



ORISSA

**Turning Seas of Trouble into
Seas of Plenty**



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SUMMARY

ORISSA'S MARINE FISHERIES – A LOOMING CRISIS

Marine fisheries in Orissa today generate significant revenues for the state via exports and domestic trade, aside from providing employment and food security for a large and growing section of the population. In 2001, the earnings from Orissa's marine fish exports to other countries was valued at around Rs. 380 crores. Marine fish production in Orissa currently stands at around 125 thousand tonnes per annum, with over 4.5 lakh fisherfolk directly dependent on the sector for a livelihood, and more dependent through market linkages.

Given these facts, safeguarding this aspect of the state's economy and ensuring its long term sustainability is essential for the economic and social well-being of the state of Orissa.

In this context, there are worrying signs of an impending crisis in Orissa's marine fisheries:

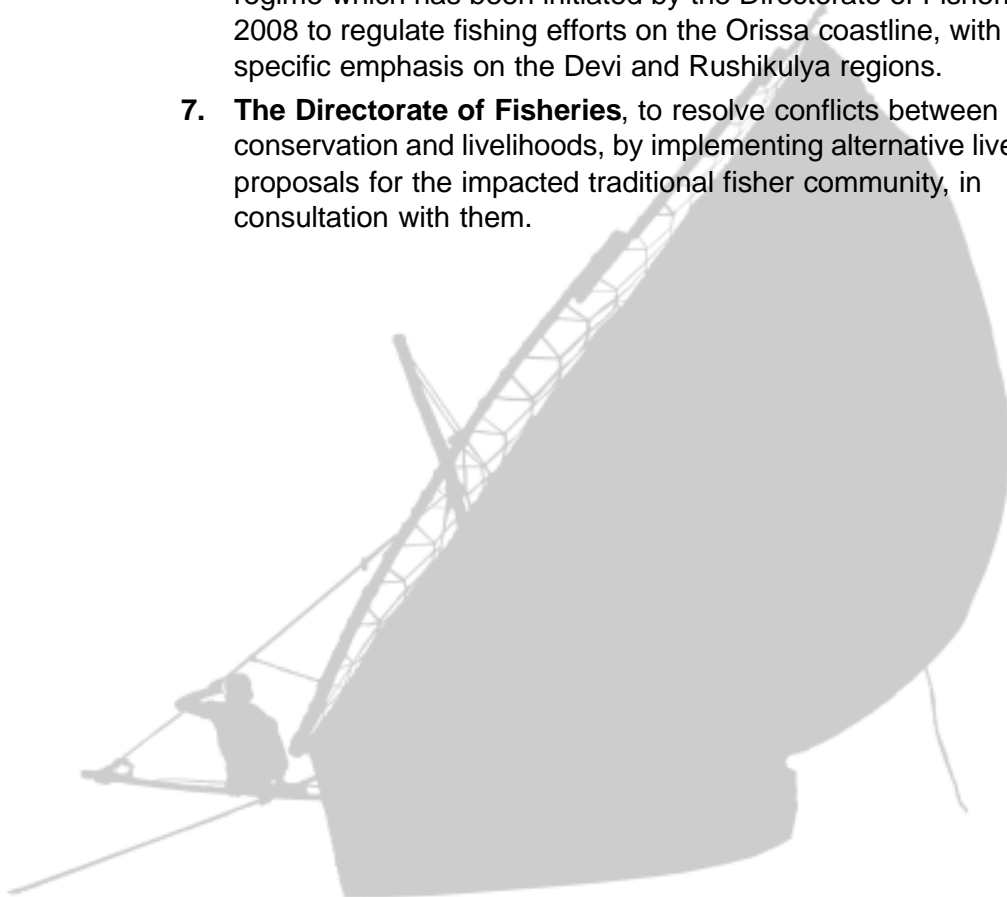
1. The number of mechanized boats has gone up by 250 percent in 25 years, from 692 in 1981 to 1,796 in 2004-05, thus reducing the area per fisher substantially. There is now a problem of over capacity in Orissa's fishing fleet.
2. From 1999 to date, there has been a plateauing or even marginal decline in the marine fish catch.
3. Some studies indicate that fish catch has steeply declined in the last decade¹ in terms of quantity, quality and variety. This is further validated through extensive anecdotal evidence collected across coastal marine fishing communities. In some regions, especially the South, communities estimate declines as high as 90% in comparison to previous decades².
4. There is poor adherence to the OMFRA Act, 1982, which prohibits trawling within 5 km. of the shoreline, reserving this area exclusively for the traditional fishers. As a result, fish catches in the traditional sector have been falling, and there has been a consistently high annual mortality of sea turtles, which congregate in the near shore waters every year between November and May. Measures taken to ensure the long term sustainability of Orissa's marine fisheries and safeguard traditional fishing livelihoods by enforcement of OMFRA will also have the benefit of reducing the mortality of sea turtles.

