Marine Turtles of India
Part 6

CONSERVATION PROGRAMMES
AND MARINE TURTLES

CHILDREN RELEASING HATCHLINGS (PHOTO: KARTIK SHANKER)
Community-based Conservation of Sea Turtle Nesting Sites in India: Some Case Studies

Roshni Kutty

In recent decades, some conservationists have advocated a shift in approach from government-managed park systems to a broader, more inclusive, community-based paradigm. Some local communities, non government organisations, and state and national governments have suggested that although national parks and other officially designated areas are important contributors, they alone cannot achieve effective natural and cultural heritage conservation, especially in a highly populated country like India. In response, the approach to conservation is undergoing a shift in both conceptual framework as well as in practice. The two case studies below illustrate innovations in conservation practice and promising steps in this direction. Although they are not within official protected areas, the examples demonstrate what can be achieved by a motivated community. Unfortunately, skeptical policy makers and practitioners question the viability of the concept itself which could lead to its abandonment. Although community conservation may not be a panacea, people and conservation can no longer be separated. Responsible authority needs to be devolved to ensure that benefits from conservation outweigh costs to communities, and that community conservation becomes firmly entrenched in national land use and conservation strategies.

Wildlife conservation has largely ignored the human component of conservation—the section of human population that is as dependent on natural resources as the wild animals that conservationists seek to protect. Only recently have conservationists realised the need to address the issues of stakeholders who have as much right to these resources as wildlife. The right to resources and achieving conservation goals are two interconnected philosophies.
Community-based conservation (CBC) can be defined as a process of conservation of natural resources where communities have a key or significant role in the decision-making process. This role could range from a consultative role for communities with management carried out by state or private agencies, to absolute control by communities over management functions, decision making and conservation responsibilities (Kothari et al 2000). CBC, or more accurately community natural resource management, can be viewed as a modern attempt to revive established and traditional local and indigenous cultural and institutional mechanisms for managing and conserving the natural environment.

The reality for much of the world, however, is that many traditional practices for regulating nature have been eroded as a consequence of expanding markets, industrialisation, urbanisation, state control, economic globalisation and profound alterations in property rights, lifestyles and consumption patterns (Kellert et al 2000). Advocacy of community conservation is driven by several perceived factors—the impotence of most state agencies to manage protected areas, the potential for cost-effective local management, use of informal social sanctions, the value of local knowledge about ecological dynamics and the enhanced motivation to conserve natural resources if it brings economic benefits. Community conservation is about finding a balance between biodiversity management and the improvement of local people’s livelihood security. Today, growing human populations with high expectations are becoming increasingly dependent on a small and shrinking natural resource base. In this context, it is inevitable that short term and immediate conflicts between the imperatives of conservation and livelihood security will emerge (Barrow and Fabricus 2002).

Traditional rights and responsibilities exist as unwritten, even implicit, understanding at the community level, which are rarely reflected in the legal structures of modern states. In present times, rural people are caught between traditional-valued culture and consumer-oriented social pressures. These societies are exposed to unprecedented alterations in lifestyle along with an ever-increasing human population. This has resulted in increasing pressure on any natural resource base on which they rely. As a result, traditional practices may seem inappropriate to present situations and hence there is a rejection and consequent loss of traditional knowledge, a knowledge which can help guide the sustainable use of natural resources (Frazier 1999).

This chapter describes community initiatives for the conservation of sea turtles in two states, Goa and Kerala, both of which were initiated by the local community without facilitation from external agencies. It also explores the possibility of a community participatory management plan in a turtle mass-nesting site in Orissa, which is not an official protected area.

In this chapter, a local community is defined as a group of human people which meet with more than one of the following criteria:

(i) share the same geographical area,
(ii) have cultural linkages with the area being conserved, and
(iii) have the biggest stake in the conservation and utilisation of natural resources.
Methods

The study was carried out over a period of one year in 2000–01. Field visits of four days to a week were conducted in Goa, Kerala and Orissa. Subsequently, the Kerala site was revisited and studied for another week, after a gap of seven months, to obtain more details on the threats facing this site, based on a request for help from the local community. During visits to each field site, interviews were conducted with the forest department and other relevant government officials, as well as with members of NGOs who were active in that study area. The interviews were unstructured and informal. Further information was collected by post or through email (where available). Study material and official documents were collected from other government departments either by the author, research assistants and other local persons. Most importantly, discussions were held with local community members. Well-known local activists helped to establish contact with local communities. Slide shows were conducted by the author to introduce the objective of work in their area, verify credentials and win the trust of the community. Since the local community in Kerala was fighting a legal battle that affected the nesting site, details were collected from the lawyer representing the community’s interests in the Kerala High Court. Material collected by the author was also used in the litigation. Joint meetings were conducted with NGOs and community representatives to discuss common issues and help plan conservation at the site.

For Orissa, a research assistant fluent in the local language was appointed to collect data on the study site. This included a socio-economic survey of the village with the help of a local NGO (United Artists Association), anganwadi workers and the villagers of the three hamlets. The compilation of this database was carried out over a period of three months. During this period, the research assistant also consulted several libraries for verification of data as well as to get official figures. The second Orissa field trip was conducted for one month. Informal interviews were conducted with several government officials and maps and other relevant documents were collected. Industries located near the Rushikulya river mouth were also visited to explore the situation with regard to lighting of the coast during the turtle nesting period. Village meetings were held separately with the three fishing hamlets. Participants of the village meetings consisted mostly of the kulo members of that village (which implies nearly all the fishing members of that village). Women were conspicuous by their absence. Separate meetings with the women were not successful.

