

Family: Curculionidae

Common name: Weevils, snout beetles

Order: Coleoptera
Family: Curculionidae
Taxonomic Name: *Anagotus fairburni* (Brookes, 1932)
Common Names: Flax weevil (Foord 1990; Scott & Emberson 1999)
Synonyms: *Phaeophanus fairburni* (Gourlay 1931)
M&D Category: C
Conservancy Office: NL, AU, WK, WL, NM, SL
Area Office: Whangarei, Warkworth, Hauraki, Kapiti, Wairarapa, Sounds, Motueka, Te Anau

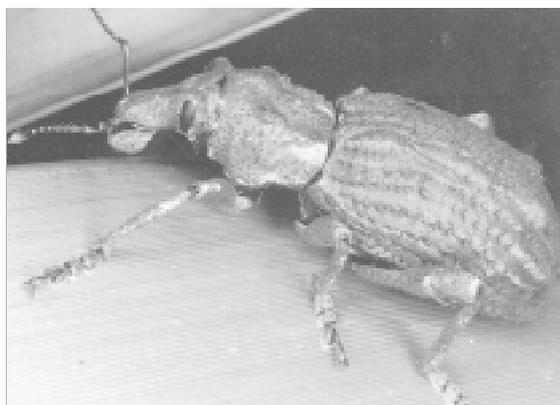
Description: A large, flightless, brown weevil.

Type Locality: Northern end of D'Urville Island (Gourlay 1931).

Specimen Holdings: -

Distribution: This weevil has a wide distribution, occurring on a number of offshore islands, from the Poor Knights in the far north to Big South Cape Island south-west of Stewart Island (Kuschel 1982), as well as in subalpine areas of Marlborough Sounds (G. Kuschel pers. comm. 1999), and the Tararua Ranges. Specimens have been collected from: Poor Knights Islands; Little Barrier Island; Ruamahuanui Island, The Aldermen Islands group; Stephens Island, on steep south-east facing slopes at the landing block and above Queen's Beach; Maud Island; Outer Chetwode Island; D'Urville Island; alpine areas of the Tararua Ranges; Dun Mt area, Nelson (Information from Gibbs & Allen 1990; Meads & Notman 1992a; Townsend 1998; Watt 1982b; Rufaut & Clearwater 1997); Mt Stokes, Marlborough Sounds; Mt Riley, Marlborough Sounds (R. Craw pers. comm. 2000); South West Island and Great Island, Three Kings Islands group; Trio Islands; Big South Cape Island (NZAC specimen records); Wairaki Island, Breaksea Sound (Thomas 1996; Thomas et al. 1992). It was relatively common in 1984 in the subalpine northern Tararua Ranges around Dundas Hut (R. Craw pers. comm. 2000). Probably no longer extant on D'Urville Island, and may not be present in the Dun Mt area (I. Millar pers. comm. 2000).

Habitat: This species is restricted to its host plant, flax (*Phormium* spp.) It has been found feeding on *Phormium tenax* at the Poor Knights (Kuschel 1982), and mountain flax (*Phormium cookianum*) on Wairaki Island (Thomas 1996). Adults retreat deep into the base of the flax bushes during the day (Thomas et al. 1992), hiding amongst the closely piled dead leaves and debris that accumulate there. Eggs are deposited at the base of flax plants, between the free edges of leaves at the base of fans (Gourlay 1931).



Sign of Presence: Flax leaves with smooth notched edges may be a sign of weevil feeding. Giant weta make similar notches, but their edges are rough (Gibbs & Allen 1990). Two caterpillars also make similar notches in flax leaves, the cutworm *Tmetolophota steropastis*, and the flax looper *Orthoclydon praefactata* (Thomas et al. 1992).

Threats: This species occurs mainly on islands and appears to be under no immediate threat. Populations on the mainland

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would be vulnerable to rat predation, if rats are present in the subalpine areas occupied by this weevil.