In this regard, Greenpeace is urging:

1. **The Department of Forests, Government of Orissa** to enable effective patrolling by expediting the process of procuring and crewing sea-worthy vessels, fundamental for marine patrolling. The process of marine patrolling should include two independent observers – a representative of the traditional fishworkers forum and a member from a local conservation organisation.
2. **The Department of Forests (Wildlife)** to commit to annual, progressively depreciating targets for turtle mortality reduction, as a measure of the effectiveness of its ongoing efforts, as elaborated on page 13.



3. **The Department of Forests (Wildlife)**, for greater transparency in its annual turtle mortality census. This should be conducted periodically through the turtle season with independent observers from local conservation organisations, in order to enable objective evaluation of mortality reduction efforts.
4. **The State Finance Ministry, Government of Orissa**, to constitute a separate budget head for the exclusive purpose of turtle protection and conservation. This would ensure that the funds are available for the concerned departments to implement their responsibilities effectively. As per a Greenpeace estimate in 2007, this would amount to a one time allocation of Rs. 2.02 crores and a recurring annual investment of Rs. 70 lakhs. Refer www.greenpeace.org/india/press/reports/orissa-turtle-package
5. **The Ministry of Environment and Forests** to extend adequate resource support to the Orissa Department of Forests – Wildlife, with the creation of a separate budget head for sea turtle conservation measures. Creation of this resource support on a consistent basis will increase accountability from the state government authorities.
6. **The Directorate of Fisheries**, to ensure effective enforcement of OMFRA. Greenpeace acknowledges and commends the patrolling regime which has been initiated by the Directorate of Fisheries in 2008 to regulate fishing efforts on the Orissa coastline, with specific emphasis on the Devi and Rushikulya regions.
7. **The Directorate of Fisheries**, to resolve conflicts between conservation and livelihoods, by implementing alternative livelihood proposals for the impacted traditional fisher community, in consultation with them.



BACKGROUND

The coast of Orissa forms a highly complex yet dynamic ecosystem, comprising of wetlands, deltas, mangroves and mudflats. Orissa is home to a high diversity of marine and aquatic life, with estuarine crocodiles, fresh and brackish water terrapins, dolphins, porpoises and the endangered sea turtles.

Orissa's marine and coastal ecosystems also support and sustain the livelihoods of thousands of fishing families. Orissa's 480 km coastline spreads across six districts – Balasore, Bhadrak, Kendrapara, Jagatsinghpur, Puri and Ganjam. The poorer fishing communities, those from the traditional sector, are experiencing a decline in their catch mainly due to over-harvesting of marine resources and destructive practices such as trawling.

Orissa supports three of the world's most important mass nesting beaches for the Olive Ridley Sea Turtle. Almost half a million turtles nest here annually, between January and March, at the Gahirmatha and Rushikulya beaches. The Devi River Mouth region is a former mass nesting site which still witnesses significant turtle congregations and sporadic nesting of high densities.

Orissa and the Olive Ridley Turtle

Of eight species of marine turtles globally, four occur in the coastal waters of Orissa. These are the Leatherback, the Green, the Hawksbill and the Olive Ridley, of which the Olive Ridley is the most common.

The study of Olive Ridley genetics along the east coast has thrown up indications that this population may be the source for all contemporary ridley populations. This makes this population vital from a global evolutionary perspective.³ Olive Ridleys begin to congregate off the coast of Orissa by November, males probably arriving first. Mating takes place in shallow coastal waters. Most mating is over by mid-January and the males begin to depart. The females then form huge aggregations, known as 'reproductive patches', in the coastal waters, before coming ashore to nest, usually on the neap tide at night.



