

A search for *Mecodema laeviceps* Broun

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Published by
Department of Conservation
Head Office, PO Box 10-420,
Wellington, New Zealand

This report was commissioned by West Coast Conservancy

ISSN 1171-9834

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Reference to material in this report should be cited thus:

Townsend, J. I., 1995.

A search for *Mecodema laeviceps* Broun.

Conservation Advisory Science Notes No. 123, Department of Conservation, Wellington.

Keywords: *Mecodema laeviceps*, carabid beetle, Central Otago, Carabidae, Oturehua, Mount Teviot, Mount Ida

Introduction

It would appear that *Mecodema laeviceps* Broun has never been a common insect in recent times, with only a total of five specimens collected in the past over a period of 60 years, the last one being taken over thirty years ago. Barratt (1994) prepared a resume of published information about *M. laeviceps* and concluded that "The status of *M. laeviceps* appears to be extremely rare, if indeed it still exists. A field survey therefore warrants high priority . . ."

B. McKinlay (DOC, Dunedin) organised an expedition to Central Otago, 30th January - 3rd February 1995 to try to re-discover this large carabid beetle. Other members of the survey team were Karen Vincent from the Alexandra Field Centre and myself.

Methods

The survey was carried out by searching in the field in selected sites based on past records for the species. All moveable material such as rocks and/or wood was lifted to check for insects sheltering beneath and then carefully replaced, making sure that any lizards etc. were not squashed in the process. Where there was little cover of this nature, searches were made beneath mats of dead *Aciphylla aurea* leaves or amongst litter at the base of tussocks or dead fern fronds under *Polystichum*. The toe of scree areas was searched down to at least soil contact. Any specimens of Carabidae not able to be positively identified in the field were collected for future study, but no more than two examples of live specimens from any one locality were taken, and if possible a selection was made so that males were collected and females released. This was for two reasons. Females are likely to be carrying eggs, and in general males have better (or at least more conventional) characters for identification. Had we encountered *M. laeviceps* in the field we were intending to photograph it and release it. My participation in the trip was to identify it from other *Mecodema* species encountered, as it was important to avoid having to bring specimens from the field to check their identity under a microscope.

Results

1. THE OTUREHUA SITE AND SURROUNDING AREAS.

This was where the last live specimen of the beetle was taken by P M. Johns in October 1964. (He had returned in the late 1980's but had not been able to find another specimen.) An attempt to locate this site was made on 30th

January, when the old railway line was intensively searched from "2 km south of Oturehua" to Wedderburn. No locality was found that matched the site description given by Johns in Barratt (1994). However several possible areas were examined. Remains of *Megadromus memes* Broun were found under old willow logs and flood debris on the northern side of the railway embankment just south-west of where the present highway crosses the railway formation - this is at the location given as H41/649 713, but re-alignment of the road caused difficulties in re-locating the site. At the Idaburn skating rink where the water had almost dried up to leave a large perimeter of dried mud, a specimen of the tiger beetle *Neocicindela dunedensis* (Castelnau) was found. Further east along the railway formation nearer Wedderburn a large area of rock ballast extending from the line to a wet area some 10 metres below was searched. Only slaters, cockroaches, millipedes, the remains of *Pheloneis* (a tenebrionid), and lizards were found. However, because of difficulties of moving the large rocks at the toe of this slope, our negative result may not reflect the true potential of this site.

A phone-call to Peter Johns provided more information about his original site, and we returned on the 1st February and travelled further south-west along the railway line and found a site that more accurately (although not precisely) fitted his description. A sketch of this area was drawn by Bruce McKinlay and is presented elsewhere. It was on a much smaller scale than we had imagined, the basalt ballast extending only about 10 metres along the railway formation and ending in an area of rank grass and willows in a wet area. Amongst this we found two specimens of *Megadromus memes* but no *Mecodema laeviceps*. This site is at H41/645 710. Brian Patrick has also searched at this site but found no carabids.

