

Status of Irrawaddy dolphin in Chilika lagoon-India



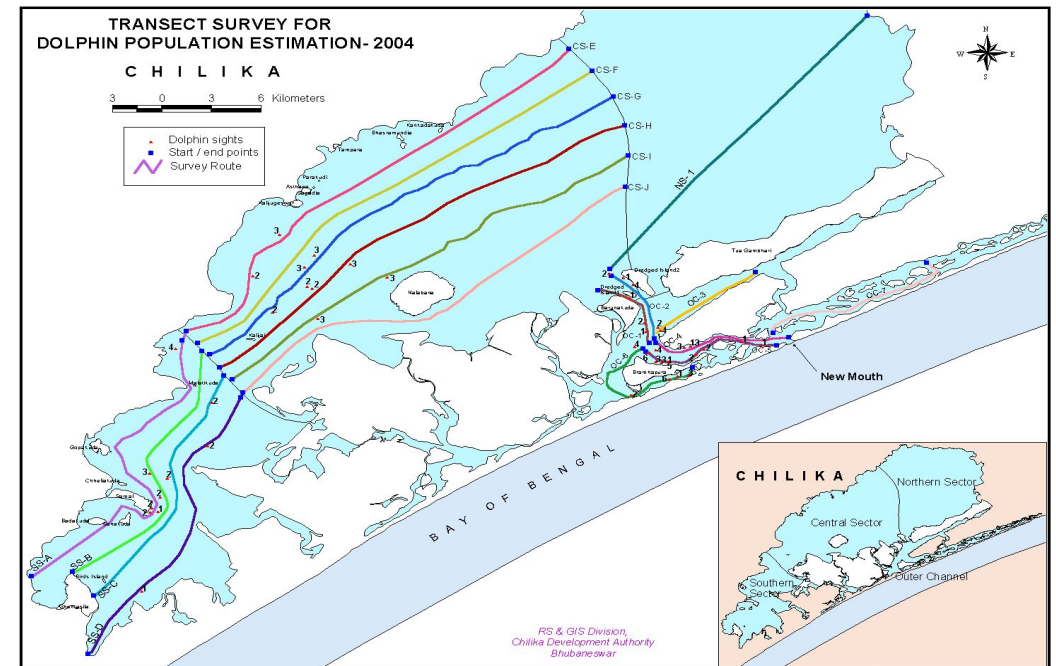
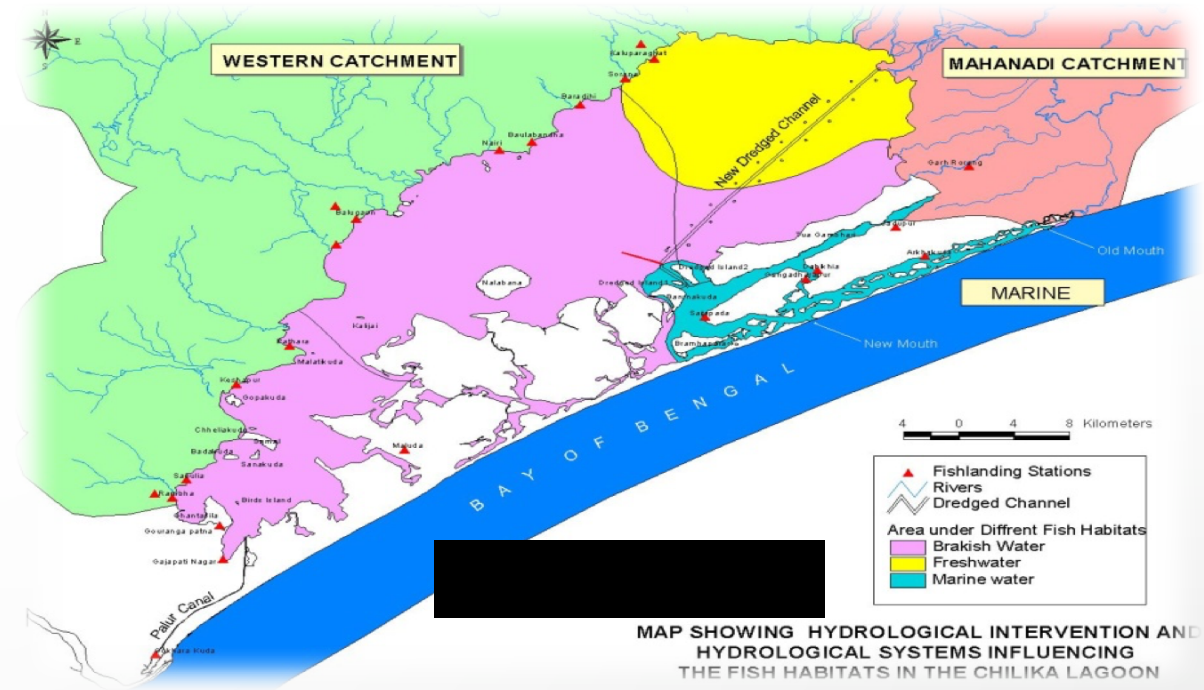
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Former Chief Executive