Discussions with all the stakeholders finally culminated in a joint meeting at Gokhurkuda village on 30 July 2001. The meeting was specifically kept informal so that the villagers would be comfortable. Identified problems and solutions were charted to form the CBC plan for Rushikulya. It was envisaged that keeping to this method would ensure that the CBC plan would involve the participation of all identified stakeholders.


2 Kulo refers to the committee of adult fishermen in each village. This committee resolves dispute among the fishermen and decides where the village will fish the next day.
Case Study 1: Morjim Beach, North Goa

Olive ridley turtles nest in small numbers along the entire coastline of Goa. However, due to extensive development and tourism along much of the coast, turtle nesting has declined. In most tourist beaches such as Calangute, Miramar, Colva and Majorda, the sand dunes, which are an integral part of the coastal ecosystem, have been destroyed and replaced by high-rise five star hotels. Consequently, Goa is left with very few undisturbed beaches. One of these, Morjim, is situated between Vagator and Harmal beaches in Pernem taluka of North Goa. Olive ridleys continue to nest here during the nesting season, from September to February. However, local villagers collect turtle eggs as an additional source of income. Most of Goa witnesses small-scale poaching of turtle eggs, and to a lesser extent turtle meat, by the local villagers.

In recent times, the coastal community of Tembwado, a small hamlet of Morjim Village Panchayat, has sought to protect these turtles and their eggs from both poachers and natural predators. The area under community conservation is roughly a 1.5-km beach that stretches from Chapora estuary in the south to Vithaldaswado in the north; the dune-backed beach begins at the estuary of the Chapora River. A road runs parallel to the beach for about 400 m and forms the entry point for tourists. The forest department has erected sign boards that notify the area as a sea turtle nesting site, warning tourists and locals against harming the turtles or their habitat.

Turtle Conservation and Tourism in Morjim

Community conservation of sea turtles in Morjim was initiated in 1995–96, by a retired army officer, Captain Gerald Fernandes, when he began an informal awareness and education campaign. The fisher folk, who were disillusioned with declining fish catch and unemployment, were approached with a suggestion to use the beach for tourism using turtle nesting to attract tourists, especially international tourists. Several temporary shacks made out of dry palm thatch dot the beach and have colourful flags and ‘Save the Turtle’ banners atop them. These shacks provide the tourists with a place to rest in the shade and also serve as local restaurants. Eager and enterprising local youth are quick to welcome tourists to their shacks, although they respect the tourist’s choice and privacy. The Department of Tourism, Government of Goa extracts a fee of Rs 10,000 per shack as license fee but does not provide any amenities in return. Since these tourists come to Morjim for its peaceful ambience, the shack-owners maintain simple but comfortable shelters (without music and lighting) and supply good food.

As soon as a nest is laid, the local youth patrolling the beach during the night notifies the forest department. The forest department staff erect a protective fencing around the nest and insert a signboard—indicating the date of laying and the expected date of hatching—into the sand beside the nest. During the day, the shack-owners keep an eye on these nests, which have been demarcated for easy spotting as well as to indicate that they are under official protection. Whenever a nest is about to hatch, a depression appears in the sand which indicates that emergence of turtle hatchlings is imminent. The locals, especially the shack-owners, notify the forest department and also tourists who either visit the beach early in the morning or stay overnight at Morjim. Hence, during the
release of hatchlings, there is an increase in the number of visitors to Morjim, which benefits the shack-owners as well as other locals.

Turtle eggs fetch Rs 3–4 per egg in the local market, while poultry eggs costs Rs 1. Hence it is profitable for fishermen to poach turtle eggs which are available to them as a free resource during the nesting season. The villagers were provided cash incentives to report nests rather than collect them. Initially, the cash incentives were provided by Captain Gerard Fernandes and later by the forest department. After a period, those who were caught poaching were discouraged from repeating the offense as it led to disgrace within the small community. Soon enough, most members of the community including veteran poachers started reporting nests that needed to be protected.

The release of sea turtle hatchlings in 1995–96 from the community-protected area was reported in the local newspapers, and caught the interest of the Goa forest department, who joined the effort in 1996–97 by deploying two guards to patrol the beach during the nesting season; the guards were to assist the village youth in nabbing poachers from neighbouring hamlets. These guards, along with 30–40 youth volunteers of the village, have helped reduce poaching substantially. The department also pays some locals to guard the beach during the nesting season. Apart from these, the forest department has continued its award scheme to locals who report nests. Additionally, an award of Rs 500 is given to the best volunteer for protection efforts. Currently, Project Turtle of the forest department of Goa pays daily wages during the nesting season to six of the local youth who watch over the beach and report nesting and hatching. A Turtle Study Centre has been set up at the range forest office in Pernem.

PROBLEMS ASSOCIATED WITH THE PROGRAMME

Following the initiation of the turtle programme, there has been a marked increase in the number of tourists in Morjim, especially local politicians and bureaucrats. Consequently, the beach has been declared a tourist centre as part of local development, and street lights have been erected on the beach for the convenience of tourists. It has also been reported that the local youth, in order to cater to VIP tourists, collect the hatchlings as soon as they emerge and retain them in water basins till the tourists arrive, after which they are released into the sea. In addition, some of the local ‘guardians’ have started digging out nests that are about to hatch to show hatchlings to tourists. Unhatched eggs are opened up manually and the underdeveloped hatchlings are also displayed in water basins. Immediately after emergence, the hatchlings use stored energy to scramble to the sea and swim vigorously past the breakers. This is known as juvenile frenzy and enables them to escape predation, which is particularly high at this stage of their lifecycle. Hence, the actions of the youth could reduce the survival probability of the hatchlings; these practices are driven by lack of scientific knowledge coupled with unhealthy competition within the community.