2. THE MT TEVIOT SITE AND SURROUNDINGS

This was considered to be the next most promising area to search. Malcolm Foord had said that the actual site of his specimen was not Mt Teviot as stated on the label, but at The Three Brothers Rocks to the west. Unfortunately the owner of this area, a Mr Paget, refused permission to go on his land, so we had to be content to view the rocks from the road. However they are now just a small "island" of natural vegetation in a sea of cultivated land so the chances of *M. laeviceps* surviving there are not great.

We carried on along Lake Onslow Road and north along Bridge Huts Road, crossed the Teviot River and then north-east to the headwaters of Manor Burn. This is rolling *Chionochloa* country with gently meandering streams often arising from semi-alpine bogs. The area is very rich in numerous small native plant species, as it is still largely in its natural condition. A richer arthropod fauna was present - few slaters but numerous cicadas, small cockroaches, millipedes and grasshoppers. At 900 - 950m (G43/ 397 155) under rocks and tussock clumps we saw two *Megadromus bullatus* (Broun) and elytra of another - all dark forms, the remains of two *Oregus aereus* (White) and a pronotum of *Megadromus* cf. *fultoni* (Broun). Under damp stones in the stream were numerous green stoneflies, *Stenoperla* sp. and one *Austroperla cyrene* (Newman) the black stonefly. The richness of fauna bodes well for

the survival of *M. laeviceps* but the chances of turning it up in such a vast area are not great without pit-trapping. An area of land to the east on Sander's property may also be good, but we were denied access there. At G43/408 130, a specimen of *Notagonum feredayi* (Bates) was collected. At G43/399 129 (760m) one live *Megadromus* cf. *fultoni* was collected (sent to P M. Johns) and another seen. Down at Lake Onslow at 680m (G43/437 119) we collected *Mecodema morio* (Castelnau), *Oregus aereus*, remains of *Holcaspis bathana*, and live *Scopodes elaphroides* (White) and *Notagonum feredayi*. Along the Old Dunstan Road we found *Holcaspis punctigera* plus other species previously named. We approached this area again on 3.2.95 via Timaburn road and amongst dead fronds of *Polystichum* ferns got elytra of *Neoferonia*, and on the ridge-top under dead *Aciphylla* remains of *Mecodema* cf. *rectolineatum*, *Holcaspis catenulata*, and *Neoferonia* again. Further afield, but in similar country at Deep Creek Rd we got *Demetrída moesta* and remains of *Oregus aereus*. On the previous day at Poolburn Reservoir we found *Holcaspis ovatella*. The climb up to Rough Ridge provided records of *Megadromus bullatus* (green form) and *M* cf. *memes* and another *Holcaspis ovatella*. This whole country still retains a wide variety of carabid species, in spite of a history of frequent burning-off.

3. OTHER AREAS TO THE NORTH

Mt Ida and its foothills must still be considered a potential site for *Mecodema laeviceps*. On 1st February we drove to the foot of Mt Ida and climbed up a leading spur to about 1000m. *Neocicindela latecincta*, *Mecodema rectolineatum*, *Oregus aereus* and *Megadromus memes* were recorded from this area. At the toe of a rock scree under dead *Aciphylla* remains of *Megadromus*, *Oregus* and *Mecodema* were found, also *Mimopeus* and *Pheloneis*. We also checked out some long-established exotic forest in the region, but found this to be relatively devoid of life - only live *Agonum* and a dead *Megadromus memes* were seen. The area around Golden Progress mine was searched and remains of *Metaglymma tibiale* found along with *Mimopeus* (Tenebrionidae) and slaters. North Rough Ridge gave us records of *Mecodema* cf. *lucidum*, *Oregus aereus*, *Megadromus* cf. *memes*, *Holcaspis bathana* and *Holcaspis ovatella*.

KNOWN DISTRIBUTION OF CARABIDAE MENTIONED ABOVE

No specimens of *Mecodema laeviceps* were seen, live or dead (remains would probably persist for several seasons) but other Carabidae may give clues about the relationships of remnant populations. At least they are common enough to imply that the possibility of finding *laeviceps* in the future cannot be ruled out.

