

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta gilliesi subfusca* (Powell, 1930)
Common Names: Gillies' land snail (Meads 1990a).
Synonyms: *Paryphanta gilliesi subfusca* (Powell 1979).
M&D Category: C
Conservancy Office: NM
Area Office: Golden Bay

Description: A snail with a dark brownish-red shell (Walker 1999 unpub.), the base being olive-brown, deepening to greenish or reddish-brown towards the umbilicus (the depression or cavity at the base of body whorl), and without any clearly defined central zone. The parietal callus (the thickened calcareous deposit on the upper part of the inside wall of the aperture) is purple and densely granulated (Walker 1999 unpub.). The shell is 45 - 47 mm wide, and 24 - 25.5 mm high (Powell 1979).

Shell width: 47 mm

Type Locality: Kaihoka, between the two lakes, in a small area of coastal forest containing ponga (*Cyathea dealbata*) and nikau palms (*Rhopalostylis sapida*), 37 m (Powell 1946, 1979).

Specimen Holdings: AMNZ.

Distribution: Past distribution probably included all forests from the north heads of Wanganui Inlet to Pilch Point, and the north Pakawau forests from the coast to the headwaters of the streams which drain to the west. Now confined to isolated, mostly small, forest remnants at Kaihoka Lakes; Greenhills Stream Mouth, two sites near Oyster Point and Mt Lunar forest; and the west Pakawau forest (Walker 1999 unpub.).

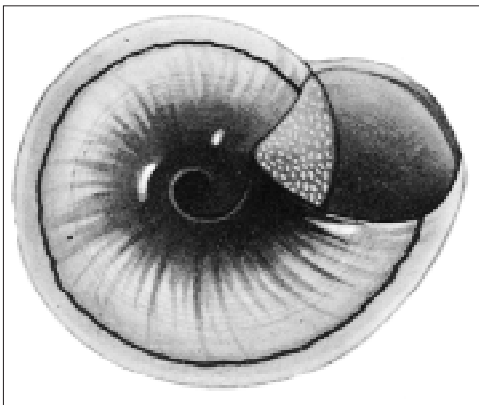
Habitat: Occurs at low levels in coastal forest and scrub (Powell 1979), from sea-level to about 200 m, on sandy mudstones, siltstones, limestones, and on old sand-dunes. Live under litter in forests of northern rata (*Metrosideros robusta*), pukatea (*Laurelia novae-zelandiae*), northern cedar, and also under kanuka (*Kunzea ericoides*) in regenerating shrublands (Walker 1999 unpub.). Powell (1930) found these snails under fallen ponga (*Cyathea dealbata*) and nikau (*Rhopalostylis sapida*) leaves.

Sign of Presence: Empty shells.

Threats: Loss and fragmentation of habitat (Walker 1999 unpub.), and the degradation of much of the remaining habitat by goat and cattle, which both trample the habitat and open it up (Meads et al. 1984; Walker 1999 unpub.) resulting in it becoming drier. Rat, thrush, and hedgehog predation is also a problem at the drier sites (Walker 1999 unpub.).

Work Undertaken to Date: The Green Hills Stream colony has been fenced, and the small Oyster Point colony was purchased by the Department of Conservation in the 1990s (I. Millar pers. comm. 1999; K. Walker pers. comm. 2000).

Priority Research, Survey, and Monitoring: 1) Monitor the density of live snails in representative permanent quadrats, at 5-yearly intervals, in several of the remaining populations (Walker 1999 unpub.).



Permission: Harper Collins Publishers (NZ) Ltd.
Powell 1979, Plate 61, Fig. 14.

Management Needs: 1) Maintain habitat at selected sites.

2) Control rat, hedgehog, thrush, and as a precautionary measure, possum numbers at key remaining habitats (Walker 1999 unpub.).

Contacts: Kath Walker.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta hochstetteri anatokiensis* (Powell, 1938)
Common Names: Hochstetter's land snail (Meads 1990a).
Synonyms: *Paryphanta hochstetteri anatokiensis* (Powell 1979).
M&D Category: B
Conservancy Office: NM
Area Office: Golden Bay

Description: A snail with a reddish shell, patterned with closely spaced, diffused, narrow, reddish-brown spiral lines and bands. The shell is 69 - 74 mm wide, and 31 - 35 mm high (Powell 1979). Shells in the southern part of the range are reddish, while the background colour in the northern populations is yellow (K. Walker pers. comm. 2000).

Shell width: 74 mm

Type Locality: The western part of the Tasman Mountains, Nelson, near the headwaters of the Anatoki, Slate and Snow Rivers (Powell 1938, 1979).

Specimen Holdings: -

Distribution: Eastern side of Haupiri Range, around Anatoki Forks and Yuletide Peak, and also on Parapara Peak (Meads et al. 1984).

Habitat: Under litter and *Gabnia* skirts in high altitude beech forests (K. Walker pers. comm. 2000).

Sign of Presence: Empty shells.

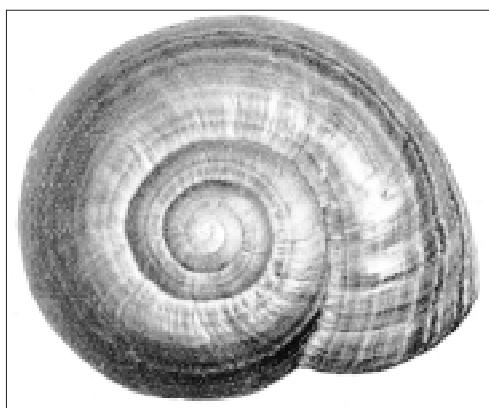
Threats: Possums.

Work Undertaken to Date: Possum control (I. Millar pers. comm. 1999).

Priority Research, Survey, and Monitoring: -

Management Needs: 1) Undertake effective possum control (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Contacts: Kath Walker.



Permission: Auckland Museum.
Powell 1938, Plate 33, Fig. 7.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta hochstetteri bicolor* (Powell, 1930)
Common Names: Hochstetter's land snail (Meads 1990a).
Synonyms: *Paryphanta hochstetteri bicolor* (Powell 1979).
M&D Category: B
Conservancy Office: NM
Area Office: Sounds, South Marlborough

Description: A snail, with a light yellowish-olive shell, having a few irregular brown spiral bands at the periphery. The shell base is free from spirals, but there is always a small circular zone of dark chocolate in and surrounding the umbilicus (the depression or cavity at the base of body whorl). The shell is 58 - 67 mm wide, and 28 - 32 mm high (Powell 1979).

Shell width: 67 mm

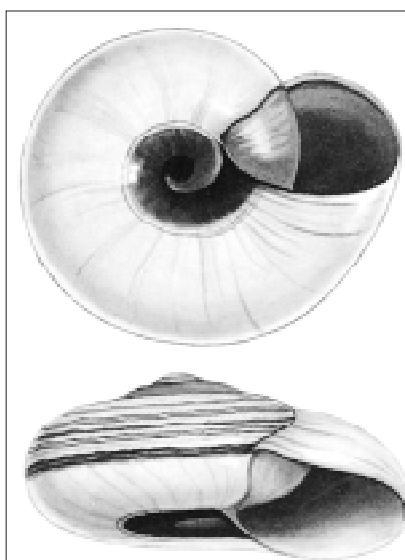
Type Locality: Mt Piripiri east of Picton, 822-945 m, under *Blechnum* fern in beech forest (Powell 1930, 1979).

Specimen Holdings: AMNZ.

Distribution: Found in the eastern Marlborough Sounds, on Blumine Island (Powell 1932); Arapawa Island; between Mt Stokes and Puzzle Peak; around Picton on Mt Cullen, Mt Robertson, Mt Piripiri 822-945 m (information from Powell 1979; Meads et al. 1984); Ocean Bay, Port Underwood (Powell 1930).

Habitat: Mixed beech/broadleaf forest, generally in deep moist leaf litter (Meads et al. 1984). They are usually found above 600 m (Climo 1975; Meads et al. 1984) but can be found to sea-level on Blumine Island (Powell 1979; Meads et al. 1984). Powell (1979) records them from under *Blechnum* fern in beech forest, and in mixed forest.

Sign of Presence: Empty shells.



Threats: Severe possum predation on Mt Cullen, Mt Robertson and Mt Piripiri. Pig predation and habitat modification at all colonies except Blumine Island. Habitat degradation by goats, and predation by the introduced weka is a problem on Blumine Island (K. Walker pers. comm. 2000).

Work Undertaken to Date: Pigs removed from Blumine Island, weka removal started in 1982 (Meads et al. 1984) but not completed. Possum and pig control undertaken at Mt Stokes, Mt Kiwi and Mt McMahon (M. Aviss pers. comm. 2000), and possum control undertaken annually on Mt Robertson since 1998 (K. Walker pers. comm. 2000).

Priority Research, Survey, and Monitoring: -

Management Needs: 1) Undertake effective predator control.

Contacts: Kath Walker.

Permission: Harper Collins Publishers (NZ)
Ltd. Powell 1979, Plate 61, Figs. 3, 4.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta hochstetteri consobrina* (Powell, 1936)
Common Names: Hochstetter's land snail (Meads 1990a)
Synonyms: *Paryphanta hochstetteri consobrina* (Powell 1979)
M&D Category: B
Conservancy Office: NM
Area Office: Motueka, Sounds, South Marlborough

Description: A snail with a reddish-brown shell. The shell is 59 - 63 mm wide, and 28 - 30 mm high (Powell 1979).

Shell width: 63 mm

Type Locality: Mt Duppa, 762 - 914 m, on a spur running towards the Whangamoia Saddle, Marlborough (Powell 1936).

Specimen Holdings: AMNZ.

Distribution: The ranges of eastern Nelson; between Mt Stewart and Mt Duppa on the Bryant Range, and Mt Baldy and Mt Richmond on the Richmond Range (Meads et al. 1984), including Mt Duppa, 548 - 914 m; Mt Fishtail 914 m (Powell 1936); Goulter's Bay, Kenepuru Sound (Powell 1979).

Habitat: Usually found above 750 m in predominantly mountain and silver beech (*Nothofagus salandri* var. *cliffortioides* *N. menziesii*) forest, in deep, moist leaf litter (Meads et al. 1984). Powell (1979) records it from down near sea-level in bracken and second growth scrub at Goulter's Bay, Kenepuru Sound.

Sign of Presence: Empty shells.

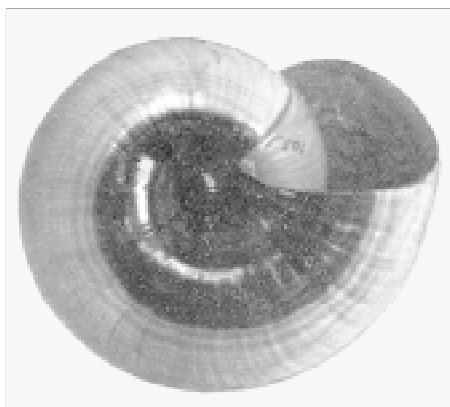
Threats: Severe possum predation on parts of the Bryant Range. Habitat degradation by pigs and goats, and predation by pigs and thrushes is also a problem (K. Walker pers. comm. 2000).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: -

Management Needs: 1) Look into predator control, especially of pigs and possums (I. Millar pers. comm. 1999).

Contacts: Kath Walker.



Permission: Auckland Museum.
Powell 1936, Plate 7, Fig. 3.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta hochstetteri hochstetteri* (Pfeiffer, 1862)
Common Names: Hochstetter's land snail (Meads 1990a)
Synonyms: *Helix hochstetteri*, *Paryphanta hochstetteri* (Powell 1979)
M&D Category: B
Conservancy Office: NM
Area Office: Golden Bay, Motueka

Description: A snail with a light yellowish-brown shell, variably spirally lined, banded or zoned with dark brown or reddish. The top surface is sculptured with minute wavy lines, abruptly terminated at the periphery. The shell base and parietal callus (the thickened calcareous deposit on the upper part of the inside wall of the aperture) are smooth. The shell is 74.5mm wide, and 31 - 35 mm high (Powell 1979). Two forms are recognised, "brown-based" and "yellow-based" (K. Walker pers. comm. 2000).

Shell width: 74.5 mm

Type Locality: Mt Campbell, southern Pikikiruna Range (Pfeiffer) (K. Walker pers. comm. 2000).

Specimen Holdings: -

Distribution: In the headwaters of the Takaka River on the Pikikiruna, northern Arthur, and Lockett Ranges, and on Cobb Ridge in Kahurangi and Abel Tasman National Parks (Walker 1999 unpub.).

Habitat: Vegetation is basically silver and red beech (*Nothofagus fusca*), with the occasional celery pine (*Phyllocladus* spp.), cedar, Hall's totara (*Podocarpus hallii*), and rata (*Metrosideros* spp.) in the canopy. *Dracophyllum*, broadleaf, stinkwood (*Coprosma foetidissima*), and mingimingi (*Coprosma propinqua*) are common in the understorey. Usually found above 600 m (Climo 1975; Powell 1979), where cloud and mist persist (Meads et al. 1984).

Sign of Presence: Empty shells.

Threats: Predation and habitat destruction by feral pigs; predation by possums; logging of forest on the Takaka Hill (K. Walker pers. comm. 2000).

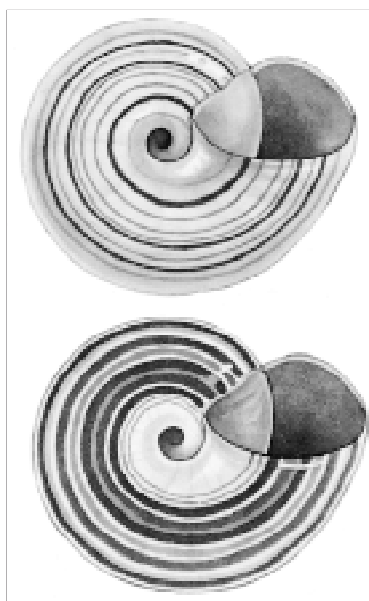
Work Undertaken to Date: Regular possum control in "brown-based" *P. h. hochstetteri* habitat at Flora Stream and in the Riwaka headwaters (K. Walker pers. comm. 2000).

Priority Research, Survey, and Monitoring: -

Management Needs: 1) Undertake effective possum control.

2) Look into feasibility of pig control (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Contacts: Kath Walker.



Permission: Harper Collins Publishers (NZ)
 Ltd. Powell 1979, Plate 61, Figs. 1, 2.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta hochstetteri obscura* (Beutler, 1901)
Common Names: Hochstetter's land snail (Meads 1990a)
Synonyms: *Paryphanta hochstetteri obscura* (Powell 1979)
M&D Category: B
Conservancy Office: NM
Area Office: Sounds

Description: A snail with a greenish-brown to yellowish-olive shell, spirally lined in brown on the top surface, but the base, including the umbilicus (the depression or cavity at the base of body whorl), is uniformly dark brown to almost black. Occasionally the outer edge is broken up into several spiral bands. The shell is 48 - 70 mm wide, and 27 - 39 mm high (Powell 1979). There is quite a variation in size, with adult snails getting smaller as they go east and south of French Pass. Adult snails at Mt Stanley are about half the size of those on D'Urville Island (Walker 1999 unpub.).

Shell width: 70 mm

Type Locality: Elmslie Bay, French Pass (Powell 1979).

Specimen Holdings: -

Distribution: Found in the western Marlborough Sounds, on many of the high points west of St Omer and north of State Highway 1. Specimens have been collected from Mt Shewell, Admiralty Bay 600 - 750 m; Mt Stanley and Editor Hill, Tennyson Inlet, above 750 m; Attempt Hill 700 m, Wells Peak 600 m, Mt Maude 650 m, on D'Urville Island; Maud Island (Meads et al. 1984); Elmslie Bay, French Pass (Powell 1979); Kenepuru Reserve (P. Brady pers. comm. 2000). Historically occurred on Stephens Island (Gibbs 1999a).

Habitat: Mostly a high altitude forest dweller (Meads et al. 1984; Walker 1999 unpub.). Found under rocks and litter in silver and black beech (*Nothofagus menziesii* and *N. solandri* var. *solandri*) forest, at and above 600 m. A small distinctive colony also exists at sea-level in broadleaf/beech/podocarp forest at Matai Bay (Walker 1999 unpub.).

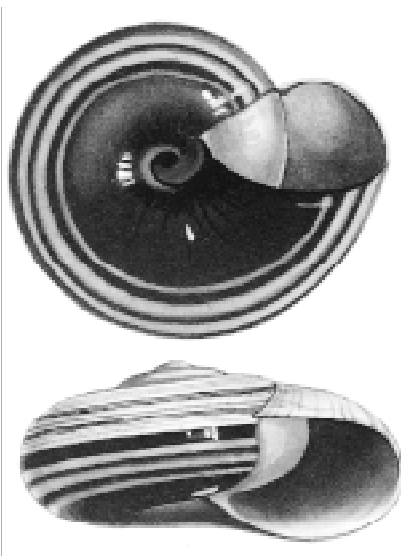
Sign of Presence: Empty shells.

Threats: Possum predation severe at most sites except D'Urville Island. Pigs are also a major problem through severe predation and destruction of habitat. Goats contribute to habitat degradation on the mainland. Rats are a problem at the colony at Matai Bay (Walker 1999 unpub.). Weka also pose a threat (P. Brady pers. comm. 2000).

Work Undertaken to Date: 1994: Possum control undertaken at all Tennyson Inlet sites (aerial 1080). Monitoring plots established on Mt Stanley and Editor Hill, Tennyson Inlet (Walker 1999 unpub.).

1996: Tennyson Inlet plots remeasured.

1997: Pig enclosure built on Attempt Hill, D'Urville Island. The density of earthworms and snails inside and outside the plots, has been measured



Permission: Harper Collins Publishers (NZ) Ltd.
Powell 1979, Plate 61, Figs. 5, 6.

annually since then. Snail monitoring plot established in the Kenepuru Forest.

1998: Possum control undertaken in Kenepuru Forest. Maintenance control of possums undertaken on Mt Stanley. Tennyson Inlet snail plots remeasured.

In recent years, limited bait station control has been conducted annually at Editor Hill (Walker 1999 unpub.).

Priority Research, Survey, and Monitoring: 1) Establish a further 5-10, 100 m² plots in good snail habitat within the mainland possum control areas, and measure snail density within the plots every 3 years (Walker 1999 unpub.).

Management Needs: 1) Carry out annual control of pigs at selected sites (Walker 1999 unpub.).

2) Maintain possum numbers at very low levels (< 3% RTC) at selected sites (Walker 1999 unpub.).

Contacts: Kath Walker.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powellipbanta lignaria johnstoni* (Powell, 1946)
Common Names: Woodformed land snail (Meads 1990a)
Synonyms: *Parypbanta lignaria johnstoni*, *P. unicolorata johnstoni*, *P. lignaria johnstoni* (Powell 1979)
M&D Category: B
Conservancy Office: WC
Area Office: Buller

Description: A snail with a light reddish-brown shell, conspicuously spirally banded and lined in dark reddish-brown. The shell base is yellowish-olive. The shell is 40 - 45.5 mm wide, and 23.8 - 25 mm high (Powell 1979).

Shell width: 45.5 mm

Type Locality: West side of Chasm Creek towards junction with the Mokihinui River, 30-152 m (Powell 1949).

Specimen Holdings: -

Distribution: The catchment of Charming Creek in the Mokihinui State Forest north of Westport (Meads et al. 1984). Powell (1979) states a boundary of a block of mountainous coastal country, isolated by the sea to the west, the Mokihinui River to the north, the Ngakawau River to the south, and Chasm and Charming Streams combine to form the eastern boundary. However, snails have subsequently also been found on the true left of both Ngakawau River and Charming Creek, about 1 km east of Powell's original boundary (K. Walker pers. comm. 2000).

Habitat: Generally found in rimu (*Dacrydium cupressinum*)/yellow silver pine (*Lepidothamnus intermedius*) forest, but also found in beech forest (Meads et al. 1984).

Sign of Presence: Empty shells.

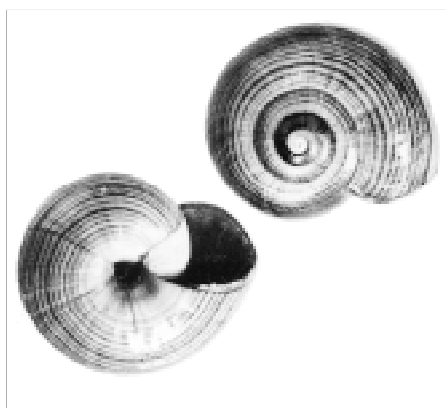
Threats: High mortality occurred in the 1980s due to the clearfelling of large areas of forest, followed by a very hot burn, root raking, and the conversion of snail habitat into exotic pine forest (Walker 1982b). There is severe possum predation occurring at all remaining colonies (K. Walker pers. comm. 2000).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: -

Management Needs: 1) Keep possum numbers steadily low for the foreseeable future (K. Walker pers. comm. 2000).

