



## Fauna Technical Note No. 4: Protocol for conducting broad-toothed stag beetle *Lissotes latidens* 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](http://www.fpa.tas.gov.au).

### 1. Introduction

The following survey protocol is recommended for determining the presence/absence of the broad-toothed stag beetle, *Lissotes latidens* 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 Mt Mangana Stag Beetle *Lissotes menalcas* (Fauna Technical Note 5) and *Hoplogonus* stag beetle species (Fauna Technical Note 11).

### 2. The beetle

The broad-toothed stag beetle, *Lissotes latidens* is a small to medium, black, flightless beetle, with a body length of up to 20 mm. The males have prominent 'bull horn' shaped mandibles and the body has a heavily pock-marked appearance. The female is smaller, up to 18 mm also black and heavily pock-marked but has a smooth linear line running down the centre of the elytra. It is not possible to distinguish *L. latidens* larvae from other *Lissotes* larvae; however larvae generally are c-shaped soft white grubs that have a brown head capsule and white body. Photos © K. Richards & C. Spencer

Photo BSB adult male	Photo BSB adult female	Photo <i>Lissotes</i> spp larvae

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 the Threatened Species Section, DPIIWE.

### 3. Broad-toothed stag beetle habitat assessment

The broad-toothed stag beetle occurs across a range of forest types, including wet eucalypt, mixed forest and rainforest, and can also be found in creek and drainage depressions in dry forest. It lives beneath logs and woody debris and display a preference for wood of a size >10 cm in diameter that has good soil contact. No preference for wood from any particular species has been recorded.

Research work conducted by Meggs (Meggs 1999; Meggs & Munks 2003), and Richards and Spencer (Richards *et al* 2006) has identified a set of habitat characteristics which can broadly be used to assess the quality of *L. latidens* stag beetle habitat. In summary, surveys indicate that the species prefers areas that:

- *occur beneath a well developed canopy*
- *contain a high abundance of coarse woody debris (logs occupy > 10% of the forest floor)*
- *contain patches of damp or wet forest within dry eucalypt forest, especially drainage lines and wet gullies, or wet eucalypt forest and rainforest.*

At this stage, areas of high quality habitat cannot be mapped, and so surveys are needed to inform where these areas occur.

#### **Where should a habitat assessment be conducted?**

Habitat assessments should be conducted in any proposed coupe/development within the range of the broad-toothed 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 survey method**

A site visit is necessary to identify areas of potential habitat (damp or wet forest and rainforest) within the operation area. These areas must be identified on the planning map.

### 4. Broad-toothed stag beetle surveys

Confirmation of the presence/absence of the beetle is required for some operations.

#### **Beetle survey method**

The presence of adult beetles may be determined by employing a single search method involving the systematic rolling of logs and smaller woody debris to enable close scrutiny of the exposed ground for the presence of live adults and exoskeletal remains.

#### **How many sites should be surveyed?**

The survey points should be stratified across the coupe, with a minimum of one survey point per

10 hectare area, with a maximum of three per 10 ha. This will depend on the variability of forest types within the coupe, whereby a survey point should be conducted in each different forest type. The location of each survey point is to be marked on an accompanying coupe map.

### How to conduct the survey?

Each survey point should consist of a circle of 30 m in diameter, inside which all moveable woody debris should be sampled.

### What to record?

- site number and location (marked on map)
- GPS co ordinates
- proximity to stream or other drainage feature
- diameter of wood where beetles are located
- number of beetles (live male, dead male, other)
- digital macro images of beetles.

## 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.
- Meggs, JM and Munks, SA 2003, Distribution, habitat characteristics and conservation requirements of a forest-dependent Invertebrate *Lissotes latidens* (Coleoptera: Lucanidae), *Journal of Insect Conservation* 7: 137–152.
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- Richards, K, Munks, SA, Spencer, C and Wapstra, M 2006, 'Monitoring the effectiveness of conservation measures for the broad-toothed stag beetle, *Lissotes latidens*, in south-east Tasmania, June 2006', *Forest Practices Authority Scientific Report No. 3*, Forest Practices Authority, Hobart.

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