Water plants of the Adelaide Hills and Fleurieu

Freshwater plants... friends and foes

Do you wonder about water plants growing in your farm dam, creek water hole or wetland?

Although many have "weed" in their common name, most are beneficial native plants.

Native water plants provide many important ecological benefits. They can indicate cleaner, healthier water compared to water bodies without water plants.

This guide will help you distinguish between our beneficial natives and invasive introduced species.

Benefits of native water plants

In addition to providing great habitat for native aquatic wildlife, native water plants also:

- **oxygenate the water**
- **stabilise sediment**
- **help sequester carbon**
- **capture excess nutrients and heavy metals.**

These qualities help reduce greenhouse gases and blue-green algae outbreaks.

While they may look weedy, and some can grow very quickly to cover the water's surface, most water plants are native and do not pose a risk to dams.

How to use this guide

This identification guide groups water plants according to the depth of water in which they typically grow, that is, **free floating, deep water** and **shallow water and fringes**. The water depth in dams and natural water bodies fluctuates seasonally, so many plants grow in a wide range of water depths. All the plants in this brochure are native apart from the **notifiable weeds** in red. See page 9.

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LANDSCAPE SOUTH AUSTRALIA HILLS AND FLEURIEU

FREE FLOATING

Red azolla

Azolla rubra (syn. *Azolla filiculoides*) **Family:** Azollaceae

Very small fern fronds with **multiple roots dangling** beneath. Fronds are **green in shaded situations, red in sunlight**. Non-flowering fern. Reproduces by frond fragmentation. Free floating. **Nitrogen fixation:** *Azolla* has a symbiotic relationship with a non-toxic cyanobacteria, *Anabaena azollae*, enabling it to convert atmospheric nitrogen gas into a plant-available form.

Benefits *Azolla* provides:

- provides habitat for aquatic life
- reduces the chance of blue-green algae outbreaks by consuming excess nutrients
- reduces evaporation and temperature by shading the dam.
- binds dissolved heavy metals
- rapid growth (plants can double in 2-5 days) offers potential for carbon sequestration.

Removal: *Azolla* can densely cover dams for short periods, potentially obstructing irrigation infrastructure or shading out other aquatic plants. Dense growth may indicate excess nutrient inputs from livestock and/or fertilisers, particularly phosphorus. Control by physical removal reduces future outbreaks by preventing accumulated nutrients returning to the water.

How to prevent *Azolla* taking over:

- fence livestock out of dams to reduce nutrient inputs from faeces and urine
- provide stock with watering troughs rather than directly drinking from the dam
- minimise or exclude fertiliser applications uphill of the dam inlet area
- plant sedges, rushes and grasses around the inlet area to filter nutrients and soil sediments
- reduce available light by shading the dam with native trees and shrubs on the north and west sides.

Water hyacinth

Eichhornia crassipes **Family:** Pontederiaceae

REPORT THIS WEED! Water hyacinth is widely considered to be the world's worst water weed.

Impact: smothers creeks and dams, can tolerate extreme growing conditions. Upright rosettes of leaves (to 60 cm) grow along long running stems, with new plants continually growing at the ends. Oval shaped thick leaves with **large swollen leaf stalks**. Roots trail underwater in dense mats to 1 m deep. Tall **lilac flower spikes** in summer. Flowers have 6 petals, one with a **yellow spot**. Free floating but may take root in shallow water.

Notifiable weed: if detected, landowners are required to notify Landscapes Hills and Fleurieu and destroy all plants.

Salvinia

Salvinia molesta **Family:** Salviniaceae

REPORT THIS WEED!

Impact: forms extensive mats over the water surface. Juvenile leaves small, flat and oval (2 cm). Mature leaves crowded, oval, **hairy and folded** (5-6 cm). **Feathery submerged leaves** look and function like roots. Non-flowering fern. Rapidly reproduces from buds at the base of leaves. Free floating.

