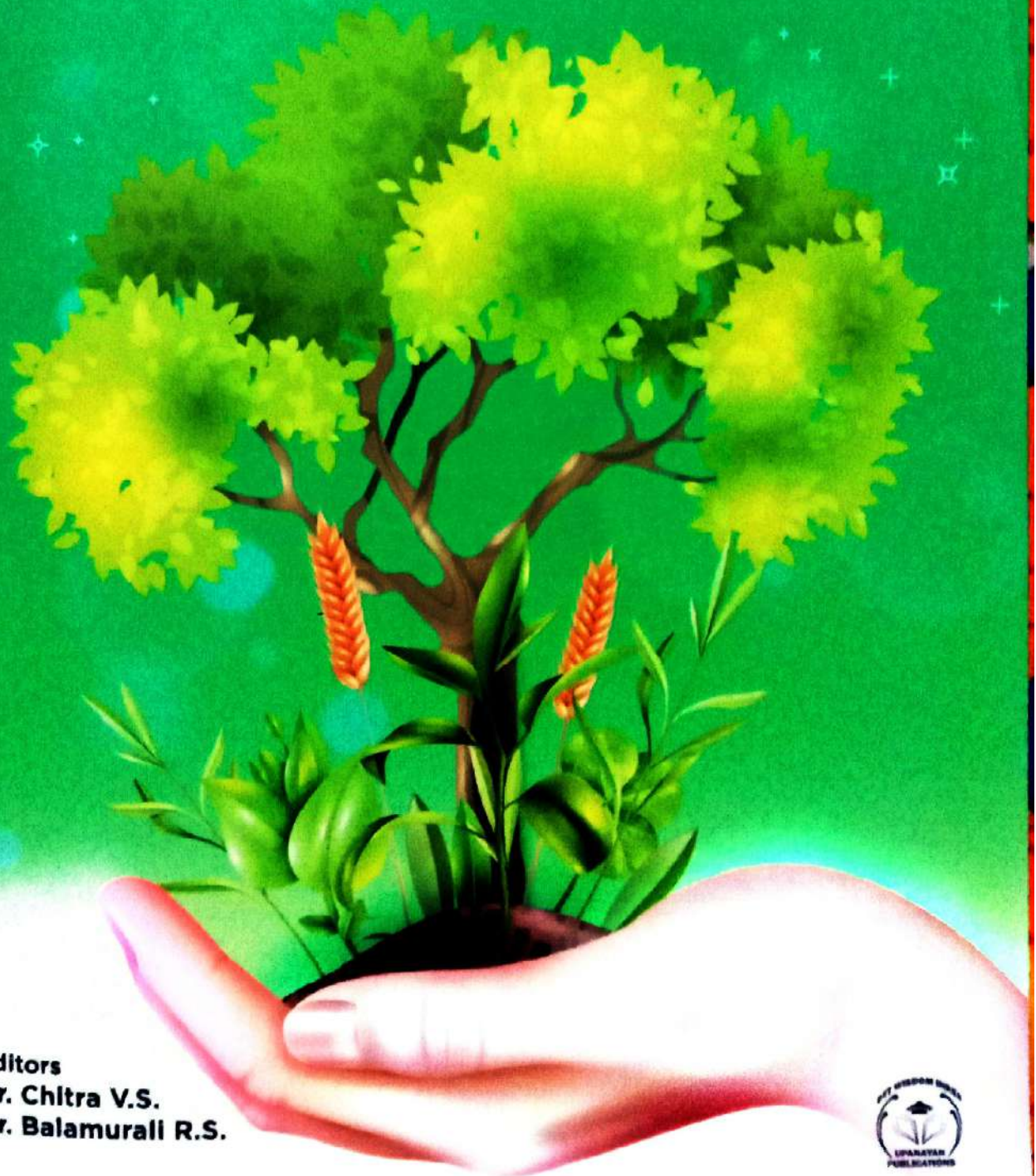


REJUVENATING ENVIRONMENTAL STUDIES

A MULTIDISCIPLINARY APPROACH



Editors
Dr. Chitra V.S.
Dr. Balamurall R.S.



Rejuvenating Environmental Studies: A Multidisciplinary Approach

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Chapter - 5

Conservation of Freshwater Biodiversity- Needs and Challenges

*Jyothylakshmi K & S. Nandakumar**

Scope and Importance

Freshwater ecosystems are one of the most threatened ecosystems of the world. Freshwater biodiversity can be defined as the variety of life forms on it, includes the diverse flora and fauna of lentic or lotic fresh water systems like lakes, ponds, reservoirs, rivers, streams and wetlands. Aspect of freshwater biodiversity also covers the variety of niches and unique species habitat interactions. Freshwater ecosystems provide sufficient resources for humans and are the primary niche for highly diverse, endemic flora and fauna. It has a major role in shaping the overall health of a freshwater system. Human populations have been expanded and increasing the demands for water resources inducing higher risk and stress upon freshwater biodiversity around the world (Dudgeon *et al.*, 2006). Several ecologically crucial freshwater species have been already are extinct or under severe threat as a result of anthropogenic activities. Existing efforts for the conservation of freshwater biodiversity might be insufficient to face the ongoing and future challenges in freshwater sector. So here we briefly discuss the needs and important challenges for freshwater biodiversity conservation. We also need to bridge the gap between freshwater ecology and conservation biology. Scientific societies have been publishing articles dealing with freshwater sciences but the efforts are little in the field of freshwater biodiversity conservation. Failure to meet these challenges will ultimately lead to the extinction