Officially, the number of tourist shacks permitted on Morjim beach is six. However, it is reported that there are twelve shacks crowding this small beach. This has affected turtle nesting as there is hardly any space left for the turtles to lay their eggs. Trawlers are not permitted to fish within five km of the coast in Goa. However, there is no
official policing of the trawlers which cause adult turtle mortality. Violations of the Coastal Regulation Zone Notification, 1991 constitute a long-term threat to the habitat of the olive ridleys. These include beach-side construction and development catering to the tourism industry. Apart from actual loss of nesting space, lighting and beach erosion as a consequence of beach-front development, are major threats to nesting habitats. Decreasing support from the forest department due to interference from vested interests and competition from neighbouring hamlets are also causes of concern for this community initiative.

CONCLUSION

Both the forest department and the community members realise that in order to make the turtle programme economically viable without sacrificing the main objectives of conservation, the programme requires support from the forest department. More extensive education and awareness on the importance of sea turtle conservation as well as dissemination of scientific and technical knowledge are necessary along the coast of Goa. So far, the participation of the community has helped the forest department to protect these turtles effectively without high expenditure on personnel and equipment. At the same time, the department has also earned the goodwill of the local community (a rare case as far as formal conservation measures are concerned). For the local community, this has been a novel experiment, which has made them realise that without having to sell their ancestral land or migrate to cities, they can continue to earn a living. Yet, there is a threat that individual interests may hinder the community effort to conserve turtles. Issues of governance have a strong influence on the conservation of natural resources. As a result, the very institutions designed to manage financial benefits and distribute them are becoming the focus of conflict. Whereas earlier, conflicts occurred mainly between local communities and conservationists, now conflicts within communities must also be addressed and resolved. Corruption, nepotism and jealousy can arise as soon as community conservation produces meaningful benefits, which in combination with the lack of technical and administrative management capacity can lead to disillusionment with the programme (Barrow and Fabricius 2002).

Case Study 2: Kolavipaalam Beach, Kozhikode, Kerala

Kolavipaalam is located in Iringal village near Payyoli in Kozhikode district, north Kerala. The community-conserved area is an 8-km beach adjacent to the village, which faces the Arabian Sea on its western side with the Kottapuzha river running behind it, and draining into the sea north of the village. Barring a 1-km stretch from the river mouth, a seawall has been erected all along the 8-km coast, with intermittent gaps for docking traditional fishing boats. Olive ridley turtles nest on these open sandy beaches as well as on the narrow sandy stretches between the seawall and the sea. There is human habitation very close to the high tide line. Private coconut plantations occupy the space between these inhabitations and the seawall.

Although fishing continues to be the major occupation of the community, the current generation of fishermen has either changed its occupation or has supplemented fishing with other sources of income. This is due to a combination of reasons—depleted fish
resources and aspirations for a better standard of living. Secondary occupations include mostly self employment as electricians, autorickshaw drivers and casual labour; they also operate small bakeries and other kiosks. Dry fish export was a major source of income for this village and once employed around 500 fisherwomen. Due to decreasing beach length, space is no longer available for the women to dry large quantities of fish. The conservation effort at Kolavipaalam includes: (i) ex situ protection of eggs of olive ridley turtles, and (ii) afforestation of mangroves in the estuarine region.

**TURTLE CONSERVATION IN KOLAVIPAALAM**

In 1992, some village youth read an article in *The Hindu* about the endangered status of olive ridley turtles. Realising that the sea turtles which nested on their beach were the same endangered species whose eggs were consumed locally, they initiated efforts at understanding and protecting them. They formed a group called *Theeram Prakriti Samrakshana Samiti* with twelve members during the same year. The group was later actively supported by the Kerala forest department. In 1997, a local forest officer encouraged the local youth to keep watch over the beach by paying daily wages to members during the nesting season. Currently, the forest department pays daily wages from October to March to six members of *Theeram*. Remarkably, the members pool their wages to provide funding for their protection efforts. During the nesting season, the youth of the village monitor the beach for nesting turtles. The eggs are relocated to a locally constructed hatchery. The hatchery fence is about seven feet tall to provide protection from stray dogs and jackals. Inside the hatchery, the pits are marked and paper boards are stuck into the sand with the date of collection, clutch size and expected hatching dates. On hatching, the hatchlings are immediately released into the sea. The members narrate that initially none of them knew how many days were required for turtle eggs to hatch. Hence, during their first nesting season, they spread mats and slept over the nests to protect them from jackals and to see when the hatchlings emerged. Since no one in their village had seen hatchlings during the daytime, they deduced that the eggs hatched at night. They also examined eggs on a weekly basis to check on development and to ensure that the eggs were still alive. Initiating this programme prompted these youth to read up related literature, which eventually led them to recognise the importance of mangroves in protecting the turtle nesting habitats and consequently, their coastal ecosystem.