Neocicindela dunedensis (Casteinau)

This is not a common species of tiger beetle, but widespread, ranging in the eastern areas of the South Island from Blenheim to Dunedin. The specimen

from Ida Skating Rink shows some affinities with the commoner *N. tuberculata* Fabricius.

Neocicindela latecincta (White)

A fairly widespread species, more common in the south of the South Island.

Mecodema cf. *lucidum* Castelnau

The typical form extends from the eastern edge of Fiordland to mountains around the Queenstown area. Central Otago seems to have a slightly different form.

Mecodema morio (Castelnau)

Not a common species. Type locality is Dunedin and it extends westward to Central Otago. Found in either forest or tussock habitat.

Mecodema rectolineatum Castelnau

Extends from the Mt Cook area, south to the mountains of Central Otago.

Metaglymma tibiale (Castelnau)

This species seems to be restricted to the dry country of Central Otago - Queenstown area.

Oregus aereus White

Fairly common through most of Otago and Southland, from the coast at Dunedin, westward to Fiordland. Also some disjunct pockets further north into Canterbury.

Holcaspis bathana Butcher

Previously known only from the Mount St Bathans Range. Both our records are made from dead remains, so must remain tentative at this stage.

Holcaspis catenulata Broun

This species is recorded mainly from forested areas from Dunedin, Southland and Fiordland. It is perhaps a little unusual for it to appear in the tussock country of Central, and our record of dead remains needs confirmation.

Holcaspis ovatella Chaudoir

This is a species centred on the Central Otago dry country.

Holcaspis punctigera Broun

A widespread species ranging from south Canterbury, down through Central Otago, Dunedin and Southland.

Megadromus bullatus (Broun)

Widespread for *Megadromus*, this species occurs from Stewart Island, Fiordland and northeast through Central Otago, into Mackenzie country. Black and green forms seem to occur more or less haphazardly.

Megadromus fultoni (Broun)

Megadromus memes (Broun)

Both these species are recorded from the Taieri district. *M. fultoni* has flat-

ter elytral intervals than *M. memes*. Most of the specimens we saw alive seemed to be the latter, but some elytral remains had very flat intervals and could be *fultoni*. Awaiting confirmation from Peter Johns.

Agonum sp.

Generally distributed in the area and to the south.

Notagonum feredayi (Bates)

Widespread in the South Island.

Scopodes elaphroides (White)

Widespread in both islands.

Discussion

Populations of *Mecodema laeviceps* may have been more extensive, with more numerous individuals during times when much of Central Otago was covered with totara forest. Other species of *Mecodema* are usually, but not exclusively forest dwellers. The recent development of tussock land into richer white clover / brown top / sweet vernal pasture or its reversion to arid areas of *Raoulia* and *Hieracium* may be only the final stage in a long decline of this species. It would seem from our survey that populations are now at such a low level that deliberate searching such as we carried out is hardly practical. Perhaps we should wait until someone makes another chance discovery, as appears to have been the case with past records. Rather than direct searching it may be possible to try pit-trapping some areas, and a prime site for this should be the larger rocky railway embankment west of Wedderburn. This, like the Johns site, is largely of an artificial nature, but it may be extensive enough to provide shelter for an elusive species that may still have a tenuous hold in the area. Perhaps the rich native tussock land at the headwaters of the Manor Burn would also be worth pit-trapping, but in both cases this should be done in such a way that live material could be released.

