: Siluriformes: Schilbeidae)
68	<i>Pachypterus atherinoides</i> * (Actinopterygii: Siluriformes: Schilbeidae)
69	<i>Silonia silondia</i> (Actinopterygii: Siluriformes: Schilbeidae)
70	<i>Pangasius pangasius</i> (Actinopterygii: Siluriformes: Pangasiidae)
71	<i>Clarias magur</i> (Actinopterygii: Siluriformes: Clariidae)
72	<i>Heteropneustes fossilis</i> (Actinopterygii: Siluriformes: Heteropneustidae)
73	<i>Arius arius</i> (Actinopterygii : Siluriformes: Ariidae)

74	<i>Nemapteryx caelata</i> (Actinopterygii: Siluriformes: Ariidae)
75	<i>Osteogeneiosus militaris</i> (Actinopterygii : Siluriformes: Ariidae)
76	<i>Plotosus canius</i> (Actinopterygii : Siluriformes: Plotosidae)
77	<i>Planiliza macrolepis</i> (Actinopterygii: Mugiliformes: Mugilidae)
78	<i>Planiliza melinopterus</i> (Actinopterygii: Mugiliformes: Mugilidae)
79	<i>Chelon parsia</i> (Actinopterygii: Mugiliformes: Mugilidae)
80	<i>Chelon planiceps</i> (Actinopterygii: Mugiliformes: Mugilidae)
81	<i>Planiliza subviridis</i> (Actinopterygii: Mugiliformes: Mugilidae)
82	<i>Osteomugil cunnesius</i> (Actinopterygii: Mugiliformes: Mugilidae)
83	<i>Crenimugil seheli</i> (Actinopterygii: Mugiliformes: Mugilidae)
84	<i>Mugil cephalus</i> (Actinopterygii: Mugiliformes: Mugilidae)
85	<i>Rhinomugil corsula</i> (Actinopterygii: Mugiliformes: Mugilidae)
86	<i>Valamugil speigleri</i> (Actinopterygii: Mugiliformes: Mugilidae)
87	<i>Atherinomorus duodecimalis</i> (Actinopterygii: Atheriniformes: Atherinidae)
88	<i>Atherinomorus lacunosus</i> (Actinopterygii: Atheriniformes: Atherinidae)
89	<i>Aplocheilus panchax</i> (Actinopterygii: Cyprinodontiformes: Aplocheilidae)
90	<i>Strongylura strongylura</i> (Actinopterygii: Beloniformes: Belonidae)
91	<i>Xenentodon cancila</i> (Actinopterygii: Beloniformes: Belonidae)
92	<i>Hemiramphus far</i> (Actinopterygii: Beloniformes: Hemiramphidae)
93	<i>Hyporhamphus limbatus</i> (Actinopterygii: Beloniformes: Hemiramphidae)
94	<i>Oryzias dancena</i> (Actinopterygii: Beloniformes: Adrianichthyidae)
95	<i>Hippocampus fuscus</i> (Actinopterygii: Syngnathiformes: Syngnathidae)
96	<i>Ichthyocampus carce</i> (Actinopterygii: Syngnathiformes: Syngnathidae)
97	<i>Macrogathus aral</i> (Actinopterygii: Synbranchiformes: Mastacembelidae)
98	<i>Macrogathus pancalus</i> (Actinopterygii: Synbranchiformes: Mastacembelidae)
99	<i>Mastacembelus armatus</i> (Actinopterygii: Synbranchiformes: Mastacembelidae)
100	<i>Pterois radiata</i> (Actinopterygii: Scorpaeniformes: Scorpaenidae)
101	<i>Tetraroge niger</i> (Actinopterygii: Scorpaeniformes: Tetrarogidae)
102	<i>Trachicephalus uranoscopus*</i> (Actinopterygii: Scorpaeniformes: Synanceiidae)
103	<i>Cociella crocodilus</i> (Actinopterygii: Scorpaeniformes: Platycephalidae)
104	<i>Platycephalus indicus</i> (Actinopterygii: Scorpaeniformes: Platycephalidae)
105	<i>Ambassis ambassis</i> (Actinopterygii: Perciformes: Ambassidae)
106	<i>Ambassis gymnocephalus</i> (Actinopterygii: Perciformes: Ambassidae)
107	<i>Chanda nama</i> (Actinopterygii: Perciformes: Ambassidae)
108	<i>Parambassis ranga</i> (Actinopterygii: Perciformes: Ambassidae)
109	<i>Lates calcarifer</i> (Actinopterygii: Perciformes: Latidae)
110	<i>Epinephelus coioides</i> (Actinopterygii: Perciformes: Serranidae)
111	<i>Epinephelus lanceolatus</i> (Actinopterygii: Perciformes: Serranidae)
112	<i>Epinephelus malabaricus</i> (Actinopterygii: Perciformes: Serranidae)
113	<i>Epinephelus tauvina</i> (Actinopterygii: Perciformes: Serranidae)

114	<i>Sillaginopsis panijus</i> (Actinopterygii: Perciformes: Sillaginidae)
115	<i>Sillago sihama</i> (Actinopterygii: Perciformes: Sillaginidae)
116	<i>Sillago vincenti</i> (Actinopterygii: Perciformes: Sillaginidae)
117	<i>Rachycentron canadum</i> (Actinopterygii: Perciformes: Rachycentridae)
118	<i>Echeneis naucrates</i> (Actinopterygii: Perciformes: Echeneidae)
119	<i>Alectis indica</i> (Actinopterygii: Perciformes: Carangidae)
120	<i>Alepes djedaba</i> (Actinopterygii: Perciformes: Carangidae)
121	<i>Carangoides ferdau</i> * (Actinopterygii: Perciformes: Carangidae)
122	<i>Carangoides oblongus</i> * (Actinopterygii: Perciformes: Carangidae)
123	<i>Carangoides praeustus</i> (Actinopterygii: Perciformes: Carangidae)
124	<i>Caranx papuensis</i> * (Actinopterygii: Perciformes: Carangidae)
125	<i>Caranx sexfasciatus</i> (Actinopterygii: Perciformes: Carangidae)
126	<i>Megalaspis cordyla</i> (Actinopterygii: Perciformes: Carangidae)
127	<i>Scomberoides commersonianus</i> (Actinopterygii: Perciformes: Carangidae)
128	<i>Scomberoides lysan</i> (Actinopterygii: Perciformes: Carangidae)
129	<i>Scomberoides tala</i> (Actinopterygii: Perciformes: Carangidae)
130	<i>Scomberoides tol</i> (Actinopterygii: Perciformes: Carangidae)
131	<i>Selar boops</i> (Actinopterygii: Perciformes: Carangidae)
132	<i>Selar crumenophthalmus</i> (Actinopterygii: Perciformes: Carangidae)
133	<i>Selaroides leptolepis</i> (Actinopterygii: Perciformes: Carangidae)
134	<i>Trachinotus baillonii</i> * (Actinopterygii: Perciformes: Carangidae)
135	<i>Trachinotus botla</i> * (Actinopterygii: Perciformes: Carangidae)
136	<i>Trachinotus mookalee</i> (Actinopterygii: Perciformes: Carangidae)
137	<i>Aurigequula fasciata</i> (Actinopterygii: Perciformes: Leiognathidae)
138	<i>Leiognathus equulus</i> (Actinopterygii: Perciformes: Leiognathidae)
139	<i>Nuchequula blochii</i> (Actinopterygii: Perciformes: Leiognathidae)
140	<i>Photopectoralis bindus</i> (Actinopterygii: Perciformes: Leiognathidae)
141	<i>Lethrinus lentjan</i> * (Actinopterygii: Perciformes: Lethrinidae)
142	<i>Lutjanus argentimaculatus</i> (Actinopterygii: Perciformes: Lutjanidae)
143	<i>Lutjanus indicus</i> (Actinopterygii: Perciformes: Lutjanidae)
144	<i>Lutjanus johnii</i> (Actinopterygii: Perciformes: Lutjanidae)
145	<i>Lutjanus kasmira</i> (Actinopterygii: Perciformes: Lutjanidae)
146	<i>Lutjanus rivulatus</i> * (Actinopterygii: Perciformes: Lutjanidae)
147	<i>Datnioides polota</i> (Actinopterygii: Perciformes: Datnioididae)
148	<i>Gerres erythrourus</i> (Actinopterygii: Perciformes: Gerreidae)
149	<i>Gerres filamentosus</i> (Actinopterygii: Perciformes: Gerreidae)
150	<i>Gerres limbatus</i> (Actinopterygii: Perciformes: Gerreidae)
151	<i>Gerres macracanthus</i> (Actinopterygii: Perciformes: Gerreidae)
152	<i>Gerres oyena</i> (Actinopterygii: Perciformes: Gerreidae)
153	<i>Gerres phaiya</i> (Actinopterygii: Perciformes: Gerreidae)

154	<i>Gerres setifer</i> (Actinopterygii: Perciformes: Gerreidae)
155	<i>Pomadasys argenteus</i> (Actinopterygii: Perciformes: Haemulidae)
156	<i>Pomadasys kaakan</i> (Actinopterygii: Perciformes: Haemulidae)
157	<i>Acanthopagrus berda</i> (Actinopterygii: Perciformes: Sparidae)
158	<i>Acanthopagrus longispinnis</i> (Actinopterygii: Perciformes: Sparidae)
159	<i>Crenidens crenidens</i> (Actinopterygii: Perciformes: Sparidae)
160	<i>Rhabdosargus sarba</i> (Actinopterygii: Perciformes: Sparidae)
161	<i>Daysciaena albida</i> (Actinopterygii: Perciformes: Sciaenidae)
162	<i>Dendrophysa russelii</i> (Actinopterygii: Perciformes: Sciaenidae)
163	<i>Johnius amblycephalus</i> (Actinopterygii: Perciformes: Sciaenidae)
164	<i>Johnius belangerii</i> (Actinopterygii: Perciformes: Sciaenidae)
165	<i>Johnius borneensis</i> * (Actinopterygii: Perciformes: Sciaenidae)
166	<i>Johnius carutta</i> (Actinopterygii: Perciformes: Sciaenidae)
167	<i>Johnius macropterus</i> (Actinopterygii: Perciformes: Sciaenidae)
168	<i>Eleutheronema tetradactylum</i> (Actinopterygii: Perciformes: Polynemidae)
169	<i>Upeneus sulphureus</i> (Actinopterygii: Perciformes: Mullidae)
170	<i>Drepane punctata</i> (Actinopterygii: Perciformes: Drepaneidae)
171	<i>Monodactylus argenteus</i> (Actinopterygii: Perciformes: Monodactylidae)
172	<i>Monodactylus kottelati</i> (Actinopterygii: Perciformes: Monodactylidae)
173	<i>Nandus nandus</i> (Actinopterygii: Perciformes: Nandidae)
174	<i>Pelates quadrilineatus</i> (Actinopterygii: Perciformes: Terapontidae)
175	<i>Terapon jarbua</i> (Actinopterygii: Perciformes: Terapontidae)
176	<i>Terapon puta</i> (Actinopterygii: Perciformes: Terapontidae)
177	<i>Terapon theraps</i> (Actinopterygii: Perciformes: Terapontidae)
178	<i>Taeniamia macroptera</i> * (Actinopterygii: Perciformes: Apogonidae)
179	<i>Etroplus suratensis</i> (Actinopterygii: Perciformes: Cichlidae)
180	<i>Oreochromis mossambicus</i> (Actinopterygii: Perciformes: Cichlidae)
181	<i>Butis butis</i> (Actinopterygii: Perciformes: Eleotridae)
182	<i>Eleotris fusca</i> (Actinopterygii: Perciformes: Eleotridae)
183	<i>Eleotris melanosoma</i> (Actinopterygii: Perciformes: Eleotridae)
184	<i>Acentrogobius masoni</i> (Actinopterygii: Perciformes: Gobiidae)
185	<i>Drombus globiceps</i> (Actinopterygii: Perciformes: Gobiidae)
186	<i>Favonigobius reichei</i> * (Actinopterygii: Perciformes: Gobiidae)
187	<i>Glossogobius giuris</i> (Actinopterygii: Perciformes: Gobiidae)
188	<i>Oligolepis acutipennis</i> (Actinopterygii: Perciformes: Gobiidae)
189	<i>Oxyurichthys microlepis</i> (Actinopterygii: Perciformes: Gobiidae)
190	<i>Periophthalmus kalolo</i> (Actinopterygii: Perciformes: Gobiidae)
191	<i>Psammogobius biocellatus</i> (Actinopterygii: Perciformes: Gobiidae)
192	<i>Taenioides anguillaris</i> * (Actinopterygii: Perciformes: Gobiidae)
193	<i>Trypauchen vagina</i> (Actinopterygii: Perciformes: Gobiidae)

194	<i>Yongeichthys criniger</i> (Actinopterygii: Perciformes: Gobiidae)
195	<i>Ephippus orbis</i> (Actinopterygii: Perciformes: Ephippidae)
196	<i>Platax orbicularis</i> (Actinopterygii: Perciformes: Ephippidae)
197	<i>Scatophagus argus</i> (Actinopterygii: Perciformes: Scatophagidae)
198	<i>Siganus canaliculatus</i> (Actinopterygii: Perciformes: Siganidae)
199	<i>Siganus javus</i> (Actinopterygii: Perciformes: Siganidae)
200	<i>Siganus vermiculatus</i> (Actinopterygii: Perciformes: Siganidae)
201	<i>Acanthurus mata</i> (Actinopterygii: Perciformes: Acanthuridae)
202	<i>Acanthurus triostegus</i> (Actinopterygii: Perciformes: Acanthuridae)
203	<i>Sphyaena jello</i> (Actinopterygii: Perciformes: Sphyaenidae)
204	<i>Sphyaena obtusata</i> * (Actinopterygii: Perciformes: Sphyaenidae)
205	<i>Sphyaena putnamae</i> (Actinopterygii: Perciformes: Sphyaenidae)
206	<i>Anabas testudineus</i> (Actinopterygii: Perciformes: Anabantidae)
207	<i>Trichogaster fasciata</i> (Actinopterygii: Perciformes: Osphronemidae)
208	<i>Trichogaster lalius</i> (Actinopterygii: Perciformes: Osphronemidae)
209	<i>Channa marulius</i> (Actinopterygii: Perciformes: Channidae)
210	<i>Channa punctata</i> (Actinopterygii: Perciformes: Channidae)
211	<i>Channa striata</i> (Actinopterygii: Perciformes: Channidae)
212	<i>Pseudorhombus arsius</i> (Actinopterygii: Pleuronectiformes: Paralichthyidae)
213	<i>Pseudorhombus micrognathus</i> (Actinopterygii: Pleuronectiformes: Paralichthyidae)
214	<i>Pseudorhombus triocellatus</i> (Actinopterygii: Pleuronectiformes: Paralichthyidae)
215	<i>Solea ovata</i> (Actinopterygii: Pleuronectiformes: Soleidae)
216	<i>Zebrias synapturoides</i> * (Actinopterygii: Pleuronectiformes: Soleidae)
217	<i>Cynoglossus lida</i> (Actinopterygii: Pleuronectiformes: Cynoglossidae)
218	<i>Cynoglossus lingua</i> (Actinopterygii: Pleuronectiformes: Cynoglossidae)
219	<i>Cynoglossus puncticeps</i> (Actinopterygii: Pleuronectiformes: Cynoglossidae)
220	<i>Triacanthus biaculeatus</i> (Actinopterygii: Tetraodontiformes: Tricanthidae)
221	<i>Abalistes stellaris</i> (Actinopterygii: Tetraodontiformes: Balistidae)
222	<i>Arothron immaculatus</i> * (Actinopterygii: Tetraodontiformes: Tetraodontidae)
223	<i>Chelonodon patoca</i> (Actinopterygii: Tetraodontiformes: Tetraodontidae)
224	<i>Leiodon cutcutia</i> (Actinopterygii: Tetraodontiformes: Tetraodontidae)
225	<i>Diodon hystrix</i> (Actinopterygii: Tetraodontiformes: Diodontidae)

Shellfishes

Sl. No.	Species
1	<i>Fenneropenaeus indicus</i> (Malacostraca: Decapoda: Penaeidae)
2	<i>Metapenaeus dobsoni</i> (Malacostraca: Decapoda: Penaeidae)
3	<i>Metapenaeus monoceros</i> (Malacostraca: Decapoda: Penaeidae)
4	<i>Penaeus monodon</i> (Malacostraca: Decapoda: Penaeidae)
5	<i>Penaeus semisulcatus</i> (Malacostraca: Decapoda: Penaeidae)
6	<i>Macrobrachium malcolmsonii</i> (Malacostraca: Decapoda: Palaemonidae)
7	<i>Macrobrachium rosenbergii</i> (Malacostraca: Decapoda: Palaemonidae)
8	<i>Macrobrachium rude</i> (Malacostraca: Decapoda: Palaemonidae)
9	<i>Portunus pelagicus</i> (Malacostraca: Decapoda: Portunidae)
10	<i>Scylla serrata</i> (Malacostraca: Decapoda: Portunidae)
11	<i>Scylla tranquebarica</i> (Malacostraca: Decapoda: Portunidae)

* New records from Chilika Lake identified under CIFRI/CDA-ICZM Consultancy Project (2011-2016)

Scoliodon laticaudus (Müller & Henle, 1838)

Spadenose shark / Indian Dog Fish

Odia: Dhudhiya Magara / Sorrah Magara / Haladia Magara

Systematic accounts

Class : Elasmobranchii
Order : Carcharhiniformes
Family : Carcharhinidae
Genus : *Scoliodon*
Species : *Scoliodon laticaudus*



Diagnostic features

Dorsal spines (total): 0; Dorsal soft rays (total): 0; Anal spines: 0; Anal soft rays: 0. Bronze grey above, white below, fins sometimes darker than body; no conspicuous markings. Maximum length recorded 100.0 cm (TL) (Bouhlef, 1988).

Habitat

Marine; brackish; demersal; amphidromous.

Distribution

Indo-West Pacific: Persian Gulf, Somalia, Tanzania, Mozambique, Pakistan to Java in Indonesia; then Japan, China, and Taiwan.

IUCN Status

Near Threatened (NT)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Rambha Bay. The species is locally known as **Dhudhiya Magara / Sorrah Magara / Haladia Magara** in Odia. In Chilika Lake, the fish is generally found in outer channel and also in the central and southern sector. It forms a good fishery in the near shore waters adjacent to Chilika Lake mainly caught in hook & line, long lines and gill nets. However, the shark fishery in Chilika has declined drastically in the recent years. During 2016-17, the total estimated landing of sharks was only 1.26 tonnes in which this Indian dog fish constituted 0.84 tonnes. Although the catch is small in Chilika Lake it is sent to Kharagpur and Kolkata markets where it is sold at average price of Rs.30/kg.

Eusphyra blochii (Cuvier, 1816)

Winghead shark

Odia: **Hatudia Magara**

Systematic accounts

Class : Elasmobranchii
Order : Carcharhiniformes
Family : Sphyrnidae
Genus : *Eusphyra*
Species : *Eusphyra blochii*



Diagnostic features

orsal spines (total): 0; Dorsal soft rays (total): 0; Anal spines: 0; Anal soft rays: 0. Grey or grey-brown above, paler below. Expanded lateral blades of head very narrow and wing-like, with a series of small bumps along edges in front of nostrils; width across head 40 or 50% of total length. Nostrils enormously expanded, each nearly 2 times the mouth head. Maximum length recorded 186.0 cm (TL) (Last and Stevens, 1994).

Habitat

Marine; brackish; benthopelagic; amphidromous.

Distribution

Indo-West Pacific: Persian Gulf to the Philippines, north to China, south to Australia.

IUCN Status

Endangered (EN)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007) which was collected from Arakhakuda area in the outer channel. The species is locally known as **Hatudia Magara** in Odia. The shark fish has commercial value as its fins are sold for higher price although its meat is not consumed locally. Occurrence of this shark is very rare in Chilika and hardly few sharks could be seen in the outer channel during a year. Although the shark does not form a fishery in Chilika, it is very important from the biodiversity point of view. Local fishermen are informed by the Department of Fisheries not to capture and kill this rare winghead shark.

Sphyrna lewini (Griffith & Smith, 1834)

Scalloped hammerhead

Odia: Hatudi Mundia Magar

Systematic accounts

Class : Elasmobranchii
Order : Carcharhiniformes
Family : Sphyrnidae
Genus : *Sphyrna*
Species : *Sphyrna lewini*



Diagnostic features

Dorsal spines (total): 0; Dorsal soft rays (total): 0; Anal spines: 0; Anal soft rays: 0. A large hammerhead with a notch at the center of head; 1st dorsal fin moderately high, 2nd dorsal and pelvic fins low. Front margin of head broadly arched with prominent median notch. Side wings of head narrow, rear margins swept backward. Uniform grey, grayish brown, or olivaceous above, shading to white below; pectoral fins tipped with grey or black ventrally. Maximum length recorded 430.0 cm (TL) (Smith, 1997).

Habitat

Marine; brackish; pelagic-oceanic; oceanodromous.

Distribution

Circumglobal in coastal warm temperate and tropical seas. Western Atlantic: New Jersey, USA to Uruguay, including the Gulf of Mexico and Caribbean. Eastern Atlantic: western Mediterranean to Namibia. Indo-Pacific: Persian Gulf, Red Sea, East Africa and throughout the Indian Ocean; Japan to New Caledonia, Hawaii and Tahiti. Eastern Pacific: southern California, USA to Ecuador, probably Peru.

IUCN Status

Endangered (EN)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007) which was collected from Alupatana area in the outer channel. The species is locally known as **Hatudi Mundia Magara** in Odia. The shark fish has commercial value outside the state where its meat and fins are sold at high prices. This shark is caught from the coastal waters of Odisha state in good number up to 1960s but sharply declined thereafter and currently this is a rarely caught by coastal fishermen. In Chilika Lake, the shark was caught from outer channel in few occasions. Its documentation from Chilika is important from the biodiversity point of view.

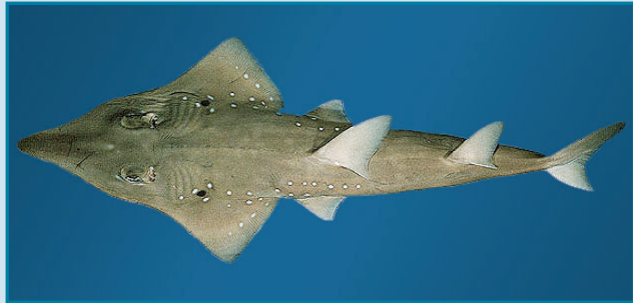
Rhynchobatus djiddensis (Forsskal, 1775)

Giant guitarfish

Odia: Tenki Magara, Mirigi

Systematic accounts

Class : Elasmobranchii
Order : Rhinopristiformes
Family : Rhinidae
Genus : *Rhynchobatus*
Species : *Rhynchobatus djiddensis*



Diagnostic features

Disc longer than wide; tail stout and shark-like. Snout elongate and tapering; rostral cartilages strong. Eyes larger than spiracles, placed just before spiracles; posterior margin of spiracles with two cutaneous folds. A row of tubercles along anterior and inner margin of orbit and on inner margin of spiracle. Caudal fin bilobed. Two dorsal fins; origin of first dorsal fin above pelvic fin bases. Posterior margin of pectoral fin anterior to pelvic fin origin. A median row of small tubercles anterior and posterior to first dorsal fin; an inner and outer series of tubercles on shoulder. Upper surface of disc dark olive-green, with numerous white spots scattered on posterior margin of disc. A distinct black ocellus on each shoulder; a distinctive black cross between the eyes. Gray white on ventral surface with darker margins to pectoral and pelvic fins. Juveniles with a black blotch on tip of snout (Mishra and Gopi, 2014). **This species is listed in Schedule I Part II A of the Wildlife Protection Act (1972).** Maximum length recorded 480.0cm (TL) (Bruin *et al.*, 1994).

Habitat

Marine; brackish; reef-associated; benthic inshore coastal waters.

Distribution

Western Indian Ocean: restricted to the Red Sea and the tropical western Indian Ocean to South Africa. Also reported from Persian Gulf. Apparently misidentified with closely related species in the northern and eastern Indian Ocean and western Pacific.

IUCN Status

Vulnerable (VU)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007). The species is locally known as **Tenki Magara, Mirigi** in Odia. In Chilika Lake, this fish is occasional visitor to the outer channel sector. Only few specimens were collected from outer channel during winter month in 2002. Local fishermen have been advised not to kill the fish since it is one of the scheduled fishes of India.

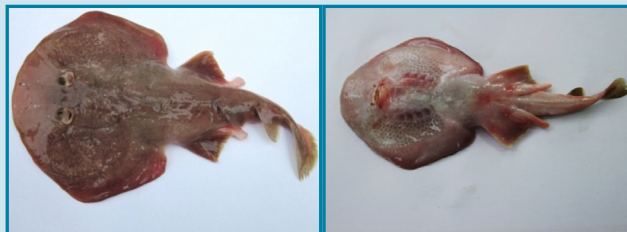
Narcine timlei (Bloch & Schneider, 1801)

Electric ray / Spotted numbfish

Odia: Bijuli Sankucha

Systematic accounts

Class : Elasmobranchii
Order : Torpediniformes
Family : Narcinidae
Genus : *Narcine*
Species : *Narcine timlei*



Diagnostic features

Outline of the disc somewhat rounded, while it is broader than in length; along the side of the tail is broad skinny keel reaching the base of caudal fin. Caudal portion of the fish is rather longer than the body. Spiracle is just behind the orbit and not tuberculated on the edge. An electric organ is situated between the pectoral fin and head. Anterior dorsal fin usually commences just behind the ventrals and is slightly smaller than the posterior dorsal fin. Hind edge of caudal fin is rounded and confluent with the ventral side of the body. Body and fins reddish brown above, with numerous irregularly sized chocolate colored spots; lower surface white. In some cases there are no spots at all.

Habitat

Marine and demersal in habit. The species generally inhabit shallow coastal waters, bays and estuaries with sandy or muddy substrata.

Distribution

It is distributed in Indo-West Pacific region: Pakistan to the Philippines, seas of India and the Malaya Archipelago.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported as new record from Chilika by Rosith *et al.* (2016) which was collected from *Khanda* catches near Nalabana sanctuary in central sector of the lake and also from lake mouth area in the outer channel during 2013 while undertaking inventory survey for fish diversity under World Bank funded ICAR-CIFRI/CDA-ICZMP Consultancy Project. The species is locally known as **Bijuli Sankucha** in Odia. The fish is capable of generating powerful electric discharge from the electric organs. The specimen was collected from the **Khanda** (Screen barrier). This is the first record of electric ray from the Chilika lagoon.

Brevitrygon imbricata (Bloch & Schneider, 1801)

Scaly whipray

Odia: **Katia Sankucha**

Systematic accounts

Class : Elasmobranchii
Order : Myliobatiformes
Family : Dasyatidae
Genus : *Brevitrygon*
Species : *Brevitrygon imbricata*



Diagnostic features

Disc width equal to disc length; tail shorter than body; ventral surface of disc entirely white.

Habitat

Marine; freshwater; brackish; demersal; amphidromous

Distribution

Indo-West Pacific: Red Sea and Mauritius to Indonesia. Also from Persian Gulf.

IUCN Status

Data Deficient (DD)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Rambha Bay. The species is locally known as **Katia Sankucha** in Odia. This ray fish species was first recorded from Chilika lake long back in 1916 by B. L. Chaudhuri, recorded as *Trygon imbricata* (Old name). It occurs in the outer channel sector and occasionally near Magarmukh and Nalabana. It does not form a commercial fishery in the lake. This ray fish is threat to humans being venomous. This ray fish breeds in Chilika Lake during monsoon and post-monsoon season in the outer channel, Satapada and Nalabana area in the central sector and its landing is negligible. It has little commercial value. The ray fish is generally caught in **Khanda** and gill nets in Chilika Lake.

Brevitrygon walga (Muller & Henle, 1841)

Dwarf whipray

Odia: Dhala Sankucha, Sulei

Systematic accounts

Class : Elasmobranchii
Order : Myliobatiformes
Family : Dasyatidae
Genus : *Brevitrygon*
Species : *Brevitrygon walga*



Diagnostic features

The fish has a sub circular disc shaped body; dull grey or brown coloured dorsal side and is whitish ventrally. Mouth is undulated with 2 buccal processes on the floor of mouth. Spiracles, that equal eye diameter, are located behind eyes. Eye diameter is 3.3 times more than inter-orbital width. Tail is whip like and slightly longer than the disc length with 1 or 2 large serrated spines; cutaneous folds absent. A small tubercle is present on the inter-orbital, inter-spiracle and mid-dorsal surface of the disc. A series of small spines present between root of tail and caudal spine.

Habitat

The species is marine inhabitant and demersal in habit

Distribution

It is distributed in Western Pacific: Thailand to southeastern Indonesia and India. Reported from India, but due to confusion with *Himantura imbricata*, its westward distribution in the Indian Ocean is unclear.

IUCN Status

Near Threatened (NT)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty *et al.* (2008) which was collected from outer channel near Arakhakuda. The species is locally known as **Dhala Sankucha, Sulei** in Odia. Frequently found in the outer channel sector and in the central and southern sectors of the lagoon. Large number of juveniles of this ray fish are found at Nalabana during monsoon. This ray fish has less to no commercial value sold at Rs 20-30/- kg. Generally caught through seine net and Khanda. Found to breed in winter season.

Himantura uarnak (Gmelin, 1789)

Honeycomb stingray/Banded whiptail stingray

Odia: Baghua Sankucha

Systematic accounts

Class : Elasmobranchii
Order : Myliobatiformes
Family : Dasyatidae
Genus : *Himantura*
Species : *Himantura uarnak*



Diagnostic features

Dorsal spines (total): 0; Dorsal soft rays (total): 0; Anal spines: 0; Anal soft rays: 0. Huge stingray with conspicuous dark spots on a light brown disc; spots well-spaced in young but crowded to form reticulated pattern in adult; white ventrally; tail marked with bands of black and white; snout sharply pointed; disc with narrowly rounded outer corners, and tail long, slender and nearly three times body length when intact, with no caudal finfolds; disc without thorns but with band of flat denticles along midback (in adults); usually 1 medium-sized sting on tail. Disc in young with "leopard" pattern: honey-comb or reticulated pattern in adults. Maximum length recorded 450.0cm and maximum disc width 150cm (De Bruin *et al.*, 1994).

Habitat

Marine; brackish (benthic, coastal waters); reef-associated; amphidromous.

Distribution

Indo-Pacific: Persian Gulf; Red Sea (and eastern Mediterranean via Suez Canal) to southern Africa and French Polynesia, north to Taiwan, south to Australia. Also in the Arafura Sea. Collected from the estuary of the River Ganges. This name has been used for a number of similar spotted species. Probably a species complex. Its identity has been confused in many publications and Micronesian specimens should be re-examined.

IUCN Status

Vulnerable (VU)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916). The species is locally known as **Baghua Sankucha** in Odia. In Chilika Lake, the ray fish occurs in the outer channel sector mostly during post-monsoon – summer and its rare occurrence has been observed in the central sector. This ray fish is mostly marketed in the neighboring Kharagpur and Howrah fresh fish markets. Its landing in Chilika is negligible. Sold at Howrah fish market at an average unit price of Rs.40-50/kg.

Pastinachus sephen (Forsskal, 1775)

Cowtail stingray

Odia: Gorulanjia Sankucha

Systematic accounts

Class : Elasmobranchii
Order : Myliobatiformes
Family : Dasyatidae
Genus : *Pastinachus*
Species : *Pastinachus sephen*



Diagnostic features

Dorsal spines (total): 0; Dorsal soft rays (total): 0. A large, plain, dark stingray with an angular snout and pectoral disc; tail long and broad-based, less than twice body length, and with no upper caudal finfold but with high lower caudal finfold- 2 to 3 times depth of tail but not reaching tail tip; no large thorns; 1 or 2 long stings on tail, further behind tail base than in most stingrays; unique hexagonal, high-crowned teeth. Dark brown or black dorsally without conspicuous markings, white ventrally. Tail black. Maximum length recorded 183.0cm (WD) (Myers, 1999).

Habitat

Marine (benthic, coastal waters); freshwater; brackish; reef-associated; amphidromous.

Distribution

Indo-West Pacific: Red Sea, Persian Gulf and South Africa to Micronesia, north to Japan, south to Melanesia and the Arafura Sea.

IUCN Status

Data Deficient (DD)

Other information – Chilika specific

This ray fish was first recorded from Chilika by Chaudhuri (1916) when it was recorded as *Hypolophus sephen*. The species is locally known as **Gorulanjia sankucha** in Odia. In Chilika Lake, the fish is generally found in the outer channel sector. It breeds in the central sector (Nalabana area), Magarmukh and near the western shore of the central sector during monsoon. Due to its negligible catch, its annual landing has not been estimated separately. Although it is rarely consumed locally but it is highly in demand at the fresh fish markets in the neighboring state of West Bengal. The average selling price of the ray fish is Rs.40-50/kg at Kharagpur fish market.

Notopterus notopterus (Pallas, 1769)

Bronze featherback

Odia: Fali

Systematic accounts

Class : Actinopterygii
Order : Osteoglossiformes
Family : Notopteridae
Genus : *Notopterus*
Species : *Notopterus notopterus*



Diagnostic features

The fish has an oblong and strongly laterally compressed body with minute scales. Craniodorsal profile of the species is nearly straight or slightly concave. Abdomen is with 25-28 double serrations in pre pelvic region. Head is also laterally compressed. Pre operculum is 1/4th of SL and has 6-8 rows of scales. Preorbital is serrated and extends to mid orbit region. Dorsal fin is inserted. Small sized pectoral fins extend beyond anal fin origin.

D. 7-9; A. 97-111.

Habitat

A freshwater species but also occurs in brackish water regions; demersal in habit.

Distribution

The fish species is distributed in Indus, Ganges-Brahmaputra, Mahanadi, Krishna, Cauvery, and other river basins in southern India; Irrawaddy, and Salween; Mekong, Chao Phraya, Mekong and virtually all coastal river basins of peninsular Thailand and Malaysia; Sumatra and Java.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansinghani (1954) which was collected from Kalupadaghat area. The species is locally known as **Fali** in Odia. This is a resident species and known to breed in the freshwater zone of the northern sector of the lagoon. It is generally encountered in northern and central sectors of the lagoon. More than 70% of its catch is exported to Howrah fresh fish market in West Bengal as live fish being transported in GI container with water. Annual catch of the fish from the lagoon is about 279.47 t valued at

Rs.161.03 lakhs, sold at Rs 50-70/- kg. It is commercially important; consumed locally as well as traded outside the state. The fish commonly caught through seine net, screen barrier net and in hook & line. Year wise annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig A.

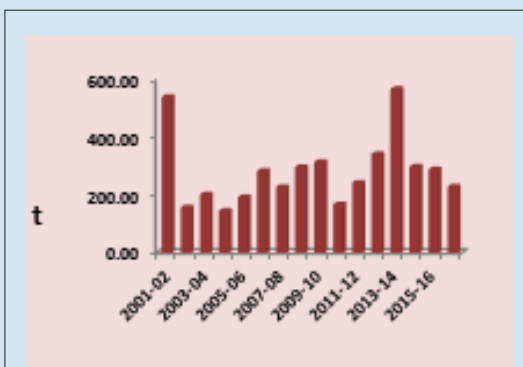


Fig A Annual landings of *N. notopterus* (Fali) during 2001-02 to 2016-17

Elops machnata (Forsskal, 1775)

Tenpounder

Odia: Nahama

Systematic accounts

Class : Actinopterygii
Order : Elopiformes
Family : Elopidae
Genus : *Elops*
Species : *Elops machnata*



Diagnostic features

E. machnata has a rounded (little compressed), elongated, fusiform body and long, compressed head with sharp snout. Mouth of the fish is wide and terminal. Cleft of mouth is longer, extending well behind eye, while lower jaw is projecting. Teeth on jaws, palate and tongue are villiform. Dorsal fin is set near midpoint of body, slightly ahead of pelvic fins. Anal fin origin is well behind the last dorsal fin ray. Pelvic fin base appears below the middle of dorsal fin base. Scales are very small, around 100 along lateral line.

D. 21-25; A. 14-17; P. 17-18; V. 12-16.

Habitat

The fish species dwells in fresh water, brackish to marine waters; pelagic-neritic in habit and oceanodromous in migration.

Distribution

Distributed in Indo-West Pacific: Red sea to Mossel Bay, South Africa, India, Pakistan, Sri Lanka and western Pacific. Also found in Africa (Inland waters).

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Chilika near Balugaon. The species is locally known as **Nahama** in Odia. It is a migratory species, majorly caught through gill nets from outer channel, central and southern sectors of the lagoon. Sold at a price of Rs. 180-200/kg; its average annual catch from the lagoon is around 4.17 tonnes and has average annual catch valuation of Rs. 1.51 lakhs per year. This economically important species is consumed locally and is known to breed in late summer and early rainy season in the sea. This fish formed a good fishery in the past (1950s & 1960s) which gradually declined with the degradation of ecosystem and almost disappeared in the commercial landings during 1990s before opening of the new lake mouth in September, 2000. This commercially high value fish reappeared in the commercial landings immediately after opening of the new lake mouth and later the catch has not improved.

Megalops cyprinoides (Broussonet, 1782)

Indo-Pacific tarpon

Odia: Paniakhia

Systematic accounts

Class : Actinopterygii
Order : Elopiformes
Family : Megalopidae
Genus : *Megalops*
Species : *Megalops cyprinoides*



Diagnostic features

Dorsal spines (total): 0; Dorsal soft rays (total): 16-21; Anal spines: 0; Anal soft rays: 23 - 31. Lower jaw projects beyond snout; a bony gular plate present between the jaw bones. Last fin ray of dorsal long and filamentous; ventrally located pectoral fins; abdominal pelvic fins with 9 or more rays. Branchiostegals more than 23. Scales very large 30-40 in lateral line. Color blue-green dorsally; silvery on sides. Can tolerate oxygen-poor water by 'breathing' air into a lung-like air bladder. Maximum length recorded 150.0cm (TL) (Rahman, 1989).

Habitat

Marine; freshwater; brackish; benthopelagic; amphidromous. The fish is of predator habit.

Distribution

Indo-Pacific: Persian Gulf, Red Sea and Natal, South Africa to the Society Islands, north to southern Korea, south to the Arafura Sea and New South Wales. Restricted to high islands (Palau, Caroline and Mariana islands) in Micronesia. Reported as far inland as the lower Shire in Malawi and the Save-Runde junction in Zimbabwe. Widespread in the Lower Zambezi River channels up to Marromeu and in the Micelo River up to Malingapanzi. South China Sea, Taiwan Strait, and East China Sea.

IUCN Status

Data Deficient (DD)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) who collected the fish from Rambha Bay of the lake. The species is locally known as **Paniakhia** in Odia. In Chilika Lake, the fish was one of the commercially important species with substantial landings in the past which was almost disappeared during the eco-degradation phase when it was rarely seen in commercial catches.

It reappeared after opening of the new lake mouth during 2000. However, the population did not increase in the later period. Its catch is landed mostly at Kalupada, Sorana, Mangalajodi in northern sector and Balugaon in the central sector and Gajapatinagar in southern sector. During 2016-17, its estimated annual landing was 20.57 tonnes valued at Rs.1.0 million, fetching an average unit price of Rs.70/kg. It is generally caught in the lake by gill nets, hand lines and **Khandas**. The species almost disappeared from commercial landings during the pre-restoration period and suddenly started reappearing after opening of the new lake mouth in 2000 and substantial landings during the post-restoration period, registering highest landing in 2002-03 were recorded.

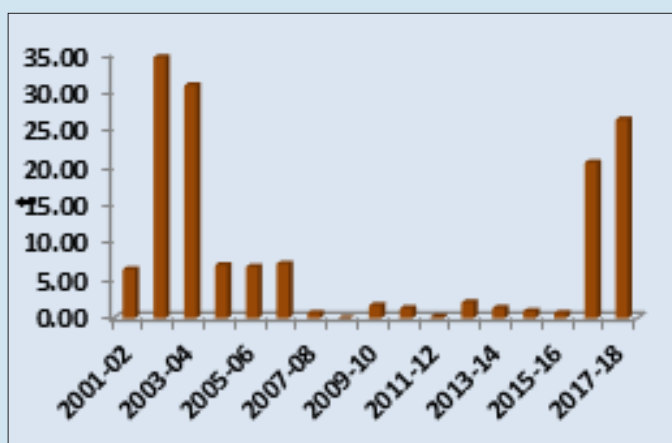


Fig.B Annual landings of *M. cyprinoides* during 2001-02 to 2017-18

Anguilla bengalensis (Gray, 1831)

Indian mottled eel

Odia: Bami

Systematic accounts

Class : Actinopterygii
Order : Anguliformes
Family : Anguillidae
Genus : *Anguilla*
Species : *Anguilla bengalensis*



Diagnostic features

Dorsal soft rays (total): 250-305; Anal soft rays: 220 - 250; Vertebrae: 106 - 112. Body elongate, head conical, flattened dorsally. Mouth terminal, lips prominent, narrow bands of teeth on jaws, broad band on vomer.

Habitat

Marine; freshwater; brackish; benthopelagic; catadromous.

Distribution

Asia: Pakistan, India, Sri Lanka, Burma, and the East Indies. Reported from Nepal and Bangladesh

IUCN Status

Near Threatened (NT)

Other information – Chilika specific

The species was first recorded from Chilika by Jones and Sujansinghani (1954). The species is locally known as **Bami** in Odia. In Chilika Lake, the fish is frequently found in the northern sector, particularly in the river mouth areas and occasionally in the central sectors of the lake. The fish is landed in more quantities at Jaguleipadara (Kanasa Block) fish landing centre and also occasionally in central sector. The fish caught from Chilika Lake is mostly transported to West Bengal (Howrah fresh fish market). The average monthly and annual landings of this fish are 1.5 tonne and 8 tonne respectively and the annual catch value during 2016-17 was estimated at Rs. 0.17 Crores. Being commercially important, the unit price for the fish at the landing centres in Chilika is Rs. 90-120/kg. Generally caught in barrier nets with net box traps (**Khanda**).

Anguilla bicolor (McClelland, 1844)

Indonesian shortfin eel

Odia: Bami

Systematic accounts

Class : Actinopterygii
Order : Anguliformes
Family : Anguillidae
Genus : *Anguilla*
Species : *Anguilla bicolor*



Diagnostic features

Dorsal spines (total): 0; Dorsal soft rays (total): 240-245; Anal spines: 0; Anal soft rays: 200 - 220; Vertebrae: 105 - 115. Olive to dark bluish-brown dorsally, lighter ventrally from jaw to anus. Dorsal body color uniform. Dorsal fin origin above vent. Teeth small, inconspicuous, multiserial, forming broad continuous bands on jaws and vomer; vomerine tooth-band extending as far back as bands of upper jaw but more pointed posteriorly. Maximum length recorded 123cm (TL).

Habitat

Marine; freshwater; brackish; demersal; catadromous

Distribution

Indo-Pacific: widespread in the tropical Indian Ocean and western Pacific. Known in Australia only from streams in the Kimberley regions of northern western Australia. Africa: widespread but relatively uncommon along east and southeast African coast and Madagascar. Mozambique; Lower Zambezi River. Most easily confused with *Anguilla obscura* and the surest way to distinguish them is by the count of vertebrae.

IUCN Status

Near Threatened (NT)

Other information – Chilika specific

The species was first recorded from Chilika by Jones and Sujansinghani (1954). The species is locally known as **Bami** in Odia. In Chilika Lake, the fish is landed in good quantity at Jaguleipadara fish landing centre under Kanasa Block (near the mouth zone of Daya River). The fish is mostly exported to Howrah fresh fish market (WB) since its local consumption is negligible. Its average unit price is Rs.90-110/kg.

Congresox talabonoides (Bleeker, 1853)

Indian pike conger

Odia: Danti

Systematic accounts

Class : Actinopterygii
Order : Anguliformes
Family : Muraenesocidae
Genus : *Congresox*
Species : *Congresox talabonoides*



Diagnostic features

Dorsal spines (total): 0; Anal spines: 0; Vertebrae: 132 - 135. Body robust and eel-shaped; mouth very large, with gape reaching well beyond eye; dorsal fin inserted before gill-openings, 57-68 fin-rays before level of vent; pectoral fins relatively small, about 4 times in head length; lateral line pores before level of anus 41 or 42. Maximum length recorded 250.0 cm (TL) (Castle, 1984).

Habitat

Marine; brackish; bathydemersal; amphidromous.

Distribution

Indo-West Pacific: From the Red Sea to Java and Sulawesi north to the Philippines, Hong Kong and Taiwan.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from central sector of Chilika. The species is locally known as **Danti** in Odia. The fish is mixed with brackish water miscellaneous catches and the average annual landing has been estimated at 2.72 tonnes during the post-restoration period. The fish is mostly marketed outside the state particularly at Howrah fresh fish market, fetching an average unit price of Rs.60-70/kg. It is caught mostly from outer channel and central sector of Chilika.

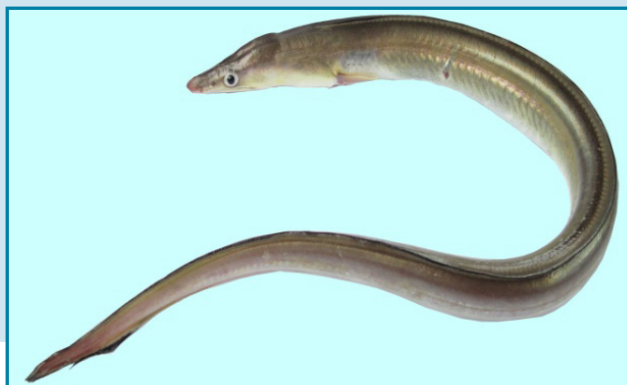
Muraenesox bagio (Hamilton, 1822)

Common pike conger

Odia: Samudra Danti

Systematic accounts

Class : Actinopterygii
Order : Anguliformes
Family : Muraenesocidae
Genus : *Muraenesox*
Species : *Muraenesox bagio*



Diagnostic features

The fish has aneel-shaped, robust body and narrower head with inter-orbital width about 10 times of head length. Mouth extends beyond eye and snout is long. Eye diameter is three times of snout length. Large teeth present, those in the middle of vomer are very prominent, blade like, with anterior and posterior basal cups. The dorsal fin has about 47-59 dorsal rays present upto the vertical level of anus. 47-59 lateral line pores present before the anus. Head is 5.5 to 6.0 and body depth 16-22 times smaller than the total length. Inter-orbital width is 9-11 times smaller than the head length. Body grayish-brown, lighter below; median fins edged with black colour.

D. 0; A. 0; Vr. 128-141.

Habitat

Marine as well as brackish water dwelling species, demersal in nature and oceanodromous in migration.

Distribution

It has a widespread distribution in Indo-Pacific.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007) which was collected from Satapada area in the outer channel. The species is locally known as **Samudra Danti** in Odia. The species has minor commercial value. It is consumed locally and sold at Rs. 60-80/ kg, caught from outer channel and central sector of Chilika using hook and line and screen barrier net (**Khanda**).

Muraenesox cinereus (Forsskal, 1775)

Daggertooth pike conger

Odia: Danti

Systematic accounts

Class : Actinopterygii
Order : Anguliformes
Family : Muraenesocidae
Genus : *Muraenesox*
Species : *Muraenesox cinereus*



Diagnostic features

Body elongate, scaleless, compressed posteriorly; prominent conical snout; eye large, inter-orbital space about 8.2 in head; anterior nostril tubular, posterior nostril a simple opening nearer to eye than to anterior nostril. Mouth large, rictus well behind eye; in lower jaw a middle row of prominent, sharp, tricuspid, erect teeth; median vomerine teeth sharply triangular in lateral view, compressed, with anterior and posterior basal cusp and the bases often in contact. Gill openings large, latero-ventral. Vertical fins continuous with caudal fin; dorsal fin origin over pectoral fin base or slightly before; dorsal finrays before a vertical through anus 66-78. Lateral line pores before anus 40-47. Vertebrae 145-159.

Habitat

Marine; freshwater; brackish; demersal; oceanodromous; Benthic, over soft bottoms down to about 100 m, also in estuaries, in warm seas. Sometimes enters freshwater environment. Feeds on small bottom fishes and crustaceans. *Food*: carnivorous (bottom-living fishes and decapods)

Distribution

Elsewhere, known from the Red Sea and throughout the northern Indian Ocean; coast of India, Burma and Malaysia northward to Hong Kong and northwards to Japan. A record on the Mediterranean Sea; immigrant from the Red Sea in the coast of Israel (Tel Aviv-Jaffa).

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Magarmukh area of Chilika Lake. The species is locally known as **Danti** in Odia. Its catch in Chilika is included in the mixed catch of marine eels and all marine eels are called as Danti in Odia. The average annual landings of marine eels (Danti) is estimated at 22 tonnes which forms 0.14% in commercial landings. It is a food fish and its average selling price Rs.60/kg. It is mostly consumed as fresh fish being popular among marine fishers. In Chilika the fish is generally caught in the barrier nets (Khandas).

Dussumieria elopsoides Bleeker, 1849

Slender rainbow sardine

Odia: Nadiakhai Kokoli

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Dussumieriidae
Genus : *Dussumieria*
Species : *Dussumieria elopsoides*



Diagnostic features

Dorsal spines (total): 0; Dorsal soft rays (total): 16-18; Anal spines: 0; Anal soft rays: 14 - 18. Branchiostegal rays more (13 to 17) and no striae on posterior part of scales; pelvic fins more advanced; W-shaped pelvic scute; isthmus with tapering evenly forward; more anal fin rays. Maximum length recorded 20.0 cm (TL) (Whitehead, 1985).

Habitat

Marine; pelagic-neritic.

Distribution

Indo-Pacific: Suez and western Indian Ocean (the Persian Gulf to Mombasa; possibly to Madagascar) to China, the Arafura Sea and to about Tonga. Previous records of *Dussumieria acuta* from northeastern Indian Ocean would refer to this species.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Talwar and Kacker (1984) which was collected from outer channel sector. The species is locally known as **Nadiakhai Kokoli** in Odia. The fish is rarely caught from Chilika Lake only in the outer channel sector during winter and summer. It more or less resembles with oil sardine occurring in substantial number in the adjacent coastal waters within Chilika and Ganjam coast. The fish is one of the tasty marine fishes which is mostly marketed locally. Its catch is negligible in Chilika and it gets mixed with the miscellaneous brackish water fish group. Its average selling price is Rs.50-60/kg.

Amblygaster leiogaster (Valenciennes, 1847)

Smoothbelly sardinella

Odia: Kawla

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Clupeidae
Genus : *Amblygaster*
Species : *Amblygaster leiogaster*



Diagnostic features

Dorsal spines (total): 0; Dorsal soft rays (total): 13-21; Anal spines: 0; Anal soft rays: 12 - 23. Body moderately slender, belly rather rounded, scutes not prominent. Distinguished from *A. sirm* by the absence of spots along the flank (gold in life, black on preservation) and fewer lower gill rakers. Closely resembles *A. clupeoides*, which has fewer lower gill rakers. Maximum length recorded 23.0 cm (SL) (Whitehead, 1985).

Habitat

Marine; pelagic-neritic.

Distribution

Indo-West Pacific: coasts of Africa eastward to Okinawa, Japan; south to Western Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty *et al.* (2015) which was collected from Rambhartia area of outer channel. The species is locally known as **Kawla** in Odia. In Chilika Lake, the fish is occasionally found in outer channel. It does not form fishery in the lake; stray catches are mixed with brackishwater miscellaneous group; caught in barrier net boxes (*Khandas*); consumed fresh locally and the average selling price is Rs.55/kg.

***Anadontostoma chacunda* (Hamilton, 1822)**
Chacunda gizzard shad
Odia: Babana Balangi

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Clupeidae
Genus : *Anodontostoma*
Species : *Anodontostoma chacunda*



Diagnostic features

It has deep, almost oval and compressed body. Its depth increases with size of fish, about 2.1-3.1 times in SL. Belly is almost rounded and with scutes. Hind edges of scales toothed, the teeth thinner than the gaps between them. Dorsal fin origin is before midpoint of body; last dorsal ray is not filamentous. Pelvic fins are below anterior part of dorsal fin base. Anal fin is short. Gill rakers are fine and less than 100 rakers are on lower arm of first arch. Mouth is inferior, maxilla straight, thin and tapering. A median series of pre-dorsal scales are present. Body colour is silvery with a large prominent black spot behind gill opening.

D. 16; A. 17-20; P. 16; V. 8; Ll. 42-45.

Habitat

It is a pelagic-neritic and anadromous species inhabits in marine, fresh and brackish water environments.

Distribution

The species is distributed in Indo-West Pacific: Persian Gulf to coasts of India and Andaman Sea, to Gulf of Thailand, Indonesia, Viet Nam, and Philippines, south to northern Australia, the Caroline Islands and New Caledonia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first recorded from Chilika by Chaudhuri (1916) which was collected from Rambha Bay. Locally called as **Babana Balangi** (in Odia) in Chilika region, are not so abundant in the lagoon. It has good commercial value; consumed locally as fresh, sun dried or dry salted; sold @ Rs 70-140/kg. Average annual landing is 1.07 tonnes and the estimated economic value was Rs.0.75 lakh. It is a migratory species. Generally caught in screen barrier net (*Khanda*), gill net and seine net (*Bhida jala*).

Corica soborna (Hamilton, 1822)

Ganges river sprat
Odia: Ursi, Nadi Chauli

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Clupeidae
Genus : *Corica*
Species : *Corica soborna*



Diagnostic features

The fish has a moderately compressed, silvery body with a light band along the sides. The head is 4 times and body depth 4.2 times larger of standard length. Length of maxilla reaches vertically upto the eye center. Belly is keeled with 10-11 pre pelvic and 6-7 post pelvic scutes. Anal fin rays are present and last two anal rays are separated from rest with a gap of three fin ray bases. Caudal fin is forked. Lateral line is absent. Small scales, 40-42 in numbers are present in lateral series.

D. 12-13; A. 11-12; P. 13; V. 8; Ls. 40-42.

Habitat

Marine to freshwater in nature. It is pelagic-neritic in habit and is often found to enter estuaries, coastal lagoons and brackish water lakes.

Distribution

The fish is distributed in Indonesia, Brunei, Malaysia and India.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from central sector of Chilika. The species is locally known as **Ursi, Nadi Chauli** in Odia, the fish occurs throughout the lagoon. Sold at Rs. 70-80/- kg, the fish is consumed locally in fresh and salted forms. It is caught through seine nets and screen barrier nets (**Khanda**).

Escualosa thoracata (Valenciennes, 1847)

White sardine

Odia: Luni Chauli

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Clupeidae
Genus : *Escualosa*
Species : *Escualosa thoracata*



Diagnostic features

The fish has an oblong or sub elongated body. The abdomen is serrated, that extends anteriorly up to the thoracic region. Mouth is anterior or antero-superior. Abdominal profile is more convex than the dorsal. Upper jaw does not project beyond the lower jaw. Maxilla is reaching below the first third or middle of the eye. Belly is strongly keeled. The fish is distinguished from juveniles of *Sardinella* sp., *Amblygaster* sp. and *Herklotsichthys* sp. By the nearly rectangular second supra-maxilla and the bright silver coloured stripe along the flank. Colour of the body is greenish dorsally; the bases of the scales being a little dark. Caudal fin is dark tipped.

D. 13-21; A. 14-19.

Habitat

Marine to freshwater dwelling species; pelagic-neritic in habit and amphidromous in migration.

Distribution

It is distributed in Indo-West Pacific: northern Indian Ocean (Karachi eastward to Rangoon) to Thailand, Indonesia (Java Sea), the Philippines, Papua New Guinea, and Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Rama Rao (1995). The species is locally known as **Luni Chauli** in Odia. The fish occurs throughout the lagoon. Sold at Rs. 60-80/kg, consumed locally in fresh and salted forms but has less commercial value.

Gonialosa manmina (Hamilton, 1822)

Ganges river gizzard shad

Odia: Makundi

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Clupeidae
Genus : *Gonialosa*
Species : *Gonialosa manmina*



Diagnostic features

Dorsal spines (total): 0; Anal spines: 0; Anal soft rays: 22 - 28. Body fairly deep, somewhat compressed, belly with 16 to 20 (usually 17 or 18) + 11 to 14 (usually 11 to 13), total 27 to 33 (usually 29 to 31) scutes. Upper jaw slender at tip and distinctly turned down, second supra-maxilla very small. Gill rakers fine and numerous (90 to 180 on lower arch). Pre-dorsal scales paired and overlapping in midline; scales moderate or small. Maximum length recorded 14.1cm (TL).

Habitat

Freshwater; brackish; pelagic; amphidromous.

Distribution

Asia: rivers and associated water bodies of Sri Lanka, India (Ganges and other rivers of Orissa, Madhya Pradesh, Uttar Pradesh, West Bengal, Assam), Pakistan and Bangladesh. (The Andaman record is doubtful - perhaps *Anodontostoma selangkai*).

IUCN Status

Least Concern (LC); VU/N (CAMP, 1998)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968). The species is locally known as **Makundi** in Odia. In Chilika, though it occurs in good number its landing has not been estimated separately and the fish is included in the miscellaneous group. This herbivorous and column feeder fish has commercial value which fetches an average unit price of Rs.60-70/kg. The fish is abundant in northern and central sectors and occasionally in the outer channel during monsoon flood when there is unidirectional freshwater flow to the sea.

Gudusia chapra (Hamilton, 1822)

Indian river shad

Odia: Gudua, Orati

Systematic accounts

Class : Actinopterygii

Order : Clupeiformes

Family : Clupeidae

Genus : *Gudusia*

Species : *Gudusia chapra*



Diagnostic features

Dorsal spines (total): 0; Anal spines: 0. Body fairly deep; 26 to 29 scutes along belly. A single triangular pectoral axillary scale; depressed tip of dorsal fin to behind vertical from anal fin origin. Hind margin of scales smooth. Dark blotch behind gill opening, often followed by a series of spots along flank. Gill rakers fine and numerous, increasing with size of fish (100 to 280 at 4 to 16 cm standard length). Maximum length recorded 20cm (TL).

Habitat

Freshwater; brackish; pelagic; potamodromous.

Distribution

Asia: rivers of India and Bangladesh affluent to the Bay of Bengal (chiefly the Ganges and Brahmaputra systems and the Mahanadi River of Orissa).

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansinghani (1954). The species is locally known as **Gudua, Orati** in Odia. In Chilika Lake, this omnivore fish predominantly occurs in northern sector followed by central sector and mostly landed under the miscellaneous group at Jaguleipadara landing centre (Kanasa Block), Bhusandapur and Kalupada landing centres in northern sector. The fish has commercial value which fetches an average unit price of Rs.70/kg and mostly consumed locally.

Hilsa kelee (Cuvier, 1829)

Kelee shad

Odia: Pandapila / Kelipila

Systematic accounts

Class : Actinopterygii

Order : Clupeiformes

Family : Clupeidae

Genus : *Hilsa*

Species : *Hilsa kelee*



Diagnostic features

Body fairly deep and compressed, belly with distinct keel of scutes. Dorsal spines (total): 0; Dorsal soft rays (total): 16-19; Anal spines: 0; Anal soft rays: 21 - 23. Top of head with numerous fronto-parietal striae; upper jaw with median notch. gill rakers about 100 to 175, those on inner arches distinctly curled; outer row of gill filaments on first arch not more than half length of gill rakers. A series of small triangular scales above axil of pectoral fin; hind part of body scales perforated. A black spot behind gill opening; usually 10 along flank. Maximum length recorded 35.0 cm (TL) (Heemstra, 1995).

Habitat

Marine; freshwater; brackish; pelagic-neritic; anadromous.

Distribution

Indo-West Pacific: probably all coasts of Indian Ocean, from Gulf of Oman and Gulf of Aden south to Transkei, South Africa and Madagascar, across the Bay of Bengal, Gulf of Thailand, Java Sea and north to Hong Kong and east to Papua New Guinea and possibly further.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Roy and Sahoo (1957) which was collected from Satapada area in the outer channel. The species is locally known as ***Pandapila / Kelipila*** in Odia. Although it was occurring in good numbers in the commercial catches during monsoon and post-monsoon seasons in the northern sector in the past, currently the fish is rarely found in commercial catches. It breeds in freshwater zone near Daya mouth in northern sector during July-September. The fish is commercially important which is liked by local consumers and is sold at an average price of Rs.60-70/kg. Its distribution is restricted with northern sector and outer channel.

Nematalosa nasus (Bloch, 1795)

Bloch's gizzard shad

Odia: Balangi

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Clupeidae
Genus : *Nematalosa*
Species : *Nematalosa nasus*



Diagnostic features

The species has strongly compressed body, inferior mouth, dentary strongly flared outward at corners. Anterior arm of pre-operculum with the third infra-orbital bone is present immediately above it. Gill rakers of 1st arch are half or less than length of gill filaments. A dark spot is present behind gill opening. Belly with 17 to 20 (usually 18) + 9 to 13 (usually 11), total 28 to 32 (usually 30) scutes. Pectoral axillary scale present; hind edge of scales distinctly toothed. Body colour is dark bluish dorsally, silvery below.

D. 0, 15-19; A. 0, 17 – 26.

Habitat

The species inhabits in marine, fresh and brackish water environments; Pelagic-neritic in nature and perform anadromous type migration.

Distribution

Indo-West Pacific: Gulf of Aden north to the Persian Gulf, then eastward to the Andaman Sea, South China Sea and the Philippines, and north to southern tip of Korea. Single record from South Africa.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Barkul Bay. The species is locally known as Balangi in Odia, occurs throughout the lake. The fish has good commercial values, sold @ Rs 70-100/- per kg. Consumed locally as fresh, sun dried or dry salted. Average annual landing is 942.66 tonnes valued at Rs.541.08 lakh. There are two populations of this species, one in the lake and other in the coastal waters. It is a migratory species, breeds

within Chilika in the southern sector of the lake in the shallow sandy areas of its eastern end (Jhingran and Natarajan (1966). The breeding season extends from February-July, the peak period being June-July. Generally caught in screen barrier net (Khanda), gill net (16-32 mm) and seine net. The mean size in the commercial catches has been found to be lesser than the minimum size at maturity which has been a concern for stocks sustainability. Maximum size recorded from the lake is 32.8 cm. The species shows wide salinity tolerance, recorded from 0 ppt to 25.6 ppt in Chilika lagoon. Year wise annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig C.