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FISHERIES MANAGEMENT IN ORISSA WILL BENEFIT BOTH ARTISANAL FISHING COMMUNITIES AND THE OLIVE RIDLEY TURTLE

In Orissa, mechanized fisheries and trawling in particular are having a serious impact on Olive Ridley turtles. According to government estimates, mortalities have declined from 13,575 in 1997-1998 to 3,242 in 2006-2007⁴. However, independent mortality census studies suggest that turtle mortalities continue to remain in the range of 10,000 to 15,000 turtles every year across the coast of Orissa. This amounts to over 100,000 dead turtles washed ashore in the last 10 years. It is reasonable to expect the total turtle mortality to be significantly higher as all carcasses would not wash ashore. These deaths are caused by drowning in fishing nets, mainly trawl nets, due to illegal fishing in restricted areas, particularly trawling within 5 km. of the coastline. The continuing death toll is essentially due to the lack of enforcement of existing laws and regulations, including OMFRA.

In addition to this visible threat, the threat posed to the turtles and the larger environment through coastal infrastructural projects such as large ports and off-shore oil explorations is a matter of serious concern. The construction of ports in the close proximity of protected areas and turtle nesting beaches and foraging areas could result in serious long term damage to the viability of the coast for this species.

ORISSA'S MARINE FISHERIES

The coast of Orissa traverses six districts, Balasore (80 km), Bhadrak (50 km), Kendrapara (68 km), Jagatsinghpur (67 km), Puri (155 km) and Ganjam (60 km) (DOF, 1998: 61). While covering just 14.5% of the total land area, the coastal region constitutes nearly 30% of the total population of the state, with an average population density of more than twice the state as a whole⁵. Marine Fish catch from Orissa contributes to 3% of India's total marine catch⁶.

Some of the salient features include:

There are 641 marine fishing villages spread across the six coastal districts.

The total marine fisherfolk population in Orissa is 450,391 (mechanised and non-mechanised) of which active fishermen are estimated at around 1.2 Lakhs.

The total number of marine fishing craft stands at 23,740 of which 3577 are mechanized (Trawlers, Gill-Netters, Dol-Netters, Purse Seiners, Liners and others) and 20,163 are Non-Mechanised (Motorised and Non-Motorised)⁷.

Current Status

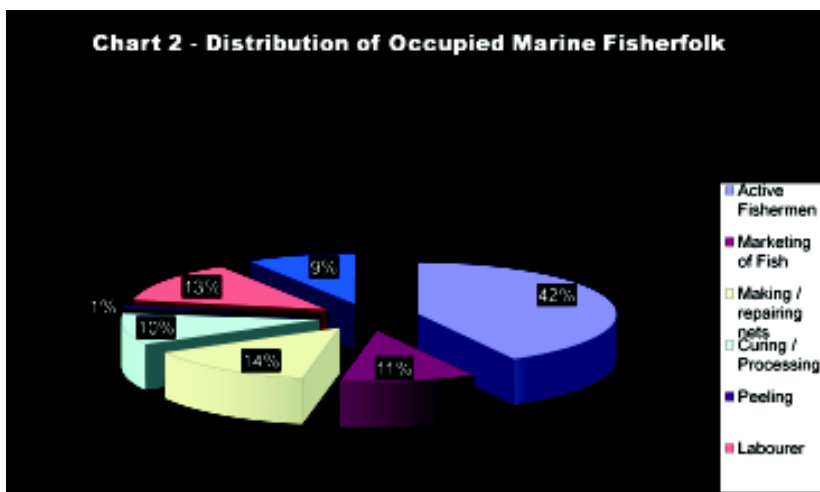
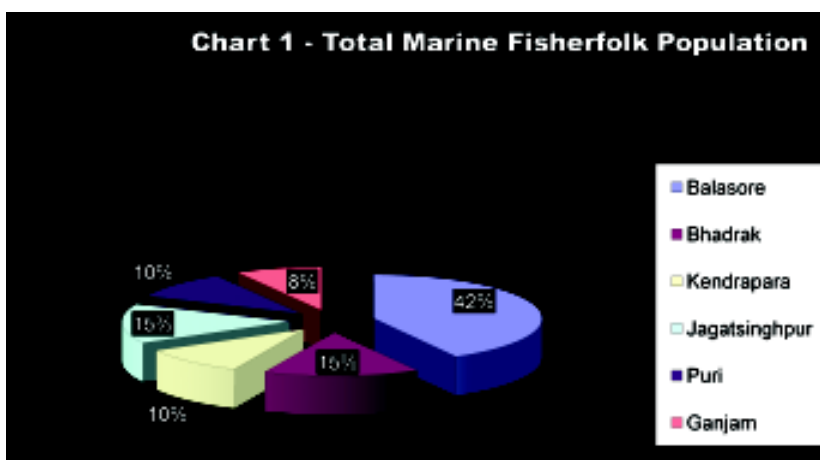
Almost all marine fisheries capture is from the coastal waters in Orissa, while deeper waters remain untouched, except for occasional cases of Illegal, Unregulated and Unreported fishing in the EEZ. From 1985, marine fish production rose from 53.6 thousand tonnes to around 133.5 thousand tonnes by 1997. By 2001, this declined to around 125 thousand tonnes, where the yields seemed to have plateaued.¹⁰

