

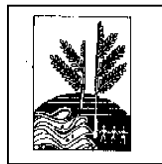
Studies in Protected Areas

HUMAN ISSUES IN PROTECTED AREAS:
A STUDY IN BHITARKANIKA WILDLIFE SANCTUARY

Bikash Rath
Programme Officer

ranjarout
Programme Officer

March 2004



©VASUNDHARA
14-E, Gajapati Nagar
Bhubaneswar-5
Orissa(India)
Ph.-0674-2300190
Fax-0674-2300235
E-mail: vasundharanr@satyam.net.in
Website: www.vasundharaorissa.org

Bhitar Kanika Wild Life Sanctuary

Introduction:

Kanika was a princely Estate for hundreds of years. The British forced the kings (Rajas) of Kanika to be loyal to them and granted them the status of a zamindar (Estate holder). This status was that of a semi-independent feudal administrator and the British usually did not intervene in the internal matters of the Estate.

The area of this largest coastal Estate of Orissa was about 440 sq. miles. It was basically a jungle Estate having extensive forest dominated by the mangroves. Bhitar Kanika literally means the inner or interior Kanika where the mangroves were mostly concentrated. The word signifies the fact that this area (Bhitar Kanika) was virtually inaccessible due to dense forests.

The Rajas of Kanika were, like most of their counter parts in other princely states/ estates, very careful about the protection of their forest resources chiefly because they saw this as a source of revenue and also, the British expected them to not let the forests destroyed. Their interest in forests was also centred on their royal habit of sporting and gaming (*shikar*). This is why they were strict about the forest regulations.

The last ruler of this feudal Estate was Raja Sailendra Narayan Bhanja Deo who was keenly interested in ecological / meteorological studies and thus, forests were of some additional significance to him. However, before he could rule for long, the Estate was taken over by the Government of Orissa after the promulgation of the Estate Abolition Act in 1951. The Raja got compensation for his resources and the forests of Kanika came under the administrative control of Govt of Orissa¹.

Bhitar Kanika Wildlife Sanctuary, situated on the delta of Brahmani-Baitarani river systems, is located in Rajnagar Tehsil of Kendrapara district. It is the second largest viable stretch of mangrove forest in the Indian mainland after the Sundarbans and is also the second Ramsar site in the state.

The area is intersected by a network of tidal creeks and rivulets, with varieties of wildlife, particularly crocodiles in water, herds of deer on the bank and migratory birds in the sky, making the place a nature's wonderland. (<http://www.indiantigers.com/bhitar-kanika-tigers-park.html>, viewed on 2-1-04).

The Kanika forests: past and present:

The forest resources of the Kanika ex-estate, as they exist now, mostly belong to the tidal swamp type of vegetation. Such type of vegetation, otherwise known as the mangroves, flourish on swamps and marshy lands dissected by a large number of creeks receiving fresh water influx from the landmass on one hand and tidal inflow from the sea on the other. The tides impart salinity to the fresh water and this is one of the most important regulatory features of this ecosystem.

¹ Old people among the Bengali migrants say that they first came to this area in 1951-52, which indicates a controversial role of the last ruler because when the Estates were abolished some zamindars/rulers reportedly tried to make maximum use of their lands for commercial purposes and hence leased out many such lands. The ruler of Kanika even filed a writ petition against the abolition of his Estate which was ultimately dismissed.

Almost all the species of this forest are evergreen. Grasses (species) are very few and same is true for the herbaceous species. Epiphytes are numerous. The dominant species of flora belong to the genus of *Heritiera* (for ex. Sundari or *Heritiera fomes*) and *Phoenix* (Hentala or *Phoenix paludosa*).

Surrounded by the mangroves, there occur some patches of non-mangrove species out of the reach of the tidal waters. The transition from mangroves to non-mangrove forests is seen in localities like the Bhitarkanika PRF(proposed reserve forest).

The forests have been destroyed in many parts over the last 60 years mostly for the extension of cultivation or habitation. Besides the reclamation of forest land, the forests have also been destroyed due to the construction of saline embankments because these embankments seize the dynamics of the water body vital to the mangrove existence and since this water nurtures them, they simply die out when the regular interaction between tidal- and fresh water supplies is stopped permanently. The overall estimation of forest degradation during the last 50 years is approx. 50% as per the apprehension of the local people.

Bio-diversity: distinguished features:

The local bio-diversity has interesting features. In the Gahiramatha Marine Sanctuary the Olive Ridleys are seen as the flagship species whereas in Bhitarkanika Sanctuary, the salt water crocodile is the flagship species i.e., the health of the local ecosystem is represented by their own status. If the crocodile population is good and healthy, then the mangrove ecosystem must be healthy also because in an unfavourable environment the crocodiles would not flourish. Same is true for the Olive Ridleys also in their respective habitat(i.e. sea).

Some remarkable features of the locality are described in the following:

- *Bhitarkanika WL Sanctuary / National Park:*

The Sanctuary / NP has distinguished flora & fauna. Of the 67 known mangrove species of India, 62 are found here(vide para 11, annexure 4,*Interim directions of the Central Empowered Committee*, 7th March 2003) among which occur some rare and endemic plants like *Lata Harakancha* (rare) and *Kanika Sundari* (endemic), etc. The population of Paniamba, supposed to be a valuable medicinal plant, is around 100 and Unara is a vulnerable species. The population of Pitamari, Pitakorua and Sisumara is comparatively low and though Sisumara is not an endangered species here at national level it is enlisted as a rare mangrove species (*personal communication*, DFO,Rajnagar).

Threatened species: controversy & confusion

Kanika sundari (*Heritiera kanikensis*) was identified by a botanist from outside. After that, eminent taxonomist of Orissa Dr. Bhawani Chowdhury also found that plant somewhere near Bagagahana, but neither the local people nor the FD staff are able to identify and distinguish it from other species. In fact, Kanika Sundari is a recently introduced term and hence not included in the list of the trees people know for centuries.

Same is true for Lata Harakancha (*Acanthus volubilis*). Even Dr. Chowdhury who identified it somewhere near the Mahisadiha creek could not find the same when he visited the place again after sometime. He believes that the plant might have been destroyed due to indiscriminate exploitation of its *loi* (stem) for domestic purposes.

Nypa fruticans is a palm once abundant but now endangered in the Sundarbans. Dr. Chowdhury says that the plant does not exist anywhere in the Orissa mangroves in wild (except the one planted at Dangamala) and that, probably it is an extinct species. He has named it as Luna Khajuri in Oriya although not in the strict sense of the term. It may be noted here that *Tamarix troupii*, locally known as Jagula, has been named as Luna Jhaun (literally meaning, salt water casuarina) as it resembles the Jhaun(casuarina) plant(*personal communication*, Dr. B.P.Chowdhury).

Among the fauna, reptiles and birds are of special attention. The Sanctuary is a shelter for 1321 salt water crocodiles (*Baula Kumbhira*, scientifically known as *Crocodylus porosus*) whose status elsewhere is threatened. World's largest reptile, a 25-ft(?) long salt water crocodile is found here. Besides, more than 12 white varieties of the salt water croc, otherwise known as *sankhua kumbhira*, also occur here (*The Pragatibadi*, p.5, 29-1-04).

King Cobra (*Ahiraja/Jharkalua*) was once found in large numbers here but illegal supply of the same has made it a threatened species. Besides King Cobra, all the three species of monitor lizards(Godhi) are also found here.

The Horse-shoe crab other-wise known as the blue-blooded crab or the king crab is a rare species found here. Out of its four varieties, two are found in India and in Bhitarkanika mud flats. Research has shown their use in the treatment of some serious diseases and slaughtering them for the highly priced chemical 'Lectine' has made them an endangered species throughout the world (Chadha S. & Kar C.S., *Bhitarkanika : Myth & Reality*, 1999, p.230) .

Avian species are a major attraction of the Sanctuary in winter. A survey in 2002 revealed the presence of 139 species of birds in Bhitarkanika including 80 species of water birds (*The Sambad*, 21-01-02). Migratory birds come from long distances, lay their eggs here and return with their off springs. Bagagahana is the most favourite spot for them. Besides, six varieties of King Fisher are found here, unlike at many other places and one of them, the Rudy Kingfisher is said to be endemic to this area only in India(*The Times of India*, p.5, 21-4-03). Similarly, Grey pelicans and the white-backed vulture, two of the red-listed(IUCN) species have also been spotted here.

Though Bhitarkanika shares the same agro-climatic conditions like the Sundarbans, there are some plant and faunal species which are found here but not in Sundarbans. The examples are plants like Paniamba, Banalembu, Masitha, etc.(Mohanty N., *Odishara Luna Jungala O Banyaprani*, 1992, p.37). Similarly, certain species are found in Sundarbans but not in

Bhitarkanika, like the Royal Bengal Tiger for which the space available here is quite inadequate as well as insufficient. Even, leopard is not found² though fishing cat and hyena have been seen in considerable numbers.

The complex interrelationship of the various elements of this biodiversity can be understood from the fact that crabs are abundant during the winter close to Bani trees whereas Jalanga fish is abundant near Keruan trees. Similarly, honeycombs are found usually in 12 mangrove species like Bani, Kharasi, Garani, Guan, Sundari, etc.(Mohanty N., *op.cit.*, pp.67, 82).

- *Gahiramatha Marine Sanctuary:*

The most important feature of this Sanctuary is the arrival of Olive Ridley turtles. These turtles migrate from other regions of the world in September-October, mate in the GM Sanctuary waters and then lay their eggs *en mass* at Gahiramatha coast (Ekakulanasi) . The eggs hatch after their return and small turtles enter the sea to go back to the region from where their mothers came.

The Olive-Ridleys(*Lepidochelys olivacea*) are the smallest of all sea turtles and at the same time are the only variety of sea turtle nesting along the Orissa coast. The 15-km long Gahiramatha beach was/is considered to be world' s largest sea turtle rookery due to their mass nesting on a large scale. After a cyclone in 1980s, this rookery was split into two parts Nasi-1 and Nasi-2 which reduced the length of the rookery considerably. Still, about seven lakh Olive-Ridleys laid eggs in Gahiramatha in 2000 after which their number is dwindling in the subsequent years due to a number of reasons including beach erosion (Mohanty N., *op.cit.*, p.53; *The Times of India*, p.4, 2-1-04)³.

These turtles are important for maintaining the ecological balance because they eat Jelly fish which preys on the fingerlings of fish and shrimp and hence the fish/shrimp population is saved and also, the chance of getting such unwanted items(Jelly fish) in fishing nets is reduced (*personal communication*, Chandra Sekhar Kar).

Recent experiments show that after leaving the Orissa coast, the turtles go a little beyond the territorial waters of Sri Lanka. The hatchlings only return after 7 years when they are adult and mature and after that, they visit the Orissa coast almost every year for breeding (*personal communication*, Biswajit Mohanty). Genetic studies also reveal that the Ridley population of Gahiramatha is the oldest stock and source of all contemporary Ridley population (*The New Indian Express*, p.5, 12-12-02).