**MANGROVE AFFORESTATION**

Having realised the importance of mangroves in the coastal ecosystem, the group started an afforestation programme of mangroves in about five acres of the estuary. The forest department supplied them with the initial batch of mangrove seeds. Some money has also been donated by the gram panchayat (governing body within a village) to buy mangrove seeds from private sources. *Theeram* members encourage and involve local residents as well as local school children in planting these saplings. They conduct their meetings in a small thatched structure that has been constructed with financial aid from the forest department. This building also serves as a shelter for members on night patrols.

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3 Pragati Srivastava, divisional forest officer, forest department, Government of Kerala.
during the nesting season. Although many youth of the village—especially Theeram members—are actively involved in the conservation efforts, the rest of the community is aware of the conservation effort and provides passive support to it. Before the involvement of the forest department, funds for guarding the eggs were generated by donations in cash and kind from within the group and the community.

The protection effort has had many positive consequences, for both the villagers and the turtles. There has been an increase in the number of turtle nests protected by Theeram. Observations by amateur bird watchers from neighbouring areas, supported by villagers’ observations, indicate that the diversity and population of birds in the mangrove ecosystem has increased as a result of greater tree cover. Young boys who fish by simple hook and line in the mangroves claim that fish yield has increased in these estuarine waters. The shallow, drinking-water wells located near the mangrove still contain sweet water, whereas wells in the rest of the village have become saline. During the course of time, villagers have observed this link between mangroves and fresh-water wells and have therefore extended full support to the mangrove reforestation programme. The local governing body, the Gram Panchayat, has recognised the importance of Theeram’s efforts and has set aside funds for planting mangroves. Considering that most Gram Panchayats allot their limited funds for ‘priority’ developmental work such as roads, electricity, drinking water, bridges, etc, this allotment of funds for mangrove reforestation demonstrates that Theeram’s efforts at spreading awareness about coastal conservation have been truly effective. Theeram was honoured with the P V Thampy award in November 2000 for environmental protection through community participation. This award hopes to boost individual and local community efforts towards preservation of their natural resources.

As a consequence of increased media publicity,4 the general public from within and outside the state have visited Kolaavipalam specifically to meet with Theeram members. This has given the youth a wider perspective of their actions, and they have learned about similar efforts elsewhere. As a result of their interactions with the forest department, as well as the local and national media, the youth are now treated with respect by various government officials, which is otherwise rare. The community has taken advantage of its improved relations with government agencies and has submitted a proposal to the irrigation department (through the forest department) to install a drinking-water pipeline for their village.

Theeram members hope to eventually open an informal education centre for children from within and outside their village. The aim of this education centre will be to expose the youngsters to various aspects of natural history such as bird-watching, observing and studying varieties of marine organisms, learning about the ecological role played by other components of the coastal ecosystem, and learning to manage mangrove nurseries.

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4A film Aamakaar – The Turtle People (see www.turtlepeople.com) documents their history and efforts. Theeram’s efforts were recognised as a remarkable case of community-based conservation which was conceived and initiated completely from within the local community, and the film-makers attempt to convey the motivation of this group, and perhaps inspire other community groups towards similar action.
Community-based Conservation of Sea Turtle Nesting Sites in India

Theeram members hope that such an education centre will encourage future generations within and outside the village to take up research (formally or informally) on natural ecosystems, and thus create awareness and concern for the community’s natural wealth.

The group also faces several serious obstacles. These include:

(i) Lack of financial resources has limited the group’s activity essentially to turtle protection and mangrove reforestation, although they would like to expand their scope of activities to establishing and managing a nature education centre.

(ii) During the nesting season, the members have to patrol the beach at night, but they earn their living during the day. This has limited their choice of occupation, in that only self-employment allows this kind of flexibility in working hours. It is encouraging though that Theeram members insist that this is not a serious constraint, as they have chosen to undertake this responsibility themselves.

(iii) The Kottapuzha riverbed is leased out by the state government to rope-makers for retting coconut fibres. Due to the leases granted, there is very little land available for reforestation of mangroves. This has restricted Theeram members from bringing more estuarine land under mangrove cover.

(iv) State politics plays a very important role in Kerala’s social structure, and, as in other instances, has affected the success and direction of conservation initiatives. So far, Theeram members have been successful in keeping politics from derailing their conservation activities. However, there has been increasing pressure from various political parties to have their representatives join the group to capitalise on the high media coverage that Theeram has received.

(v) Theeram members have been unable to mobilise neighbouring coastal communities to fight against sand mining, although their beaches have also been affected by severe coastal erosion.

Since the motivation for conservation actions by the community has been purely out of educated local concern for turtles and their habitat, there is so far no evidence of negative repercussions to the initiative as compared to the Goa programme. However, political affinity plays a very important role in Kerala’s social structure and in other instances, this has had an effect on conservation. So far, Theeram members have been successful in keeping any political leaning out of their conservation activities. However, there has been increasing pressure from political parties to include members in the group due to the high media coverage that Theeram has received in recognition of their efforts.

