

# NSW SCIENTIFIC COMMITTEE

*Ozothamnus vagans*  
Report to the NSW Scientific Committee  
J. Scott Nov 2011

## Species Status

Current Status in NSW	<i>not listed</i>	NSW endemic	<i>No</i>
Proposed Status in NSW	Endangered	LHI endemic	<i>No</i>
EPBC Act status	VS	LHI & Norfolk Isl. endemic	<i>No</i>

Status in other jurisdictions if relevant to the assessment

ACT	Vic	Qld	SA	WA	NT	Tas
		V				

## Species description

*Ozothamnus vagans* (C. White) Anderb. (Asteraceae) is described as a "straggling, spindly shrub to 2 m high, branches prominently ridged, glabrous or with loose webby hairs on the young growth. Leaves lanceolate, usually 15–50 mm long and 3–5 mm wide, rarely to 100 mm long and 15 mm wide, margins slightly recurved; lamina discolorous and with 3 longitudinal veins prominent on both surface, upper surface dark green with glandular hairs or ± glabrous, lower surface pale green with a dense short tomentum; petiole 1–1.5 mm long. Heads 2–3 mm long, 2–3 mm diam., in small compact corymbose panicles; involucre bracts pale golden, stiff, ovate, spreading, webby at the base on lower surface. Florets 12–14, with 6 outer florets filliform, female. Pappus bristles not or scarcely clavate apically." (Everett 1992).

## Taxonomy

The currently accepted name is *Ozothamnus vagans* (C.T. White) Anderb. *Helichrysum vagans* C.T.White is a synonym (APNI accessed Oct 2011; PlantNet accessed 2011).

## Distribution and number of populations

*Ozothamnus vagans* grows naturally on the edges of escarpments in the caldera areas of far northern NSW and southern Queensland. It is restricted to the high elevation ranges in the Mount Warning area and McPherson Range of far north NSW, and the Lamington Plateau of south east Queensland. The following records are known.

Pop.	Location	Land Tenure	Date	Abundance
1	Mt Warning	Mt Warning NP	1972; 1987; 1996; 1999	1. common on edge of rainforest. 2. scattered. 3. widespread and occasional. Population small (██████ pers. comm. Sept 2011)
2	Mt Nothofagus	Mt Nothofagus NP		Common along roadsides (██████ pers. comm.. Aug 2010).
3	Bar Mtn., Tweed Range	Border Ranges NP	1977; 2000	Common at the site
4	Scenic Drive, Tweed Range	Border Ranges NP	Hunter (2002)	Locally uncommon; fairly common along this road (Hunter 2002) but much less so now (██████ pers. comm. Sept 2011); very patchily distributed along this road (██████ pers. comm. Dec 2010).
5	Pinnacle Rd, off Antarctic Beech Circuit	Border Ranges NP		Very common in area
6 & 7	Gradys Ck, Border Ranges	Border Ranges NP	1976	
8	Echo Point, head of Albert River	Limpinwood NR	1997; Forest NSW record	occasional
9	Mt Bithongabel	Limpinwood NR	1990 Atlas record	

# NSW SCIENTIFIC COMMITTEE

There were no records of *Ozothamnus vagans* for Forests NSW land as of August 2010 (██████ pers. comm.). There have been suggestions that it occurs in Nightcap National Park (EPBC 2011, Sheringham & Westaway 1995), however, there are currently no herbarium records or recorded sightings of the species from there and ████████ (pers. comm. Dec 2010) does not recall seeing it there either.

There was estimated to be between 6 and 10 populations of *Ozothamnus vagans*. There was uncertainty in defining populations in the Border Ranges National Park area. The survey by Hunter (2002) showed the distribution along the Tweed Range Scenic Drive and other roads in the Park, was more or less continuous. As such this whole area may be considered as the one population, even though many of the plants are no longer visible now (but may remain as seeds in the soil – see below).

The number of locations was estimated to be less than 10. The population in the Border Ranges National Park along the Tweed Range Scenic Drive may be considered to be the one location, as the main threat to this population is from the competition of weeds. The weeds present along this road, have the potential to spread along its length, and affect *Ozothamnus vagans* individuals. The main threat to the other populations throughout the distribution of the species is also invasion by weeds; however these populations are distant from each other and can be considered as separate locations.

