

***Diuris eborensis* D.L. Jones (Orchidaceae)**

Distribution: Endemic to NSW

Current EPBC Act Status: Not Listed

Current NSW TSC Act Status: Endangered

Proposed change for alignment: List on EPBC Act as Endangered

Conservation Advice: *Diuris eborensis* D.L. Jones (Orchidaceae)

**Summary of Conservation Assessment**

*Diuris eborensis* is eligible for listing as Endangered under Criterion B1a, b(iii),(v) B2a,b(iii), (v)

The main reasons for the species being eligible for listing in the Endangered category are i) that the species has a highly restricted geographic range with an extent of occurrence (EOO) estimated to be approximately 2340 km<sup>2</sup> measured by a convex polygon encompassing the currently known sites, as recommended in IUCN (2016) and an area of occupancy (AOO) estimated to be 24 km<sup>2</sup>, based on six 2 x 2 km grid cells, the scale recommended for assessing AOO by IUCN (2016); ii) a continuing decline is estimated in area and extent and quality of habitat and the number of mature individuals due to adverse impacts of livestock grazing, pigs, weeds, slashing, illegal collection, camping, roadworks and dumping of waste; and iii) there are only 5 locations.

Assessment against IUCN Red List criteria

*Criterion A Population Size reduction.*

Assessment Outcome: Data deficient.

Justification: Insufficient data to assess.

*Criterion B Geographic range*

Assessment Outcome: Endangered under Criterion B1a, b(iii),(v) B2a,b(iii), (v).

Justification: The extent of occurrence (EOO) for *Diuris eborensis* was estimated to be approximately 2340 km<sup>2</sup>, based on a minimum convex polygon enclosing all known occurrences of the species, the method of assessment recommended by IUCN (2016). The area of occupancy (AOO) is estimated to be 24 km<sup>2</sup>, based on six 2 x 2 km grid cells, the scale recommended for assessing AOO by IUCN (2016). A species with an EOO of less than 5000 km<sup>2</sup>, or an AOO of < 500 km<sup>2</sup> would be considered to meet the threshold for the category of Endangered based on geographic range. and at least 2 of the following:

- a) the population or habitat is observed or inferred to be severely fragmented or there are ≤5 locations.

Assessment Outcome: subcriterion met at Endangered threshold.

Justification: *Diuris eborensis* is only known from 5 locations. Severe fragmentation is uncertain.

- b) a projected or continuing decline is observed, estimated or inferred.

Assessment Outcome: subcriterion met.

Justification: a continuing decline is estimated in area and extent and quality of habitat and the number of mature individuals due to adverse impacts of livestock grazing, pigs, weeds, slashing, illegal collection, camping, roadworks and dumping of waste;

- c) extreme fluctuations:

Assessment Outcome: subcriterion not met.

Justification: There is unlikely to be extreme fluctuations in *Diuris eborensis* as it should maintain a below ground tuber through adverse conditions.

*Criterion C Small population size and decline.*

Assessment Outcome: Data deficient.

Justification: The total number of mature individuals is unknown, although the largest population is estimated to comprise 150 to 300 individuals.

C1. An estimated continuing decline of at least 10% over 3 generations.

Assessment Outcome: Data deficient.

C2. A continuing decline:

Assessment Outcome: subcriterion met.

Justification: There is evidence for continuing decline of the habitat of *Diuris eborensis* due to adverse impacts of stock grazing, pigs, weeds, slashing, illegal collection, camping, roadworks and dumping of waste.

And one of:

ai) The number of mature individuals in each population is less than a threshold value.

Assessment Outcome: subcriterion met at Endangered or Vulnerable threshold.

Justification: the largest population is estimated to comprise 150 to 300 individuals so the Vulnerable threshold (<1000) is met and the Endangered threshold (<250) may be met.

aii) % mature individuals in one population.

Assessment Outcome: subcriterion not met.

Justification: unknown. Data deficient.

b) Extreme fluctuations in the number of mature individuals

Assessment Outcome: subcriterion not met.

Justification: There is unlikely to be extreme fluctuations in *Diuris eborensis* as it should maintain a below ground tuber through adverse conditions.

*Criterion D Very small or restricted population.*

Assessment Outcome: Data deficient for D1. D2 not met.

Justification:

The number of mature individuals is unknown, although the largest population is estimated to comprise 150 to 300 individuals.

D1.

Assessment Outcome: subcriterion not met.

Justification: Unknown, data deficient.

D2.

Assessment Outcome: subcriterion not met.

Justification: There are ≤5 locations but no evidence that a threat could rapidly drive the species to Critically Endangered or Extinct.

*Criterion E Quantitative Analysis.*

Assessment Outcome: Data deficient.

Justification: Insufficient data to assess.