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or depletion of freshwater biodiversity. Thus, conservation strategies should be implemented to protect and conserve the freshwater life to maintain balance and availability of resources for future generations.

1. Why freshwater biodiversity conservation is necessary?

Man has made notable advancements in many fields of science. But when it comes to biodiversity documentation contributions are just fragmentary. Freshwater biodiversity has been playing a crucial role in commercial and industrial sector. The economic value of aquatic biodiversity is plenty and uncountable. Global climate change with other human-induced intimidations has been affecting the existence of freshwater biota. In addition to that pollution, eutrophication, habitat fragmentation, overexploitation, introduction of invasive species have caused serious threats to freshwater biodiversity. The need of implementing conservation strategies in freshwater systems is being mandatory for the benefit of the present as well as future generations. Freshwater biodiversity has been playing a crucial role in ecosystem services but studies in this aspect are not adequate (Naiman *et al.*, 2006).

Conservation of freshwater biodiversity is vital for several reasons. Some of the main reasons for the conservation of the freshwater biodiversity are the following.

1. **Balancing the food chain:** Different species of freshwater organisms serve as a major food source for other organisms thereby balancing the life of living organisms.
2. **Cleansing of habitat:** Many aquatic plant species impacts the quality of water in their ecosystem in a positive way. They are able to absorb the toxic contaminants in their ecosystem and purify water.
3. **Nutritional Needs:** Protein is one of the cheapest sources of food. Decline in the variety of freshwater fishes may likely to affect our nutritional demands.
4. **Local benefits:** Freshwater species are exceedingly crucial to local ecosystems. They provide food and economy to humans and are highly beneficial to control flood and erosion.
5. **Domestic water requirements:** Fresh water biodiversity is really important to meet the demands in fresh domestic water requirements for humans.
6. **Goods and services to humans:** Commercial and recreational benefits have been provided by the freshwater biodiversity.

THE EDITORS



Dr. Chitra V. S. presently working as an Associate Professor of English at Mahatma Gandhi College, Thiruvananthapuram, University of Kerala has over a dozen years of experience in teaching English Language and Literature. Her areas of expertise comprise Indian Literature in English, English Language Teaching and the areas concerned with varieties of exile writings. She has published nearly 20 articles in various reputed journals, a book titled *The Landscape of the Dispossessed: Self and Characters* (2018), chapters in both national and international publications. Besides this, she has made her contributions to the academic world by chairing various seminar sessions and has a handful of seminar presentations, both national and international to her credit. Her Ph.D is based on the exilic aspects in the writings of Herta Muller, a Romanian-German writer. She also has a command over German which has aided in the real understanding of the works of Herta Muller, whose works were published originally in German and later translated to English. She also holds an MEd in English and M A in Psychology which has helped to sharpen teaching skills and arrive at a real comprehension of the demands and needs of students.



Dr. Balamurali R.S. is currently working as Associate Professor and Head of the Postgraduate and Research Department of Zoology in Mahatma Gandhi College, Thiruvananthapuram, Kerala, India. He has specialised in the subjects of Aquatic Biology and Fisheries, Biodiversity, Conservation Biology, Environmental Biology, Soil Biology and Aquaculture. He has more than 15 years of postgraduate teaching experience and 20 years of research experience in aquatic and soil biology. Academic and administrative experience include elected academic council member in zoology of University of Kerala, NCC Officer in the rank of lieutenant, Coordinator of IQAC, College officer of AISHE, MHRD, Govt. of India, UGC-CPE Program coordinator of college, College planning board convener, chairman and member of question paper setting board of various universities to name a few. He is a research guide in Zoology at University of Kerala, presently guiding 4 students and produced 1 PhD. Published more than 25 research articles in various journals, 12 papers in national and international conference proceedings, 3 books and undertaken 3 research projects of various agencies. He has attended more than 75 seminars and training programs, organised seminars, served as resource person for various programs and won national level awards for his academic and research contributions in conservation biology. He is also a member of various learned societies like Society for Conservation Biology, Washington, British Ecological Society, Asian Fisheries Society, Bombay Natural History Society, Indian Science Congress Association, Marine Biological Association of India, Applied and Natural Science Foundation etc.



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