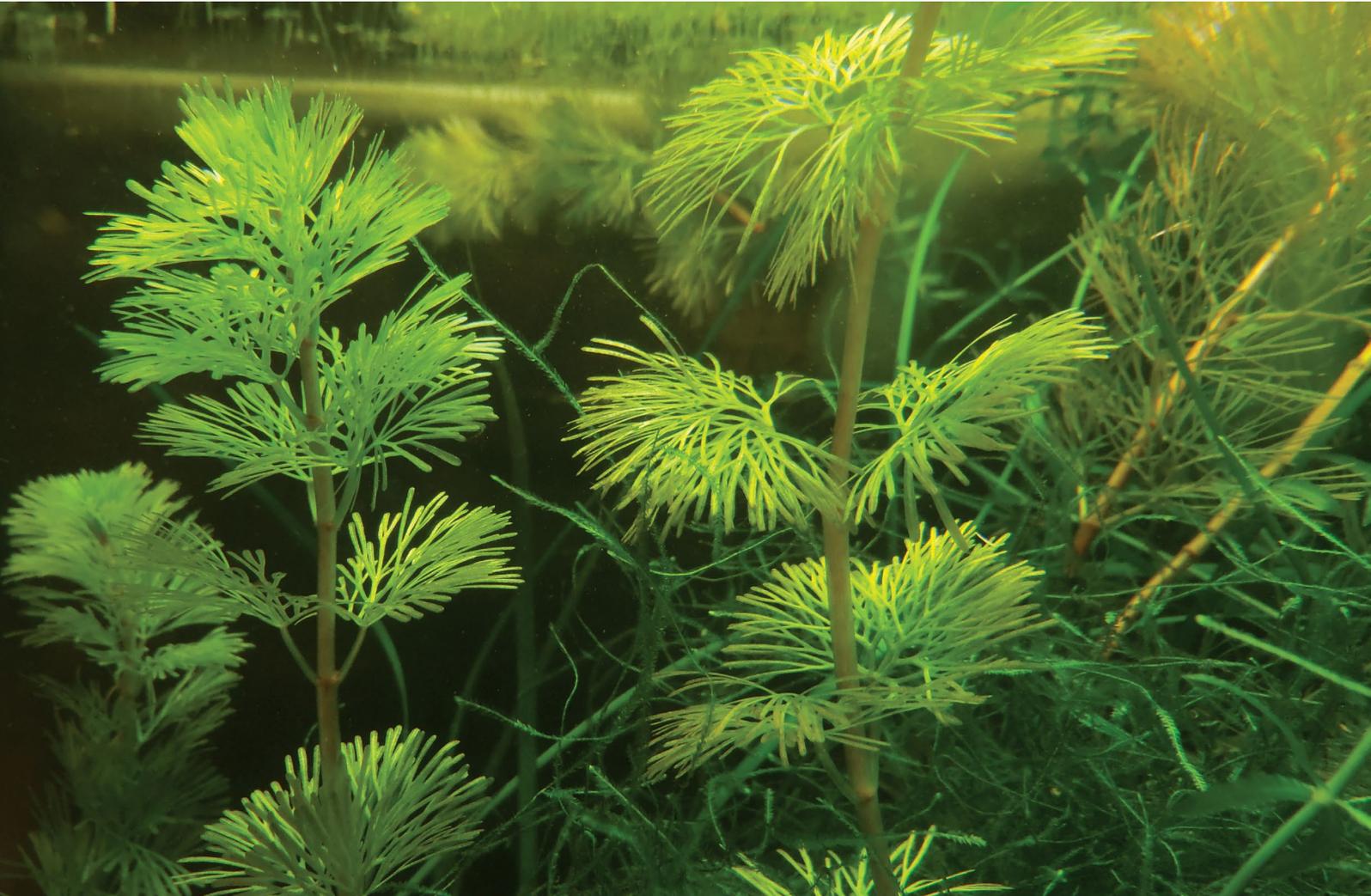


Restricted invasive plant
Prohibited invasive plant

Cabomba

Fanwort

Cabomba spp. including *Cabomba aquatica*, *C. caroliniana*, *C. furcata* (*C. piauhyensis*), *C. haynesii* and *C. palaeformis*