Chilika Development Authority

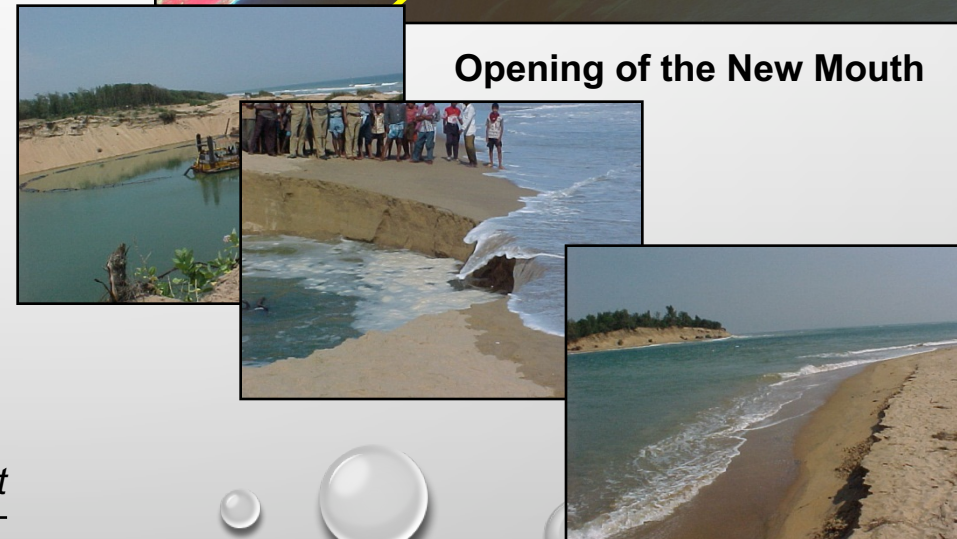
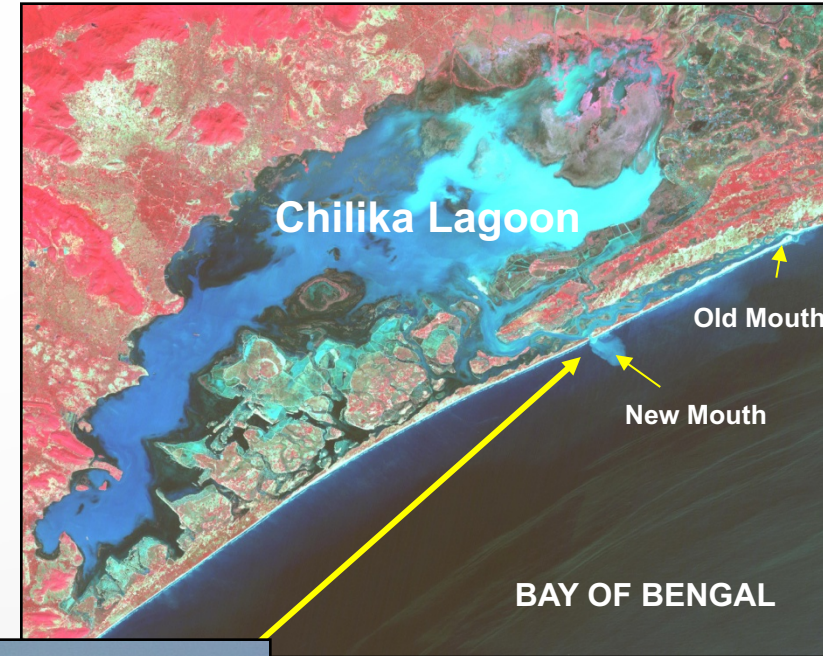
Salient features

