

Cortinarius canarius Canary Dermocybe

Taxonomy

Cortinarius canarius (E.Horak)

This was previously known as *Dermocybe canaria* Horak but is regarded by some authorities as better placed under a broader circumscription of the genus *Cortinarius* under the combination *Cortinarius canarius*.

Current conservation status

Categorised as Rare in the 2014 Advisory list of rare or threatened flora (DEPI 2014).

Proposed conservation status

Endangered in Victoria

Criterion B2ab(iii)

Species Information

Description and Life History

The taxon is described by Fuhrer (2005) as a mushroom with caps to 80 mm across, convex, becoming broadly umbonate. The whole fungus bright yellow when fresh. Stems are variable, usually with a bulbous base. Spores are around 8 x 4.5 micrometres, ellipsoidal and finely warty. The spore print is a yellowish rust brown.

Generation Length

The generation length of *Dermocybe canaria* is estimated to be 35 to 70 years. Whilst generation length is difficult to estimate for terrestrial fungi in general, field observations of this taxon over a number of years at the Jack Cann Reserve near Blackwood indicate the mycelium which produces fruiting bodies in successive seasons persists for many years and potentially survives for decades. A plausible generation time of 35-70 years is based on a potential longevity of 35-50 years or more and the likelihood that the taxon recruits from spore either episodically in response to rare fire events, at pre-settlement intervals of 35-70 years or more, or sporadically or opportunistically in response to localised site disturbance events or seasonal conditions.

Distribution

The best known Victorian occurrence is in the Jack Cann Reserve in the Simmons Reef area south-west of Blackwood in the Wombat Forest, where the taxon has been recorded consistently along the Lerderderg Heritage River Walk and also along Simmons Reef Road between 2002 and 2012.

The taxon was also been recorded in the Melba Gully State Park south-west of Lavers Hill in the western Otways in 2009. Image records in the Atlas of Living Australia (ALA) suggest the taxon may also occur in the Ballarat district and Rosea carpark area (presumably in the Grampians).

Site and specimen records in the VBA, AVH and ALA indicate the taxon also occurs in Western Australia, Tasmania and New Zealand with Tasmania clearly representing the Australian stronghold for the taxon.

Habitat

Fuhrer (2005) recorded the habitat of the taxon as eucalypt forest and rainforest, where it was uncommon. At the Jack Cann Reserve near Blackwood it is recorded in Eucalypt open forest with *Eucalyptus obliqua* (Messmate

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Stringybark), *E. radiata* subsp. *radiata* (Narrow-leaf Peppermint), *E. viminalis* subsp. *viminalis* (Manna Gum) and *Acacia melanoxylon* (Blackwood) with the exotic *Pinus radiata* (Radiata Pine) around the picnic area. The taxon is also sympatric with another rare fungus *Cortinarius cramesinus* (previously *Dermocybe cramesina*, Orange Dermocybe) at this site. One record at this site suggests the habitat extends to dry box and stringybark woodland.

At Melba Gully in the Otways the taxon is recorded in moist Cool Temperate Rainforest with *Nothofagus cunninghamii* (Myrtle Beech), tall eucalypts including *E. regnans* (Mountain Ash) and in fern gullies dominated by *Dicksonia antarctica* (Soft Tree-fern).

Threats

There is insufficient monitoring of subpopulations such as at the Jack Cann Reserve, or circumstantial observations to indicate whether the taxon is likely to have suffered significant historic habitat loss or population decline.

The greatest current and future threat to the taxon is the increasing risk of high intensity fire which has the capacity to sterilize soil substrates to sufficient depth to kill live mycelium of terrestrial fungi. Such fire events are projected to increase in frequency, intensity and landscape scale in response to climatic drying and warming, imposed anthropogenic fire regimes, including planned burning.

Specific threats to occurrences in rainforest habitats include the increasing risk of rainforest destruction by fire, climate change and anthropogenically elevated rates of Myrtle Wilt (*Chalara australis*) infection which results in mortality of mature Myrtle Beech which dominates most stands of Cool Temperate Rainforest, including Cool Temperate Mixed Forest, in southern and central Victoria.

Long-term threats may include a contraction in the extent of suitable moist forest habitat in response to the combined impact of climate change and anthropogenic fire regimes.

IUCN Criteria

Criterion A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3, A4	≥ 80%	≥ 50%	≥ 30%
A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased. A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible. A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3] A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible. based on any of the following: (a) direct observation [except A3] (b) an index of abundance appropriate to the taxon (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat (d) actual or potential levels of exploitation (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites			

Evidence:

Ineligible under Criterion A

There is insufficient evidence to determine whether there has been or will be a reduction in population sufficient to meet any threshold for Criterion A.

Criterion B. Geographic range in the form of either B1 (extent of occurrence) and/or B2 (area of occupancy)			
	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1. Extent of occurrence (EOO)	< 100 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			

Evidence:

Ineligible under Criterion B1

There is inadequate information to determine the Extent of Occurrence.

Eligible under Criterion B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 8 to 16 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

The taxon is severely fragmented naturally at the regional scale since the only confirmed occurrence are separated at distances likely to exceed the capacity of spore dispersal to effect recolonisation since wind directions are predominantly westerly in cooler seasons and northerly in dry seasons, neither of which are likely to exchange spore by wind dispersal between known donor and recipient subpopulations in the event of local extinction.

is estimated to have a continuing decline in (iii) above, based on the current and projected impact of the identified threats including the increasing risk of a decline in the area, extent and quality of rainforest habitat of some occurrences such as at Melba Gully in the Otways in response to increasing fire risk, climate change and anthropogenically elevated rates of Myrtle Wilt infection of Myrtle Beech

Criterion C. Small Population size and decline				
		Critically Endangered	Endangered	Vulnerable
Number of mature individuals		< 250	< 2,500	< 10,000
AND at least one of C1 or C2				
C1	An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2	An observed, estimated, projected or inferred continuing decline AND least 1 of the following 3 conditions:			
(a)	(i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
	(ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b) Extreme fluctuations in the number of mature individuals				

Evidence:

Ineligible under Criterion C as Data Deficient

There is insufficient evidence to determine the number of mature individuals.

Criterion D. Very small or restricted populations			
	Critically Endangered	Endangered	Vulnerable
Number of mature individuals (observed or estimated)	< 50	< 250	< 1,000
D2. Only applies to the VU category Restricted area of occupancy or number of locations with a plausible future threat that could drive the species to critically endangered or Extinct in a very short time.	-	-	D2. Typically: AoO < 20 km ² or number of locations ≤ 5

Evidence:

Eligible under criterion D2 as Vulnerable

The taxon is estimated to be very restricted.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

DEPI (2014) *Advisory list of rare or threatened plants in Victoria - 2014*. Department of Environment and Primary Industries, Melbourne. Retrieved from:
https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf

Fuhrer, B. A. (2005) *A field guide to Australian fungi*. Bloomings Books, Melbourne.