Fisheries and population of the fish in Chilika was studied during 1957-65 by Jhingran and Natarajan (1966 & 1969). The fish exhibits anadromous breeding behavior in Chilika Lake and breeds in the eastern and western part of southern sector of Chilika Lake (Jhingran and Natarajan, 1969). Length weight relationship of Chilika Balangi was studied by Karna and Panda (2012). Biology of *Nematalosa nasus* from Chilika was studied by ICAR-CIFRI (2017) under ICAR-CIFRI/CDA-ICZMP Consultancy Research Project.

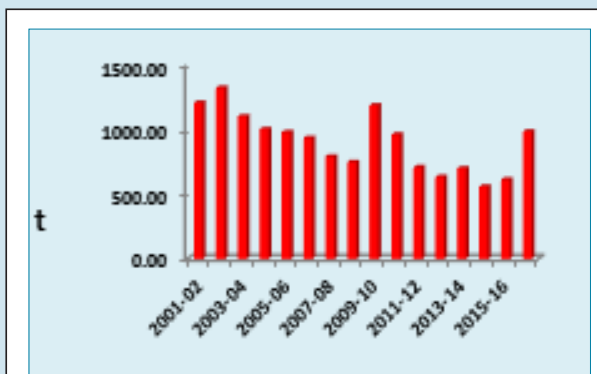


Fig C Annual landings of *N. nasus* (Balangi) during 2001-02 to 2016-17

Tenualosa ilisha (Hamilton, 1822)

Hilsa shad

Odia: Ilishi

Systematic accounts

Class : Actinopterygii

Order : Clupeiformes

Family : Clupeidae

Genus : *Tenualosa*

Species : *Tenualosa ilisha*



Diagnostic features

The species has moderately deep and compressed body. The belly is having 30 to 33 scutes. Head length 28 to 32 % of SL; a distinct median notch is present in the upper jaw. Gill rakers fine and numerous, about 100 to 250 on lower arm of first arch. Fins hyaline. Caudal fin moderate, 25 to 31% of SL. Presence of a dark blotch behind gill opening, followed by a series of small spots along flank. The notched upper jaw distinguishes it from other similar clupeids, except *Hilsa kelee*, which has numerous longitudinal striae on top of head. Color in life, silver shot with gold and purple.

Habitat

The species dwells in marine, brackish and freshwater environments; pelagic-neritic in nature and perform anadromous migration.

Distribution

Well distributed in Indian Ocean: Persian Gulf to Myanmar and India. Reported from the Gulf of Tonkin, Viet Nam, Tigris River basin and rivers of southern Iran. Abundant in India and Bangladesh, particularly in Ganges and Brhamaputra estuaries and Bay of Bengal.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Kalupadaghat area in northern sector. The species is locally known as ***Ilishi*** in Odia. This is one of the commercially important high value fishes of Chilika Lake which had a flourishing fishery in the past (1960s) but it started declining from 1970 onwards. Extreme fluctuation in the annual landings is a common feature of Hilsa fishery in Chilika. During the

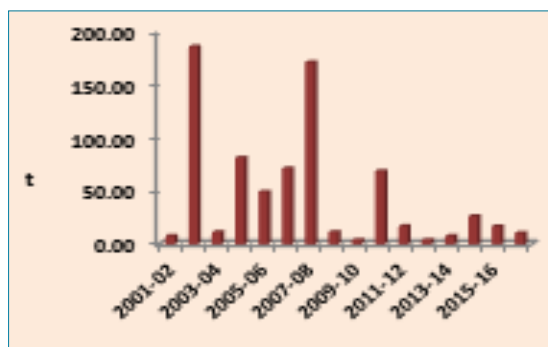


Fig D Annual landings of *T. ilisha* (Ilishi) during 2001-02 to 2016-17

period 1957-65 the annual landing fluctuated between 30-293 tonnes. During the post-restoration period (2001-02 to 2013-14) its yield fluctuated between 4.08 to 185.47 tonnes (average 53.11 t). This species breeds in the freshwater zone of northern sector of Chilika near the confluence of river Daya between August and October. Maximum length of the fish recorded from Chilika is 51.2 cm. There are two wave of migration from sea into the lake, one at the close of winter and the other at the commencement of monsoon. The average unit price at the lake site is Rs.164 per kg and the average annual landing of 53.11 tonnes has been valued at Rs.87.10 lakh. Average sectoral landings are of the order (Northern sector > Central sector > Southern sector > Outer channel). Highest annual landing of 185.47 tonnes was registered during 2002-03. The annual landings during the post-restoration period (2001-02 to 2016-17) is depicted in Fig D.

Hilsa fishery of Chilika Lake was first reported by Mitra and Devasundaram (1954) and later Jones and Sujansingani (1951) described the Hilsa fishery of Chilika Lake. Fisheries and population of the fish in Chilika was studied during 1957-65 by Jhingran and Natarajan (1966 & 1969). The biology of Chilika Ilishi was studied by Ramakrishnaiah (1972) who also remarked that Chilika Hilsa was a separate stock for Chilika Lake. This anadromous fish in the lower region of Daya River mouth near Tuanali in the northern sector. Peak spawning period for the fish in Chilika extends from August-September and the spawning activity is influenced by the monsoon floods in the Daya River. Food and feeding habit of Chilika Ilishi was studied by Karna *et al.* (2014).

Tenualosa toli (Valenciennes, 1847)

Toli shad

Odia: Kelipila

Systematic accounts

Class : Actinopterygii

Order : Clupeiformes

Family : Clupeidae

Genus : *Tenualosa*

Species : *Tenualosa toli*



Diagnostic features

Body fusiform, deep moderately and compressed strongly. Dorsal profile is somewhat concave than that of abdomen. Upper jaw contains distinct median notch, lower jaw included when mouth firmly shut. Maxilla extending to posterior half of orbit and its exposed portion smooth and covered by skin. Skin covers the dorsal surface of head and no fronto-parietal striae present. Gill filaments of outer hemibranch on 1st arch half to three quarter length of those of inner hemibranch. Gill raker present on all arches are straight or slightly curved, fine and numerous. 60-100 (Talwar and Jhingran, 1991) gill raker present in lower part of first arch. Pseudobranch not attenuated and without ventral groove. Teeth is absent. Maximum length recorded 60.0 cm (TL) (Rainboth, W.J., 1996); 50 cm (TL) (Huda *et al.* 2003).

Head 3.7-4.0 in standard, 4.9-5.2 in total length. Height 2.8-3.0 in standard, 3.7-4.0 in total length, Eye 4.5-5.0; Snout and interorbital slightly over eye diameter. Length of maxilla 2.2-2.4 in head, pectoral 4.39-5.3, pelvics 8.8-9.8 in standard length.

Median lateral series contain 40-41 scales and 13-14 scales in transverse series. Edge of scales pectinated and caudal is covered by minute scale. 29-31 scutes, 17-18 prepelvic, 12-13 post pelvic.

Dorsal originates from nearer to snout than to caudal base. Maxillary scales present on pectoral and pelvic. Origin of pelvic below 4th to 7th branched ray of dorsal. Caudal fin longer than head and upper lobe is shorter than lower lobe.

Color of body is silvery shot with yellow and purple. Shoulder bares a dark spot and present in behind the gill. Fins are hyaline. Scales on back more or less dark colored.

Habitat

Marine; freshwater; brackish; pelagic-neritic; anadromous.

Distribution

Indo-West Pacific: India to the Java Sea and the South China Sea. Newly recorded from Mauritius. May be found in Cambodian Mekong near the Viet Nam border.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Satapathy and Panda (2009) which was collected from outer channel and central sector of the lake. The species is locally known as **Kelipila** in Odia. It is a commercially important fish which is caught during post-monsoon season from the northern sector. It breeds in freshwater zone near Daya mouth in northern sector during July-September. The fish is mostly caught by local fishermen in **Patua jaal** and **Khandas** which is mostly mixed with juvenile *T. ilisha*. It is a tasty fish liked by local consumers and its average selling price ranges from Rs.80-100/kg. Its landing is negligible in Chilika and does not form a commercial fishery.

Stolephorus commersonnii Lacepede, 1803

Commerson's anchovy

Odia: Manohari Chauli Patua

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Engraulidae
Genus : *Stolephorus*
Species : *Stolephorus commersonnii*



Diagnostic features

The fish has a cylindrical body and rounded belly with 2-4 sharp scutes between pectoral and ventral fins. Maxilla is long, whose tip pointed and extending beyond posterior border of pre-operculum. Small sized teeth present on the upper edge of hyoid bones. Isthmus is continuous and does not have a silvery plate in front. Ventral fin reaches beyond dorsal fin origin. Gill rakers are 23-28 on lower arm of first arch. Pre-dorsal spine absent. Anal fin originates from below the second half of dorsal fin base. Body of the fish is creamy white with bright silvery stripe along the flanks. A double dark line on back before dorsal fin present.

D. 15-17; A. 21-23; P. 13-14; V. 7.

Habitat

It is a marine to brackish dwelling species; pelagic-neritic in habit and anadromous in nature.

Distribution

Indo-West Pacific: East Africa, from Gulf of Aden to Zanzibar, northern Madagascar and Mauritius, eastward to Hong Kong and Papua New Guinea.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916). The species is locally known as **Manohari Chauli Patua** in Odia, the fish species is found throughout the lagoon. A commercially important species; consumed locally as well as traded outside the state in both fresh and sun dried form. Caught through seine nets (drag net/ *bhida jala*), screen barrier (**Khanda**) net. Sold @ Rs 60-80/- kg at the landing center.

Stolephorus dubiosus Wongratana, 1983

Thai anchovy

Odia: Chauli Patua

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Engraulidae
Genus : *Stolephorus*
Species : *Stolephorus dubiosus*



Diagnostic features

The fish has a cylindrical body and round belly, with 4 to 7 small needle-like pre-pelvic scutes. Maxilla tippointed, reaching to or beyond hind border of pre-operculum; the pre-operculum is concave, indented near maxilla tip. Anal fin is short, originates below about middle length of dorsal fin base. The species differs from *Stolephorus commersonnii* by the presence of a small pre-dorsal spine and another on the pelvic scute. Unlike *S. commersonnii*, it has double pigment line present on the back, behind the dorsal fin.

D. 0; A. 18-19; P. 13-14; V. 7.

Habitat

The species dwells in marine and brackish water systems; pelagic-neritic in nature and amphidromous in migration.

Distribution

Eastern Indian Ocean: northern part of Bay of Bengal. Western Pacific: Gulf of Thailand, Java Sea to at least Kalimantan.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Wongratana (1983). The species is locally known as **Chauli Patua** in Odia. Distributed throughout the lagoon; A commercially important species; consumed locally as well as traded outside the state in both fresh and sun dried form. Caught through seine nets (drag net/ *bhida jala*), screen barrier (**Khanda**). Sold @ Rs. 60-80/- kg. The species forms an average composition of about 25% in the total catch of anchovies (Patua).

Stolephorus indicus (van Hasselt, 1823)

Indian anchovy

Odia: Chauli Patua / Bali Kokali

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Engraulidae
Genus : *Stolephorus*
Species : *Stolephorus indicus*



Diagnostic features

Dorsal spines (total): 0; Dorsal soft rays (total): 15-17; Anal spines: 0; Anal soft rays: 18 - 21. Belly with 2 to 6 small needle-like pre-pelvic scutes. Maxilla tip pointed, reaching to or only just beyond front border of pre-operculum; hind border of pre-operculum convex, rounded. Isthmus muscle tapering evenly forward to hind border of branchial membrane. Body light transparent fleshy brown, with silver stripe down flank; no dark pigment lines on back between head and dorsal fin.

Habitat

Marine; brackish; pelagic-neritic; oceanodromous.

Distribution

Indo-Pacific: Red Sea and South Africa, including the Persian Gulf, Madagascar and Mauritius eastward to Hong Kong, the Arafura Sea, northern and eastern coasts of Australia and further east to Samoa and Tahiti.

IUCN Status

Not Evaluated |(NE)|

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from the lake near Balugaon. The species is locally known as **Chauli Patua / Bali Kokili** in Odia. It is well distributed in central, southern and outer channel sector and less in northern sector, forming a good fishery in the lake. The fish is less a marine migrant and more a resident species in Chilika. It also breeds in the lake in central and southern sector during later part of the winter, peak spawning season is end of summer and beginning of the rains. Its annual landing during 2016-17 was estimated at 103 tonnes and the average unit price was Rs.85/-kg. The fish is landed in more quantity at Balugaon, Sorana, Kalupada and Keshpur landing centres in Chilika. The fish is generally consumed locally having good consumer preference.

Thryssa hamiltonii Gray, 1835

Hamilton's thryssa

Odia: Koncha Patua

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Engraulidae
Genus : *Thryssa*
Species : *Thryssa hamiltonii*



Diagnostic features

Dorsal spines (total): 0; Anal spines: 0; Anal soft rays: 32 - 39. Belly with 23 to 26 keeled scutes from isthmus to anus. Tip of snout above level of eye center, usually about level of upper rim of eye. Maxilla short or moderate; first supra-maxilla small, oval. A dark blotch behind upper part of gill opening. Maximum recorded size 27.0 cm.

Habitat

Marine; brackish; pelagic-neritic; amphidromous.

Distribution

Indo-Pacific: Persian Gulf eastward to Myanmar, Andamans and Penang; Taiwan south to Arafura Sea, the northern coasts of Australia and Papua New Guinea; Sarawak; a record from the Bonin Islands; presumably the Philippines; perhaps not eastward to the Hebrides, etc.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansingani (1954) which was collected from the lake near Balugaon. The species is locally known as **Koncha Patua** in Odia. Its occurrence is abundant in southern sector and central sector of the lake. Large number of its young once occur in the during rainy season. The fish has very good commercial value with consumer preference. The fish is generally caught by seine net (Patua jaal) and also in **Khanda**. Potential landing centre for this species are Keshpur, Balugaon, Sorana etc. Annual landing of this species during 2016-17 was estimated at 91 tonnes and the average unit price was Rs.80/-kg. Total landing of this fish is marketed fresh locally and in the nearby urban markets.

Thryssa malabarica (Bloch, 1795)

Malabar thryssa

Odia: Babana Patua

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Engraulidae
Genus : *Thryssa*
Species : *Thryssa malabarica*



Diagnostic features

Dorsal spines (total): 0; Anal spines: 0; Anal soft rays: 34 - 38. Belly with 23 to 26 keeled scutes (isthmus to anus). Tip of snout about level of upper rim of eye. Maxilla moderate; first supra-maxilla small, oval; jaw teeth small. A dark blotch behind upper part of gill opening; small spots on cheek, gill cover, maxilla and paired fins; gill arches pinky orange, inside of gill cover yellow and gold; inner part of anal fin deep yellow, margin whitish. Maximum length recorded 17.5cm (SL) (Whitehead *et al.*, 1988).

Habitat

Marine; brackish; pelagic-neritic; amphidromous.

Distribution

Indian Ocean: India, perhaps reaching to Pakistan, but not recorded from the Gulf and the Red Sea, its place in the Gulf being taken by *Thryssa whiteheadi*.

IUCN Status

Not Evaluated |(NE)|

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was recorded as *Engraulis kempfi*. The species is locally known as **Babana Patua** in Odia. So far, 13 *Thryssa* species have been reported from Chilika Lake of which three species were recorded during post-restoration period. All *Setipinna*, *Stolephorus* and *Thryssa* sp. under family Engraulidae forms the largest composition in the commercial landings of finfish which worked out to 18.04% during 2016-17. The estimated landing of this *Thryssa* species was more than 290 tonnes during 2016-17 and the average unit price was Rs.42/kg. The fish mostly sold locally and in the nearby urban markets.

Thryssa mystax (Bloch & Schneider, 1801)

Moustached thryssa

Odia: Phasi Patua

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Engraulidae
Genus : *Thryssa*
Species : *Thryssa mystax*



Diagnostic features

Dorsal spines (total): 0; Anal spines: 0; Anal soft rays: 29 - 37. Belly with 24 to 32 keeled scutes from isthmus to anus. Tip of snout on a level with eye center. Maxilla long, reaching to or almost to base of first pectoral fin ray; first supra-maxilla oval, minute. Lower gill rakers with serrae on the inner edge even and not clumped. A dark blotch behind upper part of gill opening. Colour back blue / green, flanks silvery; a black venulose area behind gill opening, with a golden area before it. Maximum recorded size 15.5 cm (SL).

Habitat

Marine; brackish; pelagic-oceanic; oceanodromous

Distribution

Indo-West Pacific: western coast of India to Myanmar and south to Java, Indonesia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Rambha Bay. The species is locally known as **Phasi Patua** in Odia. Its occurrence is abundant in central and southern sector but it is distributed in all the four sectors of the lake. The fish has very good commercial value with good consumer preference. Seine nets (Patua jaal), **Khanda** and gill nets are common gears for the species. Annual landing of the species was estimated at 78.8 tonnes during 2016-17. Entire catch is marketed locally and in the nearby urban markets. Average unit price is Rs.85/-kg. Potential landing centres for this species are Keshpur, Balugaon, Sorana etc.

Thryssa polybranchialis Wongratana, 1983

Humphead thryssa

Odia: Patua

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Engraulidae
Genus : *Thryssa*
Species : *Thryssa polybranchialis*



Diagnostic features

Dorsal spines (total): 0; Anal spines: 0; Anal soft rays: 35 - 39. Belly with 15 to 17 + 9 or 10 = 25 to 27 keeled scutes from isthmus to anus. A distinct hump at nape; tip of snout above upper rim of eye. Maxilla short, not quite or only just reaching to edge of gill cover; first supra-maxilla minute, oval. A dark blotch behind upper part of gill opening. Scutes present before and behind the pelvic-fin base. Maximum length recorded 17.0 cm (SL) (Whitehead *et al.* 1988).

Habitat

Marine; pelagic-neritic.

Distribution

Indian Ocean: eastern and western coasts of India.

IUCN Status

Not Evaluated |(NE)|

Other information – Chilika specific

The species was first reported from Chilika by Bhatta *et al.* (2001). The species is locally known as **Patua** in Odia. In Chilika Lake, the fish is found mostly in the central and southern sector, particularly around Kalijai hill. Its catch is grouped under the common Patua catch; generally caught in “Patua jaal” (Boat seine). During 2016-17, the total annual landing of thryssa and stolephorous species was 2002.73 tonnes forming 13.13% of the total catch in which the estimated catch of this species was 520 tonnes valued at Rs.260.00 lakhs. The fish is mostly consumed locally and in the adjacent urban and village markets.

Thryssa purava (Hamilton, 1882)

Oblique-jaw thryssa

Odia: Kana Patua, Phasi Patua

Systematic accounts

Class : Actinopterygii

Order : Clupeiformes

Family : Engraulidae

Genus : *Thryssa*

Species : *Thryssa purava*



Diagnostic features

The species has a sub-elongated body and keeled belly with 26 or 27 scutes from isthmus to anus. Tip of the snout is a little above the level of eye center. Maxilla is moderate, projecting at most to halfway the pectoral fin base. First supra-maxilla is small and angle of the mouth is oblique. Teeth of the lower jaw are slightly enlarged. An indistinct dark blotch is present behind the upper part of the gill opening and a faint dark line is present along the back. The species is distinguished from related species by the larger number of anal fin rays and moderate maxilla length.

D. 0; A. III, 38-44.

Habitat

It is marine and brackish water in nature; pelagic-neritic in habitat and oceanodromous in migration.

Distribution

Indian Ocean: Eastern coasts of India and Myanmar.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Nalabana area. The species is locally known as **Kana Patua / Phasi Patua** in Odia; occurs in all sectors of the lagoon but dominantly in central and southern sector. Caught through seine nets (drag net) and screen barrier nets. The fish is sold at Rs. 60-80/kg and consumed fresh or sun dried. The species accounts for average annual landing of 1148.24 tonnes along with other related species with average annual catch value of 561.44 lakhs INR. The fish being caught in sizable quantity and moderately priced is quite popular among local people.

Thryssa setirostris (Broussonet, 1782)

Longjaw thryssa
Odia: Samudra Patua

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Engraulidae
Genus : *Thryssa*
Species : *Thryssa setirostris*



Diagnostic features

Dorsal spines (total): 0; Anal spines: 0. Belly with 25 to 28 keeled scutes. Distinguished from all other *Thryssa* species and anchovies by the very long maxilla, reaching at least to tip of pectoral fin, usually to pelvic fin base or even to anal fin origin; also unique is the high coronoid process of the lower jaw, the jaw rising steeply in the mouth. Head with gold tints; anal and caudal fins deep yellow; dark spot behind gills. Maximum length recorded 18.0cm (SL) (Munroe and Nizinski, 1999).

Habitat

Marine; brackish; pelagic-neritic.

Distribution

Indo-Pacific: Gulf of Oman south to Port Alfred, no records from the Red Sea and Madagascar; coasts of Pakistan, India, probably Burma; Thailand, Indonesia, Philippines to Taiwan; also the Arafura Sea, northern Australia, Papua New Guinea, Solomon Islands and New Hebrides.

IUCN Status

Not Evaluated |(NE)|

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007) which was collected from Parikud area. The species is locally known as **Samudra Patua** in Odia. Its annual landing was estimated at 271 tonnes during 2016-17. The fish distributed mostly in the southern sector and central sector and also caught from outer channel and northern sector. Major catch of this fish comes from Patua jaal (Seine net). The fish is mostly sold in the local and nearby urban markets at an average unit price of Rs.45/kg. Maximum landing of this fish takes place at Balugaon landing centre followed by Sorana and Kalupada in the northern sector. In the southern sector, Keshpur landing centre receives substantial catch of this fish.

Thryssa vitrirostris (Gilchrist & Thompson, 1908)

Orangemouth anchovy

Odia: Kana Patua

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Engraulidae
Genus : *Thryssa*
Species : *Thryssa vitrirostris*



Diagnostic features

Dorsal spines (total): 0; Anal spines: 0; Anal soft rays: 31 - 40. Belly with 16 to 19 + 8 to 12 = 24 to 30 keeled scutes from isthmus to anus. Maxilla long, reaching beyond base of first pectoral fin ray; minute, oval first supra-maxilla. Lower gill rakers with serrae on the inner edge in distinct clumps in larger fishes. A dark blotch behind upper part of gill opening; inside of gill cavity bright orange. Maximum length recorded 20.0cm (TL) (Munroe and Nizinski, 1999).

Habitat

Marine; brackish; pelagic-neritic; schooling in inshore waters.

Distribution

Indian Ocean: Madagascar, coasts of Africa from Port Alfred northward to the Persian Gulf but not in the Red Sea, coasts of Pakistan and India, perhaps to Calcutta and off Myanmar, but no records.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty *et al.* (2015). The species is locally known as **Kana Patua** in Odia. In Chilika Lake, the fish occurs abundantly in southern sector between Kalijai and Rambha and is landed in more quantity at Keshpur, Rambha in the southern sector and Balugaon landing centres in central sector. The estimated landing of this Engraulid fish during 2016-17 was 218 tonnes which fetched an average unit price of Rs.50-60/kg. It is one of the most popular **Patua** fish having commercial value and mostly sold locally.

Ilisha elongata (Anonymous [Bennett], 1830)

Elongate ilisha / Big eye ilisha
Odia: Luni Paniakhia

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Pristigasteridae
Genus : *Ilisha*
Species : *Ilisha elongata*



Diagnostic features

Dorsal spines (total): 0; Anal spines: 0; Anal soft rays: 43 - 53. Body slender, belly with usually 24 to 25 + 10 to 15, total 34 to 42 scutes. Eye large, lower jaw projecting. Dorsal fin origin at about midpoint of body or a little behind; anal fin origin a little behind dorsal fin base. Swim bladder with a long tube passing back down right side of body above anal fin base. 19-25 gill rakers on lower limb of 1st arch. Maximum length recorded 60.0 cm (TL) (Novikov, 2002).

Habitat

Marine; brackish; pelagic-neritic. Generally inhabits coastal waters and lagoons.

Distribution

Indo-Pacific: Indian Ocean (Kuwait Bay and Pondicherry), Java Sea (Singapore), East China Sea (Canton north to the Koreas and southern Japan, as far as Osaka on the Pacific coast and Fukuoka in Sea of Japan, also Peter the Great Bay in Soviet waters).

IUCN Status

Not Evaluated |(NE)|

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from northern sector. The species is locally known as **Luni Paniakhia** in Odia. The fish has been rarely occurring in the lake, mostly found in outer channel between Magarmukh and Moto village. It does not form a fishery of its own but is mixed with brackish water miscellaneous fish group. The average unit price is Rs.50-60/kg.

Ilisha megalopectera (Swainson, 1839)

Bigeye ilisha

Odia: Paniakhia / Sana Bajara

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Pristigasteridae
Genus : *Ilisha*
Species : *Ilisha megalopectera*



Diagnostic features

Dorsal spines (total): 0; Anal spines: 0; Anal soft rays: 38 - 53. Body rather deep, belly with 19 to 23 + 8 to 12, total 28 to 35 (usually 30 to 34) scutes. Eye large, lower jaw strongly projecting. Dorsal fin origin near midpoint of body; anal fin origin below hind part of dorsal fin base. Swim bladder with a single long tube passing back down right side of body above anal fin base. No toothed hypo-maxilla.

Habitat

Marine; freshwater; brackish; pelagic-neritic; anadromous

Distribution

Indo-Pacific: Indian Ocean (Bombay to Bay of Bengal and Andaman coast of Thailand), Java Sea (off Java, Singapore). Sarawak, 'Cochinchina' and Macao specimens should be rechecked.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from Northern Sector of Chilika Lake. The species is locally known as **Paniakhia / Sana Bajara** in Odia. The fish does not form a sizable fishery in the lake and is mixed with brackishwater miscellaneous group. A tasty food fish with average unit price of Rs.70-80/kg; mostly marketed fresh and also sun dried.

Opisthopterus tardoore (Cuvier, 1829)

Bluespot mullet

Odia: Sana Bajra / Luni Paniakhia

Systematic accounts

Class : Actinopterygii
Order : Clupeiformes
Family : Pristigasteridae
Genus : *Opisthopterus*
Species : *Opisthopterus tardoore*



Diagnostic features

Dorsal spines (total): 0; Anal spines: 0; Anal soft rays: 51 - 63. Belly convex in front, with 29 to 35 scutes. Mouth pointing obliquely upward; lower gill rakers 22 to 28, increasing with size of fish. Pectoral fin usually about equal to head length or greater; dorsal fin small, well behind midpoint of body; anal fin long, its origin well before dorsal fin origin. Maximum length recorded 20.0 cm (SL) (Rainboth, 1996).

Habitat

Marine; brackish; pelagic-neritic; amphidromous.

Distribution

Indo-West Pacific: in tropical waters, from the Gulf of Oman to at least Madras, perhaps to the north and along the coasts of Myanmar, certainly at Penang, to the Java Sea, and Gulf of Thailand.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty *et al.* (2015). The species is locally known as **Sana Bajra / Luni Paniakhia** in Odia. In Chilika Lake, the fish is found occasionally in the outer channel sector. It is basically a coastal fish, occasionally enters into the outer channel sector of the lake for feeding purpose. Its catch is negligible; sold at an average price of Rs.60/kg. Its annual catch has not been estimated separately.

Chanos chanos (Forsskal, 1775)

Milkfish

Odia: Seba Khainga

Systematic accounts

Class : Actinopterygii
Order : Gonorynchiformes
Family : Chanidae
Genus : *Chanos*
Species : *Chanos chanos*



Diagnostic features

The fish has a torpedo-shaped body and a small, terminal and non-protractile mouth without teeth. Head and snout are conically pointed and compressed, upper jaw slightly projecting over lower. Eyes are not visible from ventral surface and are covered with an adipose layer. Accessory branchial organ present in a recess behind the true gill cavity. Dorsal and anal fin bases have scaly sheath and base of pectoral and ventral fins have axillary scales. The fish lacks spines in fins. Caudal fin is deeply forked, whereas dorsal fin is falcate. Body is bluish green on back and silvery on sides. Dorsal, anal and caudal fin margins are dusky.

Habitat

Marine to freshwater in nature; benthopelagic and amphidromous in habit.

Distribution

Distributed in the Indo-Pacific: along continental shelves and around islands of Red Sea and South Africa to Hawaii and the Marquesas, north to Japan, south to Victoria, Australia. Eastern Pacific: San Pedro, California to the Galapagos.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Chilika near Barkul. The species is locally known as **Seba khainga** in Odia, found throughout the lagoon. It is a migratory species that has an average annual landing of 4.43 t. Sold at Rs. 120-200/kg; average annual catch valuation is about Rs. 4.68 lakhs. A commercially important species, consumed locally, is caught through gill net and screen barrier net (**Khanda**). This species was forming a commercial fishery in the past and was growing to larger size in Chilika before 1980s. Thereafter its catch consistently declined and was almost missing from the commercial catch during the eco-degradation period. However, with the opening of the new lake mouth the fish started reappearing in commercial landings but later it did not improve.

Amblypharyngodon mola (Hamilton, 1822)

Mola carplet

Odia: Mohurali

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cyprinidae
Genus : *Amblypharyngodon*
Species : *Amblypharyngodon mola*



Diagnostic features

Body moderately compressed, dorsal profile more convex than ventral, snout rounded, covered with thin skin, caudal deeply forked. Lateral line incomplete and extend up to 15 scales. Scale small. Colour silvery, a dark band, runs on both sides of the body from head to tail. Dorsal and anal with black edge, longest specimen in collection 6.5cm from Barnai river. Talwar and Jhingran (1991) reported this species attains a length of 20cm.

Habitat

Freshwater; benthopelagic

Distribution

Asia: Pakistan, India (throughout India except Kerala), Bangladesh, Nepal and Myanmar

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Bhatta *et al.* (2001). The species is locally known as **Mohurali** in Odia. In Chilika Lake, the fish is frequently found in the northern sector, particularly in the river mouth zone and mainly landed at Jaguleipadara landing centre (Kanasa Block), Bhusandapur and Kalupada landing centres in the northern sectors. The fish is caught in good quantity during September to December and the average annual landing has been estimated at 22.50 tonnes. This omnivorous fish is multiple breeder and therefore is available in the northern sector of the lake almost throughout the year with peak during September-October. It is a commercially important fish (carplet) fetching an average unit price of Rs.180-200/kg which is mostly consumed locally. The fish is rich in essential nutrients useful for human health.

Gibelion catla (Hamilton, 1822)

Catla (Indian major carp)

Odia: Bhakura

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cyprinidae
Genus : *Gibelion*
Species : *Gibelion catla*



Diagnostic features

The fish has a short and deep body with depth 2.5 to 3 times more in standard length. The species has a very large head and a large, upturned mouth, with a prominent protruding lower jaw. The upper lip is absent and lower lip is thick. Fins are usually dark in color; pectoral fins being long, extending to pelvic fins. Body is covered with large cycloid scales and the colour is grayish above and silvery on sides and beneath.

D. 17; A. 7-8; LI. 40-43.

Habitat

The fish is fresh water in nature; benthopelagic and show potamodromous migration.

Distribution

Distributed in Asian countries like Pakistan, India, Bangladesh, Nepal and Myanmar.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansingani (1954). The species is locally known as **Bhakura**. Being a river migrant, the species is caught mainly from northern sector of the lagoon. A commercially important species, its average annual yield is 0.55 t. Sold @ Rs. 150-180/kg, the species has average annual catch value of Rs. 0.66 lakhs. The species is caught through gill nets; consumed locally as well as transported to Howrah market (West Bengal).

Chela cachius (Hamilton, 1822)

Silver hatchet chela

Odia: Bankusa Chela

Systematic accounts

Class : Actinopterygii

Order : Cypriniformes

Family : Cyprinidae

Genus : *Chela*

Species : *Chela cachius*



Diagnostic features

Body elongate, deep and compressed with slightly oblique mouth. Body depth 3.2-4.6 times in standard length. Lateral line complete and curved downwards. 51-56 scales on lateral line.

Body colour translucent, shining brilliant silver. Light olive on back and whitish below. A greenish longitudinal band from level of dorsal fin. Fins are yellowish.

Habitat

Freshwater; brackish; benthopelagic.

Distribution

Asia: Pakistan, India, Bangladesh and Myanmar.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansinghani (1954). The species is locally known as **Bankusa chela** in Odia. In Chilika Lake, the fish is frequently found in the northern sector, particularly in the river mouth zone and occasionally in the central sector of the lake. The fish is landed in more quantities at Jaguleipadara landing centre under Kanasa block in northern sector, Bhusandapur, Kalupadaghat and Sorana landing centres in northern sector. The fish caught from Chilika Lake is mostly consumed locally. Annual landing of this freshwater fish is negligible but has good commercial value. The fish also has ornamental value and is used in home aquarium. The average unit price at Chilika is Rs.80-100/kg.

Cirrhinus mrigala (Hamilton, 1822)

Mrigal carp (Indian major carp)

Odia: Mirikali

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cyprinidae
Genus : *Cirrhinus*
Species : *Cirrhinus mrigala*



Diagnostic features

The body is elongated and streamlined or laterally compressed. Dorsal profile more convex than that of abdomen. Ventral profile slightly convex. Grayish or greenish colour on the back and silvery at the sides and below. Fins are slightly orange coloured in larger specimen. Lateral line present and complete with about 40-45 scales. Maximum length recorded 99cm (TL) (Talwar and Jhingran, 1991).

Head 21.4% of standard length (SL) and 17.1% of total length (TL). Height 28.6% of SL and 22.9% of TL. Diameter of eye 16.7% of head length (HL).

Habitat

Freshwater; demersal (rivers, reservoirs, canals, ponds and lakes).

Distribution

Asia: Pakistan, Northern India, Nepal, Bangladesh, Myanmar, now transplanted in peninsular India.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

This Indian major carp species was first reported from Chilika by Roy and Sahoo (1957). The species is locally known as **Mirikali** in Odia which is a bottom feeder omnivore. In Chilika Lake, the fish is rarely found in the northern sector, particularly in the river mouth zone which descends from Daya River. It is landed at Jaguleipadara and Kalupada landing centres in northern sectors occasionally. It is a highly prized carp fish fetching high value in the market (Rs.150/kg av.). The average annual landing in Chilika has been estimated at 0.25 tonnes.

Cirrhinus reba (Hamilton, 1822)

Reba carp (Minor carp)

Odia: Pohola

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cyprinidae
Genus : *Cirrhinus*
Species : *Cirrhinus reba*



Diagnostic features

The fish has an elongated body having depth more than head length. Snout is projected beyond the mouth; mouth is broad and it has a complete upper lip. A thin cartilaginous cover lies inside the lower jaw. One pair of small rostral barbel present. The height of dorsal fin is less than the body depth. Pectoral fins are almost equal to head length and caudal fin is deeply forked. Body is covered with hexagonal scales.

D. 17-19; A. 8; P. 19; Ll. 34-38.

Habitat

Freshwater in nature; benthopelagic.

Distribution

Distributed in Asian countries like Pakistan, India, Nepal, Bangladesh and Myanmar.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Rajan *et al.* (1968). Locally known as **Pohola**; the fish is a riverine migrant and thus distributed mainly along the northern sector of the lagoon. The annual landing suddenly increased during 2001-02, after opening of the new lake mouth in 2000 and thereafter low landings were recorded 2009-10 and then higher landings were recorded. Its average annual yield is 28.80 t and average annual catch valuation is Rs.20.12 lakhs. Usually the fish caught through gill nets and screen barrier nets (**Khanda**). It is consumed locally, sold @ Rs. 80-120/kg.

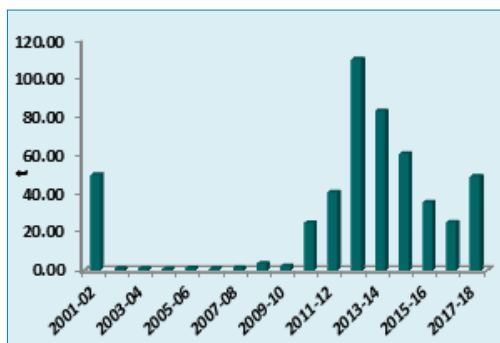


Fig E Annual landings of *C. reba* during 2001-02 to 2017-18

Esomus danrica (Hamilton, 1822)

Flying barb

Odia: Dandikari / Jhai

Systematic accounts

Class : Actinopterygii

Order : Cypriniformes

Family : Cyprinidae

Genus : *Esomus*

Species : *Esomus danrica*



Diagnostic features

Body elongate and compressed laterally with pointed head. Lower jaw longer. Body depth 3.3-4.8 times in SL and head length 2.5-5 times in SL. Mouth small and 2 pairs of barbells of which maxillary pair is extremely long reaching middle of the body. Pectoral long and pointed. Lateral line incomplete. 27-30 (Talwar and Jhingran, 1991) scales in longitudinal series. Maximum length recorded 12.5 cm (TL) (Talwar, and Jhingran, 1991).

Habitat

Freshwater; brackish; benthopelagic.

Distribution

Asia: Pakistan, Northern India, Nepal, Bangladesh, Myanmar, now transplanted in peninsular India.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Roy and Sahoo (1957) which was collected from outer channel near Berhampura during flood season. The species is locally known as **Dandikari / Jhai** in Odia. This insectivore freshwater minnow (weed fish) occurs in Chilika Lake in the freshwater zone of northern sector. During flood season, it also descend down up to outer channel when there is unidirectional freshwater flow into the sea. It breeds in the freshwater zone of northern sector and Nalabana area in the central sector. The fish is caught between Daya river mouth and Kalupadaghat and often they are caught in the shore line waters up to Balugaon. This is a very good freshwater ornamental fish usually utilized as aquarium fish. Its catch is negligible and is included in the landing of miscellaneous freshwater fish group in Chilika.

Labeo boga (Hamilton, 1822)

Boga labeo

Odia: Mundha Bata

Systematic accounts

Class : Actinopterygii

Order : Cypriniformes

Family : Cyprinidae

Genus : *Labeo*

Species : *Labeo boga*



Diagnostic features

Body is elongated and its dorsal profile is rather more convex than the ventral. Snout is projecting beyond mouth, devoid of lateral lobe, occasionally covered with large pores. Eyes are large, mouth is narrow, lips are quite thick and lower lip joined to isthmus by a bridge. Barbells are a minute maxillary pair only. Dorsal fin is inserted nearer to snout tip than to base of caudal fin, placed above or slightly anterior to tip of pectoral fin. Lateral line with 37 to 39 scales. Colour in life, often with dark spot above pectoral fin and fins with reddish tinge. Above morphological description are quite similar to Talwar and Jhingran (2001). Maximum length recorded 30cm (TL).

Minimum and maximum value of scales number on the lateral line is 60 and 70 respectively. Minimum and maximum value of scales number above the lateral line is 5 and 6 respectively. Minimum and maximum value of scales number below the lateral line is 7 and 9 respectively. Scales number mentioned by other writer are as follows, 60-65 scales on the lateral, 37-40 scales on the lateral.

Habitat

Freshwater; benthopelagic; potamodromous. Column feeder, predominantly plankton feeder.

Distribution

Asia: Pakistan, India (Assam, Odisha, Andhra Pradesh, Tamil Nadu, Bihar, Uttar Pradesh & Bengal), Bangladesh, Nepal and Myanmar.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007). The species is locally known as **Mundha bata** in Odia. In Chilika Lake, the fish is occasionally found in the northern sector, particularly in the river mouth zone and mostly landed at Jaguleipadara and Bhusandapur landing centres in northern sector. It is a commercially important freshwater fish, mostly consumed locally and fetches an average unit price of Rs.120-130/kg. Its landing is estimated under the group “miscellaneous freshwater fishes” from Chilika.

Labeo gonius (Hamilton, 1822)

Kuria labeo

Odia: Khursia

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cyprinidae
Genus : *Labeo*
Species : *Labeo gonius*



Diagnostic features

The body is elongated and its dorsal profile is more convex than the ventral. The Snout slightly projects beyond the mouth. It is without lateral lobe and studded with numerous pores. The size of the eyes is moderate and not visible from underside of the head. Mouth is narrow and sub inferior with thick lips and fringed with a distinct inner fold in their circumference. Two pairs of very short barbells are present (rostral and maxillary). Dorsal fin inserted nearer to snout-tip than to base of caudal fin. Pectoral fins are about as long as the head. Caudal fin deeply forked, with pointed lobes. Scales are small. Lateral line with 71 to 84 scales; lateral line transverse scale rows 9 to 13 between the lateral line and pelvic fin base. Colour: in life, greenish-black on back, become dull white on flanks and belly; scale darkest at their margins and several scales with red lunules giving the impression of faint longitudinal lines. Maximum length recorded 150cm (TL).

Habitat

Freshwater; benthopelagic; potamodromous. Column feeder, plankto phagus omnivorous.

Distribution

Asia: Pakistan, India (Indo-Gangetic plain, Gujarat, Assam along east coast to Krishna River), Bangladesh and Myanmar.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007). The species is locally known as **Khursia** in Odia. In Chilika Lake, the fish occurs occasionally in the river mouth zone of northern sector during monsoon season. Annual landing of this fish is negligible but is highly in demand in the local fresh fish market which fetches an average unit price of Rs.120-130/kg. Its landing is estimated in the group “freshwater miscellaneous species”.

Labeo rohita (Hamilton, 1822)

Roho labeo / Rohu (Indian major carp)

Odia: Rohi

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cyprinidae
Genus : *Labeo*
Species : *Labeo rohita*



Diagnostic features

Dorsal fin with 12-14 1/2 branched rays; lower profile of head conspicuously arched; short dorsal fin with anterior branched rays shorter than head; 12-16 predorsal scales ; snout without lateral lobe. Maximum length recorded 200cm (TL).

Habitat

Freshwater; brackish; benthopelagic; potamodromous. Column feeder planktophagous

Distribution

Asia: Pakistan, India (throughout India), Sri Lanka, Bangladesh, Myanmar and Nepal.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansinghani (1954). The species is locally known as **Rohi** in Odia. In Chilika Lake, the fish is frequently found in the northern sector, particularly in the river mouth zone in the northern sector and occasionally in the central sectors of the lake. The fish is landed in more quantities at Jaguleipadara under Kanasa Block, Bhusandapur and Kalupadaghat landing centres in northern sector. Higher catch has been observed during post-monsoon season which extends up to November. The average estimated annual landing is 14.78 tonnes and the average unit price is Rs.130-150/kg. Average size in the commercial catch ranges from 1.5 to 4.0 kg. It is mostly consumed locally and also sold in Cuttack city market.

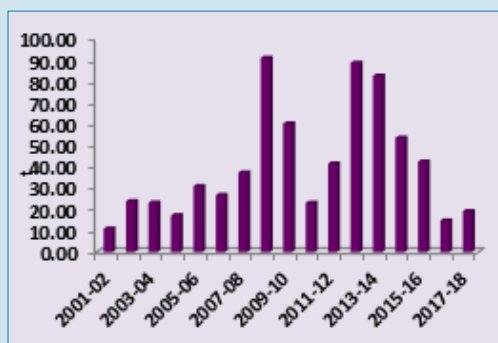


Fig F Annual landings of *L. rohita* during 2001-02 to 2017-18

Laubuka laubuca (Hamilton, 1822)

Indian glass barb

Odia: Banko Chela

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cyprinidae
Genus : *Laubuka*
Species : *Laubuka laubuca*



Diagnostic features

Body elongate, deep and compressed with slightly oblique mouth. Body depth 2.5-4.1 times in standard length. Lateral line complete with 31-37 scales. Pectoral wing-like and large. Maximum length recorded 7.0cm (TL) (Pethiyagoda, 1991).

Body colour translucent, shining silver to greenish-gray with a violet luster on caudal peduncle. Vertical steel-blue markings on sides of the body. A deep black, golden-edged blotch at the base of caudal fin. Fins are yellowish.

Habitat

Freshwater; brackish; pelagic.

Distribution

Asia: Pakistan, India (Western Ghats & Gangetic watersheds), Bangladesh, Sri Lanka, Nepal, Myanmar, Malay Peninsula and Indonesia.

IUCN Status

Least Concern (LC); LRIc/N (CAMP, 1998)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansinghani (1954). The species is locally known as **Banko chela** in Odia. In Chilika Lake, the fish is frequently found in the freshwater zone of northern sector, particularly in the river mouth zone and the outfall zone of rivulets near Bhusandapur. The fish is landed in more quantities at Jaguleipadara, Bhusandapur and Kalupada landing centre in northern sector. The catch is mixed with miscellaneous freshwater group. This glass barb species has both commercial and ornamental value to be used in home aquarium. The fish is sold locally at an average unit price of Rs.50-60/kg.

Osteobrama peninsularis Silas, 1952

Peninsular Osteobrama

Odia: Chalanta / Phula Kerandi

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cyprinidae
Genus : *Osteobrama*
Species : *Osteobrama peninsularis*



Diagnostic features

The fish has a short, deep and laterally compressed body with a short head. Snout is blunt and rounded with a small and partially upward mouth. Upper jaw is slightly longer. Profile over nape is concave and do not possess barbels. Abdominal edge is sharp and keeled entirely or only from pelvic fin base to vent. Pre-dorsal scales count to 21-24. Scales between lateral line and pelvic fin base are 14. Caudal fin is forked and the lower lobe is longer. It has a silvery body with occasional silvery lateral band and dark back.

D. I, 11-12; A. 29-36; P. 13; V. 10; Ll. 55-60.

Habitat

Freshwater in nature; benthopelagic in habit.

Distribution

Distributed in Asia. In India, the species is well distributed in Maharashtra, Orissa and Andhra Pradesh.

IUCN Status

Data Deficient (DD)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007) which was collected from Bhusandapur area of northern sector during September, 2005. The species is locally known as **Chalanta / Phula Kerandi** in Odia. Very rarely found in the lagoon mainly in the northern sector. The fish is caught through screen barrier nets (**Khanda**) and seine nets as By-catch. The fish is included in the freshwater miscellaneous group in commercial landing.

Pethia ticto (Hamilton, 1822)

Ticto barb, Firefin barb

Odia: Kuji Karandi

Systematic accounts

Class : Actinopterygii

Order : Cypriniformes

Family : Cyprinidae

Genus : *Pethia*

Species : *Pethia ticto*



Diagnostic features

Mouth is small and its position is terminal. Barbels are absent, colour is silvery. Two black spots found on the lateral line which is incomplete. Depth of body less than one-third of the standard length. Maximum length is about 10.2 cm, longest specimen in collection 3cm.

Habitat

Surface feeder and it feeds on Diatom, Algae, Crustaceans, Rotifer, insects etc. this is a small fresh water species of the genus *Pethia* found in the lower reaches of river and riverine wetlands, ponds, beels, jheels, pedifeels during monsoon, sometimes at relatively high altitudes, and apparently shows a preference for substrates of mud or silt. ENDEMIC to India.

Diet

Likely to be a foraging omnivore feeding on worms, insects and other small invertebrates, as well as plant materials and organic detritors.

Distribution

Asia: Pakistan, India, Nepal, Sri Lanka, Bangladesh, Myanmar and Thailand. Occurs in the upper Mekong, Salween, Irrawaddy, Meklong and upper Chao Phraya basins.

IUCN Status

Least Concern (LC); EN in India

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Barkul. The species is locally known as **Kuji Karandi** in Odia. This small Cyprinidae fish dominantly occurs in Chilika in the freshwater zone of northern sector and Nalabana area in the central sector. Its average annual landing in Chilika is 63 tonnes. Highest landing takes place at Kalupada followed by Bhusandapur and Sorana. The fish breeds in Chilika during April-September, Nalabana sanctuary area in the central sector has been observed as a potential spawning ground for *Pethia ticto*, mostly spawning takes place during monsoon. This small fish is very popular locally, consumed fresh and marketed mostly in the local market. Average selling price is Rs.40/kg. The fish is commonly used for home aquarium having ornamental value.

Puntius chola (Hamilton, 1822)

Swamp barb

Odia: Pita Karandi

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cyprinidae
Genus : *Puntius*
Species : *Puntius chola*



Diagnostic features

Deep and compressed body with less convex of its lower profile than upper. Terminal small mouth contain a pair of maxillary barbells. Dorsal fin inserted equidistant between snout and base of caudal. The last unbranched ray of dorsal fin is osseous, fairly strong and smooth. Pectoral as long as head excluding snout.

Body silvery with golden opercle. A dark blotch on the base of caudal fin. A black blotch present at 2nd to 5th ray of dorsal and also one or two rows of dark spots visible along its centre. During breeding season a red band appear from the alongside of the end of opercle to the end of forked of caudal fin. Head 3.2-3.6 in standard, 4.0-4.7 in total length. Height 2.6-3.0 in standard, 3.3-3.9 in total length. Eye 3.6-4.2, snout 1.0, interorbital 1.5-1.6.

Habitat

Ponds, ditches, lakes, rivers, Nullahs in Kerala, Tamil Nadu, north eastern states, West Bengal and Odisha.

Distribution

India, Pakistan, Nepal, Bangladesh, Sri Lanka and Myanmar

IUCN Status

Least Concern (LC); VU/N

Other information – Chilika specific

The species was first reported from Chilika by Bhatta *et al.* (2001) which was collected from Kalupadaghat area. The species is locally known as ***Pita Karandi*** in Odia. This small Cyprinidae fish generally occurs in the freshwater zone of northern sector of Chilika, maximum landings takes place at Kalupadaghat followed by Bhusandapur and Sorana. Spawning of this swamp barb has been observed at Nalabana area in the central sector of Chilika. Average annual landing has been estimated at 20 tonnes. The fish is sold locally and consumed fresh. Small meshed drag nets and barrier nets are commonly used by local fishermen for catching this fish. The fish known as a freshwater ornamental fish, mostly maintained in home aquarium.

Puntius sophore (Hamilton, 1822)

Pool barb

Odia: Patia Karandi

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cyprinidae
Genus : *Puntius*
Species : *Puntius sophore*



Diagnostic features

The fish has a short, deep and round, silvery body with a lateral blotch on the caudal peduncle. Cleft of the mouth extends below the first third of the orbit. Upper jaw is longer and lower labial fold is interrupted. Barbels are long and thin. The maxillary pair are 1.5 times larger than the eye diameter. The rostral pair is slightly shorter. Dorsal spine is smooth, Complete rays are weak and osseous. The fin arises slightly before the ventral and midway between the end of the snout and the root of the caudal. Lateral line is complete; As the lateral line passes through the middle of a row of scales. 2 ½ rows of scales between lateral line and the base of the ventral fin is present and 9 rows before the dorsal fin. Scales are with numerous longitudinal striae. Pectoral, ventral and anal fins are yellowish. Black spots on mid base of dorsal fin and caudal peduncle distinguishes the fish from related species.

D. 11-12; A. 8; P. 15; V. 9; LI. 20-26.

Habitat

Freshwater to brackish water in nature; benthopelagic in habit.

Distribution

Distributed in Asia: Pakistan, India, Nepal, Bangladesh, Myanmar, Yunnan, China, Bhutan and Afghanistan

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Barkul Bay. The species is locally known as ***Patia Karandi*** in Odia. The species is generally caught from the northern and central sectors of the lake. It is a resident species of the lagoon and also avails it as its breeding ground. Breeding of this *Puntius sp.* has been observed at Nalabana area during monsoon and post-monsoon season. Although the fish is a small barb, its nutrient composition is quite good and hence an important food fish for human health. Sold @ Rs 50-70/- kg. Both fresh and sun dried forms are consumed locally. Gears used for fishing are gill nets and screen barrier nets. The fish with other related species have an annual average landing of 34.85 t and values for 11.02 lakhs INR. The fish used as a freshwater ornamental fish in home aquarium.

Rasbora daniconius (Hamilton, 1822)

Slender rasbora / Blackline rasbora

Odia: Jilo / Dandikiri

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cyprinidae
Genus : *Rasbora*
Species : *Rasbora daniconius*



Diagnostic features

Body elongate, oblong and compressed with small mouth. No barbells. Lateral line complete and descends very gradually. 21-34 scales on lateral line. Maximum length recorded 10.0 cm (TL) (Talwar and Jhingran, 1991).

Body color olive on back and silvery flanks and belly. A prominent blue black stripe from eye to base of caudal fin which is delicately edged above and below by a thin and metallic golden line. A narrow dark spot above anal fin.

Habitat

Freshwater; brackish; benthopelagic.

Distribution

Asia: Mekong, Chao Phraya and Salween basins, northern Malay Peninsula, westwards to the Indus and Sri Lanka.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Roy and Sahoo (1957) which was collected from Kalupadaghat in the northern sector. The species is locally known as **Jilo / Dandikiri** in Odia. The fish is one of the popular minnows / weed fishes which is available in freshwater zone of northern sector particularly in the shoreline areas. This freshwater small fish is utilized as a beautiful ornamental fish in freshwater aquarium. Although the species is a good food fish with good nutritional composition its catch in Chilika is negligible and comes in the commercial landing being mixed with freshwater miscellaneous fish group. Its average selling price in the local market ranges from Rs.25-30/kg. The fish is best used as a freshwater ornamental fish.

Salmostoma bacaila (Hamilton, 1822)

Large rozerbelly minnow

Odia: Jaralli / Jellari

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cyprinidae
Genus : *Salmostoma*
Species : *Salmostoma bacaila*



Diagnostic features

According to Talwar and Jhingran (1991), body is elongate and strongly by compressed; mouth is oblique, lower jaw with a well developed symphysial knob; scales are very small, dorsal fin inserted well in advance anal fin; a considerable space present between anal and caudal. Lateral line is concave. Body colour is dorsally darkish but the rest of the body silvery. Maximum length recorded 18.0cm (TL) (Menon, 1999).

Habitat

Freshwater; brackish; benthopelagic; potamodromous.

Distribution

Asia: Pakistan, India (Madhya Pradesh, Rajasthan, Northern India), Bangladesh and Nepal.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Menon (1961). The species is locally known as **Jaralli/Jellari** in Odia. In Chilika Lake, the fish is frequently found in the mouth zone of Daya River in northern sector of Chilika and mostly landed at Jaguleipadara landing centre under Kanasa Block in northern sector and also at Bhusandapur and Kalupada landing centres in northern sector. Its landing is mixed with miscellaneous freshwater species constituting about 2.8% which worked out to nearly 4 tonnes during 2016-17. The fish is highly in demand in the local markets fetching an average unit price Rs.140-150/kg.

Systemus sarana (Hamilton, 1822)

Olive barb

Odia: Serena

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cyprinidae
Genus : *Systemus*
Species : *Systemus sarana*



Diagnostic features

Body oblong, head, small, barbels 2 pairs. Maxillary pair longer than orbit, rostral pair shorter. Dorsal spines (total): 3; Dorsal soft rays (total): 8; Anal spines: 2; Anal soft rays: 5. Maximum length (TL) = 42.0 cm.

Habitat

Freshwater; brackish; benthopelagic; potamodromous.

Distribution

India (throughout India except Peninsular), Pakistan, Bangladesh, Myanmar, Afghanistan, Bhutan.

IUCN Status

Least Concern (LC); VU/N

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansingani (1954) which was collected from the lake near Balugaon. The species is locally known as **Serena** in Odia. In Chilika Lake, the fish is distributed only in northern sector dominating the freshwater zone near the river outfall zone. Potential landing centres for this species are Jaguleipadara under Kanasa block in northern sector and Kalupadaghat (Chilika block) in northern sector. The fish does not occur in the remaining three sectors. The fish caught from the northern sector of the lake is mostly transported to Cuttack and Bhubaneswar cities for marketing. The average monthly and annual landings have been estimated at 0.73 tonnes and 8.72 tonnes (2016-17). The average annual catch value was estimated at Rs.0.06 Crores (2016-17). The fish is generally caught in **Khanda** and gill net.

Lepidocephalichthys guntea (Hamilton, 1822)

Guntea loach

Odia: Jimani Todi / Konda Tudi

Systematic accounts

Class : Actinopterygii
Order : Cypriniformes
Family : Cobitidae
Genus : *Lepidocephalichthys*
Species : *Lepidocephalichthys guntea*



Diagnostic features

The body of this fish is elongated and slightly compressed anteriorly and strongly posteriorly. Dorsal and ventral profiles are nearly parallel. Caudal rounded, a light band extends from snout to caudal. A patch of scales extends from below eye to upper part of operculum. Dorsal fin inserted slightly behind pelvic fin origin. Generally lateral line absent. Colour variable. Generally the ground colour is dirty yellowish. Below and above band are a series of dark blotches. A black ocellus presents on the upper half of caudal base. Dorsal and caudal barred with spots. Dorsal spines (total): 0; Dorsal soft rays (total): 8; Anal spines: 0; Anal soft rays: 7. Pectoral fin with an osseous spine in males. Maximum length recorded 15.0 cm (TL) (Talwar and Jhingran, 1991).

Habitat

Freshwater; brackish; demersal; potamodromous. Scavenging habit.

Distribution

Asia: Pakistan, northern India, Bangladesh, Nepal, Myanmar and Thailand. Known from the Salween basin.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Roy and Sahoo (1957) which was collected from the lake near Balugaon. The species is locally known as **Konda Tudi** in Odia. This is a very good freshwater ornamental fish which acts as scavenger in the aquarium. The fish does not form a fishery in Chilika and it is caught in the miscellaneous freshwater group. Although this small freshwater fish is considered as a food fish. It is rarely seen in the commercial catch. Collection of live fish from the wild is often sold locally for aquarium use at fairly good price (Rs.5-7/each).

Mystus cavasius (Hamilton, 1822)

Gangetic mystus

Odia: Bai Kantia

Systematic accounts

Class : Actinopterygii

Order : Siluriformes

Family : Bagridae

Genus : *Mystus*

Species : *Mystus cavasius*



Diagnostic features

Dorsal spines (total): 1; Dorsal soft rays (total): 7; Anal spines: 0; Anal soft rays: 10 - 11. Body elongate and compressed; head conical; occipital process narrow. Maxillary barbels, in adults, extend posteriorly beyond the caudal fin base, but in young specimen, do not extend beyond the anal fin. Dorsal spine weak, often feebly serrated. Color is grayish with a more or less well-defined midlateral longitudinal stripe. A dark spot emphasized by a white or pale area along its ventral margin is just anterior to the first dorsal spine. Dorsal, adipose and caudal fins shaded with melanophores. Maximum length recorded 40cm (SL).

Habitat

Freshwater; brackish; demersal; amphidromous. This carnivorous catfish predominantly occurs in freshwater ponds, rivers, lakes and also in brackishwater.

Distribution

Asia: lowland rivers in most major basins of the Indian subcontinent (Pakistan, Nepal, India, Sri Lanka and Myanmar), including but not limited to the Indus, Brahmaputra-Ganges, Krishna, Cauvery, Irrawaddy, Salween and Tenasserim. Reports of this species from the Chao Phraya and Mekong basins, Malaysia, and Indonesia are based on misidentifications of *Mystus albolineatus* or *Mystus singaringan*. Occurs in Thailand, but only in the Salween basin.

IUCN Status

Least Concern (LC); VU/N

Other information – Chilika specific

The species was first reported from Chilika with the older name (*Macrones cavasius*) by Chaudhuri (1916). The species is locally known as **Bai Kantia** in Odia. The fish has good commercial value and highly in demand in the local markets. The fish is landed in substantial quantity at Jaguleipadara fish landing centre under Kanasa Block and at Kalupadaghat landing centre in the northern sector. The average unit price for the fish is Rs.100/kg. It is generally exported to Howrah market (WB) and also marketed at Bhubaneswar city. Its annual landing of the fish is not much.

Mystus gulio (Hamilton, 1822)

Long whiskers catfish

Odia: Chilika Kantia

Systematic accounts

Class : Actinopterygii

Order : Siluriformes

Family : Bagridae

Genus : *Mystus*

Species : *Mystus gulio*



Diagnostic features

This catfish has a short or moderately elongated body with short and flattened head. Snout of the fish is obtuse or rounded with sub terminal, transverse mouth. Jaws are sub-equal with upper jaw slightly longer. Occipital crest is rugose and median longitudinal groove is short, extending slightly beyond the posterior border of orbit. Adipose dorsal fin base is shorter than anal fin base. Nasal barbell is shorter than head length. Body is bluish, brown or black, dull white beneath. Outer half of fins and maxillary barbells black. Absence of any spots or stripes on the body distinguishes the species from the related species.

D. I, 7+adipose; A. 12-15; P. I, 8-9; V. 6.

Habitat

Freshwater to brackish water in nature; demersal in habit.

Distribution

Distributed in Asia: countries bordering the eastern Indian Ocean, from India to Indonesia and Viet Nam. Reported from Pakistan

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Rambha Bay. The species is locally known as **Chilika Kantia** in Odia, it occurs throughout the lagoon. It is a resident species of the lagoon, and is known to use the lagoon for both breeding and feeding purposes. Maximum length recorded from the lagoon is 26 cm. Average sectoral landings are of the order (Northern sector > Central sector > Southern sector > Outer channel). Caught using gill nets and screen barrier nets. Commercially very important the species has average annual yield of 594.22 t valued at Rs.595.00 lakhs, sold @ Rs. 80-150/- kg. It is consumed locally as well as traded outside the state especially to West Bengal, where the fish is of very high demand. Year wise annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig G.