- Irrawaddy dolphins in Chilika lagoon are still considered as a physically isolated population.
- Three sub populations in marine-attached brackish water bodies: Chilika lagoon in India, Songkhla lake in Thailand, and Malampaya sound in the Philippines.
- Significantly, ***Chilika contains the most important lagoonal population of Irrawaddy dolphins of the region.***
- Unfortunately, the Chilika Irrawaddy dolphin population is not completely secured.
- The main threats to the population is from the operation of a variety of fishing nets and mechanised boat traffic.
- The population estimation of lagoon based on direct sighting using line transect surveys is 150+



Improvement after hydrological intervention for restoration of the lagoon-2000

- Seven fold increase in annual fish & prawn landing (105 Crores, INR from enhancement of fishery resources per annum).
- Improvement of salinity flux & tidal flux.
- Expansion habitat of dolphin and increase of dolphin population .(70 pre restoration to 150 post restoration)
- Reappearance of native fish species.
- Decrease of invasive species .
- Removed from *Montreux Record* due to improvement of the lake ecosystem in 2002(1st from Asia).

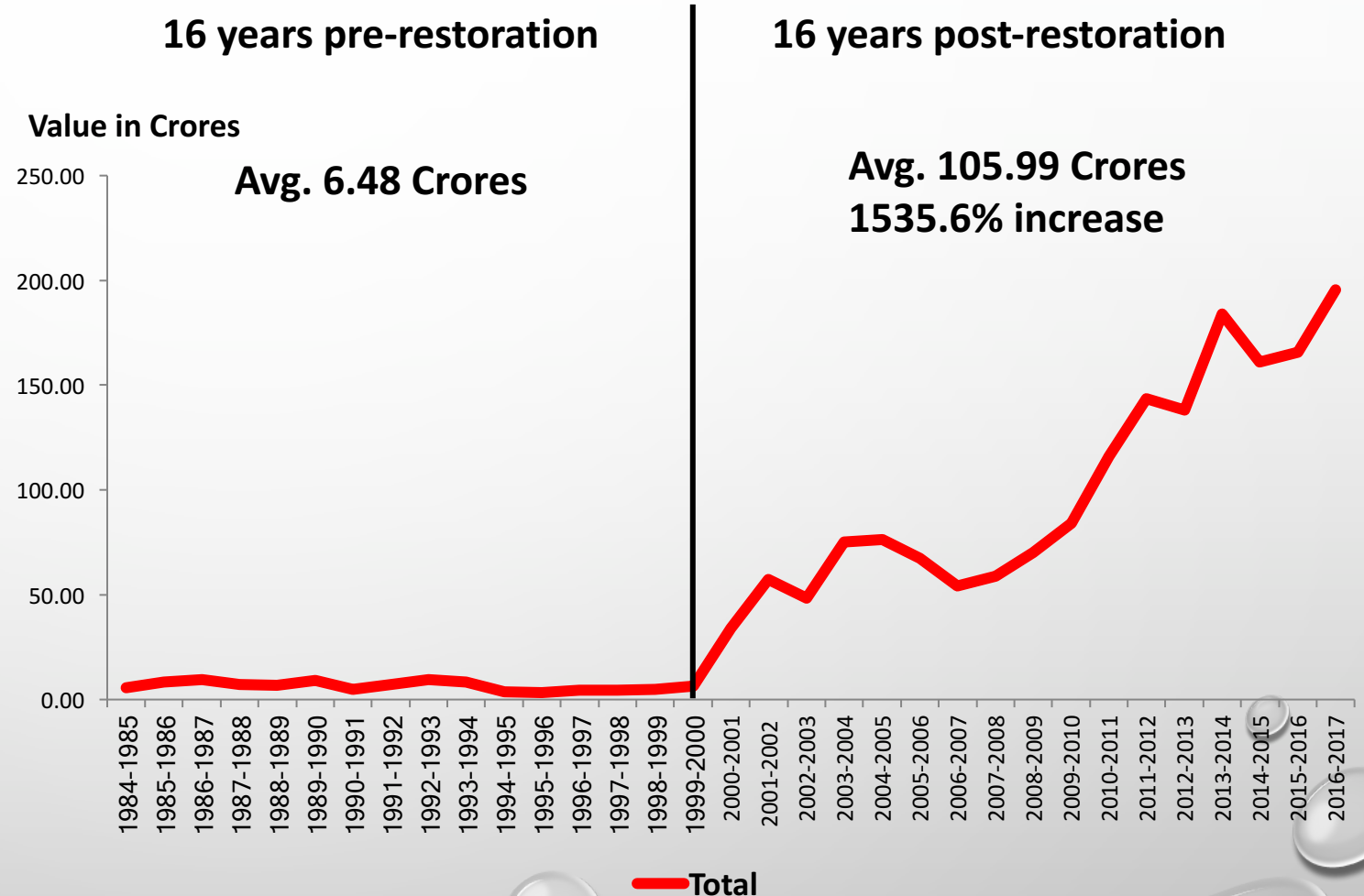


Fish catch and dolphin population (pre and post-restoration)

Dolphin population

Year	Population
1985	25(ZSI)
2004	70
2006	131
2007	135
2008	138
2009	146
2010	158
2011	156
2012	145
2013	152
2014	158
2015	144
2016	No census
2017	157