Work Undertaken to Date: Twenty individuals were transferred from Wairaki Island to Breaksea Island in March 1991 (Thomas 1996; Thomas et al. 1992).

Priority Research, Survey, and Monitoring: 1) This species is probably fairly secure at present. However, if work is being done on the west Fiordland islands or at coastal sites in Fiordland, then surveys for this species should be considered as an add-on (Edwards 1999).

Management Needs: 1) Maintain island security.

Contacts: Robin Craw, Guillermo (Willy) Kuschel; Bruce Thomas; Ian Townsend.

See Plate 3, No. 1.

Order: Coleoptera
Family: Curculionidae
Taxonomic Name: *Anagotus stephenensis* Kuschel, 1982
Common Names: Stephens Island weevil (Scott & Emberson 1999), ngaio weevil (Kuschel & Worthy 1996)
Synonyms: *Phaeophanus oconnori* Broun, 1921
M&D Category: B
Conservancy Office: NM
Area Office: Sounds

Description: A large, flightless weevil, about 15 - 23 mm long (Kuschel & Worthy 1996).

Type Locality: Stephens Island.

Specimen Holdings: NZAC (Kuschel & Worthy 1996).

Distribution: Keepers Bush and Ruston Bush on Stephens Island (Gibbs & Allen 1990), but apparently fairly rare there now (R. Emberson pers. comm. 1999). Historically present in North and South Canterbury (Worthy & Holdaway 1996; Kuschel & Worthy 1996).

Habitat: Adults are usually found on ngaio (*Myoporum laetum*) (Gibbs & Allen 1990) or karaka (*Corynocarpus laevigatus*), and their larvae may feed on these trees (Kuschel & Worthy 1996). Larvae of related species feed on recently dead ngaio (Gibbs & Allen 1990). Adults have also been found in close proximity to ngaio, on grass and fenceposts (I. Millar pers. comm. 1999).

Sign of Presence: Feeding notches on ngaio leaves (Gibbs & Allen 1990).

Threats: The quantity of recently dead ngaio could be limiting if their larvae utilise this as a food source. Some predation from tuatara is also possible (Gibbs & Allen 1990).

Work Undertaken to Date: Three weevils seen over three nights along a limited section of the ridge track by Ruston Bush in 1995. One of the weevils was seen on two different evenings. Another weevil was seen in daylight on the lower edge of Ruston Bush prior to starting evening searches (I. Millar pers. comm. 2000).

Priority Research, Survey, and Monitoring: 1) Establish a survey technique, and survey Stephens Island to get an estimate of population size (R. Emberson pers. comm. 1999; I. Millar pers. comm. 1999).

Management Needs: 1) Investigate options for establishing a new population on a rodent free island in the Marlborough Sounds. The lack of basic knowledge of the weevil's biology and ecology may pose a problem to translocation (Marris 1996b), and it will depend on results of the survey because there may be insufficient numbers to translocate (I. Millar pers. comm. 1999).

Contacts: Derek Brown, Robin Craw, Guillermo (Willy) Kuschel, Ian Millar.

See Plate 3, No. 2.



Body length: 23 mm



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Meads 1990a, p. 45.

Order: Coleoptera
Family: Curculionidae
Taxonomic Name: *Anagotus turbotti* (Spiller, 1942)
Common Names: Turbott's weevil (Foord 1990; Scott & Emberson 1999)
Synonyms: *Phaeophanus turbotti* (Spiller 1942)
M&D Category: B
Conservancy Office: NL

Area Office: Kaitaia, Whangarei

Description: A large, flightless weevil, up to 24 mm long, brown or reddish-brown with whitish spots on its back. Its underneath is whitish. There are large, cone-shaped protuberances on its back near the end of its body (Klimaszewski & Watt 1997).

Type Locality: Aorangi Island, Poor Knights Islands group (Spiller 1942).

Specimen Holdings: AMNZ, MONZ (Kuschel 1982), NZAC.