Contacts: Kath Walker.



Permission: Harper Collins Publishers (NZ) Ltd.
Powell 1979, Plate 62, Figs. 6, 7.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta lignaria lignaria* (Hutton, 1888)
Common Names: Woodformed land snail (Meads 1990a)
Synonyms: *Paryphanta lignaria* (Powell 1979)
M&D Category: B
Conservancy Office: WC
Area Office: Buller

Description: A snail with a yellowish-olive shell, and dark reddish-brown axial stripes. It has a smooth bluish-grey parietal callus (the thickened calcareous deposit on the upper part of the inside wall of the aperture). The shell is 47 - 65 mm wide, and 26 - 38.5 mm high (Powell 1979).

Shell width: 65 mm

Type Locality: The saddle between the Mokihinui and Lyell Rivers, Nelson (locality probably incorrect) (Powell 1949, 1979). Neotype; about 2.4 km up Marris' Tramway, near junction of Mumm and Stillwater Creeks (Powell 1941 cited in Powell 1949).

Specimen Holdings: Neotype in Powell collection AMNZ. Holotype not in CMNZ as stated by Suter (Powell 1949).

Distribution: Found in the Karamea Bluffs area, between the Mokihinui River and about Six Mile Creek (Meads et al. 1984), including between Sawyer's and Stillwater Creeks, St Helens, Mokihinui 24-30 m; Hill-top, 274 m, west of Sawyer's Creek; Old Mans Rock, 91 m, Kongahu Point, 6 miles north of Mokihinui River; first watercourse, Mokihinui-Karamea Rd; The Bluff or View Hill Saddle, 419 m, Mokihinui-Karamea Rd; Carlin's Flat, head of Six Miles Creek, 201 m (Powell 1949).

Habitat: Broadleaf/podocarp forest, with high rainfall and moderate temperatures. Found in deep, moist leaf litter, where the parent rock is limestone (Meads et al. 1984). Occurs from sea-level to 457 m or more (Powell 1979).

Sign of Presence: Empty shells.

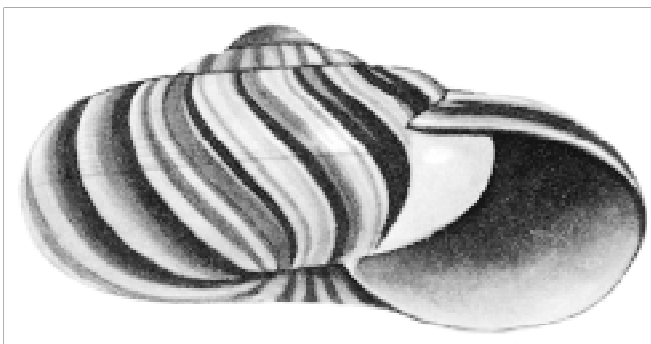
Threats: Possums and rats (Walker 1996).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Undertake effective predator control (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Management Needs: -

Contacts: Kath Walker.



Permission: Harper Collins Publishers (NZ) Ltd.
Powell 1979, Plate 61, Fig. 8.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta lignaria lusca* (Powell, 1949)
Common Names: Woodformed land snail (Meads 1990a)
Synonyms: -
M&D Category: B
Conservancy Office: WC
Area Office: Buller

Description: A snail with a reddish-brown shell, having dark-brown axial stripes with little space between them. The shell is 55.5 - 57.5 mm wide, and 33 - 35 mm high (Powell 1979).

Shell width: 57.5 mm

Type Locality: Mokihinui-Karamea Road at Glass Eye Creek (Powell 1979).

Specimen Holdings: AMNZ.

Distribution: Found in the catchments of Falls Creek and Glasseye Creek north of Six Mile Creek in the Karamea Bluffs (Meads et al. 1984). Powell (1949, 1979) lists it as from Mokihinui-Karamea Road at Glass Eye Creek and from there to Corbyvale and down to the coast at Little Wanganui.

Habitat: Broadleaf/podocarp forest with high rainfall and moderate temperatures. Found in deep, moist leaf litter, where the parent rock is limestone (Meads et al. 1984).

Sign of Presence: Empty shells.

Threats: Rats (Meads et al. 1984) and possums (Walker 1999 unpub.).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Undertake effective predator control (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Management Needs: -

Contacts: Kath Walker.

See Plate 4, No. 11.



Photo: Kath Walker.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta lignaria oconnori* (Powell, 1938)
Common Names: Woodformed land snail (Meads 1990a)
Synonyms: -
M&D Category: C
Conservancy Office: NM, WC
Area Office: Motueka, Buller

Description: A snail with a cinnamon-brown shell, crossed by a few narrow dark sepia axial stripes. The shell is 43 - 51.5 mm wide, and 36.5 - 42 mm high (Powell 1979).

Shell width: 51.5 mm

Type Locality: Headwaters of the Leslie River, tributary of the Karamea River, 609 m (Powell 1938).

Specimen Holdings: AMNZ.

Distribution: In Kahurangi National Park in the headwaters of the Karamea River, between the Crow and Leslie Rivers on the western flanks of the Arthur Range. Also in the lower Karamea River in the Kakapo and Cuckoo River catchments (K. Walker pers. comm. 2000).

Habitat: Around the Leslie River it is found in tall podocarp forest (matai (*Prumnopitys taxifolia*), rimu (*Dacrydium cupressinum*), miro (*Prumnopitys ferruginea*) and kahikitea (*Dacrycarpus dacrydioides*)) at about 610 m, in an area of large limestone bluffs (Meads et al. 1984). In the Kakapo River area it is found on limestone under beech forest (K. Walker pers. comm. 2000).

Sign of Presence: Empty shells.

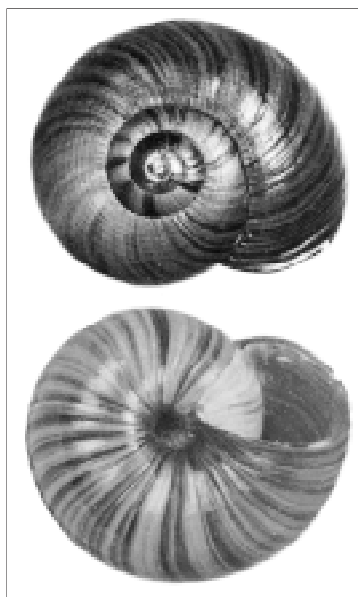
Threats: Rats (Meads et al. 1984), and possums.

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Undertake effective predator control (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Management Needs: -

Contacts: Kath Walker.



Permission: Harper Collins Publishers (NZ) Ltd. Powell 1979, Plate 62, Figs. 8, 9.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta lignaria rotella* (Powell, 1938)
Common Names: Woodformed land snail (Meads 1990a).
Synonyms: *Paryphanta unicolorata rotella*, *P. lignaria rotella* (Powell 1979)
M&D Category: B
Conservancy Office: WC
Area Office: Buller

Description: A snail with a dense dorsal pattern of dark reddish-brown spiral lines on the shell, as well as a few bold, widely spaced dark brown axial streaks. There are faint to obsolete spiral lines on the otherwise plain yellowish-olive base. The shell is 42.5 mm wide, and 24.5 - 28 mm high (Powell 1979).

Shell width: 42.5 mm

Type Locality: Between headwaters of St Andrew's and St George's Streams, tributaries of the Ngakawau River, 366 m, western slopes of Mt Glasgow, (Powell 1938).

Specimen Holdings: AMNZ.

Distribution: The western slopes of the Glasgow Range in the Mokihinui Forest, between St Andrew's and St George's Streams, 366 m; the ridge between Coal and Chasm Creeks, 213 m; the hill above the former Hydro (State) Mine, 122 - 152 m; north side of St Andrews Stream on pakihi, 396 - 427 m (Powell 1949; Powell 1979; Meads et al. 1984).

Habitat: Pakihi and rimu (*Dacrydium cupressinum*)/yellow silver pine (*Lepidothamnus intermedius*) forest (Meads et al. 1984).

Sign of Presence: Empty shells.

Threats: Habitat reduction through the logging and conversion of indigenous forest to exotic plantation (Meads et al. 1984). The clearfelling of large areas of forest, followed by a very hot burn, root raking, and conversion to exotic plantation, caused high mortality of snails in the 1980s and reduced the total possible population size (Walker 1982b). Severe possum predation is a problem at all remaining colonies (K. Walker pers. comm. 2000).

Work Undertaken to Date: Extensive survey in the 1980s; formal protection of most of the remaining habitat in the 1990s; possum control operation in 1995 with establishment of snail density monitoring plots (K. Walker pers. comm. 2000).

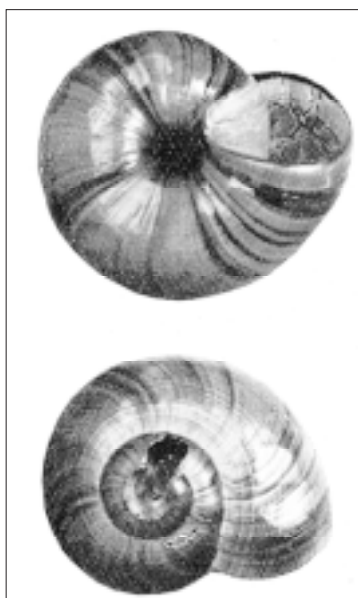
Priority Research, Survey, and Monitoring: -

Management Needs: 1) Maintain habitat at selected sites.

2) Keep possum numbers at very low levels for the foreseeable future.

3) Habitat restoration at selected sites (K. Walker pers. comm. 2000).

Contacts: Kath Walker.



Permission: Auckland Museum.
Powell 1938, Plate 33, Figs. 8, 9.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta lignaria ruforadiata* (Powell, 1949)
Common Names: Woodformed land snail (Meads 1990a)
Synonyms: -
M&D Category: B
Conservancy Office: WC
Area Office: Buller

Description: A snail similar to *Powelliphanta lignaria unicolorata* but larger, and with a darker raw-umber coloured shell, plus an axial pattern of broad, rather sparse, irregular, dark reddish-brown streaks. The shell is 47.5 mm wide, and 29 mm high (Powell 1979).

Shell width: 47.5 mm

Type Locality: Eight km north of junction of north and south branches of the Mokihinui River, on flat 6 m above river, in fairly open *Nothofagus* forest (Powell 1949).

Specimen Holdings: AMNZ.

Distribution: Found on the northern side of the Mokihinui River (Meads et al. 1984). Snails have been collected from 8 km north of the junction of north and south branches of the Mokihinui River; 3.2 km up Maori Gully, near the north branch of the Mokihinui River; 0.8-1.2 km above the main highway bridge at St Helens, Mokihinui River; between Sinclair and Stony Creeks, east side, south branch of Mokihinui River (may be a hybrid population) (Powell 1949).

Habitat: Mixed beech/podocarp/broadleaf forest with a deep litter layer and high rainfall (Meads et al. 1984).

Sign of Presence: Empty shells.

Threats: Possums and rats (Walker 1996).

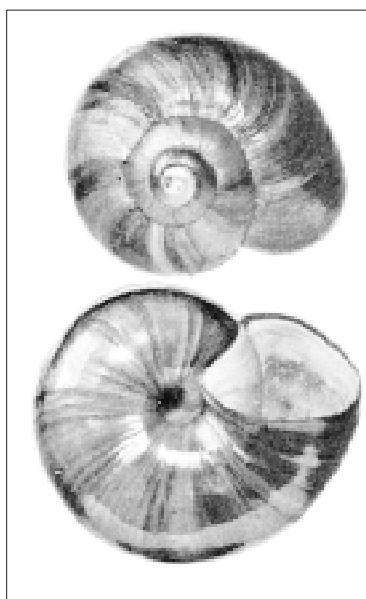
Work Undertaken to Date: Possum control over most of the snails range in 1998. Snail density monitoring plot set up in 1998 (K. Walker pers. comm. 2000).

Priority Research, Survey, and Monitoring: 1) Survey the northern and eastern boundaries of the subspecies to determine the extent of the range.

2) Establish more 100 m² snail density plots and remeasure regularly (K. Walker pers. comm. 2000).

Management Needs: 1) Regular possum control using, when possible, poisons which also control rats (K. Walker pers. comm. 2000).

Contacts: Kath Walker.



Permission: Auckland Museum.
Powell 1949, Plate 64, Figs. 1, 2.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta lignaria unicolorata* (Powell, 1930)
Common Names: Woodformed land snail (Meads 1990a)
Synonyms: *Paryphanta lignaria* Hutton, 1900 (non *P. lignaria* Hutton, 1888), *P. unicolorata*, *P. lignaria* X *unicolorata* hybrids (Powell 1979)
M&D Category: B
Conservancy Office: WC
Area Office: Buller

Description: A small snail with a plain olive-brown shell, but most have a darker raw umber colour with an axial pattern of broad, rather sparse, irregular reddish-brown streaks (Meads et al. 1984). The shell is 45 - 50 mm wide, and 26 - 29 mm high (Powell 1979).

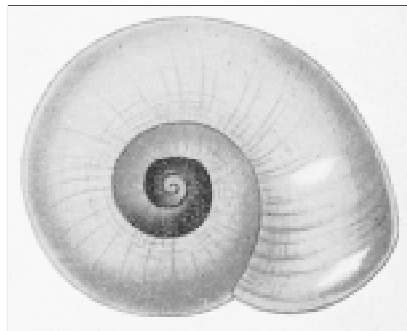


Shell width: 50 mm

Type Locality: Seddonville Flat, south side of the Mokihinui River, under flax (*Phormium* sp.) clumps (Powell 1979).

Specimen Holdings: -

Distribution: Seddonville Flat on the southern side of the Mokihinui River, on the southern side of the Mokihinui Gorge, and on the western side of the South Branch of the Mokihinui River beyond the Forks to Silver Creek and around the mouth of Goat Creek (Meads et al. 1984). See Powell (1949) for specific sites.



Permission: Harper Collins Publishers (NZ) Ltd.
 Powell 1979, Plate 61, Fig. 9.

Habitat: Mixed beech/podocarp/broadleaf forest with a deep litter layer and high rainfall (Meads et al. 1984).

Sign of Presence: Empty shells.

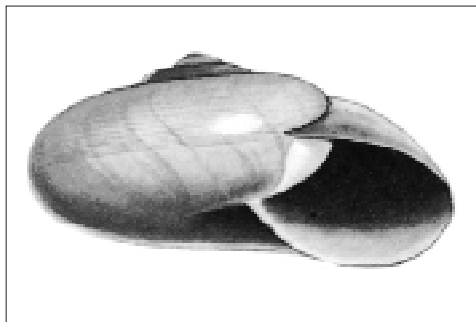
Threats: Rats (Meads et al. 1984) and possums.

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Survey the Mokihinui River area to determine distribution and abundance (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Management Needs: -

Contacts: Kath Walker.



Permission: Auckland Museum.
 Powell 1930, Plate 6, Fig. 6.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta marchanti* (Powell, 1932)
Common Names: Marchant's land snail (Meads 1990a)
Synonyms: *Paryphanta marchanti* (Powell 1979)
M&D Category: C
Conservancy Office: EC/HB,TT,WG
Area Office: Aniwanuiwa, Turangi/Taupo, Palmerston North.

Description: A snail with a yellowish-brown to old gold shell, with a reddish-brown tinge towards and within the umbilicus (the depression or cavity at the base of body whorl). The upper surface and periphery are very sparsely spirally lined in darker brown. The shell is 52 - 54 mm wide, and 28 - 30 mm high (Powell 1979).

Shell width: 54 mm

Type Locality: Ruahine Range, Mokai-Patea trig, 1097 m, near junction of Mangatera Stream with the Rangitikei River, Ruahine ranges (Powell 1932).

Specimen Holdings: AMNZ, MONZ, WMNZ.

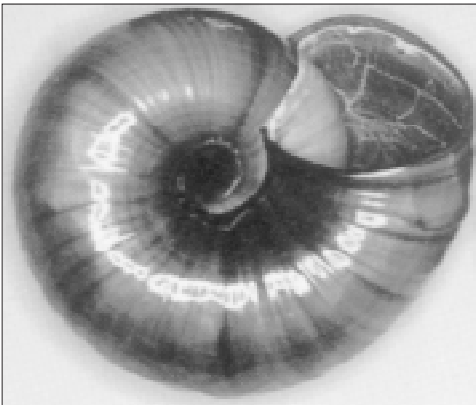
Distribution: Found from the upper reaches of the Pohangina Valley to the Otupae Range in the Ruahine Ranges, with most records from near the Reparoa Bog. North of the Ruahines it has been reported from the Kaimanawa Range, the Maungaharuru Range, from near Lake Waikaremoana, and in the Urewera National Park (Meads et al. 1984). Specimens have been collected from Ruahine Range, Mokai-Patea trig, 1097 m, near junction of Mangatera Stream with the Rangitikei River; Waikaremoana, in "goblin forest", Mt Manuoha, 1402 m, Huiarau Range (Powell 1979), and the following locations on Mt Manuoha, 20m off main Manuoha to Kaipo track, on the edge of a slip; 100-120m off the Manuoha-SH28 track (Daniel 1982). Recent taxonomic work shows that the Taranaki, Lake Waikaremoana and Maungaharuru Range populations are a different species to the Ruahine and Kaimanawa populations (Husheer 1999). The record from Mt Egmont originally attributed to this species is now tagged as *Powelliphanta* "Egmont".

Habitat: Generally found above 900 m (Meads et al. 1984; Husheer 1999), in tussock grassland, scrubland, or high altitude forest, often in stands dominated by mountain cedar (*Libocedrus bidwillii*) (Meads et al. 1984).

Sign of Presence: Empty shells.

Threats: Predation by possums is severe in the Kaimanawa population (Husheer 1999), and was also a problem in the Ruahines (K. Walker pers. comm. 2000).

Work Undertaken to Date: Survey and extent of Kaimanawa population undertaken in 1997, and 1998 (Husheer 1999). Regular possum control in the northern Ruahine Range since 1994 (K. Walker pers. comm. 2000). Thirty seven 10 m by 10 m plots have been established where possum control has begun, and are being monitored (C. Speedy pers. comm. 2000).



Permission: Manaaki Whenua Press.
Meads 1990a, p. 76, Fig. 3.

Priority Research, Survey, and Monitoring: 1) Confirm the taxonomy of populations attributed to this species.

Management Needs: 1) Urgent possum control is required if a viable population is to remain in the southern Kaimanawa Range, the relative abundance of possums should be indexed prior to control, so effectiveness of control can be determined. Monitoring plots to be measured at least 5 yearly.

2) Liaise with the NZ Army in regards to possum control on land they administer which has populations of the snail present (Husheer 1999).

3) Continue possum control and snail density measurement in the Ruahine Ranges (K. Walker pers. comm. 2000).

Contacts: Kath Walker.

See Plate 4, No. 12.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta rossiana fletcheri* (Powell, 1938)
Common Names: Ross' land snail (Meads 1990a)
Synonyms: *Paryphanta fletcheri* (Powell 1979)
M&D Category: B
Conservancy Office: WC
Area Office: Hokitika

—
Shell width: 36 mm

Description: A small snail with russet-brown shell, and widely spaced, broad, dark-sepia axial stripes. The shell is 31 - 36 mm wide, and 17 - 20 mm high (Powell 1979). Closely resembles *Pr.rossiana* and *Pr.gagei*, but has a much flatter spire (Meads et al. 1984).

Type Locality: Mt Tuhua, 1124 m, eastern side of Lake Kanieri, Westland, around bases of tussock (Powell 1979).

Specimen Holdings: -

Distribution: Mt Tuhua, 1124 m, eastern side of Lake Kanieri, Westland (Powell 1979; Meads et al. 1984).

Habitat: High altitude tussock grassland (Powell 1979; Meads et al. 1984).

Sign of Presence: Empty shells.

Threats: Probably thrush predation, and possibly possum predation (K. Walker pers. comm. 2000).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Investigate the impact of predators on this subspecies, and determine whether some form of predator control is required. (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Management Needs: -

Contacts: Kath Walker.

See Plate 4, No. 13.



Permission: Manaaki Whenua Press.
Meads 1990a, p. 81, Fig. 1.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta rossiana gagei* (Powell, 1938)
Common Names: Ross' land snail (Meads 1990a)
Synonyms: *Paryphanta gagei* (Powell 1979)
M&D Category: C
Conservancy Office: WC
Area Office: Greymouth

Description: A snail with a russet-brown shell, similar to *Pr:fletcheri*, but larger and with dense, fine, irregular lines on the upper surface. The shell is 42.5 mm wide, and 24 mm high (Powell 1979).