Fish Catch

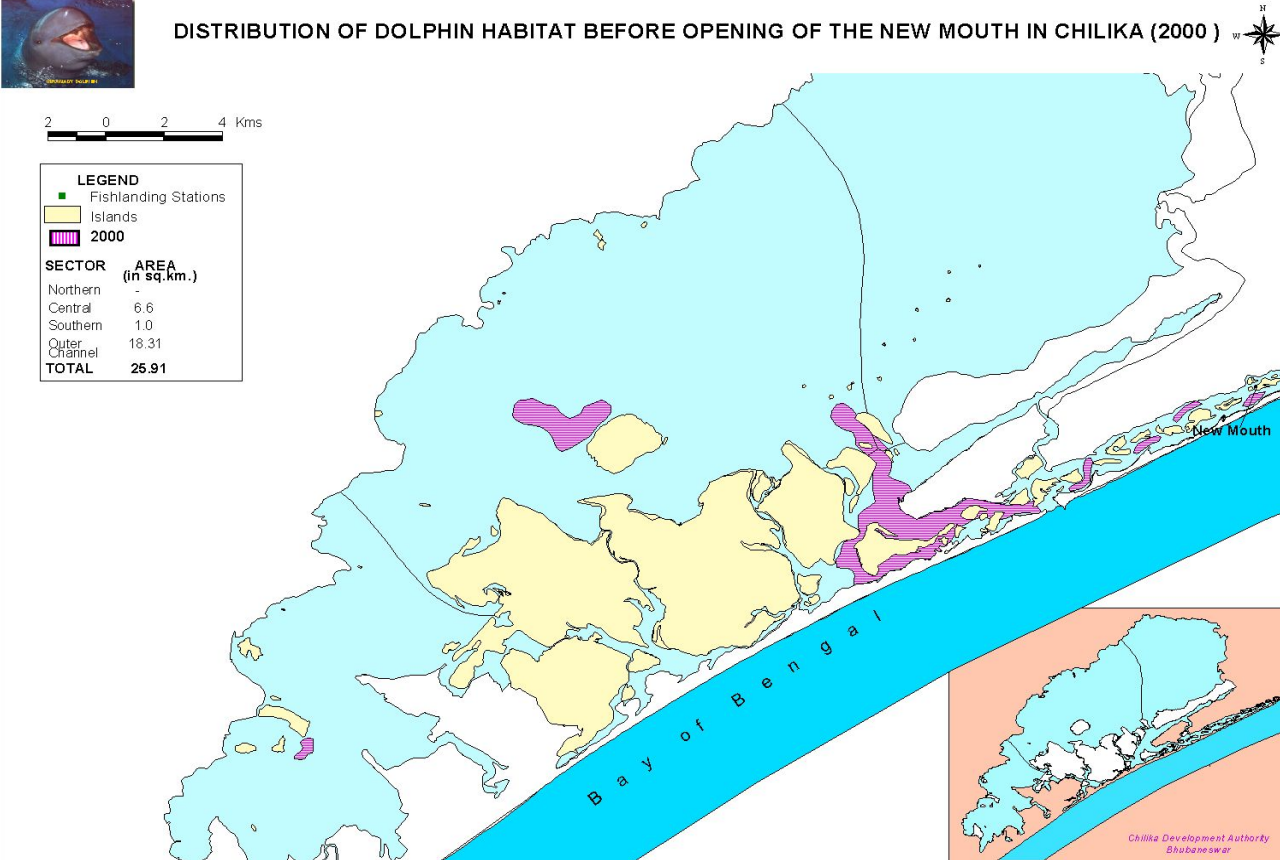


Restoration of lagoon and sustainable livelihood

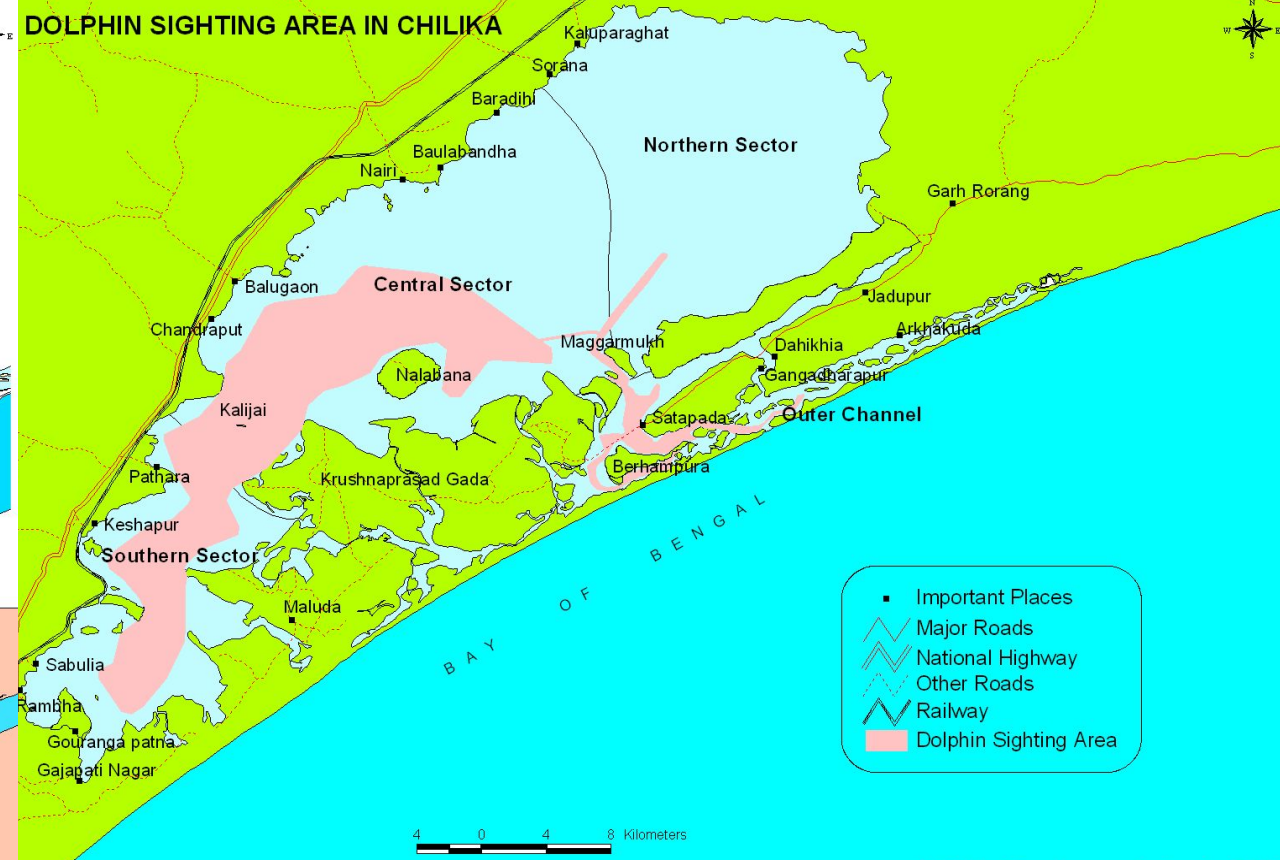
- After ecological restoration with the amelioration of biodiversity new opportunities created for community based ecotourism.
- As an alternative livelihood 1000 families from 17 fishers villages adopted dolphin based ecotourism.
- More than 1000 fishing boats are being used for dolphin watching by the local fishers. (Reducing pressure on fishery).
- To facilitate this ; capacity building of the local communities and infrastructure development is being done by CDA.
- The dolphin population in the lagoon steadily increased and the expansion of their habitat took place.