Distribution: Great Island, Three Kings Islands; Aorangi and Tawhiti Rahi Island, Poor Knights Islands; and Muriwhenua Island, Hen and Chickens Islands (information from Kuschel 1982; Watt 1982b; Meads 1990a; Brook 1999b).

Habitat: Adults are generally found on the branches of native trees, especially karaka (*Corynocarpus laevigatus*), ngaio (*Myoporum laetum*), and *Hebe bollonsii*, which their larvae bore into (May 1987a; Meads 1990a; Klimaszewski & Watt 1997; Watt 1986 cited in Brook 1999b).

Threats: None known at present (Brook 1999b).

Work Undertaken to Date: Larvae have been captive reared on karaka and ngaio (May 1987a). Pigs were eradicated from Aorangi in 1936 (Powell 1938 cited in Penniket 1981).

Priority Research, Survey, and Monitoring: 1) Survey distribution and abundance of *A. turbotti* in the Three Kings, Poor Knights, and Chicken Islands (Brook 1999b) to obtain an estimate of the size and number of populations present.

Management Needs:

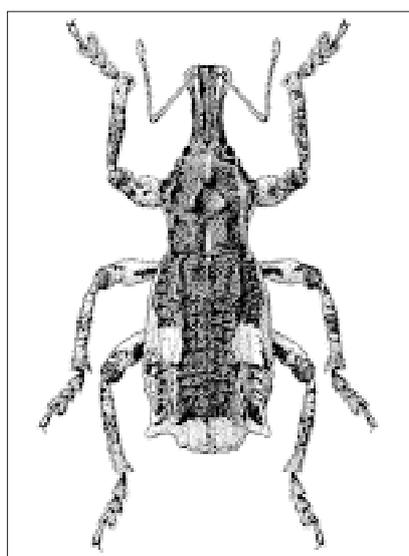
1) Maintain island security (Brook 1999b).

Contacts: Robin Craw, Guillermo (Willy) Kuschel.

See Plate 3, No. 3.



Body length: 24 mm



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 Klimaszewski & Watt 1997, p. 165, Fig. 251



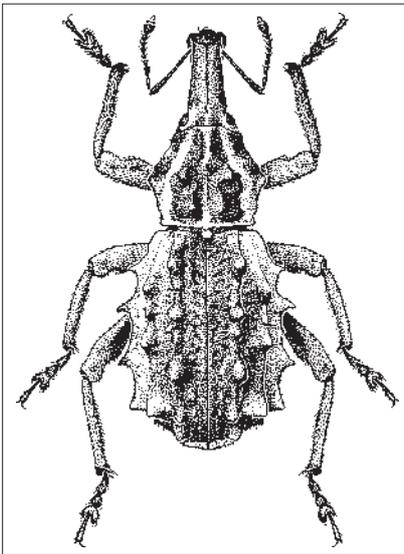
Permission: Manaaki Whenua Press.
 Meads 1990a, p. 45.

Order: Coleoptera
Family: Curculionidae
Taxonomic Name: *Hadramphus spinipennis* Broun, 1911
Common Names: Coxella weevil (Scott & Emberson 1999)
Synonyms: -
M&D Category: B
Conservancy Office: WL
Area Office: Chatham Islands

Description: A large, flightless, reddish-brown weevil, with a knobby back. It has pale yellowish to dark brown hairs and scales, lying flat against the body. The body is 20.2 - 23 mm long, and 9.6 - 11.5 mm wide (information from Emberson & Marris 1993b; Craw 1999).

Type Locality: Chatham Islands, Pitt Island (Broun 1911).

Body length: 23 mm



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 Craw 1999, p. 39, Fig. 2.

Specimen Holdings: NHML, MONZ, LUNZ.

Distribution: Restricted to the Chatham Islands group. There is a sizeable population, in the thousands, present on Mangere Island (113 ha), a small population present in highly fragmented habitat on South East (Rangatira) Island (218 ha) (Schops 1998; R. Emberson pers. comm. 1999), and a population on Little Mangere Island (Emberson 1998b). Historically present on Pitt Island, but may now be extinct there (Emberson et al. 1996).