Shell width: 42.5 mm

Type Locality: Head of Seven Mile Stream, 853 m, Rewanui, Greymouth (Powell 1979).

Specimen Holdings: -

Distribution: Head of Seven Mile Stream, 853 m, Rewanui, Greymouth; Kirwans Hill 1067 m, 11.2 km north-east of Reefton (Powell 1979); Paparoa Ranges (K. Walker pers. comm. 2000).

Habitat: Generally snails in the *rossiana* series are restricted to high altitudes between 762-1128 m, usually around tussock (Powell 1979). The type specimen was found in a niche in a moist mossy bank, under stunted yellow-pine (*Halocarpus biformis*) and spider-wood (*Dracophyllum latifolium*) (Powell 1938).

Sign of Presence: Empty shells.

Threats: Coal mining near Rewanui. Predation by thrushes and possibly possums (K. Walker pers. comm. 2000).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Investigate the impact of predators on this subspecies, and determine whether some form of predator control is required (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Management Needs: -

Contacts: Kath Walker.



Permission: Harper Collins Publishers (NZ) Ltd.
Powell 1979, Plate 62, Fig. 3.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta rossiana patrickensis* (Powell, 1949)
Common Names: Ross' land snail (Meads 1990a)
Synonyms: *Paryphanta rossiana patrickensis* (Powell 1979)
M&D Category: C
Conservancy Office: WC
Area Office: Buller

Description: A snail with a greenish or brownish shell. The shell is 35 - 36 mm wide, and 21 mm high (Powell 1979).

Shell width: 36 mm

Type Locality: Eastern side of Millerton Plateau, headwaters of St Patrick Stream, under tussock on swampy ground 762 m (Powell 1949, 1979).

Specimen Holdings: -

Distribution: Formerly reported from the Mt Arthur Range as far north as Mt Lodestone, from the Mt Owen area, the Matiri Range, and the Denniston Plateau (Meads et al. 1984), including the eastern side of Millerton Plateau, headwaters of St Patrick Stream, 762 m; between Mt Rochefort and Denniston (Powell 1979). Only snails on the Denniston Plateau are now considered to be *Pr:patrickensis*. Snails in high altitude northwest Nelson, away from the Denniston Plateau, are an undescribed new species (K.Walker pers. comm. 2000).

Habitat: Generally snails in the *rossiana* series are restricted to high altitudes between 762-1128 m, usually around tussock (Powell 1979).

Sign of Presence: Empty shells.

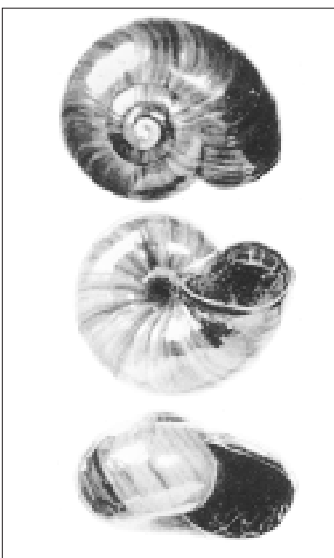
Threats: Habitat loss to open cast mining threatens much of the remaining snail population (K.Walker pers. comm. 2000).

Work Undertaken to Date: Survey of snail distribution by DOC for the PNA programme. Further distributional survey by ecological consultants to Solid Energy in the area of the proposed new mine (K.Walker pers. comm. 2000).

Priority Research, Survey, and Monitoring: 1) Investigate the impact of predators on this subspecies, and determine whether some form of predator control is required. (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Management Needs: -

Contacts: Kath Walker.



Permission: Auckland Museum.
Powell 1949, Plate 65, Figs. 10-12.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta rossiana rossiana* (Powell, 1930)
Common Names: Ross' land snail (Meads 1990a)
Synonyms: *Paryphanta rossiana* (Powell 1979)
M&D Category: C
Conservancy Office: WC
Area Office: Hokitika, Franz Josef, South Westland

Description: A snail with a thin smooth and glossy shell, dark greenish brown, and irregularly axially streaked with slightly darker brown. The shell is 34 - 38 mm wide, and 22 - 25 mm high (Powell 1979).

Shell width: 38 mm

Type Locality: Mt Greenland 884 m, Ross, Westland (Powell 1979).

Specimen Holdings: -

Distribution: Recorded from several peaks between Ross and Harihari, and from the Haast Range in Westland., including Mt Bonar, near Harihari (Meads et al. 1984); Mt Greenland 884 m; summit of Mt Rangitoto, 9.6 km south of Ross; between Okuru and Turnbull Rivers, 1036-1097 m, Haast (Powell 1979). The snails south of Harihari are now considered to be a separate subspecies (K.Walker pers. comm. 2000).

Habitat: Generally snails in the *rossiana* series are restricted to high altitudes between 762 - 1128 m, usually around tussock (Powell 1979). This subspecies has been found between 800 m and 1500 m (Meads et al. 1984).

Sign of Presence: Empty shells.

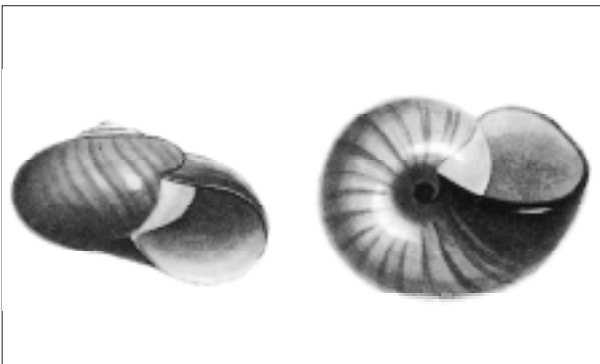
Threats: Predation by thrushes and possibly possums (K.Walker pers. comm. 2000).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Investigate the impact of predators on this subspecies, and determine whether some form of predator control is required (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Management Needs: -

Contacts: Kath Walker.



Permission: Harper Collins Publishers (NZ) Ltd.
Powell 1979, Plate 61, Figs. 11, 12.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta spedeni lateumbilicata* (Powell, 1946)
Common Names: Speden's land snail (Meads 1990a)
Synonyms: *Paryphanta spedeni lateumbilicata* (Powell 1979)
M&D Category: B
Conservancy Office: SL
Area Office: Te Anau

Description: A snail with a dark greenish or brownish shell, and a relatively wide umbilicus (the depression or cavity at the base of body whorl). The shell is 28 - 39 mm wide, and 20.5 - 25 mm high (Powell 1979).

Shell width: 39 mm

Type Locality: Billow Mountains 914 m, near south-west shore of Lake Monowai, Otago (Powell 1979).

Specimen Holdings: Powell Collection AMNZ.

Distribution: Has been found at the bush above Green Lake, Hunter Mts (E. Edwards pers. comm. 2000); Billow Mountains 914 m; Mt Hindley 1067 m (Powell 1979), south-west of Lake Monowai. Also at the bush line of the Hunter Range on the north-western shore of the lake (Meads et al. 1984).

Habitat: Generally snails in the *rossiana* series are restricted to high altitudes between 762-1128 m, usually around tussock (Powell 1979).

Sign of Presence: Empty shells.

Threats: Probably predation by thrushes and possibly also possums (K. Walker pers. comm. 2000).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Investigate the impact of predators on this subspecies, and determine whether some form of predator control is required (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Management Needs: -

Contacts: Kath Walker.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta spedeni spedeni* (Powell, 1932)
Common Names: Speden's land snail (Meads 1990a)
Synonyms: *Paryphanta spedeni*, *Ps.spedeni* (Powell 1979)
M&D Category: B
Conservancy Office: SL
Area Office: Te Anau, Murihiku

Description: A snail with a dark greenish or brownish shell. Resembles a typical *rossiana* series species in colouration, but with only the base smooth, the dorsal surface being finely and regularly lined. The shell is 36 - 39 mm wide, and 25 - 25.5 mm high (Powell 1979).

Shell width: 39 mm

Type Locality: West side of the Mataura River, opposite East Dome, on range at about 975 m, Southland (Powell 1946).

Specimen Holdings: -

Distribution: Mt Benger; Umbrella Range; Mid Dome; Eyre Mountains; Nokomai Range; Mataura Range (Patrick 1994e), on west side of Mataura River 975 m, opposite East Dome (Powell 1979); Mt Bee ridge south of Helen Peaks (Mark et al. 1989).

Habitat: Mixed snow tussock-shrubland near treeline (Mark et al. 1989). Generally snails in the *rossiana* series are restricted to high altitudes between 762 - 1128 m, usually around tussock (Powell 1979).

Sign of Presence: Empty shells.

Threats: Empty shells at Mt Bee ridge show signs of bird predation (Mark et al. 1989). Destruction of habitat through pastoral development (eg. burning, topdressing, oversowing, and grazing of tussock grassland) (K. Walker pers. comm. 2000). Also of concern is landuse change and habitat degradation from possibly feral stock, deer, goats, pigs, and hares (E. Edwards pers. comm. 2000).

Work Undertaken to Date: Looking at putting in place some long term monitoring, and evaluating the range contraction on pastoral leases and other kinds of threats (E. Edwards pers. comm. 1999).

Priority Research, Survey, and Monitoring: 1) Monitor to evaluate population trends, range contraction, and the impacts that introduced mammals are having on the populations (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Management Needs: -

Contacts: Kath Walker.

See Plate 4, No. 14.



Permission: Manaaki Whenua Press.
Meads 1990a, p. 81, Fig. 2.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta superba harveyi* (Powell, 1946)
Common Names: Superb land snail (Meads 1990a)
Synonyms: *Paryphanta superba harveyi*, *P. mouatae* (Powell 1979)
M&D Category: B
Conservancy Office: NM
Area Office: Golden Bay

Description: A snail with a yellowish-brown shell, and conspicuous broad reddish-brown axial stripes. The sparsely granulated parietal callus (the thickened calcareous deposit on the upper part of the inside wall of the aperture) is brown. The shell is 60 - 64 mm wide, and 30.5 - 31 mm high (Powell 1979).

Shell width: 64 mm

Type Locality: Goulund Downs, Heaphy Track, probably in Buller County, just within the boundary (Powell 1979).

Specimen Holdings: -

Distribution: Goulund Downs, Heaphy Track, probably in Buller County, just within the boundary (Powell 1979).

Habitat: Occurs in forests under organic litter.

Sign of Presence: Empty shells.

Threats: Predation by possums, and also thrushes and hedgehogs.

Work Undertaken to Date: 1995: Possum control (aerial 1080) undertaken on Parapara Peak. Snail monitoring plot established at Cedar Ridge (1 snail present).

1998: Snail monitoring plot at Cedar Ridge remeasured, no snails found.

1999: Survey of seven 100 m² plots north and south of Bock Peak undertaken. Possum control (aerial 1080) undertaken on the mid Wakamarama Range (Walker 1999 unpub.).

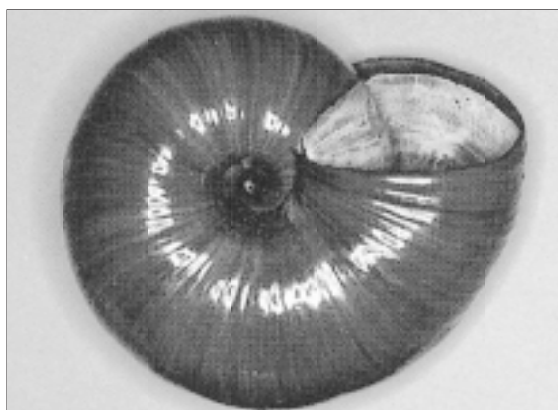
Priority Research, Survey, and Monitoring: 1) Establish a minimum 5 - 10, 100 m² plots in good snail habitat within the wider possum control areas, and measure snail density within the plots every 2 years (Walker 1999 unpub.).

2) Determine natural rates of recruitment, productivity and survival, when exotic predators are absent (Walker 1999 unpub.).

Management Needs: 1) Keep possum numbers at very low levels, less than 3% residual trap catch, at selected sites (Walker 1999 unpub.).

Contacts: Kath Walker.

See Plate 4, No. 15.



Permission: Manaaki Whenua Press.
Meads 1990a, p. 79, Fig. 1.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta superba mouatae* (Powell, 1946)
Common Names: Superb land snail (Meads 1990a)
Synonyms: *Paryphanta mouatae*, *P. superba mouatae* (Powell 1979)
M&D Category: B
Conservancy Office: NM
Area Office: Golden Bay

Description: A snail with a dark cinnamon-brown shell, irregularly axially streaked in darker brown. The smooth parietal callus (the thickened calcareous deposit on the upper part of the inside wall of the aperture) is dark brown. The shell is 50 - 61.5 mm wide, and 27 - 36 mm high (Powell 1979).

Shell width: 61.5 mm

Type Locality: Goulard Downs, West Nelson, between 15 Mile Creek and Saxon Creek (Powell 1979).

Specimen Holdings: -

Distribution: Goulard Downs, West Nelson, between 15 Mile Creek and Saxon Creek; headwaters of Saxon Creek, 5.6 km from Blue Duck Creek hut (Powell, 1979).

Habitat: Occurs in forests under organic litter.

Sign of Presence: Empty shells.

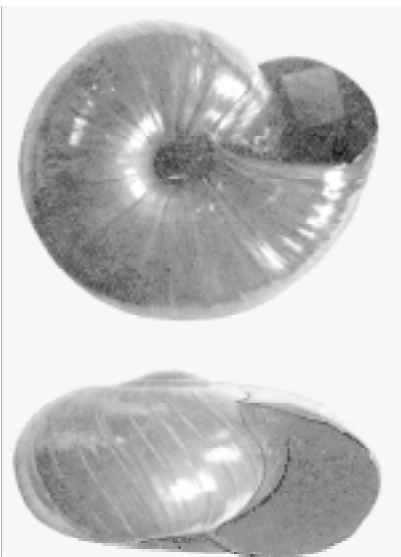
Threats: Predation by possums, and also thrushes and hedgehogs.

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Monitor populations regularly.

Management Needs: -

Contacts: Kath Walker.



*Permission: Auckland Museum.
Powell 1936, Plate 8, Figs. 7, 8.*

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta superba prouseorum* (Powell, 1946)
Common Names: Superb land snail (Meads 1990a)
Synonyms: *Paryphanta superba prouseorum* (Powell 1979)
M&D Category: B
Conservancy Office: NM, WC
Area Office: Golden Bay, Buller

Description: A snail with a uniformly yellowish to old-gold shell. The finely granulated parietal callus (the thickened calcareous deposit on the upper part of the inside wall of the aperture) and interior of the aperture are dark brown. The shell is 71 - 90 mm wide, and 36.5 - 38 mm high (Powell 1979).

Shell width: 90 mm

Type Locality: Between Kahurangi Point and Rocks Point, 3.2 to 4.8 km inland, 457 - 610 m (Powell 1979).

Specimen Holdings: -

Distribution: Between Kahurangi Point and Rocks Point, west Nelson, and 8 km south of Rocks Point (Powell 1979).

Habitat: Occurs in forests under organic litter.

Sign of Presence: Empty shells.

Threats: Predation by possums, and also thrushes and hedgehogs.

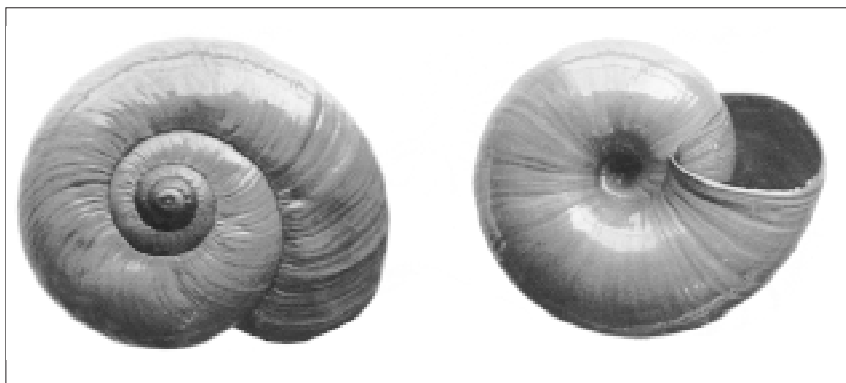
Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Monitor populations regularly.

Management Needs: -

Contacts: Kath Walker.

See Plate 4, No. 16, No. 17.



*Permission: Harper Collins Publishers (NZ) Ltd.
Powell 1979, Plate 66, Figs. 4, 5.*

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta superba richardsoni* (Powell, 1946)
Common Names: Superb land snail (Meads 1990a)
Synonyms: *Paryphanta superba richardsoni* (Powell 1979)
M&D Category: B
Conservancy Office: NM
Area Office: Golden Bay

Description: A snail with a uniformly dark yellowish to old-gold shell, with diffused, very pale reddish-brown axial streaks. The parietal callus (the thickened calcareous deposit on the upper part of the inside wall of the aperture) is smooth and brown. The shell is 60 - 76 mm wide, and 29 - 36 mm high (Powell 1979).

Shell width: 76 mm

Type Locality: Perry's Pass, 3.2 km from Blue Duck Creek hut, Goulard Downs, West Nelson (Powell 1979).

Specimen Holdings: -

Distribution: Perry's Pass, 3.2 km from Blue Duck Creek hut, Goulard Downs, West Nelson (Powell 1979).

Habitat: Occurs in forests under organic litter.

Sign of Presence: Empty shells.

Threats: Predation by possums, and also thrushes and hedgehogs.

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Monitor populations regularly.

Management Needs: -

Contacts: Kath Walker.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta superba superba* (Powell, 1930)
Common Names: Superb land snail (Meads 1990a)
Synonyms: *Paryphanta superba* (Powell 1979)
M&D Category: B
Conservancy Office: NM
Area Office: Golden Bay

Description: A snail with a uniformly yellowish to old-gold shell. The smooth parietal callus (the thickened calcareous deposit on the upper part of the inside wall of the aperture) and interior of the aperture are dark brown. The shell is 56 - 80 mm wide, and 32 - 40 mm high (Powell 1979). The foot is a pinkish-grey, with a pale but distinct white frill along the margin (Walker 1999 unpub.).

Shell width: 80 mm

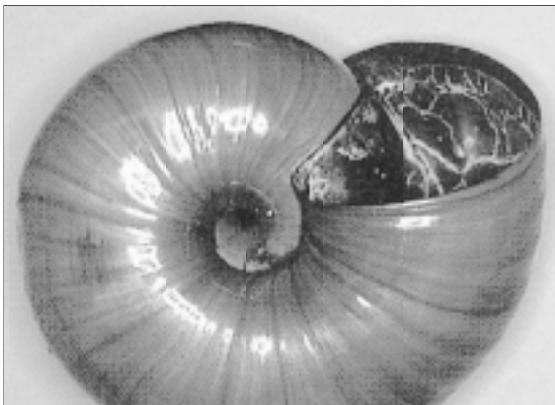
Type Locality: Cedar Creek Ridge, 762 m, eastern side of the Aorere Valley (Powell 1979).

Specimen Holdings: AMNZ, NZAC.

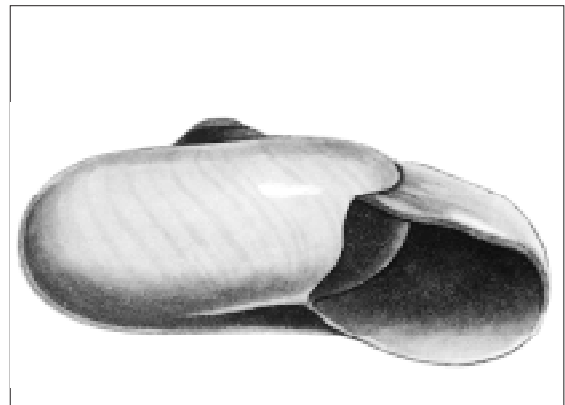
Distribution: On the eastern and western sides of Aorere Valley, Golden Bay (Meads et al. 1984). In the western Aorere Valley it is found on the Wakamarama Range from Mt White to Mt Burnett. In the eastern Aorere Valley it is found from Mt Olympus to Parapara Peak (Meads et al. 1984; Powell 1979; K. Walker pers. comm. 2000)

Habitat: Occurs in high altitude forests (800-1150 m) comprising silver beech (*Nothofagus menziesii*), mountain beech (*Nothofagus solandri* var. *cliffortioides*), southern rata (*Metrosideros umbellata*), quintinia, kamahi (*Weinmannia racemosa*), toro, *Dacrophyllum townsoni*, and the occasional cedar (Powell 1930; Meads et al. 1984; Walker 1999 unpub.). They are found under leaf litter, gahnia skirts, and bush rice grass (*Microlaena avenacea*) (Walker 1999 unpub.).

Sign of Presence: Empty shells.



