

Hoplogonus vanderschoori

Vanderschoors Stag Beetle

TASMANIAN THREATENED SPECIES LISTING STATEMENT



Image © C. Spencer,
K. Richards

Common name: Vanderschoors Stag Beetle

Scientific name: *Hoplogonus vanderschoori* Bartolozzi, 1996

Group: Invertebrate, Class Hexapoda, Order Coleoptera, Family Lucanidae

Status: *Threatened Species Protection Act 1995:* **vulnerable**
Environment Protection and Biodiversity Conservation Act 1999: **Vulnerable**
IUCN Red List: **Not listed**

Distribution: Endemic status: **Endemic to Tasmania**
Tasmanian NRM Regions: **North**

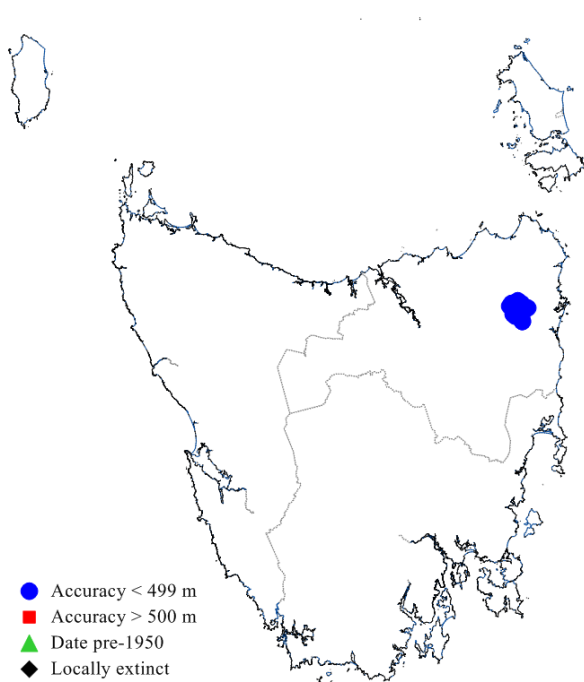


Figure 1. The distribution of Vanderschoors Stag Beetle, showing NRM regions



Plate 1. Vanderschoors Stag Beetle (male)
(image© C. Spencer, K. Richards)

SUMMARY

Vanderschoors Stag Beetle (*Hoplogonus vanderschoori*) is a flightless, black, ground-dwelling beetle reaching 18-29 mm in length. The male has large, distinctive mandibles (jaws). The species is limited to about 5600 ha in north-eastern Tasmania west and south of Pyengana. It lives in leaf litter and under logs in wet eucalypt forest, damp forest, mixed forest and rainforest, as well as in damp and wet gullies within dry forest. A leaf litter layer is vital to the survival of Vanderschoors Stag Beetle.

The primary threat is any activity resulting in exposure and drying of the soil and leaf litter. This includes activities that open up the forest canopy or disturb the forest floor, such as cutting or clearing live or dead vegetation, stock grazing or burning. Greater protection of habitat from such activities, and an improved, wider understanding of how to limit their impacts on the species, would address the key objective of maintaining and improving habitat throughout the species' range.

IDENTIFICATION AND ECOLOGY

Vanderschoors Stag Beetle (*Hoplogonus vanderschoori*) belongs to a group of flightless, black, ground-dwelling beetles, with distinctive spines on the elytra (hardened forewings that form a protective cover for the softer hindwings), and rounded mandibles (jaws) with two apical teeth.

There are three described species of *Hoplogonus*. The genus is distinguished from all other genera of stag beetles by having two obvious pairs of humeral spines (Bartolozzi 1996b, FPB 2002). Vanderschoors Stag Beetle ranges in total length from 22.9-28.6 mm (male) and 18.4-21.1 mm (female) (C. Spencer & K. Richards unpubl. data). The species is distinguished from the other two *Hoplogonus* species with reference to the shape of the mandibles and head. For a detailed taxonomic description of Vanderschoors Stag Beetle see Bartolozzi (1996b).