Habitat: These weevils inhabit a fragmented habitat of coastal cliffs, bluffs, and rocky shores on South East Island, and have a patchy distribution over the whole of Mangere Island (Given 1996 cited in Schops 1998). Adults are nocturnal and feed on Dieffenbach's speargrass (*Aciphylla dieffenbachii*) (Apiaceae) (Early et al. 1991; Schops 1998; Craw 1999), particularly on flowers at night (Emberson 1998b). *Pseudopanax chathamica* may be an alternative host for adults (Emberson et al. 1993), the adults can feed on these plants but show a strong preference for *A. dieffenbachii* (Schops 1999). Adult weevils are usually found in low vegetation, grass, and litter around the plant bases during daytime (information from Kuschel 1971; Emberson et al. 1996). Eggs are laid in soil near the host plant. Larvae burrow into the roots of the host

plant and start feeding on the root parenchyma. Often a tunnel was eaten into the root crown, but most larvae feed at the cortical region of large tap roots. Pupation takes place close to the host plant in earthen chambers up to 600 mm below the soil surface (Schops 2000). Adults show a preference for flowering host plants, particularly the petioles and flowers of male plants (Schops 1998, 2000).

Sign of Presence: Feeds on Dieffenbach's speargrass, the adult feeding on leaf tips, blades and petioles. Sign varies from mild grazing resulting in white gum production, to large areas eaten out of petioles. Male flowers are favoured, with the male flower stalks sometimes almost eaten right through, causing the tips to bend and die. Female flowers and green seeds are also eaten,



Photo: John Marris, Lincoln University.

but usually only partially (Emberson et al. 1996). Feeding damage of the petioles and leaves attributed to *H. spinipennis* larvae in Emberson et al. (1996) was actually caused by larvae of *Stephanorhynchus purus* (Schops 1998).

Threats: Dieffenbach's speargrass is very susceptible to grazing (Emberson et al. 1994), and sheep grazing, combined with rodent predation, and large scale clearing of fields, has probably resulted in the disappearance of *H. spinipennis* from Pitt Island (Kuschel & Worthy 1996). The increasing area of forest and shrubs on Mangere Island is also increasing the potential for *A. dieffenbachii* habitat to disappear (Schops 1998). Mice as well as rats prey upon the adult weevils (R. Emberson pers. comm. 1999). It is also possible that local extinctions may be caused by the feeding damage of *H. spinipennis* on *A. dieffenbachii*. The weevils do not appear to be regulated by density dependence, and reach densities beyond the carrying capacity of the plant, which results in considerable and sometimes catastrophic impact on the plant population. Regeneration of plants from seed banks or root fragments may take several years. Weevils can generally find a host plant over a distance of 100 m, possibly further, so if plants are nearby they can migrate to them (Schops et al. 1998).

Work Undertaken to Date: Mangere Island forest is being restored through intensive planting, and this may displace *A. dieffenbachii* (Schops 1998).

Priority Research, Survey, and Monitoring: 1) Survey outer islands in the Chatham Islands group, including the Murumurus, which have populations of *A. dieffenbachii* or *A. traversii*.

2) Monitor populations on Mangere and Rangatira Islands every 2 to 3 years.

3) The impact of mice, cats and weka on adult and larval *Hadramphus* are unknown and may need investigation. Whilst mice are known to prey upon this weevil, the extent of their impact is not known (information from Early et al. 1991; Emberson et al. 1996; Schops 1998; Craw 1999).

Management Needs: 1) Maintain rodent quarantine procedures on South East and Mangere Island.

2) If no additional populations found through survey, then investigate the possibility of transferring *H. spinipennis* to a rodent free island in the Chatham Islands group.

3) Establishment of *H. spinipennis* should be investigated as part of the Pitt Island restoration project. A prerequisite for this would be the establishment of a substantial *Aciphylla* population, which cannot take place without total control of sheep, pigs and cattle. Mice should also be controlled.