Permission: Manaaki Whenua Press.
Meads 1990a, p. 79, Fig. 2.



Permission: Harper Collins Publishers (NZ) Ltd.
Powell 1979, Plate 61, Fig. 7.

Threats: There has been intensive predation by possums at all sites since at least the 1970s. Predation by thrushes and hedgehogs is also a threat, but their impact is unknown. The type locality has suffered habitat modification through forest clearance and fires (Walker 1999 unpub.).

Work Undertaken to Date: 1995: Possum control (aerial 1080) undertaken on Parapara Peak. Snail monitoring plot established at Cedar Ridge and Parapara Peak.

1998: Snail monitoring plots remeasured.

1999: Establishment of seven 100 m² monitoring plots north and south of Bock Peak. Possum control (aerial 1080) undertaken on the mid Wakamarama Range (Walker 1999 unpub.).

2000: A further seven 100 m² monitoring plots established on mid Parapara Peak (K. Walker pers. comm. 2000).

Priority Research, Survey, and Monitoring: 1) No survey needed, but maintain regular remeasuring of existing monitoring plots (K. Walker pers. comm. 2000).

2) Determine natural rates of recruitment, productivity and survival when exotic predators are absent (Walker 1999 unpub.).

Management Needs: 1) Keep possum numbers at very low levels, less than 3% residual trap catch, at selected sites (Walker 1999 unpub.).

Contacts: Kath Walker.

See Plate 4, No. 18.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powelliphanta traversi otakia* (Powell, 1946)
Common Names: Travers land snail (Meads 1990a)
Synonyms: *Paryphanta traversi otakia* (Powell 1979)
M&D Category: A
Conservancy Office: WL
Area Office: Kapiti

Description: A snail with an olive-green to old-gold shell, with a closely spiralled top lined in dark reddish-brown. Many of the lines are wavy to intermittent, giving a speckled appearance. The base is uniformly dark sepia, broken up only near the periphery into several broad bands. The parietal callus (the thickened calcareous deposit on the upper part of the inside wall of the aperture) is pale blue-grey. The shell is 48 - 50 mm wide, and 25 - 26 mm high (Powell 1979).

Shell width: 50 mm

Type Locality: Near Otaki, Rahui Rd on the north bank of the Otaki River, 61 m (Powell 1979).

Specimen Holdings: AMNZ.

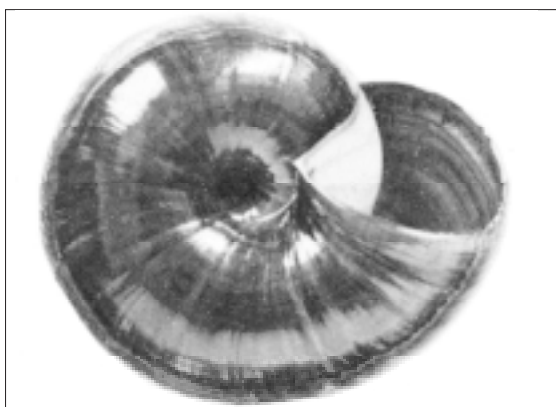
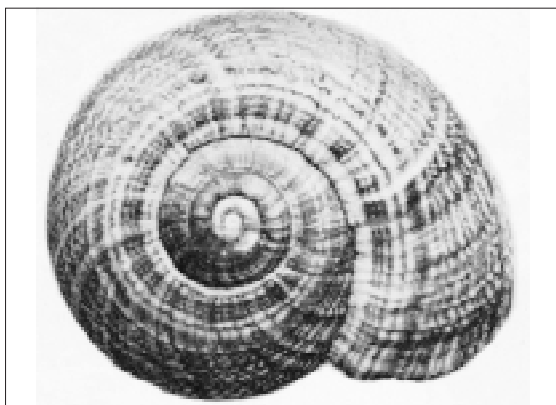
Distribution: Probably once common in the Otaki and Te Horo districts, now confined to a couple of tiny populations (Walker 1999 unpub.). Powell (1979) records them from near Otaki, Rahui Rd on the north bank of the Otaki River, 61 m; Te Horo 91-122 m, south of Otaki River.

Habitat: Found under litter in lowland secondary broadleaf forest on swampy peat and alluvial soils. The forest is comprised mainly of mixed broadleaf species, with tangled kiekie (*Freycinetia banksii*) and supplejack (*Ripogonum scandens*) (Meads et al. 1984; Walker 1999 unpub.).

Sign of Presence: Empty shells.

Threats: Almost all of the forest habitat has been cleared for farming. Predation by rats, thrushes, and hedgehogs is putting pressure on the remaining snails. Collection of snails for taxonomic description and shell collections, from an already tiny remaining population, would also have contributed to the decline of this species (Walker 1999 unpub.).

Work Undertaken to Date: 1980: Rat control started (Meads et al. 1984). Bait stations have been replenished usually every 2 months since then (Walker 1999 unpub.). Permanent plot in the main colony searched in 1987, 1990 and 1997. Snail numbers rose initially, but have declined in recent years (Walker 1999 unpub.). In the late 1980s a QEII covenant was placed over several remaining forest remnants. Stock was fenced from one colony and an active kahikatea (*Dacrycarpus*



Permission: Harper Collins Publishers (NZ) Ltd.
 Powell 1979, Plate 62, Figs. 10, 11.

dacrydioides) forest replanting programme undertaken by the private landowner (Walker 1999 unpub.).

Priority Research, Survey, and Monitoring: 1) No survey required (K.Walker pers. comm. 2000).

Management Needs: 1) Look at options such as weed control, which may make it possible for snails to utilise more of the areas under forest at the main colony (Walker 1999 unpub.).

2) Assess the practicality of erecting rodent and hedgehog proof fences around the snail colonies, and eradicating both pests within each fence (Walker 1999 unpub.).

3) If fences are not feasible, then undertake continuous rat and hedgehog control (Walker 1999 unpub.).

Contacts: Kath Walker.

See Plate 4, No. 19.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Powellipbanta traversi traversi* (Powell, 1930)
Common Names: Travers land snail (Meads 1990a)
Synonyms: *Parypbanta traversi*, *P.traversi tararuaensis*, *P.traversi florida*,
P.traversi koputaroa, *P.traversi latizona* (Powell 1979)
M&D Category: B
Conservancy Office: WL
Area Office: Kapiti

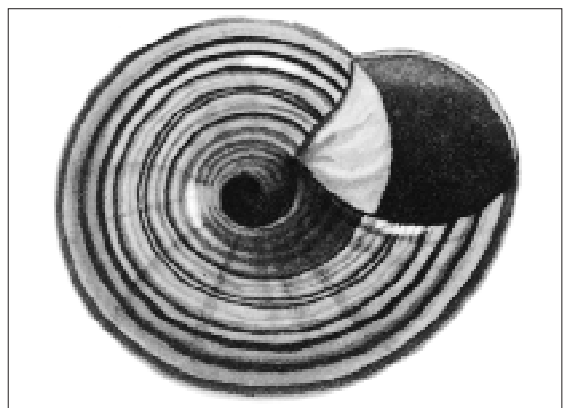
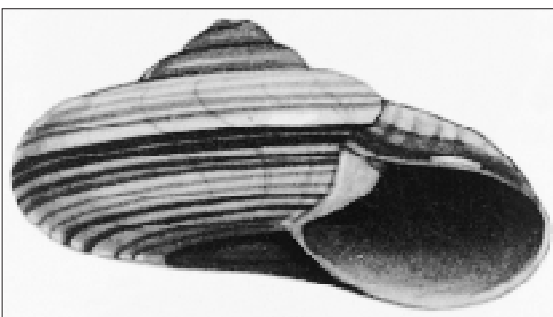
Description: A moderate sized snail, 40 - 54 mm wide, with a yellowish-brown shell. The base is spirally lined or banded in darker brown, and the dorsal surface is mostly devoid of a colour pattern (K. Walker pers. comm. 2000). The parietal callus (the thickened calcareous deposit on the upper part of the inside wall of the aperture) is dull purplish-grey. Four forms occur: 1) *koputaroa* form - shell is almost plain yellowish-olive, slightly tinged with chestnut on the dorsal surface and with a patch of the same colour in and surrounding the umbilicus, spiral colour lines are subobsolete, except for a few dark bands at the periphery; 2) *florida* form - shell dark reddish-brown, closely spirally lined and banded in darker brown on top, with the base almost completely dark brown; 3) *tararuaensis* form - shell predominantly greenish-olive tinged with russet-brown on the top, finely spirally lined in pale brown, but with a few more distinct lines about the periphery; 4) *latizona* form - shell yellowish-olive to old-gold, distantly but strongly spirally banded and lined in dark reddish-brown (Powell 1979).

Shell width: 54 mm

Type Locality: Waiopahu Reserve on the plains near Levin (Powell 1930).

Specimen Holdings: AMNZ.

Distribution: In very localised parts of the Horowhenua Plains between Lake Papaitonga and the Manawatu River (K. Walker pers. comm. 2000). The nominate subspecies is now confined to several small forest remnants near Levin (Meads et al. 1984); fa '*koputaroa*' found in several tiny colonies near Koputaroa (K. Walker pers. comm. 2000); fa '*florida*' found at Kimberley Scenic Reserve, Florida Road Reserve, and the western end of Lake Papaitonga, Levin; fa '*latizona*' Greenaways Bush on the



Permission: Harper Collins Publishers (NZ) Ltd. Powell 1979, Plate 61, Figs. 17, 18.

Arapaepae Range, east of Levin; fa '*tararuaensis*' found only in the northern Tararua Range near Kaihinu (Meads et al. 1984).

Habitat: Occurs in lowland forest dominated by tawa (*Beilschmiedia tawa*), pukatea (*Laurelia novae-zelandiae*), titoki (*Alectryon excelsus*), karaka (*Corynocarpus laevigatus*), kahikatea (*Dacrycarpus dacrydioides*) and rewarewa (*Knightia excelsa*) (Meads et al. 1984; Walker 1996). Powell (1930) recorded the snails from under leaves and masses of decaying ponga (*Cyathea dealbata*) fronds in native bush .

Sign of Presence: Empty shells.

Threats: Predation by rats, and also hedgehogs and thrushes . Trampling and habitat modification by cattle in a few areas. Destruction of forest habitat and conversion to farmland (K. Walker pers. comm. 2000).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Maintain habitat (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Management Needs: 1) Predator control (refer to draft *Powelliphanta* land snail recovery plan (Walker 2000)).

Contacts: Kath Walker.

See Plate 4, No. 20.

Genus: *Rhytida*

Common names: **Rhytid snails**

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Rhytida* "Wairau River"
Common Names: -
Synonyms: -
M&D Category: I

Conservancy Office: NM, CA

Area Office: St Arnaud, North Canterbury

Description: A snail with a yellowish shell, and coarse, irregular growth lines. Some shells having irregular brown radial bands. The mantle pigmentation is dull orange (Efford 1998).

Type Locality: Not described.

Specimen Holdings: -

Distribution: Found in inland Marlborough at Lake Tennyson; Wairau Valley; Six Mile Creek; Hukere Stream, Travers River, Nelson Lakes. Suter's (1913) record of a snail population at Lake Guyon Run is tentatively assigned to this species (Efford 1998).

Habitat: Has been found at night on boulders and logs in red beech (*Nothofagus fusca*) forest (Efford 1998).

Sign of Presence: Empty shells.

Threats: Not known.

Work Undertaken to Date: Survey planned for 1999/2000 (I. Millar pers. comm. 1999).

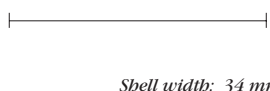
Priority Research, Survey, and Monitoring: 1) Survey known sites and surrounding areas to obtain an estimate of the distribution and abundance of this snail.

Management Needs: -

Contacts: M. Efford.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Rhytida greenwoodi stephenensis* Powell, 1930
Common Names: Greenwood's snail, Greenwood's rhytida (Foord 1990)
Synonyms: *Rhytida stephenensis* (Powell 1979)
M&D Category: I High Priority
Conservancy Office: NM
Area Office: Sounds, Golden Bay

Description: A snail with a large, robust, greenish-olive shell, without an umbilical brown patch, and usually heavily sculptured with oblique ridges (Powell 1979; Efford 1998). The shell is 33 - 34 mm wide, and 19 - 19.5 mm high (Powell 1979). The animal is grey with no mantle pigment (Efford 1998).

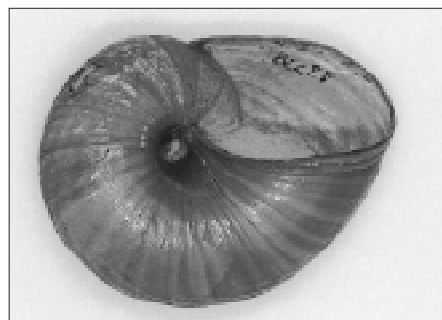


Shell width: 34 mm

Type Locality: Stephens Island, Cook Strait (Powell 1930).

Specimen Holdings: MONZ.

Distribution: Occurs on islands in the Marlborough Sounds and at several mainland sites in eastern Marlborough including, Stephens Island (Efford 1998; Townsend 1998), at Keepers Bush (Gibbs & Allen 1990) and Frogbank Bush (M. Aviss pers. comm. 2000); Glasgow Island; Maud Island (Efford 1998; Townsend 1998); Outer Chetwode Island (Te Kakaho) (Rufaut & Clearwater 1997; Efford 1998); Inner Chetwode Island (Nukuwaiata) (Rufaut & Clearwater 1997); Motu Ngaratiti (= Motungarara [Titi]) Island, Pelorus Sound; Bird Island; Motungarua (Coopers) Island; Irongate Stream, Kaikoura; Waima River; Puhipuhi Stream, Kaikoura; Thorns Creek, Cobb Valley (Efford 1998). Similar sub-Recent shells are known from cave deposits in the Takaka area (Powell 1979). The identification from Thorns Creek is uncertain (M. Efford pers. comm. 2000).



Habitat: Has been collected from under *Polystichum vestitum* (prickly shield fern) (Irongate Stream, Kaikoura), among limestone cobbles under mahoe (*Meliclytus ramiflorus*) (Waima River), under hooked sedge (*Uncinia* spp.) (Puhipuhi Stream, Kaikoura), under flax (*Phormium* spp.) (Pelorus), among rocks near stream (Thorns Creek, Cobb Valley) (Efford 1998).

Sign of Presence: -

Threats: It is likely that rat predation is contributing to a long-term decline of this species on the mainland (Efford 1998).

Work Undertaken to Date: 25-27 January 2000; Thorns Creek surveyed. Twelve live snails and 14 empty shells were collected.

Priority Research, Survey, and Monitoring: 1) Survey the Cobb Valley to obtain more detailed distribution data because the extent of the population at Thorns Creek is unknown (Efford 1998).

2) Determine the impact that rodents are having on mainland populations.

Management Needs: -

Contacts: M. Efford.

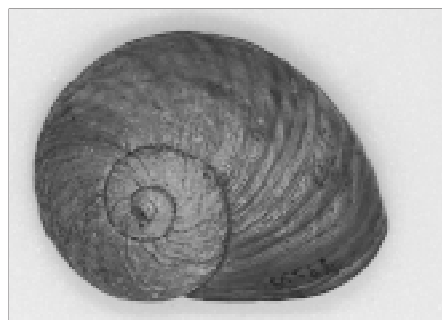


Photo: Andrew Townsend.

See Plate 5, No. 9, No. 10.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Rhytida greenwoodi webbi* Powell, 1949
Common Names: Greenwood's snail, Greenwood's rhytida (Foord 1990)
Synonyms: -
M&D Category: I
Conservancy Office: NM
Area Office: Golden Bay, Motueka



Shell width: 26.5 mm

Description: A snail with a reddish-brown shell, yellowish-brown below, and without an umbilical dark zone. The shell is 23 - 26.5 mm wide, and 12.25 - 13.5 mm high (Powell 1979).

Type Locality: Clifton, Takaka, Nelson (Powell 1949).

Specimen Holdings: AMNZ.

Distribution: Western flank of the northern Pikikiruna Range, including Clifton and Dry River, east Takaka. A thin-shelled form occurs at the Motueka River Gorge, Richmond Range, Nelson (Efford 1998), but identification of this is uncertain (M. Efford pers. comm. 2000).

Habitat: Has been collected from under *Astelia* on limestone outcrops (Powell 1949), under wheki (*Dicksonia fibrosa*) litter (Efford 1998).

Sign of Presence: Empty shells.

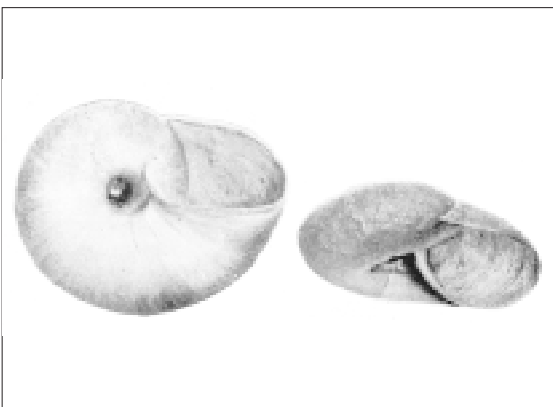
Threats: Not known.

Work Undertaken to Date: Surveys to determine the extent of the population in Golden Bay are ongoing. A recent purchase by the Department of a forest block in Dry River, east Takaka, includes a good population of this species (I. Millar pers. comm. 2000).

Priority Research, Survey, and Monitoring: 1) Survey to obtain an estimate of distribution and abundance, and determine whether this species is of conservation concern.

Management Needs: -

Contacts: M. Efford.



Permission: Auckland Museum.
Powell 1949, Plate 65, Figs. 16, 17.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Rhytida oconnori* Powell, 1946
Common Names: -
Synonyms: *Rhytida badfieldi* (Powell 1946)
M&D Category: I High Priority
Conservancy Office: NM
Area Office: Golden Bay



Shell width: 33 mm

Description: A snail with a delicate, even mid-tan shell, with a mauve sheen inside the aperture (Efford 1998). The shell is 26.3 - 33 mm wide, and 16 - 19 mm high (Powell 1979).

Type Locality: Punipaua Creek, 3.2 km south of Paturau River, subfossil in cave (Powell 1979).

Specimen Holdings: AMNZ.

Distribution: Pikikiruna Range; Abel Tasman National Park north of Canaan, in the upper Wainui River Valley; Awaroa Inlet; Awarua Bay near Separation Point. Subfossils have been found from caves near Paturau and Takaka; Honeycomb Hill Cave, Oparara. This species now occupies only a remnant of its former range, occurring in an area which is doubtful to exceed a 1 km radius (Efford 1998).

Habitat: Has been found in deep leaf litter among boulders in silver beech (*Nothofagus menziesii*) forest, and under crown fern (*Blechnum discolor*) on forest edge (Efford 1998).

Sign of Presence: Empty shells.

Threats: Rat predation.

Work Undertaken to Date: Survey planned for 1999/2000 (I. Millar pers. comm. 1999).



Priority Research, Survey, and Monitoring: 1) Survey sites around Golden Bay area to determine range and abundance.

2) Investigate the impact that rodents are having on this species.

Management Needs: -

Contacts: M. Efford.

Permission: Harper Collins Publishers (NZ) Ltd.
Powell 1979, Plate 64, Figs. 5, 6.

Genus:

Wainuia

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Wainuia* "Kekerengu"
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: NM
Area Office: South Marlborough

Description: A snail with a thin, almost black shell. No colour pattern but the whorls at the apex of the shell often weather to yellow or tan (Efford 1998). Not distinct from *W. urnula nasuta* as used in Efford (1998), and is no more than a population of that subspecies (M. Efford pers. comm. 2000).

Type Locality: Not described.

Specimen Holdings: -

Distribution: Restricted to an area around Kekerengu, South Marlborough.

Habitat: As for *W. urnula nasuta*.

Sign of Presence: Empty shells.

Threats: -

Work Undertaken to Date: Noted as not distinct from *W. urnula nasuta* as used in Efford (1998 p.12.)

Priority Research, Survey, and Monitoring: -

Management Needs: 1) Treat as a population of *Wainuia urnula nasuta*.

Contacts: Murray Efford.

Order: Stylommatophora
Family: Rhytididae
Taxonomic Name: *Wainuia urnula nasuta* Powell, 1946
Common Names: -
Synonyms: -
M&D Category: I High Priority
Conservancy Office: NM
Area Office: Sounds



Shell width: 27.5 mm

Description: A snail with a thin almost black shell. No colour pattern but the whorls at the apex of the shell often weather to yellow or tan (Efford 1998). The shell is 25.2 - 27.5 mm wide, and 16 - 16.8 mm high (Powell 1979).

Type Locality: Mt Maude, D'Urville Island 609 m (Powell 1949).

