

NSW SCIENTIFIC COMMITTEE

Cynanchum elegans (Benth.) Domin

Review of Current Information in NSW - Additional information

August 2009

Current status:

Cynanchum elegans (White-flowered Wax Plant) is currently listed as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act). The NSW Scientific Committee recently determined that *Cynanchum elegans* meets criteria for listing as Endangered in NSW under the *Threatened Species Conservation Act* 1995 (TSC Act), based on information contained in this report and other information available for the species.

Species description:

Cynanchum elegans (Benth.) Domin (Asclepiadaceae) is described by Harden & Williams (1992) as follows: "climber or twiner with stems to c. 1 m long. Leaves with lamina broad-ovate to ovate, 1.5-5.5 cm long, 15-25 mm wide, apex short-acuminate, base truncate to scarcely cordate, mostly \pm glabrous, 2 basal glands present; petiole 5-25 mm long. Inflorescences few-flowered, in clusters or umbels on branched peduncles. Calyx lobes c. 1 mm long. Corolla c. 5 mm long, 10-12 mm diam., white; tube about as long as calyx; lobes broad. Corona lobes abruptly acuminate, the apex short and curved inwards. Follicles narrow-ovoid, 6-7 cm long, apex long-acuminate, glabrous, thin-walled; seeds with coma 10-20 mm long."

Distribution and number of populations / locations:

Cynanchum elegans is endemic to the coast and adjacent ranges of NSW, occurring from Yabba NP in far northern NSW to the Kiama area on the south coast (Copeland 2008). It is found mainly from the NSW North Coast, and Sydney Basin Bioregions, but has also been recorded in the Brigalow Belt South, and New England Tableland Bioregions (*sensu* Thackway & Creswell 1995). It has been recorded in 19 conservation reserves including the following National Parks: Booti Booti, Budderoo, Goulburn River, Hat Head, New England, Oxley Wild Rivers, Woko, Wollemi, and Yabba; Nature Reserves: Berkeley, Camels Hump, Darawank, Khappinghat, Mt Seaview, and Sea Acres; State Conservation Areas: Copeland Tops, Glenrock, and the Illawarra Escarpment SCA; and Western Sydney Regional Park (Copeland 2008).

Ecology;

Key habitat requirements:

Cynanchum elegans grows in a variety of habitats from coastal scrub and littoral rainforest, to wet sclerophyll forest, and the margins of dry, littoral and subtropical rainforests in the northern part of its range (Copeland 2008). It is found on a variety of substrates such as basalt, metasediments, conglomerate, deep coastal sands and sandstone (Copeland 2008).

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Life history

There is limited knowledge of the species biology. *Cynanchum elegans* is clonal and there is uncertainty in defining a plant. One population could consist of only one plant, or, if there are clumps of stems, it may be assumed that a clump is a single plant. From years of monitoring the plants in the Illawarra and as far north as Kooragang Island in the Hunter, it was found that although flowering was occurring, only a few populations produced fruit (expert advice). These tended to be the larger populations that consisted of many clumps of plants. The response of the species to fire is also poorly known. It has been seen to regrow after a low intensity fire at Picnic Island in Lake Illawarra (NSW NPWS 1995; expert advice). In contrast, the population at South West Rocks could not be relocated following a high intensity fire (expert advice).

Number of mature individuals:

Populations: There are currently known to be 89 sites of *Cynanchum elegans* throughout its range. Available data was obtained and collated from DECC databases (Wildlife Atlas, YETI database), the Royal Botanic Gardens Herbarium database, information from DECC Illawarra District and expert advice. There may be more sites yet to be documented in the northern part of its distributional range (expert advice). Data on the size of populations is limited due to the difficulty in determining the extent of a single plant. *Cynanchum elegans* grows as a vine that has a suckering habit from beneath the ground, so a single plant may consist of a single stem or many stems.

Abundance: About 40% of sites have data on the number of plants. Many are small, although the abundance in the northern populations is poorly documented (where there have been estimates, the numbers are small, similar to the southern populations). The mean number of plants counted in 38 sites (Wildlife Atlas data) is 13, with a standard deviation of 5. The largest recorded site is from Booti Booti National Park and is estimated to be 200 plants. If the mean is extrapolated over the known populations, the estimated total population size would be between 720 and 1 620 individuals.