History of the Protected status:

Free access to the Kanika forests was restricted as early as 1868 (Dalziel W.W., *Final Report on the Revenue Settlement of Orissa:1922-32, 1932.,* p.125). During the zamindari period, the forests were classified into : *Autak* (Reserved), *Rakshit* (Protected) and *Chhada*(open). The last one was either temporary or permanent, i.e., while all wastelands within or outside the villages, which did not come under the first or second category, were recognized as permanent open forest; the temporary ones were the blocks selected on rotation

² Its occurrence is doubtful though old people say that they had seen some in the area years ago.

³ However, things improved in 2004 and by March 1st week of this year the number of turtles, which came to Bhitarkanika coast for mass nesting, was more than 2.15 lakhs (*The Samaj*, 21-3-04, p.8).

basis from the Rakshit jungles. Thoroughfare of the local residents was allowed (subject to prior permission and payment of adequate fees against which a pass was issued) for bonafide purposes or for shikar. Bonafide purposes meant collection of timber, firewood and NTFPs for own consumption and not for sale. Access of the pass-holders was restricted to the open forests so far collection of timber etc, are concerned. On the other hand, shikar was also allowed in other places (besides in Chhada Blocks). However, killing birds in Bagagahana, where concentration of local and migratory birds is maximum, was strictly prohibited (*Kanikaraj Sansodhita Junglemahal Niyamabali*, 1951).

There were certain species of flora and fauna (like, deers in velvet) declared as prohibited species (i.e., not allowed for cutting/killing). Though turtle eggs were allowed for collection, turtle-lifting was not allowed. All these restrictions were however lost their strength after the feudal administration was over.

In 1975, the Govt declared the Bhitarkanika forests as a Sanctuary for the protection of wild life. The total area of this sanctuary is 672 sq.km.. In 1988, the Govt published its intention for creating a National Park over an area of 367 sq. km. in the Bhitarkanika area, but the final notification in 1998 recognised a much reduced area. The Bhitarkanika National Park actually comprises the 145 sq.km. core area of the sanctuary and is essentially a no harvest zone by principle.

Meanwhile, in 1997, the marine waters off the Kanika coast were also declared as the Gahiramatha Marine Sanctuary for the protection of Olive-Ridley turtles. This marine sanctuary shares its boundary with the Bhitarkanika Sanctuary/National Park. It constitutes 1408 sq.km. of water body and 27 sq.km. of land mass (including Reserved Mangrove Forests, mud flats and accreted sand bars). The core area of GMS is 725.50 sq. km. and the buffer area, 709.50 sq. km..

Relationship of the people with the resource base inside the PA:

People have been utilizing the local forest resources basically for their livelihood needs, the pattern of which is reflected in the following table:

<i>Utilization</i>	<i>No. of plant species</i>	<i>Name(local) of the plant species</i>	<i>Parts used</i>
Timber	10+	Pitamari, Sisumara, Sundari, Bandari, Bani, Churanda, Masitha, Pitakoruo, Garani, etc	Stem, etc.
Firewood	Almost all	Almost all species, more particularly Rai, Sundari and Guan.	Stem, etc.
Thatch material	2+	Pinchha, Nalia	Leaves
Basket/mat making materials	3+	Nalia, Bahumruga and Keuti	Leaves, etc
Medicinal	10+	Sisumara, Chhanchina, Sundari, Banalembu, Patrakorua, Kantagila, Rai, Jagula, Pitamari, Singada, etc	Fruits, roots, bark, etc.
Edible fruits / leaves, etc	4+	Kerua, Oruo, Singada, Giria, Hentala, Gohira, etc	Fruits, seeds, leaves, etc.

Fodder	2+	Bani, Nalia, etc	Leaves
--------	----	------------------	--------

At least 40 villages are entirely dependent on the Bhitarkanika mangroves for their firewood needs(Chadha S. and Kar C.S. , *Bhitarkaikna: Myth & Reality*, 1999, pp.264-65). Another estimate shows that about 1 lakh cattle population in the boundaries of the sanctuary depend on this resource for fodder (*The New Indian Express*, 12-12-01).

The timber of Bani, Sundari, Masitha and Pitamari is very good for furniture work. Hental stem works as a substitute for bamboo and even shutters are made from it.

Exclusive use of mangrove species for making agricultural implements was as under:

<i>Implements</i>	<i>Species used</i>
Langala(plough)	Sundari, Rai
Mai (drag/harrow)	Guan
Juali (yoke)	Sishumara, Pitamari

Similarly, almost all the house-building materials are also available from the mangroves as shown in the following table:

<i>House-building materials</i>	<i>Species</i>
Khunta(pole)	Habali, Sundari
Rua (rafters)	Hental
Bata (batten)	Sundari, Guan
Pata(plank)	Bani
Thatching material	Hental leaves
Rope	Hental and Bania bark-fibre

A remarkable use of mangrove resource for house-building purpose is seen in the area in the form of roofs thatched with Hental leaves or *pinchha*. Pinchha roofs are said to be 50% more durable than roofs thatched with hay because they last for three years as against two years of the latter.

Local people say that long back their forefathers used hay for thatching purposes but the paddy fields being unprotected from tidal water intrusion, salt water used to affect the paddy fields thereby reducing the strength of the hay produced therefrom, rendering the latter not useful as a thatch material. Hence, Hental leaves were used as an alternative. These leaves are brought green and then sun-dried for a few days after which they are used on the roofs. These are even used as brooms. However, the restrictions in the National Park has made pinchha roofing more costlier since Hental patches are no more abundant near the villages and bringing the same from the NP area would require bribing the forest officials. Hence, few people now use pinchha. On the other hand, bad crops 2001-02 caused scarcity of hay as a result of which many people could not thatch their roofs afresh.

Boats are a common feature in the area. Flat-bottomed boats or *danga* are the indigenous ones while crescent-shaped boats, locally known as *dingi*, are the introduced (by the Bengali migrants) ones. However, for boat-building purposes the mangrove species are hardly used and the required timber (of terrestrial species) comes from outside⁴.

Besides the above, items of commerce include honey, fingerlings, crabs and fishes. The rivers and creeks are rich in shrimp and fish population and the Bay of Bengal, a giant source of commercial aquatic fauna is not very far. The rivers/creeks are also used for transportation.

People of the Kela community, who are snake charmers, used to come from far & near to catch varieties of snakes (more particularly, King Cobra and Python) from the local forests. Some miscreants are also engaged in the illegal poaching of deer for meat.

However an interesting part of the relationship is that the local Oriyas hardly collect many non-mangrove NTFPs like Kochila and Mankadakendu.

The Dalei and the Harijan community (who belong to the BPL category and are mostly landless) are the most forest-dependant people among the locals. The former collect honey & wax from the forests and more than 50% of their total annual income comes from this source. In fact, they considered this as their major occupation and see other kinds of work (such as working as daily labourers) to be of secondary importance. Similarly the Harijans earn about 60 to 70% of their total income from the collection and processing of Nalia grass, Bahumruga creepers and Keuti grass.

Three major sources of income for the local people are detailed below:

□ **Honey:** Three varieties are distinguished as under:

1. Baghua. This is regarded as the best and is produced by rock bees (*baghua machhi*). The months of availability are *Phalgun*, *Chaitra* and *Baisakha* i.e., February to May. The honey is locally sold at Rs.40/kg (Rs.50 outside) whereas the wax sells at Rs.35/kg (Rs.40 to 60 outside).
2. Machhia : This is produced in bee-keeping boxes hence it is not wild honey and the local tribals are not accustomed of its collection/production.
3. Korada: This is found in the hollows of some mangrove species like Sundari and Bani. It has a sweet-sour taste.

Baghua is mostly collected and the yield (of honey and wax) is more in this case than the other two. Korada honey was not accepted by the FD, but it some specific medicinal uses like in mouth ulcer and wounds developed on children' s heads its application is said to be effective.

Wax is a by-product of honey collection. The colour is either yellowish or whitish depending upon the source-flower (like, white one has a link with Kharasi flower while the yellow one has it with Garani flower). The former is said to be the best (even in case of honey also) though market rates are almost the same.

⁴ However, the Kanika Forest Rules of 1951 mention of a provision for the collection of boat-building materials from the forests.

Percentage of moisture is less in honey during winter than in the rainy season.

Collection of honey used to be about 10 quintals per season in the Dangamal range as against 15 to 20 quintals in the Rajnagar range (Satabhaya-Gupti area) due to differential distribution/concentration of forests.

□ ***Nalia grass:***

Nalia (Myriostachya wightiana) is a mangrove associate. It grows abundantly on the banks of rivers/rivulets/creeks affected by tidal waves. The reed of this grass is the most useful part which is longitudinally split into two or more parts for weaving purpose. The upper portion of this reed is thinner and this is used for finer weaving (small baskets) while the thicker lower portion is used for coarse weaving (big baskets). The *Nalia*-ware thus made are water-resistant to some extent and are hence used for cleaning rice with water.

The longitudinal pieces of reed are first rubbed in mud and then sun-dried for four to six days after which they are soaked in water to get softened and then used in basket making. The leaves are simply dried and used.

The leaves of *Nalia* can be used in mat-making. As a mat-making material, *Nalia* has some local substitutes like *Bedhuan* grass and *Keuti* grass which grow in non-mangrove areas. What is interesting is that while *Nalia* is essentially handled by the Harijans community, these substitutes are used by almost all the communities for mat-making probably because access to *Nalia* is more difficult. However, *Nalia* mats are relatively better priced than *Keuti* mats since the latter are considered to be less durable than the former. For instance, *Nalia* mat is three times more durable than *Keuti* mat. On the other hand, *Bedhuan* mats are said to be more durable than *Nalia* mats which, unlike the former, lose strength when exposed to sun and hence, while the latter is durable for three years, the former is durable for five years⁵.

The stem of *Bahumruga (Flagellaria indica)* creeper is used as a substitute for *Nalia* reed. After collection it is longitudinally split into three pieces which are then first soaked in water for four days and then dried for final use. The advantage of *Bahumruga* over *Nalia* is that unlike the latter it is devoid of joints.

□ ***Fish/crab/shrimp:***

Crabs and shrimp fingerlings have been an important source of income for many local people here. These can be caught from creeks and waterlogged paddy fields also.

⁵ *Bedhuan/Beruan* grass grows in paddy fields during rainy season when it is collected and then sundried. The mat is woven after the agricultural season is over (when people can devote time for it) and is so popular that the poor call it *bila kambala* (blanket of the paddy fields). Weaving is done very carefully in accordance with certain principles so as to ensure fortune for the user. During the winter, this mat serves like a blanket for the poor and even after death the body of the user is taken for cremation wrapped in this mat. *Keuti*- and plastic mats are more in demand now, but people have still not forgotten *Beruan* since it has been a part of their socio-cultural tradition. Some poor people reportedly make this mat for commercial purpose also (*The Samaj*, p.8, 15-1-04). *Keuti* mats are less durable and flexible than *Beruan* and hence the latter is priced more or less 50% higher.

Two varieties of crabs are distinguished. The best one (in taste and size) is known as *madhua* and is sold at Rs.20 to 22 per kg whereas the other one, which is called *balua*(hairy) and is less available, is hardly collected and marketed.