Cabomba is a popular aquarium plant. However, released into natural waterways, its rapid growth allows it to dominate native vegetation and obstruct creeks and wetlands, lakes and dams. Cabomba quickly forms a dense monoculture that effectively blocks sunlight and thereby outcompetes native plants. Cabomba thickets interfere with swimming, boating and fishing as well as creating a habitat for disease carriers like mosquitoes.

Cabomba adversely affects water quality by imparting colour and taints. This increases the cost of treating potable water and impairs the sustainable use of drinking water storages. Broken cabomba stems can

interfere with water infrastructure by blocking water intake pipes.

Legal requirements

Cabomba caroliniana is a restricted invasive plant under the *Biosecurity Act 2014*. It must not be given away, sold, or released into the environment without a permit. The Act requires everyone to take all reasonable and practical steps to minimise the risks associated with invasive plants and animals under their control. This is called a general biosecurity obligation (GBO). This fact sheet gives examples of how you can meet your GBO.



All other cabomba species are a prohibited invasive plant under the *Biosecurity Act 2014*. The Act requires that all sightings must be reported to Biosecurity Queensland within 24 hours.

At a local level, each local government must have a biosecurity plan that covers invasive plants and animals in its area. This plan may include actions to be taken on certain species. Some of these actions may be required under local laws. Contact your local government for more information.

Description

Five species are currently recognised: *C. aquatica*, *C. caroliniana*, *C. furcata* (*C. piauhyensis*), *C. haynesii* and *C. palaeformis*. The previously recognised *C. australis* is now considered to be a sub-species of *C. caroliniana*, namely *C. caroliniana* var. *caroliniana*. All are perennial, aquatic herbs growing below the water surface.

C. caroliniana may have stems up to 10 metres long. The submerged leaves and stems have a thin gelatinous coating, with the leaves being opposite and repeatedly divided to form feathery, fan-shaped structures. The leaves of *C. aquatica* tend to be less finely divided than those of the other species.

Flowers are produced above the surface and colour is dependent on species and sub-species. Flowers of *C. caroliniana* and *C. palaeformis* tend to be white, while *C. aquatica* flowers are yellow and those of *C. furcata*, purple.

The main types of cabomba that people may find in Queensland are:

- common cabomba—brown-green in appearance (*C. caroliniana*)
- green cabomba (*C. caroliniana* var. *caroliniana*) (formerly *C. australis*)
- pink cabomba (*C. furcata*)

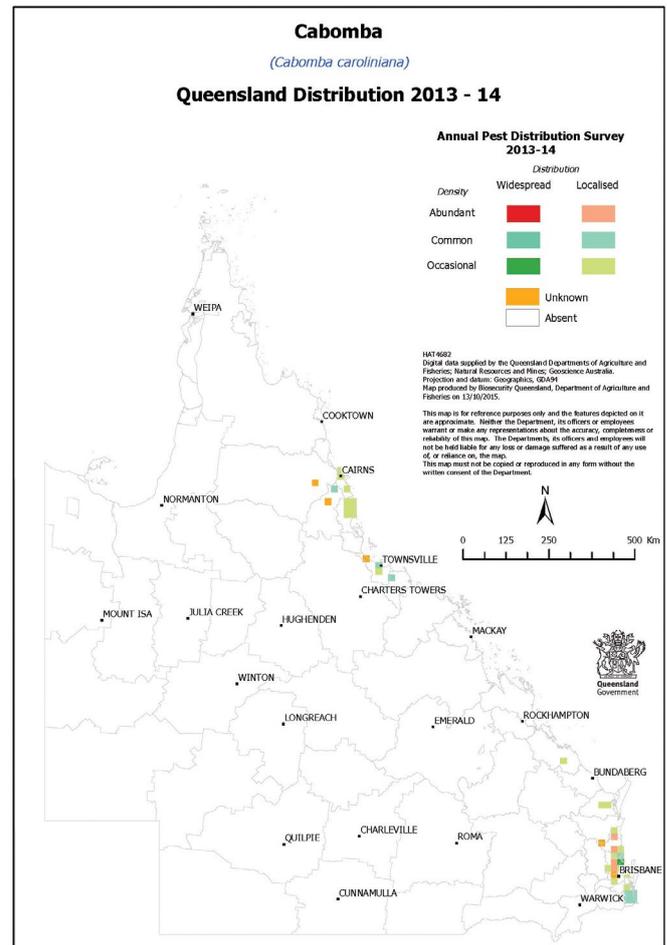
If unsure of whether or not the plant is cabomba, take samples to your local government or Biosecurity Queensland office.

