

the industrialized West and their growing anguish is enhanced by the fact that the third world should not make the same mistake by contributing its quota. The growing conflict is how to reconcile between the fast depleting finite fossil resources and the renewable resources which are emerging slowly. Exploitation of resources can only be carried to a logical limit beyond which even human ingenuity cannot provide the answer. Presently, all the international organizations are engaged in the task of environmental protection but confined to merely collecting, collating, analysing and exchanging information without disclosing the status of the environment. Since nation-states are governed by its permanent interests, its erosion in the eye of international law is, by and large, a fiction notwithstanding the fact that the 'globalization of the world's societies has become a physical reality through modern telecommunications and modern transportation – the former has exposed the people in all but the remote locations instantaneously to the world's crisis situations and the ground realities in far away places and the latter has made it possible to travel and to trade and shift investments amongst distant locations quickly and extensively than ever before' (p. 259). This is the human tragedy that has to be faced squarely, in other words, the eco-restructuring process will remain totally impractical. This will remain like the Plato's ideal – the fundamental dilemma between what is and what ought to be – will always continue to plague mankind.

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**Fish Genetics and Biodiversity Conservation.** A. G. Ponniah, P. Das and S. R. Verma (eds). Nature Conservators, 135, South Civil Lines, Circular Road, Charan Singh Colony, Muzaffarnagar 251 001. 1998. 474 pp. Price not stated.

Over 70% of all recorded living species and perhaps a much larger fraction of actual diversity exist in the tropical countries. With respect to domesticated biodiversity too, this region is a veritable goldmine. It is also known for a large segment of endemic species; for instance, more than 56% fish species, which occur in Periyar Lake, are endemic. The spectrum of biodiversity in terms of strains, varieties and animal breeds available in the tropics is indeed astounding (T. Khoshoo, Indian Science Congress, Plenary Lecture, 1986). Yet, poverty and ignorance, widely prevalent in this region, have led to widespread and large-scale loss of this precious biological resource. 'Even by the most conservative estimates, the number of species doomed for extinction is atleast 27,000 per year, i.e. 74 per day and 3 per hour'. In such a crisis, the endangerment of aquatic organisms, especially fishes is greater than that of terrestrial animals, due to lack of information on the conservation status of aquatic species and social bias for these small and cold-blooded species. Rightly, the National Bureau of Fish Genetic Resources, Lucknow organized a National Symposium on 'Fish Genetics and Biodiversity Conservation for Sustainable Production' in September 1996 and this book represents the proceedings of the symposium.

A series of 64 papers presented in the symposium have been classified under (i) Status of Biodiversity; (ii) *In situ* Conservation; (iii) *Ex-situ* Conservation; (iv) Introduction of Exotics; (v) Genetics and Biotechnology, and (vi) Genetics of Hatchery Breeding. The contents of these contributions may be briefly summarized as follows: India is fortunately endowed with bountiful fish germplasm resources distributed widely in varied aquatic ecosystems. About 10% (22,000 species) of the global ichthyodiversity is found in the Indian waters. Of them, 400 species are commercially important. Our cold water harbours 73 species, warm water of the plains 544 species, brackish water 143 species and marine ecosystem 1,440 spe-

cies. Of these, several have been recognized as endangered, vulnerable and rare. Factors responsible for such large-scale loss of fish species, as well as their germplasm resources are: (i) Loss of physical habitats due to construction of dams and weirs across the rivers, soil erosion due to deforestation and excessive utilization of waters; (ii) chemical pollution due to industrial and domestic wastes; (iii) over-exploitation and indiscriminate harvesting of juveniles and brood fishes; (iv) competition from the introduced non-indigenous species; and (v) spread of dreaded diseases. For instance, siltation from the catchment areas has destroyed the feeding and breeding grounds of many fish species; 5,334 million tons of soil is eroded annually from cultivable land and forests of India. Our rivers carry nearly 2,050 million tons of silt and deposit 480 million tons into the reservoirs, causing eutrophication and reduction in the productivity of the water bodies. Enormous amount of water is abstracted from our rivers, for different uses. For instance, the runoff in the Ganga basin is about 470 billion m<sup>3</sup>; of this 85 billion m<sup>3</sup> is diverted for storage in reservoirs. The canal network of this basin is 13,600 km and 60% of water from the Ganga is impounded in these canals for irrigation. Annually, 1.5 billion m<sup>3</sup> of industrial effluents and domestic sewage are discharged into the Ganga. The introduction of common carp into the Loktok Lake (Manipur) has led to the displacement of the endemic fish *Osteobrama belangeri*.

Since the editors look forward to constructive criticism, the reviewer has chosen to bring the following to their notice: (i) Avoidable spelling and grammatical errors are found all over the book. For instance, there are 5 errors in less than two paragraphs in p. 89 and expressions like 'morphological anatomy' (p. 245) must be avoided. (ii) Metric values must be given. Expressions like feet (p. 90) and lakhs (p. 139) must be avoided. (iii) Presentation of wrong information, as given in p. 286, must be avoided; for instance, Pandian and Varadaraj, 1987b have reported ploidy induction and not transgenesis in tilapia. (iv) Incompatibility between citation in the text and references must be avoided, e.g. see p. 286 and 292. (v) There are also incompatibilities between the legend and the actual figure, (e.g. p. 401; Figure 3) (vi) Several



contributions, like the one on seahorse, which do not fit in with a theme of the book should be deleted. Efforts in this direction will make the proceedings more impressive and useful.

Despite these avoidable errors, the book has brought out interesting information. It has drawn the attention of the following: (i) the endangered status of a couple of mahseer species and others; (ii) the danger of inbreeding and intro-

gressive hybridization among cultivable fish species; and (iii) the loss of genetic variability within a population through reduced population size, and degradation, fragmentation and loss of habitats. It is indeed heartening to know that the concept of fish conservation was practised by Emperor Ashoka (246 BC), who prohibited fishing activity during the spawning season. Therefore, we have greater responsibility of sustaining this legacy of

conservation. It is in this context, the book is timely and may be useful to fishery students, and biologists and policy makers, who are interested in conservation of fish biodiversity.

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