Mala chungudi, otherwise known as *pateli machha*, may have a rate of Rs.18 to 20 per kg. The size is very small than that of *bagda chingudi* (*Penaeus monodon*) and this species is not meant for prawn culture purpose. When salted and dried, it is known as *pateli sukhua* and is sold at Rs.40/kg if the count is about 250 and Rs. 30 to 35 per kg if the count is 300 or more(i.e., size is small). Drying reduces the weight by 33% or more.

Fingerlings of *bagda* assumed commercial value in the locality after prawn culture was started here on an extensive scale. The rates are Rs.170, Rs.100 and Rs.80 per kg for a count of 40, 60 and 100 respectively.

Honey is collected by the tribal people of Satabhaya, Kanpur, Okilapal, Dangamal, Rangani and Kuruon. Nalia-craft is practised by the Harijans of Paripangar, Kandia, Baharagada, Rabaneswar, Khamar sahi and Kaitha, etc.

Crabs and fingerlings are collected more or less in most of the surrounding villages and young children also take part in it.

Mangrove- and terrestrial plant species are used for medicinal purposes also as per the following details:

<i>Mangrove species</i>	<i>Terrestrial species</i>	<i>Medicinal use</i>
Banalembu	_____	The fruit cures acidity and cold.
Singada	_____	Fruit helps cure loose motion.
Sisumara	_____	The fruit is rubbed into paste and then applied on tumours and glandular swellings, etc.
Guan	_____	The latex is poisonous and can damage eyes or cause inflammation of skin when in contact. Its antidote is the extract of Jagula leaves. However, when applied on cuts, it helps reduce pain.
Sundari	_____	Fresh bark is to be chewed and then applied in cuts/wounds.
Pitamari	_____	Fruit is rubbed into paste which is applied on boils.
Rai	_____	Semi-mature fruit is roasted and consumed to cure loose motion.
Harakancha	_____	The root is used in case of pain caused due to piercing of <i>machha kanta</i> (needle-like fish

		bone).
Kantagila ⁶	_____	Seeds are half-roasted and consumed to counter acidity.
Patrakorua	_____	Wood oil (distilled) is applied on soars developed on children' s head.
Panikenduli	_____	Roots used in the treatment of hernia in children.
_____	Chhanchina	Bark put in curd for 2/3 days. This curd is consumed to cure arthritis, etc.
_____	Narguni	Stem used as old man' s stick for support, by the people who are otherwise unable to walk. It is believed that the Narguni stem is more effective than other kinds of support.
_____	Tundapoda	Leaves when chewed are effective in blood dysentery.
_____	Muchukundi	Leaves are chewed and flowers are soaked in water after which this water is consumed for treatment of diarrhoea.

(personal communication, Dhrubacharan Behera, Khagewsar Sahu and Gobardhan Dalei of Dangamal and Banipada Maiti, Talachua)

Keruan and Oruo fruits are cooked to prepare *khatta*. Gohira fruits are boiled before eating. Hental seeds, when semi-mature, are pounded in husk pedal (*dhenki*) and then boiled to make an eatable gruel (*jau*). Fleshy parts of the ripen fruits of Hental area also eaten directly.

Dhani dhan is consumed more by the wild life than humans. Jalanga fish, monkeys, deers etc. eat this plant or its ' paddy' . Buffalos graze on it during the season which usually extends from May to August because during the February to May they need not divert themselves to the mangroves since fodder is available in the agricultural fields.

Atundi or Torania is a terrestrial species available in suitable places inside the NP. The stem contains a juice which is consumed during thirst like water.

Harakancha thorn was reportedly used as an ingredient in *pan* and its flower' s nectar consumed by children. Such practices hardly exist now.

In fact, the local mangrove species are known to have various other uses(including medicinal) which the local people have either forgotten or are not aware of. The Bengalis have also introduced some uses in this area like making cakes from the ' paddy' of Dhani dhan or eating *Giria* leaves in times of scarcity.

Impact of the relationship on the bio-diversity:

There are two views regarding the impact of the above-described relationship as explained in the following:

⁶ Some species like Kantagila have been put under the mangroves category on the basis of the information provided by the local people. However, one or more of them may actually be mangrove associates also.

- *Positive impact (view of the local people):*

The local people say that harvesting the mangrove and non-mangrove species affects a silvicultural impact on the forest because it helps in coppicing and regeneration. They claim that after the harvesting was stopped by the authorities, Bamboo, Hental and many other species (like Kharasi, Singada and Bani) have suffered badly due to this reason and some Bamboo & Hental patches have been degraded.

The misconception

So far Nalia and bamboo are concerned, the claim of the people may be true that non-harvesting of these species slows down or hinders healthy regeneration. But claiming that cutting of Hental plants helps in its regeneration can not be true simply because no mangrove species possesses coppicing power, explains Nadiya Chand Kanungo, retired Forest Officer and eminent environmental writer. However, he says that cutting of Hental forests might indirectly facilitate some regeneration by providing a scope for the Hental seeds to reach the soil underneath because during the cutting creepers and other weeds which otherwise created an obstacle for the falling seeds by blocking the passage to the ground, are also cleared (*personal communication*).

Nentei and *Kalakatia* are some creepers which take the support of Hental plants (small) and apparently seem to suffocate the free growth of these plants by taking into seizure the tender leaves and branches. Hence, their clearing facilitates healthy growth of Hental.

Four species of bamboo reported existed in the area (in places like the Bhitarkanika PRF where space exists for the growth of non-mangrove species) viz., Dasalakhi, Sunari, Kanta and Beludi. Dasalakhi used to be the most valuable among these four. However, all except Sunari have been degraded or extinct due to the policy of Forest Department, as per the claims of the people.

- *Negative impact (view of the Forest Department/ wild life experts/local people):*

Indiscriminate exploitation of Pinchha (Hentala leaves), large scale browsing of Bani leaves by the buffalos and various other such activities by the local people have degraded the resources considerably. Besides, large scale smuggling of snakes like King Cobra has made the species endangered there.

Large scale poaching had made the salt water crocodiles a vulnerable species before the sanctuary was declared. For the Rajas of Aali and Kanika and also for many others, this crocodile was a preferred animal for *shikar*. The Kanika Forests Rules mention a fee of Rs. 7.50 per animal for this particular shikar by non-privileged people. There was a time when the Rajas invited crocodile-hunters from Japan so as to control the population of this animal in the interest of the people (*The Samay*, 8-3-03).

People used to take home large numbers of turtle eggs from the Kanika coast which reduced the scope of turtle reproduction significantly. They paid certain fees for this concession and either sold them for transportation to the Kolkata market or used them as cattle feed after drying since except few lower caste the local Oriyas do not prefer eating the eggs or turtle meat. When the Forest Department of Orissa took over the management of this area, it also used to issue (till 1975) license for egg collection @Rs.15/boatload

each boat containing 35000 to 1 lakh eggs(pp192-93). Then the Bengalis started extensive commercial fishing in the Bay of Bengal and about 1000 of them were fully involved in turtle catching operations in the Gahiramatha coast between 1975-76 to 1982-83 so as to transport the turtles to Kolkata market. It has been estimated that 50000 or more adult Olive Ridleys were captured during each nesting season during this time (Chadha & Kar, *op.cit.*, pp.197,199). The Fisheries Department facilitated the advent of mechanised boats & trawlers in the area which killed the Olive Ridleys either by hitting them or by dealing with them ruthlessly if they were caught in the nets. Official estimate puts the death toll of turtles at about 37000 between 1984-85 to 1996-97(based on the table vide annexure 4,*Interim directions of the Central Empowered Committee*, 7th March 2003). The death of these turtles has attracted wide media attention.

The Bengalis started commercial prawn culture in the area. The only species which they culture is *bagda*, a large-sized prawn of high export potential and promising demand in the domestic market also. For this purpose, they created large ponds, diverted creek waters to them since *bagda* thrives better in brackish waters, and discharged effluents into the creeks thereby polluting them. This business not only facilitated a change in the traditional land use pattern but also imparted a chemical change in the local soil particularly through the use of chemically processed prawn culture materials (for instance, lime is used). Their major impact on the local resources however has been the significant reduction in the population of many non-*bagda* species of shrimp and fish. They employ the local people to collect fingerlings of *bagda* by using non-traditional finer(zero-mesh) nets which retain not only *bagda* fingerlings but also fingerlings of other species, but the latter are ruthlessly rejected which often kills them.

The Bengalis have also been engaged in extensive fishing in the river mouths and Bay of Bengal as a result of which availability of many kinds of fish in the interior areas have been considerably decreased. Illishi was a favourite fish that was available in the interior areas before this extensive fishing was started, but now it is very difficult to get it.

Extensive commercial fishing has increased the rates(in the local market) by five to ten times. For instance, the rate of *bhekti* has increased from Rs.20/kg to Rs.110/kg.

The saline embankment has also had its adverse impact on the local resources. It was constructed before 1930s to check salt water inundation in the paddy fields and has been able to save the village areas from such inundation during cyclones to some extent. However, at the same time its obstruction to the free interaction between fresh water and tidal water in the creeks/rivers has caused a significant chemical change in the water in the affected area as a result of which local resources have suffered. For instance, Nalia has reportedly been killed in some of these affected areas. At the same time, the obstruction has stopped the outflow of excess water to the sea during floods or heavy rains, through the creeks, thereby causing water-logging for many days in village areas of some parts of the district.

If checking of tidal inundation has facilitated the destruction of virgin mangrove forests, then construction of dams in the upstream of river systems has reduced the supply of fresh water to the creeks thereby increasing the salinity to an extent not tolerable by the mangroves. The soil characteristics have been also affected due to that (*The New Indian Express*, 21-12-01).

It must be recalled here that that the resources are not uniformly distributed in this area and so are their users. Hence, the impact also has a differential pattern. For instance, Keuti grass is found in the Dangamal Panchayat but not so commonly in the Gupti Panchayat. Similarly, the Khamara sahi people use Bahumruga which their brethren in Hariharpur do not use.

Browsing of Bani leaves by buffalos is not a common sight because buffalo herds are maintained only at few places like Guja and Habala. The buffalos cross the local river in groups as a result of which crocodiles can not dare attack them. Earlier, people used to keep such herds in the mangroves, but this practice has now been abandoned mostly due to the vigilant actions of FD people.

The mangroves were richer in the Thakurdiha area (Chinchir mouth and Krushnapriyapur, etc.) than in the Kanika side, but now that richness hardly exists due to anthropogenic pressure. The Forest Department had been able to raise a successful plantation of Bandari, Rai and Keruan etc. near the Durgapur mouth, but people from Bajarapur area destroyed this plantation and turned it into agricultural fields.

The wildlife has suffered the variously due to human pressure. The population of jackals has reportedly been reduced significantly after some people used dynamites to kill them about 15 to 20 years ago. The deer population is under threat from poachers who even employ dogs to trap them and since the Forest Department does not carry out a census for the deers, the statistics of the loss in their population due to poaching is not available. Still, atleast 45 of these animals have been killed since 1997 (*The Sambad*, 11-5-03).

Birds are killed and supplied either to local hotels or to other areas. A foreign bird reportedly fetches Rs.100 to Rs.150 while an Indian bird is sold at Rs.50 to 80 (*The Times of India*, p.4, 31-12-03). The Forest officials have not been able to check this random poaching.