Acknowledgements

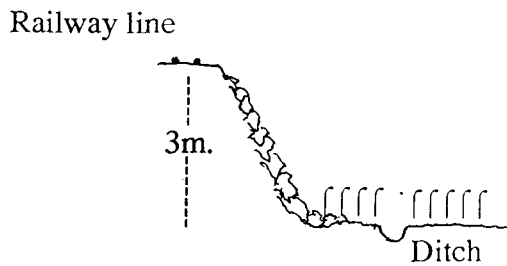
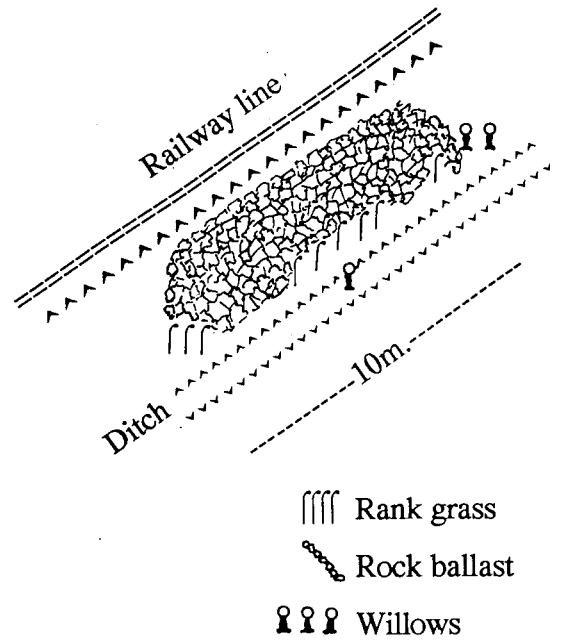
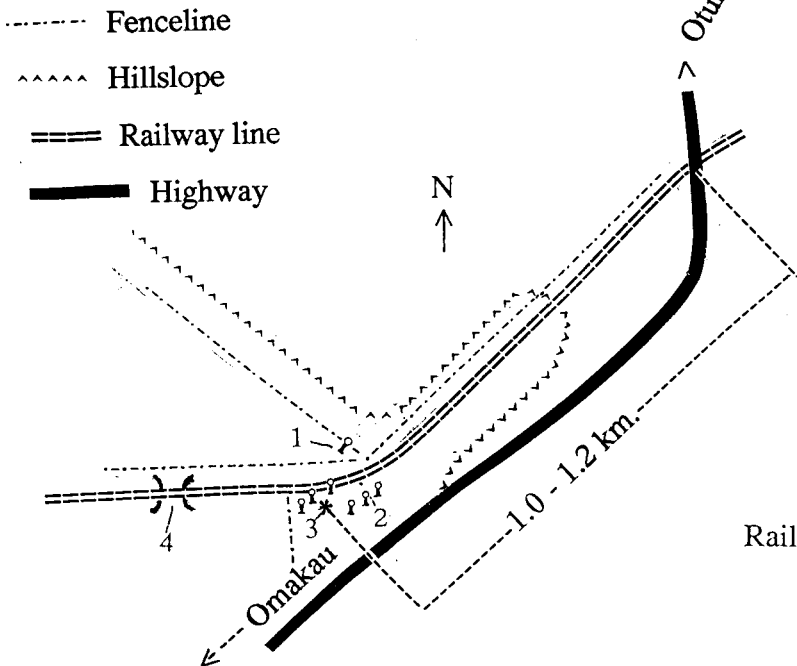
I would like to thank Bruce McKinlay (Department of Conservation, Dunedin) for the opportunity to join the survey and acknowledge the able assistance of Karen Vincent (Alexandra Field Centre) for 4WD transport to many areas otherwise impossible to reach except on foot, and her help in the field.

Reference

Barratt, B.I. P 1994 *Mecodema laeviceps* Broun: An Assessment of the Priority for Conservation. Conservation Advisory Science Notes No. 74. Department of Conservation, Wellington. 20p.