## Ecology

*Ozothamnus vagans* is generally associated with wet sclerophyll forest / rainforest margins at high elevations of greater than 500m, on rhyolite or basalt (██████ pers. comm. Dec 2010). It grows in sunny locations and occurs on the edges of and in the large gaps in the rainforest (Hunter 2002), often along roadsides where it grows as a straggly shrub. In more rocky areas and near cliffs, for instance on the western edge of Bar Mountain, significant patches of multiple individuals of maximum stature (ca. 2m) in higher light environments have been observed (██████ pers. comm. Dec 2010). However it does not generally occur in rock outcrop shrubland (██████ pers. comm. Dec 2010).

*Ozothamnus vagans* is a fairly short-lived shrub that usually occurs in patches of ten's of plants at the most (██████ pers. comm. Dec 2010). Whilst little is known about the biology of this group of plants, daisies generally require some disturbance to regenerate (██████ pers. comm. Feb 2011). It is thought there is a persistent seed bank present and germination may be promoted by an increase in light and temperature (██████ pers. comm. Dec 2010). ████████ (pers. comm. Dec 2010) states *Ozothamnus vagans* "looks like an obligate seeder and may come up en masse after fires, which are scarce in the Mt Warning caldera due to high rainfall, but they do occur."

Areas of disturbance and gaps in the rainforest may provide opportunity for *Ozothamnus vagans* to grow. The seeds of this daisy are wind-blown and populations may become established in open disturbed habitats. When the Tweed Range Scenic Drive was used as a logging road, it was wide and had open disturbed roadsides that were colonised by *Ozothamnus vagans*. Since logging has ceased and the road edges have been left to regenerate, rainforest species have grown and shaded much of the roadside. This area is now less favourable for such opportunistic species as *Ozothamnus vagans* and the population size has decreased by about 75% of what it was in 2002 (██████ pers. comm. Sept 2011).

## Number of mature individuals

Data for the number of mature individuals of *Ozothamnus vagans* is scarce. ████████ (pers. comm. Dec 2010) found it to be fairly common in its restricted habitat. He saw it in small numbers (tens of plants rather than hundreds) at any one location. He also noted it appeared to be an obligate seeder and may germinate en masse after fires, though fires are not common in this habitat.

Hunter (2002) reports in a survey he did in 2002, that *Ozothamnus vagans* was "fairly common along the Tweed Range Scenic Drive, particularly on sunny roadside banks where its

# NSW SCIENTIFIC COMMITTEE

canes arch out from the bank or fall towards the road edge below". One hundred and fifteen records for *Ozothamnus vagans* were recorded from the edges of the Tweed Range Scenic Drive. Each record may refer to one or more plants, as in some cases there was a stretch of roadside where the plants were more or less continuous (Hunter 2002). The open roadside areas appeared to favour *Ozothamnus vagans* at the time. Since this survey in 2002, the abundance along the Tweed Range Scenic Drive has decreased considerably by approximately 75% (██████ pers. comm. Sept 2011). This may be due to an increase in the regeneration of rainforest species overshadowing the *O. vagans* plants, following the cessation of its use as a logging road. Whilst *O. vagans* is still present in this habitat, it is much less abundant but will likely be present as a persistent soil seed bank.

## Threats - past

Past threats are unknown

## Threats - current

The high altitude transitional zones and exposed rocky edges where *Ozothamnus vagans* normally occurs have been invaded by weed species in the last ten years or so (██████ pers. comm. Sept 2011). Crofton Weed (*Ageratina adenophora*) and Mistflower (*Ageratina riparia*), (both daisies) are a problem both in NSW and Queensland in the habitats where *Ozothamnus vagans* occurs (██████ pers. comm. Sept 2011; ██████ pers. comm. Feb 2011). Areas on the edges of the escarpment that had an understorey of kangaroo grass are now taken over by these weeds (██████ pers. comm. Sept 2011).