Previously, the turtles used to come for mass nesting twice a year i.e., in January and March; but now they come only in March. It is said that large scale illegal fishing in the turtle congregation in January and February has forced these marine animals to opt for March when fishing activity decreases due to the string south wind (*personal communication*, Biswajit Mohanty) and the risk of human disturbance is reduced.

It is however wrong to conclude that all the negative impact on the local biodiversity owe their origin to anthropogenic pressure. Natural factors have also contributed to the same the latest example being the splitting of the Gahiramatha rookery. The turtle population is threatened by a large number of predators like dogs, hyenas, jackals and wild pigs who eat the eggs by digging the nests.

Rights issue (1): impact of the restrictions on livelihood of the local population:

During the Estate period, the King allowed the local residents for the collection of timber and NTFPs for domestic use, in lieu of certain fees, during the specified periods of the year in specified forest patches. Although a large number of plants were then declared as Reserved Species, thus implying lack of permission for their cutting, the species in the unreserved list were sufficient for the needs of the residents.

The status-quo was more or less maintained in this regard by the Revenue Department of govt of Orissa after the Estate abolition till the forests were handed over to the Forest Department in 1957. However, the revenue Officers were still enjoying power to issue permits for the unreserved species in the unreserves while the Forest Officers had the power to issue permits for the Reserved Species in the unreserved forests even after this transfer of management powers.

In 1961, the Govt declared the Kanika forests as Protected Forests under the Indian Forest Act, 1927; but clarified that it would not affect the existing rights of the individuals or communities. However, in a number of simultaneous notifications, the Govt not only declared 22 species as Reserved Species that included some popular mangrove (like Sundari and Sisumara) as well as non-mangrove species (like Amba and Panasa) and also, certain exotic species like Euclyptus; but also prohibited certain activities like the burning of lime & charcoal, removal of any forest produce and breaking up or clearing any land for cultivation or habitation, etc.

Despite all these notifications, people still managed in one way or another to collect what they wanted for their livelihood till the area was declared as Sanctuary in 1975. After this notification, some of the existing rights still continued; but the inhabitants were no more allowed to make any change in the land use pattern and also, all the creeks / nallas and riverbeds were now closed to hunting though fishing was allowed to some extent despite legal prohibition.

However, the real problem started after the notification of the National Park in 1998 because as per the rules & regulations of the National Park, no rights whatsoever exist inside the NP territory. So people were now in great trouble since any kind of thoroughfare inside the NP area where the forests and water resources of the region are concentrated, was prohibited. Thus, honey collection by the tribal Daleis and Nalia grass collection by the SC people have been stopped and they are facing problems to secure their livelihood. Some of them are resorted to illegal collection of the same since they have been extremely dependent on these raw materials. Even, catching crabs from the creeks has been restricted by the departmental staff on the plea that the crabs are for the crocodiles.

The following case studies reveal the problems of the local people in detail:

1. *Dangamal:*

This is one of the most important villages in the Sanctuary. The village is an old one and there are many Dalei adivasi families who reside here. Out of total 265 HHs(?) about 45 belong to the Daleis who are either landless or marginal farmers. Many of the Dalei HHs have been traditionally dependent on honey collection from the mangroves.

Earlier, the Forest Department used to grant them a honey pass in lieu of Rs.8/person per season. Later the fee was increased to Rs.12. The honey thus collected was being taken to Chandbali for sale in the absence of adequate local market.

Then the Department abandoned the pass system and employed these people(males) for honey collection according to which they were paid Rs.25 per kg of collection. The Department used to provide them boats and the Daleis disposed of their collection at the Departmental centre where it was further processed. The payment was made partially in

cash(Rs.15) and partially in kind(rice etc. worth Rs.10). Then the payment was increased to Rs.30 per kg of collection and it was made in cash.

Out of an average annual income of Rs.10000 per HH about 5000 to 6000 used to come from the honey business. Rest was managed from wage labour, catching crabs/fishes, etc.. But now the Department has stopped honey collection from the forests which are in the National Park area. As such, the livelihood of these people is badly affected. Since they are accustomed to this profession it is difficult for them to adopt other alternatives. On the other hand, they have little land and money to afford other viable alternatives like agriculture. Some of them had reclaimed some forest land in the Mahisamada area which the Forest Department seized later and used for plantation. Hence, some of them have no choice but to engage themselves in illegal collection of honey from the NP area.

For the Daleis as well as other villagers, house-building has now become quite difficult since the FD has restricted harvesting timber and pinchha.

Prawn culture had provided them a source of income because they used to sell ' pin' (bagda fingerlings) throughout the year to such farms. The nearest trading centre for this was Baradia-Chandbali. The sale price was Rs.40 per 100 numbers and the net income used to vary between Rs.20 to 170 per person per day. But after the farms were demolished, this source of income has almost gone.

2. *Khamara-sahi:*

Among the total 130(approx.) HHs, this village has about 60 landless Harijan HHs who are professional Nalia weavers. They also use Bahumruga creeper. Besides mats, six or more other items(*pachhia*, *bhoga-tata*, *phula-changudi*, *khalei*, *gauni*, etc.) are prepared from these raw materials which are either purchased by petty traders or by the local people. The prices are however not very encouraging.

For instance, a double-bed mat would require 4 to 5 kg of Nalia leaves(dry) as raw material. The whole job may take four days of which two days are spent only in weaving. With so much work, a person gets about Rs.70 to 80 per one such mat.

Similarly, a large basket of Nalia which can accommodate 20 to 25 kg rice, would require 1.5 to 2 kg stalks(processed) and the whole job(raw material collection, processing, weaving) may take four or more days for a person whereas the sale price is about Rs.75.

A large basket of Bahumruga having a market price of Rs.50/- may require 2 to 2.5 kg raw material and it takes at least a day for weaving.

Nalia/Bahumruga craft is practised for three months a year and yields a substantial income for the poor families @Rs.2000 to 3000 per HH. But now this source of income is at stake since the FD has banned harvesting inside the NP area. The Nalia weavers are thus forced for illegal collection of the raw materials.

3. *Harijanpada, Gupti:*

About 53 HHs of Kandra caste(SC) reside here most of whom are either landless or marginal farmers. Most of the nearby lands are owned by outsiders(Oriya) and these people cultivate

such lands on a Bhaga chasa (share of 50% in the harvest) basis. This is their chief occupation though the income from this source is not sufficient.

In early 1970s, some of these HHs were allotted land (2 acres/HH) in the adjacent area by the then Minister Kanhu Charan Lenka. They were given patta for such lands and the revenue department collected land rent/cess from them against the same. However, in 2001-02 the Forest Department seized these allotted lands claiming that the area actually belonged to it. Accordingly, the Department has asked the people to stop cultivating these lands though they still pay land cess for the same as the Revenue Department is yet to cancel their pattas.

Fishing used to be a major supplementary source of food for these people. The nearest water channel Bhandua Nala used to provide them a lot of fish, shrimp and crab. This channel was being leased out by the Panchayat @Rs.3000 to 4000 per year and the lessee used to catch fish etc. from it. The people of Harijanpada had thus no right to exploit the fish population of this channel directly, but they waited near some particular point (like, where it crosses the road) of the flow with their small implements like *bansi* and *lanja* by which they were able to catch some fish or crab. However, the Forest Department has recently obstructed this channel by delineating the NP boundary afresh as a result of which the availability of fish/crab has decreased significantly. Earlier, a person could get *two bhars* (about 60 kg) of crab in two hours but now it is difficult to get 4 crabs in a day. Similarly, earlier about 50 numbers of *bhekti* fish could be caught two hours but now it is difficult even to get a single fish of this species.

During rainy season, they used to collect sufficient shrimp from the agricultural fields. They concentrated on what is known as *mala chingudi*, very small shrimps traditionally popular and without realising the commercial value of *bagda* species, they at best used the latter in the dry form as *sukhua*. All these catches were meant for domestic consumption generally because there was hardly any taker for these things among the local people. However, the availability of *mala chingudi* has been considerably reduced after the establishment of prawn culture farms.

In the absence of irrigation facilities, the crops are rainfed. With their agricultural fields seized by the Forest Department, the struggle for survival has been more acute. Wage labour is available for two months during the agricultural season and usually the menfolk work as labourers to get payment @ Rs.40 to 50 per day. Since scope to work as wage labourers is very limited in the locality, many (about 32 persons) have migrated temporarily to Gujarat and Delhi in search of employment.

The Forest Department has provided neither solar light/cooker nor the facility for vaccination of their livestock. Rather it has seized their guns as a result of which they are no more able to protect their crops from wild boars efficiently.

The womenfolk go into the National Park once a week to collect firewood both for domestic as well as commercial purposes. They go in groups so as to avoid the danger of crocodile attacks. The firewood is sold @ Rs.40/quintal.

At night the whole hamlet is without light and in short the people are in such a miserable condition that they feel as if they are in hail. The Forest Department arranged for the training of some of the people of the area at Bhubaneswar where they were taught how to adopt other viable alternatives. Two persons from Harijanpada participated in this training and they found

the new options quite useful and promising. For instance, they were taught how to make *gundi* a type of *pan masala* using the essence of the flowers of *Luni Kia* (found in mangroves) and the roots of *Apanga lata* (a creeper also found in the local forest). But they are yet to practice it due to want of finance. Commercial crab culture they can afford to some extent in their agricultural fields, but the problem is that the Forest Department staff would not allow supply of such crabs to outside because they would suspect that the same have been collected from the National Park area.

There is no forest in the immediate neighbourhood of the hamlet though mangrove patches do exist at some distance. The villagers say that they are interested in protecting the mangroves because that would benefit them by providing fuelwood etc., but they want to do it on a condition that irrigation facility be extended to their cultivated fields so that they would be able to grow Taichung paddy.

4. *Charigheria (near Gupti):*

This village has about 55 HHs of which 10 belong to the Scheduled Tribes and 7 to Oriyas. There are many Bengali residents though they are not better off.

This village was created after 1972 when after refugees came from Bengal/Bangladesh following a cyclone. The minister K.C. Lenka granted 4 dm. homestead land and 1 *man* (acre) cultivable land to each HH. The total area of agricultural lands including those granted to the Harijans of Gupti is about 100 acres. However, now the Forest Department has established its claim in the whole area (including the village proper) and has constructed a canal from Uttara Bagapatia to Okilapal to mark its territory. The villagers have been prohibited to cultivate the fields. The people are in such a situation that some of them have to use *Kain munda* as food and the misery has forced many villagers to migrate temporarily in search of employment.

5. *Hariharpur (Gupti Panchayat):*

There are 3 to 4 HHs belonging to the Pana caste (SC). These people depend about six months a year on Nalia-ware and on bhaga chasa & wage labour for the rest of the year.

Nalia is collected during September-October. Earlier the Forest Department allowed them its collection in lieu of Rs.5 per person per trip, a system known as Nalia pass. They used to go for collection in boats and brought as much as they could. Now, after the declaration of National Park the Nalia pass is no more granted by the FD and the people have to bribe the officials for their illegal collection.

One time collection of raw material (Nalia) is used to make baskets etc. having a market value of Rs.100 to 150. The items are usually sold in the immediate neighbourhood (other villagers) against payment in kind (paddy/rice) as per the traditional village custom.

