



dynamics, including changes in abundance, distribution, and genetic diversity. At the community level, contaminants can alter species interactions, trophic dynamics, and ecosystem structure and function, leading to cascading effects throughout the food web.

Effective management strategies are essential for mitigating the effects of pollution on aquatic ecosystems and ensuring their long-term sustainability. These strategies encompass pollution prevention, remediation, regulation, and monitoring efforts. Pollution prevention involves reducing the release of contaminants into aquatic environments through source reduction, pollution prevention measures, and sustainable practices. Remediation involves restoring contaminated aquatic habitats through techniques such as bioremediation, phytoremediation, and sediment dredging. Regulation involves implementing laws, regulations, and policies to control the discharge of pollutants into aquatic environments and promote environmental stewardship. Monitoring efforts involve assessing the quality of aquatic ecosystems through water quality monitoring, biological monitoring, and chemical monitoring programs to detect changes in contaminant levels and ecosystem health over time [10].