are conserved informally as virgin forests[1] depicting a reservoir of *in situ* conservation which is managed over generations as valuable legacy from primitive practices of natural resource conservation[2]. The locals consider it as 'Dev Bhumi', and the archaic Mandu temple (Figure 1 *b*) and primary forest substantiate its origin during ancient times when the society had not settled in permanent dwellings. Worship of the sacred trees is practised, mostly on full-moon nights by the local clan. Removal of any plant material or dead wood is considered taboo and disrespect to the deity. Only the sacred tree is allowed to be touched at the twin stem region for prayers and the deity's blessings. Entry to the core zone is prohibited or guarded under strict vigil in special cases. Since adjoining forests of the grove have already suffered immense degradation during developmental activities, the Mandu grove stands as the last refuge of the diversity-rich, climax vegetation and centre of preserved biological diversity, representative of the Upper Gangetic plains, as it harbours the magnificent *Manilkara hexandra* (Roxb.) Dubard population. In-depth studies of many such species in virgin forests open vistas for future economic value. Adding to this the possibility of the ancient *F. benghalensis* L. being a representative genetic variant peculiar to this region cannot be ruled out, opening new prospects in future forest tree breeding programmes. Hence for scientific and aesthetic value the conservation measures of the Mandu grove must be strengthened through cooperation of the Government agencies, Forest departments, environmentalists and the concerned non-governmental organizations to counteract the increasing anthropogenic pressures. The Mandu grove is also exposed to conservation bottleneck as there is an approved proposal of developing it into a tourist centre with consequent human influx, religious ceremonies and resultant developmental activities. Hence, in spite of the inadvertent protection and conservation by the local clans, the groves are prone to alteration in the race of modernization and vanishing religious sentiments unless stringent action is taken through formulation of environmental protection schemes, widening of buffer zone and blocking the developmental corridors which channelize anthropogenic pressures.

Till date, all other sacred groves established in India have been reported from various parts of the country[1,3–6], but never from any of the 25 internationally significant Ramsar sites, which are the cradles of biological diversity. Coupled with this, the surface and lower layers of soil of these wetlands often serve in regulating the global carbon cycle, including the carbon stores. Consequently, these conserved sacred groves are of additional significance in terms of probable carbon stores in the archaeologically potential forested wetland sites, many of which even function as open systems with respect to carbon[7]. The Mandu sacred grove therefore, is certainly a noteworthy outcome of the field exploration work under the MoEF-approved project on Upper Ganga Ramsar site studies, under the aegis of the Botanical Survey of India. Further, the entire patch of the small Mandu forest comprises a miniature ecosystem sustained through the waters of the Ganga and adding to its grandeur are the Gangetic dolphins (*Platanista gangetica*).

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Jellyfish bloom along the south Odisha coast, Bay of Bengal

Jellyfish (medusa) form an important group of marine denizens widely distributed in coastal and offshore water. They represent short-lived plankton phase of some invertebrates and also occur as holoplankton. All cubozoans as well as many hydrozoans and scyphozoans among the cnidarians (coelenterates) have a life history consisting of a sessile polyp phase and a planktonic medusa phase. Many polyps reproduce asexually through the process of strobilation, producing multiple ephyra which join the zooplankton community in form of medusa[1]. Some species of the medusa could form dense populations when the environmental conditions, particularly food supply is abundant. Jellyfish are conspicuous, but relatively little studied group of animals in coastal waters of India. Their population size fluctuates widely with changes in ocean climate and often experiences sudden outbursts known as 'blooms' followed by population crashes[2]. Boero *et al.*[3] and Richardson *et al.*[4] had inferred that the life-cycle traits make jellyfish suited to highly variable environments, because they can survive when conditions are extremely unfavourable and could multiply rapidly when conditions become conducive. Jellyfish and ctenophores are important consumers of zooplankton, including ichthyoplankton. Therefore, they stand as potential competitors of fish as plankton predators at the secondary and tertiary consumer levels of the marine food chain. In addition, the blooming of this group could interfere with fisheries by clogging fish-

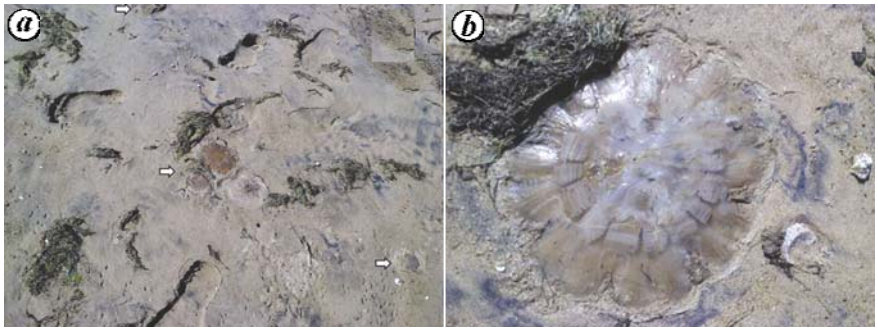

Figure 1. ***a***, Jellyfish on the beach. ***b***, Close-up view of a jellyfish.

ing nets[5]. Thus increase in population size of jellyfish can affect the coastal fisheries considerably.

During field visits to coastal places like Chilika inlets and Gopalpur-on-Sea in the southern Odisha coast during the second week of December 2012, a large number of jellyfish were found lying on the beaches near Dhalabali (Chilika mouth) and Gopalpur (Figure 1). Some jellyfish were fresh and alive, whereas the dead ones were giving out a bad odour in the areas. They were believed to have drifted onto the beach from the nearby coastal waters. The number of jellyfish on the beaches near Dhalabali was about 80–100. But the number in Gopalpur was less. Congregation of jellyfish was also observed near the Rushikulya mouth during the same period. At the same time, abundant jellyfish were also observed in fishing nets near Gopalpur. This indicated the massive growth of jellyfish population in this part of the Bay of Bengal during December 2012. In Chennai coast, jellyfish were observed round the year except November–March and their peak population density was during the reversal of coastal currents[6]. Being largely passive drifters in the sea, the arrival of jellyfish in the Kalpakkam coastal waters was closely linked to the current pattern observed along that coast[7]. Outburst of ctenophores and medusa was observed in the Arabian Sea off Mumbai and it coincided with rise in pomfret catches[8]. Seasonal jellyfish aggregations (in November–December and April–May) were also observed in coastal waters of Gujarat the gill nets operated by motorized boats are affected by the heavy deposition of jellyfish reducing the catch efficiency[9]. Recently, jellyfish blooms were observed along the coastal waters of Goa as was evident from the large number of medusa lying on the beaches during October 2012, which has lead to apprehend the collapse of coastal fisheries in that region[10].

Jellyfish form an important food source for sea turtles as well as several species of fish at the top trophic level of the marine food chain. The outbreak of jellyfish usually occurs following the phytoplankton blooms that increase the zooplankton population. Increased jellyfish production in marine ecosystems is perhaps a symptom of larger ecosystem degradation due to coastal eutrophication and overfishing[11,12]. During December, the coastal current along the Odisha coast is from northeast to southwest direction. Since this period corresponds to post-monsoon season, there is huge nutrient input via rivers. The nutrient input from rivers coupled with relatively stable hydrographic conditions and moderate temperature variations become favourable for phytoplankton growth and abundance in this segment. The high plankton production coupled with stable hydrography favours mass congregation of Olive Ridley sea turtles along this coast concomitant with jellyfish blooms. Since jellyfish serve as favourite food for turtles, jellyfish growth following plankton blooms can be considered as a biological cue attracting the Olive Ridley turtles to this coast during their reproductive phase in November–December.

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