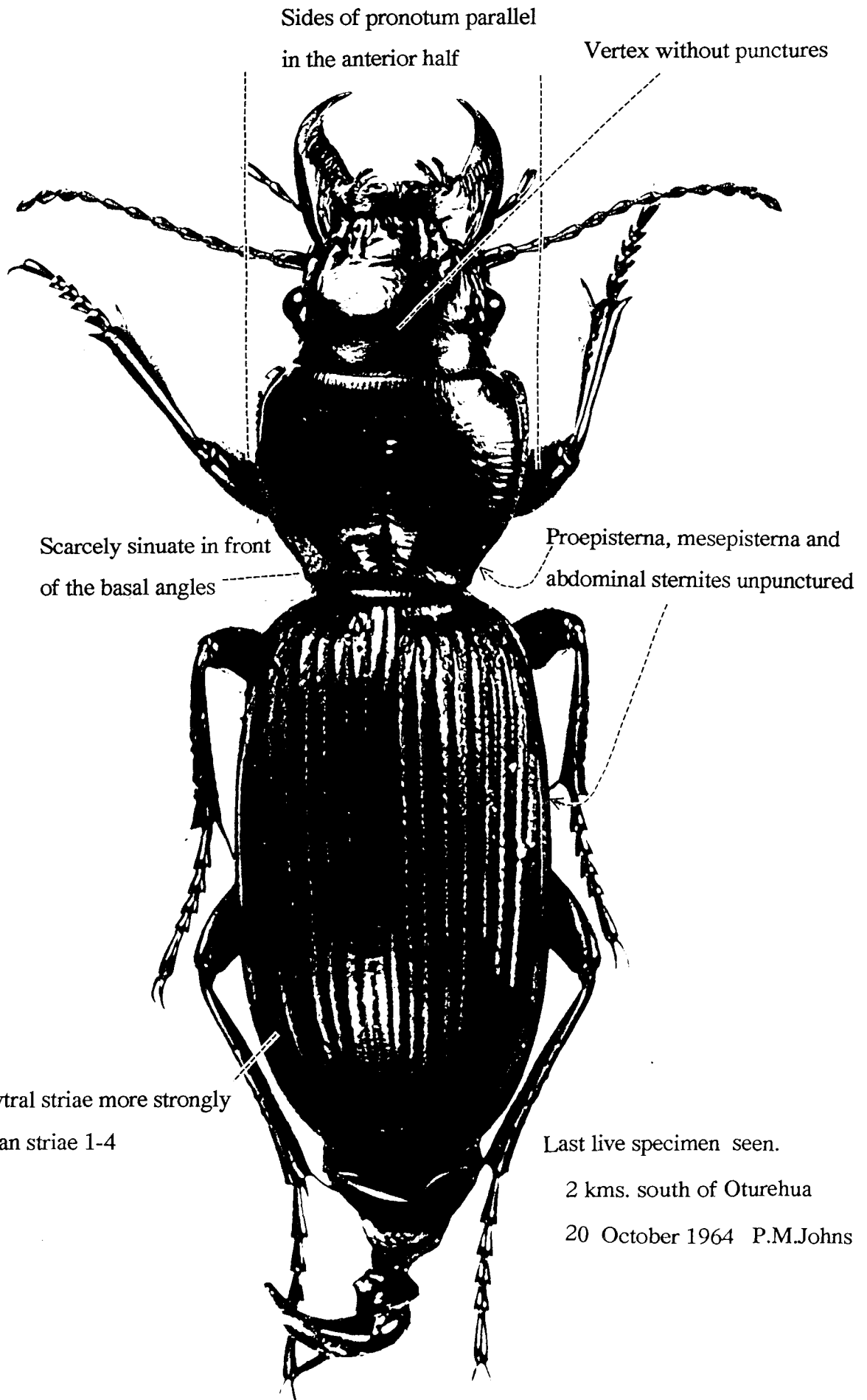
OUR SKETCH OF THE OTUREHUA SITE

- 1: Old willow tree which has fallen over fence.
- 2: Row of willows
- 3: Site
- 4: Bridge without bearers.



Relationship of topographic features
sketched direct from NZMS 260 H41/645 710

Mecodema laeviceps Broun characters for identification.



Sides of pronotum parallel
in the anterior half

Vertex without punctures

Scarcely sinuate in front
of the basal angles

Proepisterna, mesepisterna and
abdominal sternites unpunctured

7th & 8th elytral striae more strongly
impressed than striae 1-4

Last live specimen seen.

2 kms. south of Oturehua

20 October 1964 P.M.Johns