These Panas do not use Bahumruga creeper, unlike their counterparts in Khamara sahi, because they find it difficult to get this raw material conveniently. Nalia grows abundantly in particular places whereas Bahumruga is scattered here and there, hence collection of the latter is very time-taking.

6. *Okilapal (Devendranarayanpur):*

Here, out of total 145 HHs, 35 belong to the Lodha community who are a Schedule Tribe. Their original settlement was at Satabhaya, but some of the Lodha families have migrated to this area after the 1971 cyclone.

Most of them are below poverty line and also landless. Homestead lands have been allotted to them through the Bhudaan movement and cultivation is done by them in other people' s lands on bhaga chasa basis.

Till recently the main sources of income used to be three: bhaga chasa, honey collection and wage labour. About 50% of the annual income came from bhaga chasa while 40% came from honey collection and 10% from wage labour.

Honey was collected during Chaitra-Baisakh(summer). The burning green leaves of Hental were used to drive away the bees during the collection. However, the FD no more allows them to collect honey in the National Park.

Some of the Lodha HHs were provided with solar heaters which were actually damaged ones and hence were useless.

They used to capture wild boars and deers etc. using traps(*phasha*), but the traps have been seized by the FD.

Honey is now illegally collected by some of them, but this does not ensure the production which they earlier used to have. Hence, the miserable livelihood has been adversely affected by the restrictions of National Park.

With the help of Forest Department, the RED CROSS has promoted a cottage industry of the village women. This industry is known as Satabhaya Agarbatti Industry which produces agarbatti. The number of women working here is 18 who belong to all castes/communities of the village including the Lodha.

The industry is operational since two years. Three types of agrabatti are made here. The raw materials are purchased from outside and marketing is done through agents.

The members of this SHG group pay Rs.20/month as membership fee. They are paid Rs.10 for rolling one thousand agarbattis. The earning thus comes around Rs.250 to 300 per member. Each member keeps Rs.100/month in her bank account as recurring deposit from this money.

Though there are other women in the village who can be members of this group some of them are not interested for that. Hence, the membership is limited. However, this cottage industry has created self-confidence among the members and is certainly a good attempt.

The distant connection

Patia(near Bhubaneswar) has been famous for its *Kela* community who are snake charmers by profession and tradition. The Raja of Kanika had purchased a lot of land in the Patia area and had rehabilitated these Kela families there in Padmakesharipur village when they were in acute shortage of land for residential purposes. These people still regard the Kanika royal family with high esteem.

The Kanika forests provided the Patia Kelas a large variety of snakes including pythons and king cobra. Though chasing snakes in the mangrove swamps is quite a difficult task, still these people had acquired by experience the tactics of overcoming this difficulty. For instance, they used to capture Jharkalua(King cobra) from the Bani trees and pythons from the Hental forests. The journey to Bhitara Kanika used to begin in the winter after Kartik Purnima and the peak of winter season was probably chosen as the snakes usually go on hibernation during this time and are hence in a lazy state. King cobra was captured when it exposed itself to the sun on Bani tree (*personal communication*, Pagal Das, Padmakesharipur).

After declaration of sanctuary, the Patia Kelas were denied access to the Bhitara Kanika forests; hence they gradually abandoned their traditional practice of going there for snake-capturing. Their profession is no more a viable option for livelihood now and their struggle for survival has certainly been adversely affected by the restrictions in Bhitara Kanika. On the other hand, the snake population has increased in the sanctuary significantly due to their non-capturing of snakes from here. The local people have therefore found thoroughfare in the mangroves more difficult due to increasing snake population.

Recent reports however suggest that some snake-capturers belonging to the Kela community are still coming to the sanctuary from Patia and Medinipur(West Bengal) areas after the harvesting season is over in winter (*The Samaj*, p.9, 9-1-03). The King Kobra has become an important item of commerce which is said to be sold live for rupees three thousand to seven thousand (Mohanty, *op.cit.*,p.55). The utility of this snake lies in the collection of its venom for the preparation of anti-venin.

The illegal snake-capturers reportedly use the convenient (i.e., unguarded) Galiamuhan and Sagunaadia route near Chandbali and Patia is still receiving King Kobras from this source (*The Samaj*, p.3, 1-5-02). A study by the Wildlife Society of Orissa said that in February 2002, the Delhi market received as many as 76 king cobras from the Patia

Rights issue (2): Impact of the restrictions of the natural rights of the local population:

The local people allege that thoroughfare or intervention of any kind by the public has been so brutally handled by the Departmental staff that one Nakula Das of Khamarasahi has been suffering badly since last four years when he was beaten up by the concerned staff only because he was coming with his pet dog and the staff alleged that he was on a hunting

mission. People also allege that their dogs are sometimes forcefully taken away by the departmental staff to feed the crocodiles.

Steps taken by the govt to safeguard the bio-diversity:

The govt strengthened its measures to safeguard the local bio-diversity in three measure phases as illustrated in the following scheme:

Declaration of Bhitarkanika Wild Life Sanctuary (672 sq. km.)



Declaration of Gahiramatha Marine Sanctuary (1435 sq. km.)



Declaration of National Park (145 sq. km.)

Dr. Salim Ali. Noted (late) ornithologist of India was fascinated by the bio-diversity Bhitarkanika so much that he recommended to make it a Bio-sphere Reserve in 1981(Mohanty, *op.cit.*, p.60), but the present DFO seems to be unaware of this and he has sent a similar recommendation to the govt.

Salt waster crocodile is found only at three places in India: the Andamans, the Sundarbans and Bhitarkanika. So it is considered as an endangered species (although they literally flood the rivers & creeks of Bhitarkanika now) and that is why a conservation programme was started in Bhitarkanika under the guidance of Dr. Bustard. The scheme has been closed after its successful achievements and as per the Departmental claims; the crocodile population has increased significantly from 96 in 1975-77 to 1358(inclusive of those which are found in the area but outside the Sanctuary boundary) in 2004 which is a record (Chadha & Kar, *op.cit.*, p.174; *The Pragatibadi*, p.7, 29-1-04).

The lost objective

When crocodile breeding farm was started in Bhitarkanika, one of its objectives was commercial i.e., export of crocodile skin which has a good international market. This could have helped to maintain a balance in their population. But this has never been done simply because at national level the population of salt water crocodile is still considered threatened and unless the Union Ministry for Environment & Forests removes it from the list of endangered species, the authorities can not exploit the crocodiles for commercial purpose.

According to an estimate, a one-hectare farm having 50 females and 5 males would bring about Rs.15 lakhs in five years. Herpetologist Romulus Whitaker opines that animal rights activists should be realistic and says, " wild life preservation has to have some economic value if it is to make sense to the ordinary man"(*The New Indian Express*, 31-10-01 and 3-01-03).

However, since the authorities never attempted to harness this economic potential, the govt has spent about Rs.17.80 crores since 1975 for this breeding project without any financial benefit (*The Samay*, 8-3-03).

Mangrove afforestation programme has also been taken up by the department and seedlings of many threatened or important species have been raised in the nursery. Besides, a public awareness campaign has been started so as to motivate people for not doing any harm to the local bio-diversity.

The Orissa Marine Fishing Regulation Act, 1982 is in force in the Gahiramatha sanctuary. Accordingly, unauthorised fishing is prohibited in the area and while non-mechanised boats can operate upto 5 kilometres from the shore, mechanised fishing vessels can go beyond that upto 24 nautical miles from the shore. Besides, fishing is restricted in 20 kilometres seaward radius from the Gahiramatha coast (Chadha & Kar, *op.cit.*, p.251). These restrictions are particularly enforced between 2nd November to 31st March when the mass nesting takes place and hatchlings start their journey in the sea. Moreover, it has been made mandatory for the mechanised fishing boats/trawlers to use TED(Turtle Excluder Device) and the govt is further planning to ban fishing by trawlers on the Orissa coast during the breeding season of fish & shrimp for 45 days i.e., from April 15 to May 31, this time to check the loss caused to the fish and shrimp population by over-exploitation by trawlers⁷ (*The New Indian Express*, p.6, 26-3-03).

The beach areas have been declared as Coastal Regulation Zone (CRZ) where all kinds of activities (like, land reclamation, storage/disposal of hazardous substances, etc.) causing an ecological damage is generally banned(Chadha & Kar, *op.cit.*, p.252).

In 1990, the Indian Navy(Eastern Naval Command, Vishakhapatnam) first took up the safeguarding of the turtles. Later, the Coast Guard replaced the Navy in 1995⁸ (*The New Indian Express*, p.6, 4-1-03) and has also taken a number of measures to regulate the movement of trawlers . boats etc. in the sea in the Gahiramatha Marine Sanctuary for the

⁷ The marine yield of Orissa was the highest in the country till 1985 but overexploitation has reduced the production significantly in subsequent years.

⁸ However, Chadha & Kar mention that the Navy and the Coast Guard started their involvement in turtle protection from 1980-81 which was later discontinued and that the Coast Guard resumed its activities after the 1996-97 season (see p.213).

safety of the marine turtles (Olive Ridleys). It has launched ' Operation Oliver' for this purpose.

Despite all such measures, the danger to the ecosystem caused due to illegal activities is still not over though reduced to some extent. Sometimes, lack of sincerity and man/machine power makes all these measures ineffective. For ex., the total strength of Forest Department was reduced from 54 in 1998 to 34 in May 2003 so far protection of Bhitarkanika is concerned and needless to say that it is very inadequate. In some cases the lacunae at policy level and other factors like technical limitations also create problem. For instance, the vessels of the Coast Guard are usually unable to move around in the shallow waters near the coast⁹ and further, they are not empowered to seize any boat entering the restricted area under the Orissa Marine Fishing Regulation Act.

The Forest Department seems to have succeeded in one way or another in reducing the pressure on the forests so far firewood collection is concerned. People say that what (firewood) they consumed 50 years back has now been reduced approx. by 75%. In fact, they are using alternatives like cow dung cakes and hay.

The High Court of Orissa had directed the Orissa Government to set up a task force to ensure encroachment-free status of the National Park. Accordingly, some steps have been taken and while 273 acres of revenue land had earlier been handed over to the Rajnagar Mangrove Forest Division(which exercises control over the sanctuary/National Park), more than 600 acres of such land, after evicting the encroachers, were recently handed over to this Division for mangrove regeneration (*The Statesman*, Orissa page, p.iv, 31-12-03).

In a recent move, import and cultivation of the highly priced white prawn (locally known as *tatara chingudi*) in the state has been deemed illegal in order to check the risk of transmission of some diseases to the domestic varieties (*The Times of India*, p.4, 20-11-03).

A coastal highway project have been long proposed by the govt of Orissa which environmentalists have opposed on various grounds including the possible destruction of mangroves and increase in the influx of encroachers. Thankfully, this project has not yet received the approval of Govt of India.

Steps taken by the govt to safeguard the livelihood of the people:

Till a few years ago the FD allowed the local people to harvest mangrove resources for their use in lieu of certain fees. For fuelwood collection this fee was Rs.120, and for *pinchha*, Rs.20 per pass. This system has been stopped now.