Expansion of Dolphin Habitat after Ecological Restoration



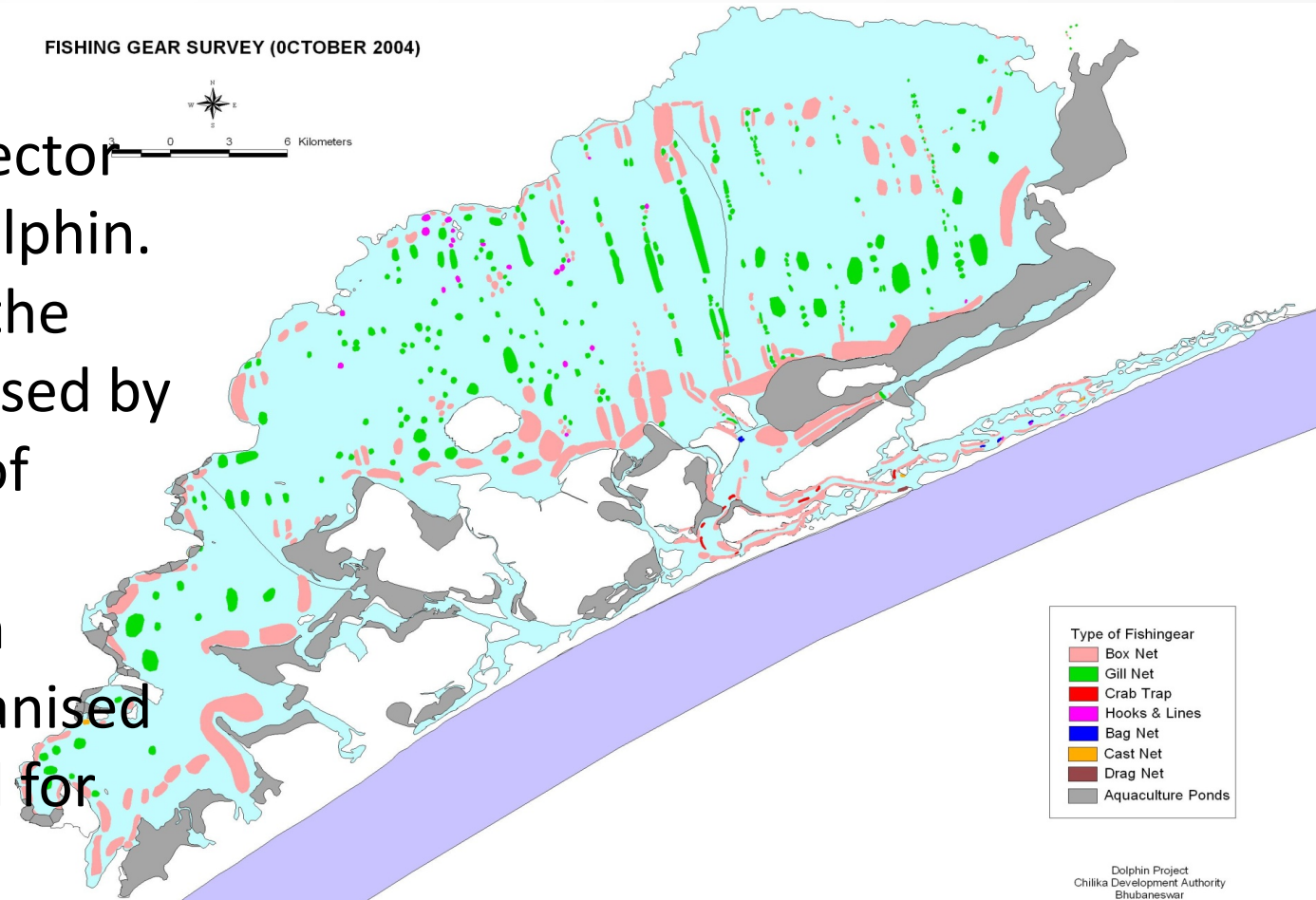
25.91 Sq Kms



183 Sq Kms

Threats

- Intentional killing is not reported so far from the lagoon .
- The high density of fishing nets and gears operated in the lagoon pose major threat to the dolphin population
- The gill nets operated along the outer channel, southern sector and central sector are identified as the major threat to dolphin.
- High density of fixed trap nets used in the lagoon along the route and channels used by dolphins obstruct the free movement of dolphins.
- One of the major threat to the dolphin population of Chilika is from the mechanised boats with long tail diesel engines used for dolphin watching and fishing.



