



**Shoalhaven City Council Weed Management Plan – Water hyacinth**

**Common name:** Water hyacinth

**Botanic name:** *Eichhornia crassipes*

**South East Regional Priority Weed Objective – Recommended Regional Measure**

*Land managers should eradicate the weed or if that is not practicable destroy as much of the weed as is practicable and suppress the spread of any remaining weed*

**Mandatory measure: Prohibition on dealings. Must not be imported into the State or sold**

**Water hyacinth** forms dense, impenetrable mats over the water surface. Specific impacts include:

- blocking irrigation channels and rivers
- restricting livestock access to water
- destroying natural wetlands
- eliminating native aquatic plants
- reducing infiltration of sunlight
- changing the temperature, pH and oxygen levels of water
- reducing gas exchange at the water surface
- increasing water loss through transpiration (greater than evaporation from an open water body)
- altering the habitats of aquatic organisms
- restricting recreational use of waterways
- reducing aesthetic values of waterways
- reducing water quality from decomposing plants
- destroying fences, roads and other infrastructure when large floating rafts become mobile during flood events, and
- destroying pastures and crops when large floating rafts settle over paddocks after flood events.

**Water hyacinth** reproduces from seeds and horizontal stems. Flowers open for only one or two days from mid to late summer before beginning to wither. When all the flowers on a spike have withered, the stalk gradually bends into the water and after two to three weeks the seeds are released and sink.

Autumn and winter frosts cause the leaves to die off but the crowns are able to overwinter. These will commence new growth in the following spring along with the germination of seeds.

Water hyacinth infestations increase most rapidly by the production of new daughter plants. During high water flows and flooding, infestations can break up and be moved to new locations.

Most spread can be attributed to human activity such as the deliberate planting of water hyacinth in ornamental ponds or dams. Unwanted aquarium plants that are discarded into waterways are a major form of spread. Water hyacinth can also be spread by contaminated boating equipment.

**What does Water hyacinth look like?**

**Leaves**

Leaves are smooth, hairless and glossy. They are generally a bright green colour and can be tinged a rusty yellow on their edges. There are two types of leaves.

- Leaves with non-bulbous petioles. Leaves are up to 60 cm long (including the petiole), narrow and erect – this leaf type is typical of plants in dense, crowded infestations.
- Leaves with bulbous petioles. Leaves are thick stemmed, circular and up to 30 cm in diameter. The stems may be 50 cm long and contain variable amounts of air, which enable the plant to float.

This leaf type is typical of plants in open water or on the open-water edge of large infestations.

**Stems**

There are two types of stems:

- erect stems up to 60 cm long, with flowers,
- horizontal vegetative stems (stolons) 10 cm long, which produce new daughter plants.

### Seeds

- Seeds are 1 to 1.5 mm long and roughly egg-shaped, with ridges from end to end. They are long-lived and may survive in mud for up to 20 years. Seeds have also remained viable over very long periods in dry soil.

### Roots

- Roots are fibrous and featherlike. In deep water they may trail below the plant and can be up to 1 m in length. In shallow water the roots may take hold in the substrate of mud or sediment.

### Flowers

- Flowers are 4 to 7 cm across, funnel-shaped, light bluish-purple or dark blue with a yellow centre and have six distinct petals. The upper petal is darker purple with a yellow mark in the centre.
- Flowers can self-fertilise and are formed on upright stems with between 3 and 35 (but commonly 8) flowers on each spike.

### General Biosecurity Duty

All plants are regulated with a **general biosecurity duty** to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable

The **Biosecurity Act 2015** and the **Biosecurity Regulation 2017** set out a range of penalties for non-compliance with the provisions of the legislation. Penalties range from \$1,000.00 on the spot fines, through to court imposed penalties of up to a maximum of \$220,000 for individuals or \$440,000 for corporations for failing to discharge a biosecurity duty. If an offence is proven to have been committed negligently, the court may impose a penalty of a maximum of \$1,100,000 for an individual and \$2,200,000 for a corporation.