The local people consider the steps taken by the govt to safeguard their life & livelihood very inadequate. They say that although one of the predecessors¹⁰ of the present DFO was very strict in the management of the Sanctuary, but he was kind enough for the people so far their genuine grievances were concerned and thus, had allowed them for the collection of some fireweed from the forests only for domestic use; but the present DFO has discontinued this.

⁹ The Coast Guard has now decided to use hovercrafts which can operate on marshy lands and shallow waters.

¹⁰ They were referring to Mr. Sanjiv Chadha and his concessions during the pre-National Park period. Their allegations against the present DFO are superficial because he has his hands tied due to the National Park regulations and also, has followed the rules so strictly that even coconut is not harvested from the Dangamal forest bungalow area.

On the other hand, the Forest Department claims that it provided the Daleis (one of the communities worst affected by the restrictions) with bee-keeping boxes for apiculture purpose at a subsidized rate though the beneficiaries could not make best use of this facility. The Department has also started promoting women's self-help groups and provided them technical support for making agarbattis. Besides, it also planned for constructing deep tube wells in those parts where drinking water facilities were devastated by the Super Cyclone in 1999.

The Management Plan for 2001-02 says that "Generation of employment opportunities for socio-economic development of people" is also one of its long term objectives. Besides, the immediate short term objectives mention that 'Quantification and ranking of dependency of the local people in mangroves and providing acceptable alternatives for socio-economic development of the region to minimize forest interference' is also their aim. But in practice, the achievements in this direction are few. Earlier, the Daleis were provided with small boats by the department for honey collection from the mangroves and the honey thus collected was purchased by the department itself. But now they are no more allowed for the collection of honey from the forests. Instead, the department tried to provide them an alternative by supplying bee-keeping boxes in some places (and to some people only), but it could not succeed due to a number of reasons.

*Bee-keeping:
Departmental contradictions*

The Forest Department once thought of encouraging apiculture so as to provide an alternative to the honey-collectors; but now it says that apiculture inside the National Park can not be allowed because it poses some threat to the fragile eco-system. In this context, the DFO clarified to us that they feared introduction of some exotic varieties of honey-bees by the farmers would be harmful to the local eco-system (*personal communication*, Anup Nayak, Divisional Forest Officer, Rajnagar Forest Division). The department also alleged that some villagers had killed spotted deers and wild boars during honey collection.

Aided by the Cuttack Gramya Bank, an NGO called *Palli Vikas* has trained about 80 farmers in apiculture and some of the trained people have also started getting the financial benefits of the same. But they allege that lack of co-operation on the part of the govt and more particularly the recent ban on apiculture in the mangroves has made the scope just more problematic (*The New Indian Express*, 27-12-02).

If the people are not satisfied with the approach of the Forest Department, then the latter is to blame for it. Because, there are instances reflecting the superficiality in their approach. For ex., recently the Department took up free vaccination programme for the local livestock in the villages, but instead of consulting the animal-husbandry department before starting this programme. It just did it randomly, as a result of which some of the cattle reportedly received overdoses of the vaccine, thus exposed to health hazards (*personal communication*, Ashok Kumar Pradhan, Livestock Inspector, Talachua). Another controversial step is the avenue plantation of many locally exotic species which were most probably introduced as a fuel

crop so as to reduce pressure on the mangroves. In this scheme, there are many Kantabagoola(*Acacia nilotica*) trees which are thorny and the villagers see this thorny species as a danger to them (in fact, a child reportedly died of the injury caused by the spike). Another part of the controversy regarding providing an alternative to fuel wood is the supply of solar heaters and low-fuel consuming chullas. The local people allege that these have been rather supplied more in areas far from the forests and hardly to them.

The crocodile conservation programme has created a panic among the local people which the Forest Department has not been able to tackle effectively. However, for the local residents this success has created a havoc, particularly in the rainy seasons when the crocodiles cross over to the water-logged cultivated lands from the rivers & creeks and the farmers are in great trouble to do their agricultural work. They say that they are even unable to protect their crops from the wild boars simply because access to the fields is difficult due to the presence of crocodiles.

Official sources put the death(human) toll at 42 since 1982 though unofficially the number is said to be 75 (*The Times of India*, p.4, 19-4-03). The loss of livestock is much more. Besides, many people have been injured by crocodile attack. However, the Forest Department is not sincere in providing compensation (which is not a significant amount) in these cases. The people thus feel that while giving so much importance to the crocodiles, the Department has neglected their cause and they say that crocodile has become more important for the Department than the people.

It is true that crocodiles are important for the ecosystem. For instance, they eat predatory fishes that are not of commercial value and hence help increase in the population of commercially important species (*vide minutes of the meeting of the State Wild Life Advisory Board on 30-9-92*, p.3). They make the water clean by eating dead bodies of animals. However, the Department has failed to take adequate care of those people who suffer the negative effect of the conservation effort. The compensation has been raised from Rs.5000 to Rs.7000 which is paid only after a joint verification team of the Police and Forest Department staff confirms the incident(death due to crocodile attack) and hence scope for a delayed/denied compensation is open due to red-tapism.

The breeding centre at Dangamal was closed a few years back after the crocodile population got saturated. This saturation has increased the threat particularly due to the illegal fishing activities and encroachment whereby the risk of man-animal conflict becomes higher. As per the census of 2000 there were only 8 crocodiles outside the sanctuary but this number increased to 45 in 2001¹¹ which the Forest Department takes as a good sign because it suggests that the crocodiles find even areas outside the sanctuary safer for breeding (*The Indian Express*, 10-01-02). However, for the people it only raises more concern. During 2002, about 500 acres of agricultural land in the Mangaladiha and Patarpurpal area remained uncultivated due to the risk of crocodile attack (*The Prajatantra*, p.7, 20-5-03).

During 1980-85, the sanctuary authorities employed the Harijans of Rabaneswar and Khamara sahi in a plantation project for Nalia in the Kalibhanadiha area with the assurance that they would collect their grass from this plantation area instead from the forests, but now they are no more allowed to harvest the grass from this plantation area. However, the plantations at Rajgarh and Righagarh are proposed for the use of the Nalia weavers.

¹¹ In 2004, this number was 37(*The Pragatibadi*, p.5, 29-1-04)

Grass craft: a refuge for the economy of the poor

Realising the market potential of the Nalia craft, the state-owned Orissa Handicraft & Cottage Industry, in association with the Mahila Bikash Samabaya Nigam and ' Sahara'-a local NGO of Dangamal, has facilitated an organised- as well as more prospective marketing of the Nalia-ware. The training imparted to the local craftswomen under this programme has taught them make non-traditional but more marketable items like flower pots, fruit baskets, bags, table lamps, oval tray racks, table etc. which has helped them to gain more confidence in their business. In fact, even some non-indigenous locals(migrants) seem to have switched over to this and Sabita Manna, a widow of Dangamal, who formerly used to earn Rs.20/day from illegal collection of wood, now gets a higher income after she decided to resort to this craft-making business (*The Times of India*, p.4, 14-5-03).

Bidyadhar Behera, who was the Sarpanch of Dangamal from 1970 to 1985, recalls how the local people were promised of many development activities to be undertaken in their interest, by the Forest Department when the Crocodile Scheme was started in 1975. He expressed his dissatisfaction over the fact that most of these promises had remained unfulfilled yet.

The fishermen community has alleged of their exploitation by the Forest Department and after 19 of their boats and 5 trawlers were recently seized by the latter, the Union of traditional fishermen has warned the govt of agitation. According to this Union, their members use traditional techniques and hence in November 2003 the govt allowed them the concession for movement in the Gahiramatha sanctuary. However, the concerned Range Officer still seizes their boats in this area and harasses them if they do not pay him bribe, said the Union (*The Samay*, p.3, 5-1-04).

Similarly, the trawler' s association has alleged ~~tha~~ the restrictions on trawlers along the Orissa coast has threatened the livelihood of 35000 dependent people particularly because even if they use TED, lack of boundary marks makes them confused as a result of which they unknowingly enter into the restricted zone (thus facing legal action) and that, the use of TED has reduced their production by 20 to 30%. They have demanded that the restriction should be only upto 10 km from the shore instead of 20 km (*The Sambad*, p.3, 28-3-03).

Gender & equity concerns:

- *Gender:*

In the society of the original local community (i.e. the Oriyas), the gender issues, in general, are more or less similar to that in other parts of the state. However, in the context of the relationship with the Sanctuary, there does exist a number of local variations.

For ex., collection of firewood is usually considered a women's job so far the actual practice is concerned. Same is true for catching crabs.

In the Dalei community, women hardly play any role in the collection and processing of honey whereas in the Harijan community the men folk collect the Nalia grass and other such raw materials from the forests and the women process the same to make the final product (baskets, etc.)

In Rangini village, an interesting information was provided by the villagers. They said that although the Forest Department staff confronted with the women 'trespassers' many times, instead of misbehaviour they (FD staff) rather filed offence cases against the husbands of the women or other male members of the family. The womenfolk of the village appeared quite confident so far the risk of misbehaviour is concerned.

- *Equity:*

The local communities broadly classify themselves into two distinct groups, viz., Oriya and Bangali (Bengali). This classification is based not only on linguistic and cultural differences, but chiefly on the financial status. In general, the Bengalis outnumber the Oriyas at many places (the dominance may be upto 90% in areas like Talachua), are quite clever in their dealings and are financially much more stronger than the Oriyas. Old people recall how the Bengalis came in a very miserable condition and how was their condition altered over the past few decades. Many of the local Oriyas sold their land to the Bengali migrants at a negligible price, but now the Bengalis are the major landholders and many Oriya people work under them as labourers or as *bhaga chasi*. Moreover, most of the prawn culture farms are owned by the Bengalis and the Oriyas either work as labourers in such farms or supply prawn fingerlings (locally known as pins) to them since they (local Oriyas) are mostly incapable of investing the amount that is required for operating one such farm. The Bengalis have a strong political connection with the local- and state politicians at various levels and quite confidently assert their dominance in the region.

In terms of forest dependency, there is some difference between the two communities. For ex., the Oriyas have been traditionally using *pinchha* for thatching purposes whereas the Bengalis hardly use that (they prefer hay) except in some villages like Krushnapriyapur. On the other hand, the Bengalis know the use of Dhani dhana and Giria saga which the Oriyas seem to ignore. Fishing from the rivers/creeks and collection of firewood / timber are equally important for many people of the two communities, but using Nalia grass or Bahumruga etc. for making baskets etc. or collection of honey from the forests is essentially confined to the Oriyas with a few exceptions.

The local Oriyas are not accustomed in eating deer meet, so there was hardly any threat from their side to these animals. But cases of illegal deer hunting have reportedly increased during the past few years and the Bengalis are accused for that.

Rules and restrictions of the Sanctuary NP are same for all, but in practice the forest dependant people suffer most due to such regulations. That way the Bengalis are least affected since their dependency on local forests is much less than the local Oriyas. Hence, the FD took certain steps in the interest of the Daleis.

Scope for participatory bio-diversity / wild life management:

The National Park is managed on the principle of 'as is where is' basis so that any kind of human intervention leading to an impact on the ecosystem can be avoided. Thus, there is no scope for allowing the local people to have a share in the management practices or forest produce.