Can be confused with native hornwort (*Ceratophyllum demersum*). Hornwort has whorled leaves around the centre stem where cabomba has a distinct leaf stalk off the centre stem. Hornwort to touch is rough and wiry while cabomba is soft and slimy.

Habitat and distribution

Cabomba grows in ponds, lakes and quiet streams. It is generally rooted in water 1–3 m deep (down to 6 m deep water clarity permitting) but can continue to grow free-floating if uprooted. It does well in both cool and warm waters but does not tolerate overly warm water (above 30 °C). Cabomba prefers slightly acidic to neutral water (pH 6–7) and alkaline waters (pH >8) are not conducive to its growth. Cabomba needs fine substrates that provide sufficient nutrients for healthy growth.

Map 1. Distribution of cabomba in Queensland



C. caroliniana is the only species known to be naturalised in Queensland. It occurs in several locations in the wet tropics, most notably, Leslie Creek on the Atherton Tablelands. South East Queensland has a large number of cabomba infestations, the most important being the water storages of Ewen Maddock Dam near Caloundra and Lake MacDonal near Noosa. Lake MacDonal has the largest cabomba infestation in Australia.

Life cycle

Cabomba flowers and has its maximum growth period in summer. Regeneration by seed has so far only been observed in the Northern Territory—new growth starts from stem fragments.

Methods of spread

Mostly by people using the plant in fish ponds and dumping contents into local water ways. Also by people not washing down water craft after recreational activities in empowerments that have cabomba infestations before moving to another location. Flooding and water fowl can spread cabomba.

Control

Managing cabomba

The GBO requires a person to take reasonable and practical steps to minimise the risks posed by cabomba. This fact sheet provides information and some options for controlling cabomba.

Prevention and early detection

The major concern at present is to stop further introduction of cabomba into natural waterways and dams.

The threat to Queensland waters by cabomba should be made known throughout the community. Persons wishing to dispose of cabomba from aquariums should do so thoughtfully to avoid its spread, for example by drying and burning the entire plant or composting.

It is illegal to possess or sell any species or variety of cabomba anywhere in the state. Report the sale of cabomba to Biosecurity Queensland.

Early detection of cabomba infestations is essential, as eradication of infestations larger than one hectare may be impossible.



Mechanical control

Mechanical removal of small infestations can be accomplished by pulling (in deeper areas scuba gear may be required), taking care to remove all of the plant to prevent re-infestation. The removed plants must be properly disposed of or destroyed. Great care must be taken not to create new fragments during mechanical control as this would only increase the spread of the plant.

Cabomba is a true aquatic and is therefore susceptible to dehydration. Removing the water (called 'drawdown') and exposing the stems and leaves for several months can be effective as long as cabomba material is allowed to completely dry out. This can be hard to achieve during the wet season, therefore drawdown is most effective in areas that have dry hot summers.

Herbicide control

Before using any herbicide always read the label carefully. All herbicides must be applied strictly in accordance with the directions on the label.

Further information

Further information is available from your local government office, or by contacting Biosecurity Queensland on 13 25 23 or visit www.biosecurity.qld.gov.au.