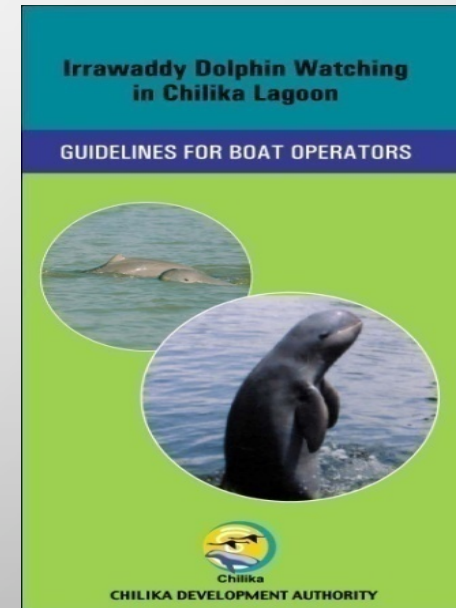
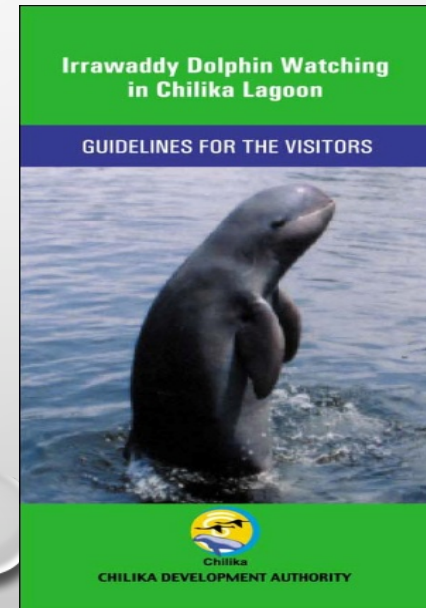
Measures to Mitigate the Threats to the Dolphin Population

- Orissa Marine Fishing Regulation Act, 1982 , OMFR Rules, 1983 for conservation of Chilika fisheries
- The use of the zero-net (net with fine mesh size) is also banned in the lagoon with effect from 2003 by the Fisheries and Animal Resources Department, Government of Odisha.
- Orissa Boat Rules, 2004
- Wildlife (protection) Act 1972
- By way of sensitizing fishers and boat operators conducting tourists for dolphin watching, the causality due to collision with mechanized boats and drowning by the gill nets is reduced.

Year	Population	Casualty
2006	131	4
2007	135	8
2008	138	6
2009	146	10
2010	158	01
2011	156	01
2012	145	01
2013	152	06
2014	158	06
2015	144	03
2016	No census	01
2017	157	01

Measures to mitigate the threats from boat traffic

- A dolphin watching protocol based on carrying capacity is developed by WII.
- Orientation training to the boatmen, professional nature guide training to educated youth was imparted in collaboration with the IITTM and the state Forest Department, for two weeks.
- Dolphin watching protocol for boat operators and visitors developed. Signage are installed at the visitor entry points.
- An enforcement team of wild life wing of Forest Department is constituted to patrol in routine manner, to ensure that the regulations are being followed.



Visitor center at Chilika

- CDA, have developed a visitor center at Satapada- a gateway to Chilika for dolphin watching.
- A number of educational materials ; like models, exhibits, panels and touch screens on Irrawaddy dolphin are displayed at the visitors centre at Satapada.
- Chilika lake is a striking example of how restoration of the ecological characters of a wetland can result not only in increased biodiversity, but also in a spectacular increase in lake productivity leading to significant livelihood security and other socio-economic benefits to the local population.