Notifiable weed: if detected, landowners are required to notify Landscapes Hills and Fleurieu and destroy all plants.

Common duckweed

Lemna disperma **Family:** Lemnaceae

Very small oval leaves in pairs, each with a **single root**. Reproduces vegetatively; two daughter plants bud off from an adult plant. Tiny white flowers barely visible in autumn. Free floating. Lemna can densely cover dams for short periods, potentially obstructing irrigation infrastructure. Dense growth may indicate excess nutrient inputs from livestock and/or fertilisers, particularly phosphorus. Control by physical removal reduces future outbreaks by preventing accumulated nutrients returning to the water.

DEEP WATER (>2m)

REPORT THIS WEED!

Leafy elodea

Egeria densa **Family:** Hydrocharitaceae

Impact: forms dense plant mats that decompose when water levels drop, causing nutrient overload.
Long **submerged stems** with densely packed **whorls of 4-5 strap-like leaves**. Showy **white male flowers with 3 petals, rise above the water** surface in summer. There are no female flowering plants in Australia. Spreads easily from stem fragments. Rooted in water to 7 m, sometimes free floating near the surface.
Notifiable weed: if detected, landowners are required to notify Landscapes Hills and Fleurieu and destroy all plants.

Floating club-rush

Isolepis fluitans **Family:** Cyperaceae

Variable appearance: in deep water stems and leaves are **submerged, weak, slender, long and grass-like**. On drier ground grass-like stems and leaves form **erect tufts** to 10 cm high. Small, inconspicuous **oval flower heads** at end of stems rise above the water in spring and summer. Deep water and muddy fringes.

Eurasian water-milfoil

Myriophyllum spicatum **Family:** Haloragaceae

REPORT THIS WEED!

Impact: forms dense underwater tangles that displace native aquatic species.
Whorls of **feather-like submerged leaves. Small, spindly flower spikes rise above water** but leaves do not.
Deep water to 10 m.
Notifiable weed: if detected, landowners are required to notify Landscapes Hills and Fleurieu and destroy all plants.

Curly pondweed

Potamogeton crispus **Family:** Potamogetonaceae

Wavy submerged leaves. Short knobby flower spikes above the water in summer and autumn.
Deep water to 4.5 m.

Blunt pondweed

Potamogeton ochreatus **Family:** Potamogetonaceae

Narrow submerged leaves with obvious mid-vein. Short **knobby flower spikes** above the water in summer.
Deep water to 4.5 m.

DEEP WATER (>2m)

Floating pondweed

Potamogeton tricarinatus **Family:** Potamogetonaceae

Floating leaves oval, submerged leaves long and narrow. Obvious **knobby flower spikes** above the water in spring and summer. Water to 3 m deep.

Ribbonweed

Vallisneria australis (syn. *Vallisneria spiralis*) **Family:** Hydrocharitaceae

Narrow leaves up to 3 m long. Male flowers submerged. Small female **flowers with stems that elongate and spiral up** to the water surface to collect floating pollen. Deep water to 7 m.

ALGAE

Freshwater algae

Algae may not look pretty, but don't under estimate their value.

There are many types of freshwater algae. They vary in colour from green and red to brown. They vary in shape from microscopic, scum-like, filamentous to plant-like. Algae are an important component of freshwater habitats.

Algae absorb nutrients and heavy metals, which purifies water. Just like aquatic plants, they produce their own food through photosynthesis, which oxygenates the water and forms the basis of the aquatic food chain. Small invertebrates feed upon algae, and they are in turn fed upon by progressively larger invertebrates and animals, including fish, turtles and rakali (native water rats).

Toxic blue-green algae

Toxic blue-green algae are not actually algae. They are a type of bacteria known as cyanobacteria, some of which can produce toxins that are unsafe for humans, animals and fish. They can look like brightly coloured, oily scum on the water surface, ranging from blue, green to brown and can smell unpleasant.