Specimen Holdings: AMNZ.

Distribution: Mt Maude 609 m (Powell 1949), D'Urville Island; Wharekupenga Bay, Arapawa Island; Port Underwood Saddle; Isolated Hill Bivouac; Keckerengu Stream; Flaxbourne River, near Ward; Ben More; Richmond Range at Mt Richmond, the Top Valley track to Old Man, and the east branch of the Wairoa River; Ferny Gair, between the Awatere and Wairau Rivers 1524 m. This is also the upper altitude limit for the genus. Strong surviving populations exist locally at Port Underwood Saddle east of Picton, on Mt Robertson at Isolated Hill and near Keckerengu (Efford 1998)

Habitat: Found at the type locality surviving on boulder piles. They have also been collected under damp leaf litter in kamahi (*Weinmannia racemosa*) forest; in stable rock piles; under hooked sedge (*Uncinia* spp.); under decaying flax (*Phormium* spp.) leaves, and among rocks in mixed low forest (Efford 1998).

Sign of Presence: Empty shells.

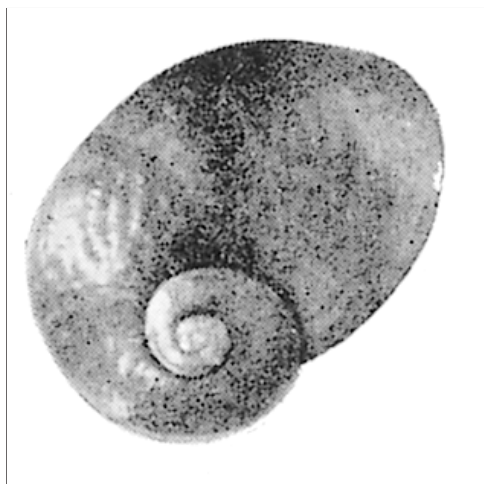
Threats: Feral ungulates (deer, goats, and pigs) are the main threat (B.J. Karl & M.E. Hearfield, pers. comm. cited in Efford 1998). Rats, hedgehogs, possums, mustelids and birds (thrush/blackbird?) are known to prey upon *Wainuia urnula*. Mice do not appear to feed on them (Efford & Bokeloh 1991).

Work Undertaken to Date: Some survey work has been undertaken on Arapawa Island (I. Millar pers. comm. 1999).

Priority Research, Survey, and Monitoring: 1) Survey to determine distribution and abundance because this is essential information for setting of conservation priorities.

Management Needs: 1) Maintain habitat at selected sites.

Contacts: Murray Efford.



Permission: Auckland Museum.
Powell 1946, Plate 9, Fig. 9.

Phylum Arthropoda

(Gr. *arthron*, joint + *pous*, foot)

Common name: Arthropods

Characteristics: Jointed exoskeleton. Segments have jointed pairs of appendages.

Class: Arachnida (Gr. *arachne*, spider)

Common name: Terrestrial chelicerates

Characteristics: Book lungs or tracheae as gas exchange organs.

Order: Araneae (L. *aranea*, spider)

Common name: Spiders

Characteristics: Unsegmented abdomen. Usually eight eyes, sometimes six.
Body divided into two portions, cephalothorax and abdomen.

Order: Araneae
Family: Gradungulidae
Taxonomic Name: *Pianoa isolata* Forster, 1987
Common Names: -
Synonyms: -
M&D Category: A
Conservancy Office: SL
Area Office: Murihiku



Body length: 14 mm

Description: A medium-size, hairy spider, with a chevron pattern on the abdomen. The body is 12 - 14 mm long. The carapace is distinctly longer than wide (Forster et al. 1987). This species is close to *Gradungula sorenseni* but *Pianoa isolata* does not have a median strip on the cephalothorax and abdomen (P. Servid pers. comm. 2000), only occurs in Waikaia area, is lighter in colour, and has a chevron pattern on the abdomen (R & L Forster pers. comm. 1999). There are two claws on the first two pairs of legs, one claw is longer than the other (applies to all gradungulids) (Forster et al. 1987).

Type Locality: Piano Flat, Waikaia Valley (in error for Waikaia Valley), from rotten log on *Nothofagus* forest floor (Forster et al. 1987).

Specimen Holdings: OMNZ.

Distribution: Piano Flat, Waikaia Valley (Forster et al. 1987); Gow Burn; Waikaia Bush; Leithan Bush; Argyle Burn (Edwards 1999). There is also a possible record from Teal Valley, Nelson, which was identified from a single damaged subadult female specimen (Forster et al. 1987) and needs to be confirmed (E. Edwards pers. comm. 1999, I. Millar pers. comm. 1999).

Habitat: Usually found beneath or inside fallen logs which have reached a certain level of decay (Forster et al. 1987; Forster 1993 unpub), predominately beech logs (G. Hall pers. comm. 1999). They are occasionally found under rocks, and apparently juveniles can also be found in leaf litter (E. Edwards pers. comm. 1999). They have no altitude boundary (G. Hall pers. comm. 1999).

Threats: Mice (Forster 1993 unpub.) and possibly moreporks (G. Hall pers. comm. 1999) will prey upon this spider. Recreational usage is damaging the habitat (G. Hall pers. comm. 1999), however, the presence of people may also be allowing regeneration, by forcing deer further back from this area, because it has been noticed that a thicker undergrowth is developing. Fragmentation is still occurring in parts of *P. isolata*'s habitat, and habitat damage from intensive sheep, cattle and deer browse is also occurring. Fire is a potential threat to habitat (E. Edwards pers. comm. 1999).

Work Undertaken to Date: Surveys of Waikaia forest are ongoing, mainly of the known areas.

Priority Research, Survey, and Monitoring 1) Conduct surveys further afield to determine extent of distribution (E. Edwards pers. comm. 1999; G. Hall pers. comm. 1999). Include a survey of the Teal Valley area, Nelson, in an attempt to locate an adult specimen and confirm whether it is *P. isolata* or not.

2) Determine the impact on the population caused by the increase in rodent numbers in mast years (E. Edwards pers. comm. 1999).

3) Monitor the amount of recreational use and changes that may be occurring in the habitat at Piano Flats (G. Hall pers. comm. 1999).

Management Needs: 1) There may be a need to look at rodent control in mast years, when outbreaks occur (E. Edwards pers. comm. 1999).

Contacts: Grace Hall, Eric Edwards.

Order: Araneae
Family: Gradungulidae
Taxonomic Name: *Spelungula cavernicola* Forster, 1987
Common Names: Nelson cave spider (Scott & Emberson 1999)
Synonyms: -
M&D Category: B
Conservancy Office: NM, WC
Area Office: Golden Bay, Buller

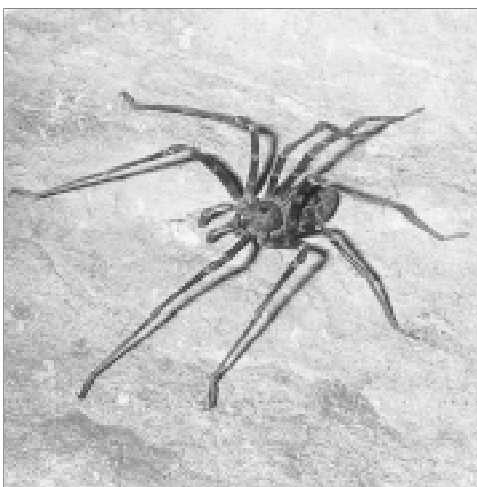
Description: A large, cave-dwelling spider with a legspan of 130 mm. The body is about 24 mm long (McLachlan 1993). There are two claws on the first two pairs of legs, one claw is longer than the other (applies to all gradungulids). The carapace is longer than it is wide (Forster et al. 1987). The tarsi ('feet') on the front two pairs of legs are swollen (R & L Forster pers. comm. 1999).

Type Locality: Wonder Sump Cave, Oparara River Area, north-western Nelson (Forster et al. 1987).

Specimen Holdings: MONZ, LUNZ.

Distribution: Known from three main areas in north west Nelson; Council (Motupipi) Cave, Heaphy River Mouth, and Oparara Valley. Found at the following sites in the Stony Creek Limestone Belt; Crazy Paving Cave, Box Canyon Cave, Stardraft Cave, Tubeway Crawl Cave, Drone Comb Cave, and the Honeycomb Hill System ("Spare Parts" Passage, Worker Passage, Rodney's Additional Passage) all in the Oparara Valley, Fenian Creek, and Splinter Creek (both near Karamea); Wonder Sump Cave; Ida Cave (information from Forster et al. 1987; Johns 1991; McLachlan 1993); Field Cave and Megamania Cave, lower Heaphy Valley (I. Millar pers. comm. 2000). These are all on the West Coast. In Nelson/Marlborough it is known from Water Supply Cave and another unnamed cave in the Pohara Valley, Council Cave near Motupipi and caves in marble near Hamama. A number of potential sites exist but are still to be checked (I. Millar pers. comm. 1999).

Above left : Body length: 24 mm
 Above right: Leg span: 130 mm



Habitat: Lives underground in limestone caves, mainly in complete darkness. Cave wetas are normally associated with their presence (McLachlan 1993). Very rarely this spider will build a brief, irregular web consisting of a few lines, but it is not known to be used to capture prey. They do frequently hang down on a dragline, especially the smaller sized spiders (A. McLachlan pers. comm. 2000). They hunt on the cave walls and roof (Forster et al. 1987), and are a 'sit and wait' predator. They are mainly found within 10-20 m from the cave entrance, although individuals have been found up to 85 m from the entrance in the Honeycomb Hill Cave System. A single spider has been seen just outside a cave entrance (A. McLachlan pers. comm. 2000).

Sign of Presence: Egg sacs hanging down from cave ceiling, suspended by silk threads. Presence of exuviae (cast skins) (I. Millar pers. comm. 1999).

Threats: No major threats known, minor threats may possibly include cave usage and possibly rats (I. Millar pers. comm. 1999). The collection

Permission: University of Otago Press.
 Forster & Forster 1999, p 76, Fig. 5.7 (above).

of *Spelungula* egg sacs by cave visitors is a minor threat also (A. McLachlan pers. comm. 2000)

Work Undertaken to Date: Ongoing surveys to estimate population size (I. Millar pers. comm. 1999).

Priority Research, Survey, and Monitoring: 1) May require more work but this will depend on the results of the current survey (I. Millar pers. comm. 1999).

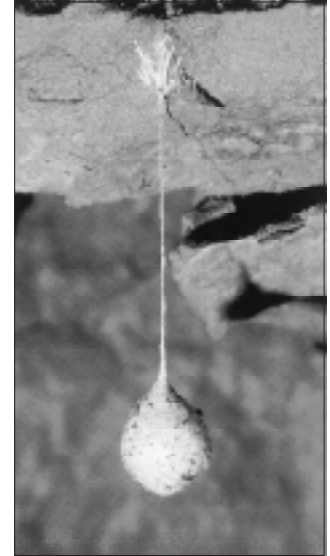
Management Needs: -

Contacts: Ian Millar, Andrew McLachlan.

Right: Leg showing the proclaw and the smaller superior claw.

*Far Right: Typical *Spelungula cavernicola* egg sac, suspended from an 80 mm long stalk attached to the roof of a cave.*

Permission: University of Otago Press. Forster & Forster 1999, p 76, Fig. 5.7 (above right); p77 Fig 5.9a.



Order: Araneae
Family: Holarchaeidae
Taxonomic Name: *Holarchaea* sp.
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: NL
Area Office: Kaitaia

H

Body length: 1.5 mm

Description: A tiny spider with a raised carapace. Its fangs are long, and project outwards (R. Forster pers. comm. 1999).

Type Locality: Not described.

Specimen Holdings: -

Distribution: Cape Reinga is stated in Molloy & Davis (1994), however, not aware of a holarchaeid being present there (R. Forster pers. comm. 1999). There is a species present at the Three Kings Islands, which was originally believed to be a holarchaeid. This has now been described as *Paranapis isolata* in the family Anapidae (G. Hall pers. comm. 2000). The genus *Holarchaea* is widespread, but not common (R. Forster pers. comm. 1999).

Habitat: Leaf litter dweller.

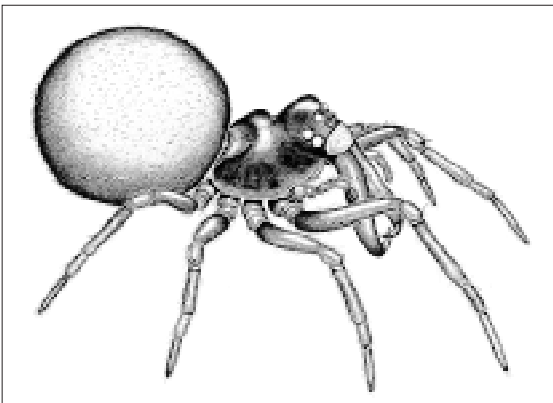
Threats: As long as habitat is okay, this species will be okay (R. Forster pers. comm. 1999).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: -

Management Needs: 1) Recommend that this species is removed from the list based on current available information.

Contacts: Phil Servid.



Holarchaea novaeseelandiae.
Permission: Otago Museum. Forster 1967, Fig. 173.

Order: Opiliones (L. *opilion*, shepherd)

Common name: Harvestmen

Characteristics: Segmented abdomen. Abdomen broadly joined to cephalothorax so body appears as one unit. Legs usually very long and thin.

Order: Opiliones
Family: Acropsopilionidae
Taxonomic Name: *Zeopsopilio neozealandiae* Forster, 1948
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: AU, WG, WL, CA

Area Office: Auckland, Palmerston North, Poneke, Waimakariri

Description: A minute yellowish-brown harvestman, with a yellow eye mound, and a black area around the eyes (Forster 1948). The pedipalp is folded back to rest along the median groove of the eye mound, and the conspicuous white portions of the pedipalp contrast with the black pigment surrounding the eyes (Forster 1948). The eyemound is greatly developed, being as wide as the cephalothoracic carapace. The body is about 1.5 mm long (Forster 1962). The most distinctive feature are the two huge eyes on a mound, which make up half of the body (R. Forster pers. comm. 1999).

H

Body length: 1.5 mm

Type Locality: Johnson's Park, Feilding, under logs and fallen branches. (Forster 1948)

Specimen Holdings: NZAC, Tube 2/57

Distribution: Johnson's Park, Feilding; Homer Forks; Lower Hollyford Valley; Mount Algidus, Rakaia Gorge; Peel Forest; Titirangi; Wellington (Forster 1948).

Habitat: Leafmould dwellers (Forster 1962). They have also been found under stones, logs and fallen branches, and in moss and lichen (Forster 1948).

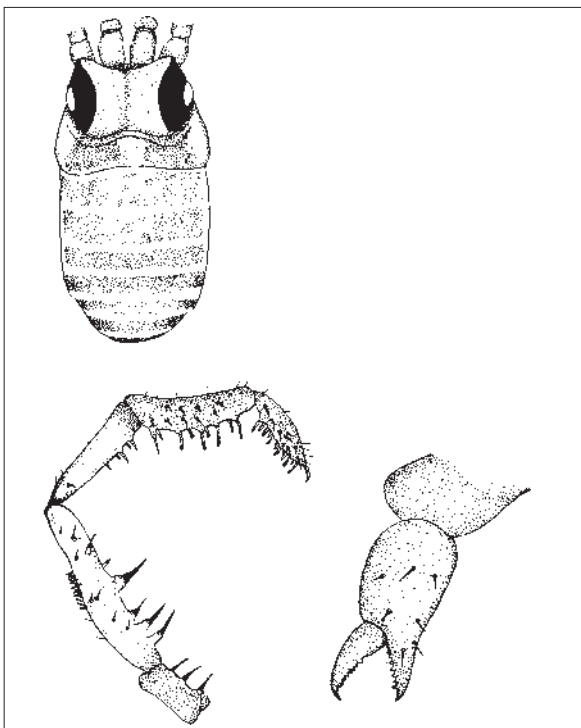
Threats: Not known.

Work Undertaken to Date: Nothing done since R Forster's work in 1947 (R. Forster pers. comm. 1999).

Priority Research, Survey, and Monitoring: 1) The harvestman group has not been revised, this needs to be done to determine if threatened (R. Forster pers. comm. 1999).

Management Needs: -

Contacts: Phil Servid.



Top: Dorsal view of body

Left: Outer view of pedipalp

Right: Chelicera

Permission: SIR Publishing, Forster 1948, Plate 10, Figs. 1, 3, 4.

Class: Insecta (L. *insectus*, segmented)

Common name: Insects

Characteristics: Body composed of head, thorax and abdomen. Thorax bears three pairs of legs and usually two pairs of wings.

Order: Diplura (Gr. *diploos*, double + *oura*, tail)

Common name: Diplurans

Characteristics: Small, blind, soil inhabiting arthropods with antennae. Some appear superficially like earwigs.

Order: Diplura
Family: Japygidae
Taxonomic Name: *Burmjapyx* sp.
Common Names: -
Synonyms: -
M&D Category: I

Conservancy Office: NM

Area Office: Golden Bay

Description: A pale whitish yellow dipluran, approximately 18 mm long (P. Johns pers. comm. 1999). These insects have no eyes, and bear a very superficial resemblance to an earwig.

Type Locality: Not described.

Specimen Holdings: -

Distribution: Council Cave, Takaka, Golden Bay (P. Johns pers. comm. 1999). Possibly also in Water Supply Cave, Pohara (I. Millar pers. comm. 1999).

Habitat: Cave mud floors with organic debris present (I. Millar pers. comm. 1999).

Threats: Not known.

Work Undertaken to Date: Seen on a regular basis at Council Cave. An immature specimen in Water Supply Cave, Pohara Valley, may have been the same species, but no taxonomic description is available to check this (I. Millar pers. comm. 1999).

Priority Research, Survey, and Monitoring: 1) Urgent need to be able to discriminate this species taxonomically. Other caves to be checked for presence/absence (I. Millar pers. comm. 1999).

Management Needs: 1) Maintain habitat at Council Cave.

Contacts: Ian Millar.



Body length: 18 mm

Order: Blattodea

Common name: Cockroaches, kokoroihi

Blattodea

Cockroaches

Order: Blattodea
Family: Blattidae
Taxonomic Name: *Maoriblatia rufoterminata* (Brunner von Wattenwyl, 1865)
Common Names: Black cockroach (kekerengu) (Scott & Emberson 1999)
Synonyms: *Polyzosteria rufoterminata* (in error), *Platyzosteria rufoterminata*, *P. brunni* (as in McKittrick 1964, not Alfken 1901), *Maoriblatti brunni* (Wise 1977), *Melanozosteria brunni* (as in McKittrick 1964, not Alfken 1901) (Johns 1966)

M&D Category: I

Conservancy Office: NL, AU, WK

Area Office: Kerikeri, Warkworth, Auckland, Great Barrier, Hauraki

Description: A dark brown to black cockroach, with the legs and thinner parts of the integument (cuticle and epidermis) red-brown. The male body is 15 mm long, the female 18 mm long. This species is very similar to *Platyzosteria novaeseelandiae*, but is smaller in size, and after the first 9 - 11 antennal segments the colour changes from brown to yellow-brown (Johns 1966).



Body length: 15 mm

Type Locality: New Zealand (Johns 1966).

Specimen Holdings: AMNZ, CMNZ, MONZ, NZAC, NHMV.

Distribution: Confined to northern parts of the North Island (Johns 1966), including Waipoua Kauri Forest; Piha; Auckland; Pollok; Little Barrier Island; Great Barrier Island; Hunua Ranges (Johns 1966); Coromandel Peninsula; North Auckland Peninsula (Johns 1974).

Habitat: Appears to have an association with kauri (*Agathis australis*) forest, or scrub following milling of such forest (Johns 1966). It is found under the bark of trees and in logs, and probably prefers scrubby forest with a lot of kanuka (*Kunzea ericoides*) and manuka (*Leptospermum scoparium*) present (P. Johns pers. comm. 1999).

Threats: Patchy distribution, but probably secure unless a decline in habitat occurs (P. Johns pers. comm. 1999).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) None required.

Management Needs: 1) None required.

Contacts: Peter Johns.



Photo: Andrew Townsend.

Order: Coleoptera (*koleos*, cover + *pteron*, wing)

Common name: Beetles

Family: Carabidae

Common name: Ground beetles, carabids

BEEPLES

Carabidae

Ground beetles

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Brullea antarctica* Castelnau, 1867
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: NL,AU,WK,WG,WL,NM,WC,?CA

Area Office: Kaitaia,Warkworth,Waikato,Whanganui,Palmerston North,New Plymouth, Stratford, Kapiti, Poneke, Golden Bay, Sounds, Motueka, Buller, Greymouth, Hokitika, Franz Josef, South Westland, Waimakariri.