Roadworks and weed control works were given as a potential threat to populations near roads such as the Tweed Range Scenic Drive in the report by Hunter (2002). Weed species such as Mistflower are common along this road and can commonly intertwine with native species (Hunter 2002). To help reduce this threat, posts have been erected along the Tweed Range Scenic Drive to alert maintenance staff of the presence of the threatened plants (██████ pers. comm. Sept 2011).

From his experience, ██████ (pers. comm. Dec 2010) notes *Ozothamnus vagans* does not seem to be subject to any particular threats.

## Threats - future

The weed species that are a current threat to *Ozothamnus vagans* and its habitat require active management for their control. Unless there is active management, weeds will remain a threat in the future.

## Extreme fluctuations

*Ozothamnus vagans* may be susceptible to population fluctuations that may result in the species being cryptic (present in the soil seed reserve only) in some locations at some times (██████ pers. comm. Dec 2010). *Ozothamnus vagans* may display an opportunistic life history whereby it can occupy areas, at least in the short term, when conditions are suitable (██████ pers. comm. Dec 2010). This is consistent with the life history of other species in the genus. The construction of the Tweed Range Scenic Drive resulted in the species becoming common along the roadside. With time, the number of visible plants of *Ozothamnus vagans* has become less as the roadside becomes more shaded as the forest grows and closes around the road (Hunter 2002). ██████ (pers. comm. Sept 2011) estimates 75% reduction in plants along this road since his survey in 2002. Fluctuations such as this may not be as great in the normal habitat for the species, ie, on the edges of the escarpment. The plants are generally 10 or more years old, with some plants up to approximately 20 years old (██████ pers. comm. Sept 2011). The information is inadequate at present to assess if *Ozothamnus vagans* is undergoing extreme fluctuations.

## Population reduction and continuing decline

Population reduction and continuing decline can be inferred from the loss of quality of habitat. ██████ (pers. comm. Sept 2011) has noticed an increase over the last ten years or so in the occurrence of Crofton Weed and Mistflower on the edges of the escarpments in the border

# NSW SCIENTIFIC COMMITTEE

areas of northern NSW and southern Queensland, areas that are habitat for *O. vagans*. With the relatively recent spread of the weed species in the habitat as documented above, there is likely to be a decline in the quality of the habitat and a possible reduction in the number of mature individuals over time. Whilst *Ozothamnus vagans* is largely reserved in the National Park system, its habitat is not necessarily free of weed invasion.

## **Extent of occurrence (EOO) and Area of occupancy (AOO)**

The extent of occurrence for *Ozothamnus vagans* was approximately 700-1000 km<sup>2</sup> covering the populations in NSW and north to the Queensland border. The extent of occurrence was measured by a convex polygon encompassing the currently known sites, as recommended in the IUCN (2010) Guidelines, and extending this to the Queensland border in line with the sites within southern Queensland. This gives a more realistic measure of the extent of occurrence as the habitat for *Ozothamnus vagans* extends into southern Queensland. This EOO is highly restricted. A species with an EOO of more than 100 km<sup>2</sup>, but less than 5 000 km<sup>2</sup>, would meet the threshold for the category of an endangered species based on geographic range.

The area of occupancy was estimated to be 72-100 km<sup>2</sup>, equivalent to 18-25 (2x2) km grids, the recommended measure for AOO in the IUCN (2010) Guidelines. The known distribution in NSW was estimated to be 18 (2x2) km grid squares. If areas are included that are just across the border in Queensland, then the known distribution would be estimated to be 25 (2x2) km grids or 100 km<sup>2</sup>. A species with an AOO of more than 10 km<sup>2</sup>, but less than 500 km<sup>2</sup>, would meet the threshold for the category of an endangered species (IUCN 2001) and have a highly restricted geographic distribution.

## **Severe fragmentation**

*Ozothamnus vagans* is found in the rainforest edges of north eastern NSW. Most of its habitat is reserved in National Parks and Nature Reserves, where there is continuous vegetation cover. There is no evidence for *Ozothamnus vagans* to be considered as severely fragmented.

