

Weeds

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OVERVIEW

- 'Weeds' are different in legal, agricultural, and environmental contexts, but are generally defined as plants growing in an undesirable place.
- Many aquatic plants, even ones that are normally beneficial, can become weeds under the right conditions (**Table 1**).
- Weed seeds may be introduced from upstream in the catchment, or from elsewhere on the nursery lot.
- Not all plants are weeds – aquatic plants in water storages play an important role in nutrient buffering, bank stabilisation, sediment trapping, and oxygenation. In addition, they reduce evaporation rates, keep a consistent water temperature, and provide habitat for aquatic biota.
- However, rapid aquatic plant growth can lead to the entire water surface being covered, resulting in oxygen depletion and deterioration of water quality.
- Additionally, some plants cause blockages to irrigation pipes or impede water intake to pumping equipment (**Figure 1**).

Aquatic habitat	Example species
Free-floating plants	Lemna species, Wolffia species and Spirodela species, salvinia (<i>Salvinia molesta</i>), water hyacinth (<i>Eichhornia crassipes</i>), and water lettuce (<i>Pistia stratiotes</i>)
Floating attached plants	Waterlilies (<i>Nymphaea</i> species) and alligator weed (Figure 1 ; <i>Alternanthera philoxeroides</i>)
Submerged plants	Native ribbon weed (<i>Vallisneria americana</i>), elodea (<i>Elodea canadensis</i>), dense waterweed (<i>Egeria densa</i>), water milfoils (<i>Myriophyllum</i> species), and Cabomba (<i>Cabomba caroliniana</i>)
Emergent plants	Peruvian water primrose (<i>Ludwigia peruviana</i>), glush weed (<i>Hygrophila costata</i>), Senegal tea (<i>Gymnocoronis spilanthoides</i>), and horsetails (<i>Equisetum</i> species).

Table 1: Examples of aquatic plants that can become weeds.

HIGHLIGHTS

- Aquatic weeds can grow excessively when nutrients and other contaminants sit in water storages, which can be problematic and may cause eutrophication once they die and decompose.
- Prevention measures include reducing nutrient inputs to dams and filtering and aerating dam water.
- Treat aquatic weeds when they become problematic and clog irrigation pumps. Identify problem species and apply the correct treatment. Manual removal of decaying plants is essential.



Figure 1. Alligator weed (*A. philoxeroides*) grows in water and on land and can form dense mats that block irrigation pumps. Reporting requirements vary in NSW (Photo: R.H. Mohlenbrock, USDA public domain).

KEY FACTORS

- Nutrient-rich water can lead to excess plant growth.
- Warm temperatures and sunlight encourage plant and weed growth in water storages, so shading dams may help to slow plant growth.
- Surface runoff from surrounding agricultural, urban, and industrial areas can introduce nutrients, sediments, particulate organic matter, and dissolved organic matter into dams, resulting in increased aquatic plant growth.
- Aquatic weeds (e.g., algal blooms) can be problematic and may cause eutrophication once they die and decompose.

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MANAGEMENT

- Free tools such as NSW WeedWise (<https://weeds.dpi.nsw.gov.au/>), iNaturalist (<https://www.inaturalist.org/>), and Which Plant Where (<https://www.whichplantwhere.com.au/>) can be used to identify aquatic plants, check management options, and learn if a plant is reportable under the Biosecurity Act.
- Collect samples of weeds from areas vulnerable to seed dispersal, especially around water entry and exit points, and within water storages. Measure and analyse weed seeds to identify species that may have been transported by floodwaters, aiding in early detection and control.
- Correct identification of the aquatic plant and assessment of the plant's ecology is necessary to ensure the most cost-effective and environmentally sound control techniques are used.
- Chemically treating plants can leave dead and decaying plants in the water which can cause deoxygenation of the water and reduction in water quality. Manually remove dead plants where possible.
- Avoid or minimise algae weed growth by monitoring and treating water storages (e.g., aeration) when eutrophication starts to occur during or after events
- To prevent a recurrence of the problem, manage the water body and its surrounds and use an integrated management approach to provide adequate long-term control.
- Filter water or divert nutrient-rich run off away from the dam, for example, by placing aquatic weed mats or geotextile to prevent spread of weeds and their seeds.
- Plant trees to shade the dam to decrease light available to plants.
- Only consider biological control agents if they are suitable for the particular situation and monitor continuously.

