

Ceratophyllum demersum

COMMON NAME

Hornwort, coontail

FAMILY

Ceratophyllaceae

AUTHORITY

Ceratophyllum demersum L.

FLORA CATEGORY

Vascular – Exotic

STRUCTURAL CLASS

Herbs - Dicotyledons other than Composites

CONSERVATION STATUS

Not applicable

BRIEF DESCRIPTION

Hornwort is a submerged freshwater perennial aquatic plant that may occur as stems attached to the sediment or as a floating mat or drifting fragments. Hornwort does not have roots but may be anchored to the sediment by the base of its stems, by means of special branches that bear finely divided foliage. It has whorled branched, narrow leaves, rough to the touch, that are densely crowded at the apex of much-branched stems. The flowers are tiny (2 mm long), in the leaf bases.

DISTRIBUTION

Widely naturalised and rapidly spreading in North Island, only known from near Motueka and Timaru in the South Island, sites have been targeted for eradication with no plants seen since 2008.

HABITAT

Moderate flowing to still water bodies, growing to >15 m deep in some clear water lakes.

WETLAND PLANT INDICATOR STATUS RATING

OBL: Obligate Wetland

Almost always is a hydrophyte, rarely in uplands (non-wetlands).

DETAILED DESCRIPTION

Submerged, rootless aquatic perennial, which anchors in sediment by buried leaves and stems. Stems are generally around 1.5 m but can be as long as 6 m. They are brittle, and easily broken by wave action. Hornwort has a very delicate appearance. Leaves are whorled and 10-40mm long. The leaves fork once or more into linear segments which are toothed (the teeth look like tiny horns – hence the name hornwort, wort being old English for plant). Leaves are most dense at the tip of the stem, becoming sparser near the base. Flowers are minute and occur singly at the base of the leaves, green if female, or whitish if male. Fruits are black oval nuts 5 mm long, with one spine at the tip and two spines at the base. Hornwort has no roots, instead its lower leaves anchor it to sediment. It can survive as a free floating mat absorbing all the nutrients it needs from the surrounding water.



Ceratophyllum demersum. Photographer: John Smith-Dodsworth, Licence: CC BY-NC.



Ceratophyllum demersum. Photographer: John Smith-Dodsworth, Licence: CC BY-NC.

SIMILAR TAXA

Fanwort (*Cabomba caroliniana*), *Myriophyllum* spp. Differs from fanwort in that the leaves are arranged in pairs on fanwort, whereas hornwort has leaves arranged in whorls. *Myriophyllum* leaves are pinnate or feathered while hornwort are forked.

FLOWERING

summer - autumn

FLOWER COLOURS

Red/Pink

FRUITING

No evidence that seed is set in NZ.

LIFE CYCLE

Perennial. Propagation by fragmentation of its brittle stems. Male and female flowers are produced but there is no evidence of seed production in New Zealand. Spread within catchments via water flow. New catchments invaded by contaminated boats and trailers (occasionally motor cooling water), eel nets, diggers, people liberating fish.

YEAR NATURALISED

1961

ORIGIN

Wide geographic range, naturally occurring in all continents, except Antarctica, not native in NZ.

REASON FOR INTRODUCTION

Ornamental aquarium plant

CONTROL TECHNIQUES

Notify Ministry for Primary Industries if found in the South island. Plants can be physically removed from the lake or waterway using SCUBA or snorkel divers for small scale infestations, or using mechanical diggers. Although the potential for contamination of other sites by mechanical equipment is a significant concern. There are a number of manipulations to the habitat that in theory can control hornwort (e.g., shading, bottom lining, water drawdown) but there are significant limits to their practical application, rendering them site (or waterbody) specific. Chemical control can be achieved using diquat or endothal. Grass carp (*Ctenopharyngodon idella*) are herbivorous fish that feed on submerged aquatic vegetation, and are currently the only biological control agent that can be used of hornwort in New Zealand.

TOLERANCES

Tolerant of low light conditions but sensitive to freezing and dehydration.

ETYMOLOGY

ceratophyllum: From the Greek keras 'horn' and phyllon 'leaf', the division of the leaves suggesting horns

NATIONAL PEST PLANT ACCORD SPECIES

This plant is listed in the 2020 National Pest Plant Accord. The National Pest Plant Accord (NPPA) is an agreement to prevent the sale and/or distribution of specified pest plants where either formal or casual horticultural trade is the most significant way of spreading the plant in New Zealand. For up to date information and an electronic copy of the 2020 Pest Plant Accord manual (including plant information and images) visit the [MPI website](#).

ATTRIBUTION

Factsheet prepared by Paul Champion and Deborah Hofstra (NIWA).

REFERENCES AND FURTHER READING

Champion et al (2012). Freshwater Pests of New Zealand. NIWA publication.

<http://www.niwa.co.nz/freshwater-and-estuaries/management-tools/identification-guides-and-fact-sheets/freshwater-pest-species>.

Johnson PN, Brooke PA (1989). Wetland plants in New Zealand. DSIR Field Guide, DSIR Publishing, Wellington. 319pp.

Coffey BT, Clayton JS (1988). New Zealand water plants: a guide to plants found in New Zealand freshwaters. Ruakura Agricultural Centre. 65pp.

Popay et al (2010). An illustrated guide to common weeds of New Zealand, third edition. NZ Plant Protection Society Inc, 416pp.

WSDE (2001). An aquatic plant identification manual for Washington's freshwater plants. Washington State Department of Ecology, 195pp.

Aston, H (1977). Aquatic plants of Australia. Melbourne University Press, 367PP.; Hofstra D, P Champion, (2006). Management options assessment for *Ceratophyllum demersum*. NIWA client Report HAM2006-162.

Hofstra D, P Champion, (2006). Organism Consequence Assessment *Ceratophyllum demersum*. NIWA Client Report: HAM2006-058e.

MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/ceratophyllum-demersum/>