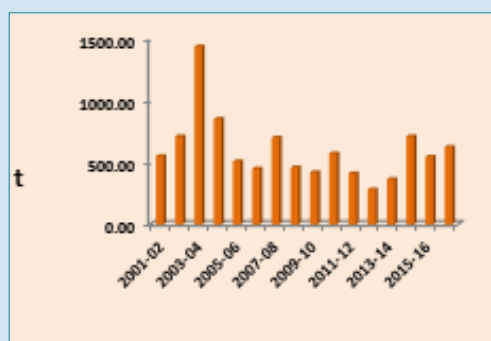


Fig G Annual landings of *M. gulio* (Kantia) during 2001-02 to 2016-17

Fisheries and population of the fish in Chilika was studied during 1957-65 by Jhingran and Natarajan (1966 & 1969). The fish breeds in the lake in the northern and central sector during June-November, August being the peak breeding period. Nalabana bird sanctuary area in the central sector has been observed to be one of the potential spawning grounds for the fish. The fishery is dominant in northern sector. Biology of *Mystus gulio* in Chilka Lake has been studied by ICAR-CIFRI (2017) under ICAR-CIFRI/CDA-ICZMP Consultancy Research Project.

Mystus vittatus (Bloch, 1794)

Striped dwarf catfish

Odia: Gagar Kantia / Tenggara Kantia

Systematic accounts

Class : Actinopterygii

Order : Siluriformes

Family : Bagridae

Genus : *Mystus*

Species : *Mystus vittatus*



Diagnostic features

Dorsal spines (total): 1; Dorsal soft rays (total): 6-7; Anal spines: 0; Anal soft rays: 12-13; Vertebrae: 31 - 37. Body elongate and slightly compressed. Maxillary barbels extending beyond the pelvic fins, often to the end of the anal fin. Dorsal spine weak, finely serrated on its inner edge. Adipose fin small, inserted much behind rayed dorsal fin but anterior to the anal fin. Color in life varies with age; generally delicate gray-silvery to shining golden, with several (about 5) pale blue or dark brown to deep black longitudinal on side. A narrow dusky spot often present on the shoulder. The fins glass, with dark tips. Maximum length recorded 21.0cm (TL) (Talwar and Jhingran, 1991).

Habitat

Found in freshwater bodies; in flooded canals, beels, paddy and jute fields, streams, haors, oxbow lakes and rivers in swarms during rainy season. Inhabits standing and flowing water bodies, even in the tidal zone. The fish also occurs in brackishwater; demersal.

Distribution

Asia: Indian subcontinent, including Pakistan, India, Sri Lanka, Nepal, Bangladesh, probably Myanmar and Thailand.

IUCN Status

Least Concern (LC) / VU/N (CAMP, 1998)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from northern sector. The species is locally known as **Gagar Kantia / Tengara Kantia** in Odia. In Chilika Lake, the fish is frequently found in the northern sector, particularly in the river mouth zone and occasionally in the central sectors of the lake. The fish breed in the river mouth area in the northern sector of the lake. The fish is landed in more quantities at Jaguleipadara under Kanasa Block, Bhusandapur and Kalupadaghat landing centres in northern sector. Higher catch has been observed during monsoon and post-monsoon season which extends up to November. The average estimated annual landing is 1.36 tonnes and the average unit price is Rs.60/kg. It is mostly sent to Howrah market and also consumed locally. This freshwater catfish is one of the important freshwater ornamental fishes to be used in the aquarium.

Ompok bimaculatus (Bloch, 1794)

Butter catfish

Odia: Pabta

Systematic accounts

Class : Actinopterygii
Order : Siluriformes
Family : Siluridae
Genus : *Ompok*
Species : *Ompok bimaculatus*



Diagnostic features

Elongate body is strongly compressed. Head depressed and snout rounded. Mouth is superior. Lower jaw is longer than upper. Two pairs of barbells are present. Maxillary barbells extend posterior to (or slightly beyond) anal fin base. Nostrils widely separated from each other. Teeth found on jaws and vomer. Caudal fin is deeply forked and its upper lobe long. Dorsal side grey, a transverse blackish spot present, behind the operculum on the lateral line, caudal stripped with black spots; besides, there are purple and yellowish spots throughout the body. Anal fin with 57 or 58 branched rays. Maximum length recorded 45.0 cm (TL) (Talwar, and Jhingran, 1991).

Body color olive-green to gray-green. A broad dark lateral band from mouth to caudal base. In juvenile, this band is bordered by a fine gold stripe. Pelvic reddish and other fins are brownish to orange.

Habitat

It is a fresh water fish, extensively in rivers, rivulets, streams, beels, canals, flooded jute fields in the rainy season. Also it occurs in brackishwaters, demersal. It feeds on the rainy season. It feeds on the crustacean larvae, algae, protozoans, a little mud and sand.

Distribution

Asia: Indian subcontinent and Myanmar, Sri Lanka, Thailand, Vietnam, Java, Sumatra, Borneo and China.

IUCN Status

Near Threatened (NT) / EN/N (CAMP, 1998)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Barkul area from Chilika Lake. The species is locally known as **Pabta** in Odia. The fish forms a small fishery in the freshwater zone of northern sector particularly between Daya river mouth and Kalupadaghat area during monsoon and post-monsoon. The fish is mainly landed at Jaguleipadara landing centre and the estimated annual catch is 0.80 tonnes. This is one of the high value freshwater fish species with average selling price of Rs.125-130/kg. The catch of this fish from Chilika is generally marketed outside the state, particularly in Howrah market. This freshwater fish has ornamental value to be used in the freshwater aquarium.

Ompok pabda (Hamilton, 1822)

Pabdah catfish

Odia: Pabta

Systematic accounts

Class : Actinopterygii
Order : Siluriformes
Family : Siluridae
Genus : *Ompok*
Species : *Ompok pabda*



Diagnostic features

Body elongated and laterally compressed with dorso-ventrally flattened head. Snout rounded. Superior mouth with longer lower jaw. Eyes sub-cutaneous and barbels two pairs, of which maxillary pair extends to end of pectoral or middle of anal fin. Dorsal fin situated above on last half of pectoral. Pectoral fin with smooth spine. Caudal forked with rounded lobes and downwards direction. Maximum length recorded 30.0 cm (TL) (Talwar and Jhingran, 1991).

Body color generally silvery grey, darkest on the back and fading white on the belly. In some may have two longitudinal bands, one above and other below the lateral line.

Head (inclusive of lower jaw) 4.2-4.8; in SL, 4.8-5.5 in TL. Height 4.1-4.5 in SL, 4.6-5.0 in TL. Eye 5.0-7.0 in head; snout 2.0-2.2; interorbital 2.8-3.7.

Habitat

Freshwater; demersal; potamodromous.

Distribution

Asia: Afghanistan, Pakistan, India (West Bengal, North Eastern States, Uttar Pradesh, Odisha, Indus Ganga and Brahmaputra river systems), Bangladesh and Myanmar.

IUCN Status

Near Threatened (NT) / EN / N (CAMP, 1998)

Other information – Chilika specific

This piscivorous, carnivorous and surface feeder freshwater fish species (Pabdah catfish) was first reported from Chilika by Bhatta *et al.* (2001). The species is locally known as **Pabta** in Odia. Although the fish does not grow to a larger size, fetches very high price (Rs.125-130/kg in the local market and Rs.180-200/kg at Howrah market) in the fresh fish market, particularly in Howrah market. Annual estimated landing during 2016-17 was 0.88 tonnes. In Chilika Lake, this commercially important freshwater fish is caught only from the freshwater zone of northern sector between Daya River mouth and Kalupadaghat landing centre. The fish is landed only at Jaguleipadara, Bhusandapur and Kalupadaghat fish landing centres. This freshwater fish has ornamental value to be used in the freshwater aquarium.

Wallago attu (Bloch & Schneider, 1801)

Wallago / Freshwater shark

Odia: Balia

Systematic accounts

Class : Actinopterygii
Order : Siluriformes
Family : Siluridae
Genus : *Wallago*
Species : *Wallago attu*



Diagnostic features

Elongated body is laterally compressed. Eyes are small. Mouth wide, its gape extends posteriorly to beyond eyes. Barbels are two pairs; among them, maxillary pair is long and extend posteriorly to well beyond origin of anal fin and the mandibular pair is much shorter, about as long as snout. Dorsal fin is short. Pectoral spine is weak. Caudal fin is deeply forked. Body colour grayish or yellowish grey in above and whitish in below but the fins grey. Maximum length recorded 240.0 cm (TL) (Pethiyagoda, R., 1991).

Habitat

Freshwater; brackish; demersal; potamodromous.

Distribution

Asia: Pakistan to Viet Nam and Indonesia. Reported from Afghanistan. Lower risk - near threatened status in Western Ghats, India. This carnivorous freshwater fish occurs in rivers, reservoirs and lakes in India.

IUCN Status

Near Threatened (NT) / LRnt / N (Lower Risk Near Threatened in India)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Barkul area of Chilika. The species is locally known as **Balia** in Odia. The fish is mostly caught in the freshwater zone of northern sector of the lake, particularly near the river mouth zones. It is also encountered in the central sector. The fish is mainly landed at Jaguleipadara landing centre under Kanasa Block, Bhusandapur, Kalupada and Sorana landing centre in northern sector. The average estimated annual landing is 2.8 tonnes. It is mostly sent to Howrah fish market in West Bengal where it is sold at an average price of Rs.100-120/kg and locally it is sold at Rs.75-80/kg.

Ailia coila (Hamilton, 1822)

Gangetic ailia

Odia: *Baunsa Patri* / *Batrudi*

Systematic accounts

Class : Actinopterygii

Order : Siluriformes

Family : Schilbeidae

Genus : *Ailia*

Species : *Ailia coila*



Diagnostic features

The species has a short and laterally compressed body with a short and greatly compressed head. Ventral profile of the body is not prominently arched. The snout is over-hanging and has a crescentic, subterminal mouth. It has a uniform silvery to brown body colour. Dorsal fin absent and only adipose fin present. Anal fin is long and not confluent with caudal fin. Caudal fin is deeply forked. Villiform teeth present in two patches on the palate. Presence of four pairs of barbels, which are longer than head. It has a complete lateral line. Blotches on body or fins absent.

A. 58-75; P. I, 13-16; V. 6.

Habitat

Occurs in fresh to brackish water environments; pelagic habit.

Distribution

Distributed in Asia: India, Pakistan, Bangladesh and Nepal.

IUCN Status

Near Threatened (NT)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from northern sector of Chilika. The species is locally known as ***Baunsa Patri* / *Batrudi*** in Odia. Found in very less number, specifically in central to northern sectors of Chilika. Considered as a good and tasty food fish, consumed locally. Generally used fishing gear is Screen barrier nets (***Khanda***). The species has shown declining trend in its catch.

Pachypterus atherinoides (Bloch, 1794)

Indian potasi

Odia: Baijhali / Baigujuri

Systematic accounts

Class : Actinopterygii
Order : Siluriformes
Family : Schilbeidae
Genus : *Pachypterus*
Species : *Pachypterus atherinoides*



Diagnostic features

The species has laterally compressed, elongated body, with four pairs of barbells. Maxillary pair reaches pelvic fins, mandibular pair equal to or slightly longer than head length and nasal pair longer than head length. Upper jaw is elongated and projecting beyond the lower jaw. Dorsal fin originates anterior to pelvic fin, but the adipose dorsal fin is vestigial or absent. Pectoral fin spine extends to the base of dorsal spine. Body is greenish-silvery on back; a pale golden stripe along the lateral line ending in a dusky spot at base of caudal fin. There is a black spot at nape in front of dorsal fin.

D. I, 5-6; P. 1/7; V. 6; A. 33-46.

Habitat

Freshwater to brackish water dwelling; demersal and amphidromous.

Distribution

Distributed mainly in Asia: Pakistan, India, Bangladesh, Nepal and Myanmar. In India, this species is distributed in the eastern Himalayan and peninsular region (up to Cauvery river system). It is abundant in the Gangetic river system and the tidal freshwater stretch of Hooghly estuary.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported as new record from Chilika by ICAR-CIFRI which was collected from northern sector near Sorana fish landing centre during March 2013 while undertaking inventory survey for fish diversity under World Bank funded ICAR-CIFRI/CDA-ICZMP Consultancy Project. The species is locally known as **Baijhali / Baigujuri** in Odia. The freshwater fish species recorded for the first time from Chilika, occurs in Northern sector caught through screen barrier nets (**Khanda**). Due to its bright and unique coloration, it is a popular fish in ornamental fish trade.

Silonia silondia (Hamilton, 1822)

Silond catfish

Odia: Zeelung / Bachua

Systematic accounts

Class : Actinopterygii
Order : Siluriformes
Family : Schilbeidae
Genus : *Silonia*
Species : *Silonia silondia*



Diagnostic features

Body of the fish is elongated and laterally compressed. It has a compressed head with obtusely rounded snout. Teeth on jaws are enlarged, canines projecting outside the mouth opening, but teeth on palate are villiform. Two pairs of barbells present. Maxillary barbells are small, not reaching beyond orbit and mandibular barbells are vestigial. Lateral line is complete but indistinct. The fish has bluish back, silvery sides and grey fins.

D. I, 7+adipose; A. 40-45; P. I, 11-13; V. 6.

Habitat

Inhabits fresh and brackish water environments; demersal and perform amphidromous migration.

Distribution

The species is restricted its distribution to Asia: Pakistan, India, Bangladesh, Nepal and probably Myanmar.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Roy and Sahoo (1957). The species is locally known as **Zeelung / Bachua** in Odia. Very rarely occurring fish species from the lagoon.

Pangasius pangasius (Hamilton, 1822)

Pangas catfish
Odia: Jalanga

Systematic accounts

Class : Actinopterygii
Order : Siluriformes
Family : Pangasiidae
Genus : *Pangasius*
Species : *Pangasius pangasius*



Diagnostic features

Dorsal spines (total): 2; Dorsal soft rays (total): 7; Anal spines: 0; Anal soft rays: 29 - 32. Eye small, its diameter more than 7 times in head length (in 18 cm long specimens); bright yellow caudal fin in adults; maxillary barbel extends to gill aperture; 23-28 gill rakers on first arch. Maximum length recorded 300.0cm (SL) (Davidson, 1975).

Habitat

Freshwater; brackish; benthopelagic.

Distribution

Asia: large rivers of Indian subcontinent and Myanmar (Ganges, Krishna?, Godavari, Irrawaddy). Current regional distribution in India: Andhra Pradesh, Uttar Pradesh & Odisha. Widely introduced in its geographical range for aquaculture. Reports from Thailand, Malaysia and Indonesia are based on misidentifications.

IUCN Status

Least Concern (LC); CR/N (CAMP, 1998)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916). The species is locally known as **Jalanga** in Odia. In Chilika Lake, this carnivorous fish occurs only in northern sector, particularly the northern part of the northern sector. It is mostly caught by **Khandas** and gill nets and the potential landing centres are Kalupadaghat, Bhusandapur and Jaguleipadara in northern sector. The fish has ornamental value whose juveniles are generally used as freshwater aquarium fish. The fish is highly commercial being sold at an average unit price of Rs.120/kg. The population of this fish in Chilika has been declined and appearing in the commercial catches rarely. Due to its low catch, the landing is not separately estimated and included in the miscellaneous group of freshwater fishes.

Clarias magur (Hamilton, 1822)

Walking catfish

Odia: Magura

Systematic accounts

Class : Actinopterygii
Order : Siluriformes
Family : Clariidae
Genus : *Clarias*
Species : *Clarias magur*



Diagnostic features

Clarias magur, the walking catfish, has an elongate body that is broader at the head, tapering toward the tail. Body compressed posteriorly. Upper jaw a little projecting. Spine of pectoral fins rough on its outer edge and serrated on its inner edge. Occipital process more or less triangular, its length about 2 times in its width ; distance between dorsal and occipital process 4-5.5 times in distance from tip of snout to end of occipital process . Genital papilla in males is elongated and pointed. It is readily recognizable as a catfish with four pairs of barbels (whiskers) and fleshy, papillated lips. The teeth are villiform (small and bristle-like), occurring in patches on the jaw and palate. The eyes are small. The pectoral spines are large and robust and finely serrate along the margins. There is no dorsal spine. The dorsal fin is continuous and extends along the back two-thirds of the length of the body. The dorsal, caudal, and anal fins together form a near-continuous margin; the caudal fin is rounded and not eel-like though it is occasionally fused with the other fins. The complete spine/ray count is: Dorsal = 62-72; Anal = 45-58; Pectoral = I + 8-11. Color is drab but variable among individuals: olive to dark brown or purple to black on the dorsal surface; pale to white on the ventral surface; and blue-green on the sides. The fins are grey-green and small white specks are present on the back half of the body. An albino variant occurs naturally and has been commercialized for the aquarium hobby trade.

Habitat

Freshwater (rivers, ponds, swamps, reservoirs, canals etc) and also brackishwater, demersal, potamodromous.

Distribution

INDEMIC to India. Distributed throughout India. Southeast Asian Countries; Bangladesh; Philippines etc.

IUCN Status

Endangered (EN)

Other information – Chilika specific

The species was first reported from Chilika by Menon (1961) which was collected from the lake near Hatabaradi. The species is locally known as **Magura** in Odia. Frequently found in the northern sector of the lake, regularly being landed at Bhusandapur, Kalupada Mangalajodi, Jaguleipadara and Jagannathpur fish landing centres. The fish is occasionally landed at Balugaon in the central sector. The fish has very good commercial value as it is highly in demand within the state and in the adjoining states (West Bengal and Andhra Pradesh). The fish is regularly caught from the lake and landed at the landing centres bordering the northern sector which are mostly sent to Andhra Pradesh and West Bengal in live condition packed in GI containers with water. The average monthly catch is about 0.4 tonnes and average annual landings is around 4.5 tonnes (2016-17). The fish is sold at an average unit price of Rs. 225/-kg at landing centre. Generally caught through gill net and hook & line; breeds in monsoon season.

Heteropneustes fossilis (Bloch, 1794)

Asian stinging catfish

Odia: Singhi

Systematic accounts

Class : Actinopterygii
Order : Siluriformes
Family : Heteropneustidae
Genus : *Heteropneustes*
Species : *Heteropneustes fossilis*



Diagnostic features

Body elongate and compressed. Depressed head covered with osseous plate at top and sides of the head. Barbels four pairs in which maxillary pairs extend to end of pectorals or to commencement to anal and mandibular pairs extend up to base of pelvics but nasal pair considerably shorter than mandibular pairs. Outstanding anatomical feature is a pair of accessory respiratory organ (air sacs) for which it is also called air sac catfish which extends backwards from the gill-chamber on either side of vertebral column. Caudal rounded. Maximum length recorded 30cm.

Habitat

Freshwater, brackish, demersal. *H. fossilis* is found mainly in ponds, ditches, swamps, and marshes, but sometimes occurs in muddy rivers. It can tolerate slightly brackish water. It is omnivorous. This species breeds in confined waters during the monsoon months, but can breed in ponds, derelict ponds, and ditches when sufficient rain water accumulates. It is in great demand due to its medicinal value.

Distribution

Occurs throughout Indian plains and the Andamans. Pakistan, Sri Lanka, Myanmar, Bhutan, Bangladesh, Thailand and Laos.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Menon (1961) which was collected from Rambha Bay. The species is locally known as **Singhi** in Odia. In Chilika Lake, the fish is frequently found in the northern sector, particularly in the northern part of northern sector and occasionally in the central sectors of the lake. The fish is landed in more quantities at Jaganathpur fishing / landing centre under Brhamagiri Block in northern sector, Jaguleipadara landing centre under Kanasa block in northern sector, Bhusandapur, Mangalajodi, Kalupadaghat and Sorana landing centres in northern sector. The fish caught from Chilika Lake is mostly transported to West Bengal and Andhra Pradesh in live condition packed in GI container with perforated lid. The average daily and monthly landings in Chilika are respectively 0.09 and 1.10 tonnes. Being commercially important, the unit price for the fish at the landing centres in Chilika is Rs. 200/-kg. The species is also farmed and found in the aquarium trade. Generally caught in **Khandas** and hook & line.

Arius arius (Hamilton, 1822)

Threadfin sea catfish

Odia: Singada

Systematic accounts

Class : Actinopterygii
Order : Siluriformes
Family : Ariidae
Genus : *Arius*
Species : *Arius arius*



Diagnostic features

The fish has elongated and robust body with depressed head. Head shield is smooth, anteriorly with a series of granules and rugae posteriorly. Median fontanelle groove on head is not reaching base of supra-occipital process. It has a blunt snout and large eyes. Palatine teeth patch has horn like conical projections. Lateral line is bifurcating at the base of tail. Gill rakers present on the hind aspect of all gill arches. Three pairs of barbules present around mouth. Tip of dorsal fin prolonged into a filament. Adipose dorsal fin is small with black spot. The caudal peduncle is moderately deep, 1.5 to 2.1 in its body depth. Body is silvery steel with sides and below lighter.

D. I, 7+ adipose; A. 20-21; P. I, 9; V. 6.

Habitat

The fish is a marine to brackish water amphidromous species. A demersal species that inhabits in estuaries, lagoons and lakes.

Distribution

It is distributed in Indo-west Pacific; in coasts of India, Bangladesh, Myanmar, Singapore and South China.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first recorded from Chilika by Chaudhuri (1916) which was collected from Satapada area. The catfish species is locally known as **Singada**. It is a resident species and occurs throughout the lagoon. Its major breeding ground is Nalabana area in the central sector. Maximum length caught from the lagoon is 40 cm. Size at maturity was estimated at 238 mm (Jhingran and Natarajan, 1966). Its Average annual yield is 177.81 tonnes and average annual catch valuation is Rs. 84.22 lakhs. It is a commercially important species; consumed locally; sold @ Rs 50-70/kg. Fishing gears used for targeting this species are gill net, screen barrier (**Khanda**), drag net (**bhida jal**) and hook & line. Average sectoral landings are of the order (Central sector > Northern sector > Southern sector > Outer channel).

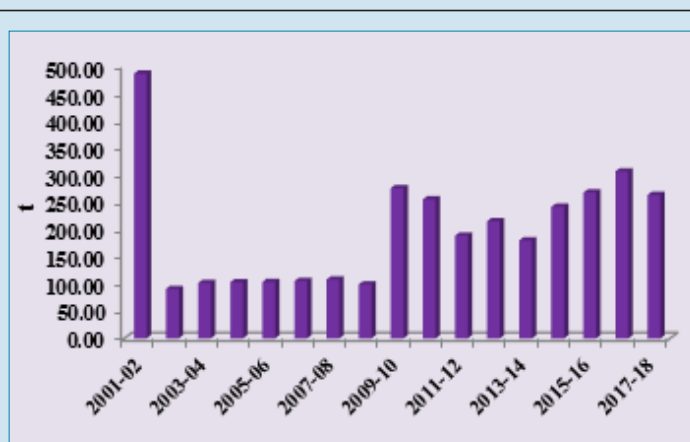


Fig H Annual landings of *A. arius* during 2001-02 to 2017-18

Jhingran and Natarajan (1966) studied the fishery and breeding habits of the fish from Chilika Lake which indicated that the fish breeds in the northern and central sectors of the lake during June-September with July as peak month. The fish feeds on lamellibranchs, prawns, annelids, higher plant matter, fish and crabs, detritus etc.

Nemapteryx caelata (Valenciennes, 1840)

Engraved catfish

Odia: Luni Kantia

Systematic accounts

Class : Actinopterygii
Order : Siluriformes
Family : Ariidae
Genus : *Nemapteryx*
Species : *Nemapteryx caelata*



Diagnostic features

Robust and elongate body with concave head profile. Mouth is sub-terminal in position. Three pairs of barbells are present out of which the maxillary barbells extend beyond the pectoral fin. Dorsal spines: 1; Dorsal soft rays: 7; Anal soft rays: 16-30. Head shield strongly rugose and granulated; supra-occipital process short, about as long as broad, with median keel, hind end concave. Dorsal and pectoral fins with very strong, thick, and coarsely granulated spine; tip of dorsal spine produced into a long filament; adipose fin rather large. Body with metallic blue luster. Tip of dorsal fin blackish, its filament black; pectoral, pelvic and anal fins dusky; caudal fin paler; adipose fin either entirely black or bearing a large black blotch on upper half. Teeth on roof of mouth.

Habitat

Marine; brackish; demersal; amphidromous.

Distribution

Indo-Pacific: east and west coast of India, Sri Lanka, Pakistan, Bangladesh, Myanmar, Thailand, the Indo-Australian archipelago but not in the Philippines or Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Satapathy and Panda (2009) which was collected from Satapada area in the outer channel. The species is locally known as **Luni Kantia** in Odia, caught in the outer channel mostly during post-winter and summer when higher salinity prevails in the outer channel. Its catch is insignificant and is mixed with the miscellaneous group of marine, brackish water fishes. A tasty catfish, marketed and consumed fresh. Caught in barrier nets and hook and lines. Average selling price in Chilika is Rs.80/kg. Distribution in Chilika mostly restricted to outer channel sector between Magarmukh and Motto fishing village (northern end of outer channel).

Osteogeneiosus militaris (Linnaeus, 1758)

Soldier catfish

Odia: Sunga

Systematic accounts

Class : Actinopterygii

Order : Siluriformes

Family : Ariidae

Genus : *Osteogeneiosus*

Species : *Osteogeneiosus militaris*



Diagnostic features

The fish has a moderately elongated body with depressed head. Head shield is rather smooth. The mouth is moderate with one pair of stiff bony maxillary barbells present, which are longer than head. Teeth on the palate are in two somewhat crescentic patches converging anteriorly. Dorsal spine is as long as the head excluding the snout. Pectoral spines are somewhat stronger than that of the dorsal and the pectoral fin reaches about half way to the ventral. Fin spines are strong and serrated. Body is dark blue with silvery reflections with silvery white belly. Fins are grayish white, minute black spots. Tips of dorsal and adipose fins are dark blue.

D. I, 7+ adipose; A. 19-22; P. I, 10-11; V. 6.

Habitat

It is a marine; freshwater and brackish water dwelling species; demersal in habit and potamodromous in migration.

Distribution

It is distributed in Indo-West Pacific: West coast of India to Bangladesh, Myanmar, Singapore, Malacca, Indonesia, Brunei Darussalam, Malaysia and Pakistan.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from central sector (Parikud area) of the lake. The species is locally known as **Sunga** in Odia, it is a resident species and occurs throughout the lagoon. Jhingran and Natarajan (1966) studied the fishery and breeding habits of the fish from Chilika Lake which indicated that the fish breeds in the northern and central sector (Nalabana area) of the lake during January-June, March and April being the peak months. The species shows buccal equivocation with the male tending the developing eggs. The minimum size at maturity as reported by Jhingran and Natarajan (1966) was 265mm. The fish appears endemic to the lake and no sea-lake migration was perceptible (Jhingran and Natarajan, 1966). The fish is a total spawner and has very large sized ova. Maximum length caught from the lagoon is 35 cm. The average sectoral landings of the order (Central sector > Northern sector > Outer channel > Southern sector). Its average annual yield is 35.05 tonnes and average annual catch valuation is Rs. 18.11 lakhs. It is sold @ 60-80/kg, the fish is commercially important and is consumed locally. It is generally caught by seine nets, gill nets and barrier nets (**Khanda**).

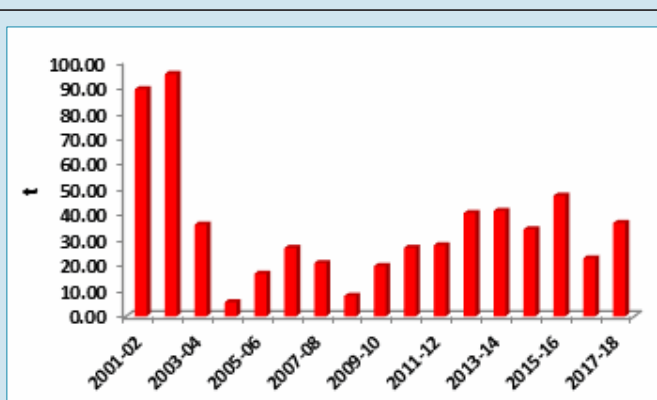


Fig I Annual landings of *O. militaris* during 2001-02 to 2017-18

Plotosus canius (Hamilton, 1822)

Grey eel-catfish

Odia: Kaunda / Nali

Systematic accounts

Class : Actinopterygii

Order : Siluriformes

Family : Plotosidae

Genus : *Plotosus*

Species : *Plotosus canius*



Diagnostic features

The fish has an eel like plain dusky-brown body with a black dorsal fin tip. Mouth is with thick lips and four pair of barbells. The nasal barbells extend well beyond eyes. Caudal fin of the species is pointed and confluent with dorsal and anal fins. It is dark olive green over head and body but soiled creamy below. First dorsal and pectoral fins are dark. Shows banded pattern at night. Distinguished from adult *Plotosus lineatus* by its long barbels on the nostrils that can reach pass the eyes.

D. I, 4; 130-140; A. 106-130; P. I, 9-13; V. 10-13

Habitat

It is marine to freshwater in occurrence; demersal in nature and amphidromous in migration

Distribution

It is distributed in Indo-West Pacific: west and south coasts of India and off Sri Lanka eastward along the coasts of Bangladesh and Myanmar, through the Indo-Australian Archipelago and the Philippines as far as Papua New Guinea.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Kalupadaghat area. The species is locally known as **Kaunda** or **Nali** in Odia. This is a commercially important resident species, locally well consumed, good food fish. Maximum length caught from the lagoon is 90 cm. The fishery and breeding of this fish in Chilika Lake was reported by Jhingran and Natarajan (1966). It is known to breed in the lagoon during May-September, July being the peak month. The minimum size at maturity of female fish was reported to be 400mm (Jhingran and Natarajan, 1966). The average sectoral landings of the fish was in the order (Northern sector > Central sector > Southern sector > Outer channel). Distributed throughout the lagoon, it is generally caught through hook and line and gill net. Sold @ Rs 40-80/- per kg. Its average annual yield is 514.64 tonnes and average annual catch valuation is Rs.204.28 lakhs. Its venomous spine causes potential threat to humans. Year wise annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig J.

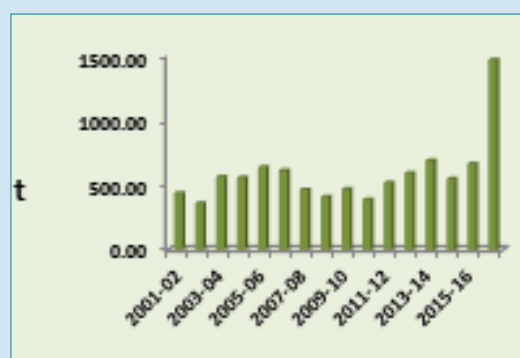


Fig J Annual landings of *P. canius* (Kaunda) during 2001-02 to 2016-17

Planiliza macrolepis (Smith, 1846)

Largescale mullet

Odia: Dangala

Systematic accounts

Class : Actinopterygii
Order : Mugiliformes
Family : Mugilidae
Genus : *Planiliza*
Species : *Planiliza macrolepis*



Diagnostic features

The fish has moderately robust body and a wide head, 26-28 % in standard length. Its rudimentary adipose eye lids are either present or completely absent. The pectoral fin has golden base and a dark spot with rudimentary axillary scale; the pectoral scale when folded forward reaches about to front of eye. Caudal fin is slightly forked. Body is dark greenish above, silvery on sides and belly and fins are dusky along margins. Pelvic fins do not extend beyond vertical from base of third spine of first dorsal fin. Twelve scales present on transverse row.

D. IV+I, 8; A. III, 9; P. 16; V. I, 5; Ll. 31-34.

Habitat

It is a species ranging from marine to freshwater, demersal and catadromous in habit.

Distribution

The fish species is distributed in Indo-Pacific: east coast of Africa, including Madagascar, Seychelles, Rodriguez; north to Sri Lanka and India (except Red Sea, Persian Gulf and Bengal), Andaman and Nicobar Islands, east to Indonesia, China, the Philippines, Japan, Marshall and Tuamotu islands, Melanesia and Polynesia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansingani (1954). The species is locally known as **Dangala** in Odia. The species is migratory in nature (catadromous) which migrates to sea for spawning during November-January. January is the peak month of migration. This species is also vulnerable for capture in the inshore areas of Bay of Bengal adjoining the lake during the said period. The fish occurs throughout the lagoon. Maximum length caught from the lagoon is 61 cm. Its average annual yield is 45.51 tonnes and average annual catch valuation is Rs.88.96 lakhs. The price varies with size and is sold @ Rs 150-170/- (< 0.5 kg) and Rs 200-250/- (> 0.5 kg). It is a highly commercial species with local and exportable demand. Fishing gears used for the species are gill net, screen barriers (**Khanda**), cast nets, stick drag nets etc. It has an average sectoral landings of the order (Northern sector > Central sector > Southern sector > Outer channel). Year wise annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig K.

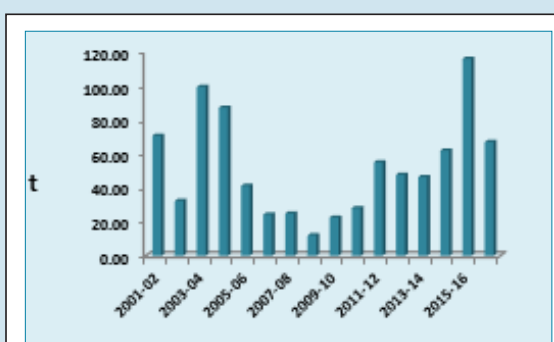


Fig K Annual landings of *P. macrolepis* (Dangala) during 2001-02 to 2016-17

Fisheries and population of the fish in Chilika was studied during 1957-65 by Jhingran and Natarajan (1966 & 1969). The fish has a restricted spawning period in Chilika (November-January) (Natarajan and Pattnaik, 1970 & 1972). Tagging experiment on the fish was conducted by Jhingran and Mishra (1962) and Mohanty (2013). Growth, mortality and stock status of the fish was studied by Panda *et al.* (2018) and the stock assessment study was conducted by ICAR-CIFRI (2017) under ICAR-CIFRI/CDA-ICZMP Consultancy Research Project which indicated decline in mean size of the fish below size at maturity.

Planiliza melinopterus (Valenciennes, 1836)

Otomebora mullet

Odia: Menji

Systematic accounts

Class : Actinopterygii
Order : Mugiliformes
Family : Mugilidae
Genus : *Planiliza*
Species : *Planiliza melinopterus*



Diagnostic features

The fish has moderately robust body and a wide head, 26-28 % in standard length. Adipose eyelid covers 1/3rd of iris. No teeth present in lower jaw but the tongue is toothed. Pectoral axillary scale is absent. First dorsal fin is inserted nearer caudal fin base than to tip of snout. Dorsal spines are strong; second dorsal fin origin on vertical through middle of anal fin base. Body colour is greenish-brown above, silvery below and all fins are dusky. The species differs from its related ones with lesser number of transverse row scales, i.e. 9 or 10 unlike *C. macrolepis* with 12.

D. IV+I, 8; A. III, 9; P. 15; V. I, 5; Ls. 26-31.

Habitat

The fish is marine, freshwater and brackish water dwelling. Usually reef-associated and catadromous in migration.

Distribution

It is distributed in Indo-Pacific: East Africa to the Marquesan Islands, north to the Philippines and the South China Sea, south to Tonga and tropical Australia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Rama Rao (1995). The species is locally known as **Menji**, found throughout the lagoon. It is an economically important species, sold at Rs. 70-100/per kg, consumed locally as well as traded outside the state. It is caught using gill nets and Screen barrier (**Khanda**) in the lagoon. It is a migratory (catadromous) fish undertake seaward migration during winter season. The average annual landing of this smaller mullet has been estimated at 0.08 t (%).

Chelon parsia (Hamilton, 1822)

Goldspot mullet

Odia: Parsi Soradi

Systematic accounts

Class : Actinopterygii
Order : Mugiliformes
Family : Mugilidae
Genus : *Chelon*
Species : *Chelon parsia*



Diagnostic features

The fish has a moderately robust body. Head moderately wide, flattened on top with depressed snout. Adipose eye lid covers most of the posterior iris. Lips are thin; lower lip with symphysial knob. The first dorsal commences midway between the snout and the base of the caudal fin. Its first dorsal spines are not very strong and are of about the same length and equal the length of the head behind the posterior third of the orbit. Pectoral axillary scale is rudimentary or absent. Caudal fin is slightly forked. Body is greenish-brown. Flanks and belly are white to silvery. A golden spot on upper portion of operculum is present. Edge of the dorsal fin is dusky. Caudal fin base is yellowish. The fish is distinguished from its related species with 11 transverse scale rows.

D. IV+I, 8; A. III, 9; P. 15; V. 15; Ls. 31-36.

Habitat

It is a fish species widespread in Indo-Pacific occurring in marine, brackish and freshwater environment. It has a catadromous nature and is found in shallow coastal waters, estuaries, lagoons and also enters tidal rivers.

Distribution

Indian Ocean: found along the coasts of Pakistan, India, Sri Lanka and Andaman Islands.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Menon (1961). It is locally named ***Parsi soradi*** which is a migratory species (catadromous) and distributed throughout the lagoon. The maximum length recorded of the species from the lagoon is 31cm. It is a commercially important good food fish. Sold @ Rs 150-200/kg, the average annual yield is 7.01 tonnes and fetches Rs. 6.31 Lakhs on an average annually. It forms 0.81% in the average annual mullet landings of 869.4 t. It is consumed fresh as well as dried salt and traded to outside the state. Fishing gear used are gill net and screen barrier (***Khanda***).

Fisheries and population of the fish in Chilika was studied during 1957-65 by Jhingran and Natarajan (1966 & 1969). Growth, mortality and stock status of *C. parsia* from Chilika Lake have been studied by Panda *et al.* (2018).

Chelon planiceps (Valenciennes, 1836)

Tade grey mullet

Odia: Tuadi

Systematic accounts

Class : Actinopterygii
Order : Mugiliformes
Family : Mugilidae
Genus : *Chelon*
Species : *Chelon planiceps*



Diagnostic features

Body slender, elongate, head wide, much depressed and pointed. First dorsal fin origin nearer to snout tip than to caudal fin base. Second dorsal fin origin at vertical through posterior half of anal fin base. Scale in the lateral series in 30-35. Pectoral axillary scale rudimentary or absent. Adipose tissue covering most of eye. 9 soft rays. Dorsal spines : 5; Dorsal soft rays : 8; Anal spines: 3.

Habitat

Coastal waters, most common in Indian coastal waters, but enters estuaries and backwaters. Feed on small algae, diatoms, and other organic matter, both living and detrital, taken in with sand and mud, demersal; catadromous.

Distribution

Indo-Pacific: Red Sea, Socotra to the west coast of India, Sri Lanka and extending to the east coast of India, Bangladesh, Andamans, Malaysia, China, the Marianas and Guam, the Philippines, and Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1917) which was collected from Nalabana area. The species is locally known as **Tuadi** in Odia. Average annual yield in Chilika 65.44 tonnes and its MSY was estimated at 64.19 tonnes (Panda, 2013). The fish grows to maximum up to 300 mm in total length in 4+ years (estimated life span). Peak spawning season during July-October. Panda (2013) studies the population parameters, feeding and breeding biology of the species. Average selling price in Chilika is Rs.100/kg. A tasty fish, marketed fresh mostly in local markets and often exported to Howrah fresh fish market in West Bengal.

Growth, mortality and stock status of this fish from Chilika Lake was studied by Panda *et al.* (2018).

Planiliza subviridis (Valenciennes, 1836)

Greenback mullet

Odia: Menji

Systematic accounts

Class : Actinopterygii
Order : Mugiliformes
Family : Mugilidae
Genus : *Planiliza*
Species : *Planiliza subviridis*



Diagnostic features

Dorsal spines (total): 4 - 5; Dorsal soft rays (total): 8-9; Anal spines: 3; Anal soft rays: 9. Dark greenish dorsally, brownish over head, white ventrally; 3-6 indistinct, dark stripes along upper rows of scales; greyish dorsal fins; caudal fin bluish with black margin. Yellowish pectoral fin and may have a blue spot at fin origin. Pectoral axillary scale rudimentary or absent. Adipose tissue covering most of eye. Preorbital bone narrow not filling space between mouth and eye. Maximum length recorded 40.0cm (SL) (Harrison and Senou, 1997).

Habitat

Marine; freshwater; brackish; demersal; catadromous.

Distribution

Indo-Pacific: Persian Gulf and Red Sea to Samoa, north to Japan. Collected at Natal, South Africa.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1917). This commercially important species is locally known as **Menji** in Odia. In Chilika Lake, the fish is distributed throughout the lake but more abundant in central sector. Highest landing takes place at Balugaon landing centre followed by Sorana and Kalupada. In southern sector, the fish caught in large number in **Khandas** near the confluence point of Palur canal in Palur Bay during winter season. The species being a catadromous fish migrate to the coastal waters from Chilika through outer channel and Palur canal for spawning. Annual landing of this smaller mullet was estimated at 56 tonnes during 2016-17. The fish is marketed locally and in the adjacent urban markets at an average unit price of Rs.100/kg.

Osteomugil cunnesius (Valenciennes, 1836)

Longarm mullet

Odia: Soradi

Systematic accounts

Class : Actinopterygii
Order : Mugiliformes
Family : Mugilidae
Genus : *Osteomugil*
Species : *Osteomugil cunnesius*



Diagnostic features

The fish species has a moderately robust body. Adipose eye lids are well developed. Maxilla is exposed when mouth is shut. First dorsal fin commences rather nearer the snout than the base of the caudal. 18 rows of scales are present between the snout and the base of the first dorsal fin. The 10th and 20th scale of the lateral line correspond with the origins of the two dorsal fins. Pectoral fins long, 86-97 % of head length reaching below origin of first dorsal fin with a long axillary scale. Second dorsal and anal fins are with black margins but the first dorsal is not. The axillary scale which is nearly half the length of fin and membranous scale with digitated hind margin distinguishes the species from related ones. Body is dark grey, flanks and ventral side silvery; a dark spot on base of pectoral fin.

D. IV+I, 8; A. III, 9; P. 15-16; V. I, 5; Ls. 30-35.

Habitat

It is a marine, fresh and brackish water species; demersal and catadromous in habit.

Distribution

The fish is distributed in Indo-West Pacific: south to South Africa; Seas of India to the Malaya Archipelago; Red Sea.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1917) which was collected from Satapada area. The species is locally known as **Soradi** in Odia, distributed throughout the lagoon. This is the only mullet species known to breed in the lagoon where as all other mullet species are catadromous and breed in the coastal waters. The species has an average sectoral landings of the order (Central sector > Outer channel > Northern sector > Southern sector). Maximum size recorded from the lake is 28.7 cm.

The species has an average annual yield of 134.11 tonnes and average annual catch valuation is Rs.225.45 lakhs. It is sold @ Rs 150-220/- kg. Commercially very important species having good food value, the species is consumed fresh as well as salt dried and traded to outside the state. It is caught using gill net and screen barrier. Increased annual landings have been recorded during 2007-08 onwards. Annual landings of this species during the post-restoration period (2001-02 to 2016-17) is depicted in Fig L.

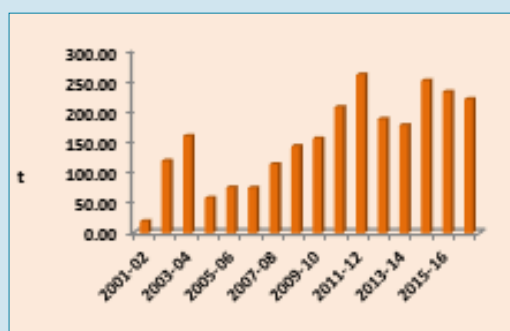


Fig L Annual landings of *M. cunnesius* (Soradi) during 2001-02 to 2016-17

Crenimugil seheli (Forsskal, 1775)

Bluespot mullet
Odia: Magi Menji

Systematic accounts

Class : Actinopterygii
Order : Mugiliformes
Family : Mugilidae
Genus : *Crenimugil*
Species : *Crenimugil seheli*



Diagnostic features

Dorsal spines (total): 4 - 5; Dorsal soft rays (total): 8-9; Anal spines: 3; Anal soft rays: 8 - 10. Bluish brown or green dorsally; flanks and abdomen silvery; dusky spots on upper row of scales, giving indistinct longitudinal stripes. Dorsal and upper lobe of caudal fin with dark-blue tip. Anal, pelvic, and pectoral fins dull yellow. Pectorals also with dark blue spot dorsally at origin. Pectoral-fin axil scale very long. Maximum length recorded 60.0 cm (TL) (Lieske and Myers, 1994).

Habitat

Marine; freshwater; brackish; reef-associated; catadromous.

Distribution

Indo-Pacific: Red Sea south to Transkei, South Africa and east to the Hawaiian and Marquesan islands, north to southern Japan, south to New Caledonia and Norfolk Island and Tuamotu Islands.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansinghani (1954). The species is locally known as **Magi menji** in Odia. In Chilika Lake, the fish is found throughout the lake, more abundant in central and southern sector. It is a catadromous species, undertakes seaward spawning migration during winter season. Annual landing of total smaller mullets (Menji group) during the year 2016-17 was estimated at 280.99 tonnes in which the catch of this smaller mullet was about 82 tonnes and the estimated catch valuation was Rs.65.6 lakhs. It is one of the most liked commercially important mullet species consumed locally and also traded outside the state.

Mugil cephalus Linnaeus, 1758

Flathead mullet

Odia: Chilika Khainga

Systematic accounts

Class : Actinopterygii
Order : Mugiliformes
Family : Mugilidae
Genus : *Mugil*
Species : *Mugil cephalus*



Diagnostic features

Body of the fish is stout, cylindrical in cross-section, robust and slightly compressed. Head is broad and flattened on top. Upper lip is thin and without papillae; armed with 1-6 rows of fine teeth. Hind end of upper jaw reaching a vertical line from anterior eye margin. Maxillary pad is not visible below corner of mouth when closed. Adipose eyelid is well developed and covering entire eye or pupil. Origin of 1st dorsal fin is nearer to snout tip than to caudal-fin base. Pectoral fin is short, not reaching dorsal fin origin. 14-15 scale rows between origins of dorsal and pelvic fins. The first and second dorsal fins commence above the 12th and 25th scales of the lateral line. Caudal fin is forked. Body is olive-brown above, silvery on sides shading to white below; 6-7 indistinct longitudinal brown bars down flanks.

D. IV+I, 6-8; A. III, 8; P. 16-17; V. I, 5; Ls. 38-42.

Habitat

The fish dwells in marine, brackish as well as freshwater region; benthopelagic in habit and catadromous in migration.

Distribution

Its distribution is cosmopolitan in coastal waters of the tropical, subtropical and temperate zones of all seas.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1917) which was collected from outer channel. The species is locally known as ***Khainga*** in Odia. The fish is migratory (catadromous) in nature, undertakes seaward migration for spawning during October-January and occurs throughout the lagoon. Its maximum length in the lagoon is 71.2 cm. Its average annual yield has been estimated at 368.77 tonnes. Average unit selling price at landing centre is Rs 180/- (up to 0.5 kg), Rs 240/- (0.5 to 1 kg), Rs 280/- (> 1 kg). It has an average annual catch valuation of Rs. 886.64 lakhs. Commercially very important species; good food fish. It is consumed fresh as well as salt dried and traded to outside the state. Fishing gears used are gill nets or screen barrier. Average sectoral landings are of the order (Central sector > Northern sector > Southern sector > Outer channel sector). Year wise annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig M.

Jhingran and Natarajan (1969) studied the fisheries and populations of *Mugil cephalus* in Chilika Lake during the period 1957-65. Feeding biology of the fish was studied by Panda (2013) and the biology was studied by Pattnaik (1966). Preliminary observations on its induce spawning was reported by Mohanty (1971) and the experiments on induced feeding of the fish was reported by Krishnan *et al.* (1996). Jhingran (1958) observed the seaward migration of the fish

in Chilika. Tagging experiment on the fish in Chilika was conducted by Jhingran and Mishra (1962) and by Mohanty (2013) also conducted the tagging experiment on the fish which resulted in 19.3% recovery. Stock assessment on the fish in Chilika was done by ICAR-CIFRI (2017) under ICAR-CIFRI/ CDA-ICZMP Consultancy Research Project. The stock assessment findings indicated that the stock is overexploited which is suffering from growth over fishing and the spawning stock biomass (17.36%) of the virgin stock biomass is below the sustainable level of at least 20-25% of SSB in population. Growth, mortality and stock status of the fish in Chilika was studied by Panda *et al.* (2018).

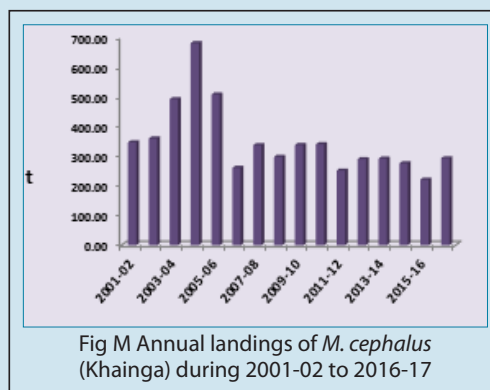


Fig M Annual landings of *M. cephalus* (Khainga) during 2001-02 to 2016-17

Rhinomugil corsula (Hamilton, 1822)

Corsula mullet

Odia: Kekenda

Systematic accounts

Class : Actinopterygii
Order : Mugiliformes
Family : Mugilidae
Genus : *Rhinomugil*
Species : *Rhinomugil corsula*



Diagnostic features

Body is elongated, stout and compressed in shape with rounded abdomen. The head profile is moderate and concave between eyes. Nostrils are at level of eye center. Snout is flat, short and overhanging. Mouth is distinctly ventral and protrusible. Jaws are equal, teeth indistinct and anterior edge of pre orbit without a spine. Eyes are prominent, bulging without adipose eye lids, placed in line with dorsal profile of head, in anterior part of head. Body dull olive-brown, silvery below; fins with golden tinge. Caudal fin is emarginated.

D. IV+I, 8; A. III, 9; P. 16; V. I, 5; Ls. 48-52.

Habitat

It is a freshwater to brackish water dwelling pelagic species.

Distribution

The distribution ranges in Asia: India, Bangladesh, Nepal and Myanmar.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1917) which was collected from Kalupadaghat. The species is locally known as **Kekenda** in Odia and occurs majorly in northern sector between Kalupadaghat and river confluence point. The species is known to breed in the rivers and ascends into the freshwater zone of northern sector of Chilika, forms a minor fishery during monsoon season. This freshwater mullet has good consumers preference and marketed fresh locally. This is very fast swimmer fish generally caught by gill nets and barrier net Khandas. The fish has two population stocks, one of the lagoon and the other of the river. Its average annual yield is 22.31 tonnes and average annual catch valuation is 17.97 lakhs INR. It is sold at 80-120/- per kg and has a good food value. An economically important species is caught through gill nets and screen barrier.

Valamugil speigleri (Bleeker, 1858)

Speigler's grey mullet

Odia: Chanra

Systematic accounts

Class : Actinopterygii
Order : Mugiliformes
Family : Mugilidae
Genus : *Valamugil*
Species : *Valamugil speigleri*



Diagnostic features

The fish has a moderately robust body. Adipose eye lid is well developed. First dorsal fin with black margin, the other fins are dusky. Pectoral fin is slightly shorter than head length. A long pointed axillary scale is present in the pectoral fin, one also at first dorsal and ventral fins. Twenty two rows of scales between snout and base of the first dorsal fin present. The first and second dorsal fins arise above the 12th and 25th scales of the lateral line. Body is dark green above, other fins dusky. A black spot at axil of pectoral fins is present.

D. IV+I, 8; A. III, 9; P. 16-17; V. I, 5; Ls. 37-40.

Habitat

The fish is found to occur in marine; freshwater as well as brackish region; demersal in habit and catadromous in migration.

Distribution

Indo-West Pacific: Pakistan through Southeast Asia to New Guinea and also extending to the Chinese coast.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1917) collected from Satapada area. The species is locally known as **Chanra** in Odia. This smaller mullet fish occurs throughout the lagoon but more commonly in central, southern and outer channel sectors. It is a migratory species and sold @ Rs 100-150/- kg in landing centers. Commercially important species, good food fish, consumed fresh locally as well as salt dried. Fishing gears used are gill net, Screen barrier. Along with other related species, the fish has average annual landing of 285.96 t from the lagoon and its annual average catch valuation is 229.21 lakhs INR. Length weight relationship of the fish was studied by Karna *et al.* (2011).

Atherinomorus duodecimalis (Valenciennes, 1835)

Tropical silverside
Odia: **Lamba lunichauli**

Systematic accounts

Class : Actinopterygii
Order : Atheriniformes
Family : Atherinidae
Genus : *Atherinomorus*
Species : *Atherinomorus duodecimalis*



Diagnostic features

Body is small and robust. Snout is round and blunt. Teeth on jaws are small; dentary sloping backwards and upwards and with a distinct tubercle like elevation at its distal end. The distal end of upper jaw extends slightly backward beyond vertical through anterior border of orbit. The anus is 2 to 4 scales in front of the pelvic fin tips, rarely more than 3 scales. Lateral scale count 33-38. Lateral process of premaxilla broad and flat. Body is blue-green and translucent. Head, base of fin, midlateral stripes silvery. Rows of spots below midlateral band present.

D. IV-VI+I, 9-10; A.I, 12-13; P. 14-17; V. I, 5; GR. 21-25.

Habitat

The fish is a marine or brackish water species, demersal and oceanodromous in habit; occurs in shallow coastal area, mangroves of estuaries and backwaters.

Distribution

It is widely distributed in Indo-West pacific.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first recorded from Chilika by Mohanty *et al.* (2015) which was collected from outer channel sector near Rambhartia. The species is locally known as **Lamba lunichauli** in Odia. It does not form a fishery and its catch is mixed with the brackishwater miscellaneous group and consumed locally. The fish species is sold at Rs. 50-70/kg. It is generally caught by screen barrier nets (**Khanda**) and seine nets.

Atherinomorus lacunosus (Forster, 1801)

Wide-banded hardyhead silverside

Odia: Samudra Chauli

Systematic accounts

Class : Actinopterygii
Order : Atheriniformes
Family : Atherinidae
Genus : *Atherinomorus*
Species : *Atherinomorus lacunosus*



Diagnostic features

The body is sub-cylindrical and laterally compressed with moderately large head and eyes. It's lateral process of pre-maxilla is very low and wide with upper margin of the dentary almost flat distally. No distinct tubercle present at the posterior end. The posterior tip of the upper jaw reaches to or beyond a vertical through anterior margin of the pupil, sometimes reaching to the center of pupil. The lower gill arch has 18-24 rakers. The mid-lateral scale count is 40-44. The pectoral fin has a blackish blotch. Anus is near or usually behind the posterior tip of the pelvic fin. It has a blue green and translucent body with silvery parts of abdomen and head highly iridescent.

D. IV-VII+I, 8-11; A. I, 12-17; P. 14-16; V.I, 5; GR. 18-25.

Habitat

It's habitat ranges from marine to freshwater, usually found to be reef-associated.

Distribution

Has an Indo-Pacific distribution from East Africa to Tonga, north to southern Japan, and south to northern Australia; except Andaman Sea.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first recorded from Chilika by Mohanty *et al.* (2015) which was collected from outer channel sector. The species is locally known as **Samudra Chauli** in Odia, occurs rarely and its catch is mixed with the brackishwater miscellaneous group. The average selling price for the fish ranges from Rs.50-70/kg. People consumed locally as fresh and sun dried. The fish species is caught through seine nets and screen barriers (*Khanda jal*).

Aplocheilus panchax (Hamilton, 1822)

Blue panchax

Odia: Borgudi

Systematic accounts

Class : Actinopterygii
Order : Cyprinodontiformes
Family : Aplocheilidae
Genus : *Aplocheilus*
Species : *Aplocheilus panchax*



Diagnostic features

The fish has an elongated and compressed body with rounded abdomen. The head is conical but not sharp; upper surface of head and nape being broad and depressed. It has a spatulate snout with terminal mouth directed slightly upward. Eye diameter is equal to inter-orbital width. The anal fin is nearly square while the caudal is rounded. Body colour is greenish on the upper surface and dull white on sides and beneath. A large black spot present on lower third of dorsal fin.. Lateral line is absent.

D. 7-11; A. 15-17; P. 15; V. 6; Li. 31-34.

Habitat

The species occur in fresh and also in brackish water. It is a benthopelagic and non-migratory species.

Distribution

Distributed mainly in Asian countries like India, Pakistan, Bangladesh, Myanmar and the Indo-Malatsian archipelago. It is also reported from Nepal, Cambodia, Viet Nam and Sri Lanka.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first recorded from Chilika by Chaudhuri (1916) which was collected from Barkul area. The species is locally known as **Borgudi** in Odia. This is a rarely found fish species having attractive ornamental value and utilized in home aquarium. The fish is also utilized for biological mosquito control. It is caught using screen barriers (**Khanda**). Its potential breeding ground in Chilika is Nalabana area in the central sector of the lake. Perennial breeder but peaks in November to March. It feeds mainly on insects.

Strongylura strongylura (van Hasselt, 1823)

Spottail needlefish

Odia: Gania

Systematic accounts

Class : Actinopterygii
Order : Beloniformes
Family : Belonidae
Genus : *Strongylura*
Species : *Strongylura strongylura*



Diagnostic features

The fish species has an elongated and rounded body with small eyes having diameter nearly $\frac{1}{3}$ rd of postorbital part of head. Both jaws are elongated with sharp backwardly directed numerous teeth. Eyes are small. Dorsal fin originates above 4th ray on anal fin and has 12 soft rays. Anal fin has 15 soft rays. Unlike *S. leiura*, caudal fin is emarginated without a keel on caudal peduncle and there is a black spot at base of caudal fin.

D. 12-14; A. 15-18; P. 11; V. 6.

Habitat

It is a marine and brackish water species; pelagic-neritic in nature.

Distribution

Indo-West Pacific: Persian Gulf eastward along the coasts of Pakistan, India, and Sri Lanka, then extending to southern China, the Philippines, and northern Australia.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1917) which was collected from central sector near Balugaon. The species is locally known as **Gania** in Odia, the fish is distributed throughout the lagoon. It is a resident species and breeds in the lagoon. Its average annual yield is 269.55 tonnes valued at Rs.278.56 lakhs, sold @ Rs 70-150/- kg. It's an economically important species caught through seine nets and screen barriers. The major catch of this fish comes from a special type

of gill net called "*Gania jaal*". The fish species is known to breed during rainy and winter seasons in the lagoon. The species has an average sectoral landings of the order (Northern sector > Central sector > Southern sector > Outer channel sector). Year wise annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig N. Length-length and length-weight relationship of the fish was studied by Karna *et al.* (2017).

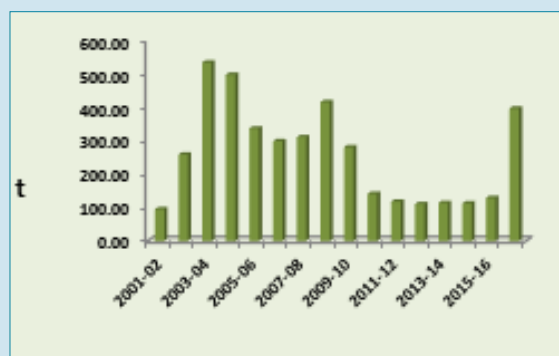


Fig N Annual landings of *S. strongylura* (Gania) during 2001-02 to 2016-17

Xenentodon cancila (Hamilton, 1822)

Freshwater garfish

Odia: Gangtudi

Systematic accounts

Class : Actinopterygii
Order : Beloniformes
Family : Belonidae
Genus : *Xenentodon*
Species : *Xenentodon cancila*



Diagnostic features

The fish species has an elongated and slightly rounded body with a deep median groove on head. Dorsal fin originates below the level of anal fin origin. The fish is greenish grey dorsally and lighter below. A dark edged silvery stripe from eyes to middle of caudal base is present. There are 4 to 5 lateral blotches between pectoral and anal fin bases.

D.15-18; A.16-18; P.11; V.6.

Habitat

It is fresh water to brackish water dwelling species.

Distribution

Pakistan to Indonesia

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968). The species is locally known as **Gangtudi** in Odia. The fish is mainly caught from northern sector of the lake which is dominated by freshwater condition followed by central sector. In southern and outer channel sector, its occurrence is negligible. It is a good food fish, consumed fresh locally and sold at Rs 80-100/- per kg. It's a commercially important species and caught with seine nets and screen barrier nets (Khanda).

Hemiramphus far (Forsskal, 1775)

Black-barred halfbeak

Odia: Saragara

Systematic accounts

Class : Actinopterygii
Order : Beloniformes
Family : Hemiramphidae
Genus : *Hemiramphus*
Species : *Hemiramphus far*



Diagnostic features

Elongate and compressed body. Upper jaw is short, triangular without scale and much broader than long. Two numbers of tricuspid teeth are present jaws. 32 gill-rakers are present on first arch, sinks on upper, and 23 on lower arm dorsal fin has 12 soft rays and anal fin has 10 soft rays, caudal fin is forked, lower lob is much longer is upper. Dorsal spines (total): 0; Dorsal soft rays (total): 12-15; Anal spines: 0; Anal soft rays: 10 - 12. Greatly prolonged, beak-like lower jaw; upper jaw short, preorbital ridge absent; pectoral fins short, not reaching past nasal pit when folded forward; with 3-9 (usually 4-6) vertical bars on the sides. Color bluish dorsally, silvery on sides. 36-41 predorsal scales. Lower lobe of caudal fin longer than upper lobe. Dorsal and anal fins located posteriorly.

Habitat

Marine; brackish; reef-associated; non-migratory. Generally occurs in areas rich in vegetation and sand flats. Adults feed mainly on sea grasses, to a lesser extent on green algae and diatoms

Distribution

Indo-West Pacific: Red Sea and East Africa to Samoa, north to the Ryukyu Islands, south to northern Australia and New Caledonia. Migrated to the eastern part of the Mediterranean Sea via the Suez Canal.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968). The species is locally known as **Gangtudi** in Odia. The fish is mainly caught from northern sector of the lake which is dominated by freshwater condition followed by central sector. In southern and outer channel sector, its occurrence is negligible. It is a good food fish, consumed fresh locally and sold at Rs 80-100/- per kg. It's a commercially important species and caught with seine nets and screen barrier nets (Khanda).

