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associated ecosystem services are hot issues with ever-growing attention placed upon them. We are increasingly recognizing that they are crucial for the survival of the aquatic biota and human beings on our planet. The efficient monitoring of water resources is fundamental for effective management of water quality and aquatic ecosystems. The first stage in sustainable ecosystem management is the evaluation of the current status of target ecosystems. Traditionally, and even today, physico-chemical parameters have mainly been used to evaluate the quality of water resources. However, they have a large limit to grab the wholeness of water system, particularly in the sense of ecosystem health and integrity, for which ecological monitoring should be based on biological factors. Various approaches are applicable to ecosystem health assessment at different levels of the biological hierarchy, from genes to ecosystems. This Special Issue is designed to improve scientific understanding and strategies for sound aquatic ecosystem management and services for researchers, decision makers, and stakeholders. Today, sustainability of a healthy freshwater ecosystem and its associated ecosystem services are hot issues with ever-growing attention placed upon them. We are increasingly recognizing that they are crucial for the survival of the aquatic biota and human beings on our planet. The efficient monitoring of water resources is fundamental for effective management of water quality and aquatic ecosystems. The first stage in sustainable ecosystem management is the evaluation of the current status of target ecosystems. Traditionally, and even today, physico-chemical parameters have mainly been used to evaluate the quality of water resources. However, they have a large limit to grab the wholeness of water system, particularly in the sense of ecosystem health and integrity, for which ecological monitoring should be based on biological factors. Various approaches are applicable to ecosystem health assessment at different levels of the biological hierarchy, from genes to ecosystems. This Special Issue is designed to improve scientific understanding and strategies for sound aquatic ecosystem management and services for researchers, decision makers, and stakeholders.