**Description**

NSW Scientific Committee (2015) state that "*Diuris eborensis* D.L. Jones (family Orchidaceae) has been described by Jones (2006a) as: "Glabrous, terrestrial herb, growing singly or in loose groups. Leaves 3-6, tufted, 70-300 mm x 3-6 mm straight. Flower stem 150-350 mm, 1-4-flowered. Flowers semi-erect to semi-nodding 18-23 mm across, pale yellowish with dark reddish purple streaks and striations on dorsal sepal and labellum. Dorsal sepal obliquely erect, 8-12 x 6-9 mm. Lateral sepals obliquely deflexed, 15-20 x 2.5-4 mm. Petals incurved or spreading; stalk 5-5.7 mm long, purplish, expanded into blade; blade 6-9 x 3-5.5 mm. Labellum 11-14 mm long; side lobes 3-5 x 2 mm, margins densely papillate; midlobe broadly ovate, 7-10 x 8-12 mm, basal margins papillate, distal margins

scalloped. Callus with 2 broad papillate marginal ridges and a long central ridge, 5-8 mm long, incurved."

"The distinguishing features of *Diuris eborensis* are noted by Jones (2006a) as follows: "Flowers pale yellow with dark purplish stripes on dorsal sepal and labellum; midlobe with scalloped margins; callus with 2 broad papillate marginal ridges and a long central ridge."

### **Distribution**

NSW Scientific Committee (2015) state that "*Diuris eborensis* is endemic to New South Wales and known from five locations on the eastern side of the New England Tableland. There have been no systematic surveys for *D. eborensis* however, the largest population is estimated to comprise 150 to 300 individuals (G. Steenbeeke pers. comm. May 2014; L. Copeland *in litt.* November 2012)."

### **Ecology**

NSW Scientific Committee (2015) state that "*Diuris eborensis* is described as favouring brown clay loams on moist grassy flats near creeks (Jones 2006b) and has been recorded at altitudes of between 900 and 1400 m a.s.l. It flowers from late October to December (Jones 2006b). Aboveground parts of *Diuris* die off after flowering (Jones 1988). *Diuris eborensis* occurs in small clumps and *Diuris* species are known to spread vegetatively (Jones 1988)."

### **Threats**

NSW Scientific Committee (2015) state that "Ongoing threats to *Diuris eborensis* include grazing and trampling by cattle, competition from exotic plants, unintended impacts of weed control, slashing, illegal collection, camping, roadworks and dumping of waste (G. Steenbeeke *in litt.* November 2012). Two of the five known locations are in conservation reserves."

### **Conservation and Management Actions**

There is no recovery plan for this species but there is a proposed NSW Saving Our Species site managed program for the species.

#### Habitat loss, disturbance and modification

- Prevent clearing or disturbance of known and suitable habitat;
- Minimise impacts of slashing or spraying on known sites.
- Ensure infrastructure construction and maintenance (e.g. for roads and tracks) does not damage plants or remaining habitats.
- Instigate appropriate fire management that is not detrimental to the species, including avoiding fires during the time of year when plants are above ground (autumn to spring). This requires consideration of all components of the fire regime and adherence to fire frequency thresholds in the NSW Rural Fire Service Bush Fire Code Threatened Species Hazard Reduction list for plants.  
[http://www.rfs.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0017/24335/ThreatenedSpeciesHazardReductionList-Part1-Plants.pdf](http://www.rfs.nsw.gov.au/__data/assets/pdf_file/0017/24335/ThreatenedSpeciesHazardReductionList-Part1-Plants.pdf)
- Reduce the adverse impacts of grazing by domestic stock on known sites

#### Invasive species

- Reduce impact of weeds on known populations.
- Reduce impact of feral pigs at known sites.

#### Ex situ conservation

- Develop a targeted seed collection program for ex situ seed banking covering representative samples from across the distribution of the species.

### Stakeholder Management

- Inform land owners and managers of sites where there are known populations and consult with these groups regarding options for conservation management and protection of the species.

### **Survey and Monitoring priorities**

- Carry out systematic surveys of known sites to estimate population size and determine trends in population size over time.
- Monitor impact of fire, weeds and pest on habitat quality and population numbers.
- Conduct targeted surveys of potential habitat.

### **Information and research priorities**

- Undertake ecological research into the species' life history, ecology and germination requirements relevant to the persistence of the species. Priorities include impacts of fire regimes on the species, along with tolerance to grazing or disturbance.

### **References**

IUCN Standards and Petitions Subcommittee (2016) Guidelines for Using the IUCN Red List Categories and Criteria. Version 12. Prepared by the Standards and Petitions Subcommittee. <http://www.iucnredlist.org/documents/RedListGuidelines.pdf>.

Jones DL (2006a) 'A complete guide to native orchids of Australia including the Island Territories' (Reed New Holland: Sydney)

Jones DL (2006b) Miscellaneous new species of Australian Orchidaceae. *Australian Orchid Research* 5, 45–111.