In the same period, the size of the fishing fleet has gone up substantially in relation to fisher population. Mechanized boats have gone up in number by 250 percent in 25 years (from 692 in 1981 to 1,796 in 2004-05) while non-mechanised and non-motorised boats have fallen in numbers from around 6000 in 1975-76 to around 4000 in 2005¹¹.

IMPORTANCE OF FISHERIES TO THE STATE

Food Security

The marine fish consumption within the state is a little less than 50% of the total catch. Marine fish consumption rose by a factor of 285% in a



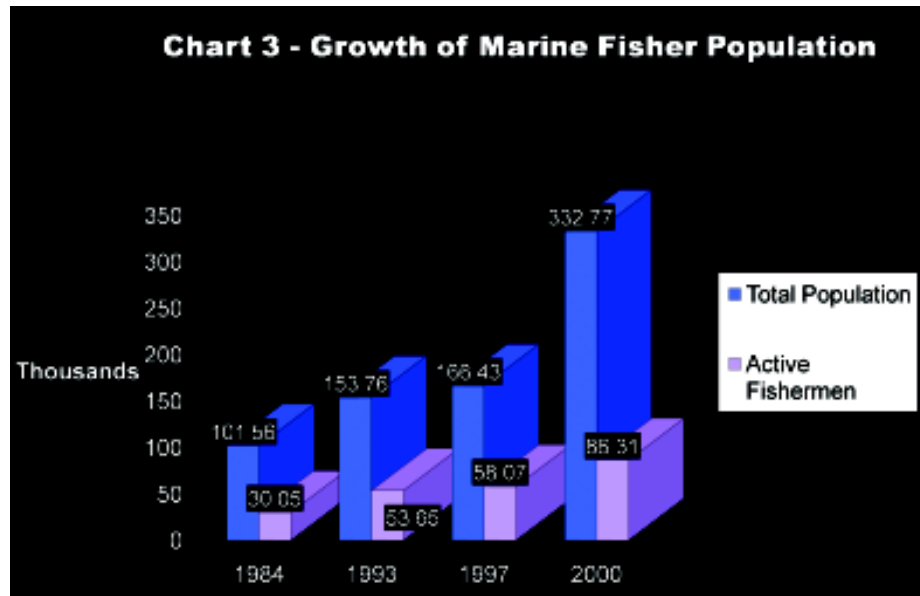
The distribution of fisher population across the six districts is as illustrated in Chart 1 and Chart 2⁸.

span of 10 years, from 1986 to 1997¹². The cost of marine fish has grown less rapidly in comparison to other non-vegetable sources of protein. There are strong indications which suggest that the relative affordability of marine fish has made it the prime source of nutrition in the coastal zone¹³. This is further vindicated by the growth in per capita consumption of marine fish from around 2.85 kg in 1986 to around 8.60 until around 1999¹⁴.

The Economics of Marine Fisheries

While the contribution of marine fisheries to the state domestic product has been consistently growing, available reports indicate that quantities exported from Orissa have begun to stagnate and even decline after

Chart 3 summarises the increase in marine fisher population between the years 1984 and 2000⁹.



previously registering a sizeable growth (Chart 4). In 2001, the earnings from exports to other countries was valued at around Rs. 3,800 Million (around 30%)¹⁵ from a previous value of around Rs. 900 Million (24% of the total production), which strongly suggests that marine fisheries exports are increasingly important for the State's economy.