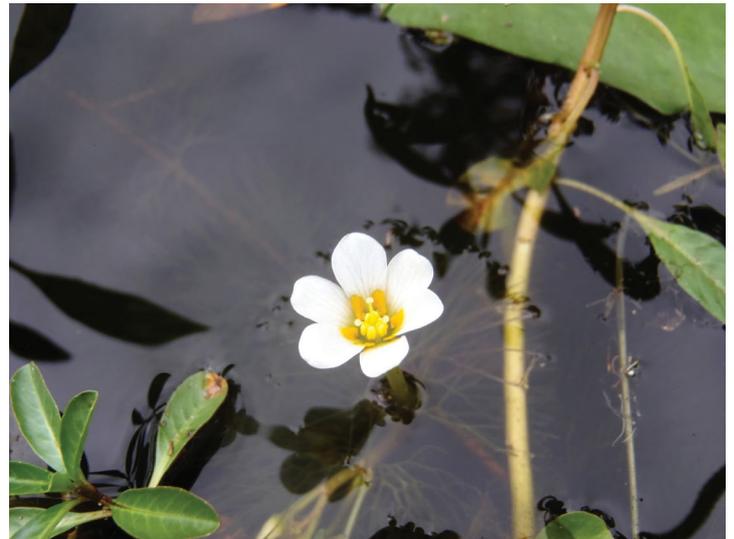


Table 1. Herbicides for the control of cabomba (*C. caroliniana*)

Situation	Herbicide	Rate	Comments
Non-flowing water bodies	Carfentrazone-Ethyl 240 g/L (Shark Aquatic Herbicide)	830 mL Shark Aquatic Herbicide per 100 000 L water [2 ppm (2 mg/L) Carfentrazone-ethyl]	<p>To control cabomba, apply Shark Aquatic Herbicide onto the surface or below the surface of the water where cabomba is growing. The intention is to achieve a concentration of 2 ppm (2 mg/L) carfentrazone-ethyl in the water where cabomba is growing. This requires application of the product over/into the water where cabomba is growing. The application should be spread evenly over the cabomba infestation regardless of the type of application used.</p> <p>DO NOT treat water where cabomba is not growing.</p> <p>DO NOT apply where desirable species are present.</p> <p>In areas where subsurface injection is not practical, ensure that low drift application methods and equipment are used. Apply by drip or handheld boom sprayer, using a minimum of 50 L water. To minimise drift when applying Shark Aquatic Herbicide to the water surface use a high-flow, minimal-drift nozzle. Use nozzles that are designed to produce spray droplets with very coarse to extremely coarse droplet sizes (>300 µm). Use nozzle types such as Air Induction, low pressure fans, flooding flat fan nozzles and other nozzle types commonly used for 'flood' applications to soils. Always follow the nozzle manufacturer's recommendations for spray pressure, spacing and height above the water surface.</p> <p>DO NOT use an adjustable handheld spray nozzle in order to avoid deoxygenation of the water.</p> <p>DO NOT apply to more than 50% in volume of the waterbody in a single application.</p> <p>DO NOT apply subsequent applications to the waterbody within 3 months.</p> <p>NOTE: Algae and non-target plants may also be affected by this application. Very toxic to aquatic life. Other aquatic species may be susceptible to this product.</p>

Read the label carefully before use and always use the herbicide in accordance with the directions on the label.

This fact sheet is developed with funding support from the Land Protection Fund.

Fact sheets are available from Department of Agriculture and Fisheries (DAF) service centres and our Customer Service Centre (telephone 13 25 23). Check our website at www.biosecurity.qld.gov.au to ensure you have the latest version of this fact sheet. The control methods referred to in this fact sheet should be used in accordance with the restrictions (federal and state legislation, and local government laws) directly or indirectly related to each control method. These restrictions may prevent the use of one or more of the methods referred to, depending on individual circumstances. While every care is taken to ensure the accuracy of this information, DAF does not invite reliance upon it, nor accept responsibility for any loss or damage caused by actions based on it.