On the other hand, some scope is there in the Sanctuary outside the National Park; but has very little meaning since the real forest wealth is inside the National Park area.

The Forest Department has acknowledged, “ No conservation will succeed without public support”. So it has initiated publicity & awareness programme regarding the importance of the mangroves, bio-degradable waste, etc.; but the objective has remained limited to creating public support only any there has been no effort on their part to go beyond that and involve people in the management. As many as 40 eco-development committees have reportedly been constituted by the authorities but their function does not seem very satisfactory due to a number of reasons. In fact, in Rangini village the people said that they knew nothing about any such committee.

The eco-development committees are just like VSS, but unlike the latter they do not have any usufruct rights. For the financial benefit of such villages, ecotourism is being utilised. For instance, some registered¹² boatmen have been allowed to take tourists inside the National Park who in turn act as their guides. These boats are required to meet certain standards so that the ecosystem is not affected by their activity.

Provisions have been made so that women can have their involvement through the eco-development committees. For instance, if a male member is chosen as president, then the vice-president must be a woman.

In 2003, the authorities took the help of local communities to chase the stray dogs who came to eat the eggs of Olive Ridleys. And this year(2004) they invited 30 young men of the local villages to assist the Departmental staff in the crocodile census operations(*The Samaj*, p.9, 25-1-04) who were paid on daily wage basis.

Encroachment problem:

The 90-km long stretch extending from Dhamra mouth to Mahanadi delta is said to be under encroachment by the migrants from West Bengal and Bangladesh (*The Sambad*, 27-12-02). The Bhitarkanika sanctuary comes under this area. It has always been alleged that the sanctuary land has been encroached by the Bengali migrants for habitation, cultivation and most importantly, prawn culture. Even in 1975, more than 27 sq. km forest land was under encroachment in the area. Years ago the govt had reportedly rehabilitated a small group of refugees near Jambu in the Mahanadi delta, but other migrants refer to this step to legalise their other settlements(encroachments) also. These people have been able to get the support of local politicians as well as revenue officials and hence, the area has been now converted into ' their area' though the Oriyas are the original settlers here. An ~~axm~~ple of such illegal settlement can be seen near the Vekta forest patch of the Sanctuary where there are reportedly 700 Bengali Muslim migrants. These migrants have been suspected of causing great harm to the local resources and culture.

There are two types of Bengali migrants; legal and illegal. During the British period, many of the Oriya zaminadris were lost to the Bengalis due to the ' sunset law' *surjyasta aain* whereby the defaulter(Estate-holder) was liable to lose his Estate if he failed to pay his dues before the sun set. Many Bengali rich men were able to purchase some Oriya Estates since the administration was then controlled from Bengal itself and this facilitated the entry of Bengali migrants to Orissa though in an insignificant number. In Kujang, the neighbouring

¹² Fee is Rs.100/-

Estate of Kanika, the Estate was owned by one such Bengali proprietor the Maharaja of Burdhan.

In Kanika, however, the migration and settlement of the Bengalis, as told by the old people, was originally facilitated by the King of Kanika himself who was eager to earn revenue through the expansion of agriculture, particularly in the coastal and mangrove areas. He encouraged the local inhabitants for that, but the latter could not prove themselves very efficient in this work. Some of these people withdrew themselves in the Krushnanagar-Kanaknagar area simply because they failed to make themselves able to reclaim and develop the lands efficiently so as to pay the land rent. So the Raja invited Bengalis from the neighbouring district of Medinapur who had expertise in converting forests lands into agricultural lands in the Sundarban mangroves. These Bengalis came first in 1357-58 Bengali year (1951-52 AD) and were allotted forest areas on payment of certain fees (*personal communication*, Banipada Maiti, Talachua). Baghua, Talchua, Subarnapur etc. were the first areas where they were allowed for clearing the forests (*personal communication*, Bidyadhar Behera). These settlers struggled against all odds (for ex., fresh water was hardly available and they had to treat the brackish water with Tamarind or lime so as to make it consumable to some extent) in this malarious climate, cleared forests and created the first *gheris* (embankments/dykes) to protect their lands from the salt water inundation. Gradually, their effort succeeded in changing the landscape of the area. These were the 'legal' (authorised) migrants, but encroachment was also done by their successors when the land available legally was felt insufficient (after partitions in the family).

However, the settlement of these people created a confidence in other people of their community residing in Medinpur or even in Bangladesh who were facing problems relating to their life & livelihood in their homeland and decided to settle in the coastal part of Kanika (and some other parts of Orissa) for a secure future. This second category of people often came and settled without any permission, thanks to the cooperation available on the part of their fellow brothers in Kanika. Some of them (most of whom were the Bangladeshi Muslims) settled independently in remote areas. Now there are reportedly a thousand Muslim settlers inside the Sanctuary area (*The Sambad*, 27-12-02). Many of these illegal migrants are said to be involved in illegal fishing, poaching of animals / birds and cutting of trees.

The encroachment of forest land in and around Bhitarkanika is more in the form of prawn farms (*chingudi gheris*). More than 7000 acres of forest land within the Bhitarkanika sanctuary is under the unauthorised occupation of prawn farmers. Though the Coastal Regulation Zone Act prohibits construction of such farms (*gheris*) within 500-metre radius of the coast, the nefarious traders have violated this provision at many places. In fact, this is the situation in the coastal areas of Kendrapara, Jagatsingpur, Bhadrak and Balasore districts. More than 25000 acres of land have reportedly lost fertility for agrarian activity following these *gheris* (*The Statesman*, Orissa page, IV, 22-7-03). The Supreme Court of India and the Orissa High Court had directed the govt to demolish such farms, but little has been done in the field. In some cases the revenue officials have given false reports to the govt so that interest of these farmers could be saved (*The Samay*, p.6, 25-3-03).

The encroachers have been smart enough to safeguard their illegal activities. To create an impression that the area they have occupied is not a newly reclaimed (forest) land they adopted a curious strategy of uprooting big coconut trees from other places and then planting them in the encroached land so that they could show the authorities that they had been residing there since long otherwise 'their' coconut trees could not have attained such a height

(*personal communication*, Chandra Sekhar Kar). Similarly, after filing a petition against their eviction, they managed to get a stay order from the High Court at Cuttack on the same day after which a special messenger handed in this order to the concerned authorities at Batighar and Jambu on the very same day (Mohanty, *op.cit.*, p.97), which is quite astonishing because given the usual legal procedures as well as the distance of Batighar/Jambu from Cuttack, the stay order should have taken atleast two or more days to reach the authorities.

Conflicts:

Bani pahi was a strip along the Balasore coast where the Bani species was abundant. The leaves of this plant are a favourite of the buffalos and quite nutritious also. The tenants used to pay 8 annas against permission for cutting timber as well as for grazing the buffalos. About 1922, the Raja of Kanika closed this jungle to the tenants which led to friction and criminal cases (Dalziel W.W., *Final Report on the Revenue Settlement of Orissa:1922-32*, 1932, p.125).

The tenants complained that the nearest open jungles were very far and to get there they had to take boats through a channel for which additional fee was charged. The Raja had introduced a new system of forest cess according to which the tenants were required to pay 6 pies per rupee of land rent in lieu of which they were entitled to get 100 maunds¹³ of fuel wood and timber for house-building as well as agricultural purposes. But the discontent of 1920s forced the Raja to go back to the earlier system of 8 annas per hearth, in 1928 though at the same time he reduced the allowed fuel wood quantity by 50% and banned collection of timber for house-building purpose in lieu of this revised fee (Dalziel, *op.cit.*, pp.125-26).

Bani pahi no more belongs to the Bhitarkanika Sanctuary and remains as the only stretch of mangroves in the Bhadrak district (undivided Balasore) which adjoins the Kendrapara district. When the intention for the Bhitarkanika National Park was declared, Bani pahi and Wheeler Island were also included in the proposed area of the NP, which was later excluded. However, the conflict between the administrators and the people that started with Bani pahi continues to exist in the Bhitarkanika sanctuary in one form or another with the same basic issue i.e., rights of the people over local resources.

There are 410 villages in the Sanctuary area with a population of around two lakhs and record of rights of these villagers were not documented by the Forest Department for long. However, there was a petition filed in 1998 in the Orissa High Court relating to various such issues and the HC asked for documentation of the record of rights which was supposed to, if done properly, expose the encroachers. The District Collector of Kendrapara was in charge of this documentation and his report, which has reportedly been submitted to the govt, is expected to bring about a substantial change in the sanctuary boundary by excluding a large number of villages, that do not seem to be ecologically important, from the sanctuary area. This proposed measure is expected to reduce the conflict between the people and the sanctuary authorities.

However, it would be superficial to conclude that Bhitarkanika is a case of people verses wild life¹⁴. Because, the FD did not introduce salt water crocodiles there, rather it just tried to save

¹³ Each maund (locally known as *mahana*) is approx. equivalent to 40 kg.

¹⁴ The superficiality was clearly reflected in the apprehension of some people (in particular, the secretary of District Krushak Sabha) who believed that the Forest Department banned honey collection inside the National

their endangered population which already existed. Similarly, the allegation that the sanctuary has facilitated damage of agricultural crops by migratory birds is also absurd because these birds used to visit the area long before the sanctuary was created and also, they (particularly the water birds) often come down to the paddy fields in confusion when the same are waterlogged after rains (*personal communication*, Banipada Maiti).

The avian villains

Villages under more than 13 Gram Panchayats have been affected by the damage caused to crops by the migratory birds, said a newspaper report in December 2001. The mass-coming of these birds coincides with the harvesting season and it may be so that lack of space and heavy competition for food among them forces some of them to the agricultural fields. *Pani chadhei* and *Bekdi bataka* (both seem to be water birds) are two bird species particularly accused for this and people say that they damage more than what they eat. The damage per day is the crop of about two to three acres.

Experts say that the competition between the local birds and the migratory birds resulted in heavy bloodshed during 1970-75 killing large number of birds from both sides. Gradually they have developed a peaceful relationship and the intimacy thus created has even resulted in non-traditional mating partners thus giving rise to some new species of birds (*The Sambad*, 11-01-02).

As regards fishing, it was not the people of Kanika who were traditionally critically dependent on commercial fishing in the Bhitarkanika area. Rather, the people of the neighbouring Estate of Aul (Aali) used to exploit this resource (*personal communication*, Chandra Sekhar Kar). The Raja used to lease out creeks and rivers as what was known as *matshyadia jana* and the people of Ali practised commercial fishing in Bhitarkanika and the Bay of Bengal. When the sanctuary was created, the authorities persuaded these people to stop coming to this area for fishing which they gradually accepted (it took some years) and hence it would be an exaggeration to say that the livelihood of the local fishermen community of Bhitarkanika was terribly affected due to the restrictions of the sanctuary.