Decline in Marine Fisheries

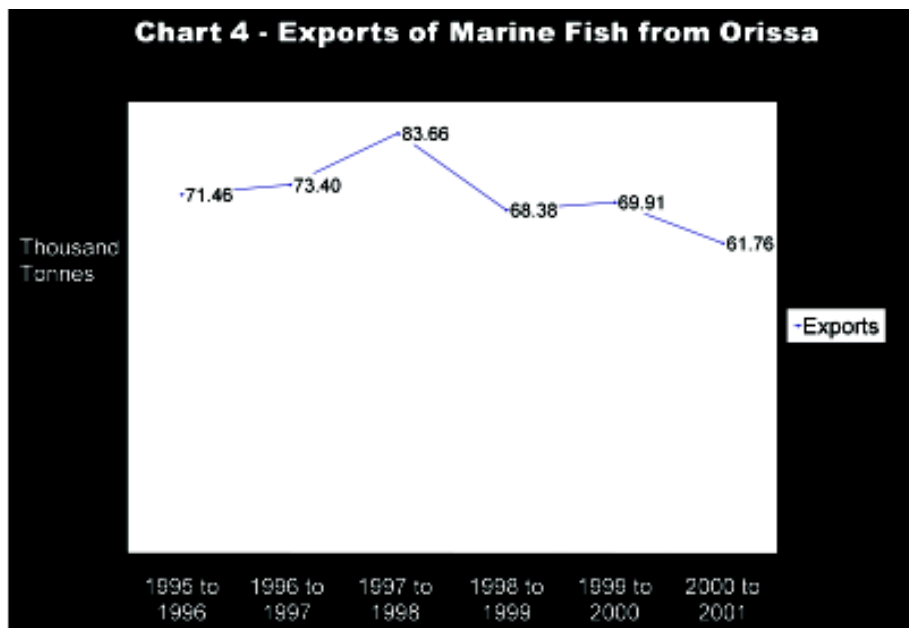
The Bay of Bengal Programme, on the basis estimates by the Fisheries Survey of India (FSI) identified a maximum sustainable yield up to a depth of 200 metres of 161,000 tonnes¹⁶. On the basis of these estimates, it could be said that the current marine fisheries production in Orissa is at about 80% of the sustainability or threshold index identified. Chart 5 highlights the growth, and eventual plateauing and in fact marginal decline of marine fisheries in Orissa.

Analysis

On the basis of data available, it is evident that marine fisheries in Orissa have reached a stage of stagnation and possible decline¹⁷.

Studies¹⁸ reveal the decline or total disappearance of some species that were once widely prevalent. While some of these changes are specific to particular locations, there are a number of species that appear to have declined uniformly across the state. That the declining species are often from commercially important categories indicates that overfishing and poor enforcement of the Orissa Marine Fisheries Regulation Act are prime contributing factors¹⁹. Further, information made available through elaborate studies indicate that fish catch has steeply declined in the last decade²⁰. This includes a steep decline in availability of fish in terms of quantity, quality and variety. This is further validated through extensive anecdotal evidence collected across coastal marine fishing communities, on the basis of their experiences. In some regions, especially the South, communities estimate declines as high as 90% in comparison to previous decades²¹.

While there are several reasons for this situation, the primary driver is a result of sectoral conflicts, which manifests when a fishing ground is targeted both by traditional and mechanized fishers. The other cause for the current situation arises from over-capitalization. The increase in demand for seafood and the rise in prices have contributed to the recruitment of new fishers into the industry, and the introduction of many



more vessels. The current catching capacity of the fishing fleets in Indian waters far exceeds that required for biologically sustainable catches from most commercial stocks,²² and this pattern is also prevalent in Orissa. With the Government encouraging mechanization the number of crafts have increased significantly, resulting in the area per fisher falling substantially²³. Lastly, overexploitation and overfishing via growth overfishing,²⁴ and recruitment overfishing²⁵ are instrumental for this decline as well.

