

CHAPTER 4

PROBLEMS: FORESTS WILDLIFE AND DOMESTICATED BIODIVERSITY

4.1 Forests

4.1.1 Shrinkage in area of natural forests

The evidence for forest loss and fragmentation can be gauged from the details of forest land releases for non-forestry purposes (table 2.7) and from the magnitude of forest encroachments. About 10,000 families are believed to have encroached forests. The forests also bear the enormous increase in cattle population. In 1883 the district had 421, 840 people and 191, 291 livestock population (Campbell, 1883). In 1991 the number of people was 1,220,260 and the number of livestock 512,349. The same period saw the number of hamlets shooting up from 1257 to 5450. Additional fragmentation is also the result of monoculture plantations (table 2.5). Over 100,000 ha of forest lands were released for non-forestry purposes since independence (the area according to Forest Annual Administrative Report of 1985-86 is 105231.587 ha). However the Annual Administrative Report of 2000-2001 shows the land releases after 1956 to be 61860.524 ha (table 2.7). Many opine that the district has reached its carrying capacity as far as developmental projects are concerned.

4.1.2 Lack of biodiversity and watershed based approach in forestry

The traditional pre-British period of forest management was village centred. Watershed forest such as the *kan* formed the heart and heritage centre of almost every village, more so in the hilly country. These *kans* were community heritage centres and were also rich in biodiversity as their relics show to this day. The state-centred scientific forestry basically lacked such traditional watershed based approach, with very undesirable consequences.

- Vegetational simplification, practiced through over the last 100 years, aimed at raising monocultures or promotion of few commercially important species. The monocultures had severe adverse effects on rural people and forest dwellers. Plantations cause decline of diversity and therefore adversely affect livelihood issues and women's employment opportunities as well as family nutrition.
- The creation of forest monocultures has changed the forest structure from multi-canopied tropical evergreen, semi-evergreen, and moist deciduous with natural ground vegetation, most ideal for biodiversity and water conservation to ecologically sterile plantations with poor watershed value. The area under teak plantations in 1960-61 was 24,388 ha. It rose to 53,354 ha in 1985-86, thus showing a steep rise of 119 percent in a mere span of 25 years. The area under teak rose to 92435 ha, yet another 73% by 2000-01. The total area of various forest plantations today stands at 258143 ha.
- Weed infestation is highest in the forest plantations. Weeds also dry up increasing fire hazard. Soil compaction and run-off are more associated with monocultures.
- Our findings from the Bisgod mines of Yellapur point out to adverse impact on the watershed due to mining. A large pond *Anekere* - 'elephant's pond'- (where

historically elephants used to drink water) has been totally filled up with mining refuse. Moreover the tail-endings were slid down the forested hill-slopes into a tributary of Kali river. Surface mining has exposed ground water in some places. An arecanut garden was partially buried when a mound of mine dump was washed down by torrential rains.

- The drying up of streams, the poor inflow into rivers and low water levels in the dams and ponds can be, mainly due to intensified interference in the forest ecosystems. The loss in terms of biodiversity, agriculture, livelihoods and losses to the State due to power crisis and loss of revenue are inestimable.
- The watershed impoverishment has not only affected the Malenadu and the coast but also, more severely, the Karnataka plains since most peninsular rivers originate in the Western Ghats.
- The widespread vegetational changes in Uttara Kannada Western Ghats, forest fragmentation and blocking of the rivers by building dams have enormously affected the input of organic litter from the forests into the coastal estuaries and the sea. This has created inestimable loss in terms of production of fish and other economically important marine and estuarine organisms, loss of revenue to the State, financial losses to banks from poor recovery of fishing loans, and adverse effects on the fishing communities of coastal Uttara Kannada.
- The *kans* were important sources of springs and streams, a fact even acknowledged by the Government of Bombay (1923). Most of the *kans* became state property from the early British period. The decline of the *kans* are due to: a. Tree felling in the *kans* of eastern Sirsi and Siddapur for fuelwood, as permitted by the British, way back in early 20th century. b. In eastern Sirsi 769 ha of *kans* were converted into *soppinbettas* or leaf manure forests. c. Overexploitation of the products of the *kans* by contractors. d. Exploitation of the timber and firewood from many of the *kans* by forest-based industries and the Forest Department itself. e. Changes in the religious beliefs related to sacred forests (Chandran and Gadgil, 1993).

