



Fauna Technical Note No. 5: Protocol for conducting Mt Mangana Stag Beetle *Lissotes menalcas* surveys



The Fauna Technical Note Series provides information for Forest Practices Officers on fauna management in production forests. These technical notes are advisory guidelines and should be read in conjunction with the requirements of the Forest Practices Code.

The Technical Notes can be accessed on the Forest Practices Authority's website: www.fpa.tas.gov.au.

1. Introduction

The following survey protocol is recommended for determining the presence/absence of Mt Mangana stag beetle, *Lissotes menalcas* and its habitat in areas covered by the forest practices system. In line with the FPA Planning Guideline 2008/1, areas of high quality habitat, referred to as significant habitat, are to be excluded from conversion (FPA, 2008).

Two additional technical notes in this series address survey protocols for Broad-Toothed Stag Beetle *Lissotes latidens* (Technical Note 4) and *Hoplogonus* stag beetle species (Technical Note 11).

2. The Beetle

Mt Mangana stag beetle, *Lissotes menalcas* is a large, black/brown, flightless beetle, with a body length of up to 25mm. The males have large mandibles and a highly polished surface, a peaked prothorax, and a dorsally depressed head capsule (Lea 1910). The female is also highly polished but not as shiny as the male, due to the much denser and larger punctures on the head and prothorax (Meggs and Taylor 1999). The female also has an obvious protruding horn located centrally between the eyes (Lea 1910). It is not possible to easily distinguish *L. menalcas* larvae from other *Lissotes* larvae, however larvae generally are c-shaped soft white grubs, that have a brown head capsule and white body.

Photo MMSB adult male	Photo MMSB adult female	Photo <i>Lissotes</i> spp. larvae
		

Protruding horn on female	Protruding horn on female	Photo <i>Lissotes</i> spp. larvae
		

Photos © K. Richards & C. Spencer

As a threatened species, no attempts should be made to search or collect the beetle, unless permitted to do so under a current Threatened species permit issued by DPIPWE Threatened Species Section.

3. Mt Mangana stag beetle habitat assessment

Mt Mangana stag beetle occurs in wet eucalypt mixed forest, where it lives within rotting logs of an intermediate decay stage. Such forest includes mature and regrowth forest and >20 yr silvicultural regeneration. They generally have a preference for eucalypt logs containing a particular moist-red rot type (Meggs & Taylor 1999, unpublished data), however they have also been recorded from rainforest logs and wattle logs of an intermediate decay stage (Meggs & Taylor 1999, unpublished data).

Research work conducted by Meggs (Meggs & Taylor 1999; Meggs 2002, 2003), Richards and Spencer (unpublished data), and FPA–FT coupe surveys has identified a set of habitat characteristics which can broadly be used to assess the quality of *L. menalcas* stag beetle habitat. These are captured in the definitions of potential and significant habitats for *L. menalcas* provided in the FPA Planning Guideline 2008/1 (below).

- **Potential habitat** for *L. menalcas* is currently defined as all land within the current known range of the species, with vegetation cover of mature, regrowth and regenerating wet forests and below 650 m elevation above sea level. *L. menalcas* distribution is patchy within areas of suitable habitat. Lower densities are supported in rainforest as the species has an apparent preference for eucalypt logs, but may be found in other species, including acacias.
- **Significant habitat** is currently defined as all land within the current known range of the species, with vegetation cover of mature, regrowth and regenerating wet forests and with live *L. menalcas* present and/or the habitat is important for the connectivity of *significant habitat* or *potential habitat*.

At this stage, there is insufficient information available to map high quality areas of habitat. Surveys, as described in this technical note, are needed to inform where such areas occur.

Where should a habitat assessment be conducted?

In any proposed coupe/development within the range of the Mt Mangana stag beetle (see Fauna Values Database or Natural Values Database) to assist with application of current agreed management recommendations delivered by the FPA threatened species planning tools (e.g. Threatened Fauna Adviser, FPA Planning Guideline 2008/1).

Habitat assessment method

In order to assess an area for habitat suitability, a visual survey of the wood decay classes in the proposed operation should be undertaken. Please refer to the decay classification sheet and record the site characteristics using the Coarse Woody Debris and Mt Mangana stag beetle assessment form attached.

Mt Mangana beetle surveys

Surveys to confirm the presence/absence of the beetle may be required for some operations.