Hyporhamphus limbatus (Valenciennes, 1847)

Congaturi halfbeak

Odia: Saragara / Ekdonti

Systematic accounts

Class : Actinopterygii
Order : Beloniformes
Family : Hemiramphidae
Genus : *Hyporhamphus*
Species : *Hyporhamphus limbatus*



Diagnostic features

It has a narrow, elongated and compressed body. Greatly prolonged, beak-like lower jaw is equal to or longer than head length. Upper jaw is short, convex, triangular and scaly. Its width is 0.6-0.8 times in its length. Pre-orbital distance is 1.3-2.1 times in diameter of orbit and 0.75-1.2 times in length of upper jaw. Origin of pelvic fins is midway between front border of eye and base of caudal fin. Total number of gill rakers on first gill arch is 23-37. Caudal fin is emarginated and not strongly forked. Body colour is greenish at back and silvery at belly region. A brilliant silvery band along sides of body is present. Margin of dorsal and caudal fins are dusky.

D. 12-16; A. 13-16; P.10; V.6.

Habitat

It is a species that ranges from freshwater to marine habitats pelagic-neritic in habit and potamodromous in migration.

Distribution

It is distributed in Indo-West Pacific: Persian Gulf to China along the mainland coast of Asia

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1917) which was collected from Chilika Lake near Balugaon. The species is locally known as **Saragara / Ekdonti** in Odia which is distributed throughout the lagoon. It is a resident species, that breeds in the lagoon throughout the year, June-July being the peak breeding season and the average sectoral landings are of the order (Northern sector > Central sector > Southern sector > Outer channel).

The fish is commercially important sold at Rs. 50- 80/kg, its average annual yield is 134.13 tonnes and average annual catch valuation is Rs.83.41 lakhs. It has also ornamental value to be used in home aquarium. It is consumed locally and caught through seine net (Drag/ Bhida jala) and screen barrier (**Khanda**).

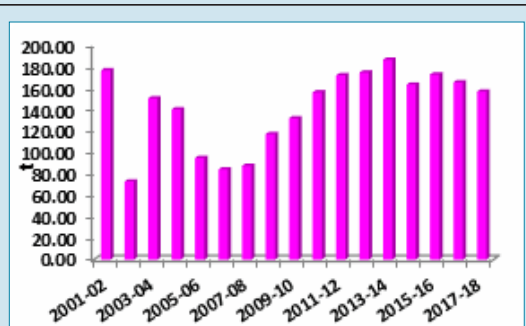


Fig O Annual landings of *H. limbatus* during 2001-02 to 2017-18

Oryzias dancena (Hamilton, 1822)

Indian rice field

Odia: Kauradia

Systematic accounts

Class : Actinopterygii
Order : Beloniformes
Family : Adrianichthyidae
Genus : *Oryzias*
Species : *Oryzias dancena*



Diagnostic features

Body is compressed. Head is short and anterior part of the nape is depressed and flattened. Mouth is small and terminal with its corner abruptly bent downwards. Snout is slightly spatulate. Abdomen is rounded. No spines present in dorsal and anal fins.

D. 6-7; A. 20-24; Vr. 28-29; caudal fin rays 6/6

Habitat

It is a fresh as well as brackish water species; benthopelagic in nature.

Distribution

It is distributed in Asian countries: India, Sri Lanka, Bangladesh and Myanmar. In India, it is found from Odisha, Tamil Nadu, West Bengal and Waynad.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1917) which was collected from Barkul Bay of Chilika Lake in central sector. The species is locally known as **Kauradia** in Odia. The fish grows to maximum size of 3.4cm and hence small sized fish. In Chilika Lake, it occurs in good number Nalabana area in the central sector. The fish breeds in the lake round the year and Nalabana area in central sector is the main breeding ground for the fish. Although the fish has little commercial importance, it has very good ornamental value and considered as a potential native ornamental fish of Chilika Lake.

Hippocampus fuscus (Ruppel, 1838)

Sea pony / Sea horse

Odia: Samudra Ghoda

Systematic accounts

Class : Actinopterygii
Order : Syngnathiformes
Family : Syngnathidae
Genus : *Hippocampus*
Species : *Hippocampus fuscus*



Diagnostic features

Rings: 11 (trunk) + 33-37 (tail). Snout length: 2.4-3.0 in head length. Dorsal fin rays: 14-17 covering 2+1 rings. Pectoral fin rays: 14-16. Coronet: low, arch of neck a smooth curve, or slightly raised and rough. Spines: low, smooth to slightly developed. Other distinctive characters: head large compared to body; deep head. Color pattern : usually dark but can be bright yellow; specimens from Suez are pale with marbled pattern of brown lines on trunk and head. Maximum length recorded 14.4 cm (TL) (Golani and Fine, 2002).

Habitat

Marine; demersal; amphidromous.

Distribution

Indian Ocean: Red Sea, Saudi Arabia, Djibouti and Sri Lanka. Records from South Africa, Madagascar, Mauritius and Réunion are questionable. International trade is monitored through a licensing system (**CITES** II, since 5.15.04) and a minimum size of 10 cm applies.

IUCN Status

Data Deficient (DD)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) as *Hippocampus brachyrrhynchus* (presently synonym) which was collected from Rambha Bay in the southern sector. The species is locally known as **Samudra Ghoda** in Odia. It breeds in the outer channel and central sector during rainy months. This sea horse was collected in good number at Rambhartia in the outer channel during fish diversity inventory survey in 2003-04. This small species usually come in the **Khanda** catches in the outer channel and Magaramukh area. It breeds in rainy months in the outer channel and central sector. It is also used in aquarium as ornamental fish.

Remarks: This species is known to be rare along Indian coast. Although its occurrence was known only from Chilika lagoon, a few specimens were reported from Tamil Nadu coast recently. The species like other seahorses is caught and traded for traditional medicines, aquaria and other exhibit-curios throughout its range. Indiscriminate catch, habitat degradation and exploitation has caused drastic depletion of population of this species. **All seahorses are placed in Schedule I Part II A of the Wildlife Protection Act (1972)** (Mishra and Gopi, 2014).

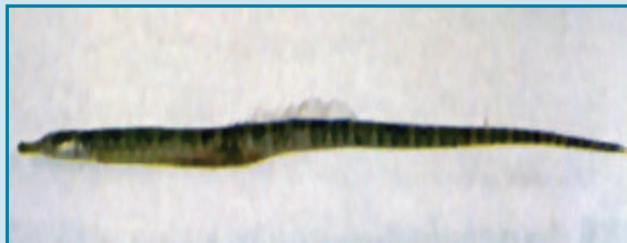
Ichthyocampus carce (Hamilton, 1822)

Banded needlefish

Odia: Bali Poka

Systematic accounts

Class : Actinopterygii
Order : Syngnathiformes
Family : Syngnathidae
Genus : *Ichthyocampus*
Species : *Ichthyocampus carce*



Diagnostic features

The fish has a highly elongated body tapering towards the caudal end. Head length is 1/10th of standard length. Snout slightly elevated on its anterior third and its ventral side is dotted with black spots. Interorbital space is slightly concave with a sharp low median ridge passing along snout. A sharp ridge is present across the opercle. Its opercula are complete with longitudinal ridge. Lateral trunk ridge is not distinctly confluent with tail ridge. Dorsal fin is yellowish and originates between first and third tail ring. Anal fin is minute but distinct. Body colour is deep brown with one or two white spots in the centre of each body ring along the infero-lateral ridge.

Habitat

It is a species ranging from Marine to freshwater, demersal in habit and amphidromous in migration.

Distribution

It is distributed in Indo-West Pacific: west coast of India to Indonesia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1916) which was collected from Satapada area of outer channel. The species is locally known as **Bali Poka** in Odia, which is not considered as a food fish, does not have much commercial value. Usually found as by-catch in screen barrier (**Khanda**) and seine nets.

Macrognathus aral (Bloch & Schneider, 1801)

One-stripe spinyeel/Lesser spiny eel

Odia: Todi

Systematic accounts

Class : Actinopterygii
Order : Synbranchiformes
Family : Mastacembelidae
Genus : *Macrognathus*
Species : *Macrognathus aral*



Diagnostic features

Dorsal spines (total): 16 - 23; Dorsal soft rays (total): 44-45. Caudal fin rays 15 and caudal fin distinctly separated from dorsal and anal fins. It is detritivorous and bottom dwelling fish. Maximum length recorded 63.5cm (TL) (Szechowycz, 1960).

Habitat

Freshwater; brackish; benthopelagic.

Distribution

Asia: Pakistan, India (Andhra Pradesh, Madhya Pradesh, Bihar, Uttar Pradesh, Odisha, Kerala & Assam), Sri Lanka, Bangladesh, Nepal and Myanmar.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansinghani (1954) which was recorded as *Macrognathus aculeatus*. The species is locally known as **Todi** in Odia. In Chilika Lake, the fish is frequently found in the northern sector, particularly near Kalupadaghat, Bhusandapur and Jaguleipadara area and the catch is mostly landed at those landing centres in the northern sector. It breeds in the freshwater zone of the northern sector during monsoon months. The fish has both commercial and ornamental values for home aquarium. Annual landing of this fish has been estimated at 0.90 tonnes during 2016-17. The fish is sold and consumed locally at an average unit price of Rs.90/kg. The fish is generally caught in barrier nets with net box traps in the northern part of the northern sector.

Macrognathus pancalus Hamilton, 1822

Barred spiny eel

Odia: Baira Todi

Systematic accounts

Class : Actinopterygii
Order : Syngnathiformes
Family : Mastacembelidae
Genus : *Macrognathus*
Species : *Macrognathus pancalus*



Diagnostic features

This fish species has slightly long and compressed, eel-like body. Head is long and pointed. Snout is long and fleshy with a concave prolongation of the upper jaw consisting of a paired series of tooth plates. No tooth plates on rostrum. Mouth is inferior and the cleft is narrow with thin lips and sub equal jaws. It possesses small superior eyes in middle of head, not visible from below the ventral surface. No spines present on either preorbital or pre operculum. Caudal fin is rounded and distinctly separated from the dorsal and anal fins. Small and cycloid scales are present between and around eyes and posterior nostril and upto maxilla. Body colour is olive-green back, yellowish beneath. Sides of the body have yellowish spots whereas the fins are yellow with black spots.

D. 24-26/30-42; A. 3/31-46; P. 19; C. 12.

Habitat

It is a freshwater to brackish dwelling fish, benthopelagic in nature.

Distribution

Asia: Pakistan, India, Bangladesh and Nepal

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from northern sector of Chilika Lake. The species is locally known as **Baira Todi** in Odia, the species is a riverine migrant and mainly caught from northern and central sectors. It is sold @ Rs 80-120/kg. It is Consumed locally and caught through screen barrier (**Khanda**). Along with other freshwater spiny eels species, it accounts for annual average landings of 39.34 tonnes and values Rs.42.41 lakhs.

Mastacembelus armatus (Lacepede, 1800)

Zig-zag eel

Odia: Kutila Todi

Systematic accounts

Class : Actinopterygii
Order : Synbranchiformes
Family : Mastacembelidae
Genus : *Mastacembelus*
Species : *Mastacembelus armatus*



Diagnostic features

It has an elongated, eel-like and compressed body; long snout without tooth plates. Mouth is inferior with narrow cleft; rim of anterior nostrils with two fimbriate and two flaps. Body colour is dull brown with 1-3 darker, longitudinal zigzag lines, more or less connected to form a reticulated pattern, more or less distinct and restricted to the dorsal two thirds of the body. A row of black spots are present along the base of dorsal fin.

D. XXXIII-XL, 67-82; A. 67-85; C. 14-17; Vr. 87-98.

Habitat

It lives in fresh to brackish water environments; demersal in nature and potamodromous in migration.

Distribution

The species is well distributed in Asian countries: Pakistan to Viet Nam, India and Indonesia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Hora (1923) which was collected from central sector near Patasanipur. The species is locally known as **Kutila Todi** in Odia. It dwells mostly in the freshwater area of northern sector but also found in central sector. It has less commercial values, consumed locally, sold @ Rs 50-80/kg. The average landing is nearly 20 tonnes annually, valued about Rs.20 lakh. The species caught through screen barrier (**Khanda**) nets and in traditional traps like "**Boja**".

Pterois radiata (Cuvier, 1829)

Radial firefish / Lion fish

Odia: Lion Fish, Singhee Machha

Systematic accounts

Class : Actinopterygii
Order : Syngnathiformes
Family : Scorpaenidae
Genus : *Pterois*
Species : *Pterois radiata*



Diagnostic features

Dorsal spines (total): 12 - 13; Dorsal soft rays (total): 10-12; Anal spines: 3; Anal soft rays: 5 - 6. Reddish to brownish and with 5-6 broad dark bars on body separated by pale lines; horizontal dark area on caudal peduncle. Only species of *Pterois* that lacks markings between its vertical fin rays and has a pair of horizontal white stripes at base of its tail. Maximum length recorded 24.0 cm (TL) (Lieske and Myers, 1994).

Habitat

Marine; reef-associated.

Distribution

Indo-Pacific: Red Sea to Sodwana Bay, South Africa and to the Society Islands, north to the Ryukyu Islands, south to New Caledonia. Records from the Mascarene Islands lack verification and are probably based on *Pterois antennata*.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

This highly prized marine aquarium fish (marine ornamental fish) was first reported from Chilika by Rajan *et al.* (1968) which they collected from outer channel near Arakhakuda. The species is locally known as **Lion Fish, Singhee Machha** in Odia. This beautiful marine ornamental fish enters into outer channel from the coastal waters during onset of monsoon season when freshwater flow prevails in the outer channel. The fish is a selective carnivorous species which prefers to consume juvenile shrimps by sucking them. The fish collected from outer channel is being maintained in the marine aquarium at the interpretation centre of Chilika Development Authority at Satapada. They also survive in the aquarium with artificial sea water. The fish is not used by local people as food fish. The local fishermen shall each fish more than Rs.50 to the people who are maintain marine or brackish water aquarium.

Tetraroge niger (Cuvier, 1829)

Odia: Bali Ghumura

Systematic accounts

Class : Actinopterygii
Order : Scorpaeniformes
Family : Tetrarogidae
Genus : *Tetraroge*
Species : *Tetraroge niger*



Diagnostic features

Body moderately compressed with prominent caudal peduncle, no barbels on lower jaw. Anterior preorbital spine short, posterior one long. Head profile is elevated dorsally. Teeth are small, pointed, re-curved in upper jaw and flattened, small in lower jaw. Opercle and preopercula is fleshy, triangular with a prominent spine. The dorsal fin has two parts of which the first is spinous and originates from above the eye with a forward bending. Second dorsal, pelvic, anal and caudal fins are rounded. Origin of the pectoral fin base and pelvic fin base is on the same plane. Lateral line is elevated anteriorly being prominent and continuous up to caudal fin. All fins are with narrow white border and dark broad sub-marginal band. Outer margin of border fin dark and white. Body is dark brown in colour with irregular dark blotches and a prominent blotch on caudal peduncle. It is rare species, possess venom glands at the base of some of the spines.

D. XIII, 7; A. III, 5; P. 12; V. I, 5.

Remarks: Preorbital and dorsal fin spines are strong and poisonous. Wounds caused on human body by these spines are very painful.

Habitat

It is a marine to freshwater living fish with demersal and amphidromous in nature.

Distribution

Indo-West Pacific: India, Philippines, Indonesia, New Guinea and Ryukyu Islands.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Satapathy and Panda (2009) which was collected from outer channel. The species is locally known as **Bali Ghumura** in Odia. It is a venomous fish that breeds in late summer and is caught as by catch in gill net and screen barrier nets. The species is not used as food fish and has no commercial value.

Trachicephalus uranoscopus (Bloch & Schneider, 1801)

Stargazing stonefish

Odia: Pathuri Machha

Systematic accounts

Class : Actinopterygii
Order : Syngnathiformes
Family : Synanceiidae
Genus : *Trachicephalus*
Species : *Trachicephalus uranoscopus*



Diagnostic features

It has elongated, weakly compressed body with wide head covered with bony ridges having numerous blunt points; possess very small eyes in the dorsal position. Lower jaw is longer. Spines and rays in the fins enclosed in the skin. Ventral fin is attached along its entire inner edge to the abdomen. Caudal fin is cut square, with a white edge. Scales are absent. Body colour is brownish, with numerous white dots.

D. X, 14; P. XIV, 0; V. I, 5; A. II, 15.

Habitat

The species inhabits in marine to brackish waters.

Distribution

The species distributed in Indo-West Pacific regions: India to Indonesia, north to Hong Kong and southern China.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Karna *et al.* (2016). The species is locally known as ***Pathuri Machha*** in Odia. The specimen was obtained from Station 7 (Satapada) during September 2015. The fish is generally venomous in nature having poison gland at the base of its spines on the body. It is not used as a food fish under has no commercial value. This is the first ever report of the occurrence of the species from the lagoon.

Cociella crocodilus (Cuvier, 1829)

Crocodile flathead

Odia: Takara

Systematic accounts

Class : Actinopterygii
Order : Scorpaeniformes
Family : Platycephalidae
Genus : *Cociella*
Species : *Cociella crocodilus*



Diagnostic features

Dorsal spines (total): 9; Dorsal soft rays (total): 11; Anal spines: 0; Anal soft rays: 11. Brownish with small dark spots on upper body; usually with 4-5 dark brown bands crosses back; spiny dorsal with broad black band near edge and small black spots below, other fins darkly spotted. Maximum length recorded 50.0 cm (TL) (Kottelat, 1993).

Habitat

Marine; brackish; reef-associated.

Distribution

Indo-West Pacific: Red Sea and East Africa to the Solomon Islands, north to southern Japan, south to Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty *et al.* (2015) which was collected from south of Nalabana caught in Patua jaal in the central sector. The species is locally known as **Takara** in Odia. Landing of this fish is negligible. The fish is a marine migrant having ornamental value for use in aquarium. It is mostly caught from the central sector of the lake from Magarmukh – Parikud Nalabana area. The fish is marketed locally at an average price of Rs.50/kg.

Platycephalus indicus (Linnaeus, 1758)

Bartail flathead

Odia: Takara

Systematic accounts

Class : Actinopterygii
Order : Scorpaeniformes
Family : Platycephalidae
Genus : *Platycephalus*
Species : *Platycephalus indicus*



Diagnostic features

Body is much compressed. Top of head has only weak ridges with low and feeble spines. A broad band of villiform teeth is present in upper jaw. Some of inner teeth near symphysis are enlarged and canine-like. Lower jaw has a row of large crowded teeth and several rows of smaller teeth at their outer side. Teeth in vomer appear like a transverse patch while in palate it is arranged in a single row with large caninoid teeth. Tongue is smooth. Two dorsal fins are present out of which the first dorsal fin has 9 spines and the second dorsal fin has 12 soft rays while anal fin has 13 soft rays. Caudal fin is truncate. Scales on upper parts of body are ctenoid. Its lower part is cycloid. Lateral line has nearly 100 scales without spines.

D. IX-X, 13; A. 13.

Habitat

It is a marine to brackish dwelling species, which is reef-associated and oceanodromous in nature.

Distribution

Indo-West Pacific: Red Sea and East Africa to the Philippines, north to southern Japan and Korea, south to northern Australia.

IUCN Status

Data Deficient (DD)

Other information – Chilika specific

The species was first reported from Chilika by Hora (1923) which was collected from outer channel sector. The species is locally known as **Takara** in Odia, found throughout the lagoon. Sold @ 60-80/kg, the fish species is consumed locally. Caught by gill nets, Screen barrier nets (**Khanda**) and seine nets (Patua jaal).

Ambassis ambassis (Lacepede, 1802)

Commerson's glassy

Odia: Bada Polagana

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Ambassidae
Genus : *Ambassis*
Species : *Ambassis ambassis*



Diagnostic features

The fish has ovate, deep or compressed body. Lateral line is continuous and has 22-30 scales that are large in size. Cheek scales, 2-3 rows. A single supraorbital spine is present but the rostral spine is absent. Preopercle ridge and rear margin of the preopercle has serrations. The inter-opercle edge is smooth except for presence of few small serrae at angle. The predorsal scales count 13-18.

D. VIII, 9-10; A. III, 9-11.

Habitat

The species is marine to freshwater dwelling, demersal in habit and Oceanodromous in nature.

Distribution

The species is distributed mainly in Africa: South Africa to Kenya, Madagascar, Reunion and Mauritius.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Satapathy & Panda (2009) which was collected from Magarmukh area. The species is locally known as **Bada Polagana**, occurs predominantly in central and outer channel sector. Sold @ Rs 50-70/- kg, it is consumed locally and used as aquarium fish. Usually caught through seine nets (drag net) and screen barrier net (*Khanda jal*).

Ambassis gymnocephalus (Lacepede, 1802)

Bald glassy

Odia: Polagana Chandi

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Ambassidae
Genus : *Ambassis*
Species : *Ambassis gymnocephalus*



Diagnostic features

The fish has laterally compressed body, with bright lateral silvery bands. It has large oblique mouth. The posterior margin of pre- opercular ridge is entire. The lower arm of first arch has 23-26 gill rakers. The second and third dorsal spines have dusky membranes in between. The supra-orbital ridge which is dentate with two to four developed spines distinguishes the species from *A. ambassis*.

D. VII+I, 9-10; A. III, 9-10; P. 14-15; V. I, 5; LI. 27-29.

Habitat

The fish is found from marine, brackish and freshwater environments. Generally inhabits estuaries, lagoons and rivers. It is a demersal, amphidromous fish species found in shallow waters.

Distribution

It shows a widespread distribution in Indo-west Pacific.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923) which was collected from Barkul area of Chilika Lake. Locally called ***Polagana Chandi***, occurs throughout the lagoon, more abundantly in the outer channel sector. The fish eats mullet eggs voraciously near lake mouth during mullet breeding season in winter. Sold @ Rs 50-70/- kg, it is consumed locally and used as aquarium fish. Usually caught through screen barrier and seine nets (drag net).

Chanda nama Hamilton, 1822

Elongate glass-perchlet

Odia: Bada Polagana

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Ambassidae
Genus : *Chanda*
Species : *Chanda nama*



Diagnostic features

Body is strongly compressed and laterally almost flat. Dorsal and ventral profile of this fish is almost equally convex. Lateral line is partly distinct, partly absent. Second dorsal spine is longest. Spines of first dorsal and rays of second dorsal gradually decrease in height. Scales are minute and rounded. Caudal fin forked. Body is transparent yellowish white with numerous tiny black dots. First dorsal and tip of second dorsal is deep black. Caudal fin is black and orange. A small black spot is found at the origin of the base of anal fin. Lower jaw is longer than upper jaw. Maximum length recorded 11.0cm (TL) (Menon, 1999).

Habitat

This small fish is seen in the clear freshwater of rivers, streams, canals and beels. Specially in the rainy season these are abundantly found from the marginal area of the jute and paddy fields. According to job *Ambassis nama* feeds at all layers of water, subsisting mainly on the minute entomostracans. It is hardy and can stand foul water. Freshwater; brackish; benthopelagic; potamodromous.

Distribution

Asia: Pakistan, India, Nepal, Bangladesh, and Myanmar.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Rajan et al. (1968) which was collected from Kalupadaghat area. The species is locally known as **Bada Polagana** in Odia. Its catch is mixed with the freshwater miscellaneous group. This small glass perchlet is considered as a good freshwater ornamental fish which is mostly used in the freshwater aquarium. Its separate landing has not been estimated so far as the catch is negligible. Its average selling price in Chilika is Rs.50-60/kg.

Parambassis ranga (Hamilton, 1822)

Indian glassy fish

Odia: Polagana / Lal Chandi / Gua Chipi

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Ambassidae
Genus : *Parambassis*
Species : *Parambassis ranga*



Diagnostic features

The fish has an elongated and compressed body with pointed snout and large mouth. Dorsal and abdominal profiles, both are very convex, but the profile over the eyes is slightly concave. Eyes are large and diameter is 7.9-9.5 in standard length. The maxilla reaches below the middle of the orbit. Pre-orbital with about 6 denticulation on its inferior edge and a strong one on its anterior superior angle directed towards the eye and about 5 more along the upper edge of that bone. Another spine present at the middle of the posterior edge of the orbit. Gill rakers on lower arm of first arch are 21-25. Body colour is olive with a dark spot on the shoulder. Margins of the dorsal and anal fins are dark. The caudal fin is deeply forked and the caudal peduncle depth is 8.3-9.1 in standard length.

D. VII+I, 15-16; A. III, 14-16; P. 11; V. I, 5; Lr. 60-70.

Habitat

It is a freshwater to brackish water dwelling species; demersal in habit.

Distribution

Distributed in Asian countries: Pakistan, India, Bangladesh, Myanmar, Thailand, Malaysia and Nepal.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from northern sector. The species is locally known as **Polagana / Lal chandi / Gua Chipi** in Odia, the fish is distributed throughout the lagoon. The fish has little commercial importance and sells at an average unit price of Rs. 30-40/kg, it is consumed locally and used as aquarium fish. Usually caught through screen barrier (**Khanda**) and seine nets (drag net). The catch is included in the miscellaneous freshwater group in commercial landing.

Lates calcarifer (Bloch, 1790)

Barramundi / Asian seabass

Odia: Bhekti

Systematic accounts

Class : Actinopterygii

Order : Perciformes

Family : Latidae

Genus : *Lates*

Species : *Lates calcarifer*



Diagnostic features

L. calcarifer has an elongated and compressed body with a deep caudal peduncle. Head is pointed whose dorsal profile is concave which gradually becomes convex. Operculum has a small spine and serrated flap. Preopercle has a spine and its edge is serrated. Mouth is large and slightly oblique. The upper jaw extends behind the eye and has villiform teeth. A deep notch is present that divides spinous part from soft rayed part of dorsal fin. Anal and pectoral fins are rounded. Scales are large and ctenoid species. Anal fins have a scaly sheath. Lower arm of first arch has 11 gill-rakers.

D. VII-IX, 10-11; A. III, 7-9; P. 17; V. I, 5; LI. 52-60

Habitat

Freshwater to marine dwelling species, this fish is demersal; catadromous in nature.

Distribution

The fish is distributed in Indo-West Pacific: eastern edge of the Persian Gulf to China, Taiwan and southern Japan, southward to southern Papua New Guinea and northern Australia

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923) which was collected from Kalupadaghat area. The species is locally known as **Bhekti** in Odia. The fish is distributed throughout the lagoon and a migratory species. It attains maximum length of 121 cm (22.7 kg). Its average annual yield is 114.88 tonnes (0.96% of average annual yield) and average annual catch valuation is Rs. 387.56 lakhs. The cost varies with size and is sold @ Rs 220/- (up to 1 kg), Rs 320/- (1 to 2 kg), Rs 420/- (>2 kg). A commercially important species consumed locally and traded outside the state. It is generally fished by gill nets and hook & long line. It is known to breed in late summer to rainy season (April-July & June-July). The average sectoral landings of the fish species are of the order (Northern sector > Central sector > Southern sector > Outer channel. Year wise annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig P.

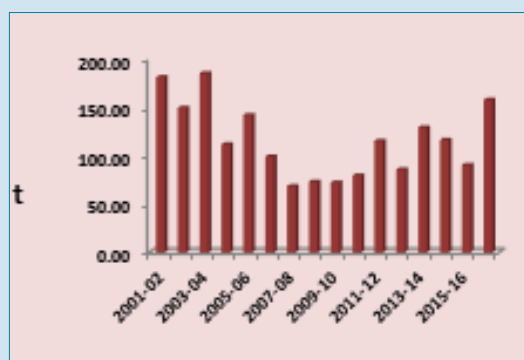


Fig P Annual landings of *L. calcarifer* (Bhekti) during 2001-02 to 2016-17

Fisheries and population of the fish in Chilika was studied during 1957-65 by Jhingran and Natarajan (1966 & 1969). Breeding and larval development of Chilika Bhekti was reported by Kowtal (1977). Stock assessment of Chilika Bhekti was first reported under Bhatta *et al.* (2009) to suggest that current exploitation level should not be increased further. Length weight relationship of the fish was studied by Mohanty *et al.* (2014). Pattnaik and Jena (1976) also studied some aspects of biology of the fish from Chilika Lake.

Epinephelus coioides (Hamilton, 1822)

Orange-spotted grouper

Odia: Bhola

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Serranidae
Genus : *Epinephelus*
Species : *Epinephelus coioides*



Diagnostic features

It has an elongated body and not strongly compressed. Inter-orbital space is slightly convex. Caudal fin rounded. Colour of the body is light brown, whitish ventro-laterally with numerous small brownish orange or reddish brown spots on head, body and median fins. Five slightly oblique brown bars on head and body present, which bifurcate ventrally. The first four bars extending basally into the dorsal fin. Large brown blotches on head; fins whitish to dusky with brown spots.

D. XI. 13-16; A. III, 8; P. 19-20; V. I, 5.

Habitat

It is marine and brackish water species usually found to be reef-associated.

Distribution

It is distributed in Indo-West Pacific: Red Sea south to Durban, South Africa and eastward to Palau and Fiji, north to the Ryukyu Islands, south to the Arafura Sea and Australia. It is also distributed in the Mediterranean coast of Israel.

IUCN Status

Near Threatened (NT)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007). The species is locally known as **Bhola** in Odia. Majorly, caught from outer channel sector of Chilika. The fish is locally consumed and sold @ 70-80/kg, although it commands a very high unit price outside the state, particularly in Mumbai, New Delhi, Chennai etc and fetches a very high unit price from overseas export markets. Common fishing gears for the species are gill nets, barrier nets (**Khandas**), hook & line etc. It is a migratory species which enters from the coastal water through lake mouth into the outer channel at juvenile and sub-adult stages. Maximum size recorded from the lake is 55cm.

Epinephelus lanceolatus (Bloch, 1790)

Giant grouper
Odia: Kala Bhola

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Serranidae
Genus : *Epinephelus*
Species : *Epinephelus lanceolatus*



Diagnostic features

Body robust, its depth 2.4 to 3.4 times in standard length (SL). Head length 2.2 to 2.7 times in SL. Preopercle finely serrate, the corner rounded. Maxilla reaching past vertical at rear edge of eye. Gill rakers in juveniles 8 to 10 on upper limb, 14 to 17 on lower limb; rudimentary in adults, difficult to distinguish from the bony platelets covering the gill arch. Dorsal fin with XI spines and 14 to 16 rays, the 3rd to 11th spines subequal; anal fin with III spines and 8 rays; pectoral-fin rays 18 to 20; pelvic fins not reaching anus; caudal fin rounded. Scales smooth, with auxiliary scales on lateral sides of body; lateral-line scales 54 to 62, the anterior scales with branched tubules; lateral-scale series 95 to 105. Colour: Small juveniles (12 cm SL) yellow, with irregular broad black bars on body, the first from spinous dorsal fin to belly and chest and extending onto head, the second from base of soft dorsal fin to anal fin and the last at base of caudal fin; small adults (20 to 50 cm SL) with irregular white or yellow spots on the black areas and fins with irregular black spots; adults (80 to 150 cm SL) dark brown with faint mottling, the fins with numerous small black spots; large adults (160 to 230 cm SL) dark brown, the fins darker. **This species is placed in Schedule I Part II A of the Wildlife Protection Act (1972)** (Mishra and Gopi, 2014). Maximum length recorded 270.0 cm (TL) (Fischer *et al.*, 1990).

Habitat

Marine; brackish; reef-associated.

Distribution

Indo-Pacific: Red Sea to Algoa Bay, South Africa and eastward to the Hawaiian and Pitcairn islands, north to southern Japan, south to Australia. Absence in the Persian Gulf is puzzling.

IUCN Status

Vulnerable (VU)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from northern sector. The species is locally known as ***Polagana / Lal chandi / Gua Chipi*** in Odia, the fish is distributed throughout the lagoon. The fish has little commercial importance and sells at an average unit price of Rs. 30-40/kg, it is consumed locally and used as aquarium fish. Usually caught through screen barrier (***Khanda***) and seine nets (drag net). The catch is included in the miscellaneous freshwater group in commercial landing.

Epinephelus malabaricus (Bloch & Schneider, 1801)

Malabar grouper

Odia: Bhola

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Serranidae
Genus : *Epinephelus*
Species : *Epinephelus malabaricus*



Diagnostic features

Dorsal spines (total): 11; Dorsal soft rays (total): 14-16; Anal spines: 3; Anal soft rays: 8. Characterized by light grey to yellowish brown color; five slightly oblique dark brown bars that bifurcate ventrally; numerous small black spots and blotches in head and body; ctenoid scales on body except cycloid anterodorsally on body, thorax and abdomen; body with auxiliary scales; greatest depth of body 3.0-3.6 in SL; rounded caudal fin; pelvic fins, 2.0-2.6 in head length; head length 2.3-2.6 times in SL; snout length 1.7-2.0 times in upper jaw length; interorbital width 4.5-6.5 times in HL and 2.1-3.0 times in upper jaw length; flat or slightly convex interorbital area; subangular preopercle, with enlarged serrae at the angle; almost straight upper edge of operculum; subequal posterior and anterior nostrils, except in large adults which have the posterior nostrils slightly larger; maxilla reaches to or past vertical at rear edge of orbit, maxilla width 4.5-6.5% of SL; upper jaw length 17-22% of SL, 2-5 rows of teeth on midlateral part of lower jaw. Often 5 irregular dark brown bars visible on body. Head, body and fins brownish covered with small blackish brown and white spots. Maximum length recorded 234.0 cm (TL) (Fischer *et al.*, 1990).

Habitat

Marine; brackish; reef-associated; amphidromous.

Distribution

Indo-Pacific: Red Sea and East Africa to Tonga, north to Japan, south to Australia. It is not known from the Persian Gulf, where the closely related *Epinephelus coioides* is common.

IUCN Status

Near Threatened (NT)

Other information – Chilika specific

The species was first reported from Chilika by Satapathy and Panda (2009). The species is locally known as **Bhola** in Odia which usually occurs in outer channel sector mainly during post-monsoon through summer. This is a one of the high value fishes which sells in the fresh fish market at very high price (Rs.150 and above per kg). Annual landing of this fish is less than 2 tonnes which is landed only at Arakhakuda, Sanapatana and Alupatana landing centres in the outer channel. This fish is one of the valuable marine ornamental fishes generally used in the public marine aquarium.

Epinephelus tauvina (Forsskål, 1775)

Greasy grouper

Odia: Chitra Bhola

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Serranidae
Genus : *Epinephelus*
Species : *Epinephelus tauvina*



Diagnostic features

Dorsal spines (total): 11; Dorsal soft rays (total): 13-16; Anal spines: 3; Anal soft rays: 8. Color of head and body pale greenish grey or brown with round dark spots that vary from dull orange-red to dark brown, centers darker than the edges. A large black blotch (or group of black spots) often visible on body at the base of last 4 dorsal-fin spines. Five sub vertical dark bars may be present on body. Dark spots on soft dorsal, caudal and anal fins of juveniles are so close that the pale interspaces form a white reticulum. 95-112 scales in longitudinal series. Scales on body ctenoid in juveniles, becoming cycloid in adults except the area beneath and posterior to pectoral fins. Pyloric caeca 16-18. Further characterized by: elongate body, depth contained 3.0-3.6 times in SL; large head, length is 2.1-2.4 times in SL; snout length 2.0-2.4 times in upper-jaw length; interorbital area narrow, flat to slightly concave, interorbital width 6.8-8.1 times in HL and 3.1-4.0 times in upper jaw length; broadly rounded preopercle, serrae at angle of preopercle slightly enlarged; upper edge of operculum almost straight; posterior nostrils distinctly larger than anterior nostrils; maxilla reaching well past eye, greatest width about twice suborbital depth, maxilla width 6.8-8.1% of standard length; upper-jaw length 21-24% of SL; 2-5 rows of teeth on midlateral part of lower jaw; inner teeth at symphysis of upper jaw are longer than the fixed canines at front of jaw. Differs from *E. howlandi* by its more elongate body and closer-set spots. Maximum length recorded 100.0 cm (TL) (Bacchet *et al.*, 2006).

Habitat

Marine; reef-associated; oceanodromous.

Distribution

Indo-Pacific: Red Sea to South Africa and eastward to Ducie in the Pitcairn Group, north to Japan, south to New South Wales and Lord Howe Island. Migration report from the eastern Mediterranean Sea may be based on *Epinephelus coioides* specimens.

IUCN Status

Data Deficient (DD)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansinghani (1954) which was collected from Satapada area in the outer channel. The species is locally known as **Chitra Bhola** in Odia. This is a one of the high value fishes which sells in the fresh fish market at very high price (Rs.150 and above per kg). It is highly in demand in the seafood export trade. Annual landing of this fish is less than 1 tonne which is mainly landed at Arakhakuda, Sanapatana and Alupatana landing centres in the outer channel. This fish is one of the valuable marine ornamental fishes generally used in the public marine aquarium. It does not form a commercial fishery in Chilika.

Sillaginopsis panijus (Hamilton, 1822)

Flathead sillago

Odia: Tooldanti Jhudanga

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sillaginidae
Genus : *Sillaginopsis*
Species : *Sillaginopsis panijus*



Diagnostic features

Body elongate with depressed head and snout. Eyes 3-11% of head length (Talwar and Jhingran, 1991). Two dorsal fins, second spine of first dorsal fin very elongate and filamentous. Eyes are small and almost covered by fleshy orbits. Scales small. 84-88 (Talwar and Jhingran, 1991) scales on lateral line. Maximum length recorded 44.0 cm (TL) (Talwar, and Jhingran, 1991; Huda *et al.*, 2003).

Body color greenish-yellow above, paler to whitish below. Fins are pale brownish with a light dusting of fine black spots.

Habitat

Marine; freshwater; brackish; demersal; amphidromous.

Distribution

Western Indian Ocean: Pondicherry northward along the Coromandel coast, Ganges delta, Myanmar, southward to Malaysia and rarely to the Indonesian Archipelago.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from southern sector. The species is locally known as **Tooldanti Jhudanga** in Odia. This flathead sillago and silver sillago (sand whiting) together forms the Sillaginid fishery with low catch (Average annual landing being 13 tonnes) but is considered as a high value fish at present which is being marketed at Howrah and Siligudi at an average selling price of Rs.180-200/kg. The catch is mostly marketed outside the state at high price. The fish has a good ornamental value and mostly used as a brackishwater / marine aquarium fish. Its juveniles are available in the outer channel along sandy shore areas.

Sillago sihama (Forsskal, 1775)

Silver sillago

Odia: Jhudanga / Kadama

Systematic accounts

Class : Actinopterygii

Order : Perciformes

Family : Sillaginidae

Genus : *Sillago*

Species : *Sillago sihama*



Diagnostic features

S. sihama has an elongated and pointed snout. Head profile is strongly convex. Mouth is small and terminal. Upper jaw is slightly longer. Vertical limb of pre opercle serrated in its lower half. Opercle with a well developed spine. Scales are about 6 rows between the lateral line and the last dorsal spine. Swim bladder has two anterior and two posterior extensions. The anterior extensions extend forward and diverge to terminate on each side of the basioccipital above the auditory capsule with tubular extensions anteriorly. A silvery longitudinal band runs along the body with presence of minute black points on dorsal and anal fins. Body light brown, ventral flanks and belly whitish; dorsal and caudal fins are dusky.

D. XI+I, 20-23; A. II, 18-23; P. 16-17; V. I, 5; LI. 66-72.

Habitat

It is a marine and brackish water dwelling species; reef-associated and amphidromous in migration.

Distribution

Indo-West Pacific: southern Red Sea and Knysna, South Africa to Japan and south to Australia. Reported from New Caledonia

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923) which was collected from Parikud area in central sector. The species is locally known as ***Jhudanga / Kadama*** in Odia. The fish species is distributed throughout the lagoon. It is a migratory species and breeds in the lagoon with an average annual yield of about 10.56 tonnes, the fish species average annual catch valuation is 18.54 lakhs INR. It is an economically important species sold @ Rs 150-200/ kg at Siligudi and Rs.100-150 within the state. The Fishing gears used for the species catch are gill nets and screen barriers. The average sectoral landings of the fish species are of the order (Northern sector > Central sector > Outer channel > Southern sector).

Sillago vincenti Mc Kay, 1980

Vincent's sillago

Odia: Jhudanga

Systematic accounts

Class : Actinopterygii

Order : Perciformes

Family : Sillaginidae

Genus : *Sillago*

Species : *Sillago vincenti*



Diagnostic features

Body of the fish species is elongated and snout is pointed. Head profile is strongly convex. Mouth is small and terminal. Upper jaw is slightly longer. The species differs from *Sillago sihama* in its swim bladder which has a single posterior extension, a short bulbous projection anteriorly with one to three anterolobate or recurved projections. No tubular extensions anteriorly unlike *Sillago sihama*. Body uniform pale tan, with the second dorsal fin spotted; dorsal and caudal fins dusky.

D. XI+I, 21-23; A. II, 22-24; P. 16-17; V. I, 5; LI. 70-74.

Habitat

It is a Marine and brackish water dwelling species; demersal in habit and amphidromous in migration.

Distribution

It is distributed in Indian Ocean: East and west coast of India

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007). The species is locally known as **Jhudanga** in Odia. The fish species is distributed throughout the lagoon. With an average annual yield of about 5 tonnes, its average annual catch valuation has been estimated at Rs.1.00 lakh. It is an economically important species sold @ Rs 80-120/- kg and consumed locally. The fishing gears used for the species catch are gill nets and screen barriers.

Rachycentron canadum (Linnaeus, 1766)

Cobia / Black salmon / Black kingfish

Odia: Metta / Samudra seula

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Rachycentridae
Genus : *Rachycentron*
Species : *Rachycentron canadum*



Diagnostic features

Dorsal spines (total): 7 - 9; Dorsal soft rays (total): 26-33; Anal spines: 2-3; Anal soft rays: 22 - 28. Head broad and depressed. First dorsal fin with short but strong isolated spines, not connected by a membrane. Caudal fin lunate in adults, upper lobe longer than lower. Back and sides dark brown, with 2 sharply defined narrow silvery bands. Certain unique characters of cobia such as possession of 7-8 detached dorsal spines help the researchers for its easy identification. Maximum length recorded 200.0 cm (TL) (Quéro, 1990).

Habitat

Marine; brackish; reef-associated; oceanodromous.

Distribution

Worldwide in tropical and subtropical waters, but absent in the eastern Pacific and the Pacific Plate, except marginally. Western Atlantic: Canada to Bermuda and Massachusetts, USA to Argentina, including the Gulf of Mexico and entire Caribbean. Eastern Atlantic: Morocco to South Africa. Indo-West Pacific: East Africa and Hokkaido, Japan to Australia.

In India they occur along the coastal waters of both west and east coast. Cobia can reach a total length of 2 m and maximum weight of 68 kg. It is an esteemed table fish with high demand in market. First growth (6-7 kg / year). It is a very good candidate species for aquaculture. Commercial production of cobia is very successful in some parts of Asia, mainly in Taiwan. High salinity tolerance of the fish in the range of 0.5-44.5 ppt qualifies it as potential species for brackish water aquaculture (diversification in coastal aquaculture). Due to its high price and emerging popularity as a candidate species for culture cobia is considered as an important resource. It is an excellent sport fish as it exhibits tenacious fight when hooked. Setting up of Cobia farms is getting momentum around the world.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from outer channel near Arakhakuda fishing village. The species is locally known as ***Metta / Samudra Seula*** in Odia. It rarely occurs in the outer channel only at juvenile stages which immigrates from the coastal waters for feeding purpose. Adults have not been encountered in Chilika. The juveniles of Cobia are also used as marine ornamental fish in marine aquaria.

Echeneis naucrates Linnaeus, 1758

Live sharksucker

Odia: Magara Joko

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Echeneidae
Genus : *Echeneis*
Species : *Echeneis naucrates*



Diagnostic features

Echeneis naucrates can be easily spotted due to the sucking disc on top of its head. Its sucking organ consists of numerous pairs of crests, which originated from a highly modified spiny dorsal fin. This sucking disc is capable of producing a strong vacuum that the species uses to attach to their hosts. The fish is usually 11 or 12 times as long as it is wide and about five and a half times the length of its head. The slim body usually has a dark stripe on the side with narrower pale edges. The sharksucker's tail is pointed and the jaw is protruded. *Echeneis naucrates* pectoral and ventral fins are dark in color and the belly is a dark brownish color. The dorsal and anal fins are black and are outlined with a lighter shade. Sharksuckers can reach approximately 100 cm in length, yet smaller ones are found more frequently. Adult females and males are difficult to distinguish. After the formation of the sucking disc, the young start to resemble the adults. Dorsal spines (total): 0; Dorsal soft rays (total): 32-42; Anal spines: 0; Anal soft rays: 29 - 41. Maximum length recorded 110.0 cm (TL) (Lieske and Myers, 1994).

Habitat

Echeneis naucrates are often present in shallow inshore brackish areas, as well as around coral reefs in marine environment. They are found at depths ranging from 20-50 meters, which is where the coral reefs are located (Marine; brackish; reef-associated).

Distribution

Circumtropical. Western Atlantic: Nova Scotia, Canada and Bermuda to Uruguay. Eastern Central Atlantic: Madeira Island.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Roy and Sahoo (1957) which was collected from Chilika of Balugaon fish landing centre. The species is locally known as **Magara Joko** in Odia. The fish is encountered mostly in the central sector and outer channel being caught by **Patua jaal** and **Khandas**. It is considered as a good brackishwater ornamental fish to be used in aquarium. The annual catch for this species has not been estimated in Chilika as the abundance is very much low. The fish has little commercial interest other than its use in brackish water aquarium.

Alectis indica (Ruppell, 1830)

Indian threadfish / Indian threadfin trevally

Odia: Jhanjara

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Alectis*
Species : *Alectis indica*



Diagnostic features

Dorsal spines (total): 7; Dorsal soft rays (total): 18-20; Anal spines: 3; Anal soft rays: 15 - 20; Vertebrae: 24. Maximum length recorded 165.0 cm (TL) (Lieske and Myers, 1994).

Habitat

Marine; brackish; reef-associated.

Distribution

Indo-Pacific: Red Sea and East Africa to French Polynesia, north to southern Japan, south to the Arafura Sea and Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from Arakhakuda area of outer channel. The species is locally known as **Jhanjara** in Odia. In Chilika Lake, the fish is generally found in outer channel and also in the central and southern sector occasionally. It forms a good fishery in the near shore waters adjacent to Chilika Lake, mainly caught in gill nets, hand line and also in barrier net boxes (**Khandas**); marketed fresh locally. Its catch is mixed with the brackish water miscellaneous groups and separate landing has not been estimated.

Alepes djedaba (Forsskål, 1775)

Horse mackerel / Shrimp scad / Djeddaba crevalle
Odia: Kanto

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Alepes*
Species : *Alepes djedaba*



Diagnostic features

Dorsal spines (total): 9; Dorsal soft rays (total): 22-25; Anal spines: 3; Anal soft rays: 18 - 20. Adipose eyelid well developed on posterior half of eye only. Both jaws with a single row of numerous comblike teeth. Supramaxilla large with a spinelike projection. 39-51 scutes. Maximum length recorded 40.0 cm (TL) (Heemstra, 1995).

Habitat

Marine; reef-associated; amphidromous.

Distribution

Indo-Pacific: Red Sea and East Africa to the Hawaiian Islands, north to Japan, south to Australia. Immigrant to the eastern Mediterranean through the Suez Canal, westward to Malta.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from Arakhakuda area of outer channel. The species is locally known as **Kanto** in Odia. In Chilika Lake, the fish is generally found in outer channel and also in the southern sector in the Palur Bay occasionally. It forms a good fishery in the near shore waters adjacent to Chilika Lake mainly caught in gill nets, drag nets and *Khandas* in the outer channel. The average annual catch has been estimated at 61.5 tonnes; valued at Rs. 37.00 lakhs. Average selling price is Rs.60/kg. Its catch is mixed with the brackish water miscellaneous groups; locally consumed fresh and also in salted and dry forms.

Carangoides ferdau (Forsskal, 1775)

Blue trevally

Odia: Parei

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Carangoides*
Species : *Carangoides ferdau*



Diagnostic features

The fish has a compressed body with bluntly rounded snout and the lips are not papillose in adults. Its first dorsal fin is 0.25 times shorter than the second. The breast is naked ventrally and the juveniles are usually found to have 5 to 6 vertical dark bands on the body. Yellow or orange spots on sides if present are small, numerous and mostly above lateral line. The species was well identified with the straight part of lateral line, which was little longer and had 29 scutes along with presence of 22 gill rakers on first gill arch.

D. IX, 26-34; A. III, 21-26.

Habitat

It is a marine to brackish dwelling species, generally reef associated and commonly occur in shallow waters of 1-60 m depth. They are known to occur in lagoons.

Distribution

It is distributed in Indo-Pacific: Red Sea and East Africa (to Port Elizabeth, South Africa) to the Hawaiian Islands.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika Lake by the scientists of ICAR-CIFRI, Barrackpore, Kolkata which was collected from the outer channel sector near Satapada area during May 2015 while ICAR-CIFRI, Barrackpore, Kolkata was undertaking field survey under ICAR-CIFRI/CDA-ICZM Consultancy Project (2011-2017). The species is locally called as **Parei**. The fish bring a new record in 2015 has no much of Chilika specific information.

Carangoides oblongus (Cuvier, 1833)

Coachwhip Trevally

Odia: Kanti

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Carangoides*
Species : *Carangoides oblongus*



Diagnostic features

Carangoides oblongus has compressed, oblong body with the dorsal profile more convex than the ventral profile. The head profile is also slightly convex. The lobe of second fin is elongated and longer than the head length. The lateral line has a moderate anterior arch, with the chord of this arch slightly shorter than the straight section. The curved section of the lateral line has 60 to 69 scales while the straight section has 0 to 2 scales and 37 to 42 scutes. The breast is scaleless, reaching ventrally to the pelvic fin origin, while laterally the naked breast is separated from the naked base of the pectoral fins by a band of scales. Both jaws contain bands of small teeth, with the bands becoming wider anteriorly. The upper jaw also hosts an irregular series of moderately large outer teeth, with the largest specimens showing this in the lower jaw as well. There are 26 to 30 gill rakers and 24 vertebrae. The fish is dusky olive green colour above, fading to a silvery white or yellow below with small blue to black blotches present on the dorsal line between the bases of the second dorsal fin rays. The upper caudal and soft dorsal fins are dusky blue; the pelvic, pectoral and anal fins are yellow, while the anal fin has white lobe tips. A diffuse dark opercular blotch may be absent altogether.

D. VIII+I, 20-22; A. III, 18-19; P. I, 18-19.

Habitat

It is a marine species usually found reef-associated.

Distribution

Indo-Pacific: Gulf of Aden and East Africa to Fiji and Tonga, north to southern Japan, south to the Arafura Sea and Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika Lake by the scientists of ICAR-CIFRI, Barrackpore, Kolkata which was collected from the Satapada area during September 2013 while ICAR-CIFRI, Barrackpore, Kolkata was undertaking field survey under ICAR-CIFRI/CDA-ICZM Consultancy Project (2011-2017). The species is locally called as **Kanti**. Rarely found in outer channel sector, it is fished in gill net, screen barrier net (**Khanda**) and hook & line.

Carangoides praeustus (Bennett, 1830)

Brownback Trevally

Odia: Tirana

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Carangoides*
Species : *Carangoides praeustus*



Diagnostic features

The fish species has an oblong and compressed body with dorsal profile more convex than ventral. The head profile is steep and mouth is pointed with lower and upper jaw at the same level. Straight part of the lateral line is conspicuously shorter than curved part with 25-30 scutes. A total of 40-43 gill rakers present on first gill arch. First dorsal fin is as high as second dorsal or slightly shorter. Distal half of second dorsal lobe is abruptly black with a white margin, wide interiorly. The fish is brownish above and silvery below. Fins are yellowish with dusky tips.

D. VIII+I, 23-24; A. II+I, 19-20.

Habitat

It is a marine species, demersal and oceanodromous in habit.

Distribution

It has an Indo-west Pacific distribution.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first recorded from Chilika by Jones and Sujansingani (1954) which was collected from central sector of Chilika Lake near Balugaon. The species is locally known as **Tirana**, found mainly in outer channel & southern sector. Sold at Rs. 80-130/kg the fish is consumed locally as fresh and salted. Fishing gears used is gill nets and hook & line. The catch is included in the brackishwater miscellaneous group.

Caranx papuensis (Alleyne & MacLeay, 1877)

Brass trevally

Odia: Dhala Kanti

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Caranx*
Species : *Caranx papuensis*



Diagnostic features

Body of the fish species is compressed and has bluntly rounded snout. The eyes have weakly developed adipose eyelids. The species breast is naked ventrally but scales present in the pre-pelvic region. It has a short upper jaw, ending before the middle of the eye. The species was well identified with the presence of distinct white narrow margin in pelvic, pectoral and anal fins. Upper lobe of caudal fin is usually uniformly pigmented, and the narrow white border is at the posterior margin of lower lobe. There is also a conspicuous white spot on the size of pupil diameter is present on shoulder just behind the postero-dorsal margin of the opercle. Adults have small black spots on body above lateral line.

D. IX, 21-23; A. III, 16-19.

Habitat

It is a tropical marine to brackish dwelling species, generally reef associated, non-migratory in nature and commonly occur in shallow waters of 1-50 m depth. They are known to occur in lagoons.

Distribution

It is distributed in Indo-Pacific: Zanzibar, Tanzania and South Africa to Caroline and Marquesan islands, north to the Ryukyu Islands, south to Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika Lake by the scientists of ICAR-CIFRI, Barrackpore, Kolkata which was collected from new lake mouth area in outer channel during September 2015 while ICAR-CIFRI, Barrackpore, Kolkata was undertaking field survey under ICAR-CIFRI/CDA-ICZM Consultancy Project (2011-2017). The species is locally called as **Dhala Kanti**. As the species is a new record to the lagoon, not much information is available about the species from the lagoon.

Caranx sexfasciatus Quoy & Gaimard, 1825

Bigeye trevally

Odia: Parei

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Caranx*
Species : *Caranx sexfasciatus*



Diagnostic features

Dorsal spines (total): 9; Dorsal soft rays (total): 19-22; Anal spines: 3; Anal soft rays: 14 - 17. Maximum length recorded 120cm (TL).

Habitat

Marine; freshwater; brackish; reef-associated; amphidromous.

Distribution

Indo-Pacific: Red Sea and East Africa to Hawaii, north to southern Japan and the Ogasawara Islands, south to Australia and New Caledonia. Eastern Pacific: southwestern coast of Baja California Sur, Mexico and the Gulf of California to Ecuador and the Galapagos Islands. It also commonly occurs in Bay of Bengal and casually entering into the estuaries and lagoons.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968). The species is locally known as **Parei** in Odia. It mostly occurs in outer channel sector being immigrated from the sea. The main landing centre for this fish in Chilika is Arakhakuda under Brahmagiri Block in the outer channel sector. The fish has good commercial value and mostly consumed locally. The average unit price of the fish is Rs.60-80/kg. Often it is converted to dry fish for local consumption.

Megalaspis cordyla (Linnaeus, 1758)

Torpedo scad

Odia: Kanti Marua / Thumburda

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Megalaspis*
Species : *Megalaspis cordyla*



Diagnostic features

Dorsal spines (total): 9; Dorsal soft rays (total): 18-20; Anal spines: 3; Anal soft rays: 16 - 17. Caudal peduncle strongly compressed with a marked median keel. About 8 to 10 detached finlets are present after dorsal and anal fins. A large black opercular spot is present. Maximum length recorded 80cm (TL).

Habitat

Marine; brackish; reef-associated.

Distribution

Indo-West Pacific: East Africa to Japan and Australia. It is quite common in Bay of Bengal.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Roy and Sahoo (1957) which was collected from central sector near Parikud. The species is locally known as **Kanti Marua / Thumburda** in Odia. In Chilika Lake, the fish is generally occurs in outer channel and landed in significant quantity at Arakhakuda fish landing centre and also at Sanapatana centre in the outer channel. It has commercial importance and consumed locally as fresh fish. The fish migrates from the sea into the lake and also caught in the central sector casually. It is mostly sold in the fresh fish markets of Puri city and nearby small towns. The average unit price for the fish is Rs.80-90/kg.

Scomberoides commersonnianus Lacepede, 1801

Talang queenfish

Odia: White Parei

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Scomberoides*
Species : *Scomberoides commersonnianus*



Diagnostic features

Dorsal spines (total): 7 - 8; Dorsal soft rays (total): 19-21; Anal spines: 3; Anal soft rays: 16 - 19. Maximum length recorded 120cm (TL).

Habitat

Marine; brackish; reef-associated; amphidromous.

Distribution

Indo-West Pacific. It commonly occurs in both Arabian seas and Bay of Bengal along Indian coast.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty *et al.* (2015). The species is locally known as **White Parei** in Odia. It occurs mostly in outer channel sector and landed in substantial quantity at Arakhakuda, Sanapatana and Khirisahi in the lake. It is marketed fresh in the local area and casually converted to dry fish. The fish has good commercial value with average unit price of Rs.100/kg. It is generally marketed at Puri and other nearby small towns. The fish migrates from the sea into the outer channel of the lake mostly for feeding purpose during winter and summer. Since its annual catch is considerably less, it is generally grouped in the miscellaneous fishes.

Scomberoides lysan (Forsskal, 1775)

Double spotted queenfish

Odia: Khadisa

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Scomberoides*
Species : *Scomberoides lysan*



Diagnostic features

The fish has elongated and compressed body. Profile over nape is slightly concave. Eyes are 4.1-5.7 in head length. Upper jaw is longer. Cleft of mouth is deep, the maxilla extending nearly half a diameter behind the orbit. Lateral line is devoid of scutes and has a slight angular elevation soon after its commencement. Pectoral fins short and not falcate. Gill raker on the first gill arch is 21-27. Body is grey green above; silvery white below. Two series of 6-8 dusky roundish blotches present above and below lateral line; distal half of dorsal fin lobe dark. Anal fin origin is slightly behind second dorsal origin and is with a small dusky blotch on anterior part.

D. VI-VII+I, 21; A. II+I, 19-21; P. 20; V. I, 5.

Habitat

This species inhabits in marine to brackish water systems and is reef-associated.

Distribution

It is distributed in Indo-Pacific region: Red Sea and East Africa to Hawaii, Marquesas, Line and Tuamotu islands, north to southern Japan, south to New South Wales and Rapa.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968). The species is locally known as **Khadisa** in Odia, occurs in outer channel sector and are not so frequent in fishermen's catch. Generally small sized (up to 12 cm) fishes inhabits in the area caught in gill net and screen barrier net. The fish consumed locally and sold @ Rs 80-100/- kg.

Scomberoides tala (Cuvier, 1832)

Barred queenfish

Odia: Kanti Parei

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Scomberoides*
Species : *Scomberoides tala*



Diagnostic features

Spots on sides elongate vertically, forming short bars in adults. Maximum length recorded 70cm (TL).

Habitat

Marine; reef-associated.

Distribution

Indo-West Pacific: East Africa to the Philippines, north to China, south to Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported as *Chorimeinus tala* from Chilika by Jones and Sujansinghani (1954). The species is locally known as **Kanti Parei** in Odia. In Chilika Lake, the fish is frequently found in the outer channel sector being landed at Arakhakuda and Sanapatana fish landing centres. Being a marine migrant the fish has good commercial value and consumer preference. Sold mainly at Puri, Brhamagiri and local village markets. The average unit price for the fish is about Rs.80-90/kg.

Scomberoides tol (Cuvier, 1832)

Needlescaled queenfish

Odia: Kanto / Koni

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Scomberoides*
Species : *Scomberoides tol*



Diagnostic features

Dorsal spines (total): 7 - 8; Dorsal soft rays (total): 19-21; Anal spines: 3; Anal soft rays: 18 - 20. Dorsally bluish, ventrally silver or white, with 5-8 vertically oblong or oval black spots. The first 4-5 intersect the lateral line, dorsal fin lobe black outer half. Body strongly compressed, oblong and elliptical, dorsal and ventral profiles equally convex. In adults, upper jaw extends to posterior edge of pupil. Soft rays of posterior dorsal and anal fins consist of semi-detached finlets.

Habitat

Marine; brackish; reef-associated.

Distribution

Indo-West Pacific: widespread throughout the Indian Ocean from Natal, South Africa northward and from Japan south to Australia and east to Fiji.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007). The species is locally known as **Kanto/Koni** in Odia. The fish rarely occurs in outer channel during post-winter and summer when the marine condition prevails there being close to the lake mouth. The fish is a highly commercial species of marine origin. Generally the fishermen of Arakhakuda fishing village catch this fish in gill nets and bring the catch to Arakhakuda landing centre. Although the annual landing of this fish is negligible, it is highly in demand at Howrah market in West Bengal. The average local unit price of the fish is Rs.120-130/kg.

Selar boops (Cuvier, 1833)

Oxeye scad

Odia: Tirana

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Selar*
Species : *Selar boops*



Diagnostic features

Color: Blue-green above, silvery to silver-gold below. A dusky spot on edge of operculum. Dorsal, anal and caudal fins with a dusky fringe, and white tips anteriorly to dorsal and anal fins.

Oblong and compressed body with large eyes having adipose eyelid. Diameter of eyes 2.7 to 3.0 times in head length. Upper jaw (maxilla) reaches to midorbit. Lower margin of gill opening with a deep furrow. Teeth are arranged in a single series in both the jaws; preceded by a band anteriorly. 23 gill rakers are present on lower arm of first arch. Two dorsal fins; first dorsal fin with 1 procumbent spine (not always visible) and 8 normal spines; second dorsal fin with 1 spine and 24 or 25 soft rays; dorsal and anal fin bases equal. Anal fin with 2 detached spines, followed by 1 spine and 20 or 21 soft rays. Pectoral fins short and falcate. Lateral line is moderately curved anteriorly and become straight before soft dorsal fin; with 44 to 46 scutes, beginning below origin of soft dorsal fin, largest scute about 4 times i body depth. Breast fully scaled.

