Ralph et al. (2025). Water quality fact sheets for production nurseries. https://doi.org/10.25949/JH43-4N56

Aquatic Biota

OVERVIEW

- Aquatic biota such as fish, invertebrates, and zooplankton are often used to monitor ecosystem health in rivers, lakes, and ponds.
- Invertebrates and zooplankton are part of the aquatic food web and provide food for fish, platypuses, birds, bats, and other animals (**Figure 1**).
- Some aquatic biota are pollution-tolerant and can survive in low-quality habitat. Others are pollution-sensitive and require high-quality habitat (**Figure 2**).
- Healthy water bodies generally have many different species, including ones that are sensitive to pollution.

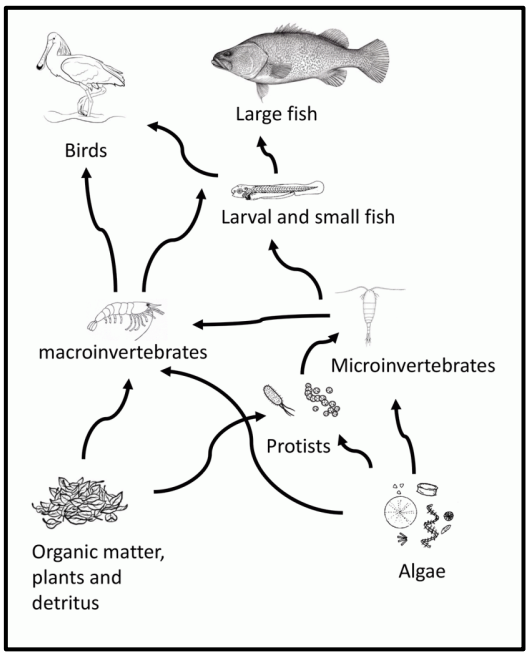

Figure 1. Simplified aquatic food web (Hitchcock, 2021).

KEY FACTORS

- Water temperature, pH, dissolved oxygen, organic matter, plants, and flow are all important aspects of habitat for aquatic biota.
- Many human activities can indirectly affect aquatic habitat. One example is non-point source pollution, which increases the amount of sediment and fertiliser in the water.
- Pollution can change the pH, increase the bioavailability of metals, add excess nutrients, and reduce dissolved oxygen, all of which harm aquatic biota.

HIGHLIGHTS

- Aquatic biota are indicators of water quality and ecosystem health.
- Many aquatic biota are sensitive to pollution and can be affected by human activities, including non-point source pollution.
- Biomonitoring can provide insight about water quality and ecosystem health.

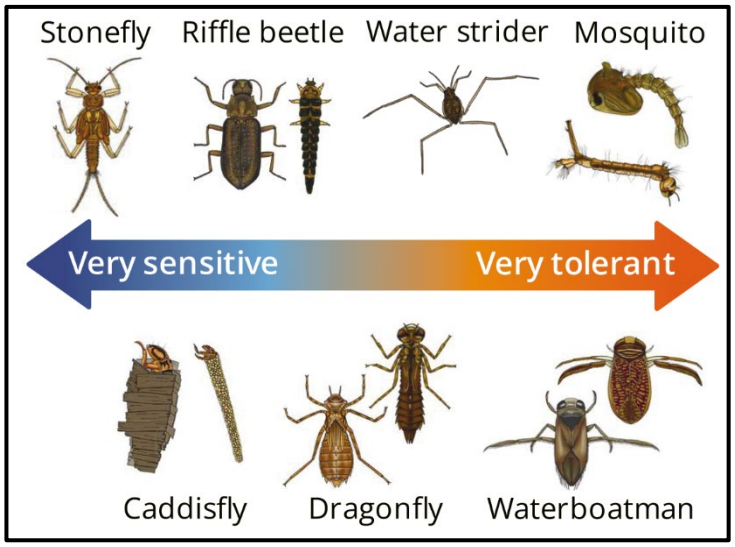

Figure 2. Aquatic macroinvertebrate sensitivity (modified from Waterwatch NSW (N.D.); illustrations by C. Rockley).

MANAGEMENT

- Most management of aquatic biota in agricultural settings is indirect. Adjusting land use to minimize sediment- and fertiliser-laden runoff can provide significant benefits.
- Biomonitoring provides more insight into aquatic health and water quality than water samples alone, especially with repeated samples over time.
- Compare observed biotic responses with environmental quality standards to evaluate contamination impacts.
- Identify areas of high ecological importance and monitor signs of ecosystem stress or degradation.
- Aquatic biota rely on good water quality but also help to improve water quality through filtration and bio-uptake of nutrients and contaminants.

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