It is assumed that the life history of *H. vanderschoori* is similar to *H. simsoni* (TSS 2012). The lifespan of adults is not known but may be at least 2 years, and the soil-dwelling larval stage

may last as long as two years. Adults emerge in late spring to early summer, after lying dormant within the soil over winter. Many males are seen in the early part of summer and it is assumed that they do most of their mate searching during this time. Females are more prevalent in late summer on the forest floor (amongst leaf litter).

Survey techniques

There are two survey methods for adult stag beetles (FPB 2002). One is a search to establish whether the species is present at a site (timed search) and is recommended for threatened stag beetles including *Lissotes latidens*, *Hoplogonus simsoni*, *H. bornemisszai* and *H. vanderschoori*; the other is a more systematic area search method that can be used to obtain density estimates for *H. simsoni* and *H. bornemisszai*. More recently, a revised survey method has been developed involving digging 'larval pits', which has been found to be an efficient means of detecting the species due to the proportionally higher numbers of larvae present resulting in shorter survey times. This method may assist in determining species presence in areas of low population density (C. Spencer & K. Richards, pers. comm.).

Confusing species

Hoplogonus species can be differentiated by the shape of the mandibles and head of the male (Bartolozzi 1996b, FPB 2002). *H. vanderschoori* has rounded mandibles (cf. straight in *H. simsoni*) with two apical teeth (cf. three in *H. bornemisszai*).

DISTRIBUTION AND HABITAT

Vanderschoors Stag Beetle is endemic to Tasmania (Table 1, Figure 1). The species is limited to an area of native forest in north-eastern Tasmania, west and south of Pyengana (south of the Tasman Highway), with its range centred on the St Columba Falls area.

Vanderschoors Stag Beetle occurs in leaf litter and under logs and appears to prefer mixed forest and rainforest (Munks et al. 2004). The majority of sites where *H. vanderschoori* is found are below 400 m (Munks et al. 2004). More recent information (K. Richards & C. Spencer

pers. comm.) indicates that the habitat includes damp/wet gullies amongst dry forest, wet forest and rainforest. There is also an atypical occurrence of the species in old rough-pasture reverting slowly back to wet forest in one part of its range.

The species has been reasonably well surveyed (Richards 1999, MacDonald 2003, Meggs et al. 2003, Munks et al. 2004). Munks et al. (2004) state that it is unlikely that future searches will significantly extend the range of the species because the eastern and northern boundary of the range of Vanderschoors Stag Beetle is mainly surrounded by unsuitable habitat, and searches outside the eastern boundary failed to find the species (MacDonald 2003; K. Richards & C. Spencer pers. comm.).

POPULATION PARAMETERS

The only available estimate of population size for Vanderschoors Stag Beetle is from the number of beetles collected at each point locality. Munks et al. (2004) report that during their surveys 1 live beetle was found and 13 dead individuals were identified from body parts. Munks et al. (2004) provide the following information. Where the species was present, the density of Vanderschoors Stag Beetle ranged from 0.2-1.2/m², with a mean (\pm SD) density for all the sites where the beetle occurred of 0.3890/m² \pm 0.3897, although it occurred at 1.2/m² at only one site. Munks et al. (2004) did not attempt to estimate the total population size and indicate some concerns with estimating population size because of the species' patchy distribution, low density and cryptic habit, which contribute to difficulties in estimating densities of the species at any particular site.

The linear range of the species is about 14.5 km, the extent of occurrence is about 99 km² and area of occupancy about 5600 ha (56 km²). This latter estimate was provided by Munks et al. (2004), using an estimate of the area of potential habitat (defined as mature wet eucalypt forest, mixed forest and rainforest) as a surrogate for area of occupancy.

RESERVATION STATUS

Vanderschoors Stag Beetle occurs in Mt Victoria Forest Reserve, St Columba Falls State Reserve and Evercreech Forest Reserve. Sites also occur on a parcel of Crown land adjacent to the St Columba Falls State Reserve that has been recommended to be added to the reserve (CLAC 2006). None of the reserves are actively managed for the species. Approximately 30% of potential habitat for the species occurs in formal reserves (Munks et al. 2004): 1340 ha (24%) occur in "formal reserves" and 320 ha (6%) occur in "informal reserves" such as areas managed by prescription on State forest including wildlife habitat strips under the *Forest Practices Code* (FPB 2000) and Forestry Tasmania's Management Decision Classification mapping system (Orr & Gerrand 1998).