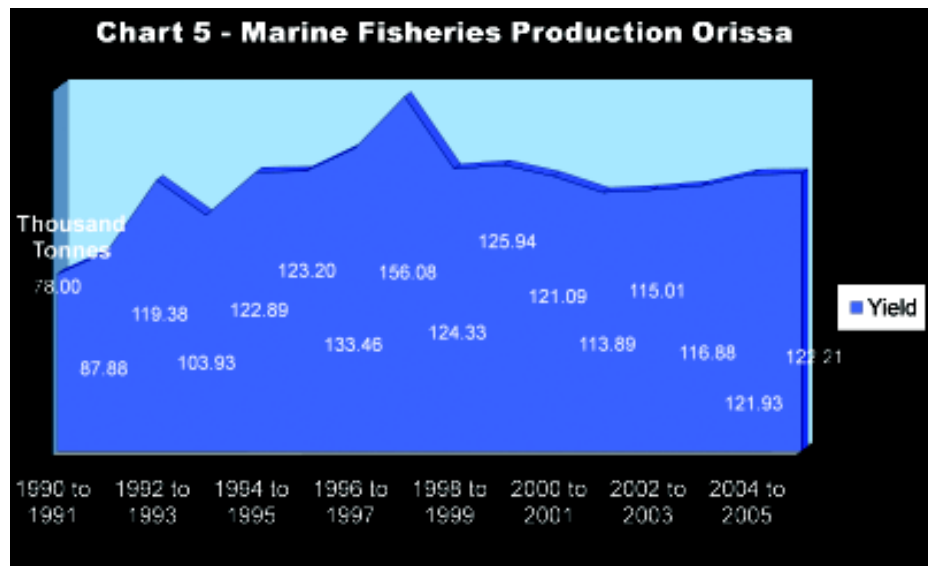
In general, to address the above threats Marine Fishery Regulation Acts were put in place. However, while the Government of Orissa had the foresight to introduce the Orissa Marine Fisheries Regulation Act (OMFRA), in 1982, which reserves near-shore waters up to 5 km from the shoreline exclusively for the traditional fishers, the much required implementation and enforcement of this measure has been poor or absent since its inception.

Social Impacts of Declining Fisheries

Catch declines have affected the entire fisheries sector, but the traditional segment, which supports the largest population, has been worst hit. The duration of fishing expeditions, distances traveled in search of fish and expenses for a given quantity of fish have all increased. Other perceived impacts include increased movements out of the fishing sector, growing unemployment, degradation of habitat, the pursuit of destructive or illegal activities, growing poverty, reduced food security and marginalization of livelihoods²⁶.

Given the vulnerability of fisher communities, particularly traditional fishers, it is critical that the Government of Orissa and the Directorate of Fisheries ensure that the OMFRA is enforced to the best extent possible. In 2008, the Directorate of Fisheries deployed two newly acquired patrol boats to operate in the North (based at Dhamra) and South (based at Paradip), in keeping with an order passed by the Supreme Court constituted Central Empowered Committee in 2004. This patrolling, if undertaken on a regular basis, will go a long way to redressing the situation of illegal trawling in near-shore waters.

Simultaneously, it is important for the Fisheries Department to reassess the State's marine resources, governed by the ecosystem approach, to



ensure sustainability and availability of fish stocks for this and future generations. In enforcing the above, there are significant gains for Orissa, given the high economic incentives the fisheries sector provides.

Legislative Framework – Policy and Measures

Some of the key measures for conservation and management of resources include:

- i. The Olive Ridley, like all other species of sea turtles, is protected in India under Schedule I of the Wildlife Protection Act, 1972, which mandates its protection status on par with the tiger.
- ii. The Gahirmatha Marine Sanctuary was formulated and declared under the WPA, in 1998, as a measure to conserve the turtles.
- iii. The Orissa Marine Fisheries Regulation Act, introduced in 1982, reserves near-shore waters up to 5 km from the shoreline exclusively for the traditional fishers, which prohibits trawling in the near-shore waters. This act was introduced primarily as fisheries management measure, to also protect the livelihoods of the traditional sector. However, implementation of OMFRA would also see a substantial reduction in turtle mortalities, as most turtle aggregations occur within 5 km. of the coastline, where illegal trawling takes a heavy toll.
- iv. The Central Empowered Committee (CEC) constituted by the Supreme Court of India passed several orders in April 2004, which included a distributed access system for different fisher crafts and sectors in the Devi and Rushikulya regions. Importantly, these seasonal restrictions on fishing in the Devi and Rushikulya areas (between November-May) did not prohibit small-scale, non-motorized traditional fishermen and was to act as a measure to benefit this poorest section of the fishing community. Motorized craft were directed to remain outside 5 km from the shore, while trawlers were to remain 20 km. away. Further, the CEC stated that mechanisms of conservation need to be participatory, involving fishermen.