Bhitarkanika actually is a case of some other conflicts that have not been properly given attention to by the social workers. These conflicts have directly or indirectly made the issue of man versus wildlife more complicated, as described below:

❑ Inter-departmental conflict:

The Orissa Government acquired all forest lands from the Raja of Kanika after the Estate abolition which were under the management of Revenue Department during Anchal administration. In 1957, when the Anchal administration was over the Revenue Department was supposed to hand over all these forest lands to the Forest Department, but only demarcated forest blocks were transferred and the non-demarcated ones are still with the Revenue Department over which the Forest Department has but little or no control and the illegal migrants and prawn farmers have taken the advantage of this lacuna. The seizure of agricultural lands in the Charigheria area by the Forest Department reminds of the treachery committed by the Revenue Department and the politicians because some areas which the

Park so that it could supply all those honey to multinational pharmaceutical companies (vide *The New Indian Express*, 27-12-02).

Ruler of Kanika had declared as ' forest' were later designated by the Revenue Department of Orissa as ' unsurveyed areas' and then settled in favour of the encroachers (Chadha & Kar, *op.cit.*, p.261).

Since long(1969-70), 10 forest blocks inside the sanctuary are proposed to be declared as Reserve Forests for more effective protection of the resources (because, the scope for political pressure or other such intervention would be legally abolished by such declaration), but the final declaration is pending due to lack of coordination of the Revenue Department or district administration which is responsible for enquiry into forest settlement cases. This creates scope for the encroachment of these forests. In fact, the District Collector of Kendrapara has categorically said that encroachers would be evicted only after the PRFs are declared as Reserve Forests(ETV Oriya news, 7 pm bulletin, 9-01-04).

The next problem was created by the Irrigation Department. To check tidal inundation in agricultural lands, this department facilitated the construction of large embankments as a result of which many virgin mangrove patches were destroyed. Moreover, it has been noticed that reports of crocodile attacks are more in areas where creeks have been blocked for irrigation (Chadha & Kar, *op.cit.*, p.271).

Then came the Fisheries Department, which facilitated the extensive commercial fishing in the creeks as well as the sea by promoting advanced mechanised systems like trawlers¹⁵. Further, its non-recognition of gill-net boats in the category of mechanised boats helped the gill-net boats evade the imposition on mechanised boats to use TEDs, thereby causing heavy mortality of the turtles(*Interim directions of the Centrally Empowered Committee*, dated 7th March 2003, para 11).

The CRZ regulation is to be enforced not by the Sanctuary authority but by the District Collector as a result of the former is often helpless to control unauthorised activities in the area restricted under the same regulation.

The latest difficulty comes from the Defence Department which has a military base in the Wheeler island close to the breeding site of Olive Ridleys. The concerned authorities promised that no test firing of missiles from this island would be carried out during the breeding season of the turtles and accordingly, the test firing of Agni missile was postponed in 1999 for the necessary period. But in January 2001and 2002 this assurance was violated and test firing of Agni took place causing severe disturbance in the ecosystem as a result of which the number of Ridleys arrived fro mass-nesting was significantly reduced. Further, the light emanating from the Missile Test Range disturbs the turtles more because their hatchlings are guided to the sea by the glow of sea water and the man-made high intensity light confuses them¹⁶.

The Bhitarkanika ecosystem has suffered dearly due to the impact of these inter-departmental conflicts. The Forest Department has itself added a dimension to this by planting casuarina trees near the Gahiramatha coast following the cyclone of 1971 in order to create a natural barrier, which turned to be an anti-turtle measure because research has shown that this

¹⁵ Under a central sector scheme the Fisheries Department facilitated mechanisation of fishing activity during mid-' 80s. Motorisation of country crafts was also a part of this programme (Chadha & Kar*op.cit.*, p.210).

¹⁶ However, latest reports say that the Test Range authorities are cooperating with the Forest Department by not flooding the beach in light during the nesting period (*The Times of India*, p.4, 2-1-04).

plantation has been an impediment for the turtles. Further, these trees prevent the formation of sand dunes. The turtles therefore avoid nesting on such beaches and their rookery is limited to a very small area now where no such plantation has been carried out(*The Times of India*, p.4, 1-1-04).

It is also alleged by the critiques that the area should be controlled from Chandbali because of its strategic location and that the shifting of the Divisional Forest Office from here to Rajnagar has made the control of the authorities over the sanctuary weaker and less effective (*The Samaj*, 9-03-02). The recent decision to exclude the Chandbali forest range from the jurisdiction of DFO, Rajnagar seems to be controversial in this context¹⁷.

❑ Development activities:

One of the earliest and most important factors causing the destruction of coastal mangrove forests was the creation of Paradeep port which is nearer to the Bhirarkanika sanctuary. Paradeep, as the name itself suggests, was a small island and vast areas(approx. 3000 hectares) of mangrove forests were destroyed in 1960s to establish a major port there. The process was repeated during the construction of Dhamra fishing harbour and military bases(Chadha & Kar, *op.cit.* p.270). It has been alleged that the movement of large vessels and ships around Paradeep has also contributed to the change in the local ecosystem which has caused the death of the turtles(*The Sambad*, p.9, 28-3-03).It may be recalled here that even if the boats and vessels do not cause any direct harm to the turtles, their movement disturbs the local ecosystem which affects the turtles during the breeding season when they are in a more delicate and sensitive state. Environmentalists have therefore opposed construction of fishing jetties in the area.

Landing of fishing boats on the soft muddy lands(banks of creeks) is likely to cause land slides since these lands usually experience continuous changes in the natural process and are therefore not fit for sustaining this kind of pressure.

❑ Chemical pollution:

The industrial units like Oswal fertilizer plant at Paradeep has caused extensive pollution of the surrounding ecosystem as a result of which the crab population has been almost wiped out from Jambu, Kharnasi, Batighar and Hukitola area after which the commercial crab-collectors have now concentrated on Bhitarkanika, Kalibhanjadiha, Kantiakhai and Bagulidiha areas(*The Samaj*, p.9, 9-1-03). Tamarind has been used to trap the crabs. In addition to nets, the fish-mafias even use poison to catch fish from the creeks and there is an apprehension that such activities reduce the food supply of the salt water crocodiles which therefore leave their territory in search for food as a result of which their encounters with men increase.

¹⁷ Territorial divisions (forest) have been reconstituted as a result of which Chandbali has been excluded from Rajnagar Division to form a part of the new Bhadrak Division. Chandbali has a key route to Bhitarkanika and if the DFO, Rajnagar can not exercise his authority over this area, it may aggravate the problem of encroachers and poachers further. An outcome of this reconstitution is that the staff of the Rajnagar Division (more particularly, Jambu Forest Range) are now hesitating to count the number of crocodiles in areas like Kendrapara and Gandakia since these two are now included in the Cuttack Division (*The Samaj*, p.9, 25-1-04).

Further, scarcity (caused by pollution) of fish and crab has reduced the availability of food for the turtles in the Mahanadi mouth. The water of Atharabanki creek has been so affected by this chemical pollution that the water there has turned white and the amount of fluorine, gypsum and certain radioactive elements have been increased considerably in the water thereby causing great harm to the sensitive ecosystem(*The Samaj*, 9-1-02).

□ People verses people:

In 1911, the population of villages under the Rajnagar police station was 30891 which increased only by 23.49% by 1951(based on the statistics provided in p.234). But between 1951 and 1961, the growth rate was tremendous and unnatural in many of the local villages. For instance, in Talachua the population rose from 5 to 1402 and in Gopaljewpatna, from 2 to 1947 during these 10 years (p.235). This unnatural increase was the result of the influx of the migrants from West Bengal and East Bengal. Many of these migrants actually came as refugees following natural calamities cyclonic storms or the communal violence in their respective areas. They reclaimed vast areas of mangroves and settled down there. The local politicians favoured them so as to use them as their vote bank and the hold of the concerned authorities on these encroachers got loosed due to political pressure or other reasons. Taking advantage, the influx increased further in the coming decades as a result of which the local Oriyas became a minority in a number of villages. Official estimate puts atleast 19 revenue hamlets where this migrant population is almost 100%(*The Statesman*, Orissa page, p.iv, 14-5-03). The govt said in 2003 that there were only 1850 Bengali migrants in the Kendrapara district, but the actual figure is said to be around 60000 (*The Dharitri*, p.14, 29-3-03). The politicians want to legalise their encroachment so that they would vote for them and hence the actual figures are suppressed.

These migrants have been so influential that even the local revenue officer(Tahsildar) issued lease orders, contrary to the legal provisions, on forest lands inside the sanctuary area upto 1994. This was stopped when the Forest Department successfully challenged it in the court(p.236), but it was too late since after 1981 43 new revenue villages, mostly inhabited by the migrants, have already been created around the National Park(*The Sambad*, 11-5-03) .

Most of the commercial activities in the Bhitarkanika area are regulated by these migrants and when the rights of fishermen are raised, it is mostly related to these people since the local Oriyas lag far behind them in number and extent of fishing activities. And the politicians are so much concerned for the security of these migrants that one of them even recently advocated for the denotification of the National Park(*The Times of India*, p.5, 21-4-03). The fact is that, needless to say, the grievances of the local people are often acute due to the pressure and competition created by the activities of the migrants. Recently, a forest guard was killed by some of these people in the Babubali island near Bhitarkanika and prior to that, two such killings took place in 1990(Mohanty N., *op.cit.* p.97). They have been reportedly engaged in illegal transportation of crocodile skin, deer meat/skin, bird-meat etc. to West Bengal and other areas. Besides, they were also involved in fake currency business and in the operation of illegal radio centres. Hence, ' It' s locals verses migrants...' , as a newspaper said and the irony is that the rights of the local Oriyas are insecure more due to these people than the sanctuary/NP itself. Although there has been no case of an ethnic violence between the locals and the migrants reported so far, but there is no guarantee that this will not take place in future.

In 1999, a super cyclone devastated the coastal districts of Orissa. Cyclones are not unknown in these parts, but the destruction of 1999 was more severe. Environmental experts have no doubt to conclude that with gradual depletion of the mangroves, which act as natural barriers against cyclones and tidal waves, the impact of cyclones has also increased.

The govt has thought of emergency relief operations, post-cyclone rehabilitation works and coastal afforestation projects and as such, crores of rupees have been spent for such activities with but little results since most of the work has been done either superficially or in a wrong manner. However, the solution actually lies in the protection of mangroves and eviction of encroachers which has little been done. A lot of mangrove forest is still under the control of the Revenue Department, which has facilitated the non-forest use of such lands thereby allowing their destruction. Prawn farms still operate on a large scale. Casuarina plantations have turned anti-turtle and manmade regeneration & plantation of mangroves is quite a difficult task. Hence, complete protection of all existing mangrove lands is the first necessity, which is to be followed by afforestation in the degraded lands. Unless the encroachers are completely evicted, this can't be achieved; but the politicians are not sincere in this matter and hence all other plans appear superficial.

In fact, the Central Empowered Committee observed in their report dated 7th March 2003 that the state govt had not been sincere in their approach for the conservation of the Bhitarkanika ecosystem:

"The Committee is of the view that sufficient steps have not been taken by the State Government for safeguarding the turtles. Unfortunately, the detailed directions given in the judgement of the Orissa High Court xxx have by and large remained uncomplished with. xxx"(para 14)

Hence, Bhitarkanika is actually the victim of a game played by the politicians and the encroachers; and unless & until this dirty game is over, little can be expected for the security of the biodiversity as well as of the livelihood of the local indigenous people.