SAND MINING

Sand mining poses the biggest threat, not just for olive ridley turtles but for the beach itself. Coastal erosion of the sandy beach has reached a critical stage in Payyoli village because of illegal sand mining in the Kottapuzha estuary. This nesting beach has become narrower, leaving very little area for sea turtles to nest. Theeram filed a public interest litigation (PIL) in 1999 in the state High Court against the sand mining. An interim stay order was granted by the court, but the enforcing authorities were unable to stop the mining. Due to erosion, the hatchery is being destroyed each year by the sea and has had to be reconstructed further inland. Most of this sand goes into land filling, to meet
the increasing demands of development in the state. After *Theeram* members filed the petition in the High Court in 1999, the community feels that sand mining has increased and that matters have worsened. Since the government has not leased land for sand collection, and nor have licences been issued to the miners, the sand mining occurring at Kolavipaalam is illegal. Yet, following the legal petition, the court orders appear to have regularised an entirely illegal activity. Although the role of the forest department has not been as active in this initiative as its counterpart in Goa, the stand of the forest department in the sand mining case has helped the community to obtain a favourable interim order from the court. Yet, political pressure seems to have negated the effort, leading to non-implementation of government and court orders.

**CONCLUSION**

The conservation programme at Kolavipaalam has succeeded in bringing the attention of the media and local authorities to the illegal sand mining activity, which would have otherwise gone unnoticed. The receding beach has also brought into focus the very real threat to existence that these coastal communities face. Ironically, this has also demonstrated the inability of local authorities to arrest the damage. The inability of *Theeram* members to mobilise neighbouring coastal communities, who are also equally affected, to fight against the sand mining is a drawback. This needs to be rectified if there is to be any hope of stopping this illegal activity. In addition, while *Theeram* members are losing ground, literally, they could share their knowledge on hatchery techniques with other coastal communities where the loss of turtle nesting habitat is not so severe, or in some cases, absent.

**An Evaluation of the Potential for Community-based Conservation at Rushikulya, Ganjam, Orissa**

There are three olive ridley mass-nesting sites in Orissa—Gahirmatha, Devi river mouth and Rushikulya. The nesting beaches at Gahirmatha lie within the Bhitarkanika sanctuary and the Gahirmatha Marine National Park. No legal protection is accorded to the other two sites. Rushikulya was discovered by the scientific community as recently as 1994 (Pandav et al 1994). Though exact figures are not available, there is an indication that tens of thousands of turtles nest here during arribadas (Pandav 2001). This site may be particularly important given the fragmentation of beaches and loss of habitat at the other major sites—Gahirmatha and Devi river mouth. Rushikulya was chosen for this study mainly because the local community is already involved in the conservation of turtles at this site through Operation Kachhapa, an initiative to protect turtles along the Orissa coast. The main objective of this study was to evaluate whether community-based conservation is possible at this site, and if so, to draw up a plan whereby the local community members, concerned government authorities—like the forest department, fisheries department, district collectorate, revenue department—and NGOs and other stakeholders could become involved in the protection and management of the mass-nesting site and the turtles.

The Rushikulya rookery, located 140 km south of Bhubaneshwar, lies between the Rushikulya river mouth and Kantiagada, a fishing hamlet located 6 km north of the
river mouth. Three villages—Purnabandha, Gokhurkuda and Kantiagada-Podampetta—are located along the mass-nesting area. While the residents of Purnabandha depend entirely on the Rushikulya River for fishing, the residents of Gokhurkuda are partially dependent on the sea and partially on the river. The residents of Podampetta hamlet of Kantiagada depend entirely on the sea; although Kantiagada is not dependent on fishing as an occupation. There are three communities along the coast—the Khandayats, an Oriya non-fishing community, the Khandaras, an Oriya fishing community mostly found along the Chilika coast and the Nolias who are a Telugu community who have migrated recently from Andhra Pradesh. The Kevtos of Purnabandha and Gokhurkuda fish in the Rushikulya river mouth, while the Nolias of Gokhurkuda and Kantiagada are active in the sea. The Nolias form a minority here and hence are also politically weak. Literacy is low in this community and hence they are exploited by the Khandayats. The Khandaras are also politically weak and are exploited by the politically stronger Khandayats.

Table 1. Profile of the communities in the study area.

<table>
<thead>
<tr>
<th>Fishing hamlet</th>
<th>Village</th>
<th>Total Population</th>
<th>No. of families</th>
<th>Percentage of fisher-folk</th>
<th>Fisher folk communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purnabandha</td>
<td>Pallibandha</td>
<td>1,070</td>
<td>200</td>
<td>92 per cent</td>
<td>Kevto – 85 per cent; Khalasi – 15 per cent</td>
</tr>
<tr>
<td>Gokhurkuda</td>
<td>Gokhurkuda</td>
<td>2,222</td>
<td>146</td>
<td>68.5 per cent</td>
<td>Kevto – 46 per cent; Wadavalchi⁵ and Khalasi – 64 per cent</td>
</tr>
<tr>
<td>Podampetta</td>
<td>Kantiagada</td>
<td>1,877</td>
<td>100</td>
<td>100 per cent</td>
<td>Entirely Nolias (Wadavalchi)</td>
</tr>
</tbody>
</table>

(Source: Anganwadi Kendra – A programme of the Department of Women and Child Development, Government of Orissa.)

About 95 per cent of the population are occupied in fishing while the rest are employed as daily wage labour, private service and small trade. Of the three hamlets, Purnabandha residents are economically stronger due to prawn seed collection. Prawn seeds harvested from the sea are either supplied to the aquaculture farmers of West Bengal, Andhra Pradesh and Orissa or are exported to Southeast Asian countries. Women and children are also involved in this activity in their spare time. Some of the residents of Gokhurkuda are also involved in prawn seed collection. However, they have observed that the quantity of prawn seeds has decreased over the years, and that this activity appears to have affected their fish stock in the sea. Of the three hamlets, Kantiagada village is economically the poorest.