Habitat

Marine; reef-associated. Adults are found inshore and form large schools on day time. They disperse at night to feed on planktonic and benthic invertebrates such as crabs and shrimps.

Distribution

Pacific Ocean: Andaman Islands to Vanuatu, north to the Philippines, south to northern Australia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Satapathy and Panda (2009) which was collected from Rambhartia area of outer channel sector. The species is locally known as ***Tirana*** in Odia. Although a good food fish, its catch in Chilika is much less and is mixed with miscellaneous brackish water fish groups. The fish mostly occurs in outer channel beyond Magarmukh and up to Parikud area in the central sector; caught by barrier nets and monofilament gill net. Marketed fresh and dried salted.

Selar crumenophthalmus (Bloch, 1793)

Bigeye scad

Odia: Kanti, Samudra Parei

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Selar*
Species : *Selar crumenophthalmus*



Diagnostic features

Body elongate and moderately compressed, with lower profile slightly more convex than upper. Eye very large, shorter than snout length and with a well developed adipose eyelid completely covering eye except for a vertical slit centred on pupil; upper jaw moderately broad at end and extending to below anterior margin of pupil; teeth small and recurved, upper jaw with a narrow band, tapering posteriorly; lower jaw with an irregular single row. Gillrakers (including rudiments) 9 to 12 upper, 27 to 31 lower on first gill arch. Shoulder girdle (cleithrum) margin with a deep furrow, a large papilla immediately above it and a smaller papilla near upper edge. Dorsal fin with 8 spines and I + 24-27 soft rays. Anal fin with 2 spines and I + 21-23 soft rays; dorsal and anal fins without a detached terminal finlet. Pectoral fins shorter than head. Scales moderately small and cycloid (smooth to touch), covering body except for a small area behind pectoral fins, scutes relatively small, chord of the curved part of lateral line contained 0.7 to 1.2 times in straight part (to caudal fin base); scales in curved part with 48 to 56 anterior scales; 0 to 4 scutes in curved part; straight part with 0 to 11 anterior scales and 29 to 42 scutes; total scales and scutes in lateral line (excluding caudal scales) 84 to 94. Colour in fresh fish, upper third of body and top of head metallic blue or bluish-green; tip of snout dusky or blackish; lower two thirds of body and head silvery or whitish; a narrow, yellowish stripe may be present from edge of opercle to upper part of caudal peduncle; blackish areas above and below pupil with a reddish area sometimes present; a small elongated, blackish opercular spot on edge near upper margin. First dorsal fin dusky on margins with rest of fin clear; second dorsal fin dusky over most of fin with dorsal lobe blackish; anal fin clear or slightly dusky along base; caudal fin dusky with tip of upper lobe dark; pectoral fins clear or slightly dusky near base and with a yellowish tint sometimes present; pelvic fins clear (<http://www.fao.org/fishery/species/2326/en>; dt.25.05.2017). Maximum length recorded 70.0 cm (TL) (Kuitert and Tono-zuka, 2001).

Habitat

Marine; reef-associated. Found small to large schools, mainly inshore or in shallow water; at times over shallow reefs but may reach depths of 170 m. Prefers clean, clear insular waters but occasionally in turbid waters. Mainly nocturnal, it feeds primarily on

planktonic or benthic invertebrates, including shrimps, crabs and foraminifers; also on fish.

Distribution

Circumtropical. Indo-Pacific: East Africa to Rapa, north to southern Japan and the Hawaiian Islands, south to New Caledonia. Eastern Pacific: Mexico to Peru, including the Galapagos Islands. Western Atlantic: Nova Scotia, Canada and Bermuda through the Gulf of Mexico and the Caribbean to São Paulo, Brazil. Eastern Atlantic: Cape Verde to southern Angola.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species (22 cm) was first reported from Chilika by Mohapatra *et al.* (2007) which was collected from outer channel sector. The species is locally known as **Kanti**, **Samudra Parei** in Odia. This is one of the important marine species in coastal scad fishery. Smaller size fishes of this species are very often encountered by fishermen in the outer channel which has good market demand for local consumption. On an average, 0.3-0.4 tonnes are caught from Chilika annually and its distribution in Chilika is mainly in outer channel and also occasionally caught from central sector.

Selaroides leptolepis (Cuvier, 1833)

Yellowstripe scad

Odia: Tirana

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Selaroides*
Species : *Selaroides leptolepis*



Diagnostic features

Body elongate, oblong and compressed; dorsal and ventral profiles equally convex. Eye diameter about equal to slightly smaller than snout length, with adipose eyelid moderately developed on posterior half of eye; upper jaw strongly protractile with posterior end of jaw concave above, concave and produced below; upper jaw without teeth; lower jaw with a series of minute teeth. Gillrakers (including rudiments) 10 to 14 upper, 27 to 32 lower and 40 to 46 total on first gill arch. Shoulder girdle (cleithrum) margin smooth, without papillae. Two separate dorsal fins, the first with 8 spines, the second with 1 + 24-26 soft rays. Anal fin with 2 detached spines followed by 1 + 21-23 soft rays; spinous dorsal fin moderately high, longest spine height about equal length of soft dorsal fin lobe. Lateral line anteriorly with a moderate regular arch, with junction of curved and straight parts below second dorsal fin between 10th to 12th soft rays; chord of curved part of lateral line longer than straight part of lateral line, contained 0.6 to 0.8 times in straight part; straight part of lateral line with 13 to 25 scales followed by 24 to 29 relatively small scutes. Breast completely scaled. Colour in life, metallic blue above, silvery white below, with a broad yellow stripe from upper margin of eye to caudal peduncle; prominent black opercular spot encroaching onto shoulder. Dorsal, anal and caudal fins pale to dusky yellow; pelvic fins white.

Habitat

Occurs in inshore waters of the continental shelf. Forms large demersal schools over soft bottom habitats at depths shallower than 50 m. Ostracods, gastropods and euphausiids are common prey but small fish are also taken. Marine; brackish; reef-associated; amphidromous.

Distribution

Indo-West Pacific: Persian Gulf to the Philippines, north to Japan, south to the Arafura Sea and Australia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty (1973) which was collected from outer channel sector near Arakuda village. The species is locally known as ***Tirana*** in Odia. Separate landing for this species has not been recorded in Chilika but is mixed with the brackishwater miscellaneous group. A tasty food fish, sold in the local market as fresh and dried salted.

Trachinotus baillonii (Lacepede 1801)

Small spotted dart

Odia: Aisina Parei

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Trachinotus*
Species : *Trachinotus baillonii*



Diagnostic features

It has an elongate to ovate and strongly compressed body. Dorsal and ventral profile is almost equally convex, snout blunt. Both jaws are with bands of small villiform teeth and tongue is lack of teeth. It has 2 separate dorsal fins. Dorsal fin lobe consistently shorter than anal fin lobe in larger specimens (> 25 cm FL). Similarly, pelvic fins relatively short, its length contained 1.9 to 2.3 times in pectoral fin length in larger specimens of > 25 cm FL. Lateral line only slightly irregular, weakly convex above pectoral fin, becoming straight posteriorly. No scutes or caudal peduncle grooves is present. Body of adult is silvery-blue to grey above, silvery white below. Sides with 3-5 black spots, smaller than eye diameter are present on lateral line; middle spot is larger than the sides. Caudal fin is symmetrical

D1. VI+ I, 21-25; A. II+I, 20-24.

Habitat

Inhabits in brackish and marine waters; usually reef-associated.

Distribution

Distribution is Indo-West Pacific and Red Sea.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by ICAR-CIFRI's scientific team while conducting fish diversity inventory survey. The species is locally known as ***Aisina Parei*** in Odia. The specimen was collected from old mouth area of Chilika during September 2015. As this species is new record for the lagoon, no much information about its catch, commercial values etc are available. The fish is a casual visitor to the outer channel of the Chilika for feeding purpose, rarely found in the commercial catches.

Trachinotus botla (Shaw, 1803)

Large spotted dart

Odia: Peti Parei

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Trachinotus*
Species : *Trachinotus botla*



Diagnostic features

The fish has a compressed round body with small head. It has four dull grey oval shaped lateral line spots, located about 2/3rd above lateral line. The anterior one is larger and gradually decreases towards the fourth. Second dorsal and anal fins are highly falcate and the soft anal rays count 19. Dorsal-fin lobe is usually longer than anal-fin lobe and pelvic fins are long, their length contained 1.5 to 1.7 times in pectoral-fin length in specimens larger than about 25 cm fork length. The vomerine tooth patch is usually tear drop shaped.

D. VII, 22-24; A. III, 19-22.

Habitat

It is a tropical marine to brackish dwelling species, generally reef associated commonly occur in shallow waters of 1-60 m depth.

Distribution

It is distributed in Indian Ocean: Somalia and Kenya to Algoa Bay, South Africa; also Madagascar, Sri Lanka and Western Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by ICAR-CIFRI's scientific team while conducting fish diversity inventory survey. The species is locally known as **Peti Parei** in Odia. The fish was collected from old mouth area of Chilika on 9 September 2015 caught by hook and line. As the species is a new record to the lagoon, not much information is available about the species from the lagoon. It is a food fish consumed by coastal fishermen.

Trachinotus mookalee Cuvier, 1832

Indian pompano
Odia: Dhala Oranga

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Carangidae
Genus : *Trachinotus*
Species : *Trachinotus mookalee*



Diagnostic features

Profile of snout broadly rounded, in adults becoming nearly straight to interorbital region; tongue with a narrow band of teeth, persisting to about 50 cm FL; supraoccipital bone broad and sausage-shaped in adults >30 cm FL. 2 separate dorsal fins, the first with 6 short spines (the anterior spines often becoming completely embedded in adults). followed 1 spine and 16-18 soft rays. Head and bodies generally silvery, greenish to bluish-grey dorsally, paler below; anal fin bright to dirty yellow, lobe without a brownish anterior margin. Maximum length 90.0 cm (TL).

Colour: Head and body silvery, greenish to bluish grey dorsally, paler below, large adults sometimes with body mostly bronze or greenish golden; 2nd dorsal and caudal fins dusky yellow, leading edges and fin tips darkest; pelvic fins pale yellow to white; pectoral fins dark; juveniles silvery with pale yellow fins, except distal half of dorsal fin lobe black.

Habitat

Marine; demersal.

Distribution

Indo-West Pacific.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007). The species is locally known as **Dhala Oranga** in Odia. In Chilika Lake, the fish is frequently found in the outer channel sector, mainly being landed at Arakhakuda and Sanapatana fish landing centres. Occasionally also found in the central sector of the lake. The marine fish has commercial value fetching an average unit price of Rs.100-110/kg. It is generally caught by gill nets and bag nets operated in the outer channel. In the commercial landing, it is included in the miscellaneous group since its landing is insignificant.

Aurigequula fasciata (Lacepede, 1803)

Striped ponyfish
Odia: Tankachandi

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Leiognathidae
Genus : *Aurigequula*
Species : *Aurigequula fasciata*



Diagnostic features

2nd dorsal-fin spine elongated; about 11 vertical lines; breast scaleless; axil yellow. Dorsal spines (total): 8; Dorsal soft rays (total): 16; Anal spines: 3; Anal soft rays: 14. Deep bodied and vertical dark bars on upper sides. Long filament on dorsal spine. Silvery body. Naked head; with nuchal spine. Protracted mouth pointing downward.

Habitat

Marine; brackish; demersal. Found in coastal waters. May also enter semi-enclosed sea areas and estuaries. Euryhaline, Forms schools, Feeds on polychaetes, small crustaceans, and small fish.

Distribution

Indo-West Pacific: Red Sea and East Africa to Samoa and Fiji, north to Japan, south to northeastern Australia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Satapathy and Panda (2009) which was collected from Sanapatana area in outer channel. The species is locally known as **Tankachandi** in Odia. The fish is regularly caught in outer channel being mixed with other leiognathid species and are included in the landing of brackish water miscellaneous group of fishes, hence individual catch is not recorded in the catch data. Though small in size but a good tasty food fish, marketed and dried salted by the fishermen of Arakuda and Sanapatana village in the outer channel sector. Generally caught in barrier nets, drag nets and bag nets. Rarely occurs in the central sector and Palur Bay in the southern sector.

Leiognathus equulus (Forsskal, 1775)

Common ponyfish

Odia: Tanka Chandi

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Leiognathidae
Genus : *Leiognathus*
Species : *Leiognathus equulus*



Diagnostic features

The species has a deep and compressed body with strongly arched dorsal profile. Mouth points downward when protracted. Mandibular profile is strongly concave. Head is without scales, breast without thin scales. Body colour is silvery with faint, narrow vertical stripes on back. Small black blotch is present on caudal peduncle. Pectoral axile is dusky and anal fin yellowish.

D. VIII, 15-16; A. III, 14-15; P. 18-20; V. I, 5

Habitat

It is a marine, fresh and brackish water dwelling species. It is demersal in habit and amphidromous in migration.

Distribution

It is distributed in Indo-West Pacific: Red Sea, Persian Gulf and East Africa (including Reunion, Comoros, Seychelles, Madagascar and Mauritius) to Fiji, north to the Ryukyu Islands, south to Australia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923). The species is locally known as **Tanka Chandi** in Odia, distributed throughout the lagoon. It has minor commercial value, sold @ Rs 50-60/kg in fish landing center. The fish consumed locally as fresh and salt dried. The fish generally captured through screen barrier nets (**Khanda**), drag nets and seine nets. The fish is a potential material for poultry feed preparation.

Nuchequula blochii (Valenciennes, 1835)

Twoblotch ponyfish

Odia: Chandi

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Leiognathidae
Genus : *Nuchequula*
Species : *Nuchequula blochii*



Diagnostic features

It has oblong or elevated body; strongly compressed. The mouth is very protractile. It has minute teeth of equal size present in the jaws. The lower jaw is longer and its antero-ventral profile is almost straight. The posterior margin of the maxilla reaches to below the first third or middle of the eye. The lower edge of preopercle is serrated. Breast is fully scaled but the cheek is naked. A distinct, jet-black blotch is located distally on the spinous dorsal fin. The supra-orbital ridge is serrated. A brown blotch is present over the nape.

D. VIII, 16; A. III, 14; P. 18-19; V. I, 5; Ll. 60.

Habitat

The species occurs in brackish to marine water bodies, demersal in habit and amphidromous in migration.

Distribution

It has an Indo-West Pacific distribution: known only from Pakistan, India, and Thailand.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923) which was collected from Barkul Bay in central sector. The species is locally known as **Chandi** in Odia, occurs in northern and central sector of Chilika. The fish has a minor commercial value, consumed locally, sold @ Rs. 50-60/kg at landing center. The fish generally captured through screen barrier nets (**Khanda**), drag nets and seine nets. The fish is a potential material for poultry feed preparation.

Photopectoralis bindus (Valenciennes, 1835)

Orangefin ponyfish

Odia: Tonki Chandi

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Leiognathidae
Genus : *Photopectoralis*
Species : *Photopectoralis bindus*



Diagnostic features

Dorsal spines (total): 8; Dorsal soft rays (total): 16-17; Anal spines: 3; Anal soft rays: 14. Bright orange blotch, edged with black on the dorsal fin. Breast scaled. Maximum length recorded 11.0 cm (TL) (James, 1984).

Habitat

Marine; brackish; demersal; amphidromous.

Distribution

Indo-West Pacific: Port Sudan in the Red Sea and the Persian Gulf to Japan, the Arafura Sea and Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007) which was collected from outer channel sector near Arakhakuda. The species is locally known as **Tonki chandi** in Odia. The fish is caught in association with other Leiognathid species in the outer channel sector. It is sold in the local market.

Lethrinus lentjan (Lacepede, 1802)

Pink ear emperor

Odia: Kokoroba

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Lethrinidae
Genus : *Lethrinus*
Species : *Lethrinus lentjan*



Diagnostic features

It's body depth greater than head length. Inter orbital space moderately convex; snout straight, no hump to head. Maxilla reaches opposite anterior or posterior nostril. Posterolateral teeth in jaws include distinct molars in adults, anterior teeth caniniform. Dorsal fin continuous; fourth dorsal fin spine longest; it is 2.7 to 3.1 times in head length. There are 5 ½ scale rows between lateral line and median dorsal fin spines. Inner surface of pectoral fin base is without scales. Body is green-grey above and lighter silvery below. White spots on scales centre especially above lateral line. Head with bright red margin to opercle and usually to pectoral fin base.

D. X, 9; A. III, 8; P. 13; V. I, 5

Habitat

The species dwells in both marine and brackish region and is found to be reef-associated.

Distribution

The species is well distributed in Indo-West Pacific: Red sea, Arabian (Persian Gulf), East Africa to the Ryukyu Islands and Tonga.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika Lake by ICAR-CIFRI while undertaking fish diversity inventory survey in Chilika under ICAR-CIFRI/CDA-ICZM Consultancy Project (2011-2017) which was collected from new lake mouth area during September 2015. The species is locally known as **Kokoroba** in Odia. The species is a new record for Chilika (TL = 16.3 cm). This fish was caught from gill net operated in new mouth area of Chilika.

Lutjanus argentimaculatus (Forsskal, 1775)

Mangrove red snapper

Odia: Angarua

Systematic accounts

Class : Actinopterygii

Order : Perciformes

Family : Lutjanidae

Genus : *Lutjanus*

Species : *Lutjanus argentimaculatus*



Diagnostic features

The species has moderately deep body with pointed snout. Body greenish-brown, belly silvery; scales with a dark centers and white margin; medial fins with reddish hue. Preorbital bone is relatively broad, wider than eye diameter. Jaw teeth are conical with upper canines notably enlarged (as of all *Lutjanus* species). Preopercular notch and knob poorly developed; vomerine teeth (on roof of mouth) are in a V-shaped patch, without a medial posterior extension. Tongue with a patch of granular teeth. Gills with 16–20 gill rakers are on 1st gill arch. Pectoral and ventral fins dark brown; anterior margin of ventral fin red with narrow white margin. Caudal fin is emarginated. Juveniles are with 8 whitish bars on sides and 1 or 2 blue lines across cheek.

D. X, 13-14; A. III, 8; P. 16-17; V. I, 5; Ll. 46.

Habitat

It is a marine, brackish and freshwater dwelling species usually reef-associated and oceanodromous in migration.

Distribution

It is distributed in Indo-West Pacific: East Africa to Samoa and the Line Islands, north to the Ryukyu Islands, south to Australia. Has dispersed into the eastern Mediterranean (off Lebanon) via the Suez Canal but not well established there.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from outer channel near Arakhakuda village. The species is locally known as **Angarua** in Odia. It is a rare species found only in outer channel sector of Chilika. It has good commercial value, consumed locally, sold @ Rs 100-200/kg. The fish is caught in hook & long line and gill nets.

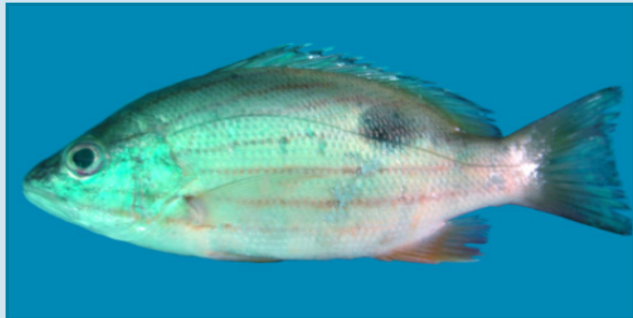
Lutjanus indicus Allen, White & Erdmann, 2013

Russell's snapper

Odia: Rangua

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Lutjanidae
Genus : *Lutjanus*
Species : *Lutjanus indicus*



Diagnostic features

It has an elevated and deeply compressed body with rounded abdomen. Head is short, compressed with dorsal profile deeply sloped. Vomerine tooth patch is triangular, with a median posterior extension. Preorbital width is about equal to, or slightly less than eye diameter. Pre-opercular notch is shallow. Scale rows on back rising obliquely above lateral line. Caudal fin is truncate. Body is brownish yellow, the lower sides and belly being yellowish white. 6-7 narrow golden horizontal stripes on sides, the lower ones horizontal and upper ones rising obliquely to dorsal profile. A black blotch is present below anterior dorsal rays. All fins are yellowish; caudal fin dusky.

D. X, 14; A. III, 8; P. 16; V. I, 5; LI. 48-50.

Habitat

The fish inhabits in marine and brackish water environments, generally found to be reef-associated.

Distribution

The species is commonly distributed in Western Pacific region.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Roy & Sahoo (1957) which was collected from outer channel near Alupatana village. The species is locally known as **Rangua** in Odia. The species mostly inhabits in outer channel sector but rarely found in southern and central sector. The species has good commercial value, consumed locally, sold @ Rs 100-200/kg. The fish is caught in gill nets and hook and long line. In outer channel, the species more frequently found to be caught in hook and line. This is a migratory species.

Lutjanus johnii (Bloch, 1792)

John's snapper

Odia: Rangua

Systematic accounts

Class : Actinopterygii

Order : Perciformes

Family : Lutjanidae

Genus : *Lutjanus*

Species : *Lutjanus johnii*



Diagnostic features

It has an elevated and deeply compressed body with rounded abdomen. Its head is short and compressed. The dorsal profile of body is deeply sloped. The villiform teeth are present in both jaws; canine in the upper and smaller ones in the lower jaw. Presence of vomerine tooth patch is crescentic, without a median posterior extension. Inter-opercular knob is absent. Longitudinal scale rows above lateral line are parallel to it and those below lateral line are horizontal. Caudal fin is truncate. Body colour is yellow with silvery shine and silvery white on belly. Center of each scale is with reddish brown spots giving an appearance of series of horizontal lines. No stripes on sides of body. A round black spot longer than eye is present above lateral line situated below the anterior soft dorsal rays.

D. X, 14; A. III, 8; P. 16; V. I, 5

Habitat

The species dwells in both marine and brackish region and is found to be reef-associated. It is an oceanodromous species.

Distribution

The distribution of the species ranges from Indo-West Pacific: East Africa to Fiji, north to the Ryukyu Islands, south to Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923) which was collected from Rambha Bay (southern sector). The species is locally known as **Rangua** in Odia. The species frequently occurs in outer channel sector but also found in southern and central sector. The species is commercially important, sold @ Rs 100-200/kg. Largely used for local consumption. The fish caught in gill nets and Hook and long line. Common size occurs in Chilika is 8-15 cm.

Lutjanus kasmira (Forsskal, 1775)

Common bluestripe snapper

Odia: Soosta, Rangua

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Lutjanidae
Genus : *Lutjanus*
Species : *Lutjanus kasmira*



Diagnostic features

Preorbital width usually greater than eye diameter; vomerine teeth (on roof of mouth) in a V-shaped patch, without a medial posterior extension; tongue toothless; scale rows on back rising obliquely above lateral line; 20–22 gill rakers on 1st gill arch. The fish is also known as a game fish.

Dorsal spines (total):10; Dorsal soft rays (total):14-15; Anal spines: 3; Anal soft rays: 7 - 8. Tooth patch on vomer crescentic, without a posterior median extension. Preopercular knob and notch well developed. Pale dusky stripes. Background colour yellowish. Fins scaled. 4 blue stripe. Maximum length recorded 40.0cm (TL) (Bykov, 1983).

Colour: Yellow with abrupt transition to white on lower one-third; a series of 4 blue stripes on yellow portion of body; several faint greyish stripes on lowermost part of sides; fins yellow

Habitat

Marine; reef-associated.

Distribution

Indo-Pacific: Red Sea and East Africa to the Marquesas and Line islands, north to southern Japan, south to Australia. Southeast Atlantic: East London, South Africa.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was recorded from Arakhakuda (outer channel) as *Lutjanus quinquilineatus*. The species is locally known as **Soosta, Rangua** in Odia which casually occurs in outer channel and mostly landed at Arakhakuda fish landing centre. The fish does not form a commercial fishery in the lake. It is generally caught by gill nets and hook & lines.

Lutjanus rivulatus (Cuvier, 1828)

Blubberlip snapper

Odia: Rangua

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Lutjanidae
Genus : *Lutjanus*
Species : *Lutjanus rivulatus*



Diagnostic features

The species has moderately deep, slender and laterally compressed body. Body depth is 3 times in SL. Dorsal profile of head sharply sloped. Preorbital bone is broad, twice the eye diameter. The preopercular notch and knob is moderately developed. Posterior and inferior preopercular border is denticulate. Six transverse rows of scales are present on operculum. Frontal part of head is naked, bearing numerous ripple blue lines. Mouth is oblique and its maxillary reaching to below front border of eye or of pupil. Small teeth are present on vomer in a sharply dent band, in an elongate band on palatines. Scales beginning on occiput is with a distinct supra-temporal band. Longitudinal rows of scales above lateral line rising obliquely, ascending to dorsal profile, running horizontally below the lateral line. Around 48-52 transverse rows of scales are above lateral line and 45-49 below it. Dorsal spines are robust. First spine is half the length of second, which is shorter than third. Soft dorsal is rounded, as high as spinous part. Soft part of anal fin is also rounded; deeper than spinous part. Ventral spine is as long as snout. Caudal fin slightly emarginated. Body colour olive-brown to blackish dorsally and faded gradually towards ventral. A chalky white spot surrounded by black margins is located on the lateral line just below the junction of spiny and soft dorsals. Three black longitudinal bands present on body before the chalky spots. Upper part of spiny dorsal is reddish, while the top of both dorsal rays and anal fins is yellowish. The pelvic and anal fins are deep black whereas the pectorals are completely yellow in colour.

Habitat

The species inhabits in marine water, found to be reef-associated.

Distribution

Distributed in Indo-Pacific: East Africa to Tahiti, north to southern Japan, south to Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika Lake by Karna *et al.* (2017) while the ICAR-CIFRI scientific team was undertaking fish diversity inventory survey in Chilika under ICAR-CIFRI/CDA-ICZM Consultancy Project (2011-2017) which was collected from Satapada area of outer channel and new mouth area during September & December 2015. The species is locally known as **Angarua** in Odia. The species is newly recorded for Chilika lake, hence not much of information specific to Chilika Lake are available.

Datnioides polota (Hamilton, 1822)

Silver tiger perch

Odia: Verenda / Udari

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Datnioididae
Genus : *Datnioides*
Species : *Datnioides polota*



Diagnostic features

The fish has an elevated, oblong and compressed body. Abomen is rounded and pre-dorsal profile strongly concave. It has a compressed head and pointed snout with large eyes. Mouth is wide and terminal, cleft does not extending to anterior border of orbit. Upper jaw is protrusible. Total gill rakers on the first arch are 20-23. The Lateral line is curved, complete and has about 40-60 large scales in lateral series. The body colour pattern is highly variable; up to 7 vertical bars on body, sometimes with 1 to 4 partial bars between full bars. Of the three anal spines, second is longer than third.

D. XII, 13-14; A. III, 8-9; P. 19; V. I, 5; LI. 40-60.

Habitat

The fish dwells in fresh and brackish water region specifically near mouth regions of rivers and coastal lagoons; benthopelagic in habit.

Distribution

It is distributed in Asia and Oceania: India to Indonesia and New Guinea.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923) which was collected from the lake near Barkul. The species is locally called as **Verenda** or **Udari**. It is a resident species in Chilika, is well occurs throughout the lagoon but more frequently found in central and northern sector. It breeds near river mouth of Daya in the northern sector and also in Nalabana area in the central sector. The average annual landing has been estimated at 53.73 tonnes valued at Rs. 41.48 lakhs. The average sectoral landings are of the order: central sector > northern sector > southern sector > outer channel sector. It has good commercial value, sold @ Rs. 70-80/kg. Generally, consumed locally and also has ornamental value. Fishermen in Chilika used gill nets and screen barrier nets (**Khanda**) for targeting this species.

Karna *et al.* (2017) studied the length weight and length-length relations of the species from the Chilika Lake.

Gerres erythrouros (Bloch, 1791)

Deep-bodied mojarra

Odia: Jagili

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gerreidae
Genus : *Gerres*
Species : *Gerres erythrouros*



Diagnostic features

Body is deep, depth 2.0-2.3 in Standard length. Snout is somewhat spatulate with strongly protractile mouth. The posterior process of the premaxilla reaches to opposite the first third of the orbit. Preopercle is entire or finely serrated along its vertical limb. Dorsal spines are strong, the second rather longer than the third and almost equal to the length of the head, both rather curved. Pectoral fin is longer than the head length and reaching to anal fin. Five rows of scales are present in between the lateral line and the base of the fifth dorsal spine. Body is silvery with indistinct longitudinal lines along the scale rows on dorsal part. Dorsal fin is with black margin. Ventral and anal fins are yellow with white tips.

D. IX, 10; A. III, 7; P. 6-7; V. I, 5; Ll. 38-41.

Habitat

It is a marine or brackish species, generally reef-associated and oceanodromous in migration.

Distribution

It is distributed in Indo-West Pacific: Madagascar to Australia, Vanuatu.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty *et al.* (2015) which was collected from Parikud area in central sector. The species is locally known as **Jagili** in Odia, occurs throughout the lagoon, abundantly in central and southern sectors. The fish has good commercial value, sold @ Rs. 60-80/kg. The fishes used for local consumption as well as traded to outside of the state. Target gears for the species in Chilika are gill net, screen barrier (**Khanda**) and seine net.

Gerres filamentosus Cuvier, 1829

Whipfin silver-biddy

Odia: Jagili

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gerreidae
Genus : *Gerres*
Species : *Gerres filamentosus*



Diagnostic features

The fish species has an oblong, elevated, moderately compressed and deep body. It has a small mouth and the maxilla extends to below the front edge or first fourth of the orbit. Its body depth is 2.0-2.5 in standard length. Five or six fine rows of scales between the lateral line and base of the dorsal sheath. The predorsal distance is equal to or less than the body depth. Second dorsal spine is long and filamentous. Body colour is silvery, sides with 8-10 vertical series of ovoid bluish spots. Snout is black, an anterior black spot on base of each dorsal spine and ray. Caudal fin grayish and other fins yellow with numerous fine dots on the fin membrane.

D. IX, 10; A. III, 7-8; P. 16; V. I, 5; Ll. 44-47.

Habitat

It is found in freshwater to marine habitat; demersal in nature and amphidromous in migration.

Distribution

Distribution is Indo-Pacific: East Africa and Madagascar to Japan and Australia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923) which was collected from Satapada area of outer channel. The species is locally known as **Jagili** in Odia, occurs throughout the lagoon and major catch comes from central and southern sectors. The fish is commercially important, sold @ Rs. 60-80/kg. The fishes used for local consumption as well as traded to outside of the state. Target gears for the species in Chilika are gill net, screen barrier (**Khanda**) and seine net.

Gerres limbatus Cuvier, 1830

Saddleback silver-biddy

Odia: Jagili

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gerreidae
Genus : *Gerres*
Species : *Gerres limbatus*



Diagnostic features

Scales between 5th dorsal fin spine base and lateral line 2.5-3 (usually 2.5). Second anal fin spine more robust than 3rd. Premaxillary groove without scales. Posterior margin of maxilla beyond a vertical through anterior margin of inner dermal eye opening. Diffused dark saddle patches along the back of live specimens 4 or 5: 1st saddle on nape; 2nd under second to 6th or 7th dorsal fin spine; 3rd beneath anterior soft part of dorsal fin; 4th beneath posterior soft part of dorsal fin; 5th on 1/3 upper caudal peduncle (or extending onto upper caudal peduncle or absent). Dorsal fin faint yellowish, with a dark patch on tip of spinous portion above a line running from middle of second dorsal spine to tip of 6th dorsal spine (rarely broader or otherwise indistinct with growth). Caudal fin pale yellow (often with a dusky trailing edge). Anal fin with anterior half yellow or dull orange, posterior whitish hyaline (Rarely dusky). Pectoral fins yellowish color, grading to hyaline at the tip. Pelvic fins yellow or dull orange (hyaline in Thai and Indonesian specimens). Supraneural bones 3.

Habitat

Marine; brackish; demersal; amphidromous.

Distribution

Indo-West Pacific: India and Sri Lanka to southeast Asia and the South China Sea. Reported in Iran.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty *et al.* (2015). The species is locally known as **Jagili** in Odia. Landing of this fish being much less in volume, is mixed with the landing of *G. setifer*. A good food fish and high in demand as for *G. setifer*. Mostly captured from central and southern sector of Chilika, marketed fresh locally and sold @ Rs.100/kg. Gill net, screen barrier (**Khanda**) and seine net are the targeted gears for the species in Chilika.

Gerres macracanthus Bleeker, 1854

Longspine silver-biddy

Odia: Jagili

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gerreidae
Genus : *Gerres*
Species : *Gerres macracanthus*



Diagnostic features

The fish species has an oblong, moderately compressed and deep body. It has a small and protractile mouth and the maxilla extends to below the front edge or first fourth of the orbit. Its body depth is 2.3-2.4 in standard length. Head and body fully covered with scales. Five or six fine rows of scales between the lateral line and base of the dorsal sheath. The predorsal distance is equal to or less than the body depth. Second dorsal spine is long but not filamentous. Body colour is silvery, sides with a series of vertical bars on back and sides of body. Snout is black, an anterior black spot on base of each dorsal spine and ray. Caudal fin grayish and other fins yellow with numerous fine dots on the fin membrane.

D. IX, 10; A. III, 7; P. 15-16; V.I, 5; LI. 42-44.

Habitat

The fish species dwells in marine to brackish region, demersal in habit.

Distribution

It is distributed in Indo-West Pacific, Red Sea to East Africa to Indonesia and New Guinea.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Jones & Sujansingani (1954). The species is locally known as **Jagili** in Odia, mostly found in southern sector of Chilika Lake, also occurs rarely in other sectors. The fish has good commercial value, sold @ Rs 80-100/kg. The fish used both for local consumption. The species generally caught in gill net and screen barrier net (**Khanda**).

Gerres oyena (Forsskal, 1775)

Slender spine mojarra

Odia: Jagili

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gerreidae
Genus : *Gerres*
Species : *Gerres oyena*



Diagnostic features

The species has an oblong and slightly compressed body. The groove of the posterior processes of the premaxillaries reaches to opposite the middle of the orbit. The maxilla extends to below the first third of the orbit. Preopercle roughened along its vertical limb but not serrated. Depth of the body is 2.5-3 in standard length. Pectoral fin is long, extending beyond anal fin origin. Anterior part of dorsal fin elevated. Highest dorsal spine is as long as head length excluding the snout. Second anal spine is strongest but shorter than the third which equals half the length of the head. Body colour is olive above, silvery grey below with a series of faint paired spots arranged in rows on sides. Margins of dorsal and caudal fins are dusky.

D. X, 10; A. III, 7; P. 15-16; V. I, 5; LI. 35-41.

Habitat

The fish is a demersal species found in shallow coastal waters, estuaries and lagoons. It is a marine or brackish water fish; usually reef associated.

Distribution

It is distributed in Indo-West Pacific. The potential areas are Red sea, east coast of Africa and Seas of India to the Malaya- Archipelago.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923) which was collected from Satapada area of outer channel. The species is locally known as **Jagili** in Odia, occurs throughout the lagoon. The species is a commercially important fish, sold @ Rs 80-100/kg. The average sectoral yields are in order: central sector > southern sector > northern sector > outer channel sector. The fishes used for local consumption as well as traded to outside of the state. Target gears for the species in Chilika are gill net, and screen barrier net.

Gerres phaiya Iwatsuki & Heemstra, 2001

Strong spined silver-biddy

Odia: Jagili

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gerreidae
Genus : *Gerres*
Species : *Gerres phaiya*



Diagnostic features

Dorsal spines (total): 9; Dorsal soft rays (total): 10; Anal spines: 3; Anal soft rays: 7. When fresh, upper surface of head and trunk silvery, golden-brown, grading to silver on abdomen. Pelvic and anal fins yellow, first few rays of pelvic fin with a white distal margin or whitish-hyaline posteriorly; caudal fin yellowish-dusky with slightly whitish lower margin posteriorly, lobes usually broadly rounded posteriorly; dorsal and pectoral fins yellowish-hyaline; trunk with approximately 6-10 vertical dusky bars (about half width of pupil diameter), more apparent when stressed or when preserved. Number of scales between the base of the 5th dorsal fin spine and lateral line 4-4.5. Second dorsal fin spine longest, 23-27% SL (mean 25%). Supraneural bones 3.

Habitat

Marine; brackish; demersal. Tropical

Distribution

Western Indian Ocean: southwest coast of India; probably also in Bengal Bay and the Andaman Sea.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923) in the previously recorded name *Gerres oyena* which was collected from Satapada area of the outer channel sector. The species is locally known as **Jagili** in Odia. The fish occurs in all four sectors of the lake and forms a good commercial fishery being mixed with the silver biddy group and average contribution to the silver biddy landings was estimated at 8.25% (average annual landing being 14.4 tonnes). The fish is one of the popular and commercial fish species of Chilika Lake. The fish is generally marketed fresh and consumed by local people.

Gerres setifer (Hamilton, 1822)

Small Bengal Silver-biddy

Odia: Jagili

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gerreidae
Genus : *Gerres*
Species : *Gerres setifer*



Diagnostic features

Body oblong and slightly compressed, silvery and mouth small. Supraneural bones 2. Last dorsal fin spine is longer than the penultimate spine, mean 1.17.

Habitat

Habitat benthopelagic; amphidromous ; brackish; marine

Distribution

Indian Ocean: east coast of India and Sri Lanka. Reported from Bangladesh, Myanmar and Thailand. Found predominantly in Hooghly estuaries and Chilika Lake.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923) which was collected from Barkul Bay. The species is locally known as **Jagili** in Odia. In Chilika, it is distributed throughout the lake, more abundantly occur in the eastern zone of southern sector. The fish breeds in the southern sector of the lake in the sandy areas at the eastern end during May-August, June being the peak. The fish is landed in more quantity at Kalupadaghat and Sorana landing centres in northern

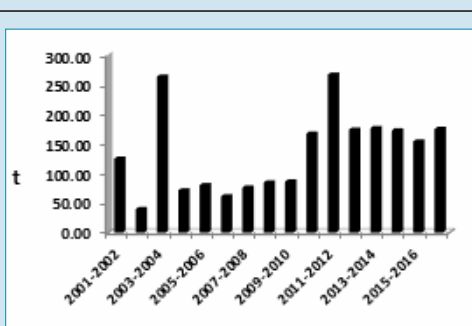


Fig Q Annual landings of *G. setifer* (Jagili) during 2001-02 to 2016-17

sector and Balugaon in the central sector. It is a commercially important species mostly marketed within the state. The average daily and annual landings of the fish in Chilika are 14.6 and 175 tonnes respectively. It fetches an average unit price of Rs.87/-kg at Chilika. The fish is generally caught in Chilika in ***Khandas***, seine nets and gill nets. Year wise annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig Q.

Fisheries and population of the fish in Chilika was studied during 1957-65 by Jhingran and Natarajan (1966 & 1969). The biology of Chilika Jagili was studied by Pattnaik (1971). Length-weight relationship of Chilika Jagili was studied by Karna *et al.* (2010). The fish breeds in Chilika Lake during May-August with peak in June around the lake mouth area and in the southern sector of the lake in the shallow sandy areas at the eastern end.

Pomadasys argenteus (Forsskal, 1775)

Silver grunt

Odia: Kokoraba

Systematic accounts

Class : Actinopterygii

Order : Perciformes

Family : Haemulidae

Genus : *Pomadasys*

Species : *Pomadasys argenteus*



Diagnostic features

Body of the fish is ovate with head profile almost straight. Mouth is small but lips not thickened. Two pores and a central groove under the chin present. Antorse spine before the dorsal fin origin is absent. Notch between the spinous and soft rayed portion of the dorsal fin is shallow. Body is generally silver-mauve to fawn above and white below. Small specimens with numerous spots aligned horizontally or fused into horizontal lines. Large specimens plain or with scattered charcoal scale spots on back and upper sides. The snout is dark brown; the upper operculum charcoal or purplish.

D. XII, 13-14; A. III, 7; P. 215; V. I, 5; C. 17; Ll. 50.

Habitat

The fish is marine to freshwater dwelling and demersal in nature.

Distribution

It is distributed in Indo-West Pacific: Red Sea to the Philippines, north to southern Japan and south to northern Australia. The fish is also reported from New Caledonia, Oman and Kuwait.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Roy & Sahoo (1968) which was collected from southern sector of the lake. The species is locally known as **Kokoraba** in Odia. It occurs throughout the lagoon but more frequent in central and northern sector than other two. The species is commercially important as it sold @ Rs 80-150/kg. The fish is a good food fish; consumed locally. The main gears that are used by fishermen, targeting the species are gill nets and screen barrier nets.

Pomadasys kaakan (Cuvier, 1830)

Javelin grunter

Odia: Kokoraba

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Haemulidae
Genus : *Pomadasys*
Species : *Pomadasys kaakan*



Diagnostic features

The fish has a slender body. The head profile is slightly convex. Lips are not thickened. Two pores and a central groove under the chin is present. No antrorse spine present before the dorsal fin origin. A deep notch between the spinous and the soft-rayed portion of the dorsal fin is present. Color is generally silvery with a golden tint on the sides; the upper operculum olive-yellow; the snout dusky, overlain with yellow. Four or five dark gray lines present along the sides. Young specimens have 7-11 vertical bands on the upper sides; older ones with bands formed by spots aligned in vertical rows. Two or three rows of spots present along the dorsal fins.

D. XII, 13-15; A. III, 7-8. LI. 45-50.

Habitat

The fish is a marine to brackish water species and usually reef-associated in habit.

Distribution

It is distributed in Indo-West Pacific: Red Sea and east coast of Africa to south-east Asia, north to Taiwan, south to Queensland, Australia. Also reported from Persian Gulf

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007). The species is locally known as **Kokoraba** in Odia. It occurs throughout the lagoon but more frequent in central and outer channel sector. The species is commercially important as it sold @ Rs 80-150/- kg. The fish is a good food fish; consumed locally. The potential gears to target the species are gill nets and screen barrier nets. Its landing is included in the brackishwater miscellaneous groups.

Acanthopagrus berda (Forsskal, 1775)

Goldsilk seabream

Odia: Kala Khuranti

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sparidae
Genus : *Acanthopagrus*
Species : *Acanthopagrus berda*



Diagnostic features

The species has a convex dorsal profile but straight ventrally. The head is more convex than abdomen. Snout is compressed and pointed. Opercle is with a distinct spine and presence of a dark opercular spot. Six incisors in front of either jaw found. Maxilla reaches to front edge of orbit. Six rows of scales on pre-operculum; no silvery edges to body scales. Caudal fin is emarginated. Body colour is silvery grey. Doral, anal and caudal fins are with black edges. A dark band is present along its anal fin.

D. XI-XII, 11-12; A. III, 8-9; P. 15; V. I, 5.

Habitat

The species occur in marine, freshwater and brackishwater environments; demersal in habits and exhibits oceanodromous migration.

Distribution

The species is well distributed along Indian Ocean, South Africa, Mozambique, the Red Sea, Persian Gulf, India and Malaysia.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Roy & Sahoo (1962). The species is locally called as **Kala Khuranti**. The species mainly occurs in the outer channel and central sector of the lagoon. The species is a good food fish, having high commercial value. The fish generally consumed locally rather traded to out side of the state. Price is mostly size dependent, sold @ Rs 120-300/- kg (at landing center). Gill net, screen barrier net (*khonda jal*), hook and line are the major fishing nets in which the species caught.

Acanthopagrus longispinnis (Valenciennes, 1830)

Bengal yellowfin seabream

Odia: Kala Khuranti

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sparidae
Genus : *Acanthopagrus*
Species : *Acanthopagrus longispinnis*



Diagnostic features

It has a fairly deep and slightly compressed body. Depth more than 2.4 times in standard length. Head is large, snout oblique with a bulge above eyes. Four to six canine teeth present in front of both jaws. Pre-opercular scales are 4-5 series. Body dusky grey, belly yellowish, scales with dark bases and silvery edges. A dark band is present between eyes and a dark spot at origin of lateral line. The first soft dorsal fin ray is slightly longer than last dorsal fin spine. Pelvic fins yellow, pectoral and anal fins dusky at base, yellow at margin, lower caudal fin lobe yellow.

D. XI-XII, 10-12; A. III, 8-10; P. 14; V. I, 5; LI. 44-46.

Habitat

The species is demersal in habits found in marine, fresh and brackish water ecosystems.

Distribution

The species is distributed in Northwest Pacific and East Asia Shelf, recorded from India, Japan, South Korea, Taiwan, China and Northern Vietnam.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Roy and Sahoo (1962) who recorded the species as *Chrysophrys dontnia* which was collected from outer channel and central sector of the lake. The species is locally known as **Kala Khuranti** in Odia. The species mainly occurs in outer channel sector and rarely found in central and southern sector of Chilika. The species is a good food fish, having high commercial values; consumed locally. Price is size dependent, sold @ Rs 150-300/- kg at landing center. The fish caught mostly in gill net, screen barrier net (*khonda jal*), hook and line (specifically in outer channel sector).

Crenidens crenidens (Forsskål, 1775)

Karanteen seabream

Odia: Haribolia Khuranta

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sparidae
Genus : *Crenidens*
Species : *Crenidens crenidens*



Diagnostic features

Dorsal spines (total): 11; Dorsal soft rays (total): 11; Anal spines: 3; Anal soft rays: 10. Dull colored. Maximum length recorded 30.0 cm (TL) (Smith and Smith, 1986).

Habitat

Marine; demersal. Subtropical.

Distribution

Western Indian Ocean: Red Sea and Persian Gulf to Durban, rarely as far as East London, South Africa. Also reported from the southern coast of Madagascar. Migrated to the Mediterranean through the Suez Canal.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Roy and Sahoo (1957) which was collected from Parikuda area in the central sector. The species is locally known as **Haribolia Khuranta** in Odia. This is a smaller size sparid fish (Perch), distributed in central, southern and outer channel and rarely caught from northern sector. The fish is landed in more quantity at Balugaon fish landing centre and also in the landing centres in Krushna Prasad area viz. Patanasi, Kumarpur, Kholamunha etc. Although the fish has commercial value its landing is negligible which was estimated at 0.09 tonne during 2016-17. The average unit price for the fish is Rs.70/kg. The fish has also ornamental value which can be used in brackish water aquarium.

Rhabdosargus sarba (Forsskal, 1775)

Goldlined seabream

Odia: Dhala Khuranti

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sparidae
Genus : *Rhabdosargus*
Species : *Rhabdosargus sarba*



Diagnostic features

The fish has a deep body, the depth 2.0-2.3 in standard length. Head is large, about 4.0 in standard length. Inter-orbital and pre-opercle flange are naked or with few scales. Caudal fin is deeply emarginated. Body is silvery grey. Each scale is with a golden center form longitudinal lines along body. The belly is yellowish in colour.

D. XI, 12-13; A. III, 11; P. 14-15; V. I, 5; Ll. 56-59.

Habitat

It is a marine to brackish dwelling species usually reef-associated and oceanodromous in migration.

Distribution

It is distributed in Indo-West Pacific: Red Sea and East Africa to Japan, China, and Australia.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from Parikud area. The species is locally known as ***Dhala Khuranti*** in Odia. The fish is abundantly found throughout the lagoon, average sectoral landings are of the order central sector > northern sector > outer channel sector > southern sector. The average annual yield is 164.35 tonnes valued at Rs.212.76 lakhs. This is a commercially important fish species of the lake; consumed locally as well as traded to outside the state. Its selling price is mainly size dependent, sold @ 100-160/- kg. The species mostly caught in gill nets but also a major catch

comes from screen barrier nets (*Khanda jal*). Year wise annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig R which indicated that higher annual landings were recorded after 2011-12. Maximum size of the fish as recorded from Chilika was 325 mm and its spawning season extends from November to March with peak in December. Breeds in the sea near lake mouth.

Jhingran and Natarajan (1966) reported the fishery of this fish from Chilika Lake which showed extreme fluctuations 2-165 tonnes during 1957-65 with the average annual yield for the period at 91 tonnes. The fish breeds in the

sea, perhaps in the vicinity of the lake mouth during November-January, the peak breeding month being December. Its fishery is more active in the outer channel and southern sector. Panda (2013) studied the feeding biology and stock assessment of the fish. Karna *et al.* (2010) studied its length weight relationship. Some aspects of the fishery and biology of the fish was studied by Pattnaik (1973).

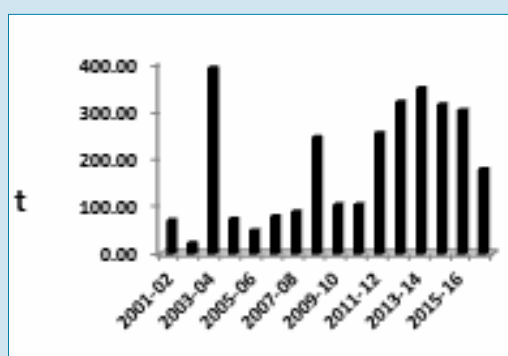


Fig R Annual landings of *R. sarba* (Dhala khuranti) during 2001-02 to 2016-17

Daysciaena albida (Cuvier, 1830)

Bengal corvine

Odia: Borogo

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sciaenidae
Genus : *Daysciaena*
Species : *Daysciaena albida*



Diagnostic features

The species has an oblong body with rounded snout. The colour of the body is generally grey, shading to silvery along the belly. Dark spots, in oblique rows along scale rows occasionally present. Pectoral, pelvic and anal fins are yellowish, whereas the axil of pectoral fin is black. The lower jaw is slightly projecting beyond the upper jaw and the mouth is slightly inferior. A pair of small tapering barbels present on the chin. The caudal fin is rhomboid shaped in adults. Scales of the head are cycloid.

D. IX-X+I, 23-26; A. II, 7; P.17-18; V. I, 5; LI. 48-51.

Habitat

The species is marine, brackish; benthopelagic in nature and amphidromous in migration.

Distribution

The fish species is distributed in Asia and Oceania: India to Indonesia and New Guinea. Very commonly found in Indian waters.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923) which was collected from Barkul area. The species is locally known as **Borogo** in Odia. The fish is locally popular as **Boroga** (Odia) (>0.5 kg) or **Pendi** (0.25-0.5 kg) or **Kania** (<0.25 kg). It occurs throughout the lake, average sectoral landings are of the order (Northern sector > Central sector > Southern sector > Outer channel). Maximum size recorded from the lake is 80cm. The average annual yield: 695.33 t (Average annual catch

valuation is about Rs.867.86 lakhs). It has high commercial value. It is mostly exported to outside the state (mainly to West Bengal) and very less quantity sold locally. The unit price of the species varies with fish size. It sold @ 150/- kg (up to 0.5 kg size), Rs.250-330/- kg (0.5 to 1 kg size), Rs. 400/- kg (1 to 2 kg size) and Rs.450/- kg (above 2kg size). Locally the fish consumed in fresh, dried and salt dried forms. Main fishing gears used targeting this species are gill nets, screen barrier nets (*Khanda*) and hook & line. The fish performs lake – sea and vice versa migration. No lake – sea or vice versa migration has been perceptible in this species. Year wise annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig S.

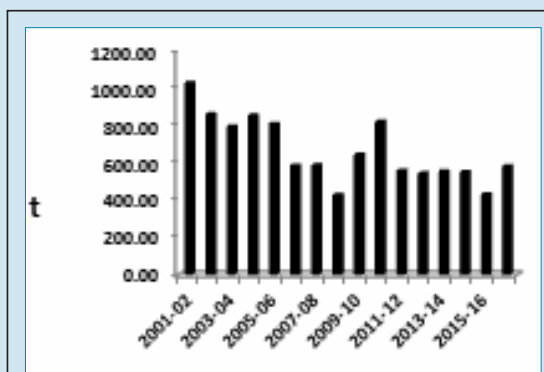


Fig S Annual landings of *D. albida* (Borogo) during 2001-02 to 2016-17

Fisheries and population of the fish in Chilika was studied during 1957-65 by Jhingran and Natarajan (1966 & 1969). The stock assessment study was conducted by ICAR-CIFRI (2017) under ICAR-CIFRI/CDA-ICZMP Consultancy Research Project which indicated that the mean length in commercial catches was lower than the size at maturity and the annual catch showed progressive decline. The spawning stock biomass has decline to 19.1% from the virgin stock biomass resulting in low recruitment. Length weight relationship of the fish was studied by ICAR-CIFRI (2017) under ICAR-CIFRI/CDA-ICZMP Consultancy Research Project. Breeding and early development of the fish was studied by Kowtal (1978). Growth estimation and length at maturity of the fish was studied by Karna and Panda (2011).

Dendrophysa russelii (Cuvier, 1829)

Goatee croaker

Odia: Golara

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sciaenidae
Genus : *Dendrophysa*
Species : *Dendrophysa russelii*



Diagnostic features

The species has an oblong body with rounded snout. Mouth is inferior with presence of a single barbel on chin. In the lower arm of first gill arch around 8 to 9 gill rakers are present. The spinous dorsal fin is dark while the other fins are pale. The caudal fin is rhomboid in shape. Scales present are cycloid on front part of head and lower parts of dorsal and anal fins. Gasbladder is carrot-shaped with 15-17 pairs of arborescent appendages present of which the first one entering head. The colour of the body is generally grey, shading to white along the belly.

D. X+I, 25-28; A. II, 7; P. 16; V. I, 5; LI. 46-49.

Habitat

The species is marine, brackish; benthopelagic in nature and amphidromous in migration.

Distribution

Indo-Pacific distribution i.e., Australia, India and Sri Lanka extending eastward, including southern China, Philippines.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923) which was collected from Barkul area. The fish is locally called as **Golara**. It occurs throughout the lake but major catch comes from northern sector. The average annual yield: 28.15 tonnes (Average annual catch valuation is Rs.13.93 lakhs). It is a commercially important fish species. The average unit price is Rs. 80-100/kg. Locally consume it in fresh, dried and salt dried forms. Main fishing gears used targeting this species is gill nets, screen barrier nets (*Khanda jal*) and hook & line.

Johnius amblycephalus (Bleeker, 1855)

Bearded croaker

Odia: Dadhi Borei

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sciaenidae
Genus : *Johnius*
Species : *Johnius amblycephalus*



Diagnostic features

The species has an oblong and compressed body. Snout is rounded and projecting with inferior mouth. Body depth 3.0-3.7 and head is 3.1-3.4 in standard length. A blunt barbell is present on chin with median mental pore at front of its base. Caudal fin is rhomboid. Gas-bladder is hammer shaped with 14-15 pairs of arborescent appendages, the first branching head.

D. X+I, 23-26; A. II, 7; P. 18-19; V. I, 5; Ll. 48-53.

Habitat

The species found in freshwater to marine water bodies; demersal in nature.

Distribution

Indo-West Pacific: east of Pakistan through the coastal waters of the Indian Ocean and the Indo-Australian Archipelago to the Philippines, New Guinea and to the Repulse Bay, Queensland; through the South China Sea to Hainan, Taiwan, Hong Kong and Kwangtung.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Menon (1961) which was collected from northern sector. The species is locally known as **Dadhi Borei** in Odia. It occurs throughout the lake but is not so abundant. It has good commercial value sold @ 80-100/kg. Locally consumed in fresh, dried and salt dried forms. Marketed locally. Its catch in Chilika is mixed with the miscellaneous brackishwater group. Main fishing gears used targeting this species are gill nets, screen barrier nets (**Khanda**) and hook & line.

Johnius belangerii (Cuvier, 1830)

Belanger's croaker

Odia: Dhusara Sila

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sciaenidae
Genus : *Johnius*
Species : *Johnius belangerii*



Diagnostic features

Overall body colour dark grey, sometimes the pigment concentrated in short dark bars on back. 27-31 soft rays; 2nd spine strong, about $\frac{1}{2}$ of head length; 8-10 very short gill rakers on lower limb of 1st arch; teeth differentiated into large and small in upper jaw only, the large ones close-set, not canine-like; swimbladder hammer-shaped, with 11-15 pairs of appendages.

Color: Brown to grayish above, silvery below as also head. With longitudinal obliquely ascending rows of dark spots on scales, regular on back, less so on flanks, more pronounced in a full grown specimens, in younger specimens the scales are so closely dotted with black and brown as to impart a general pale brownish appearance, spinous dorsal, anal, ventrals and terminal half of caudal blackish.

Oblong, posteriorly compressed, height in adult about equal to head. Its fronto-dorsal profile ascending nearly in a straight line. Snout obtuse, convex, somewhat swollen, prominent before upper jaw, its free border with a central pore, on each side two incisions, the lateral one deepest, both separating a small triangular lobe, between then two smaller ones, making the center of the upper lip quadrilobate, above it on top of snout a transverse series of three small pores, chin with five pores. Cleft of inferior mouth nearly horizontal, lower jaw included, upper reaching hind border of pupil, upper border of maxillary slipping under suborbital, its distal end broader than half length of pupil. Teeth in villi form bands, in the lower jaw uniform, in the upper the outer row enlarged and distant. Operculum with two flat weak spines, preopercle serrulate at its vertical limb, post temporal crenulate. Scales wanting only on apex of snout and jaws, round eye, on opercles and on base of vertical fins not ciliated, otherwise ciliated, the nuchal and anterior dorsal ones smaller, lateral line in its anterior half arched, the sensory tubes arborescent.

Habitat

Marine; brackish; demersal; amphidromous. Inhabits coastal waters and estuaries. Feeds on invertebrates, particularly benthic worms.

Distribution

Indo-West Pacific: Pakistan, India, Sri Lanka, through the East Indies, to China. Records from the east coast of Africa were probably based on misidentifications as this species does not occur there. Range extends westwards to the Persian Gulf.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from eastern part of northern sector. The species is locally known as ***Dhusara Sila*** in Odia. The fish rarely occurs in the outer channel and northern sector of Chilika at sub-adult stage and the annual landing is much less and hence is mixed with the landing of *D. russelli*. Common fishing gears are gill nets and barrier nets. Marketed fresh and dried salted in the local markets. This is a good food fish liked by local people.

Johnius borneensis (Bleeker, 1851)

Sharp-noose hammer croaker

Odia:

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sciaenidae
Genus : *Johnius*
Species : *Johnius borneensis*



Diagnostic features

A fairly small species with an evenly decurved snout which is not swollen or projecting. Mouth is large and terminal; upper jaw slightly overshooting lower jaw in front and ending posteriorly below hind margin of pupil, making an angle of about 30° with the horizontal. Teeth villiform in narrow bands; well differentiated in size in both jaws, outer upper row and lower inner row of enlarged and widely spaced teeth. Dorsal fin deeply notched; dorsal spines moderately weak. Pectoral fins moderately long and about 3/4th of the head length. Second anal spine short and fairly weak. Caudal fin rhomboid. Body greyish on back and silvery, glossed with golden on flanks and belly. Spinous dorsal fin dusky in its upper third; anal, pectoral and pelvic fins with a slight yellowish tinge.

D. X-XII, 27-32; A. II, 7-8; Ll. 50.

Habitat

It is a marine, brackish and freshwater ranging species; benthopelagic in habit. This sciaenid inhabits shallow coastal waters and also enters estuaries.

Distribution

Indo-West Pacific: Persian Gulf eastward to southern China and Taiwan and northern and northeastern Australia and New Guinea. It forms a fishery on the North-West coast of India and is also common in the catches on the East coast. In estuarine waters of India; lower Gangetic estuary and Sundarbans.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika Lake by ICAR-CIFRI while undertaking fish diversity inventory survey in Chilika under ICAR-CIFRI/CDA-ICZM Consultancy Project (2011-2017) which was collected from the Satapada area and new lake mouth in the outer channel during March 2013. The fish is newly recorded from the lagoon and does not have much information specific to Chilika. It was caught in gill nets and screen barrier nets (***Khanda***).

Johnius carutta Bloch, 1793

Karut croacker / Jew Fish

Odia: Borei / Patharamundi

Systematic accounts

Class : Actinopterygii

Order : Perciformes

Family : Sciaenidae

Genus : *Johnius*

Species : *Johnius carutta*



Diagnostic features

Color: Purplish brown from the presence of numerous fine dots, but becoming golden in lower fourth of body, lateral line generally lighter than contiguous part. Head glossed with purple. First dorsal fin dark, the others with grey edges. A silvery streak along the lateral line.

Height $3 \frac{1}{2}$ to 4, head $4 \frac{1}{3}$ to $4 \frac{1}{2}$ in total length. Eye 4 to $5 \frac{1}{4}$ in length of head, $1 \frac{1}{4}$ from end of snout and also apart. Snout inflated, overhanging the upper jaw, which slightly overlaps the lower, distance between eye and upper edge of maxilla equals diameter of orbital, cleft of mouth nearly horizontal maxillary reaching $\frac{3}{5}$ in eye, length $2 \frac{3}{4}$ to 3 in head, 5 pores on chin. Preopercle crenulated, more especially along its lower border, opercle with two weak spines. A row of pores across the snout, 5 along edge of free border, and a lateral lode. Teeth in jaws in villi form bands, only upper row enlarged. Dorsal spine weak, second and third the longest, $\frac{1}{3}$ higher than rays and $\frac{1}{2}$ height of body, outer ventral ray, elongate. Second anal spine weak, nearly $\frac{2}{3}$ as high as first ray, and $\frac{2}{7}$ to $\frac{2}{5}$ length of head. Caudal rhomboidal, least height of caudal peduncle $3 \frac{1}{2}$ to $3 \frac{4}{5}$ in head. The series of scales run rather obliquely upward both above and below the lateral line. White or yellow streak along lateral line. Upper $\frac{2}{3}$ of dorsal fin black. The membrane of the soft dorsal is inconspicuously scaled nearly or quite to its outer edge. DOB 27-32 %, snout rounded, mouth small, inferior. HL 26-30 %, ED 27-28 %. Teeth differentiated into large and small in upper jaw only, larger ones closely set, lower jaw teeth small, no canines, gill rakers in the lower limb of 1st gill arch 7-8, lInd AFS weak 7-10 %. Sagitta: head of the tadpole shaped impression lying parallel to that of the broad anterior end, tail ending into a deep cone. Swim bladder hammer shaped with 16 pairs of arborescent appendages, the 1st entering the head. Dorsal spines (total): 11; Dorsal soft rays (total): 26-29; Anal spines: 2; Anal soft rays: 7

Breeds in rainy season and winter season.