Description: A large, stout bodied, flightless ground beetle. The body is dark-brown to black, and the legs are reddish-brown, short, stout, and adapted for digging. The body is 21 - 26 mm long (information from Hudson 1934; Britton 1949; Harris 1978).

Type Locality: Auckland (Broun 1880).

Specimen Holdings: GMI, CMNZ, OMNZ, MONZ, NZAC, LUNZ.

Distribution: This species is believed to be virtually everywhere along the seashore (A. Laroche pers. comm. 1999). Specimens have been collected from Te Pahi (R. Emberson pers. comm. 1999); North Herekino, Northland (pers. obs.); Kawhia, Northland, Paturau; Te Werahi Beach, Northland (J. I. Townsend pers. comm. 1999) Hokitika (CMNZ); Greymouth; north Karamea Beach, Westland; Springfield, Canterbury*; Nelson; Westport; D'Urville Island; north Wairoa (Britton 1949); Paekakariki, Wanganui; Auckland (Hudson 1934); Martins Bay, Harihari Beach (P. Johns pers. comm. 1999); Castlecliff, Wanganui; (Harris 1978); Kaupokonui Beach, Manaia, Taranaki (Harris 1980); Wainuiomata River mouth (R. Hornabrook pers. comm. 2000); Waikanae Beach, Wellington (1995); Titahi Bay; Waitarere Beach, Levin; Wereroa, Levin; Neils Beach, Arawhata; Hokio Bay; Westport; Te Maika, Kawhia; Pouto Desert, North Kaipara, North Auckland (MONZ); Otaki Beach (Bull 1959); Muriwai Beach, Auckland; Port Waikato (1984); New Plymouth Beach, Taranaki; Foxton Beach; Okarito, Westland; Ship Creek Beach, north of Haast (NZAC); Farewell Spit (I. Millar pers. comm. 2000). * Check this record.

Habitat: This is a sand burrowing species found above the shoreline of sandy beaches (Harris 1978). Hudson (1934) states that this species is found in sandy places under logs or stones on the sea-beach above the high-water mark (Britton 1949).

Threats: Some populations may be in trouble at modified sites on North Island beaches (P. Johns pers. comm. 1999). Historically, katipo have been known to prey upon *Brullea antarctica* (Bull 1948), and where katipo are present this will occur. Habitat modification, through the removal of driftwood from beaches, is a potential threat but not currently considered to be a limiting factor (J. I. Townsend pers. comm. 1999).



Body length: 26 mm



Top: Adult
 Bottom: Front leg showing broad protibia adapted for digging.
 Photo: Andrew Townsend.

Work Undertaken to Date: -

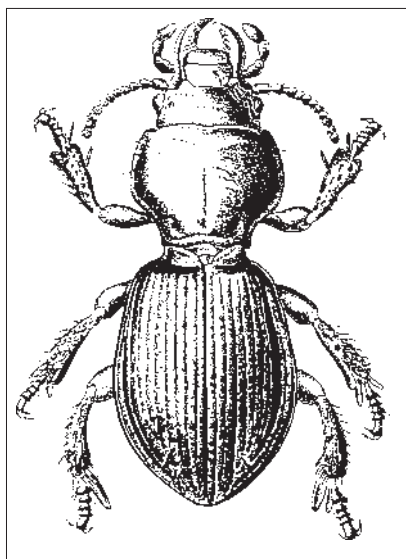
Priority Research, Survey, and Monitoring: 1) Investigate the impact that the introduced spider *Steatoda capensis* is having on this species.

2) Investigate the impact of introduced mammalian predators on this species.

3) The Springfield record from Hudson (1949) should be checked because it does not seem to fit with the habitat requirements.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, John Nunn, Ian Townsend.



*Drawing: Tony Harris
Permission: Landcare Research (NZ) Ltd.*

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Holcaspis falcis* Butcher, 1984
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: CA



Body length: 10 mm

Area Office: Twizel
Description: A flightless, black ground beetle, 10 - 11 mm long (Butcher 1984).

Type Locality: Mt John, Tekapo, Canterbury, under stones (Butcher 1984).

Specimen Holdings: NZAC.

Distribution: Concentrated around the lakes of the Mackenzie Basin, and the hills to the south, i.e. between 44°S and 45°S, including Mt John, Tekapo; Lake Pukaki c. 915-1220 m (NZAC); c. 29 km south of Twizel; Hydro Lake, Benmore (Butcher 1984); Quail Burn, Omarama (J.I. Townsend pers. comm. 2000); South Canterbury, in the foothills along the eastern side (A. Laroche pers. comm. 1999).

Habitat: A nocturnal, bush species (A. Laroche pers. comm. 1999).

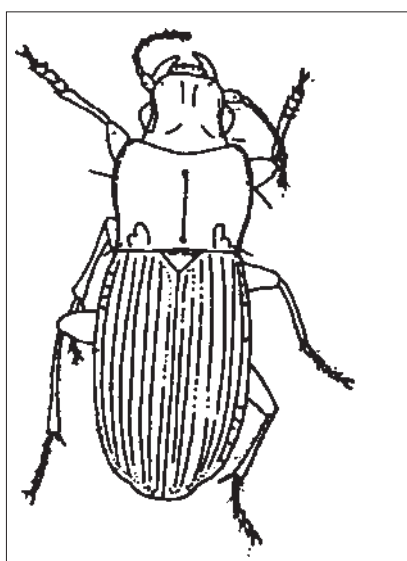
Threats: Not known.

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Survey to obtain an estimate of distribution and abundance of this species, and whether it is in any need of conservation action.

Management Needs: -

Contacts: Mike Butcher, Andre Laroche, Ian Townsend.



Permission: SIR Publishing, Butcher
1984, p 68, Fig 38.



Photo: Andrew Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Maoripamborus fairburni* Brookes, 1944
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: NL
Area Office: Kerikeri



Body length: 24 mm

Description: A large, black, flightless ground beetle. The body is 20 - 24 mm long, with slightly iridescent upper body sides (Klimaszewski & Watt 1997). The head is narrow and elongate (Harris 1992), projecting in front of the protruding hemispherical eyes (Klimaszewski & Watt 1997).

Type Locality: Waimatenui.

Specimen Holdings: NZAC

Distribution: Has been collected from Waipoua Forest², near Russell, Ngaiotonga and Waimatenui¹; Houto Hill, Houto, Northland (1978) (A. Harris pers. comm. 2000). Has recently been found at Trounson (A. Booth pers. comm. 2000); in the Hunuas, Auckland, and is believed to be abundant in Northland (A. Larochelle pers. comm. 1999). Numerous fossils are present in the central North Island caves¹.

²Harris 1992; ²Klimaszewski & Watt 1997.

Habitat: Historically in kauri (*Agathis australis*) forest, but now found in all kinds of forest including pine plantations (A. Larochelle pers. comm. 1999), having been found under pine logs, often burrowing into the underside (J. I. Townsend pers. comm. 1999). It is believed to be a snail predator (Harris 1992; Klimaszewski & Watt 1997), and has been observed eating a small *Rhytida* sp. snail. Four recently dead specimens were found in a forest margin on a clay bank. They were beside the burrows of a *Neocicindela* (tiger beetle) species, and all had their heads broken off (Harris 1992).

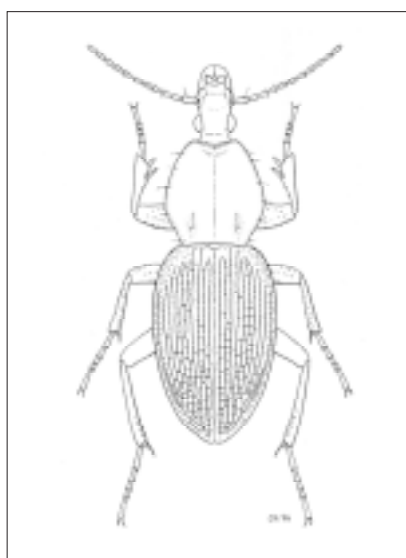
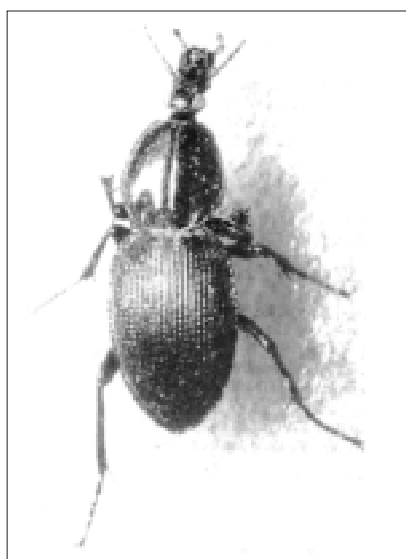
Threats: Rodent predation is a possible threat. Reduction of kauri forest habitat may not be a major concern if other forest types are equally as suitable. Decline in prey species could be a major threat, depending on exactly what its prey is. If it is a predator of large land snails, then it is in trouble, if it predate a range of invertebrates, then there may be no need for concern (R. Emberson pers. comm. 1999).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Determine prey species. If it is a generalist predator then it is likely that this species is not of conservation concern.

Management Needs: -

Contacts: Andre Larochelle, Ian Townsend.



Top: Permission: Entomological Society of New Zealand. Harris 1992, p 42.

Bottom: Permission: Manaaki Whenua Press. Klimaszewski & Watt 1997, p128, Fig 103.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Maoripamborus* sp.
Common Names: -
Synonyms: -
M&D Category: I

Conservancy Office: WK

Area Office: Maniapoto

Description: A flightless, black, ground beetle, with a narrow elongated head. May be the same species as *Maoripamborus fairburni*.

Type Locality: Not described.

Specimen Holdings: Private collection.

Distribution: Awakino River Valley (S.Thorpe pers. comm. 2000).

Habitat: Under and within old fallen pongas (*Cyathea dealbata*) (J.I.Townsend pers. comm. 2000).

Threats: Not known.

Work Undertaken to Date: Searched for in 1999 without success.

Priority Research, Survey, and Monitoring: 1) Survey suitable areas in the Awakino region using pitfall traps, in an attempt to locate this species. If located, work needs to be done to determine whether this is a different species to *Maoripamborus fairburni* (J.I.Townsend pers. comm. 1999).

Management Needs: -

Contacts: Ian Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema allani* Fairburn, 1945
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: NM, CA, WC

Area Office: St Arnaud, Waimakariri, Buller, Greymouth, South Westland

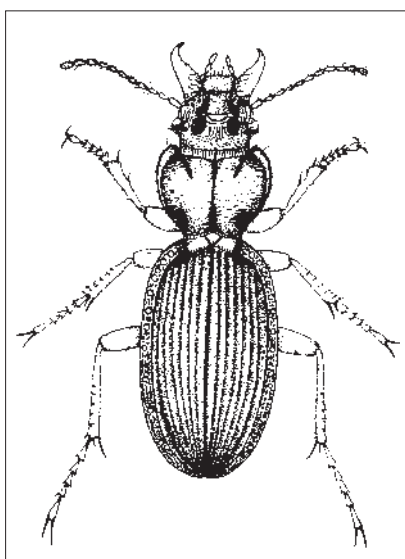
Description: A large, bronze-black, flightless ground beetle. The elytra (wing cases) are dark chocolate-brown, and rather dull (Fairburn 1945). The body is 32 - 35 mm long (Britton 1949) and 10.5 mm wide (Fairburn 1945).

Type Locality: Valley between Mts. Misery and Horrible 792 m (Britton 1949).

Specimen Holdings: CMNZ, NHML, MONZ, NZAC.

Distribution: Found in the northern ranges of the Main Divide (J. I. Townsend pers. comm. 1999). Originally described from a beech-clad valley between Mt Horrible and Mt Misery, near Cass, Canterbury^{6,7}, it has also been found at Pylon Gully near Cass²; Arthurs Pass National Park^{2,5} at Mt Binser⁵, Andrews River Area⁵, Andrews Valley², Hallelujah Flat^{2,5}, near Trust Hut² in the Poulter Valley^{2,5}, and 800 m downstream from Trust Hut, Poulter River⁵; Hurunui Valley^{2,5}; Lewis Pass^{2,3,5,6} (914 m) down the east side³ and at Wilberforce Valley²; Bobs Cove, Queenstown; Lake Sumner, Nelson Lakes (P. Johns pers. comm. 1999); St Arnaud, Nelson Lakes (R. Emberson pers. comm. 1999); Mt Cedric, Nelson^{1,6} 1371 m⁶; Cass⁴; Nelson Lakes National Park Summit 1371 m⁴; Matoura Range⁵; Bealey River; Ada Pass 975 m, Nelson; Baldy Ridge, 1219 m, Glenroy, Murchison; Haast Pass; Travers Valley 1310 m, Lake Rotoiti, Nelson; Craigieburn Range 1219 m; Upper Travers Valley; Lake Frazer 30 m; Knobs Flat, Eglington Valley⁶; Travers Valley & Matakitaki, Nelson Lakes National Park (I. Millar pers. comm. 2000).

Body length: 35 mm



Permission: SIR Publishing, Fairburn 1945, Plate 59.



Photo: Andrew Townsend.

¹Britton 1949; ²Johns 1980; ³Townsend 1997; ⁴MONZ; ⁵CMNZ; ⁶NZAC; ⁷Fairburn 1945.

Habitat: Found in beech forests and shrublands (A. Larochelle pers. comm. 1999). Within Arthurs Pass National Park and to the north, the species is generally associated with, but not restricted to, red beech (*Nothofagus fusca*) and silver beech (*N. menziesii*) forest. The southern populations (Pylon Gully and Wilberforce Valley) are within pure stands of mountain beech (*Nothofagus solandri* var. *cliffortioides*) (Johns 1980). Usually found under logs at the

upper bush line above 900 m (J. I. Townsend pers. comm. 1999), but at Arthurs Pass National Park they have been found down quite low in the valley floor, between 340 m and 700 m (P. Johns pers. comm. 1999). Have been collected from beech scrub, leaf litter, and under logs (NZAC).

Threats: Covers a wide distribution, and not under any immediate threat (R. Emberson pers. comm. 1999; A. Larochelle pers. comm. 1999; J. I. Townsend pers. comm. 1999)

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: -

Management Needs: 1) Recommend that this species is removed from the list based on current available information.

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema angustulum* Broun, 1914
Common Names: -
Synonyms: -
M&D Category: I

Conservancy Office: TT, WG, NM

Area Office: Ruapehu, Stratford, Motueka

Description: A small bodied, flightless, black ground beetle (Hudson 1934), 20 mm long by 6 mm wide (Broun 1910).

Type Locality: Nelson: Mount Arthur, 1219 m (Britton 1949).

Specimen Holdings: NHML, NZAC.

Distribution: Nelson, Kahurangi National Park (J.I. Townsend pers. comm. 1999); Mt Egmont* c. 915 m; Waimarino* c. 850 m; Mount Arthur Tableland c. 1280 m; (Hudson 1934) Mount Arthur c. 1219 m (Britton 1949); Mt Arthur c. 1370 m; Balloon Hut; Takaka Hill c. 610 m; Mt Peel c. 1219 m; (NZAC). *The records from Mt Egmont and Waimarino are probably incorrect identifications.

Habitat: Inhabits high country beech forest, shrubland, and grassland (A. Larochelle pers. comm. 1999), and has been found mainly under logs (J. I. Townsend pers. comm. 1999).

Threats: All known sites are on protected land, no imminent threats (J.I. Townsend pers. comm. 1999).

Work Undertaken to Date: Very few specimens have ever been collected (J. I. Townsend pers. comm. 1999).

Priority Research, Survey, and Monitoring: 1) Taxonomic work is required because species boundaries of this group are not distinct (R. Emberson pers. comm. 1999).

2) Need to verify whether the records from Mt Egmont and Waimarino are correct.

3) Continue to survey the Mt Arthur region whenever in that area (I. Millar pers. comm. 1999).

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.



Body length: 20 mm



Permission: SIR Publishing, Britton 1949,
Plate 75, Fig. 110.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema atrox* Britton, 1949
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: AU, BP, EC/HB
Area Office: Great Barrier, Tauranga, Hawke's Bay

Description: A flightless, black ground beetle, 21 mm long (Britton 1949).

Type Locality: Auckland:Tauranga (Britton 1949).

Specimen Holdings: NZAC, MONZ (Watt 1979b).

Distribution: Tauranga County (single specimen), Lower Kaimai (Watt 1979b). Possibly present around Rotorua (J.I. Townsend pers. comm. 1999). Possible specimens from Motutaiko Island, Lake Taupo; Taupo District; Ruapuka, Great Barrier Island; Little Bush, Puketitiri, Hawkes Bay (MONZ).

Habitat: Found mainly under logs (J.I. Townsend pers. comm. 1999). Watt (1979b) stated that they had been found under a pile of fence posts and under large fragments of rotten pine log, on light well-drained soil.

Threats: Not known.

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Taxonomy needs clarification, as this is a difficult species to identify. There is some doubt over Britton's description, and once further research is undertaken into its taxonomy it may be synonymised (J.I. Townsend pers. comm. 1999) with *M. occipitale* (A. Laroche pers. comm. 1999).

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Laroche, Ian Townsend.



Body length: 21 mm



Photo: Andrew Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema brittoni* Townsend, 1965
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: CA
Area Office: Raukapuka

Description: A large, uniformly black, flightless ground beetle. The body is 22 - 23 mm long (Townsend 1965).

Type Locality: Type specimen labelled Hanmer, believed to be mislabelled (J.I. Townsend pers. comm. 1999).

Specimen Holdings: NZAC.

Distribution: Found around the South Canterbury foothills (R. Emberson pers. comm. 1999), in the Geraldine-Fairlie area (Johns et.al. 1980) and Timaru (Howe 1998). Specimens have been collected from Mackenzie Pass 914-1219 m; Hanmer; and near Kakahu Hill, Geraldine (Townsend 1965).

Habitat: Appears to favour scrubby open areas in the countryside (Howe 1998), such as scree and stream bed habitats (A. Laroche pers. comm. 1999). Has also been found in gardens (Howe 1998), and in bushy gullies in South Canterbury limestone country (R. Emberson pers. comm. 2000). It usually shelters under logs (J.I. Townsend pers. comm. 1999).

Threats: Believed to be present in reasonable numbers (Howe 1998). Habitat destruction is a potential concern (P. Johns pers. comm. 1999).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Improve knowledge of distribution through (informed) incidental survey (E. Kennedy pers. comm. 2000).

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Laroche, Ian Townsend.

Body length: 23 mm



Photo: Andrew Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema chiltoni* Broun, 1917
Common Names: Giant ground beetle
Synonyms: -
M&D Category: C

Conservancy Office: OT, SL

Area Office: Central Otago, Wakatipu, Murihiku, Te Anau

Description: A large, flightless ground beetle. The body is black, with reddish stripes on the elytra (wing cases) (Foord 1990). The body is 36 - 38 mm long and 10.5 mm wide (at the elytra) (Britton 1949).

Type Locality: Mt Dick, south end of Lake Wakatipu (Britton 1949).

Specimen Holdings: NHML, CMNZ, MONZ, NZAC.

Distribution: Montane to alpine areas east and south of Wakatipu⁶ in the Eyre and Nevis Mountains^{1,3}. Has been found at Mt Dick^{2,7} near Kingston, on the south western side of Lake Wakatipu², and at Cainard Stn, 1524 m⁷; Carrick Range², south-west of Bannockburn, 880-1300 m^{4,5}, and at Watts Rock⁷; Hector Mountains² on the Nevis Valley side, 900-1360 m; Nokomai Range to the north-east of Garston, Blackmore Recommended Area for Protection (RAP) at about 900 m; Irthing Stream to the north of Five Rivers in the Eyre Mountains, at about 600 m; Bold Peak, Humboldt Mountains west of Kinloch^{4,5}; Gorge Burn, west of Jane Peak; Nevis Saddle; The Remarkables²; Mt B, Eyre Mt, 609 m; Elytra from Nevis, 883 m⁷; south end of Takitimu Range (J.I. Townsend pers. comm. 1999); Pig Creek, Eyre Mountains; Allen Creek; Acton Steam Catchment in Eyre Forest; Pig Creek in lower Borland Burn. Remains have been found at Mt Difficulty (E. Edwards pers. comm. 1999). The specimens labelled Mt Dick may have been collected from Allen Creek behind Mt Dick (B. McKinlay pers. comm. 1999). The population at Watts Rock is now depleted (R. Emberson pers. comm. 2000). The distribution is relatively large but patchy.