Cyanobacteria growth in still water is driven by high nutrient levels (particularly phosphorus and nitrogen) and can dominate dams during the warmer months of the year. Cyanobacteria thrive in the warm surface layer of water where light is readily available for photosynthesis.

How to avoid a cyanobacteria outbreak

Prevention is better than cure.
Reduce nutrient inputs into dams by:

- fencing to permanently exclude livestock access to the dam. This prevents them fouling the water with faeces and urine. Provide healthy clean drinking water to livestock by reticulating water to stock troughs
- avoiding fertiliser applications in the dam inlet region. This area should be fenced off from livestock. Plant or allow grasses, sedges and rushes to grow in this area to intercept sediment and nutrients that will otherwise run into the dam
- maintaining full ground cover in the paddocks above the dam to avoid soil being washed into the dam
- not fertilising the catchment area above the dam before heavy rain events.

In the event of an outbreak, disturbance of the warm surface water can create less favourable growing conditions e.g. spraying the water surface with water through a fire fighting unit to create mixing.

Putting barley straw into dams can help inhibit and control an outbreak during warm weather, provided the water is well aerated. See **aquatictechnologies.com.au/wp-content/uploads/2021/02/Barley-Straw-Literature-Review-Final.pdf** for more information about barley straw.

Want more information about toxic blue-green algae? Go to **waterquality.gov.au/issues/blue-green-algae**

SHALLOW WATER (TO 2M) AND MUDDY FRINGES

Lesser joyweed

Alternanthera denticulata **Family:** Amaranthaceae

Narrow leaves in pairs on creeping stems that take root when in contact with soil. **Stems and leaves often flushed pink**. Small **white-pink flowers** in leaf bases in summer and autumn. Annual. Muddy fringes.

Alligator weed

Alternanthera philoxeroides **Family:** Amaranthaceae

REPORT THIS WEED!

Impact: invades on land and in water, spreads easily by fragments, extremely difficult to control.

Creeping **hollow stems** above and below ground. Grows roots easily, down to 1 m deep to survive harsh conditions. Shiny **dark green spear-shaped leaves**. Small **white flower balls** on stalks in summer. Large plant mats may float freely or be rooted in or out of water.

Notifiable weed: if detected, landowners are required to notify Landscapes Hills and Fleurieu and destroy all plants.

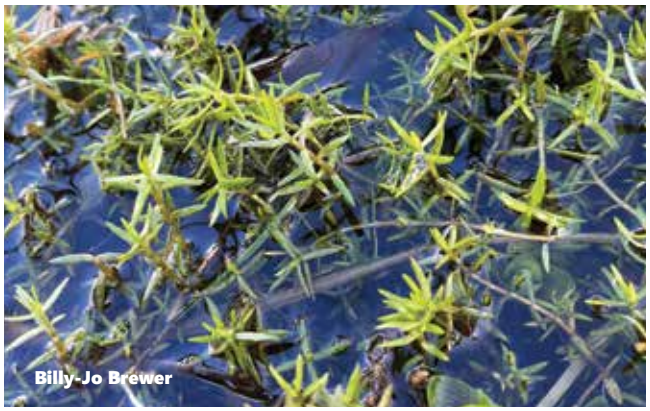
Australian waterbuttons

Cotula australis **Family:** Compositae

Low growing, **fern-like leaves**. Small **yellow button-like daisy flowers** in winter and autumn. Muddy fringes.

Swamp stonecrop

Crassula helmsii **Family:** Crassulaceae



Creeping branches with narrow pointed leaves in a regular pattern, appearing **cross-like** from above. Small **white flowers on stems** arising from leaf bases in spring. Annual. Muddy fringes to deep water to 3 m.

Water ribbons

Cycnogeton procerum (syn. *Triglochlin procerum*) **Family:** Juncaginaceae

Glossy **strap-like leaves** float on the water surface or stand erect. Large **knobby flower spike** to 145 cm long in spring and summer, but typically 30-50 cm long. Water to 1.5 m deep. Typically found in flowing water, but can survive in still water and muddy fringes.