CONSERVATION STATUS

Vanderschoors Stag Beetle is listed as vulnerable on the Tasmanian *Threatened Species Protection Act 1995*, meeting criterion B (extent of occurrence estimated to be less than 20,000 km²), specifically B2c (continuing decline in area, extent and/or quality of habitat).

THREATS, LIMITING FACTORS & MANAGEMENT ISSUES

TSS (2012) identify the following major threats to Vanderschoors Stag Beetle: loss of habitat, particularly due to clearing for agriculture or establishment of forestry plantations, removal of coarse woody debris by harvesting for firewood and high intensity burns.

The primary threat to Vanderschoors Stag Beetle is any activity that opens the forest canopy or disturbs the soil and litter layer leading to exposure to sunlight and dehydration, which may in turn lead to greater predation by species such as currawongs and quolls.

Table 1. Population summary for Vanderschoors Stag Beetle

Listing Statement for *Hoplogonus vanderschoori* (Vanderschoors Stag Beetle)

	Location	Tenure	NRM region*	1:25 000 mapsheet	Year last (first) seen	Extent of subpopulation (ha)	Number of records
1	Evercreech Rivulet	Evercreech Forest Reserve/State forest	North	Brilliant	2002	Unknown	2 records
2	Mt Young (southeast)	State forest	North	Brilliant	2004	Unknown	2 records
3	Dilgers Hill Road	Private property	North	Victoria	1999	Unknown	1 record
4	Edwards Peak (southwest)	Mt Victoria Forest Reserve/State forest	North	Victoria	2004	Unknown	2 records
5	Cottons Hill (south of)	State forest	North	Victoria	1996	Unknown	1 record
6	St Columba Falls (south)	St Columba Falls State Reserve/Crown land/State forest	North	Victoria	1999 (1992)	Unknown	6 records
7	Kohls Creek (upper reaches)	State forest/Private property	North	Pyengana	2009 (2007)	Unknown	9 records
8	Cottons Plains (Mt Victoria Road)	Mt Victoria Forest Reserve	North	Victoria	1992	Unknown	1 record
9	Mt Victoria Road	Mt Victoria Forest Reserve	North	Victoria	2009	Unknown	1 record
10	Dobsons Creek tributary	Private property	North	Victoria	2004	Unknown	2 records
11	Bendover Hill	State forest/private property	North	Victoria	2004 (2003)	Unknown	2 records
12	Bendover Hill (east of)	Private property	North	Victoria	2003	Unknown	1 record
13	Intake Bridge (slopes above)	State forest	North	Victoria	2009	Unknown	1 record
14	Forest Lodge Road	State forest	North	Victoria	2003	Unknown	1 record
15	Rattrays Flat (north of)	Private property	North	Victoria	2006	Unknown	1 record
16	North George River tributary	Mt Victoria Forest Reserve	North	Ringarooma	2003	Unknown	1 record
17	St Columba Falls (north)	St Columba Falls State Reserve	North	Victoria	1999	Unknown	1 record
18	Powers Ridge	Private property	North	Pyengana	2002	Unknown	1 record

*NRM region = Natural Resource Management region

Habitat loss (clearing for pasture/crops or plantations): Munks et al. (2004) suggested that there should be no conversion of potential habitat to plantation or clearing for agriculture within the range of the species, as this activity permanently removes habitat. Parts of the species' range have already been converted to plantation/agricultural land. Conversion of an old rough pasture site reverting back to wet forest supporting the species was prevented several years ago, although this habitat is considered atypical and most typical intensively managed pasture sites would not support the species.

Habitat modification (native forest silviculture): Forestry activities pose the greatest threat to Vanderschoors Stag Beetle given that much of its habitat in State forest has been identified as having potential for wood production (Munks et al. 2004). Conversion of native forest to plantation or for agriculture, and clearfell, burn and sow practices have been identified as posing the greatest threats to this species and its habitat.