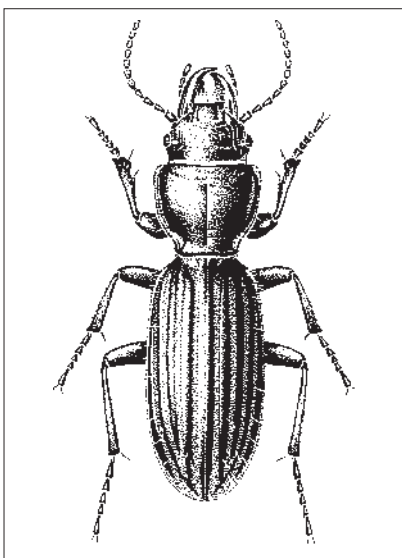
¹Britton 1949; ²Mark et al. 1989; ³Sherley 1990; ⁴Barratt 1993; ⁵Barratt 1994a; ⁶Patrick 1994f; ⁷NZAC.

Habitat: Most often found below 1100 m, although the range in which specimens have been discovered is 606-1524 m. Generally populations have been found in tussock grassland, although beech forest has also been shown to support a healthy population of this species (Barratt 1993). It was originally found under beech logs in forest, and it is likely that lowland forest is the true habitat (J.I. Townsend pers. comm. 1999), occurring both in the forest (A. Laroche pers. comm. 1999), and at the lower altitude tussock/beech margin (B. Barratt pers. comm. 1999).

Threats: Habitat modification through pastoral development, grazing and burning (Barratt 1993) is the major threat.

Work Undertaken to Date: Surveys conducted in 1992, 93, & 94 (B. McKinlay pers. comm. 2000). An assessment for conservation was done in 1993 (Barratt 1993).

Body length: 38 mm



Permission: Manaaki Whenua Press.

Priority Research, Survey, and Monitoring: 1) Survey the Nokomai Range to obtain an estimate of the population status in this area.

2) Establish current distribution and population status.

3) Determine habitat requirements (Barratt 1993).

Management Needs: 1) Maintain habitat at selected sites.

Contacts: Barbara Barratt, Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.

Order: Coleoptera

Family: Carabidae

Taxonomic Name: *Mecodema costellum* "spelles"

Common Names: -

Synonyms: -

M&D Category: X

Conservancy Office: NM

Area Office: Golden Bay

Description: Largest of the *Mecodema* species, but has only been found as remnant bits (J.I.Townsend pers. comm. 1999).

Type Locality: Not described.

Specimen Holdings: -

Distribution: Paturau caves, northwest Nelson (J.I.Townsend pers. comm. 1999).

Habitat: Has only ever been found as remnants in caves (J.I.Townsend pers. comm. 1999).

Threats: Probably extinct.

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Survey suitable sites around Paturau limestones in a final attempt to locate this species. Likely to be extinct, but until a series of specific searches have been conducted we can not state this with any confidence.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochele, Ian Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema costellum costellum* Broun, 1903
Common Names: Stephens Island ground beetle (Scott & Emberson 1999), Stephens Island carabid
Synonyms: -
M&D Category: A
Conservancy Office: NM
Area Office: Sounds

Description: A large, flightless ground beetle. The body is 30 - 39 mm long (Tennyson 1998; Townsend 1998), and 9.5 - 11.5 mm wide (Townsend 1965).

Type Locality: Stephens Island (Britton 1949).

Specimen Holdings: NZAC, CMNZ.

Distribution: Restricted to Stephens Island (Townsend 1965; Tennyson 1998) at Keepers Bush, near the Ruston Bush fenceline (Gibbs & Allen 1990), and near the Frogbank (I. Millar pers. comm. 2000). Specimens have been collected from the bush behind the lighthouse; Winch Bush (CMNZ); No 1 keepers house (1981); and remnant forest (1981) (NZAC).

Habitat: Found under logs and stones (Gibbs & Allen 1990), generally ngaio (*Myoporum laetum*) logs which are rotting on the ground (J.I. Townsend pers. comm. 1999). Has been collected from remnant forest, and under dead logs and tin roofing (NZAC).

Threats: Habitat is disappearing and this species is now less common than in earlier days. Large ngaio logs are their main source of refuge (J.I. Townsend pers. comm. 1999).

Work Undertaken to Date: Substitute logs (fence posts) being left as artificial refugia. This is ongoing (I. Millar pers. comm. 1999) and appears successful. A search in 1999 located 16 specimens over a 4 day period (B. Brown pers. comm. 2000).

Priority Research, Survey, and Monitoring: 1) Establish a monitoring programme to check the effectiveness of substitute logs (I. Millar pers. comm. 1999).

Management Needs: 1) Continue the practice of substitute logs (fence posts) being left as artificial refugia.

Contacts: Mike Aviss, Rowan Emberson, Peter Johns, Andre Laroche, Ian Millar, Alan Tennyson, Ian Townsend.



Body length: 39 mm



Permission: SIR Publishing.
 Britton 1949, Plate 68, Fig. 85.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema costellum lewisi* Broun, 1908
Common Names: -
Synonyms: -
M&D Category: I

Conservancy Office: NM, CA

Area Office: South Marlborough, Waimakariri

Description: A flightless ground beetle, usually with black elytra (wing cases), but sometimes tinged reddish-brown (Townsend 1965).

Type Locality: Broken River, Mt White Station, Canterbury (Townsend 1965).

Specimen Holdings: CMNZ, NZAC.

Distribution: Broken River, Canterbury; near the junction of the Harper and Avoca Rivers; the Poulter River area; forest near the road to Mt White Station, Cass; Upper Hodder River, Inland Kaikoura (Townsend 1965); Five Mile Creek, Avon Valley, Marlborough (Townsend 1997b); Andrews River, Arthurs Pass; Petes Stream Hut, Poulter River, Arthurs Pass National Park (CMNZ); Upper Hodder Valley 1371 m (NZAC). Historically present in North Canterbury (Worthy & Holdaway 1996).

Habitat: Lowland, montane, and subalpine, in dry beech forests and shrublands (A. Laroche pers. comm. 1999). A burrower, with the opening usually near the edge of a log or in a space under the log (Johns 1980).

Threats: Predation by mammals (R. Emberson pers. comm. 1999).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Survey to obtain an estimate of distribution and abundance, and determine whether this species is of conservation concern.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Laroche, Ian Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema costellum obesum* Townsend, 1965
Common Names: -
Synonyms: -
M&D Category: I (High Priority)

Conservancy Office: NM

Area Office: Golden Bay, Motueka, South Marlborough, St Arnaud

Description: A flightless ground beetle, with a shiny black head, thorax and legs. The elytra (wing cases) are black or dull brownish-black. The body is 34 - 42 mm long and 11.5 - 13.5 mm wide (Townsend 1965).

Type Locality: Canaan, Takaka Hill, Nelson, 762 m (Townsend 1965).

Specimen Holdings: NZAC, CMNZ.

Distribution: Found in the Nelson region at Canaan; Red Hill; Maitland Creek (Townsend 1997b); Rough Creek, Top House; head Maitlands Creek, Red Hills, Wairau Valley; Lake Rotoiti, Nelson (Townsend 1965); Takaka Hill 975 m; track to Harwoods Hole, Takaka Hill 762 m; Red Hill, 609 m (NZAC); Canaan Rd, Takaka (S. Thorpe pers. comm. 2000).

Habitat: Generally under old, large, beech logs (J.I. Townsend pers. comm. 1999).

Threats: Not known, possibly habitat destruction through logging. This species is apparently becoming scarcer, possibly being displaced by another carabid beetle (*Plocamostethus planiusculus*), because these are apparently occurring in greater numbers at the same location as *M. costellum obesum*. This is based purely on casual observation (J.I. Townsend pers. comm. 1999).

Work Undertaken to Date: Seen in 1973, not located in later searches until a recent survey in 2000 at Canaan. Two sites were searched, a strong population was found at one site, but none at the other (information from I. Millar pers. comm. 2000; J.I. Townsend pers. comm. 1999).

Priority Research, Survey, and Monitoring: 1) Determine whether *Plocamostethus planiusculus* is having an effect on the *M. costellum obesum* populations (J.I. Townsend pers. comm. 1999).

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.



Body length: 42 mm

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema curvidens* (Broun, 1915)
Common Names: -
Synonyms: *Metaglymma curvidens* (Britton 1949).
M&D Category: I



Body length: 20 mm

Conservancy Office: EC/HB

Area Office: Opotiki

Description: A black flightless ground beetle. The body is 20 mm long (Britton 1949).

Type Locality: Opotiki (Britton 1949).

Specimen Holdings: NHML.

Distribution: Opotiki, at the edge of the volcanic plateau, east of Rotorua (J.I. Townsend pers. comm. 1999).

Habitat: Probably forest (J.I. Townsend pers. comm. 1999).

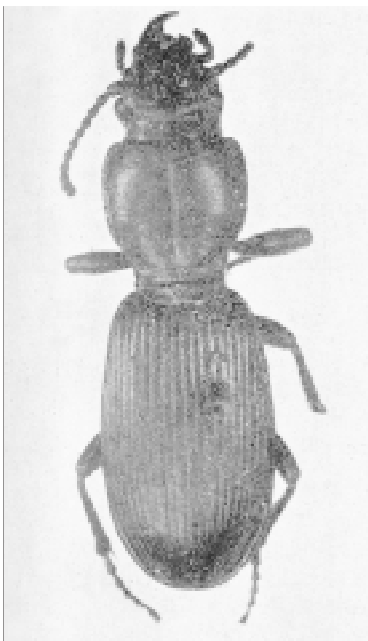
Threats: Not known.

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) The taxonomy of this species needs to be checked to determine if it is definitely a separate species (R. Emberson pers. comm. 1999; J.I. Townsend pers. comm. 1999).

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.



*Permission: SIR Publishing, Britton 1949,
Plate 77, Fig. 120.*

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema dunense* Townsend, 1965
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: NM
Area Office: Motueka



Body length: 19.5 mm

Description: A medium sized flightless ground beetle with a black body, and dark reddish-brown or black antennae (Macfarlane et al. 1992). The body is 18 - 19.5 mm long, and 6.5 mm wide (Townsend 1965).

Type Locality: Dun Mountain (Townsend 1997).

Specimen Holdings: NZAC.

Distribution: Known from the Wooded Peak mineral belt, Nelson; Dun Mt (Townsend 1965); Wooded Peak (Townsend 1965, 1997b); Mt Richmond, 1524 m; Dun Mt, 1097 m; track beyond Windy Point, Dun Mt (NZAC). This species is poorly known (A. Larochelle pers. comm. 1999).

Habitat: Occurs in upper beech forest (Macfarlane 1992) at the upper bush edge around Dun Mt (J.I. Townsend pers. comm. 1999), and at the scrub/tussock boundary at Wooded Peak (Townsend 1997b). They are mostly found under rotten logs (J.I. Townsend pers. comm. 1999).

Threats: Not known.

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Survey suitable upper beech forest habit in the Bryant Range to the north and south of Dun Mt, to determine if this species is truly restricted to the Wooded Peak/Dun Mt area.

2) Survey suitable sites in the Richmond Range to determine if the species is present there (I. Millar pers. comm. 2000).

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.



Photo: Andrew Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema dux* Britton, 1949
Common Names: -
Synonyms: -
M&D Category: I

Conservancy Office: EC/HB, TT, WG

Area Office: Hawkes Bay, Turangi/Taupo, Palmerston North

Description: A slightly bronze-black flightless ground beetle, with dark reddish-brown to black antennae and legs. The body is 18 - 22 mm long (Britton 1949).

Type Locality: Oio, northern Ruahine Range (Britton 1949; J.I. Townsend pers. comm. 1999).

Specimen Holdings: NHML, NZAC.

Distribution: Has been collected from Oio, Mokai Patea Trig, Black Ridge (J.I. Townsend pers. comm. 1999), and Mt Te Atuaopara (1463 m) in the Ruahine Ranges (NZAC). Taumaranui and Waipawa are also mentioned in Britton (1949).

Habitat: Lowland, montane, and subalpine, in wet beech forest and shrubland (A. Laroche pers. comm. 1999). Usually found at the upper forest/tussock boundary (J.I. Townsend pers. comm. 1999).


Threats: Not known. Appears to have a widespread distribution, including both lowland and subalpine habitats.

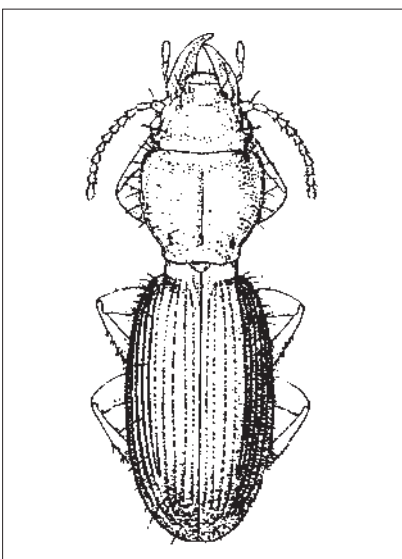
Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Survey to obtain an estimate of distribution and abundance, and determine whether this species is of conservation concern.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Laroche, Ian Townsend.


Body length: 22 mm



*Permission: SIR Publishing.
Britton 1949, Plate 59, Fig. 3.*



Photo: Andrew Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema howitti* Castelnau, 1867
Common Names: -
Synonyms: *Mecodema rectolineatum*, *M. walkeri* (Britton 1949)
M&D Category: I
Conservancy Office: CA

Area Office: North Canterbury

Description: A large, black, flightless, ground beetle. The body is 26 - 31mm long (Britton 1949).

Type Locality: Near Christchurch.

Specimen Holdings: GMI, MONZ, CMNZ, NZAC.

Distribution: Moderately widespread on the eastern half of Banks Peninsula (R. Emberson pers. comm. 2000) from Hilltop eastwards to the end of the peninsula (J.I. Townsend pers. comm. 1999). It has been collected from Summit Road; Akaroa; Hilltop, 609 m (Britton 1949); Mt Herbert; Okuti Reserve (Johns 1986); 800 m below Hilltop, Little River side; Menzies Bay; Puaha Valley; Port Levy; Okuti Valley; Pigeon Bay Saddle; Wainui (CMNZ); and the Port Hills (NZAC). Appears to now be absent from the Port Hills (Johns 1986).

Habitat: Found mainly under logs (J.I. Townsend pers. comm. 1999), in lowland pastures (A. Laroche pers. comm. 1999).

Threats: Habitat fragmentation, probably mammalian predators, land development and the gradual loss of old logs in pastures (R. Emberson pers. comm. 2000).

Work Undertaken to Date: Postgraduate research project underway to determine conservation status.

Priority Research, Survey, and Monitoring: -

Management Needs: 1) Maintain habitat at selected sites.

Contacts: Rowan Emberson, Peter Johns, Andre Laroche, Ian Townsend.



Body length: 31 mm



Photo: Andrew Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema integratum* Townsend, 1965
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: NM
Area Office: St Arnaud



Body length: 20 mm

Description: A uniformly dull, bluish-black, flightless ground beetle. The body is 18 - 20 mm long (Townsend 1965).

Type Locality: Long Lookout Range, near Mt Owen, Nelson 1371 m (Townsend 1965).

Specimen Holdings: -

Distribution: Long Lookout Range (Townsend 1965) (this is probably the same as Lookout Range); Mt Murchison (Townsend 1997b).

Habitat: Montane, alpine grassland (A. Laroche pers. comm. 1999), usually between 1371-1524 m (Townsend 1965), at the upper bush edge to open tops. Found mainly under logs (J. I. Townsend pers. comm. 1999).

Threats: Loss of habitat due to the clearance of large logs is a problem, as is mammalian predation (P. Johns pers. comm. 1999).


Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Survey Lookout Range area to determine the distribution and abundance of this species, and whether it is in need of conservation action.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Laroche, Ian Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema laeviceps* Broun, 1904
Common Names: Ida Valley carabid
Synonyms: -
M&D Category: A
Conservancy Office: OT
Area Office: Central Otago



Body length: 28.5 mm

Description: A slightly shiny, black, flightless ground beetle, with reddish upper legs (Broun 1904). The body is 27.0 - 28.5 mm long (Britton 1949).

Type Locality: Otago: Ida Valley (Britton 1949).

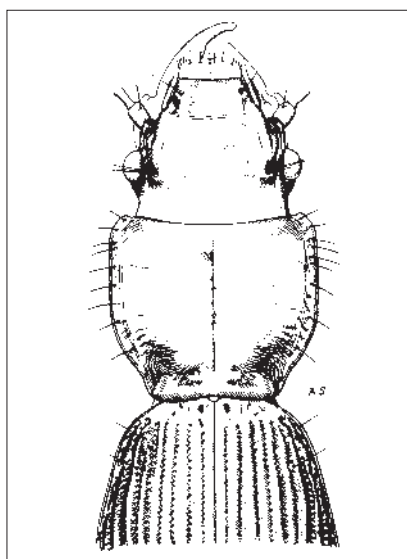
Specimen Holdings: AMNZ, NHML, MONZ, NZAC, CUNZ.

Distribution: Ida Valley (Barratt 1994b; Patrick 1994b); Old Man Range 1524 m; Mt Ida, Wedderburn near Mt Ida; Mt Teviot, East Otago Plateau between Millers Flat and Lake Onslow, c. 450 m (Barratt 1994b); Oturehua (Sherley 1990; Barratt 1994b).

Habitat: Found under big stones in tussock country (Sherley 1990). Altitude records available from only two specimens, found in tussock grassland, and under a rock in tussock and briar surrounding vegetation, at 450 m and 479 m (Barratt 1994b).

Threats: The modification of habitat through pastoral development may be the final stage in the long decline of this species. It appears never to have been common in recent times (Townsend, 1995), and a live specimen has not been seen since 1964 (Barratt 1994b).

Work Undertaken to Date: Searches conducted in the late 1980's (Oturehua locality), 1995, May 1999, and at Oturehua in December 1999, failed to locate the beetle (information from Barratt 1994b; Townsend, J.I. 1995; B. Barratt pers. comm. 2000; P. Johns pers. comm. 2000).



Permission: SIR Publishing.
 Britton 1949, Plate 60, Fig. 9



Photo: Andrew Townsend.

Priority Research, Survey, and Monitoring: 1) Conduct a thorough search of the Mt Teviot and Oturehua sites. The Wedderburn area and northern parts of the Ida Valley should probably be the wider focus, because these are the areas where most have been collected from.

2) If positive records are made, extend survey range to include Maniototo, Ida and Manuherakia Valleys, and the Teviot and Lammerlaw area of the East Otago Plateau (Barratt 1994b).

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema litoreum* Broun, 1886
Common Names: -
Synonyms: *Mecodema dissonum* (Britton 1949).
M&D Category: I
Conservancy Office; OT, SL
Area Office: Murihiku, Coastal Otago

Description: A shiny black, flightless ground beetle (Broun 1886). The body is 20 - 24 mm long (Britton 1949).

Type Locality: Otago: Taieri Beach, on sandhills (Britton 1949).

Specimen Holdings: NHML, MONZ, NZAC.

Distribution: This species has been found on Pig Island (Tihaka) in Foveaux Strait (Cooper et al. 1999); Otago; Taieri Beach; Hump Ridge; Invercargill (Britton 1949); Te Wai Wai Bay between Oropuke and Riverton; (P. Johns pers. comm. 1999); Kawakaputa Bay near Riverton; Three Sisters sand-dunes and Haldane Bay (E. Edwards pers. comm. 1999); Mt Burns tops, Borland Saddle, Fiordland (J.I. Townsend pers. comm. 1999); Omaui Beach 1995 (MONZ); Oreti Beach 1995 (MONZ; P. Johns pers. comm. 1999); and Bluff (NZAC). It has also been recently noted from behind beaches from Taieri River to The Hump (Fiordland), and at Mason Bay, Stewart Island. It is common on Pig Island (Cooper et al. 1999).

—————
 Body length: 24 mm

Habitat: A coastal forest species, inhabiting wet forests and scrubland beech forest (A. Larochelle pers. comm. 1999). It has been collected from under logs on the beach (MONZ), and records suggest that it can tolerate modified marram/pasture grass sward on beach sands (Cooper et al. 1999), occurring above the high water mark (E. Edwards pers. comm. 1999).

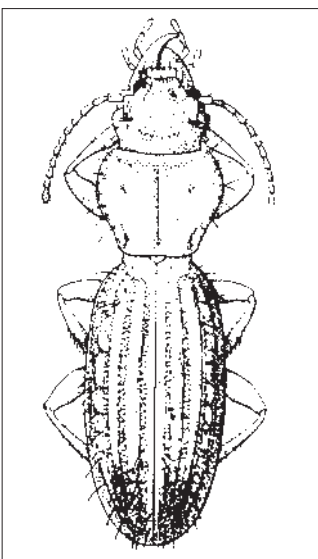
Threats: Loss of coastal forest habitat (A. Larochelle pers. comm. 1999) and logs which are probably their main refugia (P. Johns pers. comm. 1999), is the greatest threat facing this species. They may be present even when there are no logs present in an area, because specimens have been collected under such conditions using pitfall traps (E. Edwards pers. comm. 1999).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Survey coastal areas of Otago and Southland to determine the distribution and abundance of this species, and whether it is in need of conservation action. It is likely that this species is in no immediate need of conservation action.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.