4.1.3 People-centred forestry not getting deserving attention

The nearly two centuries of state-centred forestry saw commercial timbers at the core of forest management. Species of subsistence value to the people were totally ignored. Conversion of forests into monoculture plantations of teak, Acacia, eucalyptus etc. has caused great impoverishment of forest villages. The wildlife also has been depleted due to habitat changes. It has not been appreciated that in Uttara Kannada, every little patch of natural forests has great potential for creating rural employment through production of non-timber forest produce (NTFP).

4.1.4 No effective fire management in forests

Forests where natural vegetation has been altered seriously are more prone to fires. Such fires, especially affecting the ground vegetation are serious threats to biodiversity, especially in the deciduous forests of Yellapur, Mundgod and Haliyal. Ground vegetation and dry litter in the teak plantations catches fire almost every year.

- Repeated fires make the forests drier
- Fires compact the soil and promotes erosion
- Water-run off increased and watershed value of forests reduced.
- NTFP plants are destroyed in fires. Food plants for wildlife also get destroyed.
- Fires create local droughts.
- Fires promote invasion of weeds like *Eupatorium*.

Fires have positive role too:

- Fire is necessary for promotion of grass in otherwise forested landscape.
- Fires can be used for weed control
- Fire promotes the regeneration of several species, including teak and bamboo.

4.1.5 Forest encroachments not seen in historical context

In Uttara Kannada, almost 80% of the land is under the legal ownership of the Forest Department, though all that is not forest. Agriculture is confined to only 12% of the land. Traditionally, in this district, forests, people and agriculture co-existed for ages. But today due to various pressures forests are undergoing fragmentation. As bulk of the people are biodiversity dependent if forests are poor people become poor too. As the livelihood supporting capacity of forests has decreased forest encroachments for agriculture has increased.

- The major cause for the spate of forest encroachments is the impoverishment of forest itself, having lost its livelihood sustaining capacity substantially.
- The loss of livelihoods makes the people encroach forests mainly for agriculture.
- Increase in agricultural settlements within the forests lead to greater fragmentation.
- Fragmentation affects wildlife adversely, cut off their migration corridors, deprive them of their water sources and lead to increased conflicts with the humans.

4.1.6 Community heritage centres within forests, such as sacred groves of yesteryears, not given due recognition.

In the pre-British period village communities used to maintain sacred forests. Most of these forests became part of reserved forests and were even subjected to timber extraction. Nevertheless these community heritage sites even today have rare species and have great watershed value.

- The Karikan forest in Honavar is the northernmost forest having Gurjan tree (*Dipterocarpus indicus*).
- The Katlekan forest in Siddapur has the endangered *Myristica* swamp full of rare species
- The Kan of Mathigar village in Siddapur, maintained by Karivokkaliga people, is the only place in Uttara Kannada where the natural population of “Bilidhupa” tree (*Vateria indica*) is found.

- The Yana forest in Kumta has spectacular rock formations, unique soil and rich biodiversity. The forest also is the source of good perennial springs.

4.1.7 Habitat changes, hunting and decline of wildlife

Many villagers reported that there has been steady decline in wildlife. They attributed the decline due to poaching, lack of food and drinking water scarcity in summer. The district had abundant wildlife almost until the close of the 19th century. Peyton (1883) reported sighting tigresses with five cubs each twice, one of them with five half grown ones! Packs of wild dogs with 20 or more animals were often seen. Spotted deer herds of 150-200 animals were also seen.

During the latter half of the 19th century hunting of the predator animals were rewarded. During 1867-82 period, reward hunting of an average of 30 tigers and 35 leopards every year was reported (Campbell, 1883). We would be fortunate to have even 30 surviving tigers in the whole district today. Nair and Gadgil (1978), and Prasad et al (1978) and Chandran and Gadgil (1993b) also reported about steady decline of wildlife. All the wildlife present in the past are present now also, but in small numbers. They have disappeared from several areas now. Poaching continues to be a problem in the district till to-date.

Crocodiles are reported to have existed about 100 years ago in the river Aghanashini. However, they are reported to be present in small numbers in the river Kali (Prakash Pandit, personal communication).

Elephants used to periodically migrate from the forests of the erstwhile Mysore kingdom. However, ever since forest fragmentation, especially the construction of the Linganmakki dam their migratory route got cut off. At present there are an estimated 40 to 60 elephants isolated in the north-eastern forests of the district. The last of the elephants from the Sharavati valley forests in Honnavar of southern Uttara Kannada vanished just a decade or so back.