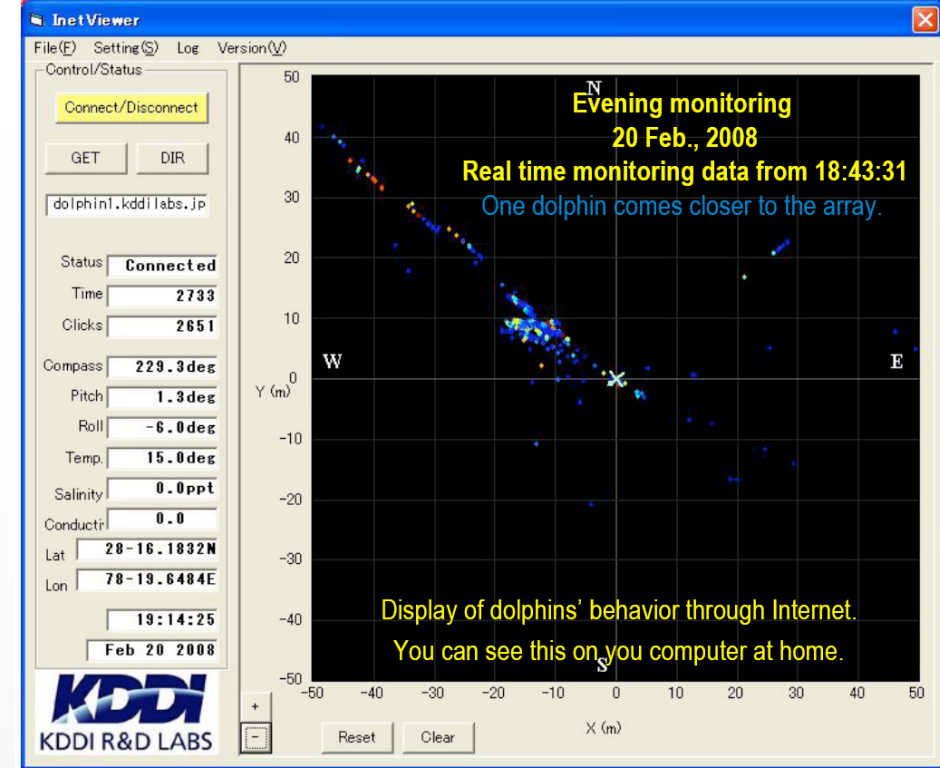


Studies & Research

- During past 17 years, there have been attempts to develop survey design and analytical methods for population estimation by CDA, that have significantly enhanced both understandings of Irrawaddy dolphin ecology and ability to assess and manage threats to their populations by CDA.
- However, still, there are significant knowledge gaps about the distribution, abundance, migration pattern, underwater behaviour and response to threat throughout their habitat in the lagoon.
- Their shallow, small population, fragmented distribution and cryptic behaviour make visual survey challenging, tedious, time-consuming and expensive, whereas passive acoustic monitoring of these cetaceans' is a non-invasive and potentially cost-effective method.

Under Water Acoustic Study

- Due to turbidity of the lagoon water there is limitation in study of underwater behaviour of Irrawaddy dolphin.
- For study of abundance and distribution of Irrawaddy dolphin populations in the lagoon using passive acoustic survey, CDA collaborated with KDDI R&D Lab of Tokyo University and WWF, India to develop an advanced underwater observation system.
- A customised array of 8 hydrophones along with an in-situ data capturing and storage system was developed to capture the clicks of Irrawaddy dolphin.
- The digital data captured could be used to interpret its underwater behaviour by use of the customised software.



Contd.

- The primary objective of this technology has been to bridge the gap of the limitation of visual observation and provide reliable data on the underwater behavior of the dolphin through the acoustic technology.
- The study is passive and noninvasive, so there is no adverse impact on the dolphins and the environment.
- This also helped in determining the response of the dolphin to the approaching objects like boats and the noise from the boat and other sources. Based on the outcome the dolphin watching protocol is developed.



WAY FORWARD

The successful restoration of the lagoon by CDA has catalysed a significant improvement in the habitat and prey base of the dolphin, which is exemplified by their increase in population. However, lots more to be done to secure the dolphin population of the lagoon. Some of the future steps proposed to be taken by CDA are as follows;

- Continue with the acoustic study to understand the underwater behaviour of the dolphin and their habitat in a more resolute manner.
- Sustainable monitoring and data analysis for understanding their current status, identify with all precession the threat to the population from tourism, fishery and other anthropogenic activities and enhance surveillance.
- Study the possible migration between the lagoon & the Bay of Bengal to ascertain whether dolphin population of the lagoon are isolated population or otherwise.
- Due to COVID 19 Pandemic, the tourism activities in lagoon is completely stopped for past 5 months. This provides an excellent opportunity to study the impact of tourism on the dolphin population of the lagoon.

THANK YOU FOR YOUR KIND
ATTENTION