Habitat

Marine; freshwater; brackish; demersal; amphidromous

Distribution

Indian Ocean: Pakistan eastward to the west coast of the Malay Peninsula.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007) which was collected from Tuanali in Northern Sector. The species is locally known as **Borei** / **Patharamundi** in Odia. The species is one among the fifteen species under Sciaenidae family recorded from Chilika Lake. Annual average landing of this species is 10.7 tonnes and forms 38% in the average annual landings of sciaenid species (*Dendrophysa russelli*). This is a commercially important sciaenid species which is popular among local consumers, Marketed fresh and dried salted. Common fishing gears are gill nets and barrier nets.

Johnius macropterus (Bleeker, 1853)

Largefin croaker

Odia: Kania

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sciaenidae
Genus : *Johnius*
Species : *Johnius macropterus*



Diagnostic features

The species has elongated body. Its snout is slightly projecting; mental pores five; a short blunt barbell behind the median pore. It has 10-12 gill rakers on lower arm of first arch. The scales are cycloid on snout below eyes and on breast. Gas-bladder is hammer-shaped with 13-16 pairs of arborescent appendages, the first branching in head. Body colour is dark grey on back, whitish on flanks and belly with silvery reflections; spinous dorsal darkish.

D. X+I, 27-33; A. II, 7-8; P. 14-16; V. I, 5; LI. 44-50.

Habitat

This is a marine species, demersal in habit.

Distribution

It is distributed in Indo-West Pacific: India and Sri Lanka eastward to Thailand and Malaysia and south to New Guinea.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Menon (1961). The species is locally known as **Kania** in Odia. The fish is rarely found in the lagoon, distributed in central and outer channel sector. It has good commercial value having average unit price of Rs.80/kg. Locally, consumed in fresh, dried and salt dried forms. Main fishing gears used targeting this species is gill nets, screen barrier nets (**Khanda**) and hook & line.

Eleutheronema tetradactylum (Shaw, 1804)

Fourfinger threadfin

Odia: Sahala

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Polynemidae
Genus : *Eleutheronema*
Species : *Eleutheronema tetradactylum*



Diagnostic features

The fish has an elongated and compressed body. The snout is of projecting type with large mouth. Lower lip reduced to a small fold at corner of mouth. Teeth present are extending to exterior of jaws. Pectoral fins are positioned and inserted low on body, with branched rays whose lower four rays are free and filamentous. Caudal fin forked. Air-bladder is absent. Body is silvery green above, yellowish white on sides and abdomen. Dorsal and caudal fins are yellowish but dusky at margins. Pectoral filamentous rays are white.

D.VIII+I-II, 13-15; A.II, 15-17; P. 12-15+4; V.I, 5; LI. 75-85.

Habitat

It is a freshwater, brackish as well as marine dwelling species, pelagic-neritic in habit and amphidromous in migration.

Distribution

Indo-West Pacific: Persian Gulf to Papua New Guinea and northern Australia. Bangladesh, China, Philippines, Sri Lanka, Thailand. In India it is distributed in West Bengal (Hoogly estuary), Odisha and Andamans.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1917) which was collected from Barkul Bay. The species is locally known as **Sahala** in Odia. Abundantly found and well distributed throughout the lagoon. Average annual yield is about 313.39 tonnes (Average annual catch valuation about Rs.871.83 lakhs). Maximum size recorded from the lake is 100cm. It has very high commercial value. Unit price mostly depending on fish size, sold @ Rs 120/- kg (up to 0.2 kg), Rs 200/- kg (0.2-0.5 kg), Rs 350/- kg (> 0.5 kg) in landing center. Consumed locally both in fresh and salt-dried form. The fish targeted by fishermen through gill nets (Sahala jal of 40-90 mm meshed), seine nets and screen barrier net (*Khonda*). Average sectoral landings are of the order: Northern sector > Central sector > Southern sector > Outer channel sector). The fish breeds in the sea as well as the lake and performs inter sea-lake movements. Annual landings of this fish for the last 16 years (2001-02 to 2016-17) after opening of the new lake mouth is depicted in Fig T.

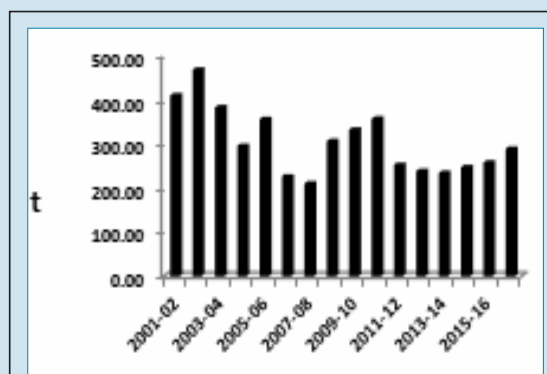


Fig T Annual landings of *E. tetradactylum* (Sahala) during 2001-02 to 2016-17

Fisheries and population of the fish in Chilika was studied during 1957-65 by Jhingran and Natarajan (1966 & 1969). The stock assessment and length weight relationship of *E. tetradactylum* in Chilika study was studied by ICAR-CIFRI (2017) under ICAR-CIFRI/CDA-ICZMP Consultancy Research Project which indicated that around 88% of fishes were caught before attaining the first maturity which clearly indicated overexploitation of juveniles (growth over fishing in Chilika). The current spawning stock biomass was around 10.27 of the virgin stock which is below the sustainable stock level. Fishery and biology of Chilika Sahala was also studied by Pattnaik (1970) and hermaphroditism in Chilika Sahala was also reported by Pattnaik (1967). Breeding and larval development of Chilika Sahala in the northern sector of Chilika was reported by Kowtal (1965 & 1972).

Upeneus sulphureus Cuvier, 1829

Sulphur goatfish

Odia: Gopi Rangia

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Mullidae
Genus : *Upeneus*
Species : *Upeneus sulphureus*



Diagnostic features

The fish has an elongated body; mouth in front of snout, rather small and with a lateral cleft. Teeth in a single row in both jaws present. Palate is edentulous. The maxilla reaches to below the first third of the orbit. Barbels reach to opposite the posterior edge of the orbit in the young ones, but to nearly below the angle of the preopercle in the adults. First dorsal spine is very small, the third a little longer than the second or the fourth. Six rows of scales are present between the two dorsal fins. Origin of anal fin is below the second or third dorsal ray. A purplish blotch is present on the opercle descending on to the sub opercle. A brilliant golden stripe, two third as wide as a scale passes from the orbit to the upper third of the tail, there are generally two or three more below and parallel with it.

D. VIII, 9; A. I, 7; P.15; Ll. 35-38.

Habitat

The fish is a marine to brackish water dwelling species; demersal in habit and oceanodromous in migration.

Distribution

The fish is distributed in Indo-West Pacific: East Africa to south-east Asia, north to China, south to northern Australia and Fiji.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Satapathy and Panda (2009). The species is locally known as **Gopi Rangia** in Odia. The fish is a migratory species having good ornamental value (marine ornamental fish), occur mainly in outer channel and central sector of Chilika. It has not so commercial value considered as a minor fish in Chilika, sold @ Rs 50-60/- kg in landing center. Its catch is included in the miscellaneous group in Chilika. There are no specific gears used for the species rather caught mostly in screen barrier net (*Khanda*).

Drepane punctata (Linnaeus, 1758)

Spotted sicklefish

Odia: Ghee Chandi

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Drepaneidae
Genus : *Drepane*
Species : *Drepane punctata*



Diagnostic features

Dorsal spines (total): 8 - 10; Dorsal soft rays (total): 20-22; Anal spines: 3; Anal soft rays: 17 - 19. Color generally silvery with greenish tinge above. Pectoral fins long and pointed. Similar to *D. longimana* but differs in having 4 - 11 vertical gray spots on the upper half of the sides, and generally 8 dorsal spines (against none (spots) and generally 9 spines in *D. longimana*).

Habitat

Marine; brackish; reef-associated; amphidromous; Subtropical, preferred 28°C; 32°N - 22°S.

Distribution

Indo-West Pacific: temperate and tropical waters from India to northern Australia, New Guinea, Indonesia, Philippines, Taiwan and Japan.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968) which was collected from Arakhakuda in the outer channel. The species is locally known as **Ghee Chandi** in Odia. In Chilika, it is commonly caught from outer channel sector and rarely from central sector. The fish does not form a commercial fishery in the lake although it has good commercial value with consumer preference. The potential landing centres for the fish are Arakhakuda, Motto, Sanapatana, Alupatana etc in the outer channel sector. The landing of this fish is included in the brackishwater miscellaneous group. The average unit price is Rs.120/-kg.

Monodactylus argenteus (Linnaeus, 1758)

Silver moony

Odia: Rupali Chandi

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Monodactylidae
Genus : *Monodactylus*
Species : *Monodactylus argenteus*



Diagnostic features

Body is deep and compressed with body depth 1.2-1.5 in SL. Its mouth is small and terminal. Scales on the body are deciduous and extending onto head and median fins. Lobes of dorsal and anal fins are prolonged; ventral fins rudimentary, reduced to a small spine. Juveniles silvery with two curved dark striped across head, the first through eye and the second from nape through base of pectoral to before anal fin. Anterior lobes of dorsal and anal fins are dusky. All fins yellow except pectoral translucent. Adults are silvery, the anterior lobes of dorsal and anal fin dusky.

D. VII-VIII, 28; A. III, 28-30; P. 16; LI. 54-56.

Habitat

The species is marine, brackish and freshwater dwelling; pelagic-neritic in nature.

Distribution

It is distributed in Indo-West Pacific: Red Sea and East Africa to Samoa, north to the Yaeyamas, south to New Caledonia and Australia.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923) who collected the fish from central sector near Parikud. The species is locally known as **Rupali Chandi** in Odia. This is a migratory species immigrates from sea into the lake and rarely occurs in outer channel sector of Chilika and Palur canal. It has not much commercial value, sold @ Rs 70-100/- per kg. Used for local consumption. It has very good ornamental value for utilizing in aquarium. The potential gears for the species are gill nets and screen barrier net (**Khanda**).

Monodactylus kottelati Pethiyagoda, 1991

Indo-Pacific tarpon/Silver moony

Odia: Chandi

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Monodactylidae
Genus : *Monodactylus*
Species : *Monodactylus kottelati*



Diagnostic features

Dorsal spines (total): 8; Dorsal soft rays (total): 28-30; Anal spines: 3; Anal soft rays: 28 - 30. Body depth contained 0.98-1.03 times in standard length in adults. Pelvic fin rudimentary or absent. Maximum length recorded 10.0cm (SL) (Bruin *et al*, 1994).

Habitat

Marine; brackish; pelagic-neritic.

Distribution

Indian Ocean: Sri Lanka.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2014). The species is locally known as **Chandi** in Odia. The fish is an important ornamental fish of marine and brackish water origin but does not form a commercial fishery in Chilika. It is rarely seen in the lake being caught in the **Khandas** in the outer channel and southern sectors.

Nandus nandus (Hamilton, 1822)

Gangetic leaffish / Mud perch

Odia: Bodisi / Olostora / Bhutusi

Systematic accounts

Class : Actinopterygii

Order : Perciformes

Family : Nandidae

Genus : *Nandus*

Species : *Nandus nandus*



Diagnostic features

A deep laterally compressed body with nearly straight belly and arched back. Head is large and compressed. Snout is pointed. Eyes are comparatively large in smaller specimens. Body colour is greenish brown. Three yellow-green or olive green coloured vertical patchy bands at sides. Fins greenish to yellowish, some narrow dark bands radiate from eye. Dorsal spines strong and soft portion largest, caudal fin slightly rounded, pectoral spine weak, scales ctenoid, lateral line interrupted. Scales number above lateral line is 8. Lateral line interrupted at 39-41 scales. Lateral line continued below for 14-16 scales. Scales number in longitudinal series is 48 to 50. Scales number mentioned by writers are lateral line interrupted at 35 or 39 or 41 scales, continued below for 14-16 scales up to base of caudal, 8 row of scales between lateral line and origin of spinous dorsal, 46-57 scales in longitudinal series. Maximum length recorded 20.0 cm (TL) (Talwar and Jhingran, 1991).

Habitat

Freshwater; brackish; benthopelagic.

Distribution

Asia: Pakistan to Thailand.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The freshwater species was first reported from Chilika by Bhatta *et al.* (2001) which was collected from Kalupadaghat in the northern sector. The species is locally known as **Bodisi / Olostora / Bhutusi** in Odia. It breeds in the river Daya and descends into northern sector of the lake. Landing of this fish in Chilika is negligible and its distribution is restricted within the river mouth zone of northern sector, particularly near the mouth of Daya River. Often the fish is caught near Bhusandapur, Mangalajodi and Kalupada landing centres. The fish is used as a freshwater ornamental fish in freshwater aquarium and breeds in rivers draining into northern sector. The average selling price of this food fish is about Rs.50/kg. Its estimated annual landing of this species is about 2.5 tonnes.

Pelates quadrilineatus (Bloch, 1790)

Fourlined terapon

Odia: Kora Gahana

Systematic accounts

Class : Actinopterygii

Order : Perciformes

Family : Terapontidae

Genus : *Pelates*

Species : *Pelates quadrilineatus*



Diagnostic features

It has oblong and laterally compressed body. Jaws equal, posterior margin of upper jaw extending to vertical line through posterior nostril; teeth brown tipped, 2 rows in lower jaw and 3 rows or a villiform band with outer row of upper jaw enlarged in upper jaw; vomer and palatines (on roof of mouth) toothless. Preopercle is serrate, serrations larger along vertical border. Lower opercular spine is stronger and longer, but not extending beyond margin of opercular lobe. Gill with 16-18 gill rakers on upper limb and 22-27 gill rakers on lower limb of first gill arch. Spinous part of dorsal fin arched, fifth to seventh spines longest. Anal fin with 3 spines and 9-11 soft rays, the 2nd anal spine subequal to the 3rd and shorter than longest anal rays. Pored scales in lateral line and 9-11 rows of scales are above lateral line and 19-23 below it. Body silvery-grey dorsally, silvery-white ventrally; 4 to 6 narrow, dark brown stripes on body; spiny part of dorsal fin and behind gill opening with blotches; mouth and gill cavity red in life.

D. XII-XIII, 9-11; A. III, 9-10; LI. 66-75.

Habitat

Found in marine to brackish inshore waters; usually reef-associated.

Distribution

Widespread in the Indo-Pacific from East Africa, including the Red Sea and Persian Gulf, eastwards to the Philippines, Japan, and China to New South Wales and the Solomon Islands.

IUCN Status

Not Evaluated

Other information – Chilika specific

This ray fish was first recorded from Chilika by Rajan *et al.* (1968) which was collected from outer channel near Arakhakuda village. The species is locally known as **Kora Gahana** in Odia. The species mostly found in outer channel sector and central sector of the lake. Its catch being negligible, it is included in the miscellaneous brackishwater fish group in commercial landing. Consumed locally and sold in the local village markets. Sold @ Rs. 50-60/kg at landing sites of Chilika. Caught with all types of inshore fishing gears including gill nets, screen barrier net (*Khanda*) and seine nets.

Terapon jarbua (Forsskal, 1775)

Jarbua terapon

Odia: Gahana

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Terapontidae
Genus : *Terapon*
Species : *Terapon jarbua*



Diagnostic features

The body is deep and compressed. Mouth is slightly oblique and its upper jaw (maxillary) reaches vertical through anterior pupil indicating an adult fish. In case of juveniles, the maxillary reaches vertical through front edge of eye. Teeth are conical, strong and slightly curved. The outer row of teeth is much enlarged. 14 gill rakers are present on lower arm of first arch. Body color is fawn above, cream below, nape dark; head, body and fins with and iridescent sheen. Three or four curved dark brown bands run from the nape to the hind part of the body, the lowermost continuing across the middle of the caudal fin. Dorsal fin is notched. Caudal fin is emarginated. Body is covered with small scales.

D. XI-XII, 9-11; A. III, 7-10.

Habitat

The species dwells in marine, brackish and freshwater environments; demersal in nature and catadromous in migration.

Distribution

Indo-Pacific: Red Sea and East Africa to Samoa, north to southern Japan, south to the Arafura Sea, Australia and Lord Howe Island.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923). The species is locally known as **Gahana** in Odia. The fish is a migratory species for Chilika, is well distributed throughout the lake but abundant in south-east part of the lake. Average annual yield is nearly 42 tonnes. Commercially important species, used for local consumption, sold @ Rs 70-100/- per kg. It has ornamental value, caught through gill net, screen barrier net (*khonda*) and seine net.

Terapon puta Cuvier, 1829

Small-scaled terapon

Odia: Gahana

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Terapontidae
Genus : *Terapon*
Species : *Terapon puta*



Diagnostic features

It has deep and compressed body. Mouth is slightly oblique and its upper jaw (maxillary) reaches vertical through anterior pupil indicating an adult fish. In juveniles, the maxillary reaches vertical through front edge of eye. Teeth are conical, strong and slightly curved. The outer row of teeth is much enlarged. Gills with 14 gill rakers on its lower arm of first arch. Dorsal fin is notched. Caudal fin is emarginated. Body is covered with small scales.

D. XI-XII, 9-11; A. III, 7-10.

Habitat

The species dwells in marine, brackish and freshwater environments; benthopelagic in nature and shows amphidromous migration.

Distribution

Distributed in Indo-West Pacific region: Northern Indian Ocean and the Indo-Australian Archipelago.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1923). The species is locally known as **Gahana** in Odia. The fish is a resident species, well distributed throughout the lake and breeds within the lake. Average annual yield is about 30 tonnes (average annual catch valuation is more than 10 lakhs INR). Commercially important species, used for local consumption, sold @ Rs 80-100/- per kg. It has ornamental value, caught through gill net, screen barrier net (*khonda*), seine net.

Terapon theraps Cuvier, 1829

Largescaled terapon

Odia: Gahana

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Terapontidae
Genus : *Terapon*
Species : *Terapon theraps*



Diagnostic features

Dorsal spines (total): 11 - 12; Dorsal soft rays (total): 9-11; Anal spines: 3; Anal soft rays: 7 - 9. Body oval, compressed, robust. Lower opercular spine extending well beyond the opercular flap. Post-temporal bone exposed posteriorly and serrate. Color is dusky green above, white below; body, head and fins with an iridescent sheen. Four longitudinal brown stripes extend on the upper side from the head. A large prominent black blotch is on the distal end of the spinous portion of the dorsal fin. Similar brown stripes run across the caudal fin. Maximum length recorded 30.0 cm (SL) (Heemstra, 1986).

Habitat

Marine; freshwater; brackish; reef-associated.

Distribution

Indo-West Pacific: East Africa, Madagascar, Seychelles, Red Sea, Arabian Peninsula, Persian Gulf to India and Andaman Islands; and southeast Asia. Reaches south to the Arafura Sea and northern Australia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Talwar and Kacker (1984). The species is locally known as **Gahana** in Odia. In Chilika Lake, the fish is found mostly in the outer channel and south eastern part of southern sector, particularly between Kumarpur to Parikud area. All terapontid species in Chilika are called locally as Gahana and the total estimated annual landings of this group during 2016-17 was 97.34 tonnes of which *T. theraps* was about 20 tonnes. The average selling price was Rs.60/kg. The annual catch value during 2016-17 was Rs.12.00 lakhs. The fish is a very good marine / brackishwater ornamental fish which are well maintained in the aquarium. In Chilika, the fish is locally consumed.

Taeniamia macroptera (Cuvier, 1828)

Dusky-tailed cardinalfish

Odia: Samudra Phulaguna

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Apogonidae
Genus : *Taeniamia*
Species : *Taeniamia macroptera*



Diagnostic features

The fish is large eyed and has a short, deep and compressed body, semi-transparent in nature with orange tinged bands across the body. A black spot on the rear end of the caudal peduncle is a marked feature. Scales are large and ctenoid. First and second dorsal fins are completely separated. Scales on the lateral line series are 25 in number. The suborbital portion of the infraorbital canal of the fish is highly perforated. The medians of the secondary canal projections are also perforated along with the margins. The lateral margins of the mandibular canal are highly branched and perforated. Double edged preopercle, whose posterior edge is completely serrated and ventral edge serrated on posterior half. Cheek and top of the head have numerous small dusky spots.

D. VI+I, 9; P. 13-15; A. II, 13-15; Ll. 25+3-5.

Habitat

It is a marine reef associated species commonly occur in shallow waters of 2-20 m depth.

Distribution

It is distributed in Indo-West Pacific: eastern Indian Ocean and western Pacific.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mukherjee *et al.* (2016). The species is locally known as **Samudra Phulaguna**. The fish does not form a fishery in the lake but is important from the ichthyofunal diversity point of view.

Etroplus suratensis (Bloch, 1790)

Pearlspot
Odia: Kundala

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Cichlidae
Genus : *Etroplus*
Species : *Etroplus suratensis*



Diagnostic features

The fish has an elevated and compressed body and rounded abdomen. Head is moderate and compressed with terminal thin lipped mouth and small cleft. Snout is spout like with lateral large eye located at middle of head, not visible from below ventral surface. Villiform teeth in two or three rows on jaws present. Dorsal fin inserted above level of base of pectoral fin and caudal fin emarginated. Body light green with eight vertical bands; scales above the lateral line with pearly white spot. Pectoral fins yellowish with jet black base.

D. XVIII-XIX, 9-14; A. XII-XIII, 11-12; P. 17; V. I, 5; LI. 35-40.

Habitat

It is a brackish water species but can range up to freshwater region; Benthopelagic in habit.

Distribution

It is distributed in Western Indian Ocean: Coastal regions of peninsular India and Sri Lanka. In India, the wild populations have been recorded from Kerala and Tamil Nadu. There are also populations in West Bengal, Odisha, Andhra Pradesh and Goa.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansingani (1954) which was collected from Kalupadaghat area. The adult species is locally known as **Kundala** in Odia and the juveniles are called as **Chopi**. This is one of the resident species of Chilika Lake and endemic to the lake at the regional level. It occurs throughout the lagoon, maximum size recorded from the lake is 30.5 cm. It breeds round the year, December-February and April-May are the peak breeding seasons. It breeds mostly along the western shore in weedy areas and Nalabana area in the central sector is a potential breeding habitat for the fish. It is abundantly caught in northern, central and southern sectors. Average annual yield is about 200.15 tonnes forming nearly 2% of the average annual landing. Average annual catch value of this cichlid fish is Rs.401.68 lakhs. It has high commercial value, good food fish, consumed locally and traded to outside the state especially to Kerala and Tamil Nadu where the average unit price realized ranges from Rs.300-350/kg. Local average unit price @ Rs 70-80/kg (small sized), Rs 170-180/- (medium sized) and Rs 200-250/- (larger sized). Fishermen used gill nets and screen barrier (*Khanda*) for commercial harvest. Average sectoral landings are of the order (Central sector > Northern sector > Southern sector > Outer channel sector). Presently, the fish is under the pressure of over fishing at present. The annual landings of this fish during the post-restoration period (2001-02 to 2016-17) is depicted in Fig U.

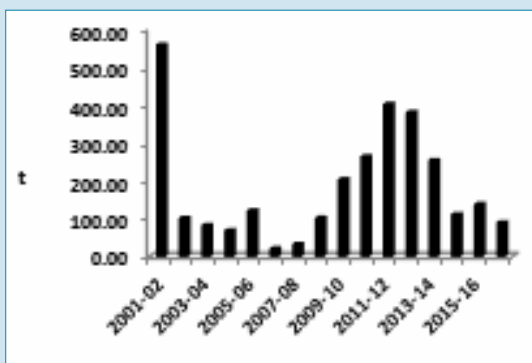


Fig U Annual landings of *E. suratensis* (Kundala) during 2001-02 to 2016-17

Fisheries and population of the fish in Chilika was studied during 1957-65 by Jhingran and Natarajan (1966 & 1969). ICAR-CIFRI (2017) under ICAR-CIFRI/CDA-ICZMP Consultancy Research Project studied the biology and fishery trend of the fish during the period 2011-2016.

Oreochromis mossambicus (Peters, 1852)

Mozambique tilapia
Odia: Tilapia / Olla Kau

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Cichlidae
Genus : *Oreochromis*
Species : *Oreochromis mossambicus*



Diagnostic features

Body is elongate with rounded abdomen. Head profile is concave and a long snout. It has a large terminal mouth nearly as wide as head with equal jaws and cleft extending to below anterior border of eyes. Caudal fin is slightly rounded and not densely scaled. Body is covered with cycloid scales. Lateral line is incomplete. Females and non-breeding males are silvery grey with 2-5 mid-lateral blotches. Spiny part of dorsal fin light with dark mottling. Soft dorsal, anal, caudal and pelvic fins are blackish. Indistinct dark opercular spot is present.

D. XV-XVII, 10-12; A. III-IV, 7-12; Ll. 30-32.

Habitat

It is found in fresh and brackish water bodies; benthopelagic in habit and amphidromous in migration.

Distribution

It is distributed in Africa: Lower Zambezi, Lower Shiré and coastal plains from Zambezi delta to Algoa Bay. It is mostly available in India, Pakistan, Bangladesh and Sri Lanka.

IUCN Status

Near Threatened (NT)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra et al. (2007). The species is locally known as Tilapia or Olla Kau in Odia. The fish is a resident species and its occurrence is restricted to southern-eastern part of the lake between Parikud and Palur Bay (part of central and southern sectors). The fish is not the native species of the lake which incidentally escaped into the lake from some village aquaculture ponds located in Krushna Prasad Block sometime during mid eighties. Although the fish was occurring in the lake and forming the fishery of the second cichlid species since eighties it was first reported by Mohapatra et al. (2007). Average annual yield is 73.60 tonnes and average annual catch valuation is Rs.35.33 lakhs. It has good commercial value, sold @ Rs. 70-80/kg. Consumed locally in fresh condition. The target gear for the species is gill net and screen barrier nets (**Khanda**). Average sectoral landings are in the order (Central sector > Southern sector).

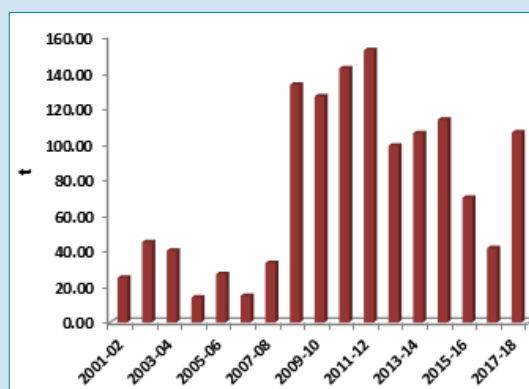


Fig V Annual landings of *O. mossambicus* during 2001-02 to 2017-18

Butis butis (Hamilton, 1822)

Duckbill sleeper

Odia: Gagibalakhera

Systematic accounts

Class : Actinopterygii

Order : Perciformes

Family : Eleotridae

Genus : *Butis*

Species : *Butis butis*



Diagnostic features

The fish has a cylindrical body. Head shape is elongated, broad and anteriorly depressed. Serrated ridges present on head. The dorsal profile is rather concave from the occiput to the snout. Lower jaw is longer than the upper. Eyes present are lateral and not prominent. Cleft of mouth commences opposite the upper edge of the eye. Maxilla extends to below middle of the eye. Interorbital space is scaled. Brownish body with a black blotch edged with scarlet at base of the pectoral fin. Fins are spotted. Anal papilla is distinct. Dark longitudinal lines are present on body. Caudal fin is black with light margin dorsally, pectoral base with 1-2 black spots.

D. VII, 8; A. I, 8-9. LI. 28.

Habitat

It is a marine to freshwater ranging species; demersal in habit and amphidromous in migration.

Distribution

It is distributed in Indo-West Pacific: East Africa to Fiji. Occurs in seas and estuaries of India.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first recorded from Chilika by Hora (1923) which was collected from central sector of Chilika Lake. The species is locally known as **Gagibalakhera** in Odia. The species is found rarely in Chilika, occurs in central and outer channel sector. This species has less commercial value, sold among small fishes in bulk but is used as a potential species for ornamental purpose. Found in screen barrier net (**Khanda**).

Eleotris fusca (Forster, 1801)

Dusky sleeper
Odia: Balakhera

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Eleotridae
Genus : *Eleotris*
Species : *Eleotris fusca*



Diagnostic features

The fish has a cylindrical body. Head is elongate, broad and depressed anteriorly. Lower jaw is longer. The maxilla reaches to below the middle of the orbit. A preopercular spine is present. Angle of opercle armed with a short spine directed downward and forward, which usually becomes blunted with age. Scales extend to the snout, 48 rows before the dorsal fin. Body is brown to shiny black, lighter on the abdomen, which sometimes has a yellow tinge. Fins are spotted; horizontal bars on the dorsal fins present, sometimes vertical ones on the caudal fins. 9-10 gill rakers present on lower part of first branchial arch.

D. VII, 7-9; A. I, 8; Ll. 59-68.

Habitat

It occurs in marine; freshwater; brackish water regions; demersal in habit and amphidromous in migration.

Distribution

It is distributed in Indo-West Pacific: East Africa to French Polynesia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Hora (1923). The species is locally known as **Balakhera** in Odia. The species occurs rarely in central and outer channel sector of Chilika. This is a minor fish having little commercial value, sold @ Rs 40-40/kg. Generally caught in screen barrier net (*Khanda*) and seine net.

Eleotris melanosoma Bleeker, 1853

Broadhead sleeper

Odia: Balakhera

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Eleotridae
Genus : *Eleotris*
Species : *Eleotris melanosoma*



Diagnostic features

The fish species has a sub cylindrical body with oblong head. Eyes are lateral and not prominent. No teeth present on the palate. Preopercle with a single downward facing, curved, strong spine at its angle. Dorsal fins two in numbers are spinous and sometimes filamentous. Base of pectoral fins are slightly muscular. Ventral fins placed close together but not united. Body colour is dark brown to black with longitudinal lines. Fins are generally spotted in the young ones but black in large individuals.

D. VII, 8; A. I, 8.

Habitat

The species is freshwater, brackish as well as marine, demersal in nature and amphidromous in migration.

Distribution

It is distributed in Africa, Asia and Oceania: East Africa to Society Islands, north of Japan, Vanuatu.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty *et al.* (2015). The species is locally known as **Balakhera** in Odia. The species is found in outer channel and central sector of Chilika. This species has less commercial value, sold @ Rs 40-50/kg. Commonly found in screen barrier net (**Khanda**) and seine net.

Acentrogobius masoni (Day, 1873)

Grey goby

Odia: Luni Baligirida

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gobiidae
Genus : *Acentrogobius*
Species : *Acentrogobius masoni*



Diagnostic features

The fish has slightly elongated body with bluntly rounded head. Cleft of mouth is oblique, commencing opposite lower edge of the eye. The posterior extremity of the maxilla extends to below the middle of the orbit. Broad papillae on each side of chin present. No scales present on cheeks. Upper part of opercle has scales. Predorsal scales count about 25. Body is olive with numerous blue spots on nape and behind pectoral fin. Numerous wart like glands present along the opercle, nape and mandible. Caudal fin is wedge shaped.

D. VI+I, 10-11; A. I, 9; P. 19; V.I, 5; C. 12; PD. 25.

Habitat

It is a tropical species that is demersal and amphidromous in nature. It occurs in brackish and coastal marine waters.

Distribution

It is distributed in Indian Ocean: Bangladesh, Indo-Australian Archipelago and Thailand. In India, it is recorded from Cochin backwaters and Chilika Lake.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Koumans (1941). The species is locally known as **Luni baligirida** in Odia and occurs in central and southern sector of Chilika. This fish has less commercial value, sold @ Rs 40-50/- per kg. Generally, the fish caught in screen barrier catch which is included in the miscellaneous group of brackishwater fishes.

Drombus globiceps (Hora, 1923)

Big head goby

Odia: Gaji Baligirida

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gobiidae
Genus : *Drombus*
Species : *Drombus globiceps*



Diagnostic features

Shape of the body is elongate and slightly compressed. Snout is short and rounded. The tongue is emarginated. Caudal fin is pointed. Eyes are large and about 3.3 times in head length and are devoid of tentacles. Back and flanks are yellowish green and belly reddish- yellow. Head and body are with brown spots. Body shows presence of pearl like blue spots. First dorsal fin is with black spot behind the fifth ray. Second dorsal and caudal fins are with a white stripe.

D. VI+I, 10; A. I, 9; P. 17. Ls. 26-27; PD. 7-8.

Habitat

It is a demersal fish, amphidromous in nature. It has been found to inhabit fresh, brackish and marine waters.

Distribution

The species is well distributed in India, Indonesia and Papua New Guinea.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Hora (1923). The species is locally known as **Gaji Baligirida** in Odia. The fish mainly occurs in Nalabana area of central sector to Satapada and also found in northern sector of Chilika. It has less commercial value, sold @ Rs 40-50/kg. Commonly found in catch of screen barrier net (**Khanda**) and seine net.

Favonigobius reichei (Bleeker, 1854)

Indo-Pacific tropical sand goby

Odia: Chitra Bali Chedhuan

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gobiidae
Genus : *Favonigobius*
Species : *Favonigobius reichei*



Diagnostic features

The species has an elongated body. Head is slightly depressed. Mouth is oblique with a prominent lower jaw. Maxilla extends to below anterior part of the eye. Cheeks and opercula naked; a narrow band of mucous canal running below eye to maxilla; two strong canals longitudinally on cheek and one canal along posterior margin of pre-opercula. predorsal scales 3, scale absent on remainder of head. First dorsal fin elongated into a filament. Pectoral fin is shorter than head length. Caudal fin rounded. Body colour is green above, lighter below; cheek and opercula with violet streaks; a violet stripe from eye over to lip to chin; dusky spots laterally on back. Second dorsal, pectoral and caudal fins are spotted; dark stripe on the lower base of pectoral.

D. VII, 8; A. I, 7-8.

Habitat

It is Marine; freshwater; brackish dwelling species, demersal and amphidromous in habit. This species generally inhabits the mangrove creeks and lagoons.

Distribution

It is distributed in Indo-West Pacific: East Africa to the Philippines, north to Japan, south to northern Australia. In India, it has been previously recorded from the Godavari estuary and from the Andaman and Nicobar Islands.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika Lake by ICAR-CIFRI while undertaking fish diversity inventory survey in Chilika under ICAR-CIFRI/CDA-ICZM Consultancy Project (2011-2017) which was collected from the Satapada area of outer channel sector from **Khanda** catches during March 2013. The species is locally known as **Chitra Bali Chedhuan** in Odia. The species is newly recorded from a screen barrier net (**Khanda**) operated near Satapada, hence not much of information about the species are available.

Glossogobius giuris (Hamilton, 1822)

Tank goby

Odia: Bali Garida

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gobiidae
Genus : *Glossogobius*
Species : *Glossogobius giuris*



Diagnostic features

Body of the fish is plane, elongated, anteriorly cylindrical and compressed with rounded abdomen. Head is depressed, pointed and scaled above behind eyes. Cheeks and operculum are naked. Snout obtusely rounded or pointed not longer than eye with an oblique mouth. Tongue is bilobed, branchiostegal membranes attached to sides of isthmus. Caudal fin is rounded. Eyes are superior and large; placed in middle of head and the iris without lappet. Body colour is olive to dusky green above, lighter below. Five to six large blotches are present on the body. Dorsal fin has small spots, forming longitudinal stripes. 9 to 14 scales in transverse line present. First dorsal fin is with or without one black spot.

D. VI+I, 9; A. I, 8; P. 19-20; Ls. 29-36.

Habitat

The fish inhabits in marine, fresh and brackish waters. It is benthopelagic in nature and amphidromous in migration.

Distribution

The species distributed in Africa to Oceania: Red Sea and East Africa and most inland freshwater bodies over the Indian Ocean and western Pacific. It is common in coastal and estuarine waters from Africa and Madagascar to India and south of China.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Hora (1923) which was collected from Satapada area of outer channel. The species is locally known as **Baligarida** in Odia, occurs mostly in the northern and central sector of Chilika. The fish is a commercial species, sold @ Rs. 80-100/kg. Consumed locally as well as traded to other states. Commonly caught in screen barrier (**Khanda**) and seine nets (**Drag / Bhida jala**).

Oligolepis acutipennis (Valenciennes, 1837)

Sharptail goby

Odia: Chhita Lanja Baligirida

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gobiidae
Genus : *Oligolepis*
Species : *Oligolepis acutipennis*



Diagnostic features

The species has an elongated body. Head and snout are obtuse and rounded. Cleft of mouth is oblique; its anterior extremity commencing opposite the lower edge of the eye. The width of gape equals length of cleft. Pre-opercular pores are present. Maxilla although not reaching past eye but reaches beneath the anterior edge of the eye. Body is grayish brown superiorly becoming dull white beneath with presence of numerous dark blotches along back. A series of eye size faint blotches present on mid-side. The last spot is at caudal base. Four lines of spots or bands present along both dorsal fins. Dorsal fin longitudinally barred and last dorsal ray divided at its base. Caudal fin is lanceolate. Fins are dusky, often spotted. A dark brown bar is present from below eye to hind end of jaw.

D. VI+I, 10-11; A. I, 10-11; P. 20-21.

Habitat

The species is found in marine, freshwater and brackish water region; demersal in habit and amphidromous in migration.

Distribution

It is distributed in Indo-West Pacific: Natal, South Africa to Indonesia and the western Pacific. It is also very common in seas of India and Andaman Islands.

IUCN Status

Data Deficient (DD)

Other information – Chilika specific

The species was first reported from Chilika by Hora (1923) which was collected from Rambha Bay in southern sector. The species is locally known as **Chhita Lanja Baligirida** in Odia, occurs mainly between Nalabana and Satapada area of Chilika. The fish has less commercial value, sold along small fishes in bulk. Commonly found in screen barrier (**Khanda**) and seine nets (**Drag/Bhida jala**) catches. Due to its ornamental value the fish is also utilized as aquarium fish.

Oxyurichthys microlepis (Bleeker, 1849)

Maned goby

Odia: Gallah

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gobiidae
Genus : *Oxyurichthys*
Species : *Oxyurichthys microlepis*



Diagnostic features

The fish has an elongated and compressed body with rounded abdomen. Head is large and compressed 3.3-3.8 in standard length, with a distinctive membranous crest on nape. Mouth is oblique, cleft extending to below hind edge of orbit. Snout is blunt. Tongue largely fused to floor of mouth, tip free, ventral forming a disc. Pectoral and pelvic base are naked. No bump on eyes present. Pre-dorsal is with low crest. Caudal fin is twice the size of the head and lanceolate to pointed. Body is violet; vertical fins pink; first dorsal with two blue lines, second with blue spots; pectoral orange with violet spots; ventral orange.

D. VI+I, 12-13; A. I, 13; P. 20-22; Ls. 42-50; PD. 15-20.

Habitat

It is a marine to brackish water distributed species; demersal in habit and amphidromous in migration.

Distribution

It is distributed in Indo-West Pacific: Kenya to Transkei, South Africa; eastward to the tropical western Pacific.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Koumans (1941). The species is locally known as **Gallah** in Odia, mainly occurs in the central sector between Nalabana and Satapada area and also in the southern sector of Chilika Lake. Although a food fish, it has little commercial importance but has ornamental value for keeping in aquarium. Commonly noticed in screen barrier (**Khanda**) and seine net (**Drag/Bhida jala**) catches.

Periophthalmus kalolo Lesson, 1831

Common mudskipper

Odia: Luna Chedhuan, Keuta

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gobiidae
Genus : *Periophthalmus*
Species : *Periophthalmus kalolo*



Diagnostic features

Dorsal spines (total): 8 - 16; Dorsal soft rays (total): 10-12; Anal spines: 1; Anal soft rays: 9 - 11. Differs from *P. argentilineatus* by lacking thin silvery bars ventrally on the sides and having pelvic fins connected at the base by a low membrane; further characterized by: frenum of pelvic fins vestigial, but visible macroscopically; pelvic fins united by membrane for about one half their length; D1 height moderate, its margin rounded, black stripe inframarginally with numerous white spots proximally, no elongate spines; D2 with single dusky stripe inframarginally; dorsal fins not connected by membrane; D1 with 11-15 spines; longitudinal scale count 66-86; head width 16.5-22.5% SL; pelvic fin length 13.1-15.4% SL; length of anal fin base 15.9-18.7% SL; length of D2 base 18.5-23.8% SL; total D2 elements 12-13; total anal fin elements 11-12; TRDB 18-22. Maximum length recorded 14.1 cm (TL) (Kottelat *et al.*, 1993).

Habitat

Marine; brackish; reef-associated.

Distribution

Indo-Pacific: East Africa to Samoa.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Hora (1923) who recorded the fish as *Periopthalmus koelreuteri*. He collected this common marine mudskipper fish from outer channel near Manikapatana. The species is locally known as **Luna Chedhuan, Keuta** in Odia. The fish is found in the outer channel jumping on the silty slope of western bank during ebb tide. Occurrence of this marine mudskipper is restricted to the outer channel sector of Chilika between Moto and Satapada area. This marine mudskipper is one of the important marine ornamental fishes often used in marine aquarium. Its landing has not been estimated in Chilika as yet and they are only found in the catch of miscellaneous species of marine – brackish water fishes.

Psammogobius biocellatus (Valenciennes, 1837)

Sleepy goby

Odia: Neuli Baligirida

Systematic accounts

Class : Actinopterygii

Order : Perciformes

Family : Gobiidae

Genus : *Psammogobius*

Species : *Psammogobius biocellatus*



Diagnostic features

Body of the fish is plane, elongated, anteriorly cylindrical and compressed with rounded abdomen. Head is depressed, pointed and scaled above behind eyes. Cheeks and operculum are naked. Snout obtusely rounded or pointed not longer than eye with an oblique mouth. Tongue is bilobed, branchiostegal membranes attached to sides of isthmus. Caudal fin is rounded. Eyes are superior and large; placed in middle of head and the iris without lappet. Body colour is dark brown to black, with longitudinal rows of small black spot; 2-3 saddles on back and side. A black ocellus with a white edging in the hind portion of the first dorsal fin is present. Dorsal fins are white spotted, dark crossbands on pelvic fins.

D. VII, 9; A. I, 8.

Habitat

It is a marine to freshwater dwelling species; benthopelagic in habit and amphidromous in migration

Distribution

Indo-Pacific: south to East London, South Africa. Western Central Pacific: Guam

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Hora (1923). The species is locally known as **Neuli Baligirida** in Odia, occurs throughout the lagoon but frequent in central and northern sector of Chilika. The fish has commercial value being sold @ Rs. 60-70/- kg. Consumed locally as well as traded to other states. Commonly caught in screen barrier and seine nets. Its landing is included in the brackishwater miscellaneous group.

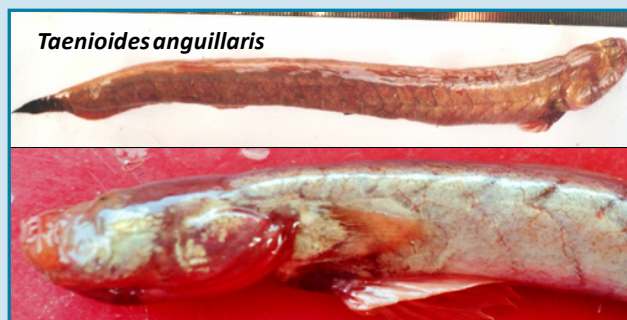
Taenioides anguillaris (Linnaeus, 1758)

Eel worm goby

Odia: Gatua Cheduhan

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gobiidae
Genus : *Taenioides*
Species : *Taenioides anguillaris*



Diagnostic features

Body shape is highly elongate and compressed. Head is sub-cylindrical; eyes minute. Mouth is vertical; chin with three pairs of short barbels. Dorsal and anal fins enveloped in skin and confluent with caudal fin. Caudal fin is pointed. Body is yellowish with a golden tinge. Vertical fins are yellowish; caudal fin pinkish. *T. buchanani* can easily be distinguished by its blackish vertical fins (yellowish in case of *T. anguillaris*). Even though *T. buchanani* has small eyes, they are distinct (eyes are minute in *T. anguillaris*). *T. buchanani* has 5 canines on each side of jaws while in *T. anguillaris* has 6-7 canines on each side of upper jaw and 4-5 canines on each side of the lower jaw.

D. VI, 40-47; A. I, 37-44.

Habitat

The species exhibit burrowing habit and occurs in estuaries. In India the species is fairly common in the creeks and mangrove areas.

Distribution

It is distributed in Sundarbans and Andaman Islands of India.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by ICAR-Central Inland Fisheries Research Institute (CIFRI), Barrackpore, Kolkata under the five years consultancy research project, April 2017. The species is locally known as **Gatua Cheduhan** in Odia. The species has been recorded for first time from Chilika caught in screen barrier net near Satapada area.

Trypauchen vagina (Bloch & Schneider, 1801)

Comb goby

Odia: Nali Chedhuan, Pania

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gobiidae
Genus : *Trypauchen*
Species : *Trypauchen vagina*



Diagnostic features

The species has a compressed and very elongated body. Abdomen is rounded. Head is compressed, naked with a median crest on occiput. Snout is conical but not sharp. Mouth is oblique, lower jaw prominent; cleft extending to behind orbit. Eyes present in anterior part of head are very small, covered by skin. Jaws are unequal, with teeth in many rows and pointed. Body is covered with cycloid scales. Head, nape and breast are naked. Pectoral fin is half of head length. Pelvic fins are very small, united, forming a disc. Both dorsal and anal fins are connected with caudal fin. Caudal fin is rounded and equal to head length. Body is reddish in colour.

D. VI, 40-49; A. I, 39-46; P. 15-18; V.I, 5.

Habitat

The fish species occurs from marine to brackish region; demersal in habit and amphidromous in migration.

Distribution

Distribution of the species ranges from Indo-Pacific: Coasts of India through the Malay Archipelago to China; also in the Philippines, New Caledonia and South Africa.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansingani (1954). The species is locally known as **Nali Chedhuan, Pania** in Odia. The species occurs in central and outer channel sector burrowing in the bottom mud, specifically found in Magarmukh area of the lagoon. It has neither commercial nor ornamental value. Its catch in the lake is negligible and is mixed with the miscellaneous group, treated as trash fish. Commonly found from catch of screen barrier nets (*Khanda jal*).

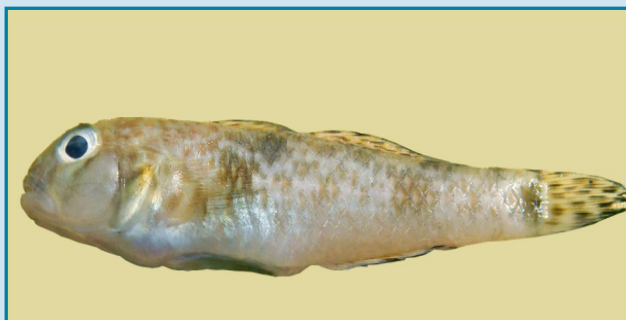
Yongeichthys criniger (Valenciennes, 1837)

Yellowfin toxic goby

Odia: Luni Chedhuan

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Gobiidae
Genus : *Yongeichthys*
Species : *Yongeichthys criniger*



Diagnostic features

Body is elongated, eyes lateral, occasionally prominent. Snout is obtuse. The cleft of mouth is oblique, commencing anteriorly opposite the middle of the eyes. The maxilla reaches to below front edge or first third of the orbit. Several rows of fine warts along the cheeks, opercles, and upper surface of head and nape of neck present. An open pore is present between the eyes. The two dorsals with narrow inter space between their bases. The second and third spines of first dorsal fin are often with filamentous terminations. Last dorsal ray divided to its base. Caudal fin is rounded. Colour of the body is pale yellowish orange. Head, body, dorsal and caudal fins irregularly spotted and blotched with black. Caudal and anal fins are with dark edges.

D. VII, 9; A. I, 9.

Habitat

The fish is marine to brackish water species and demersal in habit.

Distribution

It is distributed in Sundarbans and Andaman Islands of India.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007). The species is locally known as **Luni Chedhuan** in Odia. The species found mainly near Satapada area up to Nalabana area of Chilika. The fish sold along with other gobiids @ Rs 50-70/- kg. Commonly noticed in screen barrier and seine nets (*drag/bhida jala*). Toxicity in this species is particularly high in the skin; so it is poisonous to eat. The fish is not used as a food fish and its catch is mixed with the miscellaneous group.

Ephippus orbis (Bloch, 1787)

Orbfish

Odia: Chandi

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Ephippidae
Genus : *Ephippus*
Species : *Ephippus orbis*



Diagnostic features

Color: Greenish above, the sides and belly silvery, more or less dusky in their margin part, the ventrals sometimes brown or blackish. 4 or 5 vertical black bars on body from dorsal fins almost to belly; margins of soft dorsal, pelvic, anal and caudal fins dusky black.

Head and body silvery blue-green. Four or 5 faint dark blue bars often visible on body. Fins dusky. Body orbicular and strongly compressed, its depth more than twice length of head. Eye above horizontal axis through mouth. Mouth small, the maxilla not reaching past vertical at front edge of eye. Jaws with bands of slender, incisiform teeth with a single lanceolate cusp. No teeth on palatines or vomer. Preopercle distinctly serrate, with a broad naked margin. Opercle without spines. Head 3 to 3.5, 4 to 4.3 in length with caudal, much higher than long. Eye more or less than 2.3 in head. Lateral line angularly arched with more or less than 40 sensory scales, about eight to ten scales in a transverse series between lateral line and origin of dorsal, and 14 between lateral line and origin of anal, about five above the top of the lateral line. Dorsal with the first spine very small and procumbent, in old specimens hidden. The second and third spines smaller, the fourth, fifth and sixth the longest, gradually decreasing in size, their deeply incised membrane with a filiform prolongation, the succeeding spines short but strong, the soft dorsal rounded, and similar to anal, which has three spines, much shorter than eye. Pectorals obtusely rounded, longer than half length of head and about equal to spines of ventrals the first ray of which reaches anal. For other characters see those of the subfamily.

Habitat

Marine; reef-associated; amphidromous; demersal; neiritic; common on mud banks or mud and sand. Feeds on benthic invertebrates and fishes.

Distribution

Indo-West Pacific: Persian Gulf to Natal, South Africa, eastward to India and Lesser Sunda Island, Indonesia, north to Japan and Taiwan, south to northern Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Satapathy and Panda (2009) which was collected from outer channel sector. The species is locally known as **Chandi** in Odia. Its catch in Chilika is negligible and hence mixed with the miscellaneous brackishwater fish group. Meat is very tasty, marketed fresh and sold in the local markets.

Platax orbicularis (Forsskål, 1775)

Orbicular batfish

Odia: Chaina Chandee

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Ephippidae
Genus : *Platax*
Species : *Platax orbicularis*



Diagnostic features

Dorsal spines (total): 5; Dorsal soft rays (total): 34-39; Anal spines: 3; Anal soft rays: 25 - 29. The ocular band of adult specimens with a series of dark vermiculations. Adults (above 20 cm) yellowish silvery or dusky, dark bar through eye and another bar just behind head. Occasionally with a few small, scattered black spots on body. Median fins yellowish, with black margins posteriorly. Pelvic fins black. Small juveniles reddish brown, with irregular black spots and blotches and small, white (black-edged) ocelli on body. Small black spot at base of last 3 dorsal- and anal-fin rays. Caudal fin transparent except for base, which is reddish brown. Body orbicular and strongly compressed, its depth more than twice length of head and 0.9 to 1.4 times SL. Head length 3.4 to 3.8 times SL. Snout profile of large adults (above 40 cm total length) concave, with bony swelling between eyes. Interorbital width 38 to 48% head length. Jaws with bands of slender, flattened, tricuspid teeth, the middle cusp about twice length of lateral cusps. No teeth on palatines or vomer. Five pores on each side of lower jaw. Preopercle smooth. Opercle without spines. Anterior profile angular. Maximum length recorded 60.0 cm (TL) (Bouhlef, 1988).

Habitat

Marine; brackish; reef-associated; semi-demersal; neritic.

Distribution

Indo-Pacific: Red Sea and East Africa and Persian Gulf to the Tuamotu Islands, north to southern Japan, south to northern Australia and New Caledonia. Recorded off the coast of Florida in the Western Central Atlantic.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Satapathy and Panda (2009) which was collected from outer channel sector. The species is locally known as **Chaina Chandee** in Odia. It is a food fish having interest to fisheries, young once are very much preferred as marine ornamental fish for marine aquarium. The fish is occasionally caught in stray number in the outer channel and it does not form a fishery.

Scatophagus argus (Linnaeus, 1766)

Spotted scat

Odia: Chitra chandi

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Scatophagidae
Genus : *Scatophagus*
Species : *Scatophagus argus*



Diagnostic features

The Body shape is squarish to quadrangular, strongly compressed with triangular head. Dorsal profile of head is steep and snout rounded. Mouth is small, horizontal but not protractile. Rostro-dorsal profile is strongly ascending and followed by a deep concavity. Mouth is small, not protractile. Eye are moderately large, its diameter somewhat smaller than snout length. Villiform teeth present in several rows on jaws. Body is greenish-grey to dusky with numerous irregular large round brown spots. Belly is silvery. Juveniles are with a few large roundish blotches, about size of eye, or with about 5 or 6 broad, dark, vertical bars. In large adults, spots may be faint and restricted to dorsal part of flanks.

D. IX, 16-18; A. IV, 16-18; P. 20; V. I, 5.

Habitat

This species ranges from marine to freshwater; usually reef-associated and amphidromous in migration.

Distribution

The fish is distributed in Indo-Pacific: Kuwait to Fiji, north to southern Japan, south to New Caledonia. Also reported from Samoa, Tonga and the Society Islands.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Roy and Sahoo (1957) which was collected from Balugaon coast. The species is locally known as **Chitra Chandi** in Odia. The fish occurs mainly in southern and outer channel sector and rarely in central sector. It has less commercial value, sold @ Rs 70-80/- kg. Commonly found in catches of gill nets, seine nets and screen barrier nets (*Khanda jal*). It is one of the very good ornamental fish for brackish water aquarium.

Siganus canaliculatus (Park, 1797)

White-spotted spinefoot

Odia: Samadho / Ora

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Siganidae
Genus : *Siganus*
Species : *Siganus canaliculatus*



Diagnostic features

The fish has an oval and strongly compressed body. Teeth present on jaws are small and denticulated. Preopercular angle is 89°-96°. Cheeks appear to be scaleless but sometimes with few to many, fine, embedded scales on lower 2/3. Midline of thorax is scaleless between pelvic ridges. Margin of anterior nostril encircled by a low flange with the flap extending towards posterior flap; flap shortens with increasing size. Body is silvery gray above, silvery below; a touch of olive green on nape and upper surface of head. Bright pattern mottled with pale cream and dark brown. The fish usually displays a dark patch just below origin of lateral line. A dark shoulder mark and barred present on the caudal fin.

D. XIII, 10; A. VII, 9; Vr. 23.

Habitat

Found in Marine and brackish water region; reef-associated and oceanodromous in migration.

Distribution

Distribution is Indo-West Pacific: Persian Gulf, Gulf of Oman, Pakistan, India, Sri Lanka, Burma, Thailand, Singapore, Malaysia, Indonesia, Papua New Guinea, Philippines, Cambodia, Viet Nam, south China, Taiwan and Western Australia. Also found in Ryukyu Islands, Palau, Yap and Melanesia.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007). The species is locally known as **Samadho / Ora** in Odia. The species frequently found in outer channel area, but also found in central and southern sector of Chilika. It has some commercial value, sold @ Rs 70-90/ kg. The fish caught in gill net and screen barrier. But in outer channel area, the species found to be caught through cast nets also. The fish has ornamental value to be utilized in brackish water aquarium. The annual catch of the fish is mixed with the brackishwater miscellaneous group.

Siganus javus (Linnaeus, 1766)

Streaked spinefoot

Odia: Samadho / Ora

Systematic accounts

Class : Actinopterygii

Order : Perciformes

Family : Siganidae

Genus : *Siganus*

Species : *Siganus javus*



Diagnostic features

The fish has an oval and strongly compressed body. Teeth present on jaws are small and denticulated. Dorsal fin spines are slender. Anal fin spines are stout. Caudal fin is emarginated. Body is bluish white above, light below with numerous blue spots on head, nape and upper half of body. Ventral part of body has narrow irregular bluish grey wavy stripes forming a reticulum. Dorsal and anal fins are yellow. Caudal fin is dusky with a large black patch in the middle.

D. XIII, 10; A. VII, 9; P. 17-18; V. II, 3.

Habitat

Found in marine and brackish water region; reef-associated and oceanodromous in migration.

Distribution

Indo-Pacific: Persian Gulf, Gulf of Oman, Pakistan, India, Sri Lanka, Burma, Andaman Islands, Thailand, Viet Nam, southern China, Malaysia, Indonesia, Philippines, Australia, New Guinea, Vanuatu and New Caledonia.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Bhatta *et al.* (2001). The species is locally known as **Samadho / Ora** in Odia. The species frequently found in outer channel area, but also found in central and southern sector of Chilika. It has some commercial value, sold @ Rs 80-120/- kg. The fish caught in gill net and screen barrier. But in outer channel area, the species found to be caught through cast nets also. The fish has ornamental value to be utilized in brackish water aquarium. The annual catch of the fish is mixed with the brackishwater miscellaneous group.

Siganus vermiculatus (Valenciennes, 1835)

Vermiculated spinefoot

Odia: Samadho / Ora

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Siganidae
Genus : *Siganus*
Species : *Siganus vermiculatus*



Diagnostic features

Body is deep and compressed; its depth 1.9-2.2 times in SL. Nape and snout convex whereas interorbital space concave. Anterior nostril is with a flange which is slightly broadened posterior. Scales minute; cheeks covered with prominent scales. midline of thorax scaled but not pelvic ridges. A forward directed spine is present in front of dorsal fin and last dorsal spine is longest in specimen above 12.5 cm SL and 5th to 8th spines longest in smaller fish. Last anal fin spine is longest (about 1.8 times of first spine). Caudal fin is emarginated. Around 17-26 rows of scales are present between lateral line and bases of leading dorsal spines. Body colour is bluish white, head brown to brownish or golden yellow. Head and body with vermiculate or irregular blue lines are present. Dark lines breaking into spots on caudal fin, spots arranged in 4 vertical rows. Dark spots also present on soft parts of dorsal and anal fins, arranged in rows, the proximal row prominent.

D. XIII, 10; A. VII, 9; Vr. 13.

Habitat

The species usually found reef-associated, inhabits in marine to brackish environments.

Distribution

Indo-West Pacific: India, Sri Lanka, Andaman Islands, Thailand, Malaysia, Singapore, Indonesia, Philippines, Palau, Guam, New Guinea, Solomon Islands, Fiji.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansinghani (1954) which was collected from Chilika near Balugaon. The species is locally known as ***Samadho / Ora*** in Odia. The species rarely found in outer channel sector of Chilika, caught in gill nets. The fish predominantly occurs in the outer channel and also distributed in central and southern sector and also occasionally in northern sector. It is considered as a brackishwater ornamental fish and does not form a commercial fishery. The annual catch is included in the miscellaneous brackishwater fish group.

Acanthurus mata (Cuvier, 1829)

Elongate surgeonfish

Odia: Moothia, Kala Chandi

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Acanthuridae
Genus : *Acanthurus*
Species : *Acanthurus mata*



Diagnostic features

Dorsal spines (total): 9; Dorsal soft rays (total): 24-26; Anal spines: 3; Anal soft rays: 23 - 24. Body brown; head banded; fins brown. Capable of changing color to pale bluish overall. Behind eye a yellow area and 2 yellow bands extending anterior from eye. A single, sharp, forward-pointing erectile spine which folds down into a horizontal groove on each side of the caudal peduncle; spine in white sheath. Gill rakers 13-15 in both anterior and posterior rows. Scales minute. Maximum length recorded 50.0 cm (TL) (Randall, 1986).

Habitat

Marine; reef-associated.

Distribution

Indo-Pacific: Red Sea south to Natal, South Africa and east to the Marquesas and Tuamotu islands, north to southern Japan, south to the southern Great Barrier Reef and New Caledonia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007) which was collected from Magarmukh area of outer channel sector. The species is locally known as ***Moothia, Kala Chandi*** in Odia. The fish has little interest to fisheries because of its small size and rare occurrence in the lake. The fish being a benthic grazer is mostly caught by bottom set nets. Small size fishes have ornamental values and can be used in the marine aquarium.

Acanthurus triostegus (Linnaeus, 1758)

Convict surgeonfish

Odia: Bagha Chandi

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Acanthuridae
Genus : *Acanthurus*
Species : *Acanthurus triostegus*



Diagnostic features

Convict tangs have a pale body color varying from white/greenish-white to gray or even yellow. This background is overlaid one going through each eye. They are highly laterally compressed and have small scales, gill rakers, dorsal spines and anal spines. Dorsal spines (total): 9; Dorsal soft rays (total): 22-26; Anal spines: 3; Anal soft rays: 19 - 22. Body olivaceous gray, with 4 vertical stripes (1 stripe on head across the yellow eye; 1 on caudal peduncle); shading to white ventrally, often with a sharp line of demarcation. Sharp, forward-pointing, erectile spine on each side of caudal peduncle which folds down into a groove. Scales minute. Teeth with denticulations on sides and top. Gill rakers 18-22 in anterior row, 19-24 in posterior row. Maximum length recorded 27.0 cm (TL) (Randall, J.E., 1986).

Habitat

Convict tangs are surgeonfish that prefer to occupy coral reefs, but are also found in tide pools and other near shore habitats such as shallow, low current beach communities. They are tropical reef fish. Convict tangs are mainly found in temperatures ranging from 24-26°C and at depths of 0-90 m. This marine fish is considered as a good marine ornamental fish for aquarium use.

Distribution

Indo-Pacific: throughout the region except for the seas around the Arabian Peninsula. Eastern Pacific: lower Gulf of California to Panama, including the Revillagigedo, Cocos, Clipperton, and Galapagos islands.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2013) which was collected from Magarmukh area during the post-restoration period. The species is locally known as **Bagha Chandi** in Odia. In Chilika Lake, the fish is occasionally found in the outer channel and Magarmukh area in the central sector. Its annual landing has not been estimated as the catch is very negligible.

