

## Aquatic plants Special Issue

Aquatic plants form a highly specialized group of plants that have made water their permanent or seasonal home. From stagnant lakes and flowing rivers to marshes, paddy fields, estuaries, and even waterfalls, these plants occupy some of the most dynamic habitats on Earth. They have developed an impressive range of structural, anatomical, and reproductive adaptations that enable them to live in environments where they are submerged, water levels fluctuate, and there is limited gas exchange. This makes them a classic subject of study for plant biologists.

Changes in aquatic plant communities are widely recognized as early warning signs of ecological disturbance because they are so closely linked to the health of ecosystems. Eutrophication, river regulation, invasive species, climate change, and land-use change are all getting worse around the world. This makes freshwater ecosystems one of the most endangered ecosystems on Earth. Species that are only found in these habitats are particularly at risk, highlighting the importance of having accurate taxonomic knowledge and reliable information on species distributions to support conservation and management efforts.

Aquatic plants are crucial to the environment, but our understanding of them at the species level remains limited, particularly in tropical areas. There are approximately 350,000 angiosperm species known worldwide, but only about 2,600 of them are truly aquatic. They are relatively uncommon, found in approximately 17% of angiosperm families and 1.5% of genera, representing less than two percent of total flowering plant diversity (Cook, 1990; Les & Philbrick, 1993; Les & Schneider, 1995). Also, these plants have a surprisingly high level of taxonomic complexity. *Eleocharis*, *Eriocaulon*,

*Juncus*, *Potamogeton*, *Rotala*, *Scirpus*, and *Typha* are just a few of the many aquatic genera that exhibit big intraspecific differences, considerable phenotypic plasticity, and frequent hybridization. These characteristics complicate accurate species identification, even for trained taxonomists. The lack of updated regional Floras and monographs complicates the issue, necessitating biodiversity assessments to rely on generic or family-level classifications rather than species-level identifications.

In light of this, *Rheedeaa* is happy to announce a special issue on the diversity and systematics of aquatic plants. This issue brings together studies that fill in important gaps in our knowledge of this unique group of plants. The papers in this volume demonstrate how careful taxonomic work, combined with information on ecology and morphology, can reveal both the evolutionary patterns and the conservation priorities of aquatic plants. For example, revisions and summaries of taxonomically challenging genera, such as *Ammannia* and *Potamogeton*, help improve scientific clarity. Research on *Eriocaulon* and Podostemaceae elucidates the influence of extreme aquatic and rheophytic environments on morphological evolution, reproductive strategies, and pollination mechanisms. Detailed descriptions of narrowly endemic and endangered species, such as *Willisia selaginoides* and the Malabar River Lily (*Crinum malabaricum*), highlight the importance of possessing species-level biological knowledge to effectively protect them. Research into the microecology and floristic diversity of seasonal wetlands on lateritic plateaus in South India offers broader ecological insights, emphasizing these habitats as reservoirs of aquatic plant diversity. Finally, new distribution records, such

as *Heteranthera reniformis* being reported for the first time in Asia, demonstrate the importance of continued exploration and study of aquatic plants in the field to enhance our understanding of their biogeography.

The studies in this special issue collectively highlight the persistent importance of aquatic plant research and the crucial function of taxonomy in ecology and conservation. We hope that this special issue will be useful to taxonomists, ecologists, and conservation biologists, spark further research on aquatic plants, and help

document and protect freshwater biodiversity, which is one of nature's most important yet fragile components.

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