Austral brooklime

Gratiola peruviana **Family:** Plantaginaceae

Oval leaves with **toothed edges**. Creeping stems take root when in contact with soil. **Tubular pale pink flowers** in spring to autumn, followed by brown seed capsules. Muddy fringes.

Floating club-rush

Isolepis fluitans **Family:** Cyperaceae

Variable appearance: On drier ground grass-like stems and leaves form **erect tufts** to 10 cm high. Small, inconspicuous **oval flower heads** at end of stems in spring and summer. Muddy fringes to deep water.

Common nardoo

Marsilea drummondii **Family:** Marsileaceae

Four-leaf clover shaped leaves float on the water surface. Non-flowering fern. Muddy fringes and shallow water to 1 m deep.

Cat-tail

Myriophyllum caput-medusae **Family:** Haloragaceae

Stalks of **asparagus-like red-tipped leaves** on **green stems** above the water, submerged whorls of feather-like leaves. Small flowers above water in leaf bases in spring and summer. Shallow water to 2 m. **NOTE:** submerged leaves look similar to the weeds eurasian water milfoil, *Myriophyllum spicatum* and parrot feather *(Myriophyllum aquaticum)*.

Hyssop loosestrife

Lythrum hyssopifolia **Family:** Lythraceae

Stems upright or spreading out, with small oval leaves. **Stems often red**. Small **purple flowers** in leaf bases in spring and summer. Annual. Muddy fringes.

Parrot's feather

Myriophyllum aquaticum **Family:** Haloragaceae

REPORT THIS WEED!

Impact: invades ponds, shallow lakes and slow moving streams. Whorls of **feather-like leaves similar above and below water**. Stems **above water light green to white**, below water red to brown. Shallow water to 1.5 m.

Notifiable weed: if detected, landowners are required to notify Landscapes Hills and Fleurieu and destroy all plants.

Upright water-milfoil

Myriophyllum crispatum **Family:** Haloragaceae

Leaves in whorls around the stem. **Narrow leaves above water**, becoming more divided and f**eather-like as they submerge**. **Crisped white hairs** on the stems are unique to this plant. Small cream/red flowers in leaf bases from spring to autumn. Water to 1 m deep and muddy fringes. **NOTE:** Leaves look similar to the weed parrot feather *(Myriophyllum aquaticum)*.

SHALLOW WATER (TO 2M) AND MUDDY FRINGES

Red water-milfoil

Myriophyllum verrucosum **Family:** Haloragaceae

Red leaves in whorls around the stem. Floating **leaves have toothed edges**, submerged leaves have deep, narrow divisions. **Small white flowers** in leaf bases all year, occurring only on plants growing in exposed mud. Muddy fringes to deeper water (4 m). **NOTE:** looks similar to other native and weedy *Myriophyllum* species, but is distinctive in its red coloured leaves and stems.

Swamp lily

Ottelia ovalifolia **Family:** Hydrocharitaceae

Oval shaped leaves float on the water, radiating from a central point. Obvious single **white flowers with 3 petals** in late spring to early autumn. Shallow water to 60 cm.

Common reed

Phragmites australis **Family:** Gramineae *(Poaceae)*

Tall erect **bamboo-like stems and leaves** to 3 m. Large **white feathery flower plumes** at the top of stems summer to winter. Top growth dies down in autumn and winter, re-shoots in spring. Water to 1 m deep and muddy fringes. Can dominate small, shallow dams and water channels.

Running marsh-flower

Orndуffia reniformis (syn. *Villarsia reniformis*) **Family:** Menyanthaceae

Rosette of **glossy green kidney-shaped leaves** float on water surface. Cluster of **stalked yellow flowers** rise above the leaves up to 1.2 m high in spring and summer. Flower **petal edges wavy**. Shallow water, typically to 60 cm deep, or stranded in muddy fringes.