Habitat modification (removal of coarse woody debris): Firewood collection occurs on all tenures (excluding reserves) and may locally affect potential habitat. High intensity burns have the potential to remove coarse woody debris but such burns are usually undertaken as part of forestry operations so are considered in the section below. The potential impact of activities such as fuelwood harvesting (i.e. woody debris collected for energy production) on the species is unknown.

Burning: The burning of forest habitat has the effect of removing accumulated litter and coarse woody debris, which then can take many years to re-accumulate. While fire is a natural component of Tasmania's eucalypt forests, too frequent burning of wet forest can lead to long-term damage and removal of the leaf litter layer and other coarse woody debris, leading to the degradation or complete removal of the habitat of the Vanderschoors Stag Beetle.

Stock trampling: Uncontrolled access by stock to areas of forest habitat can lead to significant degradation of the leaf litter habitat for

Vanderschoors Stag Beetle species through compaction of the leaf litter and soil.

Illegal collection: Illegal collection for purposes of selling or personal insect collections is a minor threat to Vanderschoors Stag Beetle.

Climate change: The trend towards a warmer climate may increase the frequency of and exacerbate the effect of wildfire on the habitat of Vanderschoors Stag Beetle. A warmer climate (and less rainfall) may also alter the suitability of wet and damp forest, causing a shift to drier habitat conditions less suitable for the species.

MANAGEMENT STRATEGY

What has been done?

Recovery planning: A draft recovery plan (TSS 2006) has been prepared for Tasmanian threatened stag beetles, including Vanderschoors Stag Beetle.

Targeted surveys & monitoring: Richards (1999) surveyed specifically for *H. bornemisszai* and *H. vanderschoori*, with the intention of determining their presence/absence in proposed forestry coupes. MacDonald (2003) conducted a specific survey to determine the veracity of part of the predicted range of *H. vanderschoori*. Munks et al. (2004) reports on all these surveys. In addition to these formal surveys, anecdotal collections (e.g. by beetle collectors) have contributed records, including the type locality (Bartolozzi 1996b). The Forest Practices Authority has been undertaking long-term monitoring of the impacts of different forest management practices on threatened stag beetles in northeastern Tasmania.

Forestry management: Vanderschoors Stag Beetle is included in the *Threatened Fauna Adviser*, a decision-support system used by the forest industry to take account of threatened fauna in wood production forests (FPB 2000, 2002). Consultation between the Forest Practices Authority and DPIPWE is required under the protocols for managing threatened species in wood production forests (FPB 2000). Surveys are likely to be required at known sites, and in potential habitat, that may be affected by forestry-related proposals, to develop site-

specific management recommendations to ensure the viability of the species. This consultation protocol has resulted in several surveys for the species being undertaken.

Management objectives

The main objective for the management of Vanderschoors Stag Beetle is to maintain and improve habitat throughout the range of the species through appropriate land management.

What is needed?

- To minimise the loss or degradation of subpopulations – improve reservation status and/or develop management agreements with private landowners and public land managers;
- To better understand the species' habitat requirements within different vegetation communities of its range – undertake surveys to further refine the range of the species;
- To better understand the impacts of forestry activities on the species – analyse and report on the results of a long-term study looking at the impacts of these forestry practices on the threatened stag beetles;
- To better protect the species – provide information and extension support to fire management authorities such that the species can be appropriately considered in fire management plans within its range;
- To better protect the species – provide information and extension support to relevant Natural Resource Management committees, local councils, government agencies, the local community and development proponents on the locality, significance and management of known subpopulations and potential habitat of Vanderschoors Stag Beetle.

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Prepared in August 2011 by Mark Wapstra under the provisions of the Tasmanian *Threatened Species Protection Act 1995*. Published in August 2012.

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View:

<http://www.dpiw.tas.gov.au/threatenedspecieslists>

Contact details: Threatened Species Section, Department of Primary Industries, Parks, Water and Environment, GPO Box 44, Hobart, Tasmania, Australia, 7001. Phone (03) 6233 6556; fax (03) 6233 3477.

Permit: A permit is required under the Tasmanian *Threatened Species Protection Act 1995* to knowingly “take” (which includes kill, injure, catch, damage, destroy and collect), keep, trade in or process any specimen of a listed species.