CURRENT CONSERVATION PROGRAMME: OPERATION KACHHAPA AND THE ORISSA WILDLIFE DEPARTMENT

Operation Kachhapa (OpK) is a conservation programme launched by the Wildlife Protection Society of India, New Delhi in 1998–99 to protect the breeding and nesting sites of olive ridley turtles and to stem large-scale mortality from incidental catch in mechanised fishing off the coast of Orissa. The project is a collaborative effort between

⁵ Also called Nolias or Jalari
the Wildlife Protection Society of India, New Delhi, the Orissa forest department, the Wildlife Society of Orissa (WSO) and other local NGOs (Shanker and Mohanty 1999). Initially, the programme was concentrated in Gahirmatha and Devi river mouth, and from 1999–2000, included the Rushikulya river mouth (Wright et al 2001). Once sporadic nesting begins at Rushikulya, one or two youth from Purnabandha are appointed by Operation Kachhapa to patrol the beach. When mass nesting begins, both the forest department as well as Operation Kachhapa deploys about 16 boys to patrol the beach. Whenever the situation demands, such as during mass hatching, more labour from the villages is deployed for patrolling and rescue operations. After mass hatching, the number of patrolling members is reduced.

Around ten local boys, mostly from Purnabandha, are appointed by the Wildlife Society of Orissa to patrol the mass-nesting beach and to protect the nests/eggs and hatchlings that face various threats on the beach. Some of the functions of Operation Kachhapa field personnel include:

(i) Protecting nests/eggs from predators, especially stray dogs.
(ii) Rescuing hatchlings, which have strayed towards the landward side of the beach due to artificial illumination along the road.
(iii) Preventing the local villagers from prawn seed collection during the nesting season.

However, there are a number of difficulties that Operation Kachhapa faces, both at the management level as well as at the field level. These include:

(i) Inadequate personnel to protect the 6-km beach. Only a few people are employed through the season, and the others are employed only during mass nesting or hatching. This leads to uncertainty and insecurity among the patrol members and affects their efficiency.
(ii) Shelters for staff are lacking on the beach.
(iii) Lack of coordination between the staff of the forest department and Operation Kachhapa.
(iv) Disparity in pay scales, both within Operation Kachhapa as well as between Operation Kachhapa members and the forest department patrolling members. Disparity also exists in the incentives given by different agencies.

**A CBC PLAN FOR RUSHIKULYA**

Since the discovery of this rookery in 1994, conservation efforts by the forest department and by local NGOs have been scaled up. This has led to increasing conflict between the fisher folk and turtle protection agencies, since several restrictions have now been placed on the fishing community’s activities. Several solutions came up during the course of interviews with concerned government officials, local NGOs, interested individuals, scientists and at village meetings held in each of the three hamlets. A joint meeting of all concerned stakeholders was held on 30 July 2001 in order to arrive at a consensus. This resulted in a community-based conservation plan for Rushikulya that could address livelihood issues and meet conservation concerns. Although solutions to the problems were suggested from various quarters, a consensus could not be reached for all of them.
The following stakeholders were identified with regard to sea turtle conservation in Rushikulya. The list includes those who were present at the final consensus meeting, which formulated the plan for community-based conservation.

(i) Purnabandha village: five members of the *kulo* committee.
(ii) Gokhurkuda village: since the meeting was held at this village, a large number of *kulo* committee members were present.
(iii) Kantiagada village: only one advisor of their *kulo* committee.
(iv) The wildlife wing of the forest department: the chief wildlife warden, Chilika divisional forest officer (wildlife), research officer, Rambha range forest officer and a forest guard were present.
(v) The fisheries department: the field extension officer and fisheries demonstrator of Ganjam Block were deputed to attend the meeting. Discussions with the ex-director, fisheries department, during the course of an interview also helped with the plan.
(vi) The tourism department: the joint director of tourism stated his department’s stand *vis-à-vis* ecotourism as an alternative source of income for the villagers.
(vii) The district administration: represented at the meeting by the Ganjam Block development officer.
(viii) United Artists Association: a local NGO which has been working with the fisher folk of Ganjam district for more than twenty years.
(ix) Orissa Traditional Fisherfolk Union: a union of the artisanal fisherfolk. Every marine fishing village has a unit of this organisation.
(x) Wildlife Society of Orissa: the state agency for implementing Operation Kachhapa was represented by field personnel.

During the course of the final meeting, the formation of a committee (termed as Uniform Protection Committee or UPC) was suggested; it would consist of field level staff of the forest department, fisheries department, local police and an equal number of members from the three villages. This committee would be principally responsible for patrolling and protecting the mass-nesting site. It was also conceived that various administrative problems—such as wage disparity, involvement of certain villages, etc would be resolved by the committee.

There is a need to explore sources of funding for running the UPC. One suggestion was the creation of a corpus through funds obtained from all concerned agencies who have funds available for turtle conservation efforts in Orissa like the WPSI, Operation Kachhapa, other national and international agencies as well as central and state government departments. The Orissa forest department promised initial support with available funds. Apprehensions regarding misuse of funds are valid and measures need to be taken to prevent misuse and ensure transparency in utilisation.