Slender knotweed

Persicaria decipiens **Family:** Polygonaceae

Narrow leaves with a **dark blotch** in the centre. Upright stems are often pink. Short **red-pink flower spikes** all year. Muddy fringes.

Jersey cudweed

Pseudognaphalium luteoalbum **Family:** Compositae

Woolly grey-green stems and leaves. Distinctive pale yellow **flowers in knobby clusters** most of the year. Annual. Muddy fringes.

Small river buttercup

Ranunculus amphitrichus **Family:** Ranunculaceae

Deeply lobed, toothed leaves on creeping stems that take root when in contact with soil. **Yellow flowers** all year. Muddy fringes or deep water to 8 m. Sometimes completely submerged or with leaves and flowers emerging above water.

Celery-leaved buttercup

Ranunculus sceleratus **Family:** Ranunculaceae

REPORT THIS WEED!

Impact: the most poisonous of buttercups. Quickly infests damp areas and is toxic to humans and stock.
Upright plant with **parsley-like leaves** divided into three deep lobes. Spreads annually by seed. **Golden yellow flowers** with relatively small petals in spring and summer. Muddy fringes.
Notifiable weed: if detected, landowners are required to notify Landscapes Hills and Fleurieu and destroy all plants.

Grass-leaved arrowhead

Sagittaria graminea var. *platyphylla* **Family:** Alismataceae

REPORT THIS WEED!

Impact: invades wetlands and waterways.
Narow leaves emerge from the water on long **triangular stalks** up to 1.2 m tall. Submerged strap-shaped leaves. **Whorls of white or pink flowers with 3 petals** from summer to autumn. Shallow water.
Notifiable weed: if detected, landowners are required to notify Landscapes Hills and Fleurieu and destroy all plants.

Giant arrowhead

Sagittaria montevidensis **Family:** Alismataceae

REPORT THIS WEED!

Impact: invades wetlands and waterways.
Arrow shaped adult leaves emerge from the water on long **rounded stalks** up to 1 m tall. Juvenile ribbon-like leaves are submerged. **White flowers with 3 petals**, on branched stems from summer to autumn. Red wine coloured dot at base of each petal. Shallow water.
Notifiable weed: if detected, landowners are required to notify Landscapes Hills and Fleurieu and destroy all plants.

Creeping monkey-flower

Thyridia repens (syn. *Mimulus repens*) **Family:** Phrymaceae

Creeping stems with **small oval leaves** in opposite pairs. Stems take root when in contact with soil to form mats. Leaves and stems are hairless. Individual **purple flowers with two prominent raised yellow spots** in spring to summer. Flowers are tall and large relative to the leaves. Muddy fringes, occasionally standing upright to 20 cm in shallow water.

Narrow-leaf cumbungi

Typha domingensis **Family:** Typhaceae

Tall erect **strappy leaves** to 4 m. Typical **bulrush flower spike** with male flowers above female flowers almost all year. Top growth dies down in winter, re-shoots in spring. Water to 2 m deep. Similar to native broad-leaved cumbungi *(Typha orientalis)*. Can dominate small, shallow dams and water channels.

Water plants of the Adelaide Hills and Fleurieu

REPORT THIS WEED

Introduced water plants are relatively uncommon in South Australia, but they have the potential to overwhelm dams and spread more rapidly than our native water plants.

Their threat to the environment, primary industry and public safety is so great that, once detected, the Landscape South Australia Act 2019 requires landowners to notify the outbreak to their local landscape board.

Use this guide to help identify notifiable weeds.

If in doubt, call Landscapes Hills and Fleurieu on 8391 7500 for identification and destruction assistance.

With early detection, infestations can be destroyed before they spread and become a serious problem.

Want more information about notifiable aquatic weeds? Go to pir.sa.gov.au/biosecurity/weeds/landholder_responsibilities

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