## **Information sources - written**

Australian Plant Name Index (APNI). Accessed Oct 2011 via:  
[http://www.anbg.gov.au/cgi-bin/apni?taxon\\_id=38480](http://www.anbg.gov.au/cgi-bin/apni?taxon_id=38480)

Department of Environment, Climate Change and Water NSW 2010, *Border Ranges Rainforest Biodiversity Management Plan - NSW & Queensland*, Department of Environment, Climate Change and Water NSW, Sydney. Accessed on the web via:  
<http://www.environment.gov.au/biodiversity/threatened/publications/recovery/border-ranges/pubs/brrb-management-plan.pdf>

Environment Protection and Biodiversity Conservation Act 1999. Approved Conservation Advice for *Ozothamnus vagans*. Accessed on line June 2011 via:  
<http://www.environment.gov.au/biodiversity/threatened/species/pubs/56207-conservation-advice.pdf>

Everett J (1992) '*Ozothamnus*', In: Harden, GJ (Ed.) *Flora of New South Wales*, vol. 3, University of New South Wales Press, Sydney, pp. 237-243.

Hunter RJ (2002) Survey for Threatened and Significant Plants along Tweed Range Scenic Drive and the Booyong Walking Track system, Border Ranges National Park. Unpublished report prepared for Kyogle Area, NSW National Parks and Wildlife Service.

IUCN Standards and Petitions Subcommittee (2010). Guidelines for Using the IUCN Red List Categories and Criteria. Version 8.1. Prepared by the Standards and Petitions Subcommittee in March 2010.  
(<http://intranet.iucn.org/webfiles/doc/SSC/RedList/RedListGuidelines.pdf>.)

IUCN (2001) 'IUCN Red List Categories and Criteria: Version 3.1.' (IUCN Species Survival Commission: Switzerland)

# NSW SCIENTIFIC COMMITTEE

NSW National Parks & Wildlife Service (NSW NPWS) 2004, *Parks and reserves of the Tweed Caldera – Plan of Management*, Department of Environment and Climate Change.

PlantNet. Accessed in Oct 2011 via:  
<http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Ozothamnus~vagans>

Sheringham P, Westaway J, (1995) Significant Vascular Plants of the Upper North East New South Wales. An unpublished Report by the NSW National parks and Wildlife Service for the Natural Resources Audit Council.

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. ANCA, Canberra.

## Databases

The following databases were accessed for records of *Ozothamnus vagans*.

- National Herbarium of NSW, Royal Botanic Gardens Sydney.
- DECCW Wildlife Atlas
- Australian Virtual Herbarium via :<http://avh.rbhv.vic.gov.au/avh/>
- Australian National Herbarium (CANB), Australian National Herbarium Specimen Information Register (ANHSIR) database 2011. Canberra: Australian National Herbarium, 2011.
- Queensland Herbarium, Department of Environment and Resource Management Brisbane Botanic Gardens Mt Coot-tha.
- National Herbarium of Victoria (MEL), Royal Botanic Gardens Melbourne

## Information sources - verbal

[REDACTED], botanist, [REDACTED] NSW.

[REDACTED], rainforest ecologist, [REDACTED] NSW.

[REDACTED] NSW National Parks and Wildlife Service.

[REDACTED], Department of Biological Science, Macquarie University, Sydney [REDACTED].

[REDACTED], Queensland Herbarium, Brisbane Botanic Gardens.

[REDACTED], Forests NSW.

[REDACTED]

[REDACTED]

# NSW SCIENTIFIC COMMITTEE

## Assessment of the conservation status of the *Ozothamnus vagans* against Threatened Species Conservation Regulation (2010):

**Criterion 6:** The species has undergone, is observed, estimated, inferred or reasonably suspected to have undergone, or is likely to undergo within a time frame appropriate to the life cycle and habitat characteristics of the taxon,

(c) a moderate reduction in population size, based on either:

d). an index of abundance appropriate to the taxon, or

e). geographic distribution, habitat quality or diversity, or genetic diversity.

DATA DEFICIENT. There are no quantitative data available on population reduction or continuing decline that could be used to assess decline. Therefore, the species is not eligible for listing in any category under this criterion and is data deficient.