**Outcome of the joint meeting**

Various issues were discussed at the joint meeting with regard to the rights of the local communities, sea turtle conservation and action to be taken by various participants. The most salient points are discussed here.
1. Ban on fishing in the sea by local fisher folk using traditional gear: The fishermen are prohibited from fishing by the forest department during the four month mass-nesting period between January–April. Since this is also the best fishing season, the rule is openly violated. Adult turtles get trapped in their fishing nets and they have to cut open their nets to disentangle them. This problem is perceived to have increased in the past few years. Apart from a ban on fishing in the sea, the fishermen are not permitted to fish in the river mouth during the mass-nesting period. In order to compensate the villagers for the loss of income incurred during the ban period, the fisheries department suggested a relief-cum-savings scheme for the fisher folk. However, the fisheries department conceded that funds for the scheme are limited and need to be increased.

At the workshop, it was recommended that traditional fishing should be allowed barring use of gill nets. Fishers would voluntarily stop fishing during the 7–10 day period of mass nesting/ hatching. The Uniform Protection Committee (UPC) would oversee the ban and non-use of gill nets during mass nesting/hatching.

2. Alternative livelihood options such as ecotourism are to be explored. Ecotourism is to be initiated from the next turtle season by providing Purnabandha village with a well-equipped nature interpretation centre and by training of village youth as tourist guides with the help of the forest department and NGOs. The tourism department should regulate the tourists and transportation up to the village.

3. Prawn seed collection by the local community and hatchling mortality: The fine mesh size of the nests used for prawn seed collection prevents adult turtles from coming ashore and traps hatchlings that are swimming towards the ocean. Since this is a good source of income, the villagers, especially Purnabandha residents, are unwilling to give up this occupation. A complete ban on prawn seed collection would be ideal from the perspective of forest and fisheries departments and conservationists. However, alternative occupations, such as ecotourism or culturing of crabs could be adopted. It was also suggested that the fisheries department should stop the manufacture of nets for prawn seed collection. The present marine squad with members from the fisheries department and the police need to conduct frequent raids at check posts to check the prawn seed trade. The UPC would be responsible in implementing the ban on prawn seed collection in the nesting area during the nesting season.

5. Many turtles are killed due to incidental capture in trawl and gill nets. The fisheries department states that there is no trawling by the Orissa state government along the Ganjam coast. While trawling is less of a problem here than along the rest of the Orissa coast, trawlers are observed fishing illegally. Trawlers often cross their boundary limit of five or ten km from the coast (which depends on the tonnage or length of the boat) in violation of section 16 (1), (2), and (3) of the OMFR Rules, 1983. This affects the traditional fisher folk and often leads to clashes between the two. Attempts by local fishermen to seize such illegal trawlers has led to accusations on the part of the trawler-owner that the local fisher folk are resorting to looting the fish catch of the trawler. Overall coordination at the field and at the highest level among the coast guard, and forest, fisheries and police departments is required.
in order to effectively stop this; steps are being taken to improve communication with regard to incompatibility in the transmitting frequencies between the coast guard and the wildlife division radio transmitters. The forest department should involve the local fishermen in nabbing errant/illegal trawlers.

6. Depredation of eggs by jackals and dogs needs to be addressed. Suggestions included fencing off the mass-nesting area and protecting the eggs in situ as well as by transferring them into hatcheries, neither of which may be practical. However, in situ nest protection can be carried out by UPC members.

7. A sea turtle conservation awareness programme can be initiated in these villages, by integrating the programme with the UN-sponsored disaster management awareness programme that is currently in progress in Ganjam. This programme has been recently initiated by UN programme officers in coordination with the Block Development Office and local NGOs. The institutional mechanisms and infrastructure of the disaster management awareness programme could be utilised as a tool for spreading awareness on the importance of sea turtle conservation. Besides the local communities, generating awareness among the urban communities, especially among those residing in the towns/municipalities around Rushikulya river mouth (Ganjam, Humma, Chhatarpur) needs to be given adequate importance too. The overall coordination of the awareness programme could be carried out by the United Artists Association, a local NGO working with fisher folk communities with support from the forest department and NGOs.

8. Factory lights near the beach as well as the street lighting from Humma town and Ganjam/Chhatarpur has resulted in illumination behind the nesting beach, which leads to heavy hatchling disorientation and mortality. It is essential that the powerful factory lights are switched off during mass nesting and mass hatching. The UPC members will be responsible for intimating the factory management when mass hatching or mass nesting begins so that lights can be turned off.

9. Villagers can be encouraged through awareness programmes to moor their boats near the river mouth during mass nesting and hatching. However, some villagers (particularly those of Gokhurkuda and Podampetta) would find it inconvenient to moor their boats in the river mouth 4–5 km away.

9. According to the Orissa Coastal Zone Management Plan (CZMA), the Rushikulya coast has been demarcated as CRZ III with only some sand bars near the coast and some coastal stretches being demarcated as CRZ I up to 100 m. As the regulations for CRZ III are less rigorous, developmental projects such as the construction of an oil dump by Bharat Petroleum between Kantiagada and Jattipadar have been proposed, which could adversely affect the nesting population at this beach. The Rushikulya mass-nesting area has to be redesignated as CRZ I. The forest department offered to take up this issue at the CZMA level as well as at the state secretary level.