Threats:

Populations in the southern end of the range in the Illawarra, and some of the populations on the north coast are under greater threats from urbanisation than some of the more isolated populations that occur in the National Parks of the northern ranges.

Populations in the Wollongong to Cobbity areas are severely fragmented and under threat from weeds, disturbances, urban edge effects, rubbish dumping, wood collecting etc. These populations comprise 43% of the currently known populations.

The following extract is taken from the DEWHA (undated):

“Threats to White-flowered Wax Plant that may impact a number of sites include stochastic events leading to localised extinction (due to low population numbers, isolation and limited potential for colonisation and expansion); grazing; housing development and associated activities; and weed invasion. Significant threats affecting some sites include changed hydrology associated with urban

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runoff; vandalism; erosion; land fill; expansion of coal tailings dump; rubbish dumping; pollution; quarrying; human disturbance; tourist associated disturbance; and road/track widening (Matthes & Nash 1993; NSW DECC 2005; NSW NPWS 2002).

Inappropriate fire management is a major threat to White-flowered Wax Plant, especially to the Woko NP, Camels Hump NR and Cape Hawke populations. Many of the remnant patches in the Illawarra region and Cumberland Plain are subject to frequent burning through arson. Site details and exact threats for each location, are detailed in the appendices of Matthes and Nash (1993).

Grazing by cattle (*Bos taurus*), goats (*Capra hircus*), pigs (*Sus scrofa*), horses (*Equus caballus*), sheep (*Ovis aries*) and deer (*Dama dama*, *Cervus* spp.) is affecting 14 of the remnant patches, causing rapid deterioration of White-flowered Wax Plant habitat. The species is susceptible to predation by insect larvae of *Dichromia quinqualis* (Qld DNR 2000): this moth is the only representative of that genus in Australia.

In 1993, the habitat of 21 sites of White-flowered Wax Plant was affected by a variety of weed species. These are: Moth Vine, Lantana (*Lantana camara*), Cape Ivy (*Delairea odorata*), Bitou Bush (*Chrysanthemoides monilifera*), and African Olive (*Olea europaea* var. *africana*). The weed species present at the sites are in such abundance that they are altering the natural habitat, including potential changes to nutrient levels, and probably reducing capacity for regeneration (Matthes & Nash 1993).

Poorly supervised bush regeneration activities are a potential threat at some locations as White-flowered Wax Plant can be mistaken for the common exotic climber, Moth Vine. Bush regenerators sometimes remove native climbers where they are thought to be suppressing natural regeneration (NSW NPWS 2002e)."

'High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition', 'Competition and habitat degradation by Feral Goats, *Capra hircus*', 'Predation, habitat degradation, competition and disease transmission by Feral Pigs, *Sus scrofa*', 'Herbivory and environmental degradation caused by feral deer', 'Invasion, establishment and spread of Lantana (*Lantana camara* L. *sens. lat*)', 'Invasion of native plant communities by *Chrysanthemoides monilifera*' are listed as Key Threatening Processes under the TSC Act in NSW.

Extreme fluctuations:

There is currently no evidence for extreme fluctuations. *Cynanchum elegans* plants appear to be long-lived and sucker from beneath the ground, and population numbers are not thought to dramatically fluctuate over time (Copeland 2008).

Population reduction and continuing declines:

There has been decline recorded at a number of locations across the range of distribution of *C. elegans*. Inferred and projected decline is likely due to ongoing impacts of weeds and edge effects in the Illawarra and coastal populations. Some recent examples of threats are:

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- Populations on the north coast are subject to threats from weeds (expert advice Oct 2008).
- Sea Acres: *C. elegans* plants not visible after spraying for weeds (expert advice Oct 2008).
- Lake Cathie: some *C. elegans* plants were killed whilst spraying for Bitou bush control (expert advice Oct 2008).
- South-west Rocks - plants could not be found following a hot fire (expert advice Oct 2008).
- A population at Unanderra (Wollongong area) has been cleared (expert advice Oct 2008).
- Populations at Cringila should be checked as *C. elegans* could not be relocated (expert advice Oct 2008).