### Chemical control calendar

January	February	March	April	May	June	July	August	September	October	November	December
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**Glyphosate 360 g/L** (Only products registered for aquatic use) Rate: 1 L – 1.3 L in 100 L of water. Apply in warmer months for best result. Maximum 4 applications per year. Not to be applied within 500 m of potable (drinking) water uptake. NIL withholding period

**Metsulfuron-methyl 600 g/kg** (Brush-off®) Rate: 10 g per 100 L water plus a wetter at 200 mL per 100 L water. PERMIT [84767](#) Expires 31/05/2020

Comments: May only be applied in enclosed water bodies, and not within 400 m of potable water supply uptakes. WARNING: very toxic to aquatic plants and algae. Apply a maximum of 3 applications per year at minimum intervals of 90 days. Withholding period: Nil (recommended not to graze for 7 days before treatment and for 7 days after treatment to allow adequate chemical uptake in target weeds).

**Diquat 200 g/L** (Reglone®) Rate: 400 mL per 100 L of water. Comments: Spot spray to wet all foliage thoroughly, add Agral 600. Observe withholding period.

Withholding period: 1 day in pasture, 10 days in treated water.

**Diquat 200 g/L** (Reglone®) Rate: 5.0–10.0 L/ha

Comments: Boom spray to wet all foliage thoroughly, add Agral 600. Observe withholding period.

Withholding period: 1 day in pasture, 10 days in treated water.

**2,4-D 300 g/L** (Affray 300®)

Rate: 1.0 L in 200 L of water

Comments: Avoid causing submersion of sprayed plants.

Withholding period: 7 days.

**Herbicides are a safe and effective method of control** as part of an integrated water hyacinth management plan. Use of herbicides does not stop the need to manage water hyacinth infestations effectively. The aim of herbicide treatment is to minimise the spread of water hyacinth. Always treat “outliers each season and work continuously on larger sections to reduce the density and abundance of water hyacinth.

**ALWAYS READ THE LABEL AND USE CHEMICALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS**

Refer to NSW DPI Weedwise website: <http://weeds.dpi.nsw.gov.au/WeedBioSecurities?Areald=114>

Water hyacinth page: <http://weeds.dpi.nsw.gov.au/Weeds/Details/145#biosecurity>

**Control:** Water hyacinth is difficult to control in all freshwater aquatic environments. When access is limited by the presence of the weed itself, control becomes more difficult. Early detection and rapid response offer the greatest likelihood of successful control and the opportunity for eradication. It is essential that any new infestations are controlled as soon as possible. If allowed to become established, the seed bank rapidly expands, increasing costs and massively increasing the duration of the control program. In large, established infestations, the aim of a long-term control program should be to carry out annual control treatments in order to reduce the quantities of reproducing plants and restrict seed bank build-up over the long term.

**Mechanical control:** Early control attempts concentrated on removing plants from the water with pitchforks, dumping the accumulated mass on land to die. Manually removing plants from small areas of water such as farm dams and drains is an effective form of controlling water hyacinth, but only when the rate of removal is faster than the rate of regrowth. On a larger scale, manual removal is less likely to achieve control of water hyacinth.

**Chemical:** In NSW, a number of herbicides are registered for the control of water hyacinth. For specific information on registered herbicides see below.

The most commonly used technique for applying herbicides to water hyacinth is high volume spraying with hose and handgun power sprays either from a boat or from the banks. In some situations large infestations have been aurally sprayed.

Treatments with herbicides should be carried out early in the growing season (generally in spring).

Spraying an entire heavy infestation can cause the weed mat to sink and rot resulting in deoxygenation of the water, potentially killing fish. This can be avoided by spraying one third of the infestation at a time, or by physically removing as much of the weed as possible prior to spraying.

#### Useful references:

NSW Weedwise: <http://weeds.dpi.nsw.gov.au/WeedBiosecurities?Areald=114>

Biosecurity Act 2015: <https://www.legislation.nsw.gov.au/acts/2015-24.pdf>

Biosecurity Regulation 2017: <https://www.legislation.nsw.gov.au/regulations/2017-232.pdf>

South East Regional Strategic Weed Management Plan: [http://southeast.ils.nsw.gov.au/\\_data/assets/pdf\\_file/0006/722706/South-East-Regional-Weed-Mgmt-Plan.pdf](http://southeast.ils.nsw.gov.au/_data/assets/pdf_file/0006/722706/South-East-Regional-Weed-Mgmt-Plan.pdf)

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