Sphyraena jello Cuvier, 1829

Pickhandle barracuda

Odia:Gayala

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sphyraenidae
Genus : *Sphyraena*
Species : *Sphyraena jello*



Diagnostic features

The species has an elongate and round body. Head large, with a long, pointed snout; mouth large, maxilla (upper jaw) almost reaching to anterior margin of eye, lower jaw projecting; strong, pointed, flattened teeth in both jaws, large in front, smaller behind and a few triangular, flattened teeth on roof of mouth (palatines). No gill rakers on first arch; upper and lower gill arch platelets rough, but without distinct spines. Origin of first (spinous) dorsal fin slightly behind pelvic fin origin; anterior dorsal and anal fin rays not reaching beyond tips of posterior rays when fin depressed; pectoral fin tip reaching beyond pelvic fin base. Scales small, more than 130 (usually 135-140) in lateral line. Body colour is blue/black or brown above, sides silvery, with a dark pattern of serpentine bars reaching a little below lateral line, but no inky spots on hind part of body below lateral line (bars very distinct in young).

Habitat

The species found in marine and brackish water bodies; usually reef-associated and perform oceanodromous migration.

Distribution

Distributed in Eastern Indian Ocean and Western Pacific regions.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007). The species is locally known as **Gayala** in Odia. Mostly the juveniles and sub-adults visit outer channel mainly for feeding and their occurrence in the lake is restricted to outer channel sector only. The maximum total length and weight of the fish in the marine environment has been reported to be 150 cm and 11.5 kg respectively. The maximum size of the fish recorded from Chilika Lake is 42 cm. It is a good food fish, rarely found in Chilika. Consumed locally, has comparatively less commercial value, sold @ Rs. 80-120/- kg.

Sphyraena putnamae Jordan & Seale, 1905

Sawtooth barracuda

Odia: Gayala

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sphyraenidae
Genus : *Sphyraena*
Species : *Sphyraena putnamae*



Diagnostic features

The species has an elongated and slightly compressed body. Head very long with long snout; mouth large, with lower jaw projecting beyond upper. Strong canine teeth in jaws and on palatines of unequal size. No gill rakers on first gill arch; preopercle and opercle rounded; maxilla reaches almost front edge of eye. Scales small, cycloid. Lateral line well developed and nearly straight. Two widely separated dorsal fins. Caudal fin forked, in large adults with a pair of indistinct lobes at posterior margin. A total of 15 acutely angled chevrons are present on sides of body and their apices directed forward.

D1.5; D2.1, 8; P.12-14.

Habitat

It is a marine species, usually found to be reef-associated.

Distribution

Indo-West Pacific: Red Sea and East Africa to New Caledonia and Vanuatu, north to southern Japan. Reported from Fiji and Tuvalu.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported as *Sphyraena raghava* from Chilika by Chaudhuri (1917) which was collected from Satapada area. The species is locally known as **Gayala** in Odia. Although the maximum recorded length from marine environment is 90 cm, the maximum size of the fish recorded from outer channel sector of Chilika Lake was 37 cm. The fish occasionally enters the outer channel sector during post-winter and its occurrence is restricted between Magarmukh and lake mouth. It is a good food fish, rarely found in Chilika. Consumed locally, has less commercial value, sold @ Rs 60-100/- kg.

Sphyraena obtusata Cuvier, 1829

Obtuse barracuda

Odia: Gayala

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Sphyraenidae
Genus : *Sphyraena*
Species : *Sphyraena obtusata*



Diagnostic features

It has an elongated and slightly compressed body; large head with a long and pointed snout. The maxilla (upper jaw) reaching to anterior margin of eye, lower jaw is projecting. Teeth are present on both jaws are strong, pointed and flattened; front teeth are large and behinds are smaller. A few triangular, flattened teeth on the roof of mouth (palatines). In the gill, the first arch with two prominent gill rakers; upper and lower gill arch platelets rough but without distinct spines. The origin of pelvic fins situated well before first dorsal-fin origin. Pectoral fin tip reaching first dorsal fin origin. Body colour is silvery white; sides are without dark bars or chevrons. However, a longitudinal yellow or dark stripe above lateral line is clearly visible in fresh. Sides of mouth are bright yellow. Second dorsal and caudal fin is yellow. Terminal end of caudal fin is with black margins.

D. VI, 9; A. II, 9.

Habitat

This species inhabits in marine to brackish waters; usually found reef-associated.

Distribution

The species is well distributed in Indo-Pacific regions: Red Sea and East Africa to Samoa, north to the Ryukyu Islands, south to Lord Howe Island. Also found in Mediterranean and the Red Sea.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika (outer channel sector-Satapada area) by Karna *et al.* (2017). The species is locally known as **Gayala** in Odia which is also a good food fish. Its percentage composition in commercial catch being negligible, the fish grouped under miscellaneous brackish water species. It is locally consumed and sold at Rs.50-100 / kg depending on size. The maximum size recorded from the outer channel of Chilika Lake was 27 cm.

Anabas testudineus (Bloch, 1792)

Climbing perch

Odia: Kau

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Anabantidae
Genus : *Anabas*
Species : *Anabas testudineus*



Diagnostic features

The fish species has an elongated and compressed body with a depth of nearly $\frac{1}{3}$ rd of standard length. The length of snout is nearly $\frac{1}{5}$ th of standard length. The body is rifle green in colour, very pale below, back dusky to olive. It has more than four vertical bands on sides, which disappears with age. Head with longitudinal stripes ventrally and the iris is golden reddish. Posterior margin of opercle has a dark spot. It has a large mouth with villiform teeth on jaws. The lateral line is interrupted about the seventeenth scale.

D. XVI-XX, 8-10; A. IX-XI, 8-11; P. 15; V. I, 5; LI. 28-32.

Habitat

The species resides in fresh as well as brackish water; it is demersal and potamodromous in nature.

Distribution

Distributed in Asian countries: India to Wallace line including China.

IUCN Status

Data deficient (DD)

Other information – Chilika specific

The species was first reported from Chilika by Menon (1961) which was collected from northern sector near Hatabaradi. The species is locally known as **Kau** in Odia. The fish mostly caught from northern sector near Bhusandapur, Kalupada, Jaguleipadara and Jagannathpur area and in the central sector near Nalabana area. The fish is landed in good quantity at Jagannathpur and Jaguleipadara landing centres in northern sector. It has good commercial value, sold @ Rs 70-120 / kg. Fishes in live condition traded to other states mainly to West Bengal. The species caught in gill nets and screen barrier nets (**Khanda**).

Trichogaster fasciata Bloch & Schneider, 1801

Banded gourami

Odia: Kou Phasi, Khasi Kari

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Osphronemidae
Genus : *Trichogaster*
Species : *Trichogaster fasciata*



Diagnostic features

Body of the fish is elongated and strongly compressed. Mouth is small and slightly protrusible. Ventral side consists of a single elongated ray. Preorbital is serrated in young specimen. Color of the species is greenish with 14 or more oblique orange or bluish bars descending downwards and backwards from the back to the anal fin. Vertical fins have alternating dark and pale spots or bars. The anal fin is often with a red margin. Caudal fin is slightly notched or cut square. Immature specimens have a black spot at the root of the caudal fin.

D. XV-XVII, 9-14; A. XV-XVIII, 14-19; Vr. 27

Habitat

It is a freshwater dwelling species, benthopelagic in habit.

Distribution

It is distributed specifically in Asian countries: Pakistan, India, Nepal, Bangladesh and upper Myanmar.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Bhatta *et al.* (2001) collected from Kalupada area. The species is locally known as **Kou Phasi, Khasi Kari** in Odia. The species mainly occur in northern and central sector of Chilika. It is a very good native and hardy freshwater ornamental fish which is mostly maintained in home aquarium. Although it is generally not used as food fish but is highly in demand as an attractive native freshwater ornamental fish. It has commercial value as an freshwater ornamental fish. Its catch is included in the miscellaneous group and sometimes sold @ Rs 50-60/- kg. Commonly found in the catch of screen barrier net and seine net (drag net) in the freshwater zone of northern sector between Jaganthpur and Kalupadaghat area in the northern sector.

Trichogaster lalius (Hamilton, 1822)

Dwarf gourami

Odia: Kou Phasi, Khasi Kari

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Osphronemidae
Genus : *Trichogaster*
Species : *Trichogaster lalius*



Diagnostic features

It has compressed body with terminal mouth and small cleft. Body is crimson in colour and light blue vertical bands are present extending up to dorsal, anal and caudal fins. Soft parts of dorsal and anal fins not produced. Caudal fin is slightly emarginated.

D. XV-XVIII, 11-20; A. XV-XXII, 11-20; P. 10; V. 1; LI. 26-28.

Habitat

Occurs in freshwater lakes, reservoirs, rivers, canals; benthopelagic in nature.

Distribution

Well distributed in Pakistan, India and Bangladesh.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Roy and Sahoo (1968) from Kalijugeswar area near Balugaon. The species is locally known as **Kou Phasi, Khasi kari** in Odia. The species mainly occur in northern and central sector of Chilika. It is a very good native and hardy freshwater ornamental fish which is mostly maintained in home aquarium. Although it is generally not used as food fish but is highly in demand as an attractive native freshwater ornamental fish. It has commercial value as freshwater ornamental fish. Its catch is included in the miscellaneous group and sometimes sold @ Rs 50-60/- kg. Commonly found in the catch of screen barrier net and seine net (drag net) in the freshwater zone of northern sector between Jaganthpur and Kalupadaghat area in the northern sector and it occurs in the western weedy shore area of the lake up to Chandraput coast.

Channa marulius (Hamilton, 1822)

Great snakehead

Odia: Saala

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Channidae
Genus : *Channa*
Species : *Channa marulius*



Diagnostic features

The fish has an elongated, anteriorly sub-cylindrical body with rounded abdomen. The head is large and depressed with plate like scales. Snout somewhat obtuse and mouth fairly large, opening moderate to wide that may extend to below orbit. An accessory respiratory organ in the form of a thin bony lamina present in a cavity in gill chamber. Both dorsal and anal fins free from caudal. A black white-edged ocellus present on basal portion of caudal fins. 15-16 pre-dorsal scales and 10 scales between orbit and angle of preopercle present.

D. 45-55; A. 28-36; P.18; V.6; LI.60-70.

Habitat

It is a freshwater species, benthopelagic and potamodromous in habit.

Distribution

It is distributed in India to China, south to Thailand, Cambodia and Pakistan.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty *et al.* (2015) which was collected from Bhusandapur and Jaguleipadara area in northern sector. The species is locally known as **Saala** in Odia, occurs mainly in northern sector of Chilika. It has good commercial value, sold @ Rs 120-160/kg, mostly sent to New Delhi markets. This species is a good aquaculture species, consumed locally as well as traded to other states within India as live samples. Average annual yield is 3.23 tonnes (Average economic evaluation is Rs. 5.83 lakhs. The species has been caught in hook & line and also found from catch of screen barrier nets (**Khanda**).

Channa punctata (Bloch, 1793)

Spotted snakehead

Odia: Gadisha

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Channidae
Genus : *Channa*
Species : *Channa punctata*



Diagnostic features

The fish has an elongated and rounded body, cylindrical anteriorly. Scales on body are large and on head are plate like. Cheek scales are 5 and predorsal scales are 12 in number. Eyes are moderate in size. Its diameter is 1/12th of head length. Mouth is large. Lower jaw has 3 to 6 canines located behind a single row of villiform teeth. Caudal fin is rounded. Body colour varies from black to light green on dorsal sides and flanks, ventral side white to pale yellow. Sometimes it has a reddish tinge, several dark blotches on flanks, some with numerous black spots on body and also on dorsal, anal and caudal fins.

D. 28-33; A. 21-23; P. 17; V. 6; LI. 37-40.

Habitat

The fish dwells in fresh to brackish water; benthopelagic in nature and perform potamodromous migration.

Distribution

The species is commonly distributed in Asia: Afghanistan, Pakistan, India, Sri Lanka, Nepal, Bangladesh, Myanmar and Yunnan in China.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1917) which was collected from Parikud area. The species is locally known as **Gadisha**, occurs mainly in northern sector of Chilika. It breeds in Chilika Lake in the fringe weedy areas between Bhusandapur and Jagannathpur. It has less commercial value, sold @ Rs 50-80/kg. This fish consumed locally. Average annual yield is 33.5 tonnes valued at Rs. 8.89 lakhs. The species is caught in hook & line and also found from catch of screen barrier nets (**Khanda**) and Boja (Bamboo screen trap). The fish is landed in more quantity at Mangalajodi landing centre.

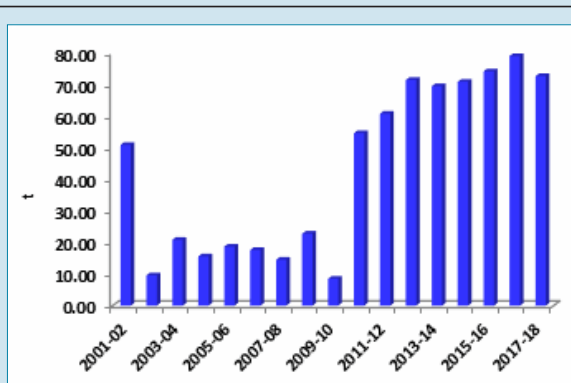


Fig W Annual landings of *C. punctata* during 2001-02 to 2017-18

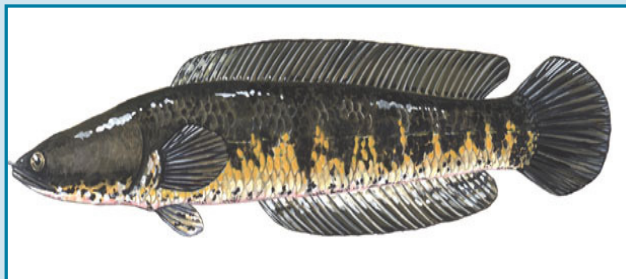
Channa striata (Bloch, 1793)

Striped snakehead

Odia: Seula

Systematic accounts

Class : Actinopterygii
Order : Perciformes
Family : Channidae
Genus : *Channa*
Species : *Channa striata*



Diagnostic features

Body elongate. Head broad and flattened reminiscent of a snake's head. Top and sides of head covered with scales. Mouth large; only small teeth on palate. Eyes in anterior part of head. Lateral line with 42-57 very large scales. Dorsal fin longer than anal fin and beginning above pectoral fin. Caudal rounded. Oblique bars on body.

Habitat

Very common in freshwater plains; survive dry season by burrowing in bottom mud of lakes, canals and swamps as long as skin and breathing apparatus remain moist. Feeds on fishes and crustaceans.

Distribution

Found in sluggish or standing water from Sri Lanka to Indonesia, the Philippines and China. One of the most common snakeheads in Cambodia.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansingani (1954) which was collected from Kalupadaghat area. The species is locally known as **Seula** in Odia, frequently found in the northern sector, particularly in the northern part of northern sector and occasionally in the central and southern sectors of the lake. The fish species has very good commercial value as it is highly in demand in West Bengal and Andhra Pradesh. The fish is everyday caught from the lake and mostly transported by road to West Bengal as live fish kept in water in metal (GI) container with perforated lid. The average daily catch from the lake is about 7 tonnes and average annual landings is 84 tonnes (2016-17). The fish is sold at an average unit price of Rs. 120/-kg at landing centre. Major landing of this fish takes place at Jaguleipadara, Bhusandapur, Kalupada and Sorana landing centres in Chilika Lake. Generally caught through gill net and hook & line; breeds in monsoon season. Year wise annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig X.

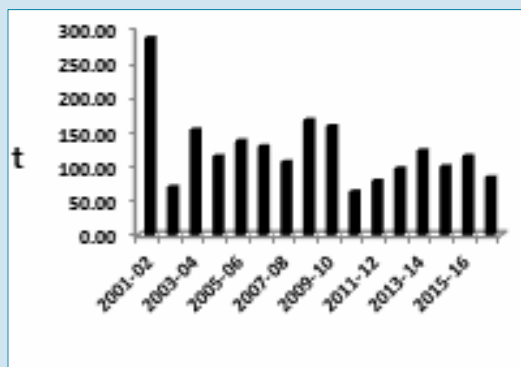


Fig X Annual landings of *C. striata* (Seula) during 2001-02 to 2016-17

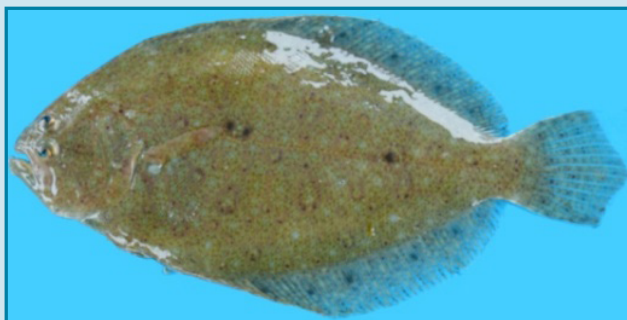
Pseudorhombus arsius (Hamilton, 1822)

Large-tooth flounder

Odia: Patpata

Systematic accounts

Class : Actinopterygii
Order : Pleuronectiformes
Family : Paralichthyidae
Genus : *Pseudorhombus*
Species : *Pseudorhombus arsius*



Diagnostic features

Body shape is generally oval and compressed with both eyes on left side. Mouth has 5-10 pointed teeth in either jaw. Scales on eye side are ctenoid and on blind side cycloid. First dorsal ray is inserted over anterior nostril. Gill rakers are 9-13 on lower arm of first arch. Body is light brown with dark spots and rings on eye side. A large dark spot at the junction of straight and curved parts of lateral line and two smaller ones on lateral line at posterior part of body and near anterior end of caudal fin distinguishes the species. Median fins with scattered dark spots. Caudal fin is wedge shaped with its central rays being the longest.

D. 74-76; A. 58-61; P. 11-13; V. 5; Ll. 67-80.

Habitat

It is a marine to brackish dwelling species; demersal in habit and oceanodromous in migration

Distribution

It is distributed in Indo-West Pacific: Persian Gulf and east coast of Africa (south to Algoa Bay and perhaps to Knysna, South Africa) to Fiji, north to southern Japan, south to the northern coast of Australia.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Hora (1923). The species is locally known as **Patpata** in Odia. It occurs mostly in central and outer channel sector of Chilika. It has no commercial value and treated as a trash fish, found in the catches of screen barrier nets and in seine nets. Its annual landing being negligible is included in the brackishwater miscellaneous group.

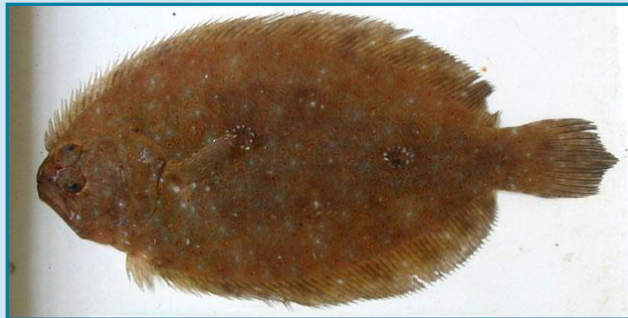
Pseudorhombus micrognathus Norman, 1927

Flounder fish

Odia: Patpatia

Systematic accounts

Class : Actinopterygii
Order : Pleuronectiformes
Family : Paralichthyidae
Genus : *Pseudorhombus*
Species : *Pseudorhombus micrognathus*



Diagnostic features

Body is flat and oval. Its body depth is $\frac{1}{2}$ of standard length. Dorsal profile of head is notched in front of eyes, which are located on left side. Maxilla extends to middle of lower eye. About 12 long and slender gill rakers are present on lower arm of first arch. Teeth are minute in both jaws. Dorsal fin originates above anterior nostril of blind side. Ctenoid scales on ocular side and cycloid scales on blind side cover the body. Lateral line is curved and forms 2 branches near head region. Maximum length recorded 12.0 cm (TL) (Satapathy & Panda, 2009).

Habitat

Marine; bathydemersal.

Distribution

Indo-West Pacific: India and the Philippines.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Satapathy & Panda (2009). The species is locally known as **Patpatia** in Odia. In Chilika Lake, the fish occurs rarely in the outer channel sector, central sector and also southern sector of Chilika Lake. It does not form a fishery in the lake. This marine fish has ornamental value for marine aquaria.

Pseudorhombus triocellatus (Bloch & Schneider, 1801)

Three spotted flounders

Odia: Chakka Patpata

Systematic accounts

Class : Actinopterygii
Order : Pleuronectiformes
Family : Paralichthyidae
Genus : *Pseudorhombus*
Species : *Pseudorhombus triocellatus*



Diagnostic features

Dorsal spines (total): 0; Dorsal soft rays (total): 65-70; Anal spines: 0; Anal soft rays: 49 - 52. Body brownish, with 1 ocellus above and below lateral line and 1 ocellus on posterior third of straight section of lateral line. Many indistinct spots and blotches on body. Pectoral fin on ocular side with 11-12 soft rays.

Habitat

Marine; demersal.

Distribution

Indo-West Pacific: India and Sri Lanka to western Thailand, Sumatra and the southern islands of Indonesia, and northwestern Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohapatra *et al.* (2007) while undertaking ichthyofaunal inventory survey in the outer channel sector during 2006. The species is locally known as **Chakka Patpata** in Odia. The fish rarely occurs in the outer channel during high salinity phase (post-winter and summer season). It does not form a commercial fishery in Chilika although it is one of the commercially important fish species with high unit selling price. The stray catches of this species is included in the brackish water miscellaneous group.

Solea ovata Richardson, 1846

Ovate sole

Odia: Patpata

Systematic accounts

Class : Actinopterygii
Order : Pleuronectiformes
Family : Soleidae
Genus : *Solea*
Species : *Solea ovata*



Diagnostic features

The species has a ovate and flat body. Eyes present on right side. Inter-orbital is scaly. Snout obtusely pointed. Dorsal and anal fins not confluent with caudal; both ventral fins present. Ocular side of body and fins are olive-brown with spots and black blotches; deep black blotches on outer 2/3rd of pectoral fins.

D. 58-67; A. 41-51.

Habitat

The species inhabits in marine waters; demersal in nature.

Distribution

Indo-Pacific: including the northern China Sea, Gulf of Thailand, the Philippines and southward to Indonesia.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Rajan *et al.* (1968). The species is locally known as **Patpata** in Odia. It occurs mostly in central and outer channel sector of Chilika. It has no commercial value and treated as a trash fish. The catch comes from screen barrier nets (Khanda jaal) and seine nets (Bhida jaal). Annual catch being much less it is included in the brackishwater miscellaneous fish group.

Zebrias synapturoides (Jenkins, 1910)

Indian zebra sole

Odia: Zebra Patpata

Systematic accounts

Class : Actinopterygii

Order : Pleuronectiformes

Family : Soleidae

Genus : *Zebrias*

Species : *Zebrias synapturoides*



Diagnostic features

Body elongate and flat with strong ctenoid scales on both sides. Eyes on right side; nearly contiguous (separated by a scaly orbital space) and without tentacles. Right pectoral fin (pectoral fin on the ocular side) shorter than the eye and its upper rays not produced. Posterior rays of dorsal and anal fins joined only to the basal half of the caudal fin. Body is brownish with 13 dark cross-bands on the ocular side.

Habitat

This species generally prefers sandy/muddy bottoms of shallow inshore waters.

Distribution

In India it is distributed in the South-West coast and along the entire East coast.

IUCN Status

Not Evaluated

Other information – Chilika specific

The striped sole fish (Soleidae) was first reported from Chilika Lake during fish fauna inventory survey by ICAR-CIFRI's scientist during March 2013 collected from Satapada area of Chilika Lake in the outer channel sector. The fish was captured from a screen barrier nets. Its occurrence in the lake is rare and is mixed with the catch miscellaneous group. Although it is food fish, often people maintains this sole fish in the marine aquarium because of its attractive colourful stripes on the body.

Cynoglossus lida (Bleeker, 1851)

Roughscale tonguesole

Odia: Patpatta

Systematic accounts

Class : Actinopterygii
Order : Pleuronectiformes
Family : Cynoglossidae
Genus : *Cynoglossus*
Species : *Cynoglossus lida*



Diagnostic features

Color: In alcohol specimens light brownish, still lighter on blind side.

Very elongate. Height 4-4.6 in length with caudal, head 4.5-5 in length with caudal. Eyes about 10, less than one eyediameter apart. Vertical through hindborder of upper eye somewhat before that through middle of lower eye. Posterior nostril on colored side pierced in interorbital space, anterior nostril tubular, near upper lip, those of blind side with an elevated rim at some distance of each other. Corner of mouth below hindborder of lower eye, more than one eyediameter nearer to branchial opening than end of snout. Hook of upper jaw reaching to below eye. Scales ctenoid on both sides. Two lateral lines on colored side, an upper and a middle one, separated by 13-14 scales. One indistinct median one on blind side.

Habitat

Marine; demersal.

Distribution

Indo-West Pacific: East Africa, Pakistan and India to the Malay Archipelago and the Philippines.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Satapathy and Panda (2009) which was collected from Satapada area of the outer channel sector. The species is locally known as **Patpatta** in Odia. It has no commercial value and treated as a trash fish. The fish found in the catches of screen barrier nets (*Khanda jal*) and in seine nets (*Bhida jal*).

Cynoglossus lingua Hamilton, 1822

Long tongue sole

Odia: **Dudhpatua**

Systematic accounts

Class : Actinopterygii
Order : Pleuronectiformes
Family : Cynoglossidae
Genus : *Cynoglossus*
Species : *Cynoglossus lingua*



Diagnostic features

The fish has a flat and very elongate body with tubular anterior nostril and obtusely pointed snout. Corner of mouth reaching well beyond vertical through posterior margin of the lower eye and is much nearer to gill opening than to tip of snout. It has a short rostral hook. Feebly ctenoid scales present on the coloured side only. One lateral line is present on the blind side. Pectoral fins absent and only left ventral fin is present. Ocular side is reddish brown, sometimes with irregular brownish black patches. A large black blotch is present on the operculum.

D. 126-138; A. 97-114; C. 10

Habitat

The fish is found to occur from Marine to freshwater region. It is demersal and amphodromous in habit.

Distribution

The fish is distributed along the Indo-west Pacific region.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Talwar & Jhingran (1991). The species is locally known as **Dudhpatua** in Odia. It occurs mostly in central and outer channel sector of Chilika. It has no commercial value and treated as a trash fish. The fish found in the catches of screen barrier nets (*Khanda jal*) and in seine nets (*Bhida jal*).

Cynoglossus puncticeps (Richardson, 1846)

Speckled tongue sole

Odia: Aswa

Systematic accounts

Class : Actinopterygii
Order : Pleuronectiformes
Family : Cynoglossidae
Genus : *Cynoglossus*
Species : *Cynoglossus puncticeps*



Diagnostic features

The fish has an elongated flat body with tubular anterior nostril. The interorbital space is narrow. It has a rounded snout which is 1/3rd of head length. Pectoral fins are absent and only left-ventral fin present. Ocular side is yellow-brown with distinct irregular brown blotches, whereas the lower side is whitish. Some rays of dorsal and anal fins dashed with dark brown markings. Ctenoid scales present on both sides. A single lateral line is present on the blind side. D. 90-100; A. 72-78; Vr. 44-49; C. 10.

Habitat

It is a species that ranges from marine to freshwater region and is demersal in habit.

Distribution

It is distributed along the Indo-west Pacific. Found from seas of India to the Malaya-Archipelago.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Jones and Sujansingani (1954). This species is locally called as **Aswa**. It occurs mostly in central (eastern Nalabana area) and outer channel sector of Chilika. It has no commercial value and treated as a trash fish. The fishes found in the catches of screen barrier nets (*Khanda jal*) and in seine nets (*Bhida jal*).

Tricanthus biaculeatus (Bloch, 1786)

Short-nosed tripodfish

Odia: Sukura

Systematic accounts

Class : Actinopterygii
Order : Tetraodontiformes
Family : Tricanthidae
Genus : *Tricanthus*
Species : *Tricanthus biaculeatus*



Diagnostic features

The species has a deep and compressed body. Snout is moderately acute. Outline of head from base of first dorsal-fin spine to above eye an even slightly convex curve or almost a straight line. Its skin is moderately thick with numerous scales not individually easily discernible to the unaided eye, each scale bearing upright spinules and having a rough, shagreen-like appearance. Visible dorsal fin spine is 5; the 2nd much less than half the length of the 1st. Spiny dorsal-fin membrane very dark between first and third spines and usually equally dark between third and fifth spines. Caudal fin deeply forked, caudal peduncle distinctly tapered. Pelvic fin represented by a large spine which is movably articulated with anterior end of pelvis and capable of being locked erect by a flange on the pelvis. Lateral line is inconspicuous.

D. V+23; A. 21; P. 13-14; V. I.

Habitat

The species inhabits in marine to brackish water environments, found in sandy coastal areas, estuaries and lagoons; demersal in nature.

Distribution

Indo-West Pacific: Persian Gulf eastward through Bay of Bengal to eastern Australia, northward to southern Japan and China.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1917) which was collected from Barkul Bay. The species is locally known as **Sukura** in Odia. It is a commonly occurring and resident species in Chilika, breeds in the lagoon. Average annual yield is 244.84 tonnes valued at Rs. 100.87 lakhs. The average sectoral landings are of the order: Northern sector > Central sector > Southern sector > Outer channel sector. It is economically important fish species, used for local consumption. The unit price is Rs 70-150/- kg. Most of the catch registered through gill nets and than in seine net (drag net). Year wise annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig Y. Karna *et al.* (2017) studied the length weight and length-length relations of the species from the Chilika Lake.

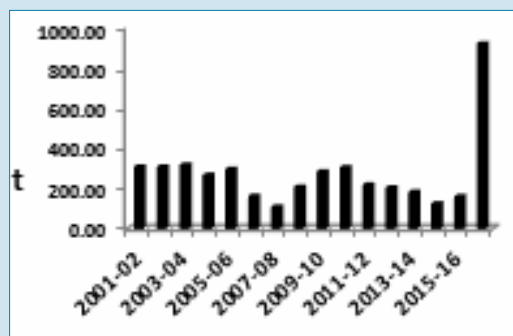


Fig Y Annual landings of *T. biaculeatus* (Sukura) during 2001-02 to 2016-17

Abalistes stellaris (Bloch & Schneider, 1801)

Starry triggerfish

Odia: Chai

Systematic accounts

Class : Actinopterygii
Order : Tetraodontiformes
Family : Balistidae
Genus : *Abalistes*
Species : *Abalistes stellaris*



Diagnostic features

Dorsal spines (total): 3; Dorsal soft rays (total): 25-27; Anal spines: 0; Anal soft rays: 24 - 26. Scales enlarged above the pectoral fin base and just behind the gill slit to form a flexible tympanum; scales of posterior body with prominent keels, forming longitudinal ridges. A prominent groove in the skin extending anteriorly from front of eye for a distance of about 1 eye diameter. Caudal peduncle depressed. Caudal fin rays of adults prolonged above and below. Maximum length recorded 60cm (TL).

Habitat

Marine; demersal; amphidromous

Distribution

Indo-West Pacific: Red Sea and East Africa to Southeast Asia, north to Japan and south to northern Australia. Eastern Atlantic: St. Helena and south coasts of Africa.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty *et al.* (2015) during the post-restoration period of the lake. The species is locally known as **Chai** in Odia. The fish is a casual visitor frequenting outer channel sector through the lake mouth and rarely in the southern sector through Palur canal. Although it has little commercial value but is considered as a potential ornamental fish of marine origin. Its landing is insignificant in the lake although it is generally caught in the outer channel in barrier nets with net box traps. In the commercial landing the fish is included in the miscellaneous group.

Arothron immaculatus (Bloch & Schneider, 1801)

Immaculate puffer

Odia: Samudra Bengafula

Systematic accounts

Class : Actinopterygii
Order : Tetraodontiformes
Family : Tetraodontidae
Genus : *Arothron*
Species : *Arothron immaculatus*



Diagnostic features

The species has a heavy blunt body, rounded in cross section with large, broad and blunt head. Back is broad. In jaws the teeth are fused into a beak - like dental plate with a median suture on each jaw, thereby giving the appearance of four heavy and powerful teeth, two in each jaw. Eyes are situated in about the middle of the length of the head. The inter-orbital space is broad and flat. Two imperforate tentacles are present on either side. Either jaw with a median suture. Teeth are of about equal size, two each in both jaws. Distal portion of all fins are rounded. Dorsal fin is situated on the last third of the total length excluding the caudal fin. Pelvic fin is absent. Dorsal, pectoral and anal fins are transparent and light yellow. Dorsal, anal and caudal fins are with nine rays, while pectoral fin with 18 rays each. Caudal fin is longer, about 1/4th of the total length. Body is covered with fine dermal spinules but are absent on snout and posterior tail region (caudal peduncle). Whole body is greenish in colour, deeper above and dirty white below. Dorsal and anal fin are yellowish in colour but pectorals are greenish-yellow. Caudal fin is yellow but upper and lower edges as well as end is black. Moreover, the entire body is spotless, which is one of the significant characteristic of the species.

Habitat

The species is a marine and brackish water dwelling fish, found to be reef-associated.

Distribution

Indo-West Pacific: Red Sea and East Africa to Indonesia, north to southern Japan.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika Lake by Karna *et al.* (2016) which was collected from the outer channel sector near Satapada area during September 2015 while ICAR-CIFRI, Barrackpore, Kolkata was undertaking field survey under ICAR-CIFRI/CDA-ICZM Consultancy Project (2011-2017). The species is locally called as **Samudra Bengafula**. The species is a new record for Chilika Lake and does not have much information specific to Chilika Lake.

Chelonodon patoca (Hamilton, 1822)

Milkspotted pufferfish

Odia: Bengaphula Macha

Systematic accounts

Class : Actinopterygii
Order : Tetraodontiformes
Family : Tetraodontidae
Genus : *Chelonodon*
Species : *Chelonodon patoca*



Diagnostic features

It has a short and robust body, nostrils are with flaps. Mouth is terminal and small. Small prickles are present on back and abdomen. Caudal fin rounded. Body colour is almost dark brown to grey and ventrally whitish. Numerous round to ovate white spots are present on the body except on the ventral parts. A broad streak of yellow colour is found on lower sides of body. Three narrow dark bars are on the back.

D. 9-10; A. 8-10; P. 16-17.

Habitat

It is found in marine, brackish and freshwater systems; reef-associated and performs anadromous type migration.

Distribution

Widespread in Indo-Pacific region: East Africa to the Admiralty Islands, New Britain and Trobriand Islands, north to China, south to northern Australia.

IUCN Status

Not Evaluated

Other information – Chilika specific

The species was first reported from Chilika by Chaudhuri (1917). It is one of the very common Puffers in Chilika, locally called ***Bengaphula macha***. Very poisonous to eat. Commonly found in the catch of screen barrier net (***Khanda***) of Satapada region and rarely found in seine net in Satapada to Magarmuch area of Chilika. It is not consumed by local people and its landing has not been estimated.

Leiodon cutcutia (Hamilton, 1822)

Ocellated pufferfish

Odia: Bengaphula Macha

Systematic accounts

Class : Actinopterygii
Order : Tetraodontiformes
Family : Tetraodontidae
Genus : *Leiodon*
Species : *Leiodon cutcutia*



Diagnostic features

Body is short with rounded abdomen and blunt snout. Mouth is small and terminal; both jaws with a median suture. One or two nostrils are present on each side in the form of short tube. Body covered with fine dermal spines. The upper lateral line is not reaching the tail, curved down above anal fin. Ventral fin is absent. All fins are rounded. Body colour is greenish above and whitish below. A light band is present across eyes. Greenish reticulations are on the back of body and a red spot is on the throat.

D. 7-13; A. 8-12; P. 21; C. 7.

Habitat

A demersal species found in brackish and fresh water bodies follow potamodromous type migration.

Distribution

Well distributed in Asia: India, Bangladesh, Sri Lanka, Myanmar and Malay Archipelago, Mekong.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Rama Rao (1995). The species is locally known as **Bengaphula macha** in Odia, common Puffers in Chilika. The fish is not used for food purpose due to its very poisonous characteristics. Commonly found in the screen barrier (**Khanda**) catches in Satapada region; also found in the seine net catches in northern and central sector of Chilika.

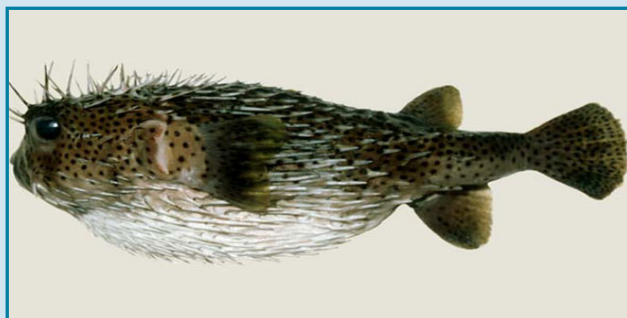
Diodon hystrix Linnaeus, 1758

Spot-fin porcupinefish

Odia: Jhinka Bengaphula

Systematic accounts

Class : Actinopterygii
Order : Tetraodontiformes
Family : Diodontidae
Genus : *Diodon*
Species : *Diodon hystrix*



Diagnostic features

Porcupine fish have round, expandable, slender bodies with small fins. These fish lack pelvic fins, and the rounded dorsal and anal fins are positioned near the caudal fin. Body colour varies, but they are generally uniformly dull brown to green with the body covered in small dark spots and markings, with a pale belly that is surrounded by the dusky ring. The fish has large eyes and wide, flattened mouth.

Dorsal spines (total): 0; Dorsal soft rays (total): 14-17; Anal spines: 0; Anal soft rays: 14 - 16. Body robust; teeth united in each jaw but without a central division; body covered with long, sharp spines, folded backwards when body not inflated; 16 to 20 spines between snout and dorsal fin; dorsal region of caudal peduncle spiny (1 or more small spines wholly on caudal peduncle); back, flanks and fins light brown with numerous dark spots; belly spiny. Spines long. Body grayish tan, with small black spots, but no large dark blotches. Belly white, surrounded by dusky ring. About 20 spines in an approximate row between snout and dorsal fin. Maximum length recorded 91.0cm (TL) (Eschmeyer *et al.*, 1983).

Habitat

Marine; reef-associated; benthic on seagrass beds. Adults are generally found in holes and crevices in inshore areas including lagoons, caves, shipwrecks, reefs, and ledges, and are also found in seamount areas. They are found at depths up to 50 meters, most commonly between 3 and 20 meters. Juveniles are pelagic until reaching 20cm in length, becoming benthic thereafter.

Distribution

Circumtropical. Eastern Pacific: San Diego, California, USA to Chile, including the Galapagos Islands. Western Atlantic: Bermuda, Massachusetts (USA), and northern Gulf of Mexico to Brazil. Eastern Atlantic: 30°N to 23°S. Western Indian Ocean: Red Sea to Madagascar, Reunion and Mauritius. The reports in the Mediterranean Sea are doubtful.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty *et al.* (2015) which was collected from outer channel and near Arakhakuda fishing village. The species is locally known as ***Jhinka Bengaphula*** in Odia. In Chilika Lake, the fish is rarely found in the outer channel sector and often they are caught beyond Magarmukh area. The fish has ornamental value to be maintained in the marine aquarium. The fish has no commercial value and is considered as a non-food fish.

Fenneropenaeus indicus (Millne Edwards, 1837)

Indian white prawn

Odia: Chilika Kantala

Systematic accounts

Class : Malacostraca

Order : Decapoda

Family : Penaeidae

Genus : *Fenneropenaeus*

Species : *Fenneropenaeus indicus*



Diagnostic features

Carapace hairless, Rostrum slender and long, with 7 to 9 teeth on dorsal margin and 4 to 6 teeth on ventral margin; blade of rostrum becoming moderately high in large specimens; adrostral crest and groove extending as far as, or just beyond epigastric tooth, post-rostral crest ending distinctly before posterior margin of carapace; gastrofrontal and hepatic crests absent; gastro-orbital crest extending over posterior 2/3 of distance between hepatic spine and orbital margin; outer surface of lateral lobes of petasma with a few rows of minute tubercles. Body pale pink to yellowish in colour and semi-translucent with olive-green to grey-blue speckles; rostral and middorsal abdominal crests mostly brown, pereopods generally of same colour as body; pleopods pink or red. Juveniles are whitish, with specks of same colour as adults; rostral crest semi-translucent; pleopods whitish.

Habitat

It is a brackish water species, benthic in nature, dwells in 2 to 90 m water depths (in sea).

Distribution

The species is well distributed in Indo-Pacific region.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Kemp (1915). The white prawn, locally called **Chilika Kantala** is one of the major contributors to the penaeid prawn fishery of Chilika Lake (Jhingran and Natarajan, 1969). This species occurs as a benthic organism in brackishwater of Chilika Lake within 0.3 – 5.0 m of water depth. About 60 % of landings of *F. indicus* from Chilika were exported to foreign markets as frozen product earlier, but presently the export of this prawn has been reduced due to increase in export of *Letopenaeus vannamei* from Odisha. Annual landings in Chilika during post-restoration period fluctuated in the range 317.95 tonnes (2002-03) to 1964.03 tonnes (2011-12) with an average for the period 1102.19 tonnes contributing 9.48 % to the average annual landings (fisheries output) and 26.73% to the average annual prawn landings during the post-restoration period. The average annual catch value of Chilika *Kantala* during the post-restoration period was estimated at 220.6 million INR. Good catches are usually made between March-August. The *Kantala* fishery in Chilika usually

commences from March and extends up to August with peak in May-June. The commercial *Kantala* fishery is chiefly contributed by two waves of incursions of juveniles during the period April-July and August-December. The April-July juvenile wave is traceable to post-larval abundance in February (January-March) period. The period of post-larval abundance also indicate approximately spawning periods and concentrations of adults in the inshore / off-shore areas of Bay of Bengal adjoining the lagoon in that spawning month would make them vulnerable for capture if intensive exploitation in sea is attempted. The major fishing gear for the prawn species is barrier net and *Dubi jaal* (Trammel net). Central sector of the lake registered highest landings followed by outer channel and northern sector. Maximum size of *F. indicus* in Chilika Lake has been recorded as 140mm from outer channel. Over fishing and decline in *Kantala* fishery has not been noticed during the post-restoration period. Annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig Z. Ramakrishnaiah (1979) studied the post larval incursions and fisheries of penaeid prawns in Chilika Lake. Rao (1967) studied the biology of *Penaeus indicus* and *Penaeus monodon* from Chilika Lake. The entire outer channel and the area around the head of channel seem to form suitable substrats from benthic life of the post-larvae before dispersion (Jhingran and Natarajan, 1966).

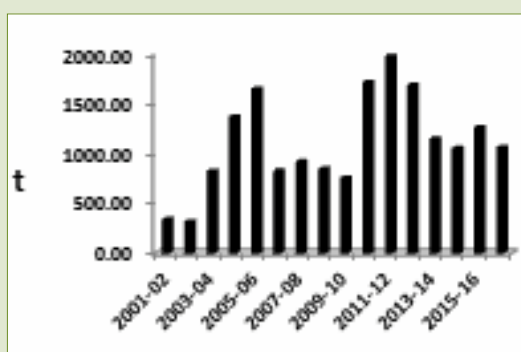


Fig Z Annual landings of *F. indicus* (Chilika Kantala) during 2001-02 to 2016-17

Metapenaeus dobsoni (Miers, 1878)

Kadal shrimp

Odia: Chilika Panu

Systematic accounts

Class : Malacostraca

Order : Decapoda

Family : Penaeidae

Genus : *Metapenaeus*

Species : *Metapenaeus dobsoni*



Diagnostic features

Body lightly pubescent in patches. Rostrum long, extending a little beyond the tip of the antennular peduncle, with 8-9 dorsal teeth and having a well marked double curve. Anterolateral angles of the carapace without spine. The antennal spine is not very strong and not continued backward as a strong ridge, so that the post – antennular sulcus is not so deep as in *M. monoceros*. The fifth abdominal somite about 2/3 length of the 6th, which is a little shorter than the telson. The telson shorter than the endopod of the uropod and without lateral marginal spines. The inner antennular flagellum longer than the outer, exceeding its peduncle in length. All the legs are ciliated and the chelae weak. Strong spines present on the basis of all 3 pairs of chelipeds. The last pair of thoracic legs do not nearly reach the middle of the antennal scale. In the adult female the last pair of thoracic legs is generally represented by a coxa to which is articulated a horny stump. No exopod on the 5th pair of legs. The petasma is quite symmetrical. In the adults it consists of 2 rigid segments tightly folded in all their length, interlocked all along their anterior margin. In adult female, the thelycum consists of a broad concave median tongue. The species rarely exceeds 125 mm in total length.

Habitat

This is a brackish and marine species dwells within 1 - 37 m water depth (sea environment), benthic in nature.

Distribution

Indo-West Pacific: west coast of India to the Philippines and New Guinea.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Kemp (1915). Kadal shrimp, locally called **Chilika Panu** is the second highest contributor to the penaeid prawn fishery in Chilika Lake forming 9.38 % to the average annual fisheries output and 27.13 % to the average annual prawn landings.

The species occurs in brackishwater of Chilika within depth range 0.3 – 4.0 m. Presently, the entire catch of *Panu* is marketed fresh in markets within and outside the state. Annual landings during the post-restoration period (2001-02 to 2014-15) fluctuated in the range 801.07 tonnes (2008-09) and 1716.29 tonnes (2011-12) with an annual average for the period at 1118.64 tonnes. Maximum size of 70 mm has been recorded from Chilika.

Annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig AA.

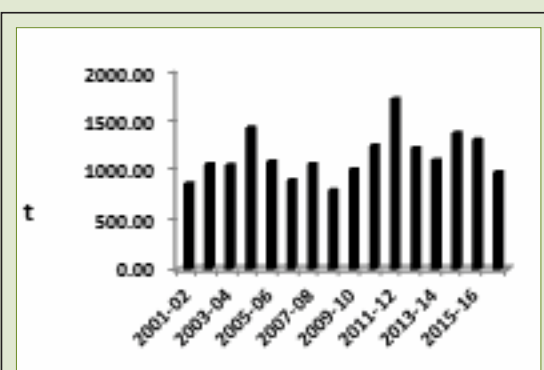


Fig AA Annual landings of *Metapenaeus dobsoni* during 2001-02 to 2016-17

Metapenaeus monoceros (Fabricius, 1798)

Speckled shrimp
Odia: Chilika Marada

Systematic accounts

Class : Malacostraca
Order : Decapoda
Family : Penaeidae
Genus : *Metapenaeus*
Species : *Metapenaeus monoceros*



Diagnostic features

Almost entire body pubescent which is restricted to dorsal part of carapace and abdominal patches; rostrum armed with 9 to 12 dorsal teeth along entire dorsal margin, straight, reaching as far as, or beyond, tip of antennular peduncle; post rostral creast reaching posterior margin of carapace; adrostral creast ending behind second rostral tooth, adrostral groove behind epigastric tooth; telson armed only with spinules; in adult males, merus of fifth pereopod with a proximal notch followed by a long, inwardly curved spiniform process and a row of tubercles; distomedian projections of petasma convoluted, greatly swollen, bulbiform, directed enterolaterally and concealing distolateral projections in ventral view. In adult females, anterior plate of thelycum long and deeply grooved; lateral plates with strongly raised lateral margins forming two longitudinal creasts. Body pink, green-greyish or whitish with brown specks; rostral and middorsal abdominal crests brown; antennae red; pereopods and pleopods of same colour as body, sometimes more intensely pink; distal part of uropods purple-blue, external margin of exopods red. The species attains a maximum length of about 180 mm.

Habitat

A brackish water benthic species inhabits within 10 to 30 m water depths in sea environment.

Distribution

Well distributed in South-east Atlantic, the Mediterranean and Indo-West Pacific.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Kemp (1915). Speckled / brown prawn, locally called **Chilika Marada** is the largest contributor to the penaeid prawn fishery in Chilika Lake forming 9.48 % to the average annual fisheries output and 27.43 % to the average annual prawn landings. The species occurs in Chilika within depth range 0.3 – 4 m. Presently, the entire catch of *Marada* is marketed fresh in markets within and outside the state. Annual landings during the post-restoration period (2001-02 to 2014-15) fluctuated between 624.23 tonnes (2002-03) to 1574.27 tonnes (2004-05) with an annual average of 1131 tonnes. The common modal size of the prawn in the lake catches ranged from 60-90mm but in southern sector a higher modal value of 105mm has been observed. Annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig AB.

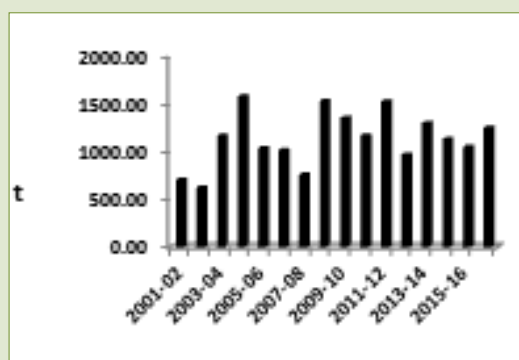


Fig AB Annual landings of *Metapenaeus monoceros* during 2001-02 to 2016-17

Penaeus monodon Fabricius, 1798

Giant tiger prawn
Odia: Chilika Bagada

Systematic accounts

Class : Malacostraca
Order : Decapoda
Family : Penaeidae
Genus : *Penaeus*
Species : *Penaeus monodon*



Diagnostic features

Carapace smooth, rostrum with 7-8 teeth on dorsal and 3-4 teeth on ventral margin; adrostral crest and groove extending as far as, or slightly ahead of epigastric tooth; postrostral crest well developed, almost reaching posterior margin of the carapace, with or without a feeble median groove; gastrofrontal crest absent; antennal crest very prominent, ending above middle of hepatic crest; gastro-orbital crest extending over posterior half, or less, of distance between hepatic spine and orbital margin; hepatic crest straight, almost horizontal, distinctly separated from base of antennal crest; fifth pereopod without exopod. Petasma (in males) with distomedian projections slightly overhanging distal margin of costae; ventral costae generally unarmed, sometimes minutely serrate at tip; outer surface of lateral lobes generally unarmed; inner surface of lateral lobes armed with spinules. Thelycum (in females) with lateral plates, their median margin sometimes forming tumid lips; anterior process concave, rounded distally; posterior process subtriangular, partly inserted between thelycal plates. Body colour is green-grey to brown.

Habitat

Inhabits in marine and brackish water ecosystems; benthic in nature.

Distribution

Indo-Pacific and Atlantic Ocean: from southeast Africa and Pakistan to Japan, the Malay Archipelago and Australia.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Kemp (1915). The giant tiger prawn, locally called Chilika Bagada forms the most important Penaeid prawn fishery in the lake occurring as a benthic organism in brackish water habitat within depth range 0.3 – 5.0 m. Almost 90% of landings of this prawn is exported to foreign countries as frozen seafood product. Annual landings during post-restoration period (2001-02 to 2014-15) fluctuated in the range 265.72 (2001-02) tonnes to 847.99 (2011-12) tonnes with an annual average for the period at 493.55 tonnes. The prawn fetches an average unit price of Rs.500/- kg (Rs. 5.0 lakhs/tonne at the landing centres in the lake). Good catches are usually made between March and June but may commence in February and extends to July. The commercial fishery of the species is represented by participating 'juvenile waves'. February-July wave is by far more dominant accounting for nearly the entire fishery. The post-larval abundance during October-January has a bearing on the success of this wave (Jhingran and Natarajan, 1969). Northern sector of the lake registered highest landings followed by outer channel and central sector. Split bamboo traps, barrier nets with net box traps and trammel nets (Gill net) are the principal fishing gears for the prawn. Maximum size of *P. monodon* in Chilika Lake has been recorded as 300mm in the southern sector of the lake. Over fishing and decline in fishery has not been noticed. Annual landings for 16 years during the post-restoration period (2001-02 to 2016-17) is depicted in Fig AC.

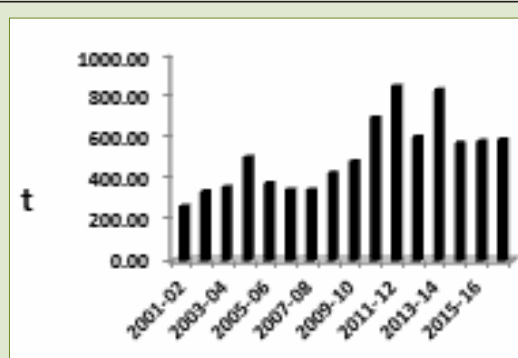


Fig AC Annual landings of *P. monodon* (Chilika Bagada) during 2001-02 to 2016-17

Penaeus semisulcatus de Haan, 1844

Green tiger prawn
Odia: Sankhua Chingudi

Systematic accounts

Class : Malacostraca
Order : Decapoda
Family : Penaeidae
Genus : *Penaeus*
Species : *Penaeus semisulcatus*



Diagnostic features

Carapace and abdomen uniformly glabrous. More or less straight rostrum armed with 7 or 8 dorsal and 3 ventral teeth. Inclined downward and anteriorly hepatic carina. White and red transverse stripes present as bands in the antennae. Adrostral carina reaching well beyond epigastric tooth. Upper antennular flagellum larger than lower. Maxilliped III reaching tip of basal segment as antennular peduncle. Abdomen dorsally carinated from fourth somite. Telson unarmed. Maximum length recorded 18.0cm (TL) (Holthuis, 1980).

Habitat

Bottom mud, sand. Depth 2 to 130 m. Marine (adults) and estuarine (juveniles).

Distribution

Indo-West Pacific: Red Sea, E. and S.E. Africa to Japan, Korea, the Malay Archipelago and northern Australia. Eastern Atlantic: The species has reached the eastern Mediterranean through the Suez Canal; it is now found all along the coasts of Egypt, Israel, Lebanon, Syria and southern Turkey.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Kemp (1915) which was collected from outer channel near Satapada. The green tiger prawn, locally called **Sankhua Chingudi** forms one of the commercial Penaeid prawn fishery in the lake with an estimated annual landing of 14.25 tonnes (2016-17). Both *P. semisulcatus* and *P. monodon* apparently look similar except the colour. The shrimp is mostly marketed locally at an average price of more than Rs.300/kg.

Macrobrachium malcolmsonii (H. Milne Edwards, 1844)

Monsoon river prawn

Odia: Golda Chingudi

Systematic accounts

Class : Malacostraca
Order : Decapoda
Family : Palaemonidae
Genus : *Macrobrachium*
Species : *Macrobrachium malcolmsonii*



Diagnostic features

Body and anterior two pairs of pereopods (chelipeds) dark grey, paler ventrally; antennae and inner flagella of antennules grey; outer flagella brownish. Rostrum rather long, reaching to about of antennal scale, its tip slightly upcurved; basal part of dorsal margin rather high and crest-like, armed with 7 to 11 teeth of which the posterior 2 or 3 are placed behind the orbital margin; distal part of dorsal margin toothless, except for 1 or 2 (sometimes up to 4) subdistal teeth; ventral margin with 4 to 7, usually 6, teeth. Hepatic spine situated at a lower level than antennal spine, not on the same horizontal line. Second pair of pereopods robust and equal in size; carpus slightly, but distinctly longer than merus, 1 or 2 larger basal teeth on cutting edges of fingers, no teeth on distal part of cutting edges and no tubercles in a row on either side of the edges. Telson gradually tapering to a sharp point, without posterior margin; tip of telson overreaching posterolateral spines. In adult males, carapace with spinules anteriorly; second pair of pereopods with a very short pubescence which is especially distinct on the movable finger (except at its tip). Carpus is shorter than propodus.

Habitat

It is a benthic species inhabits fresh to salt waters, found mostly in rivers and estuaries.

Distribution

Well distributed in southern Asian regions. Also known from the eastern parts of Indian and Burma. In India the species is common in the Chilika Lake and peninsular rivers that drain into the Bay of Bengal, Deltaic Bengal and rivers of Mahanadi delta. The fresh water prawn fishery of the river Godavari is constituted mainly by this species.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Kemp (1915). Monsoon river prawn, locally called ***Golda chingudi*** is the second largest sized freshwater prawn occurs in Chilika Lake which generally migrate from river Daya draining into the lake in northern sector. Maximum landing of this prawn takes place at Jaguleipadara, Kalupada and Bhusandapur landing centres. The active fishery season commences in Chilika at the onset of monsoon, when the flood water comes to the lake. The fishery remains active in the northern part of the northern sector. The average unit price of Golda chingudi in Chilika has been Rs.260/kg in the recent years. Maximum size of 200mm of this prawn has been recorded from Chilika Lake.

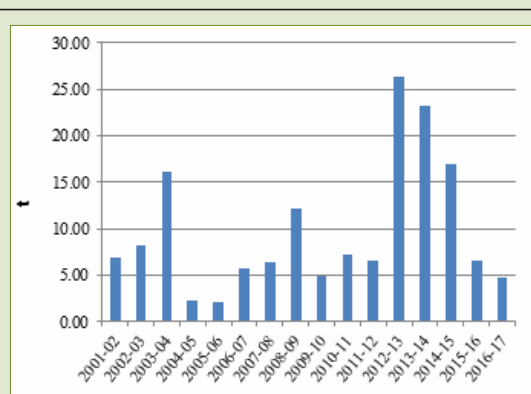


Fig AD Annual landing of *M. malcolmsonii* from Chilika during 2001-02 to 2017-18

Macrobrachium rosenbergii (De Man, 1879)

Giant freshwater prawn

Odia: Golda / Gaja Chingudi

Systematic accounts

Class : Malacostraca

Order : Decapoda

Family : Palaemonidae

Genus : *Macrobrachium*

Species : *Macrobrachium rosenbergii*



Diagnostic features

Rostrum long and slender, usually extending distinctly beyond the antennal scale (especially in younger specimens); dorsal margin armed with 11 to 14 teeth, of which the posterior 2 or 3 are placed behind the orbital margin, 9 or 10 forming an elevated basal crest; most of distal part of dorsal margin toothless or with only a few teeth (including 1 or 2 subdistal teeth); ventral margin armed with 8 to 14 teeth. Hepatic spine situated distinctly below antennal spine, not on same horizontal line. Second pair of pereopods robust and of same size, with the carpus longer than the merus. Telson regularly tapering to a sharp point, without a posterior margin, tip overreaching postero-lateral spines. In adult male, carapace smooth, second pair of pereopods spinous, cutting edges of fingers with 1 or 2 large proximal teeth, rest of the edges entire without rows of tubercles at either side; movable finger with a dense velvety pubescence, covering it entirely except for the distal end, no pubescence on the rest of these legs, except for scattered hairs. Carpus shorter than propodus. Dark grey, sometimes with longitudinal or irregular streaks of darker and lighter colour; often orange patches at the articulations of abdominal somites. Largest pereopods of adult male bright or dark blue or lavender, orange at the joints, their pubescence grey. Eggs of berried females yellow.

Habitat

It is a benthic species inhabits in freshwater environments.

Distribution

Indo-West Pacific: Asia and Oceania.

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Kemp (1915). Giant freshwater prawn, locally called **Golda** or **Gaja chingudi** is the largest freshwater prawn occurs in Chilika Lake which generally migrate from river Daya draining into the lake in northern sector. Maximum landing of this prawn takes place at Jaguleipadara, Kalupada and Bhusandapur landing centres. The active fishery season commences in Chilika at the onset of monsoon, when the flood water comes to the lake. The fishery remains active in the northern part of the northern sector. The average annual landings of *M. rosenbergii* during the post-restoration period (2001-02 to 2014-15) has been recorded at 57.58 tonnes contributing 0.48 % to the total average fisheries output of the lake and 1.28 % to the total average annual prawn and shrimp landings. The annual catch fluctuated from minimum of 13.95 tonnes (2004-05) to 126.10 tonnes (2013-14). The prawn (scampi) is one of the prime exportable seafood products being exported to foreign markets. The average unit price of Golda chingudi in Chilika has been Rs.326/- kg in the recent years and the average catch valuation during the post-restoration period (2001-02 to 2014-15) for the average annual catch has registered 18.75 million INR. Maximum size of 270 mm of Golda chingudi has been recorded from Chilika Lake.

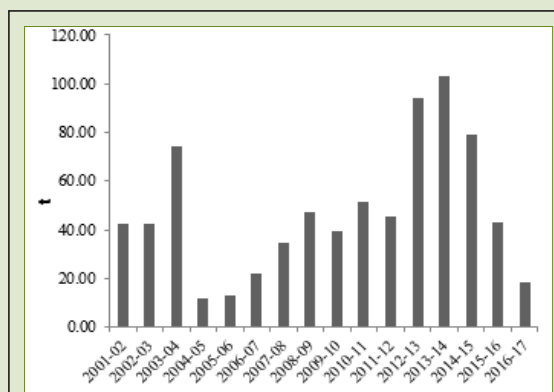


Fig AE Annual landing of *M. rosenbergii* from Chilika during 2001-02 to 2017-18

Macrobrachium rude (Heller, 1862)

Hairy river prawn

Odia: Gandia Chingudi

Systematic accounts

Class : Malacostraca
Order : Decapoda
Family : Palaemonidae
Genus : *Macrobrachium*
Species : *Macrobrachium rude*



Diagnostic features

Rostrum straight and long with 10-17 dorsal teeth and 3-8 (usually 3-6 ventral teeth), reaching almost to about end of antennal scale; hepatic spine located at lower level than antennal spine; posterior margin of telson distinct, with 2 pairs of spines; in adult males 2nd pair of pereopods very large and heavy, all segments covered with a short and dense pubescence. Body colouration is translucent. The large legs of males are dark reddish to brown. Tips of pereopods and distal half of uropods are dark brownish.

Habitat

The species inhabits in fresh to brackish waters, streams and rivers. It returns to the sea to release larvae.