The increase in human population within the forest belt is a major cause for wildlife decline. The forest dwellers hunt mainly for a. Protection of crops; b. For ritual purposes; c. Due to scarcity of protein food in the interior villages.

Use of explosives in inland waters for catching fish has been pointed out as causing mass destruction, even of the non-target species as well as juvenile forms. Endemic river fishes are also affected by damming of rivers as well as diversion of streams.

Bird hunting has been reported in Kanmane, Magodu and Athiveri villages towards the north-East Uttara Kannada (people's observation). Decline of coastal mangroves, due to mainly aquaculturing and other human pressures, disappearance of beach flora and decline of ponds due to lack of maintenance and encroachments have caused decline of birds as well.

4.1.8 Contract system for NTFP collection, an affront on local livelihoods

In Uttara Kannada forests have been traditionally associated with livelihood security of the forest dwellers as well as village communities. But the introduction of contract system for NTFP collection, from the early British period, and continued till today, has played havoc towards destruction of biodiversity and impoverishment of villagers. The contract system is a bane on the forest ecosystems and has telling effect on the people's livelihood. The State is hardly benefited by the contract system. Moreover the State is responsible for the huge lot of people who have been deprived of their traditional privileges in the forest due to contract system, widespread creation of forest monocultures, drying up of streams and so on. Therefore the local residents get very little income for the NTFP except in JFM villages. But JFM covers only 25% of the villages.

- The contractor is associated with destructive extraction of forest produce. Most yielding pepper vines have been cut down to gather pepper, so much so, today the forest vines yield hardly any pepper. The exploitation by the contractor is more opportunistic and without any thought on the regenerative capacity of the resource exploited.
- The contract system is associated with lopping the branches of wild nutmegs – “Rampatri” (*Myristica malabarica*), “Uppage” (*Garcinia cambogea*), nellikai (*Emblica officinalis*), stripping the cinnamon trees of bark, pulling down of pepper vines, cutting branches of trees with bee-hives and so on.
- The local people employed by the contractors to gather forest produce are given only low wages.
- The contractor has no permanent interest in the forest, unlike the local villagers or forest dwellers.
- The middleman corners bulk of the profit as the NTFP collector is in the dark about the end markets, and about the processing and uses of the goods that he gathers from the forests.

4.1.9 Opportunistic exploitation of medicinal plants

As the medicinal value of more and more plants from the Western Ghats are being unraveled to the modern world, no database exists on the distribution and abundance of such plants. No knowledge exists of the employment and income potential from such plants and also about what levels of processing or value additions can be done on medicinal plants. Medicinal plants' exploitation as such, is opportunistic.

4.1.10 Decline in honey production: There has been decline of honey production in the recent years. The forest dwellers have not been able to ascribe any specific reasons for the decline. However, in the recent years, the spread of a disease for honey bees has affected honey production.

4.1.11 Degraded state of *soppinbettas* (leaf manure forests): *Soppinbettas* are patches of forests adjoining the arecanut gardens in which the privilege of leaf manure collection is permitted. The *bettas* are allotted to individual holdings mostly at the rate of nine acres

of forests for every one acre of arecanut. *Bettas* are used for cattle grazing as well as for fuel collection. Since the farmers have no rights over the trees except the removal of green leaves most of them did not take interest in planting and enriching the *bettas*. These *bettas* especially in Sirsi and Siddapur taluks have brought about considerable forest fragmentation. There is lack of any good management plan for the betta forests.

4.1.12 Dead wood collection related problems: The collection of dead and fallen trees that prevailed till recent years, from the forests proper, has been pointed out as causing much disturbances. This involves traversing through nook and corners of forests, making footpaths, drag-trails for fallen wood and tracks for transportation. Moreover the standing dead and tall old trees with hollows form exclusive habitats for several species of birds. Their removal therefore will deprive these birds of their homes. Ali and Ripley (1983) observed that the Great Indian hornbill, a very rare bird in Uttara Kannada, having preference for large natural tree-holes at 15-20 m above the ground. Selection felling of such large trees, as well as removal of large dead/dying trees would have caused great depletion of such birds (Daniels, 1989; Gadgil & Chandran, 1989).

4.1.13 Increasing pressure on perennial streams/swamps and primary forests: Most streams of the district are used for agriculture and arecanut gardens, leaving very little for stream bank and swamp vegetation. The species on the verge of extinction in the Western Ghats, including in Uttara Kannada due to drainage of swamps are *Myristica fatua*, *Gymnacranthera canarica*, *Mastixia arborea* and *Semecarpus kathalekanensis* (a newly discovered swamp dwelling tree) etc. (Chandran & Mesta, 2001).