Hence *Ozothamnus vagans* does not meet the requirements of 'Vulnerable' for Criterion 6.

**Criterion 7:** The geographic distribution of the species is estimated or inferred to be (b) highly restricted.

YES (for EOO and AOO): The EOO for this species was estimated to be approximately 700-1000 km<sup>2</sup> covering the populations in NSW and north to the Queensland border. The extent of occurrence was measured by a convex polygon encompassing the currently known sites, as recommended in the IUCN (2010) Guidelines, and extending this to the Queensland border in line with the sites within southern Queensland. This EOO is highly restricted. A species with an EOO of more than 100 km<sup>2</sup>, but less than 5 000 km<sup>2</sup>, would meet the threshold for the category of an endangered species based on geographic range.

The area of occupancy was estimated to be 72-100 km<sup>2</sup>, equivalent to 18-25 (2x2) km grids, the recommended measure for AOO in the IUCN (2010) Guidelines. A species with an AOO of more than 10 km<sup>2</sup>, but less than 500 km<sup>2</sup>, would meet the threshold for the category of an endangered species (IUCN 2001) and have a highly restricted geographic distribution.

and either:

(d) a projected or continuing decline is observed, estimated or inferred in either:

i) an index of abundance appropriate to the taxon, or

ii) geographic distribution, habitat quality or diversity, or genetic diversity,

YES. There is a projected decline estimated for the habitat quality and an inferred decline in the abundance of mature individuals. An increase in the invasion of weeds into the habitat of *Ozothamnus vagans* within the last ten years is a threat to the species.

or

(e) at least two of the following three conditions apply:

i) the population or habitat is observed or inferred to be severely fragmented,

NO: The population or habitat are not considered to be severely fragmented.

ii) all or nearly all mature individuals are observed or inferred to occur within a small number of populations or locations,

YES. *Ozothamnus vagans* is estimated to occur in less than ten populations and locations.

iii) extreme fluctuations are observed or inferred to occur in either:

• an index of abundance appropriate to the taxon, or

• geographic distribution, habitat quality or habitat diversity.

DATA DEFICIENT. *Ozothamnus vagans* may have extreme fluctuations in the abundance of the species due to its life history.

Hence *Ozothamnus vagans* does meet the requirements of 'Endangered' for Criterion 7 under sub criterion 7 d

# NSW SCIENTIFIC COMMITTEE

**Criterion 8: The estimated total number of mature individuals of the species is (c) 'moderately low.'**

DATA DEFICIENT: Insufficient data are available with which to estimate whether or not the total number of mature individuals of the *Ozothamnus vagans* is very low, low, moderately low or not low. Therefore, the species is not eligible for listing in any category under this criterion and is data deficient.

Hence *Ozothamnus vagans* does not meet the requirements of 'Vulnerable' for Criterion 8.

**Criterion 9: The total number of mature individuals of the species is observed, estimated or inferred to be (c) 'low'.**

DATA DEFICIENT: Insufficient data are available with which to estimate whether or not the total number of mature individuals of *Ozothamnus vagans* is extremely low, very low, low or not low. Therefore, the species is not eligible for listing in any category under this criterion and is data deficient.

Hence *Ozothamnus vagans* does not meet the requirements of 'Vulnerable' for Criterion 9.

**Criterion 10: For vulnerable species, the geographic distribution of the species is observed, estimated or inferred to be very highly restricted such that it is prone to the effects of human activities or stochastic events within a very short time period.**

NO. The AOO of this species is estimated to be no more than 100 km<sup>2</sup> (based on 2 x 2 km grid cells, the scale recommended by IUCN (2008) for assessment of AOO).

The corresponding IUCN threshold for 'Vulnerable' is an AOO of less than 20 km<sup>2</sup>.

Hence *Ozothamnus vagans* does not meet the requirements of 'Vulnerable' for Criterion 10.

**Conclusion:** *Ozothamnus vagans* meets the criteria for listing on the TSC Act as 'Endangered' as it satisfies **Criterion 7d** of the *Threatened Species Conservation Regulation*.