4. Mt Mangana beetle surveys

Surveys to confirm the presence/absence of the beetle may also be required for some operations, e.g. where conversion or clearing is proposed. Surveys should only be conducted if significant habitat has been identified using the habitat assessment method and decaying logs contribute > 15% of the log composition; however, non-destructive searching may be undertaken. **It is a requirement that people conducting MMSB surveys have undertaken the relevant training (refer to the Threatened Species Section, DPIPW, for training).**

Beetle survey methods

The presence of adult Mt Mangana stag beetle may be determined by:

- (1) Non-destructive searching – whereby the upper surface of logs are visually assessed for presence of live beetles or beetle remains, and moveable logs (> 15 cm diameter) are rolled and soil interface searched. All logs must be replaced *in situ*.
- (2) Log excavation – large logs (> 15 cm diameter) of decay class 2 – 4 are split open with the aid of an axe and decaying wood areas searched for presence of beetles. Particular emphasis should focus on moist red rot types, where present, (refer to the decay classification sheet). Note that this method is destructive, particularly for larvae of MMSB, and may only be conducted if method (1) fails to record evidence of beetles.

How many sites should be surveyed?

The survey points should be stratified across the proposed operation area, with a minimum of one survey point per 10 hectare area (and a maximum of 3 per 10 ha), and with at least one survey point per forest community, where multiple forest communities are present. The location of each survey point is to be marked on an accompanying operation map.

Survey methods

Each survey point should consist of a circle of 30 m diameter, inside which the survey techniques apply.

Method (1) should be applied to all moveable logs inside the survey point and presence of MMSB recorded.

Method (2) should only be employed with the failure of the non-destructive method. Five logs of decay class 2–4 should be selected from within the survey point and surveyed until the presence of MMSB is confirmed, or for a maximum of 10 minutes per log. Habitat destruction should be kept to a minimum.

The resulting information will be used to categorise areas, the coupe or sections of the coupe, into three habitat quality types:

- (A) Unsuitable or poor quality habitat;
- (B) Currently poor habitat quality, with the potential for moderate to high habitat quality (referred to by FPA as potential habitat); or
- (C) Currently moderate to high quality habitat (referred to by FPA as significant habitat).

References

- FPA Planning Guideline 2008/1 2008, *An internal planning framework developed by the Forest Practices Authority for the purposes of delivering management prescriptions through the Threatened Fauna Adviser to avoid or limit the clearance and conversion of significant habitat for threatened forest fauna*, Forest Practices Authority, Hobart, Tasmania.
- Lea, A M 1910, 'Notes on the genus *Lissotes*, with descriptions of new species', *Pap. Proc. Roy. Soc. Tasm.* 346-366.
- Meggs, J M and Taylor, R 1999, 'Distribution and conservation status of the Mt Mangana stag beetle, *Lissotes menalcas* (Coleoptera: Lucanidae)', *Papers and Proceedings of the Royal Society of Tasmania* 133: 23-28.
- Meggs, J M 2002, *Survey to determine the presence/absence of Lissotes menalcas (Mt Mangana stag beetle) at the Proposed Integrated Timber Processing Site (Southwood), Lonnvale*, A report to Forestry Tasmania, Hobart, Tasmania.
- Meggs, J M 2003, 'Threatened stag beetles in Tasmania's production forests', MSc thesis, University of Tasmania, Hobart, Tasmania.

Publication details

This technical note has been prepared by Karen Richards (FPA). It should be cited as:

Forest Practices Authority 2010, 'Protocol for conducting Mt Mangana Stag Beetle *Lissotes menalcas* surveys', *Fauna Technical Note No. 5*, Forest Practices Authority, Hobart.

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Document Summary Information

Document name	Fauna Technical Note No.5: Protocol for conducting Mt Mangana Stag Beetle <i>Lissotes menalcas</i> surveys
Version	1.0
Trim record	2009/55604
Owner	Biodiversity Section Staff
Author(s)	Biodiversity Section Staff
Release date	February 2010
Release Approved by	Biodiversity Manager
Release status	For publication on the FPA webpage and other external distribution

Version Control

Version	Date	Author(s)	Summary of changes
1	Feb 2010	Biodiversity Section Staff	Document creation
1.1	Feb 2011	Nina Roberts	Note: the wording of this document is identical to that approved by the FPA Biodiversity Manager in early 2010, except for the addition of document control information.