4) Keep some of Mangere Island clear of forest to provide habitat for *A. dieffenbachii*, or ideally, provide natural self-sustaining habitat (information from Emberson et al. 1996; Schops 1998).

Contacts: Robin Craw, Rowan Emberson, Guillermo (Willy) Kuschel.

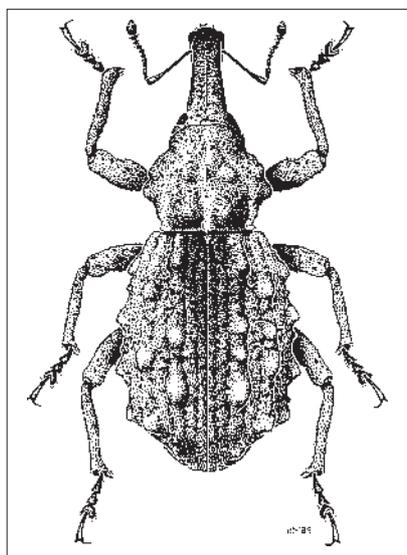
See Plate 3, No. 5.

Order: Coleoptera
Family: Curculionidae
Taxonomic Name: *Hadramphus stilbocarpae* Kuschel, 1971
Common Names: Knobbled weevil (Scott & Emberson 1999), also called the stilbocarpa weevil
Synonyms: -
M&D Category: C
Conservancy Office: SL
Area Office: Te Anau



Body length: 21.7 mm

Description: A large, knobbly-backed, flightless weevil, 15.5 - 21.7 mm long and 7.8 - 9.5 mm wide. Its body is dark brown, with greyish-brown to dark brown scales present. The scales on top of the tubercles (knobbly bits on the back) are paler in colour (Craw 1999). The larvae reach a maximum size of 17.5 mm long by 6.5 mm wide. They have a dark black-brown head, and dark greenish-brown maxillae. The pupa reaches a maximum length of 17.0 mm (May 1981).



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 Craw 1999, p 39, Fig 3.

Type Locality: Murderers Cove, Big South Cape Island (Kuschel 1971).

Specimen Holdings: AMNZ, NHML, CMNZ, MONZ, NZAC, OMNZ (Craw 1999), BMH (Kuschel 1971).

Distribution: Resolution Island (exposed outer coast and Five Fingers Peninsula)⁷ Puysegur Point^{4,7}; Bird Island, Foveaux Strait^{1,3,4,7}; Big South Cape Island^{4,5,7} at Murderers Cove, Puwai Bay, North Peak, and North East End¹; North East Island at Station Point^{1,2}, Signpost Hill, Ho Ho Bay, Sinkhole Drain, Sinkhole Flat², and Broughton Island⁷ in The Snares Islands group^{3,4,5}; Wairaki Island, 'OG3' a small islet 500 m east of Hawea Island, and Breaksea Island in Breaksea Sound; islands in Dusky Sound⁶; Hawea Island; a small islet on the south side of Breaksea Island; Shelter Islands, Doubtful Sounds (B. Thomas pers. comm. 1999). Specimens have also been collected from North Bay, Big Solander Island (1996); base of Northwest Point, Big Solander Island 1996 (MONZ). There is a possible population at Puysegur Point, although this may represent a new species⁷.

¹Kuschel 1971; ²May 1981; ³Meads 1990a; ⁴Sherley 1990a; ⁵Thomas et al. 1992; ⁶Emberson et al. 1996; ⁷Craw 1999.



Bottom: Permission: Manaaki Wbenua Press. Meads 1990a, p 49.