Jones DL (1988) 'Native orchids of Australia'. (Reed: Sydney)

NSW Scientific Committee (2015) Final Determination to list the orchid *Diuris eborensis* D.L.Jones as an ENDANGERED SPECIES. Accessed 15<sup>th</sup> August 2016. <http://www.environment.nsw.gov.au/resources/threatenedspecies/determinations/FDDiuriseborCR.pdf>

# NSW SCIENTIFIC COMMITTEE

## Final Determination

The Scientific Committee, established by the *Threatened Species Conservation Act* 1995 (the Act), has made a Final Determination to list the orchid *Diuris eborensis* D.L.Jones as an ENDANGERED SPECIES Part 1 of Schedule 1 of the Act. Listing of Endangered species is provided for by Part 2 of the Act.

The Scientific Committee has found that:

1. *Diuris eborensis* D.L. Jones (family Orchidaceae) has been described by Jones (2006a) as: "Glabrous, terrestrial herb, growing singly or in loose groups. Leaves 3-6, tufted, 70-300 mm x 3-6 mm straight. Flower stem 150-350 mm, 1-4-flowered. Flowers semi-erect to semi-nodding 18-23 mm across, pale yellowish with dark reddish purple streaks and striations on dorsal sepal and labellum. Dorsal sepal obliquely erect, 8-12 x 6-9 mm. Lateral sepals obliquely deflexed, 15-20 x 2.5-4 mm. Petals incurved or spreading; stalk 5-5.7 mm long, purplish, expanded into blade; blade 6-9 x 3-5.5 mm. Labellum 11-14 mm long; side lobes 3-5 x 2 mm, margins densely papillate; midlobe broadly ovate, 7-10 x 8-12 mm, basal margins papillate, distal margins scalloped. Callus with 2 broad papillate marginal ridges and a long central ridge, 5-8 mm long, incurved."
2. The distinguishing features of *Diuris eborensis* are noted by Jones (2006a) as follows: "Flowers pale yellow with dark purplish stripes on dorsal sepal and labellum; midlobe with scalloped margins; callus with 2 broad papillate marginal ridges and a long central ridge."
3. *Diuris eborensis* is endemic to New South Wales and known from five locations on the eastern side of the New England Tableland. There have been no systematic surveys for *D. eborensis* however, the largest population is estimated to comprise 150 to 300 individuals (G. Steenbeeke pers. comm. May 2014; L. Copeland *in litt.* November 2012).
4. *Diuris eborensis* is described as favouring brown clay loams on moist grassy flats near creeks (Jones 2006b) and has been recorded at altitudes of between 900 and 1400 m a.s.l. It flowers from late October to December (Jones 2006b). Aboveground parts of *Diuris* die off after flowering (Jones 1988). *Diuris eborensis* occurs in small clumps and *Diuris* species are known to spread vegetatively (Jones 1988).
5. The geographic distribution of *Diuris eborensis* is highly restricted. The extent of occurrence is estimated to be 2340 km<sup>2</sup> based on a minimum convex polygon enclosing all known occurrences of the species, the method of assessment recommended by IUCN (2014). The area of occupancy (AOO) is estimated to be 24 km<sup>2</sup>, based on six 2 x 2 km grid cells, the scale recommended for assessing AOO by IUCN (2014).
6. Ongoing threats to *Diuris eborensis* include grazing and trampling by cattle, competition from exotic plants, unintended impacts of weed control, slashing, illegal collection, camping, roadworks and dumping of waste (G. Steenbeeke *in litt.* November 2012). Two of the five known locations are in conservation reserves. 'Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants' is listed as a Key Threatening Process under the Act.
7. *Diuris eborensis* is not eligible to be listed as a Critically Endangered species.

# NSW SCIENTIFIC COMMITTEE

8. *Diuris eborensis* D.L.Jones is eligible to be listed as an Endangered species as, in the opinion of the Scientific Committee, it is facing a very high risk of extinction in New South Wales in the near future as determined in accordance with the following criteria as prescribed by the *Threatened Species Conservation Regulation* 2010:

## **Clause 7 Restricted geographic distribution and other conditions**

The geographic distribution of the species is estimated or inferred to be:

- (b) highly restricted,  
and:
  - (d) a projected or continuing decline is observed, estimated or inferred in either of the key indicators:
    - (a) an index of abundance appropriate to the taxon, or
    - (b) the geographic distribution, habitat quality or diversity, or genetic diversity.

Dr Mark Eldridge  
Chairperson  
Scientific Committee

Exhibition period: 02/10/15 – 27/11/15

Proposed Gazettal date: 02/10/15

## **References:**

IUCN Standards and Petitions Subcommittee (2014) Guidelines for Using the IUCN Red List Categories and Criteria. Version 11. Prepared by the Standards and Petitions Subcommittee.

<http://www.iucnredlist.org/documents/RedListGuidelines.pdf>.

Jones DL (2006a) 'A complete guide to native orchids of Australia including the Island Territories' (Reed New Holland: Sydney)

Jones DL (2006b) Miscellaneous new species of Australian Orchidaceae. *Australian Orchid Research* **5**, 45–111.

Jones DL (1988) 'Native orchids of Australia'. (Reed: Sydney)