Distribution

Distributed in Southern Asia

IUCN Status

Least Concern (LC)

Other information – Chilika specific

The species was first reported from Chilika by Kemp (1915). Hairy river prawn, locally called ***Gandia chingudi*** is the highest contributor to the total landings of freshwater prawns in Chilika. This is the common species in the freshwater prawn fisheries of the lake. The species is dominant in the northern sector of the lake during monsoon season. The average annual landings of the species during the post-restoration period (2001-02 to 2014-15) has been recorded 212 tonnes accounting for 1.78 % contribution to the average annual fisheries output during the period and 4.80 % contribution to the average annual landings of prawn and shrimp landings from the lake.

Portunus pelagicus (Linnaeus, 1758)

Flower crab / Blue swimming crab

Odia: Rani Kankada

Systematic accounts

Class : Malacostraca
Order : Decapoda
Family : Portunidae
Genus : *Portunus*
Species : *Portunus pelagicus*



Diagnostic features

Carapace rough to granulose, regions discernible; front with 4 acutely triangular teeth; 9 teeth on each anterolateral margin, the last tooth 2 to 4 times larger than preceding teeth. Chelae elongate in males; larger chela with conical tooth at base of fingers; pollex ridged. Color: males with blue markings, females dull green.

Habitat

The species inhabits in brackish and marine waters and Reef-associated dwells within depth range of 0 - 40 m.

Distribution

Distributed in Indo-Pacific region as well as in the Mediterranean.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Kemp (1915). The species is locally called as **Rani Kankada**, is a marine blue swimming crab which occurs in Chilika Lake and contributes substantially to the landings of portunid crabs during high saline period i.e. during March-July. The species does not appear in commercial landings during monsoon and early winter period. Annual landing of this portunid crab in Chilika fluctuated during 2008-09 and 2014-15 from 28.53 tonnes (2008-09) to 209.18 tonnes (2014-15), averaging at 122.55 tonnes. Locally it is considered as a low priced marine crab but it is sent to Andhra Pradesh in cooked and iced condition where it sales at higher price. Local average unit price is Rs 40/- kg.

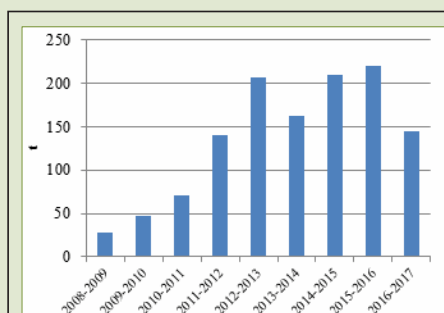


Fig AF Annual landings of *P. pelagicus* (blue swimming crab) from Chilika Lake during 2001-02 to 2016-17

Scylla serrata (Forsskål, 1775)

Giant mud crab

Odia: Chilika Redha Kankada

Systematic accounts

Class : Malacostraca

Order : Decapoda

Family : Portunidae

Genus : *Scylla*

Species : *Scylla serrata*



Diagnostic features

Carapace smooth, with strong transverse ridges; H-shaped gastric groove deep; relatively broad frontal lobes, all more or less in line with each other; broad anterolateral teeth, projecting obliquely outwards. Well-developed present on outer surface of chelipedal carpus and anterior and posterior dorsal parts of the palm. Color: carapace green to almost black; legs may be marbled.

Habitat

This is a neritic and benthic organism, found on mud and sandy bottoms and also on highly silty substrata and seagrass beds.

Distribution

Distribution is Indo-West Pacific

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Kemp (1915). Chilika Lake is known in the country for mud crab production. *Scylla serrata* is commonly called **Chilika Redha Kankada** (Odia), is the dominant mud crab species in Chilika accounting for 61.78 % in the average annual landings of mud crab during the post-restoration period (2001-02 to 2015-16). Annual landing of the species during the period fluctuated between 67.25 tonnes (2001-02) and 131.99 tonnes (2008-09), averaging at 96.88 tonnes during the period. Largest size of male and female *Scylla serrata* recorded from Chilika Lake were 159 mm CW/0.68 kg and 181 mm CW/0.83 kg respectively. The minimum size at first maturity of *S. serrata* in Chilika was estimated at 79 mm CW. Breeding season of this mud crab species extends from August-November. The crab breeds round the year at less intensity and the juvenile crabs are available throughout the year with peak during December-February. Recruitment takes place during post winter (January-April). The active fisheries for the species extend from February-October. Dominants size groups in the commercial landings ranges from 61-90mm CW (54.3%) for males and 91-120mm CW for females. Average unit price for Chilika mud crabs Rs.330/kg. Average annual landings of *Scylla serrata* of Chilika Lake during the period 2001-02 to 2016-17 is depicted in Fig AG.

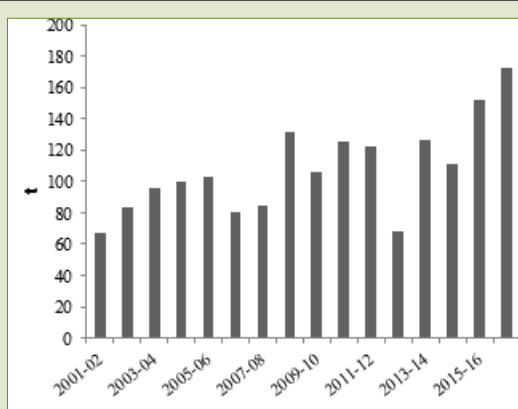


Fig AG Annual landings of *Scylla serrata* (mud crab) from Chilika Lake during 2001-02 to 2016-17

Scylla tranquebarica (Fabricius, 1798)

Purple mud crab

Odia: Chilika Sabuja Kankada

Systematic accounts

Class : Malacostraca
Order : Decapoda
Family : Portunidae
Genus : *Scylla*
Species : *Scylla tranquebarica*



Diagnostic features

Carpus of chelipeds with two obvious spines on distal half of outer margin. Frontal lobe spines of moderate height (mean height c. 0.04 times frontal width measured between medial orbital sutures), blunted with rounded interspaces; antero-lateral carapace spines broad, with outer margin convex. Polygonal patterning weak on chelipeds and first two pairs of legs; last two pairs of legs with stronger patterning for both sexes; patterning variable on abdomen of female, absent on male.

Habitat

Demersal and occurs in estuarine / brackish water environment

Distribution

Well distributed in Eastern Indian Ocean, Northwest Pacific, Western Central Pacific: Indo-West Pacific including shelf waters.

IUCN Status

Not Evaluated (NE)

Other information – Chilika specific

The species was first reported from Chilika by Mohanty *et al.* (2006). *Scylla tranquebarica* is the largest size mud crab species in Chilika Lake. It is locally called as **Chilika sabuja kankada**. This mud crab species forms 38.22 % in the annual average mud crab landings. The largest size *Scylla tranquebarica* recorded from Chilika Lake during 2010 whose carapace width was 234 mm and body weight was 3.175 kg. Review of literatures revealed that this size was the largest recorded from Indian waters so far. The minimum size at first maturity of this species was estimated at 121mm CW. The breeding season of *Scylla tranquebarica* extends from March-June. Recruitment takes place during monsoon (June-September). This species is highly sought for live export to international markets. The average unit price of this mud crab species at Chilika is Rs.450/- kg. About 40 % of this species weighing more than 300 g are usually live exported through mud crab exporters of Chennai. Average annual landings of *Scylla tranquebarica* of Chilika Lake during the period 2001-02 to 2016-17 is depicted in Fig W.

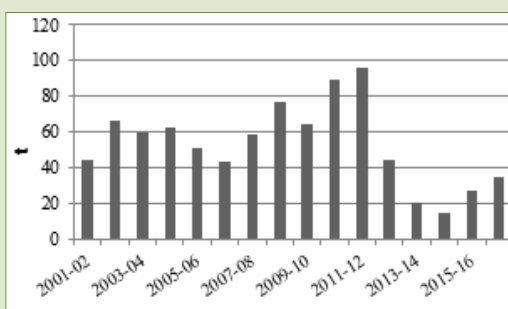


Fig AH Annual landings of *Scylla tranquebarica* (mud crab) from Chilika Lake during 2001-02 to 2016-17

SPECIES INDEX

Finfishes

	Page No.
<i>Abalistes stellaris</i> (Actinopterygii: Tetraodontiformes: Balistidae)	326
<i>Acanthopagrus berda</i> (Actinopterygii: Perciformes: Sparidae)	244
<i>Acanthopagrus longispinnis</i> (Actinopterygii: Perciformes: Sparidae)	2455
<i>Acanthurus mata</i> (Actinopterygii: Perciformes: Acanthuridae)	303
<i>Acanthurus triostegus</i> (Actinopterygii: Perciformes: Acanthuridae)	304
<i>Acentrogobius masoni</i> (Actinopterygii: Perciformes: Gobiidae)	281
<i>Ailia coila</i> (Actinopterygii: Siluriformes: Schilbeidae)	126
<i>Alectis indica</i> (Actinopterygii: Perciformes: Carangidae)	199
<i>Alepes djedaba</i> (Actinopterygii: Perciformes: Carangidae)	200
<i>Ambassis ambassis</i> (Actinopterygii: Perciformes: Ambassidae)	178
<i>Ambassis gymnocephalus</i> (Actinopterygii: Perciformes: Ambassidae)	179
<i>Amblygaster leiogaster</i> (Actinopterygii: Clupeiformes: Clupeidae)	63
<i>Amblypharyngodon mola</i> (Actinopterygii: Cypriniformes: Cyprinidae)	93
<i>Anabas testudineus</i> (Actinopterygii: Perciformes: Anabantidae)	308
<i>Anguilla bengalensis</i> (Actinopterygii: Anguliformes: Anguillidae)	56
<i>Anguilla bicolor</i> (Actinopterygii: Anguliformes: Anguillidae)	57
<i>Anodontostoma chacunda</i> (Actinopterygii: Clupeiformes: Clupeidae)	64
<i>Aplocheilus panchax</i> (Actinopterygii: Cyprinodontiformes: Aplocheilidae)	158
<i>Arius arius</i> (Actinopterygii : Siluriformes: Ariidae)	134
<i>Arothron immaculatus</i> * (Actinopterygii: Tetraodontiformes: Tetraodontidae)	327
<i>Atherinomorus duodecimalis</i> (Actinopterygii: Atheriniformes: Atherinidae)	156
<i>Atherinomorus lacunosus</i> (Actinopterygii: Atheriniformes: Atherinidae)	157
<i>Aurigequula fasciata</i> (Actinopterygii: Perciformes: Leiognathidae)	221
<i>Brevitrygon imbricata</i> (Elasmobranchii: Myliobatiformes: Dasyatidae)	47
<i>Brevitrygon walga</i> (Elasmobranchii: Myliobatiformes: Dasyatidae)	48
<i>Butis butis</i> (Actinopterygii: Perciformes: Eleotridae)	278
<i>Carangoides ferdau</i> * (Actinopterygii: Perciformes: Carangidae)	201
<i>Carangoides oblongus</i> * (Actinopterygii: Perciformes: Carangidae)	202
<i>Carangoides praeustus</i> (Actinopterygii: Perciformes: Carangidae)	204

	Page No.
<i>Caranx papuensis</i> * (Actinopterygii: Perciformes: Carangidae)	205
<i>Caranx sexfasciatus</i> (Actinopterygii: Perciformes: Carangidae)	206
<i>Gibelion catla</i> (Actinopterygii: Cypriniformes: Cyprinidae)	94
<i>Chanda nama</i> (Actinopterygii: Perciformes: Ambassidae)	180
<i>Channa marulius</i> (Actinopterygii: Perciformes: Channidae)	311
<i>Channa punctata</i> (Actinopterygii: Perciformes: Channidae)	312
<i>Channa striata</i> (Actinopterygii: Perciformes: Channidae)	314
<i>Chanos chanos</i> (Actinopterygii: Gonorynchiformes: Chanidae)	91
<i>Chela cachius</i> (Actinopterygii: Cypriniformes: Cyprinidae)	95
<i>Chelon parsia</i> (Actinopterygii: Mugiliformes: Mugilidae)	144
<i>Chelon planiceps</i> (Actinopterygii: Mugiliformes: Mugilidae)	146
<i>Chelonodon patoca</i> (Actinopterygii: Tetraodontiformes: Tetraodontidae)	328
<i>Cirrhinus mrigala</i> (Actinopterygii: Cypriniformes: Cyprinidae)	96
<i>Cirrhinus reba</i> (Actinopterygii: Cypriniformes: Cyprinidae)	97
<i>Clarias magur</i> (Actinopterygii: Siluriformes: Clariidae)	130
<i>Cociella crocodilus</i> (Actinopterygii: Scorpaeniformes: Platycephalidae)	176
<i>Congresox talabonoides</i> (Actinopterygii: Anguilliformes: Muraenesocidae)	58
<i>Corica soborna</i> (Actinopterygii: Clupeiformes: Clupeidae)	66
<i>Crenidens crenidens</i> (Actinopterygii: Perciformes: Sparidae)	246
<i>Crenimugil seheli</i> (Actinopterygii: Mugiliformes: Mugilidae)	151
<i>Cynoglossus lida</i> (Actinopterygii: Pleuronectiformes: Cynoglossidae)	321
<i>Cynoglossus lingua</i> (Actinopterygii: Pleuronectiformes: Cynoglossidae)	322
<i>Cynoglossus puncticeps</i> (Actinopterygii: Pleuronectiformes: Cynoglossidae)	323
<i>Datnioides polota</i> (Actinopterygii: Perciformes: Datnioididae)	232
<i>Daysciaena albida</i> (Actinopterygii: Perciformes: Sciaenidae)	249
<i>Dendrophysa russelii</i> (Actinopterygii: Perciformes: Sciaenidae)	251
<i>Diodon hystrix</i> (Actinopterygii: Tetraodontiformes: Diodontidae)	330
<i>Drepane punctata</i> (Actinopterygii: Perciformes: Drepaneidae)	263
<i>Drombus globiceps</i> (Actinopterygii: Perciformes: Gobiidae)	282
<i>Dussumieria elopsoidea</i> (Actinopterygii: Clupeiformes: Dussumieriidae)	62
<i>Echeneis naucrates</i> (Actinopterygii: Perciformes: Echeneidae)	197
<i>Eleotris fusca</i> (Actinopterygii: Perciformes: Eleotridae)	279

	Page No.
<i>Eleotris melanosoma</i> (Actinopterygii: Perciformes: Eleotridae)	280
<i>Eleutheronema tetradactylum</i> (Actinopterygii: Perciformes: Polynemidae)	260
<i>Elops machnata</i> (Actinopterygii: Elopiformes: Elopidae)	53
<i>Ephippus orbis</i> (Actinopterygii: Perciformes: Ephippidae)	293
<i>Epinephelus coioides</i> (Actinopterygii: Perciformes: Serranidae)	184
<i>Epinephelus lanceolatus</i> (Actinopterygii: Perciformes: Serranidae)	185
<i>Epinephelus malabaricus</i> (Actinopterygii: Perciformes: Serranidae)	187
<i>Epinephelus tauvina</i> (Actinopterygii: Perciformes: Serranidae)	189
<i>Escualosa thoracata</i> (Actinopterygii: Clupeiformes: Clupeidae)	67
<i>Esomus danrica</i> (Actinopterygii: Cypriniformes: Cyprinidae)	98
<i>Etroplus suratensis</i> (Actinopterygii: Perciformes: Cichlidae)	274
<i>Eusphyra blochii</i> (Elasmobranchii: Carcharhiniformes: Sphyrnidae)	43
<i>Favonigobius reichei</i> * (Actinopterygii: Perciformes: Gobiidae)	283
<i>Gerres erythrourus</i> (Actinopterygii: Perciformes: Gerreidae)	234
<i>Gerres filamentosus</i> (Actinopterygii: Perciformes: Gerreidae)	235
<i>Gerres limbatus</i> (Actinopterygii: Perciformes: Gerreidae)	236
<i>Gerres macracanthus</i> (Actinopterygii: Perciformes: Gerreidae)	237
<i>Gerres oyena</i> (Actinopterygii: Perciformes: Gerreidae)	238
<i>Gerres phaiya</i> (Actinopterygii: Perciformes: Gerreidae)	239
<i>Gerres setifer</i> (Actinopterygii: Perciformes: Gerreidae)	240
<i>Glossogobius giuris</i> (Actinopterygii: Perciformes: Gobiidae)	284
<i>Gonialosa manmina</i> (Actinopterygii: Clupeiformes: Clupeidae)	68
<i>Gudusia chapra</i> (Actinopterygii: Clupeiformes: Clupeidae)	69
<i>Hemiramphus far</i> (Actinopterygii: Beloniformes: Hemiramphidae)	162
<i>Heteropneustes fossilis</i> (Actinopterygii: Siluriformes: Heteropneustidae)	132
<i>Hilsa kelee</i> (Actinopterygii: Clupeiformes: Clupeidae)	70
<i>Himantura uarnak</i> (Elasmobranchii: Myliobatiformes: Dasyatidae)	49
<i>Hippocampus fuscus</i> (Actinopterygii: Syngnathiformes: Syngnathidae)	167
<i>Hyporhamphus limbatus</i> (Actinopterygii: Beloniformes: Hemiramphidae)	164
<i>Ichthyocampus carce</i> (Actinopterygii: Syngnathiformes: Syngnathidae)	169
<i>Ilisha elongata</i> (Actinopterygii: Clupeiformes: Pristigasteridae)	88
<i>Ilisha megalopectera</i> (Actinopterygii: Clupeiformes: Pristigasteridae)	89

	Page No.
<i>Johnius amblycephalus</i> (Actinopterygii: Perciformes: Sciaenidae)	252
<i>Johnius belangerii</i> (Actinopterygii: Perciformes: Sciaenidae)	253
<i>Johnius borneensis</i> * (Actinopterygii: Perciformes: Sciaenidae)	255
<i>Johnius carutta</i> (Actinopterygii: Perciformes: Sciaenidae)	257
<i>Johnius macropterus</i> (Actinopterygii: Perciformes: Sciaenidae)	259
<i>Labeo boga</i> (Actinopterygii: Cypriniformes: Cyprinidae)	99
<i>Labeo gonius</i> (Actinopterygii: Cypriniformes: Cyprinidae)	101
<i>Labeo rohita</i> (Actinopterygii: Cypriniformes: Cyprinidae)	102
<i>Lates calcarifer</i> (Actinopterygii: Perciformes: Latidae)	182
<i>Laubuka laubuca</i> (Actinopterygii: Cypriniformes: Cyprinidae)	103
<i>Leiodon cutcutia</i> (Actinopterygii: Tetraodontiformes: Tetraodontidae)	329
<i>Leiognathus equulus</i> (Actinopterygii: Perciformes: Leiognathidae)	222
<i>Lepidocephalichthys guntea</i> (Actinopterygii: Cypriniformes: Cobitidae)	114
<i>Lethrinus lentjan</i> * (Actinopterygii: Perciformes: Lethrinidae)	225
<i>Lutjanus argentimaculatus</i> (Actinopterygii: Perciformes: Lutjanidae)	226
<i>Lutjanus indicus</i> (Actinopterygii: Perciformes: Lutjanidae)	227
<i>Lutjanus johnii</i> (Actinopterygii: Perciformes: Lutjanidae)	228
<i>Lutjanus kasmira</i> (Actinopterygii: Perciformes: Lutjanidae)	229
<i>Lutjanus rivulatus</i> * (Actinopterygii: Perciformes: Lutjanidae)	230
<i>Macrogathus aral</i> (Actinopterygii: Synbranchiformes: Mastacembelidae)	170
<i>Macrogathus pancalus</i> (Actinopterygii: Synbranchiformes: Mastacembelidae)	171
<i>Mastacembelus armatus</i> (Actinopterygii: Synbranchiformes: Mastacembelidae)	172
<i>Megalaspis cordyla</i> (Actinopterygii: Perciformes: Carangidae)	207
<i>Megalops cyprinoides</i> (Actinopterygii: Elopiformes: Megalopidae)	54
<i>Monodactylus argenteus</i> (Actinopterygii: Perciformes: Monodactylidae)	242
<i>Monodactylus kottelati</i> (Actinopterygii: Perciformes: Monodactylidae)	265
<i>Mugil cephalus</i> (Actinopterygii: Mugiliformes: Mugilidae)	152
<i>Muraenesox bagio</i> (Actinopterygii: Anguilliformes: Muraenesocidae)	59
<i>Muraenesox cinereus</i> (Actinopterygii: Anguilliformes: Muraenesocidae)	60
<i>Mystus cavasius</i> (Actinopterygii: Siluriformes: Bagridae)	115
<i>Mystus gulio</i> (Actinopterygii: Siluriformes: Bagridae)	117
<i>Mystus vittatus</i> (Actinopterygii: Siluriformes: Bagridae)	119

	Page No.
<i>Nandus nandus</i> (Actinopterygii: Perciformes: Nandidae)	266
<i>Narcine timlei</i> * (Elasmobranchii : Torpediniformes: Narcinidae)	46
<i>Nemapteryx caelata</i> (Actinopterygii: Siluriformes: Ariidae)	136
<i>Nematalosa nasus</i> (Actinopterygii: Clupeiformes: Clupeidae)	72
<i>Notopterus notopterus</i> (Actinopterygii: Osteoglossiformes: Notopteridae)	51
<i>Nuchequula blochii</i> (Actinopterygii: Perciformes: Leiognathidae)	223
<i>Oligolepis acutipennis</i> (Actinopterygii: Perciformes: Gobiidae)	285
<i>Ompok bimaculatus</i> (Actinopterygii: Siluriformes: Siluridae)	121
<i>Ompok pabda</i> (Actinopterygii: Siluriformes: Siluridae)	123
<i>Opisthopterus tardoore</i> (Actinopterygii: Clupeiformes: Pristigasteridae)	90
<i>Oreochromis mossambicus</i> (Actinopterygii: Perciformes: Cichlidae)	276
<i>Oryzias dancena</i> (Actinopterygii: Beloniformes: Adrianichthyidae)	166
<i>Osteobrama peninsularis</i> (Actinopterygii: Cypriniformes: Cyprinidae)	104
<i>Osteogeneiosus militaris</i> (Actinopterygii : Siluriformes: Ariidae)	137
<i>Osteomugil cunnesius</i> (Actinopterygii: Mugiliformes: Mugilidae)	149
<i>Oxyurichthys microlepis</i> (Actinopterygii: Perciformes: Gobiidae)	286
<i>Pachypterus atherinoides</i> * (Actinopterygii: Siluriformes: Schilbeidae)	127
<i>Pangasius pangasius</i> (Actinopterygii: Siluriformes: Pangasiidae)	129
<i>Parambassis ranga</i> (Actinopterygii: Perciformes: Ambassidae)	181
<i>Pastinachus sephen</i> (Elasmobranchii: Myliobatiformes: Dasyatidae)	50
<i>Pelates quadrilineatus</i> (Actinopterygii: Perciformes: Terapontidae)	268
<i>Periophthalmus kalolo</i> (Actinopterygii: Perciformes: Gobiidae)	287
<i>Pethia ticto</i> (Actinopterygii: Cypriniformes: Cyprinidae)	105
<i>Photopectoralis bindus</i> (Actinopterygii: Perciformes: Leiognathidae:)	224
<i>Planiliza macrolepis</i> (Actinopterygii: Mugiliformes: Mugilidae)	141
<i>Planiliza melinopterus</i> (Actinopterygii: Mugiliformes: Mugilidae)	143
<i>Planiliza subviridis</i> (Actinopterygii: Mugiliformes: Mugilidae)	148
<i>Platax orbicularis</i> (Actinopterygii: Perciformes: Ehippidae)	295
<i>Platycephalus indicus</i> (Actinopterygii: Scorpaeniformes: Platycephalidae)	177
<i>Plotosus canius</i> (Actinopterygii : Siluriformes: Plotosidae)	139
<i>Pomadasys argenteus</i> (Actinopterygii: Perciformes: Haemulidae)	242
<i>Pomadasys kaakan</i> (Actinopterygii: Perciformes: Haemulidae)	243

	Page No.
<i>Psammogobius biocellatus</i> (Actinopterygii: Perciformes: Gobiidae)	289
<i>Pseudorhombus arsius</i> (Actinopterygii: Pleuronectiformes: Paralichthyidae)	316
<i>Pseudorhombus micrognathus</i> (Actinopterygii: Pleuronectiformes: Paralichthyidae)	317
<i>Pseudorhombus triocellatus</i> (Actinopterygii: Pleuronectiformes: Paralichthyidae)	318
<i>Pterois radiata</i> (Actinopterygii: Scorpaeniformes: Scorpaenidae)	173
<i>Puntius chola</i> (Actinopterygii: Cypriniformes: Cyprinidae)	107
<i>Puntius sophore</i> (Actinopterygii: Cypriniformes: Cyprinidae)	109
<i>Rachycentron canadum</i> (Actinopterygii: Perciformes: Rachycentridae)	195
<i>Rasbora daniconius</i> (Actinopterygii: Cypriniformes: Cyprinidae)	111
<i>Rhabdosargus sarba</i> (Actinopterygii: Perciformes: Sparidae)	247
<i>Rhinomugil corsula</i> (Actinopterygii: Mugiliformes: Mugilidae)	154
<i>Rhynchobatus djiddensis</i> (Elasmobranchii: Rajiformes: Rhinobatidae)	45
<i>Salmostoma bacaila</i> (Actinopterygii: Cypriniformes: Cyprinidae)	112
<i>Scatophagus argus</i> (Actinopterygii: Perciformes: Scatophagidae)	297
<i>Scoliodon laticaudus</i> (Elasmobranchii: Carcharhiniformes: Carcharhinidae)	42
<i>Scomberoides commersonnianus</i> (Actinopterygii: Perciformes: Carangidae)	208
<i>Scomberoides lysan</i> (Actinopterygii: Perciformes: Carangidae)	209
<i>Scomberoides tala</i> (Actinopterygii: Perciformes: Carangidae)	210
<i>Scomberoides tol</i> (Actinopterygii: Perciformes: Carangidae)	211
<i>Selar boops</i> (Actinopterygii: Perciformes: Carangidae)	212
<i>Selar crumenophthalmus</i> (Actinopterygii: Perciformes: Carangidae)	214
<i>Selaroides leptolepis</i> (Actinopterygii: Perciformes: Carangidae)	216
<i>Siganus canaliculatus</i> (Actinopterygii: Perciformes: Siganidae)	298
<i>Siganus javus</i> (Actinopterygii: Perciformes: Siganidae)	300
<i>Siganus vermiculatus</i> (Actinopterygii: Perciformes: Siganidae)	301
<i>Sillaginopsis panijus</i> (Actinopterygii: Perciformes: Sillaginidae)	191
<i>Sillago sihama</i> (Actinopterygii: Perciformes: Sillaginidae)	192
<i>Sillago vincenti</i> (Actinopterygii: Perciformes: Sillaginidae)	194
<i>Silonia silondia</i> (Actinopterygii: Siluriformes: Schilbeidae)	128
<i>Solea ovata</i> (Actinopterygii: Pleuronectiformes: Soleidae)	319
<i>Sphyaena jello</i> (Actinopterygii: Perciformes: Sphyaenidae)	305

	Page No.
<i>Sphyraena obtusata</i> * (Actinopterygii: Perciformes: Sphyraenidae)	307
<i>Sphyraena putnamae</i> (Actinopterygii: Perciformes: Sphyraenidae)	306
<i>Sphyrna lewini</i> (Elasmobranchii: Carcharhiniformes: Sphyrnidae)	44
<i>Stolephorus commersonnii</i> (Actinopterygii: Clupeiformes: Engraulidae)	78
<i>Stolephorus dubiosus</i> (Actinopterygii: Clupeiformes: Engraulidae)	79
<i>Stolephorus indicus</i> (Actinopterygii: Clupeiformes: Engraulidae)	80
<i>Strongylura strongylura</i> (Actinopterygii: Beloniformes: Belonidae)	159
<i>Systemus sarana</i> (Actinopterygii: Cypriniformes: Cyprinidae)	113
<i>Taeniamia macroptera</i> * (Actinopterygii: Perciformes: Apogonidae)	273
<i>Taenioides anguillaris</i> * (Actinopterygii: Perciformes: Gobiidae)	290
<i>Tenualosa ilisha</i> (Actinopterygii: Clupeiformes: Clupeidae)	74
<i>Tenualosa toli</i> (Actinopterygii: Clupeiformes: Clupeidae)	76
<i>Terapon jarbua</i> (Actinopterygii: Perciformes: Terapontidae)	270
<i>Terapon puta</i> (Actinopterygii: Perciformes: Terapontidae)	271
<i>Terapon theraps</i> (Actinopterygii: Perciformes: Terapontidae)	272
<i>Tetraroge niger</i> (Actinopterygii: Scorpaeniformes: Tetrarogidae)	174
<i>Thryssa hamiltonii</i> (Actinopterygii: Clupeiformes: Engraulidae)	81
<i>Thryssa malabarica</i> (Actinopterygii: Clupeiformes: Engraulidae)	82
<i>Thryssa mystax</i> (Actinopterygii: Clupeiformes: Engraulidae)	83
<i>Thryssa polybranchialis</i> (Actinopterygii: Clupeiformes: Engraulidae)	84
<i>Thryssa purava</i> (Actinopterygii: Clupeiformes: Engraulidae)	85
<i>Thryssa setirostris</i> (Actinopterygii: Clupeiformes: Engraulidae)	86
<i>Thryssa vitrirostris</i> (Actinopterygii: Clupeiformes: Engraulidae)	87
<i>Trachicephalus uranoscopus</i> * (Actinopterygii: Scorpaeniformes: Synanceiidae)	175
<i>Trachinotus baillonii</i> * (Actinopterygii: Perciformes: Carangidae)	218
<i>Trachinotus botla</i> * (Actinopterygii: Perciformes: Carangidae)	219
<i>Trachinotus mookalee</i> (Actinopterygii: Perciformes: Carangidae)	220
<i>Triacanthus biaculeatus</i> (Actinopterygii: Tetraodontiformes: Tricanthidae)	324
<i>Trichogaster fasciata</i> (Actinopterygii: Perciformes: Osphronemidae)	221
<i>Trichogaster lalius</i> (Actinopterygii: Perciformes: Osphronemidae)	310
<i>Trypauchen vagina</i> (Actinopterygii: Perciformes: Gobiidae)	291

	Page No.
<i>Upeneus sulphureus</i> (Actinopterygii: Perciformes: Mullidae)	262
<i>Valamugil speigleri</i> (Actinopterygii: Mugiliformes: Mugilidae)	155
<i>Wallago attu</i> (Actinopterygii: Siluriformes: Siluridae)	125
<i>Xenentodon cancila</i> (Actinopterygii: Beloniformes: Belonidae)	161
<i>Yongeichthys criniger</i> (Actinopterygii: Perciformes: Gobiidae)	292
<i>Zebrias synapturoides</i> * (Actinopterygii: Pleuronectiformes: Soleidae)	320

Shellfishes

	Page No.
<i>Fenneropenaeus indicus</i> (Malacostraca: Decapoda: Penaeidae)	332
<i>Macrobrachium malcolmsonii</i> (Malacostraca: Decapoda: Palaemonidae)	341
<i>Macrobrachium rosenbergii</i> (Malacostraca: Decapoda: Palaemonidae)	343
<i>Macrobrachium rude</i> (Malacostraca: Decapoda: Palaemonidae)	345
<i>Metapenaeus dobsoni</i> (Malacostraca: Decapoda: Penaeidae)	334
<i>Metapenaeus monoceros</i> (Malacostraca: Decapoda: Penaeidae)	336
<i>Penaeus monodon</i> (Malacostraca: Decapoda: Penaeidae)	338
<i>Penaeus semisulcatus</i> (Malacostraca: Decapoda: Penaeidae)	340
<i>Portunus pelagicus</i> (Malacostraca: Decapoda: Portunidae)	346
<i>Scylla serrata</i> (Malacostraca: Decapoda: Portunidae)	347
<i>Scylla tranquebarica</i> (Malacostraca: Decapoda: Portunidae)	349

REFERENCES

- Amaoka, K. and D.A. Hensley (2001). Paralichthyidae. Sand flounders. p. 3842-3862. In K.E. Carpenter and V. Niem (eds.) FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 6. Bony fishes part 4 (Labridae to Latimeriidae), estuarine crocodiles. FAO, Rome.
- Bacchet, P., T. Zysman and Y. Lefèvre (2006). Guide des poissons de Tahiti et ses îles. Tahiti (Polynésie Française): Editions Au Vent des Îles. 608 p.
- Barman, R. P., S. S. Mishra, S. Kar, P. Mukherjee and S. C. Saren (2007). Marine and estuarine fish fauna of Orissa. *Rec. Zool. Surv. India, Occ. Paper*, No. 260: 1-186.
- Bhatta, K. S., A. K. Pattnaik and B. P. Behera (2001). Further contribution to the fish fauna of Chilika Lagoon, a coastal wetland of Orissa. *Geobios*, **28** (2-3): 97-100.
- Bhatta, K. S., R. N. Samal, S. Karna, D. Sahoo, S. Panda, A. K. Pattnaik (CDA), K. Hiramatsu and K. Ito (JICA) (2009). The biological & ecological characteristics and the current status of fisheries & resources of commercially important species in Chilika Lagoon: 174p.
- Bouhlef, M. (1988). Poissons de Djibouti. Placerville (California, USA): RDA International, Inc. 416 p.
- Bykov, V.P. (1983). Marine Fishes: Chemical composition and processing properties. New Delhi: Amerind Publishing Co. Pvt. Ltd. 322 p.
- Carpenter, K. E. and V. H. Niem (Eds) (1998). FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Volume 2. Cephalopods, crustaceans, holothurians and sharks. Rome, FAO. 687-1396 p.
- Castle, P.H.J. (1984). Muraenesocidae. In W. Fischer and G. Bianchi (eds.) FAO species identification sheets for fishery purposes. Western Indian Ocean (Fishing Area 51). Volume III. FAO, Rome.
- Chaudhuri, B. L. (1916a). Description of two new fishes from Chilika Lake. *Records of Indian Museum*, **12**(3): 105-108.
- Chaudhuri, B. L. (1916b). Fauna of the Chilika Lake: Fish Part I. *Memoir of Indian Museum*, **5**(4): 403-440.
- Chaudhuri, B. L. (1916c). Fauna of the Chilika Lake: Fish Part II. *Memoir of Indian Museum*, **5**(5): 441-458.
- Chaudhuri, B. L. (1917). "Fauna of the Chilika Lake : Fish, Part III," *Mem. Indian Mus.*, **5**(6): 491-508.
- Chaudhuri, B. L. (1923). "Fauna of the Chilika Lake : Fish, Part IV," *Mem. Indian Mus.*, **5**(11): 711-736.

- Davidson, A. (1975). Fish and fish dishes of Laos. Imprimerie Nationale Vientiane. 202 p.
- Day, F. (1986). The fishes of India: being a natural history of the fishes known to inhabit the seas and fresh waters of India, Burma and Ceylon. Vol I. Today & Tomorrow's Book Agency, New Delhi. 778p.
- De Bruin, G.H.P., B. C. Russell and A. Bogusch (1994). FAO species identification field guide for fishery purpose. The marine fishery resources of Sri Lanka. Rome, FAO, i-x, 1-400, 32 pls.
- Deb Maya (1995). Crustacea: Brachyura. In: *Wetland Ecosystem Series 1: Fauna of Chilika Lake, Zool. Surv. India*: 345-366.
- Debabrata Panda, Surya K. Mohanty, Ajit K. Pattnaik, Subrata Das and Subodha K. Karna (2018). Growth, mortality and stock status of mullets (*Mugilidae*) in Chilika Lake, India. *Lakes & Reservoirs*: 1-13. DOI: 10.1111/lre.12205
- Eschmeyer, W. N. and R. Fricke, and R. van der Laan (eds). Catalog of Fishes: Genera, Species, References. (<http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>). Electronic version accessed 30.05.2018.
- Eschmeyer, W.N., E.S. Herald and H. Hammann (1983). A field guide to Pacific coast fishes of North America. Houghton Mifflin Company, Boston, U.S.A. 336 p.
- Fisccher, W. and G. Bianchi (eds.) (1984). FAO species identification sheets for fishery purposes. Western Indian Ocean (Fishing Area 51). Rome: FAO. Volumes 1-6. <http://www.fao.org/docrep/009/ad468e/ad468e00.htm>
- Fischer, W., I. Sousa, C. Silva, A. de Freitas, J.M. Poutiers, W. Schneider, T.C. Borges, J.P. Feral and A. Massinga (1990). Fichas FAO de identificação de espécies para actividades de pesca. Guia de campo das espécies comerciais marinhas e de águas salobras de Moçambique. Publicação preparada em colaboração com o Instituto de Investigação Pesqueira de Moçambique, com financiamento do Projecto PNUD/FAO MOZ/86/030 e de NORAD. Roma, FAO. 1990. 424 p.
- FishBase (2018). <http://www.fishbase.org/search.php> Electronic version accessed 30.05.2018.
- Froese, R. and D. Pauly (eds.). (2015). FishBase. World Wide Web electronic publication, version 08/2015. Accessed at <http://www.fishbase.org>, 13 September 2015.
- Golani, D. and M. Fine (2002). On the occurrence of *Hippocampus fuscus* in the eastern Mediterranean. *J. Fish Biol.* **60**(3):764-766.
- Harrison, I.J. and H. Senou (1997). Order Mugiliformes. Mugilidae. Mulletts. p. 2069-2108. In K.E. Carpenter and V.H. Niem (eds.) FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Volume 4. Bony fishes part 2 (Mugilidae to Carangidae). FAO, Rome.
- Heemstra, P.C. (1986). Teraponidae. p. 543-544. In M.M. Smith and P.C. Heemstra (eds.) *Smiths' sea fishes*. Springer-Verlag, Berlin.

- Heemstra, P.C. (1995). Additions and corrections for the 1995 impression. p. v-xv. In M.M. Smith and P.C. Heemstra (eds.) Revised Edition of Smiths' Sea Fishes. Springer-Verlag, Berlin.
- Hiddink, J. G., B. R. MacKenzie, A. Rijnsdorp, N. K. Dulvy, E. E. Nielsen, D. Bekkevold, M. Heino, P. Lorance & H. Ojaveer (2008). Importance of fish biodiversity for the management of fisheries and ecosystems. *Fisheries Research*, **90**: 6–8.
- Holthuis, L.B. (1980). FAO Species Catalogue. Vol. 1. Shrimps and prawns of the world. An annotated catalogue of species of interest to fisheries. *FAO Fish. Synop.* **125**(1):271 p. Rome: FAO.
- Hora, S. L. (1923). Fauna of the Chilika Lake. Fish, Part V. *Memoir of Indian Museum*, **5**(11): 737–769.
- <http://europa.eu/scadplus/leg/en/lvb/128023.htm> (2005)
- <http://www.fao.org/fishery/species/2326/en>; dt.25.05.2017
- https://en.wikipedia.org/wiki/Chilika_Lake#Geology accessed on 23.11.2016.
- Huda, M.S., M.E. Haque, A.S. Babul and N.C. Shil (ed.) (2003). Field guide to finfishes of Sundarban, Aquatic resources division, Sundarban, Boyra, Khulna, Bangladesh, p.174.
- ICAR-CIFRI (2017). Post-restoration assessment of the ecology and fisheries diversity of Chilika Lake under ICAR-CIFRI/CDA-ICZM Consultancy Project Report (October, 2011 to April, 2017): 498p.
- IUCN (2018). IUCN Red list of Threatened Species, Version 2017.3. Electronic Database accessible at <http://www.iucnredlist.org>, 30.05.2018.
- James, P.S.B.R. (1984). Leiognathidae. In W. Fischer and G. Bianchi (eds.) FAO species identification sheets for fishery purposes. Western Indian Ocean (Fishing Area 51). Vol. 2. FAO, Rome. pag. var.
- Jayaram, K. C. (1999). The fresh water fishes of the Indian region. Narendra Publishing House, Delhi, 551p.
- Jayaram, K.C. (2010). The freshwater fishes of the Indian region. Revised 2nd ed. Delhi: Narendra Publishing House. 616 pp.
- Jhingran, V. G. (1958). Observations on the seaward migration of *Mugil cephalus* Linnaeus from the Chilika Lake for breeding. *Curr. Sci.*, **27**: 181-182.
- Jhingran, V. G. and A. V. Natarajan (1966). *Final Report on the Fisheries of the Chilika Lake (1957-1965)*. Bulletin No 8: 1-12, Central Inland Fisheries Research Institute, Barrackpore, Kolkata, India.
- Jhingran, V. G. and A. V. Natarajan (1969). A study of the fisheries and fish population of the Chilika Lake during the period 1957-65. *J. Inl. Fish. Soc. India*, **1**: 49-126.

- Jhingran, V. G. and K. N. Mishra (1962). Further fish tagging experiments in the Chilika Lake (1959) with special reference to *Mugil cephalus* Linnaeus. *Indian J. Fish.*, **9**(2): 477-498.
- Jones, S. and K. H. Sujanshingani (1954). Fish and fisheries of the Chilika Lake with statistics of the catches for the years 1948–1950. *Indian Journal of Fisheries*, **1**(1-2): 256-344.
- Jones, S. and K. H. Sujansinghani (1951). The Hilsa fishery of Chilika Lake. *J. Bom. Nat. Hist. Soc.*, **50** (2): 264-280.
- Karna, S. K. and S. Panda (2011). Growth estimation and Length at maturity of a commercially important fish species i.e., *Daysciaena albida* (Boroga) in Chilika Lagoon, India. *European Journal of Experimental Biology*, **1**(2): 84-91.
- Karna, S. K. and S. Panda (2012). Length-Weight Relationship (LWR) of *Nematolosa nasus* (Bloch) from Chilika lagoon, Orissa. In: Fisheries and Aquaculture (Edited by L. Patro). Sonali Publications, New Delhi. 342-349.
- Karna, S. K. and S. Panda (2012). Length-Weight Relationship (LWR) of 20 fish Species in Chilika Lagoon, Odisha (India). *Asian Journal of Experimental Biological Sciences*, **3**(1): 243-246.
- Karna, S. K., B. C. Guru and S. Panda (2014). Food and Feeding habits of *Tenualosa ilisha* (Hamilton, 1822) from India's largest brackish water lagoon. *Int. J. Sc. Research.*, **3**(12): 123-125.
- Karna, S. K., M. M. Baliarsingh, L. Patro and S. Panda (2010). Growth estimation through Length Weight Relationship (LWR) of *Rhabdosargus sarba* and *Jerreomorpha setifer* in two ecological sectors of Chilika lagoon, Orissa (India). *Aquatic Biodiversity* (Edited by Dr. L. Patro). Discovery Publishing House, New Delhi. 181-194.
- Karna, S. K., M. Mukherjee, V. R. Suresh, R. K. Manna, Manas H. M. and R. K. Raman (2017). Length–weight and length–length relationship of *Strongylura strongylura* (van Hasselt, 1823) and *Hyporhamphus limbatus* (Valenciennes, 1847) from Chilika Lake, India. *Journal of Applied Ichthyology*, **33**:640-641.
- Karna, S. K., R. K. Manna, D. Panda, M. Mukherjee, V. R. Suresh, A. Raut and M. K. Mukhopadhyay (2016). First record of *Trachicephalus uranoscopus* (Bloch and Schneider, 1801) from Chilika lagoon, Odisha Coast of India. *Indian Journal of Geo-Marine Science* (Accepted), (Ref. IJMS/MS- 3284; Date 29 /11 /2016).
- Karna, S. K., R. K. Manna, D. Panda, Manas H. M., M. Mukherjee and V. R. Suresh (2017). Occurrence of Blubberlip snapper, *Lutjanus rivulatus* (Cuvier, 1828) from Chilika lagoon, India. *Indian Journal of Geo-Marine Sciences* (Accepted), (Ref. IJMS/MS- 3502; Date 30 /03 /2017).
- Karna, S. K., R. K. Manna, M. Mukherjee and V. R. Suresh (2017). Occurrence of Obtuse barracuda *Sphyraena obtusata* Cuvier, 1829 (Actinopterygii: Perciformes: Sphyraenidae) from Chilika lagoon, Odisha coast of India. *Indian Journal of Geo-Marine Science* (Accepted) (MS Id: IJMS/MS 3598/17; Date 04/09/2017).

- Karna, S. K., S. Panda and B. C. Guru (2011). Length-Weight Relationship (LWR) and Seasonal distribution of *Valamugil speigleri* (Valancienues)* through size frequency variation and landing assessment in Chilika lagoon, India. *Asian Journal of Experimental Biological Sciences*, **2**(4): 654-662.
- Karna, S. K., V. R. Suresh, R. K. Manna, D. Panda, Manas H. M. and M. Mukherjee (2016). First record of the Immaculate puffer fish, *Arothron immaculatus* (Bloch and Schneider, 1801) from Chilika lagoon, India. *Indian Journal of Geo-Marine Science* (Accepted), (R ef. IJMS/MS- 3273; Date 09 /1 2 / 2016).
- Kemp, S. (1915). Crustacea: Decapoda, Fauna of the Chilika Lake. *Memoir of Indian Museum*, **5**: 199-325.
- Kottelat, M., A. J. Whitten, S. N. Kartikasari and S. Wirjoatmodjo (1993). Freshwater fishes of Western Indonesia and Sulawesi. Periplus Editions, Hong Kong. 221p.
- Kottelat, M., A.J. Whitten, S.N. Kartikasari and S. Wirjoatmodjo (1993). Freshwater fishes of Western Indonesia and Sulawesi. Periplus Editions, Hong Kong. 221 p.
- Koumans, F.P. (1941). Gobioid fishes of India. *Memoir of Indian Museum*, **13**(3): 205–313.
- Kowtal, G. V. (1965). On the breeding of *Eleutheronema tetradactylum* (Shaw) in the Chilika Lake. *Sci. & Cult.*, **31**: 262-263.
- Kowtal, G. V. (1972). Observations of the breeding and larval development of “Chilika Sahala” *Eleutheronema tetradactylum* (Shaw). *Indian J. Fish.*, **19** (1&2): 70-75.
- Kowtal, G. V. (1977). Some observations on the breeding of *Lates calcarifer* (Bloch) from the Chilka lake. *J. Inland Fish. Soc. India*, **9**: 191-192.
- Kowtal, G. V. (1978). A note on the breeding and early development of *Pseudosciaena coiber* (Ham) from the Chilika Lake. *J. Inland Fish. Soc. India*, **10**: 152-155.
- Krishnan, L., K. V. Ramakrishna, P. K. Ghosh, R. D. Prasad and D. Raja Babu (1996). Experiments on induced breeding of the grey mullet *Mugil cephalus* L. in Chilka lake. *J. Mar. Biol. Ass. India*, **38**(1&2): 150-153.
- Kuiter, R.H. and T. Tono-zuka (2001). Pictorial guide to Indonesian reef fishes. Part 1. Eels-Snappers, Muraenidae - Lutjanidae. Zoonetics, Australia. 1-302.
- Last, P.R. and J.D. Stevens (1994). Sharks and rays of Australia. CSIRO, Australia. 513 p.
- Lieske, E. and R. Myers (1994). Collins Pocket Guide. Coral reef fishes. Indo-Pacific & Caribbean including the Red Sea. Haper Collins Publishers, 400 p.
- Menon, A. G. K. (2004). Threatened fishes of India and their conservation. *Zoological Survey of India*, 170 pp.
- Menon, A.G.K. (1999). Check list - fresh water fishes of India. *Rec. Zool. Surv. India, Misc. Publ., Occas. Pap. No. 175*, 366 p.

- Menon, M. A. S. (1961). On a collection of fish from lagoon Chilika, Orissa. *Records of Indian Museum*, **59**(1-2): 41-69.
- Mishra, S. S. and K. C. Gopi (2014). Scheduled Fishes of India. ENVIS, ZSI, by the Director Zoological Survey of India, India, Kolkata: 1-32p.
- Misra, K. S. (1969). *Pisces: The fauna of India and adjacent countries*. Vol. 1. (2nd Ed.), New Delhi: Manager Publications. 276 pp.
- Misra, K. S. (1976a). *Pisces: The fauna of India and adjacent countries*. Vol. 2. (2nd Ed.), New Delhi: Manager Publications. 438 pp.
- Misra, K. S. (1976b). *Pisces: The fauna of India and adjacent countries*. Vol. 3. (2nd Ed.), New Delhi: Manager Publications. 367 pp.
- Mitra, G. N. and M. P. Devasundaram (1954). On the Hilsa of the Chilika Lake with a note on the occurrence of Hilsa in Orissa. *J. Asiatic Soc. Sci.*, **20** (1): 33-40.
- Mohanty, A. K., L. Nayak and K. S. Bhatta (2014). Length-weight relationship and relative condition factor of Asian seabass, *Lates calcarifer* (Bloch) from Chilika Lagoon, Odisha. *International Journal of Fisheries and Aquatic Studies*, **1**(6): 222-224.
- Mohanty, S. K. (1971). Preliminary observations on induced spawning of *Mugil cephalus* Linn. in the Chilika Lake. *J. India Fish. Assoc.*, **1** (2): 1-7.
- Mohanty, S. K. (1973). Further additions to the fish fauna of the Chilika Lake. *Journal of Bombay Natural History Society*, **72**(3): 863-866.
- Mohanty, S. K. (2002). Fisheries biodiversity of Chilika Lagoon. *Chilika Newsletter*, **3**: 11-12.
- Mohanty, S. K. (2013). Assessing migration of mullets in Chilika. *Chilika Newsletter*, **7**: 20-24.
- Mohanty, S. K., A. Mohapatra, R. K. Mohanty, K. S. Bhatta, and A. K. Pattnaik (2006). Occurrence and biological outlines of two species of *Scylla* (De Haan) in Chilika lagoon, India. *Indian J. Fish.*, **53** (2): 191-202.
- Mohanty, S. K., K. S. Bhatta, R. K. Mohanty, S. Mishra, A. Mohapatra and A. K. Pattnaik (2008). Eco-restoration impact on fishery biodiversity and population structure in Chilika Lake. In: Monitoring and modelling lakes and coastal Environments, Pratap K. Mohanty (ed.) (A Springer publication).
- Mohanty, S. K., S. S. Mishra, M. Khan, R. K. Mohanty, A. Mohapatra and A. K. Pattnaik (2015). Ichthyofaunal diversity of Chilika Lake, Odisha, India: an inventory, assessment of biodiversity status and comprehensive systematic checklist (1916–2014). *Check List*, **11** (6): 1-19.
- Mohapatra, A., R. K. Mohanty, S. K. Mohanty, K. S. Bhatta and N. R. Das (2007). Fisheries enhancement and biodiversity assessment of fish, prawn and mud crab in Chilika lagoon through hydrological intervention. *Wetlands Ecology and Management*, **15**(3): 229-251.

- Mohapatra, A., S. K. Mohanty and S. S. Mishra (2015). Fish and Shellfish Fauna of Chilika Lagoon: An Updated Checklist. pp. 195-224.
- Mohapatra, Anil, Dipanjan Ray and Prasad Chandra Tudu (2013). New Record of Convict Surgeonfish *Acanthurus Triostegus* (Linnaeus, 1758) from Chilika lake. *Rec. Zool. Surv. India*: **113** (Part-4): 75-77.
- Mohapatra, Anil, Dipanjan Ray, Prasad Chandra Tudu and Subhrendu Sekhar Mishra (2014). Range extension and first report of *Monodactylus kottelati* (Perciformes: *Monodactylidae*) from Chilika Lagoon, east coast of India. Marine Biodiversity Records, page 1 of 2. *Marine Biological Association of the United Kingdom*. **7**: 1-2. Published online doi: 10.1017/S1755267214000013.
- Molur Sanjay and Sally Walker (eds). (1998). Report of the Workshop "Conservation Assessment and Management Plan (CAMP) for Freshwater Fishes of India", Zoo Outreach Organization, Conservation Breeding Specialist Group, India, Coimbatore, India. 156 pp.
- Molur Sanjay and Sally Walker (eds). (1998). Report of the Workshop "Conservation Assessment and Management Plan for Freshwater Fishes of India", Zoo Outreach Organization, Conservation Breeding Specialist Group, India, Coimbatore, India. 156 pp.
- Mukherjee, M., S. K. Karna, R. K. Manna, V. R. Suresh, D. Panda, A. P. Sharma, A. Roychowdhury and A. Raut (2016). First record of Dusky tailed Cardinal fish, *Taeniamia macroptera* (Cuvier, 1828) from Chilika lagoon, India. *Indian Journal of Geo- Marine Science* (Accepted), (R ef. IJMS/MS- 3056; Date 02 /1 1 /2016).
- Munroe, T.A. and M. Nizinski (1999). Engraulidae. Anchovies. p. 1698-1706. In K.E. Carpenter and V.H. Niem (eds.) FAO species identification guide for fishery purposes. The living marine resources of the WCP. Vol. 3. Batoid fishes, chimaeras and bony fishes part 1 (Elopidae to Linophrynidae). FAO, Rome.
- Myers, R.F. (1999). Micronesian reef fishes: a comprehensive guide to the coral reef fishes of Micronesia, 3rd revised and expanded edition. Coral Graphics, Barrigada, Guam. 330 p.
- Natarajan, A. V. and S. Patnaik (1970). Observations on breeding ground and development of the Chilika mullet *Liza macrolepis* (Smith). *J. Bombay Nat. Hist. Soc.*, **67** (3): 577-578.
- Natarajan, A. V. and S. Patnaik (1972). Embryonic and larval development of the Chilika mullet *Liza macrolepis* (Smith). *J. Inland Fish. Soc. India*, **4**: 15-19.
- NBFGR (2010). *Threatened freshwater fishes of India*. National Bureau of Fish Genetic Resources, Lucknow (UP). 20 pp.
- Novikov, N.P., A.S. Sokolovsky, T.G. Sokolovskaya and Y.M. Yakovlev (2002). The fishes of Primorye. Vladivostok, Far Eastern State Tech. Fish. Univ., 552 p.

- Panda, D. (2013). Final report on fisheries and fish yield potential of Chilika lagoon during the post-engineering intervention. Central Inland Fisheries Research Institute (ICAR), Barrackpore, Kolkata: 104p.
- Patnaik, D. A. (1966). On the biology of *Mugil cephalus* Linnaeus of the Chilika Lake. *Proc. Second All India Congr. Zool. Varanasi*, 1962, Pt. II: 457-464.
- Patnaik, S. (1967). Hermaphroditism in the Indian salmon *Eleutheronema tetradactylum* (Shaw). *Curr. Sci.*, **36** (19): 525.
- Patnaik, S. (1970). A contribution to the fishery and biology of Chilika Sahala *Eleutheronema tetradactylum* (Shaw). *Proc. Indian. Nat. Sci. Acad.*, **36** (1): 33-61.
- Patnaik, S. (1971). Observation on the fishery and biology of Chilika Jagili, *Gerres setifer* (Hamilton). *J. Inland Fish. Soc. India*, **3**: 25-43.
- Patnaik, S. (1973). Some aspects of the fishery and biology of the Chilika khuranti *Rhabdosargus sarba* (Forsk.) *J. Inland Fish. Soc. India*, **5**: 102-114.
- Patnaik, S. and S. Jena (1976). Some aspects of biology of *Lates calcarifer* (Bloch) from Chilika Lake. *Indian J. Fish.*, **23** (1&2): 65-71.
- Pethiyagoda, R. (1991). Freshwater fishes of Sri Lanka. The Wildlife Heritage Trust of Sri Lanka, Colombo. 362 p.
- Pethiyagoda, V.R. (1991). *Monodactylus kottelati*, ein neues Flossenblatt aus Sri Lanka (Pisces: Monodactylidae). *DATZ, Aquarien Terrarien*, p.162-167.
- Ponniah, A. G. (1993). Categorization of Indian threatened fishes. In: P.V. Dehadrai, P. Das and S.R. Verma. *Threatened fishes of India*. Proceedings of the National Seminar on Endangered Fishes of India Held at National Bureau of Fish Genetic Resources, Allahabad on 25 and 26 April 1992. Muzaffarnagar: Nature Conservators. Publication No. 4, pp. 375-387.
- Quéro, J.-C. (1990). Rachycentridae. p. 723-724. In J. C. Quéro, J. C. Hureau, C. Karrer, A. Post, and L. Saldanha (eds.) Check-list of the fishes of the eastern tropical Atlantic (CLOFETA). JNICT, Lisbon; SEI, Paris; and UNESCO, Paris. Vol. 2.
- Rahman, A.K.A. (1989). Freshwater fishes of Bangladesh. Zoological Society of Bangladesh. Department of Zoology, University of Dhaka. 364 p.
- Rainboth, W.J. (1996). Fishes of the Cambodian Mekong. FAO species identification field guide for fishery purposes. FAO, Rome, 265 p.
- Rajan, S., S. Pattnaik and N. C. Basu (1968). New records of fishes from the Chilika Lake. *Indian Journal of the Zoological Society of India*, **20**(1-2): 80-93.
- Ramakrishnaiah, M. (1972). Biology of *Hilsa ilisha* (Hamilton) from the Chilika Lake with an account of its racial status. *Indian J. Fish.*, **9** (1&2): 35-53.
- Ramakrishnaiah, M. (1979). Observation on post-larval incursions and fishery of penaeid prawns in Chilika Lake. *J. Inland Fish. Soc. India*, **11**(2): 31-40.

- Ramarao K. V. (1995). Pisces. *In: Wetland Ecosystem Series 1: Fauna of Chilika Lake*. Zoological Survey of India, Calcutta. 483-506.
- Randall, J.E. (1986). Acanthuridae. p. 811-823. In M.M. Smith and P.C. Heemstra (eds.) *Smiths' sea fishes*. Springer-Verlag, Berlin.
- Rao, A. V. P. (1967). Some observations on the biology of *Penaeus indicus* H. Milne Edwards and *Penaeus monodon* Fabricius from Chilka lake. *Indian J. Fish.*, **14** (1&2): 251 – 270.
- Rao, D. V. (2009). A field Guide to Fishes (Chilika Lake, Odisha, East Coast of India) Vedams eBooks (P) Ltd, New Delhi 110088, India: 252 p.
- Reddy, K. Narapu. (1995). Crustacea: Decapoda. *In: Wetland Ecosystem Series 1: Fauna of Chilika Lake*. Zoological Survey of India, Calcutta. 367-389.
- Roshith, C. M., R. K. Manna, V. R. Suresh, D. Panda, A. P. Sharma, A. Roy Chowdhury, M. Mukherjee and S. K. Banik (2016). Electric ray *Narcine timlei* (Torpediniformes: Narcinidae) from Chilika lagoon, Odisha, India. *Current Science*, **110** (8): 1408-1410.
- Roy, J. C. and N. Sahoo (1957). Additions to the fish fauna of the Chilika Lake. *J. Bombay Nat. Hist. Soc.*, **54**: 944-53.
- Roy, J. C. and N. Sahoo (1962). Bulletin on the Development of Chilika Lake (Chilika Fisheries, 1949-55). Govt. of Odisha Press, Cuttack: 63p.
- Satpathy, D. and S. Panda (2009). *Fish Atlas of Chilika*. Chilika Development Authority, Bhubaneswar, India. 74 pp.
- Smith, C.L. (1997). National Audubon Society field guide to tropical marine fishes of the Caribbean, the Gulf of Mexico, Florida, the Bahamas, and Bermuda. Alfred A. Knopf, Inc., New York. 720 p.
- Smith, J.L.B. and M.M. Smith (1986). Sparidae. p. 580-594. In M.M. Smith and P.C. Heemstra (eds.) *Smiths' sea fishes*. Springer-Verlag, Berlin.
- Szechowycz, R.W. (1960). Freshwater fishes of Ceylon. *Loris:J. Wildlife Nat. Protection Soc. Sri Lanka*, June:285-290.
- Talwar, P. K. and A. G. Jhingran (1991). *Inland fishes of India and adjacent countries*. (Vol 1 & 2). Oxford / IBH Publing Company, New Delhi. 1077 pp.
- Talwar, P. K. and A. G. Jhingran (1991). *Inland fishes of India and adjacent countries*. Volume 1, Oxford & IBH Publishing Co. Pvt. Ltd, New Delhi, Calcutta, 338p.
- Talwar, P. K. and A. G. Jhingran (2001). *Inland fishes of India and adjacent countries*. Volume 1, Oxford & IBH Publishing Co. Pvt. Ltd, New Delhi, p. 200.
- Talwar, P.K. and A.G. Jhingran (1991). *Inland Fishes of India and Adjacent Countries*, Vol. 1, Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi-Calcutta, pp.382-383.

Talwar, P.K. and A.G. Jhingran (1991). Inland fishes of India and adjacent countries. Volume 2. A.A. Balkema, Rotterdam.

Talwar, P.K. and A.G. Jhingran (1991). Inland fishes of India and adjacent countries. vol 1. A.A. Balkema, Rotterdam. 541 p.

Talwar, P.K. and R.K. Kacker (1984). Commercial sea fishes of India. Handbook No. 4. Calcuta: Zoological Survey of India. 997 pp.

Whitehead, P.J.P. (1985). FAO Species Catalogue. Vol. 7. Clupeoid fishes of the world (suborder Clupeoidei). An annotated and illustrated catalogue of the herrings, sardines, pilchards, sprats, shads, anchovies and wolf-herrings. FAO Fish. Synop. 125(7/1):1-303. Rome: FAO.

Whitehead, P.J.P., G.J. Nelson and T. Wongratana (1988). FAO Species Catalogue. Vol. 7. Clupeoid fishes of the world (Suborder Clupeoidei). An annotated and illustrated catalogue of the herrings, sardines, pilchards, sprats, shads, anchovies and wolf-herrings. FAO Fish. Synop. 125(7/2):305-579. Rome: FAO.

WISA (2012). *Chilika: An Integrated Management Planning Framework for Conservation and Wise Use*. Wetlands International - South Asia & Chilika Development Authority, 162 pp.



ICAR-Central Inland Fisheries Research Institute

Barrackpore, Kolkata - 700 120 (India)

&

Chilika Development Authority

C - 11, BJB Nagar, Bhubaneswar - 751 014 (India)