Implementation of the CBC plan

Various studies are required for proper implementation of a CBC plan including socio-economic evaluations of the fishing communities, potential for tourism, impacts of
fishing on turtles, and social and environmental impacts of alternative livelihoods. Any CBC plan requires sincerity and dedication from all involved parties, including the government. The key to long-term conservation of the olive ridley on the Orissa coast lies in mobilising the local community to participate in conservation programmes, and to instil in them a sense of ownership and pride and a belief that by protecting the turtles they can also ensure a secure future for themselves. However, community-based conservation programmes alone may not be sufficient to protect the turtles and their nesting habitats. Ideally, enforcement of wildlife and fisheries laws by the forest and the fisheries departments, complimenting and supporting local community-based efforts, would ensure a more secure future for sea turtles. A community participation approach, where the local communities benefit economically through increased occupational opportunities, would be likely to yield better results than a completely protectionist approach. The Orissa forest department has benefited from the people’s involvement in Simlipal Tiger Reserve, which has helped the government officials in checking illegal activities in the area through prompt reporting of offences by community members.

Lastly and most importantly, since the major cause of mortality of adult turtles is due to modern fishing practices, which have also endangered traditional coastal lifestyles in addition to the turtles, a solution lies in encouraging artisanal fishing along the Orissa coast.

Interestingly, even when alternative livelihoods are economically viable, this does not necessarily lead to improved conservation. A recent analysis by the Biodiversity Conservation Network across Asia found that the linkages between financial benefits and conservation effectiveness were complex and site specific. In fact, the results of this analysis showed that there was a weak relationship between enterprise success and conservation success. They found that effective conservation was not linked to financial benefits alone but to a range of other incentives as well (Salafsky et al 2001). This is not to say that economic incentives are unimportant. They are and will continue to be an important factor driving decision-making, especially as local communities get increasingly exposed to market forces and cash economics.

Hence, though a ‘plan’ for CBC is presented, this is not a general model that can be adopted for every turtle-nesting area. There are no guarantees that an intervention that works in Rushikulya will work equally well at another site since each area has specific ecological and social factors. What can, however, be done, is to follow certain guidelines that this process has adopted in order to bring about a consensus between conservation concerns and livelihood issues. Current legislative frameworks do not support the empowerment of rural communities as ecosystem managers.

However, the recent (2002) amendment of the Indian Wildlife (Protection) Act, 1972 includes two new categories of protected areas, conservation reserves and community reserves. The latter, in particular, provides a mechanism whereby communities can declare and manage an area for the conservation of wildlife and habitats. Conservation is also more likely to succeed where there is a traditional stakeholder involved in managing the resources. This is because the traditional stakeholder already commands the respect of the community and the community is aware of and has accepted the traditional rule
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system (BCN 1999). Also, not all communities are capable of or are willing to take management responsibility for an enterprise at the outset of a project. Often, they need to see benefits before there is full commitment from the community. They would also need to be helped in developing technical and financial skills.

**Conclusion**

Although it is difficult to extrapolate the results of the first two case studies to the third programme where participatory management is being brought in by external agencies, certain techniques could be adopted and some lessons can be learned with regard to the kind of support that a community requires from external agencies. Nearly all CBC initiatives or programmes have begun or are likely to begin after the community has faced a period of hardship. This makes them more ready to accept tough decisions that may result in temporary loss of income, as the Kerala example shows. Cash benefits are important, but mainly so that one can get people to respond to conservation education and awareness. This was a technique that was used in the Goa case. If there is a lot of cash generated by the threats, then the threshold amount of cash that would need to be generated should be higher in order to wean the violators away from ecologically harmful practices. This was acknowledged as a failure on the part of the Orissa state government in order to break the prawn seed collection network. Non-cash benefits can be as important as cash benefits for conservation success. Pride and self-esteem are important non-cash benefits that can be developed. Issuing uniforms, badges and ID cards for wage employers patrolling the nesting beach form part of this strategy. As the Kerala and Goa examples show, media exposure and leadership of their own and a wider community (other groups/villages) can contribute to their self-esteem.

The notion of community-based sustainable management of natural resources, presupposes true commitment of community institutions. It also hinges on the genuine commitment of the management authorities to share responsibility for the control and management of resources. While both conditions are integral to long-term success, it is not clear to what extent these conditions have been met. Until these are achieved, community conservation will remain an uneasy, if productive, compromise between the demands of communities, the reservations of management authorities, and the interventions of external agents. Achieving the goals of CBC is complicated and organisationally challenging. Effectively implementing CBC necessitates a careful and difficult blending of local, national, and sometimes international interests and institutions, as well as reconciling multiple and sometimes conflicting objectives. The complexity of goals, interests and organisational features of CBC renders its implementation exceedingly difficult.

The eventual success of CBC may depend, however, as much on institution building and organisational reform as on socio-economic development and scientific considerations (Kellert et al 2000). The case studies demonstrate that the most serious threats to these areas are usually organised invasive practices such as trawling, mining and unregulated tourism. These activities need to be addressed through stricter law enforcement and influencing regional planning and policy processes, and not merely through community development.
The capacity of the communities to accept the role that community conservation programmes and donor projects would like them to play can constrain the development of real partnerships. Some community institutions are strong enough to take responsibility, while many are not. An essential activity is strengthening community institutions, for stronger communities are the key to true partnerships. They can undertake responsibility for natural resources and can exert sufficient pressure on the authorities to be granted responsibility in the first place. The responsible involvement of rural people and communities cannot be a ‘quick-fix’ approach. Time and trust between the different parties are key elements, so that capacity can be built. Donor funding is most useful in the early stages of initiatives, as seed funds. However, sudden injections of large funds can lead to misappropriation or conflict. Lastly, donor funding cannot be a substitute for national investment. Community conservation must evolve to become functionally institutionalised within conservation authorities and move beyond the level of trial or demonstration.

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**Literature Cited**


