

CORRESPONDENCE

extraction decreases the ability of river to dilute pollutants. In addition to this, extensive fishing has also posed severe effects on dolphin population. Ganges dolphins are blind yet social but troubled by the most social beings. These are mainly poached for their oil which has a very high price in the black market due to its medicinal value. The construction of barrages at Bijnor, Narora, Farrakha and Kanpur have restricted the movement of dolphins, which may inhibit genetic, social as well as ecological interactions among individuals, limit the gene-flow, increase their vulnerability to natural catastrophes and ultimately lead to their extinction.

Conservation and management of a species requires sound understanding of its ecology hence the population status of

the Ganges River dolphin needs to be reviewed frequently to know the trends and factors responsible for its declining population. The Ganges River Dolphin Programme initiated by WWF-India needs to be strengthened at a national level as in the case of Project Tiger to save this rare species from extinction. Motivation and involvement of the fishermen community towards conservation along with regular monitoring of dolphin population and distribution is the only way to protect it. If adequate measures are not taken immediately, we might soon have another Baiji corollary.

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Prospects of bamboo shoot processing in north-east India

India has a vast bamboo cover of about 100,000 km² which constitutes about 12.8% of the country's forest area. It is represented by 23 genera and 128 species of which 15 genera and 50 species are in Arunachal Pradesh¹. A few species of bamboo are edible and are also of medicinal value. Bamboo shoots find an important place in the south-east Asian cuisine. In north-east India, it is consumed either raw or processed because of its exotic taste and flavour. Bamboo shoots are low in fat and calories but rich in fibre with about 90% water. They are said to be anticancerous and antimicrobial; and are being scientifically tested at the Tamil Nadu Agricultural University (TNAU). They are effective in decreasing blood pressure, cholesterol and increasing appetite due to the presence of phytosterols. Shoots are used as raw material in the manufacture of steroidal drugs². They are used as extenders because they take on the flavour of the ingredients they are cooked with. Fresh shoots have a crisp and sweet flavour with limited shelf-life and have to be sold immediately (Figure 1). The peak availability period is June to October. Prices range from Rs 15 to 20 per kg depending upon availability and demand. To cater to the metro markets, the shoots need to be processed and preserved pro-

perly. *Bambusa balcooa* Roxb., *B. polymorpha* Munro in Trans., *B. tulda* Roxb., *Dendrocalamus giganteus* Munro in Trans., *D. hamiltonii* Nees et. Arn, *D. hookerii* Munro in Trans., *D. longispata* Kurz, *D. membranaceus* Munro in Trans., *D. sikkimensis* Gamble, *Gigantochloa rostrata* Wong in Malay., *Melocanna baccifera* (Roxb.) Kurz, *Phyllostachys bambusoides* Sieb., *Schizostachyum dullooa* Gamble, *Teinostachyum wightii* Beddome and two unidentified spp., *Chingwa* and *Khupri* are the edible species in north-east India³.

The processing starts with thorough washing followed by peeling off the skin, shredding, slicing and cutting into cones. Next, they are boiled for about 10 min to remove bitterness and unwanted matter. This is followed by storing in brine solu-

tion with 5% salt and 1% citric acid. The final step is vacuum packaging of the processed shoots in 100 g packets containing 25 ml brine solution. However, the tribal people of the north-east have evolved different indigenous techniques of processing – slicing, shredding, fermenting, pickling and drying. In Arunachal Pradesh, the young shoots are ground and dried; used as chutney or flavouring agent. Juice of fermented shoots stored for about 50–60 days is used for flavouring vegetables; shoots cut into pieces are boiled and used as vegetables⁴. The shelf-life of the product is one year without any deterioration of colour, flavour and texture and sold at a market price of Rs 80 per kg.

In India, bamboo shoots, either processed or raw, have a high demand in the



Figure 1. Fresh culms of *Phyllostachys bambusoides* Sieb for sale.

markets of the north-east along with other areas like Mumbai, Bangalore, Chennai, Delhi and Sikkim. Being a lesser known food product, bamboo shoot processing has potential to be developed as an innovative and promising enterprise. Annually, over two million tonnes of edible shoots are consumed all over the world, mostly in Asia. China alone earns over US\$ 20 million annually. The world trade in bamboo shoots for 2002 was Rs 34,000 million (300,000 tonnes). In north-east India, annual average consumption of shoots (in tonnes) is: Arunachal Pradesh 1979, Manipur 2188,

Meghalaya 442, Mizoram 433, Nagaland 442 and Tripura 201 (ref. 2). The region has a vacuum processing unit (Natural Hill Food Products) at Aizawl, vacuum processing and canning unit (Luit Valley Food Processing) at Jorhat, and canning and pickling unit (Nagaland Foods) at Dimapur.

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Snow partridge hopes for a safe home in Arunachal Pradesh

The Eastern Himalaya, being an abode of mammoth biodiversity is known to house an uncountable number of floral and faunal species. With a portion of the Eastern Himalaya extending into the western part of Arunachal Pradesh, the state happens to contribute richly to the biodiversity of the country. Among a long list of enigmatic bird species is the family Phasianidae which represents indicators of habitat quality due to its substantial dependence on understorey and ground layer vegetation. Unfortunately, it is also known to be hunted for its meat and feathers. This group includes species like Himalayan monal (*Lophophorus impejanus*), blood pheasant (*Ithaginis cruentus*), satyr tragopan (*Tragopan satyra*) and many others, but the species in focus here is the timorous snow partridge (*Lerwa lerwa*), a rare resident of the higher reaches of the Eastern Himalaya. Though listed in the least concern category by International Union for Conservation of Nature (IUCN), the species is struggling to secure a safe home in the Tawang district of Arunachal Pradesh.

Wildlife habitat fragmentation, a common consequence of human develop-

ment is affecting the species survival. Tawang positioned at the trijunction of India, Bhutan and China, attracts a large number of tourists all round the year. The road passing through the area connects the district to mainland India. Frequent sightings of snow partridge flocks are reported from the area surrounding the Sela Lake, situated at 4100 m at the entrance of Tawang. The lake lies in the alpine zone and is surrounded by less vegetation and dominated by rocks and low shrubs which are considered as a good habitat for snow partridges. Movement of vehicles seems to be one of the significant threats to the snow partridge population and several other wild floral and faunal species thriving in the area. The flocks while crossing the road may fall victim to road accidents. Furthermore, the vegetation of the area including the fascinating Rhododendrons, also seems to suffer from habitat degradation and fragmentation due to road widening and repair by the Border Roads Organization (BRO). The partridges may fall prey to the labourers. Also, the accumulation of a significant amount of non-biodegradable waste in the form of plas-

tic bags and bottles can act as a source of diseases to the flocks roaming around.

Conservation of a species is not possible without the knowledge of its ecology. A detailed study of the snow partridges with proper documentation has to be conducted in the area. A database regarding the present population status and range of movement of the species should be generated, so that a regular check can be kept on fluctuations experienced by the population in the area over a period of time and necessary conservation measures for the same can be taken accordingly. Also, large scale awareness programmes among the local communities and visitors related to the conservation importance of the area along with its floral and faunal components should be extended before robustly promoting further tourism in the area. Provisions for proper dumping of wastes should be made and littering should be strictly prohibited through sign boards, etc. It is advisable to work intently to endow this rare and amiable species of Himalaya with a safe home before the situation worsens.

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