The endangered Lion-tailed Macaque is present in small numbers only in the relics of primary evergreen forests of Sharavati valley of Honavar taluk and Siddapur taluks. These forests are very evergreen and with high levels of Western Ghats endemism. However, recent decades have witnessed high levels of forest fragmentation due to expansion of agriculture, selective felling, the construction of Sharavati Tail-race project and encroachment of *Myristica* swamps.

4.2 Domesticated Biodiversity

Uttara Kannada has great diversity in its landscape, soil and rainfall. There are accordingly tremendous local diversity of cultivated plants. Notable is the diversity of rice, mangoes, jackfruit, pepper, brinjal, banana, lady's finger, coconut, arecanut etc. Such diversity has been developed through the efforts of generations of farmers.

More the local varieties of a crop, greater is the stability of agricultural sector. For example there are over 40 local varieties of rice alone in Kumta taluk. Developed by farmers these varieties have tremendous genetic variability and adaptability. The Kagga variety is salt tolerant; the Sannakki of Medine is scented like Basmati. The Halaga is popular variety grown by several farmers, having good resistance to pests and diseases. For each special use there is a suitable variety.

Uttara Kannada was once famous for its production of pepper. Pepper was grown not only in the gardens but the villagers had even taken care of wild pepper in the forests such as Pepper forests (Menasukans).

Today, unfortunately, due to the large-scale introduction of hybrid, high yielding and grafted varieties of crops, and with the threat from genetically modified (GM) varieties round the corner, we are losing precious heritage of scores of locally adapted varieties of all cultivated plants. This is not only a loss to the efforts of the local farmers, but creates a grim scenario for the future of agriculture itself. The new varieties of crop plants most often do not have adaptability to local conditions. Pests and diseases are more for them. Farmers are forced to use more pesticides, which are dangerous to ecosystems, water bodies and affects badly the health of humans and animals.

The large-scale conversion of *gajni* rice fields into prawn culturing ponds has nearly wiped out the salt tolerant Kagga rice. The local varieties of mangoes, such as “Appemidi” famed for pickle making, have disappeared largely; the trees were cut for making matchsticks and other industrial purposes.

4.2.1 No action plan for conservation of traditional crop varieties

In the first place, despite the good presence of Agricultural and Horticultural departments in every taluk there is no database on the diversity local crop plants, the area under such crops or where or who cultivate these. No database exists on the local breeds of poultry.

4.2.2 The increased application of pesticides and chemicals in agriculture/horticulture.

The use of pesticides and chemical fertilizers has various undesirable effects on fragile ecosystems as well as on humans. There is also reported to be a tendency among farmers to grow for their own use organically grown food and food produced with the chemicals and pesticides for the market. The excessive use of chemicals in agriculture can have various adverse effects:

- Health problems to humans and domestic animals.
- Adverse effects on soil quality (structure, porosity, soil organisms)
- Pollution of water bodies and soil
- Adverse effects on water conservation due to compaction of soils and increase in bulk density.
- Higher expenses
- Pests developing resistance
- Shrinking exports. Most advanced countries insist on importing only organically grown foods.
- Adverse effects on biodiversity- honey bees, butterflies, fishes, amphibians, birds, wild mammals etc.
- Pollution from manufacturing process

4.2.3 The need for greater involvement of women from non-agricultural sectors as well as those with small land holdings in conservation of domestic biodiversity.

Unemployment/underemployment is high among women. There is need for greater nutritional security of poor families.

4.2.4 Land use changes

There has been some conversion of paddy fields into arecanut gardens due to the high profits the latter earned till recent years, apart from conversion of *gajnis* into shrimp farms. Area under the millet ragi declined from 833 ha in 1969-70 to 353 ha in 1993-94.

4.2.5 Shrimp aquaculture and the decline of salt tolerant rice

The reclaimed coastal backwaters or *gajnis* have been from time immemorial cultivated with salt tolerant rice variety- the *kagga*. The recent decades saw the conversion of substantial portions of such *gajnis* into intensive shrimp farming areas, causing a major decline of *kagga* rice cultivation.

4.2.6 Infected crops: the spread of ‘bunchy top disease’ of banana and wilt of pepper saw large-scale elimination of such crops. Coconut mite disease is also spreading rapidly in the district.