Habitat: The Foveaux Strait to Snares populations are found on the fleshy herb stilbocarpa, (*Stilbocarpa lyallii*, *S. robusta*) (Kuschel 1971; Craw 1999), whilst the south-west Fiordland populations are restricted to the shoreline carrot (*Anisotome lyallii*) (Meads 1990a; Thomas et al. 1992; Craw 1999). The adults are nocturnal, sheltering at the base of plants during the day, and emerging to feed after dusk (Thomas et al. 1992), congregating in large numbers on a single plant (Meads 1990a, Craw 1999). Habitat appears to remain stable for a long time, then the plants quickly decline. Regrowth of *Anisotome* is occurring on the islet to the south of Breaksea Island, and it may be that the plants and weevils go through a boom and bust cycle (B. Thomas pers. comm. 1999). Adults have been

collected on one occasion each from under *Phormium*, *Poa foliosa*, and in *Olearia* forest. The larvae have been found feeding on the living rhizomes of *S. robusta* (May 1981), and also feed on the roots of *A. lyallii* (Kuschel 1971).

Sign of Presence: The adults feed by chewing a hole through the leaf and then enlarging it. The hole is often close to the leaf margin and can give the illusion of a notch in the leaf edge (Craw 1999).

Threats: Very prone to attack by rats (Meads 1990a) and the ship rat (*Rattus rattus*) exterminated the population on Big South Cape Island during the rat invasion of 1962-63 (Kuschel 1971; Watt 1977; Meads 1990a). A possible threat may be the increase in seal population numbers because they lie on the weevil's host plants when they come ashore. Habitat reduction is occurring on OG3 due to the weevils feeding on a host plant until it dies (B.Thomas pers. comm. 1999). In 1991 there were 136 Anisotome plants on OG3 Islet, yet by April 1996 only six remained. In contrast, the population on Wairaki Island has remained relatively stable over this period (Thomas 1996).

Work Undertaken to Date: Forty individuals from OG3 Islet were transferred to Breaksea Island in March 1991 (Thomas et al. 1992), this was successful and they have colonised well (B.Thomas pers. comm. 1999). The OG3 population has been monitored since the early 1990s.

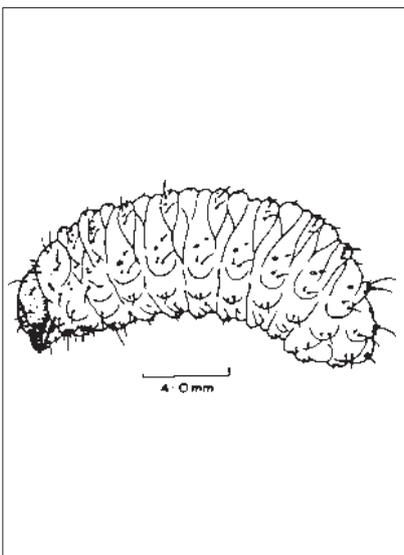
Priority Research, Survey, and Monitoring: 1) Survey Puysegur Point as a population may still exist there (Sherley 1990a). This population may be an undescribed species of *Hadramphus* (Craw 1999).

2) Survey Hawea Island to see if there is a general population present across the island. Hawea Island has been monitored by Landcare since the rat eradication in 1986, and if weevils are only present at the control plot, then they may have been accidentally introduced to the island during monitoring (B.Thomas pers. comm. 1999).

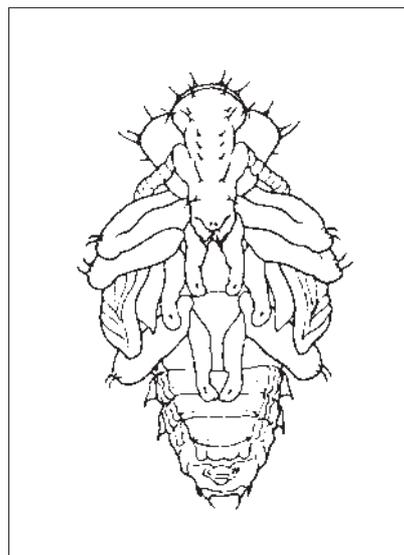
Management Needs: 1) Maintain island security.