Permission: SIR Publishing, Britton 1949, Plate 59, Fig. 5.



Photo: Andrew Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema morio* Castelnau, 1867
Common Names: -
Synonyms: *Mecodema punctifer* (Britton 1949), *Metaglymma punctifer* (J. Nunn pers. comm. 1999).
M&D Category: I
Conservancy Office: OT, SL
Area Office: Central Otago, Coastal Otago, Murihiku



Body length: 14 mm

Description: A flightless, bronze-black or dark brown, ground beetle. The body is 14 mm long (Britton 1949).

Type Locality: Otago: Dunedin (Britton 1949).

Specimen Holdings: GMI, MONZ.

Distribution: Found in Otago and Southland (Tennyson 1998) at Lake Onslow, east of Roxborough, 680 m (Townsend, J.I. 1995); Dunedin; Swampy; Logan Burn; Forest Hill Reserve; Invercargill (Patrick et al. 1987a); Slopedown Mokoreta number 2, 580-713 m; Longwood Range 804 m, Bald Hill; Waipori, East Otago, east of Lammerlaw Range near Lake Mihinerangi, 520 m (B. Barratt pers. comm. 1999); Rocklands; Bradford, Dunedin; Fernree Reserve, Taieri Rd; Coal Point, east of Katangata (J.I. Townsend pers. comm. 1999). There is also a specimen in MONZ labelled Stephens Island. However, no other specimens have been collected from this location (MONZ).

Habitat: Found in both forest and tussock habitat (Townsend, J.I. 1995), generally lower altitude tussock shrubland. It is usually only present in low densities (B. Barratt pers. comm. 1999).

Threats: Not known. As long as habitat remains, this species should be secure (B. Barratt pers. comm. 1999).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Determine difference between *M. minax* and *M. morio* (A. Laroche pers. comm. 1999), as there is some confusion over their taxonomy. Both of these species are listed in Molloy and Davis (1994), and if they are not separate species this will alter their conservation status.

Management Needs: -

Contacts: Barbara Barratt, Rowan Emberson, Peter Johns, Andre Laroche, Ian Townsend.

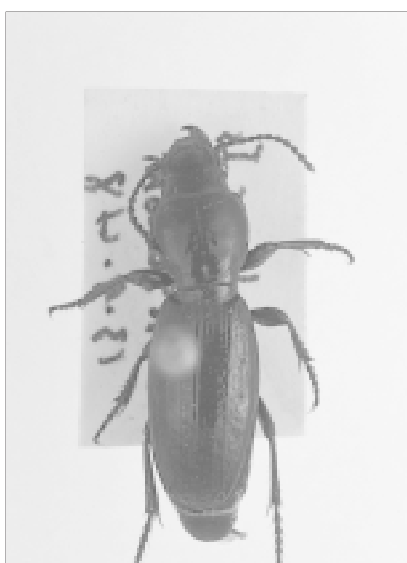


Photo: Andrew Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema nitidum* Broun, 1903
Common Names: -
Synonyms: -
M&D Category: I

Conservancy Office: NM, WC

Area Office: Golden Bay, St Arnaud, Buller, Greymouth

Description: A flightless, bronze-black ground beetle. The body is 17 mm long, and the width of the elytra (wing cases) is less than 5 mm (Britton 1949).

Type Locality: Nelson: Westport (Britton 1949).

Specimen Holdings: NHML.

Distribution: Found from Westport to north-west Nelson (J.I. Townsend pers. comm. 1999), at Westport; Kaituna River, Collingwood (Britton 1949); Maruia, Shenandoah, Mt Burnett (Townsend 1997b); and possible specimens from Crooked River Scenic Reserve, West Coast (R. Emberson pers. comm. 1999).

Habitat: Wet forest, associated with nikau (*Rhopalostylis sapida*) and seepages (A. Larochelle pers. comm. 1999).

Threats: Not known.

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Taxonomic work required as it is in a difficult group (R. Emberson pers. comm. 1999), and there may be confusion with other species, *M. punctatum* possibly (J.I. Townsend pers. comm. 1999). If it is not a separate species, then there is not currently a conservation requirement.

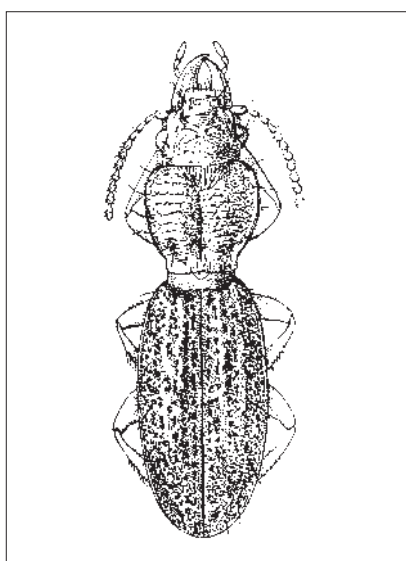
(2) Incidental survey.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.



Body length: 17 mm



Permission: SIR Publishing.
Britton 1949, Plate 61, Fig. 11.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema pavidum* Townsend, 1965
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: WC

Area Office: Buller

Description: A flightless ground beetle, with a dull black body and reddish black legs, palpi, and antennae. The body is 18.5 - 22.5 mm long (Townsend 1965).

Type Locality: Seddonville, Westland (Townsend 1997b).

Specimen Holdings: -

Distribution: Seddonville and Karamea Bluff (Townsend 1965, 1997b).

Habitat: Beech and rata (*Metrosideros* spp.) forest (J.I. Townsend pers. comm. 1999; A. Larochelle pers. comm. 1999).

Threats: Not known.

Work Undertaken to Date: Seddonville and Karamea Bluff is a poorly known part of country, invertebrate-wise (A. Larochelle pers. comm. 1999).

Priority Research, Survey, and Monitoring: 1) Survey the Seddonville and Karamea Bluff area using pitfall traps to obtain an estimate of abundance and distribution of this species. Additional information will also be gained on the invertebrate composition of this part of the country, which is poorly known.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.

Body length: 22.5 mm

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema pluto* Britton, 1949
Common Names: -
Synonyms: -
M&D Category: I



Body length: 24 mm

Conservancy Office: AU, WK, BP

Area Office: Warkworth, Hauraki, Tauranga

Description: A flightless, black ground beetle, with dark brown antennae and palpi. The body is 24 mm long, and 6.7 mm wide (across elytra) (Britton 1949).

Type Locality: Auckland: Te Aroha Trig Station (Britton 1949).

Specimen Holdings: NHML.

Distribution: Mt Te Aroha; Little Barrier Island (J.I. Townsend pers. comm. 1999); Waikawa Bay, Coromandel (R. Emberson pers. comm. 1999).

Habitat: Found on hilltops, in wet broadleaf, podocarp, coastal forest (A. Laroche pers. comm. 1999). Often under old kauri (*Agathis australis*) logs in scrubby forest (P. Johns pers. comm. 1999).

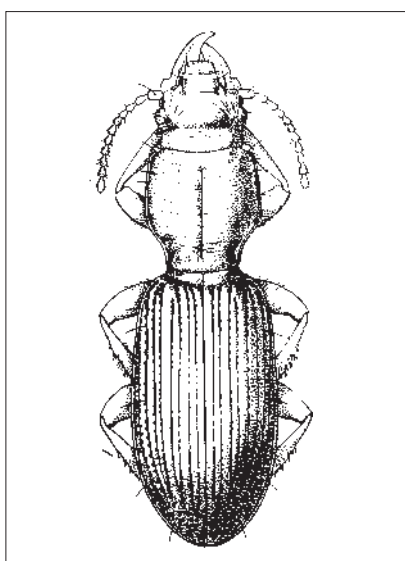
Threats: Not known.

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Survey to obtain an estimate of distribution and abundance, and determine whether this species is of conservation concern.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Laroche, Ian Townsend.



Permission: SIR Publishing.
Britton 1949, Plate 61, Fig. 14.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema politanum* Broun, 1917
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: OT

Area Office: Wakatipu

Description: A flightless ground beetle, 21 - 24 mm long (Britton 1949). There appears to be an altitudinal variation present within this species (J.I. Townsend pers. comm. 1999).

Type Locality: Staircase on side of Lake Wakatipu, Remarkables (J.I. Townsend pers. comm. 1992).

Specimen Holdings: NHML, MONZ, NZAC.

Distribution: Has been collected from mountains near Lake Wakatipu; Minaret Peaks, west of Lake Wanaka (Britton 1949); Obelisk, Ben Lomond (R. Emberson pers. comm. 1999); Hector Mountains 1450 m & 1600 m (B. Barratt pers. comm. 1999); Queenstown; Ben Lomond (MONZ); Mistake Basin; Coronet Peak 1371 m; Bush Stream, Mt Cook 1371 m; remnants from Lake Tekapo; Lake Pukaki 914 m; ?Mt Percival 1219 m, Kaikouras (NZAC).

Habitat: Montane, subalpine, and alpine herbfields (A. Laroche pers. comm. 1999), and tussock grassland (B. Barratt pers. comm. 1999).

Threats: Not known. Not considered to be under any immediate threat.

Work Undertaken to Date: Britton (1949) thought that it is quite possible that a continuous series will be found connecting *M. lucidum* to *M. politanum*, so that the latter will become a synonym.

Priority Research, Survey, and Monitoring: 1) Taxonomy needs revision because there may be confusion with *M. lucidum* (Britton 1949; B. Barratt pers. comm. 1999; J.I. Townsend pers. comm. 1999).

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Laroche, Ian Townsend.



Body length: 24 mm



Photo: Andrew Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema proximus* Britton, 1949
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: NM

Area Office: Sounds, Motueka

Description: A flightless, black ground beetle, with a slightly bronzed appearance. The antennae and lower legs are dark-reddish-brown, the upper legs bright-red. The body is 17-18 mm long, and 4.5 mm wide (across pronotum) (Britton 1949).

Type Locality: Saddle Hill, near Nelson, 1188 m (Britton 1949).

Specimen Holdings: NZAC.

Distribution: Saddle Hill, Nelson (Britton 1949); D'Urville Island (Townsend 1997b), and likely to be present in other areas in the eastern Marlborough Sounds area (J.I. Townsend pers. comm. 2000).

Habitat: Montane beech forest, and up into subalpine grasslands (A. Laroche pers. comm. 1999; J.I. Townsend pers. comm. 1999). On D'Urville Island, it is found on a rocky forested area (I. Millar pers. comm. 2000), and in more open areas with tussock and rock cover. Remains have been found in spider webs (J.I. Townsend pers. comm. 1999).


Threats: Not known.

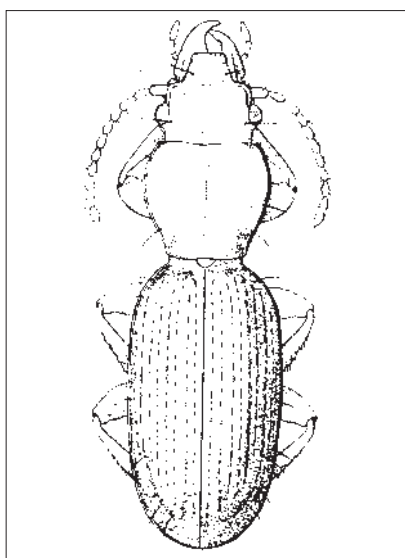
Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Survey to obtain an estimate of distribution and abundance, and determine whether this species is of conservation concern.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Laroche, Ian Townsend.


Body length: 18 mm



*Permission: SIR Publishing.
Britton 1949, Plate 59, Fig. 4.*



Photo: Andrew Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema pulchellum* Townsend, 1965
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: NM

Area Office: Sounds, Motueka

Description: A flightless ground beetle, the body is shiny black apart from the elytra (wing cases), which are reddish-brown to dull brownish-black. The body is 29 - 32 mm long (Townsend 1965).

Type Locality: West of Saddle Hill, Nelson, 914 m on ridge (Townsend 1965).

Specimen Holdings: NZAC.

Distribution: West of Saddle Hill; Mt Stokes (Townsend 1997b); Mt Richmond 1524 m; Mt Malita 883 m; and remnants from Mt Stokes 1188 m, Marlborough (NZAC).

Habitat: Montane. Found under blocks of limestone in beech forest on Saddle Hill (A. Larochelle pers. comm. 1999), and under rocks at other sites.

Threats: Not known.

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Survey to obtain an estimate of distribution and abundance, and determine whether this species is of conservation concern.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.

Body length: 32 mm



Photo: Andrew Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema punctellum* Broun, 1921

Common Names: -

Synonyms: -

M&D Category: X

Conservancy Office: NM

Area Office: Sounds

Description: A large, flightless, black ground beetle 38.5 mm long and 11.7 mm wide (across elytra) (Britton 1949).

Type Locality: Stephens Island (Britton 1949).

Specimen Holdings: NHML, CMNZ.

Distribution: Stephens Island (Britton 1949; Townsend 1997b).

Habitat: Unknown. Possibly sheltered under large logs.

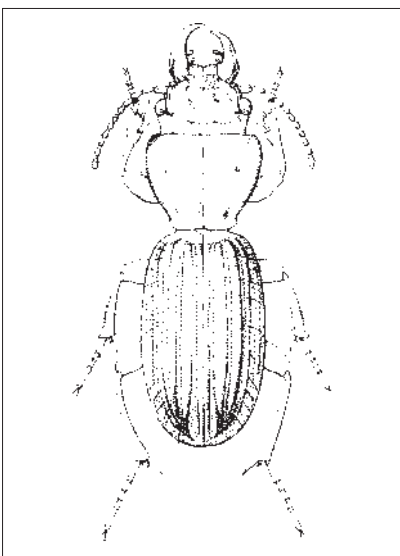
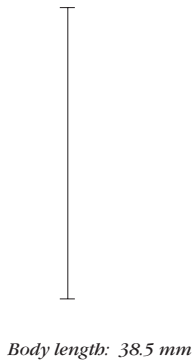
Threats: Possibly loss of habitat because there are no large logs left (J.I. Townsend pers. comm. 1999).

Work Undertaken to Date: Has not been seen since 1931 (Gibbs 1999a) despite searches in 1961 (P. Johns pers. comm. 1999), 1971, 74/75, 76, 81, 90 (Gibbs & Allen 1990), and 1996. D'Urville Island searched in 1997 without success (I. Millar pers. comm. 2000).

Priority Research, Survey, and Monitoring: 1) Continue to survey D'Urville Island to determine if the beetle is present on this island or not (J.I. Townsend pers. comm. 1999). It may be possible to include survey work for this beetle with other work being done on the island.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochele, Ian Townsend.



Permission: SIR Publishing.
Britton 1949, Plate 59, Fig. 2.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema quoinense* Broun, 1912
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: WL

Area Office: Kapiti/Poneke, Wairarapa

Description: A flightless ground beetle, mainly black apart from the upper legs which are bright red. The body is 25 mm long (Britton 1949).

Type Locality: Wellington: Mt. Quoin, Tararua Range, 1188 m (Britton 1949).

Specimen Holdings: NHML, MONZ.

Distribution: Mt Quoin, Tararua Range (Britton 1949); Mt Holdsworth 914 m, 1907 (MONZ); along range to Mitre Peak, Tararua Ranges (R. Hornabrook pers. comm. 2000).

Habitat: Above the bush line (R. Hornabrook pers. comm. 2000).

Threats: Not known. May not be under threat because it was considered common in 1982 (R. Hornabrook pers. comm. 2000).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Survey areas around Mt Quoin and Mt Holdsworth in the Tararua Ranges to determine the distribution and abundance of this species, and whether it is in need of conservation action.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.



Body length: 25 mm



Photo: Andrew Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema rex* Britton, 1949
Common Names: -
Synonyms: -
M&D Category: I

Conservancy Office: SL

Area Office: Murihiku, Te Anau

Description: A flightless, black ground beetle, apart from the palpi which are brown. The body is 35 mm long and 8 mm wide (across pronotum) (Britton 1949).

Type Locality: Southland: Tuatapere (Britton 1949)

Specimen Holdings: NHML, MONZ, NZAC.

Distribution: Has been found at Tuatapere (Patrick et al. 1987); Hump Ridge; Longwoods (P. Johns pers. comm. 1992); Borland Saddle (J.I. Townsend pers. comm. 1999); Dusky Sound 1987; Mt Burns 1300 m; Grebe River 520 m; Lake Mike, Cameron Mountains; West Arm, Manapouri (NZAC); Little Solander Island; and remains from Northeast Point, Big Solander Island (MONZ). The specimens from the Solander Islands may be more closely related to the *alternans-budsoni* complex (J.I. Townsend pers. comm. 2000).

Habitat: Rain forest, beech forest, tussock grassland (A. Laroche pers. comm. 1999).

Threats: Rodents are a possible concern (E. Edwards pers. comm. 1999).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) Survey to obtain an estimate of distribution and abundance, and determine whether this species is of conservation concern.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Laroche, Ian Townsend.



Photo: Andrew Townsend.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema rugiceps anomalum* Townsend, 1965
Common Names: -
Synonyms: *Mecodema perscultum* by Britton 1949 (not Broun 1915) (Townsend 1965).
M&D Category: I
Conservancy Office: NM
Area Office: Sounds, Motueka, South Marlborough



Body length: 21.5 mm

Description: A shining black, slightly bronzed, flightless ground beetle. The distinguishing feature is the pronotum, which has longitudinal and transverse wrinkles, with numerous punctures in and between the wrinkles. The body is 17 - 21.5 mm long (Townsend 1965).

Type Locality: Upper Maitai, Nelson (Townsend 1965).

Specimen Holdings: NZAC.

Distribution: Upper Maitai; Dun Mountain; Mt Riley, Marlborough; west of Saddle Hill, Nelson; Mt Starveall, Nelson; Picton, Marlborough; Mt Duppa, Nelson; Mt Richmond, Marlborough; Wooded Peak, Nelson; head of Fabians Valley (Townsend 1965); Opouri Saddle; Mt Kahikatea (Townsend 1997b); ridge north of Port Underwood Saddle. (NZAC).

Habitat: Lowland and montane (A. Larochelle pers. comm. 1999) forest (Townsend 1965). Specimens have been collected between 914 m and 1524 m (NZAC).

Threats: Not known. Not believed to be under any immediate threat.

Work Undertaken to Date: Common in 1982 (R. Hornabrook pers. comm. 2000). This may be a species of its own (J.I. Townsend pers. comm. 1999). The taxonomy of this will result in no change to the conservation status because subspecies are evaluated in the same manner as species.



Priority Research, Survey, and Monitoring: 1) Survey to obtain an estimate of distribution and abundance, and determine whether this species is of conservation concern.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.

Photo: J I Townsend
Permission: Landcare Research (NZ) Ltd.

Order: Coleoptera
Family: Carabidae
Taxonomic Name: *Mecodema strictum* Britton, 1949
Common Names: -
Synonyms: -
M&D Category: I
Conservancy Office: NM
Area Office: Golden Bay, Motueka



Body length: 17 mm

Description: A flightless, bronze-black, ground beetle. The body is 17 mm long (Britton 1949).

Type Locality: Takaka Hill 1066 m (Britton 1949).

Specimen Holdings: NZAC.

Distribution: Takaka Hill (Britton 1949).

Habitat: Beech forest (A. Larochelle pers. comm. 1999), under blocks of marble (J.I. Townsend pers. comm. 1999).

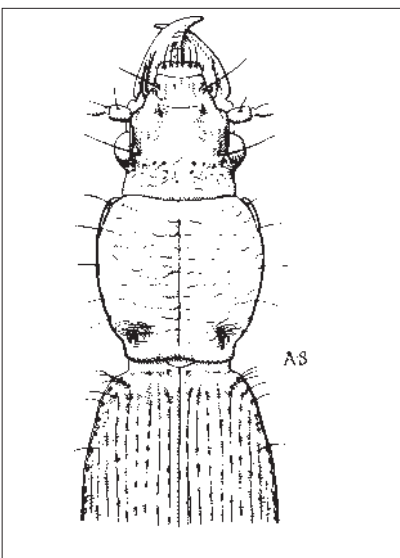
Threats: Not known.

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: Survey area around Takaka Hill to determine the distribution and abundance of this species, and whether it is in need of conservation action.

Management Needs: -

Contacts: Rowan Emberson, Peter Johns, Andre Larochelle, Ian Townsend.



*Permission: SIR Publishing.
Britton 1949, Plate 62, Fig. 16.*

Photo: Andrew Townsend.