YEAR	ORDERS/ LAWS/ DIRECTIVES	OUTCOMES (AS OF NOVEMBER 2008)
1984 onwards	Government of Orissa : Orissa Marine Fisheries Regulation Act directing effective Patrolling and stringent implementation of no trawling zones	Effective regulation of fishing efforts has been sporadic at best. In 2008, the Fisheries department has acquired and it is hoped that the agency will patrol the coastline in seriousness, protecting the near-shore waters, which are traditional fisher grounds
1998	Declaration of the Gahirmatha Marine Sanctuary (GMS - no fishing within the sanctuary) by state government	Trawling continues to take place illegally. The Forest Department has not been equipped with adequate resources (boats and personnel) for effective enforcement.
1998	Government of Orissa : Constitution of state level High Power Committee for Olive Ridley Turtles to discuss, recommend, assess and revise plans for turtle conservation in the state	Inadequate Implementation of recommendations made by the Committee on an annual basis.
2002	Government Notification : Compulsory use of TEDs and cancellation of licenses of offending trawlers	Most trawlers do not use TEDs
2002-03	High Power Committee : Mortality census records to evaluate turtle conservation efforts	The official government maintained data is contested by independent estimates, with huge variances between the government and independent estimates
2002-03	Orissa High Court : Specific budget heads for turtle protection and conservation by both State and central government	No compliance or action on this as yet
2004	CEC Orders and Guidelines in April 2004 including i. Demarcation of the GMS ii. Recognise right of passage of traditional fisher communities through the GMS. iii. Enforcing no-fishing in GMS and regulating fishing efforts, especially Trawling, at Devi iv. Compensation of impacted traditional fishermen v. Acquisition of patrol boats for effective patrolling. vi. Armed police personnel to be permanently stationed at Gahirmatha, Devi & Rushikulya	i. The GMS is yet to be demarcated as of 2008 ii. Conflicts on passage and hardship to local traditional fisher communities prevail iii. Fishing Violations within GMS continue and trawling in the close proximity of the shore at Devi continues unabated iv. While a savings-cum-relief scheme has been created, implementation has been irregular. An alternative livelihood report has recently been concluded by the Government, and it is hoped that this process will be expedited v. While the fisheries department has acquired two patrol boats in 2008, the Forest Department is yet to acquire patrol boats. vi. Has not been initiated.



RECOMMENDATIONS

Given the current situation, Greenpeace is urging that:

1. **The Department of Forests, Government of Orissa** to enable effective patrolling by expediting the process of procuring and crewing sea-worthy vessels, fundamental for marine patrolling. The process of marine patrolling should include two independent observers – a representative of the traditional Fishworkers Forum and a member from a local conservation organisation.
2. **The Department of Forests (Wildlife)** to commit to annually and progressively depreciating targets for turtle mortality reduction, as a measure of the effectiveness of its ongoing efforts.
3. **The Department of Forests (Wildlife)** to be transparent in the process of maintaining a turtle mortality census, conducted periodically through the turtle season with independent observers, in order to enable an objective evaluation of the success of mortality reduction efforts.
4. **The State Finance Ministry, Government of Orissa**, to constitute a separate budget head for the exclusive purpose of turtle protection and conservation. This would ensure that the funds are available for the concerned departments to implement their responsibilities effectively.
5. **The Ministry of Environment and Forests** to extend adequate resource support to the Orissa Department of Forests – Wildlife, with the creation of a separate budget head for sea turtle conservation measures. Creation of this resource support on a consistent basis will increase accountability from the state government authorities.
6. **The Directorate of Fisheries**, to ensure effective enforcement of OMFRA. Greenpeace commends the patrolling regime which has been initiated by the Directorate of Fisheries in 2008 to regulate fishing efforts on the Orissa coastline, with specific emphasis on the Devi and Rushikulya regions.
7. **The Directorate of Fisheries**, to resolve the current perceived conflicts on conservation and livelihoods, by expediting the process of implementing an alternative livelihood proposal for members of the impacted traditional fisher community, in partnership with them.
8. **The Department of Forests and Directorate of Fisheries** should include and involve the fisher communities especially the marginalised traditional fishermen in the decision making and implementation process on management and conservation measures. By alienating fishermen and local organisations from this process, the government has virtually assumed the entire burden of implementation, a huge task that it cannot adequately carry out on its own.