Contacts: Robin Craw, Guillermo (Willy) Kuschel, Bruce Thomas.

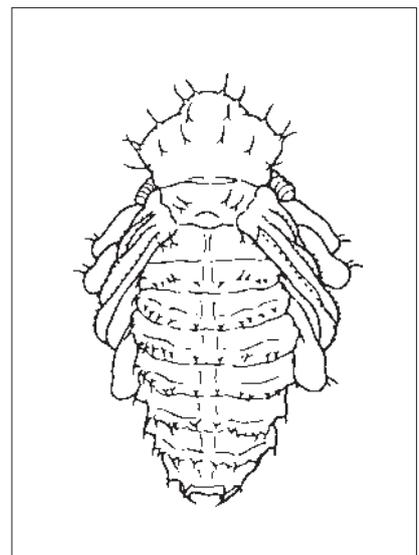
See Plate 3, No. 7.



Larva, lateral view.



Pupa, ventral view.



Pupa, dorsal view.

Permission: SIR Publishing, May 1981, p 268, Figs 34, 39 and 40.

Order: Coleoptera
Family: Curculionidae
Taxonomic Name: *Hadramphus tuberculatus* (Pascoe, 1877)
Common Names: Canterbury knobbed weevil (Scott & Emberson 1999), Banks Peninsula speargrass weevil (Foord 1990), spaniard weevil (Kuschel & Worthy 1996)
Synonyms: *Lyperobius tuberculatus* (Pascoe 1877)
M&D Category: X
Conservancy Office: CA
Area Office: North Canterbury



Body length: 16.3 mm

Description: A large, knobbed-backed, flightless weevil, 11.7 - 16.3 mm long and 6.5 - 8.3 mm wide. Its body is dark brown, with greyish-brown scales present. The scales on top of the tubercles (knobbed bits on the back), head and elytral (wing case) intervals being paler in colour (Craw 1999).

Type Locality: Christchurch (lectotype).

Specimen Holdings: NHML, CMNZ, NZAC (Craw 1999).

Distribution: Was once present on the Canterbury plains^{3,4}, foothills and fringing ranges, at Christchurch, Blackford and Mt Oakden (Rakaia R.), Temuka⁴, Oxford^{2,4} and Waimate^{1,2,4}. There have been references to this species having occurred at Banks Peninsula², but there are no known specimens collected from there⁴.

¹Johns 1986; ²Sherley 1990a; ³Kuschel & Worthy 1996; ⁴Craw 1999.

Habitat: Adults are nocturnal, their host plants are probably *Aciphylla subflabellata* and *A. glaucescens* (Apiaceae) (Craw 1999).

Threats: This species is possibly extinct, the last specimen collected being from Waimate in 1922 (Craw 1999). Removal of *Aciphylla* through habitat modification on the

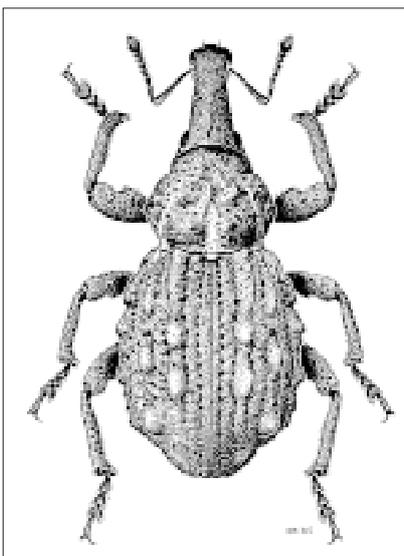
Canterbury Plains has probably contributed to the likely extinction of this species (Kuschel & Worthy 1996), with the depredations of rats and mice which prey on adults and larvae, being another factor (Johns 1986).

Work Undertaken to Date: -

Priority Research, Survey, and Monitoring: 1) A thorough search is required for this species to determine the likelihood of it being extinct. Search historic sites plus surrounding areas and other likely habitat.

