



NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Weed Alert

HAVE YOU SEEN THIS PLANT?

Water caltrop

Trapa spp.



Water caltrop (*Trapa natans*) plant with fruit.
Photo: Sainty and Associates

INTRODUCTION

Water caltrop is a floating, annual, aquatic plant that grows in slow moving water. It would most likely be found in farm dams, water features, fish ponds or in ponded and slow moving water bodies near towns.

When uncontrolled, water caltrop forms large populations that can create nearly impenetrable mats across wide areas of water, out-competing native plants for sunlight and making the waterways inaccessible to boats.

The sharp spines on water caltrop fruit are also a hazard for humans and animals.

Two species of the genus *Trapa* – *T. natans* and *T. bicornis* – are referred to as water caltrop. Water caltrop is also known as water chestnut, but is not related to Chinese water chestnut (*Eleocharis dulcis*), which is cultivated for its edible tubers.

WORLD STATUS

Water caltrop is native to the warm temperate parts of Eurasia and Africa. In China the seeds are cooked and eaten. The species has been introduced into North America and has become an invasive species in eastern areas of Canada and the United States. Although water caltrop is yet to be found in NSW it has the potential to become a significant weed.

IDENTIFICATION

Trapa natans is an annual herb with a floating rosette and a stem that is rooted in the soil below the water level.



Water caltrop oval-like leaves and feather-like roots.
Photo by Vic Ramey, University of Florida/IFAS Center for Aquatic and Invasive Plants. Used with permission.

Stems

Submerged stems are unbranched and long, reaching 3.6–4.5 m in length. The stems are anchored into the mud by very fine roots.

Leaves

There are two types of leaves. The first leaves produced are submersed and fall off during early stem growth. The submersed leaves are finely divided and feather-like. The second type of leaves form on the water surface in a rosette. These floating leaves have saw-tooth edges and are oval or triangular shaped, 2–3 cm long, with the upper surface glossy and the lower surface covered with fine short hairs.

Roots

After the submersed leaves drop off, feather-like roots up to 8 cm long develop in their place. These roots are often mistaken for leaves (see image above).

Flower

The flowers form above the water surface in early summer. The four-petaled flower is white and about 8 mm long.

Fruit

The fruit is a woody or bony nut, about 3 cm wide, with four (1 cm long) stout spines or horns. Each fruit contains a single seed.

Trapa bicornis is similar to *T. natans*. One distinctive feature is that *T. bicornis* has two spines on the fruit instead of four.

GROWTH AND SPREAD

Water caltrop is a floating, annual, aquatic plant growing in slow moving water up to 5 m deep. The plant over winter seeds in mud. These seeds germinate during the warmer months producing stems that reach the water surface and produce rosettes. A single seed may give rise to 10 to 15 plant rosettes. Each rosette can produce up to 15 to 20 seeds.

The plant spreads when rosettes break away, by fruits detaching from the stem and floating to another area. The fruit can also be spread by birds and other animals. Seeds can remain viable for up to 12 years, although most will germinate in the first two years. If the fruits are left to dry out they die.

CONTROL

Hand removal is an effective means of eradication of smaller populations. Plants are easily hand pulled and should be removed from the waterway to prevent their spread. The potential of *Trapa* spp. seeds to lay dormant for many years makes total eradication difficult and continual monitoring necessary. Hand harvesting from canoes and raking have been effective in small outbreaks.

Herbicides and mechanical harvesting have both been effective for control of large-scale populations of *Trapa* spp. in the United States.



Water caltrop nut.
Photo by Vic Ramey, University of Florida/IFAS Center for Aquatic and Invasive Plants. Used with permission.

WATCH OUT FOR AND REPORT ANY FORM OF WATER CALTROP

Trapa spp. are Class 1 noxious weeds throughout NSW under the NSW *Noxious Weeds Act 1993*. These weeds must be eradicated from the land and the land must be kept free of the plant. As a notifiable weed, all outbreaks must be reported to the local council within three days.

If you have seen this plant, please report it to your Council Weeds Officer or NSW Department of Primary Industries for positive identification.

REFERENCES

Hosking, J. R., Sainty, G., Jacobs, S. and Dellow, J. (in prep) *The Australian WEEDbook*.

Global Invasive Species Database (2006) *Trapa* species (<http://www.issg.org/database>) [Accessed 1 November 2006].

ACKNOWLEDGEMENTS

Dr John Hosking, Elissa van Oosterhout and Rod Ensbeay.

Prepared by Annie Johnson, Andrew Petroeschovsky and Dr Stephen Johnson.

7181

FOR MORE INFORMATION:

Contact your local council weeds officer or district agronomist, or telephone the NSW Department of Primary Industries Hotline on 1800 680 244



NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Visit our website: www.dpi.nsw.gov.au/weeds