Extent of Occurrence (EOO) and Area of Occupancy (AOO):

The geographic distribution of *Cynanchum elegans* is not currently restricted with an extent of occurrence estimated to be 81 000 km². Within this range, however, the area of occupancy is conservatively estimated to be at least 450 km² based a 2 x 2 km grid, the spatial scale of assessment recommended by IUCN (2008). Since there are recently discovered sites that are yet undocumented (Copeland 2008), the area of occupancy may exceed 500 km² as more sites are documented in the future. The current AOO would be described as highly restricted, but considered as moderately restricted should more populations or information become available.

Severe fragmentation:

There are parts of the distributional range of *Cynanchum elegans* that are fragmented, and parts that have populations located in continuous vegetation in conservation reserves. The Illawarra area, at the southern end of the range of *C. elegans*, would be considered to be severely fragmented. There remains only pockets of remnant rainforest habitat left in the Illawarra due to a long history of clearing for rural and urban development. Similarly, urbanisation along the north coast has led to fragmentation of some habitat and populations, whilst other populations in the coastal National Parks, are less so. Populations on the northern ranges in the National Parks of Oxley Wild Rivers, Woko and Goulburn River would not be considered to be severely fragmented due to more continuous natural vegetation in these areas.

References:

- Copeland L (2008) 'Conservation status of *Cynanchum elegans* (Benth.) Domin (Asclepiadaceae) in New South Wales.' A confidential report to the Scientific Committee (NSW TSC Act 1995).
- DEWHA (undated) '*Cynanchum elegans* (White-flowered Wax Plant).' Department of the Environment, Water, Heritage and the Arts. http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=12533
- Harden GJ, Williams JB (1992) *Asclepiadaceae*. In 'Flora of New South Wales, Volume 3.' (Ed. GJ Harden) p529. (University of NSW Press, Sydney).

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IUCN (2008) 'Guidelines for using the IUCN Red List Categories and Criteria. Version 7.0.' (Standards and Petitions Working Group of the IUCN Species Survival Commission Biodiversity Assessments Sub-committee: Switzerland). (<http://intranet.iucn.org/webfiles/doc/SSC/RedList/RedListGuidelines.pdf>).

Matthes M, Nash S (1993) 'Conservation Research Statement and Species Recovery Plan for *Cynanchum elegans*.' A report for the Australian Nature Conservation Agency Endangered Species Program Project No. 311, and NSW National Parks and Wildlife Service.

NSW NPWS (1995) *Cynanchum elegans* Species Recovery Plan Annual Report. Unpublished report to the Australian Nature Conservation Agency, NSW NPWS Hurstville.

Thackway R, Creswell ID (1995) 'An interim biogeographic regionalisation for Australia: a framework for setting priorities in the National Reserves System Cooperative Program'. Version 4.0. (Australian Nature Conservation Agency: Canberra)

Explanatory note

Between 2007 and 2009 the NSW Scientific Committee undertook a systematic review of the conservation status of a selection of plant and animal species listed under the Threatened Species Conservation Act. This species summary report provides a review of the information gathered on this species at the time the Review was undertaken.

The Scientific Committee's report on the Review of Schedules project and final determinations relating to species that were either delisted or had a change in conservation status can be found on the following website: www.environment.nsw.gov.au .

The Committee gratefully acknowledges the past and present Committee members and project officers who ably assisted the Committee in undertaking the Review of Schedules Project. Information on the people involved in the project can be found in the Acknowledgement section of the project report entitled "Review of the Schedules of the Threatened Species Conservation Act 1995. A summary report on the review of selected species" which is available on the abovementioned website.

This species summary report may be cited as:

NSW Scientific Committee (2009) *Cynanchum elegans* Review of current information in NSW. August 2009. Unpublished report arising from the Review of the Schedules of the Threatened Species Conservation Act 1995. NSW Scientific Committee, Hurstville.