Management Needs: -

Contacts: Robin Craw, Peter Johns, Guillermo (Willy) Kuschel.



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 Craw 1999, p. 39, Fig. 4.

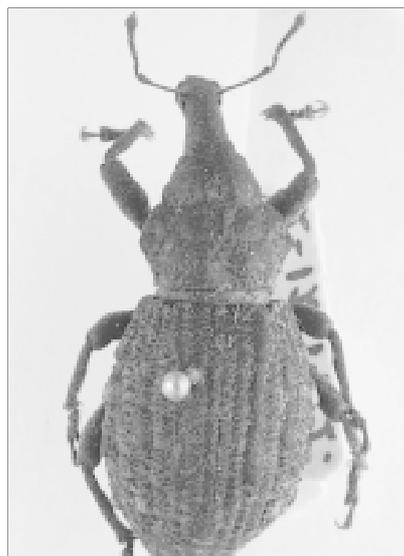


Photo: Andrew Townsend.

See Plate 3, No. 6.

Order: Coleoptera
Family: Curculionidae
Taxonomic Name: *Heterexis seticostatus* (Brookes, 1951)
Common Names: Campbell Island ribbed weevil (Scott & Emberson 1999), ribbed weevil
Synonyms: *Campbellorbinus seticostatus* (Brookes 1951)
M&D Category: B
Conservancy Office: SL
Area Office: Southern Islands



Body length: 11.7 mm

Description: A medium sized flightless weevil, 8.8 - 11.7 mm long, and 3.5 - 5.3 mm wide (Kuschel 1964). The body is pitchy-black or dark brown, almost black (Kuschel 1964) and the elytra (wing cases) clothed with fine yellowish scales and short hairs (Brookes 1951).

Type Locality: Windlass Bay, Campbell Island (Kuschel 1964).

Specimen Holdings: CMNZ, MONZ.

Distribution: Restricted to Campbell Island (Kuschel 1964, 1971; Sherley 1990a). Has been found at Windlass Bay; on the west coast behind St Col Peak; St Col Peak ridge; Yvon Villarceau Peak region; and Perseverance Harbour at Tucker Cove, between Tucker Cove and Camp Cove, Lookout Bay (Brookes 1951), and Garden Cove (CMNZ).

Habitat: Early specimens were found under either *Chrysobactron rossi* (bog lily) (now a synonym of *Bulbinella rossi*), tussock or amongst turf (Brookes 1951). Adults inhabit the bases of the lily and the larvae feed on the roots (Meads 1990a).

Threats: Rodent predation is likely to be the main threat, in particular Norway rats (*Rattus norvegicus*) (Meads 1990a; Sherley 1990a). However, there is a feeling that this species is secure at present (G. Kuschel pers. comm. 1999).

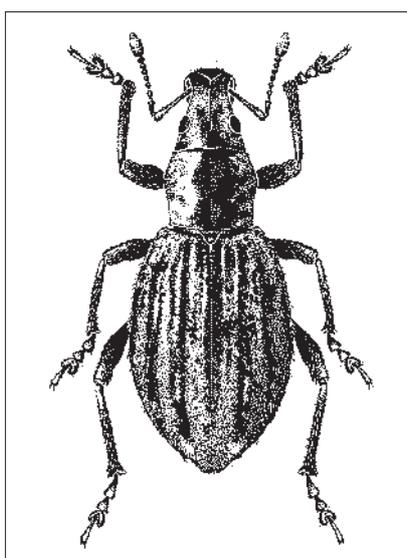
Work Undertaken to Date: First stage of rodent eradication from Campbell Island completed, with bait acceptance trials conducted in August 1999 (I. McFadden pers. comm. 1999).

Priority Research, Survey, and Monitoring: -

Management Needs: 1) Eradicate rodents from Campbell Island. First stage completed, with bait acceptance trials conducted in August 1999 (I. McFadden pers. comm. 1999).

Contacts: -

See Plate 3, No. 11.



Drawing: Des Helmore
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