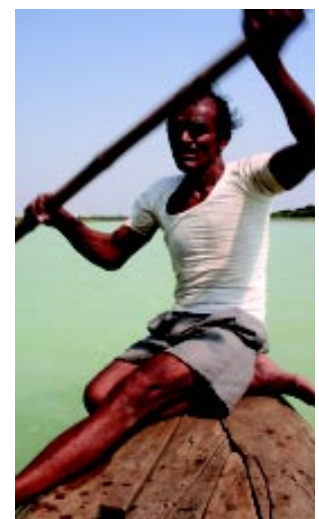
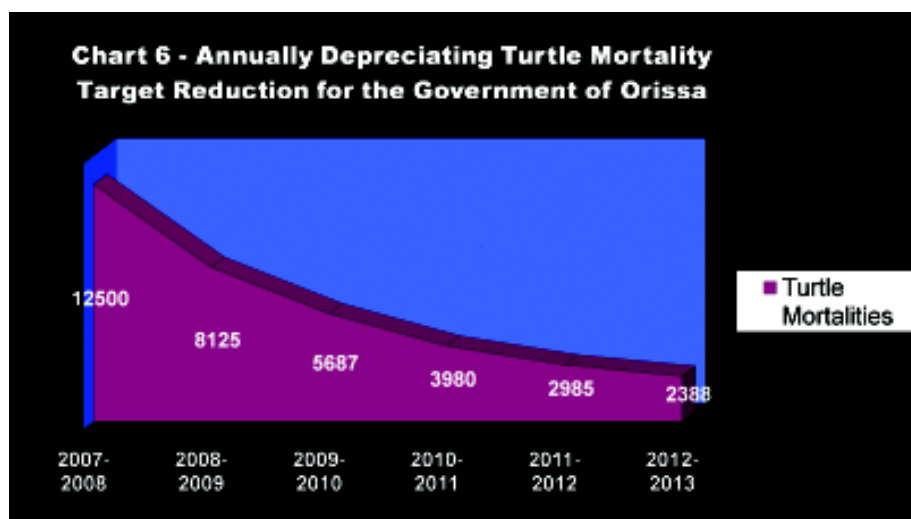
Evaluative Indicators of conservation efforts

The management of Orissa's marine fish resources and the conservation of the Olive Ridley Turtle are closely interconnected. A greater recognition of the "ecosystem approach" is required by the two main agencies responsible for these twin objectives - the Directorate of Fisheries and the Department of Forests (Wildlife). This approach requires consideration of whole ecosystems, and all the species which inhabit them, at a scale that ensures that ecosystem integrity is maintained. This would mandate recognition of the complex interactions between species that make up the marine ecosystem.

Given this interconnected nature, from a conservation and management perspective, a reduction in turtle mortality will be a visible indicator of the efficacy of the conservation and management efforts of state government agencies. While Government estimates of mortalities suggest a decline from 13,575 in 1997-1998 to 3,242 in 2006-2007, independent mortality census studies suggest a continuing trend of turtle mortalities in the range of 10,000 to 15,000 turtles every year across the state's coastline²⁷. While reduction of turtle mortalities to zero is impractical, a reduction from the current annual average of 12,500 plus is vital.

Greenpeace believes that the Government of Orissa and the Wildlife Department in particular should commit to an annually depreciating turtle mortality reduction target, as an evaluative indicator of its conservation efforts. Spanning across five years, this would mean:

- i. One could base these targets on the prevailing mortality estimates (12,500) and aim to gradually reduce the number of turtle deaths to less than 3000 in five years.
- ii. Starting this season, if the government/ forest department commits itself to reducing the turtle mortality by 35% it would effectively mean active and stringent patrolling resulting in a reduced mortality count of 8125 along the entire coast of Orissa.
- iii. If the forest and fisheries departments commit to a further mortality reduction of 30% for the 2009-10 season, it would



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- mean a total number of 5687 dead turtles.
- iv. A further 30% mortality reduction in the season from 2010-2011 will see turtle mortalities brought down to 3980.
 - v. In 2011-12, a further 25% reduction will bring mortalities down to 2985
 - vi. An additional 20% mortality reduction would mean 2388 dead turtles in 2012-13 by 20%.

There is an obvious and huge disparity between the current forest department mortality numbers and those by independent NGOs and observers, which needs to be resolved for the above targets to be meaningful. This can only be done by the inclusion of independent observers, in partnership with the Forest Department, in the process of maintaining an annual mortality census.

The steps laid out above would involve substantial effort and involvement on the part of the state government and its departments. But this is by no means an impossible task. Considering the immense biological wealth that is at stake, it is certainly vital, urgent and inevitable if Orissa's seas are to be restored and conserved for this and future generations.

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17. Refer to “Chart 5 – Marine Fisheries Production Orissa” : Directorate of Fisheries, Government of Orissa.
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23. Vivekanandan, *et al.*, 2003
24. Growth overfishing refers to a situation when different sectors of fisheries use smaller mesh sizes in order to maximise catches. As a result, small fish, juveniles and sometimes eggs are caught in the process. Such growth overfishing (fish caught before having a chance to grow to full size) is done by both mechanized and non mechanized sectors, though especially prevalent in the mechanized sector.
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