# **Invertebrates found in the Coleridge Catchment area**



**Final report to the Coleridge Habitat Trust** 

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### **Executive Summary**

#### Introduction

The Canterbury knobbled weevil (*Hadramphus tuberculatus*) is possibly the most threatened insect in New Zealand. Known from only a single site in Burkes Pass, the weevil is vulnerable and discovering another population would add genetic diversity and security against threats such as predators, fire, habitat loss and climate change.

#### **Methods**

Pitfall traps and visual searches were used to survey three properties that contained golden Spaniard /speargrass (*Aciphylla aurea*), the known host plant of the threatened weevil. Peak Hill and Mt Algidus Stations allowed access to survey, and a third, Mt Oakden did not give permission, however data from a previous survey undertaken there a decade earlier was used for this report. About 30 pitfall traps were left set for over four weeks from December 2020 to January 2021 before collection. Historic collection records from Lincoln University Research Museum and Canterbury Museum were also obtained as a comparison to my survey results.

#### **Results**

No Hadramphus tuberculatus were found however, two to three new species of ground beetles (including a Mecodema species, Cerabilia species and a Trichopsida species) and possibly two to four weevils are of significant interest and require further specialist taxonomic or molecular determination. An unidentified ground weta (Hemiandrus species) also requires DNA analysis. Two species Maamiga marrisi a small wasp and the long-nosed kauri weevil (Mitrastethus baridioides) were both unusual finds for the region.

#### Discussion

Although no Canterbury knobbled weevil were found during the survey, there were several sites with plant damage which is consistent with damage by this weevil. One issue was the poor flowering season which does reduce the chance of seeing the weevil feeding on the *Aciphylla* pollen. The diversity of invertebrates found near the *Aciphylla* during this study and other previous surveys highlights how important this plant community is for the conservation of invertebrates and other biodiversity utilising this habitat. There are many threats to *Aciphylla* and its community including pest herbivores, invasive plants e.g. wilding trees, land clearance, etc. We need conserve this endemic plant and the endemic species living on and around it.

#### Recommendations

- 1. Protection of roadside populations of *Aciphylla aurea* e.g. along Mt Algidus Rd. where trees are threatening to shade them out.
- 2. Removal of several specimens of exotic broom (*Cytisus scoparius*), *Pinus radiata* and another wilding trees (possibly Larch) from Peak Hill.
- 3. My survey only touched the surface in a vast area of potential Canterbury Knobbled Weevil habitat. Further surveys should be encouraged given the lack of collecting undertaken in the Lake Coleridge area.

#### Introduction

The Canterbury knobbled weevil is an endangered beetle species that once had a huge distribution in Canterbury (and possibly further afield) but currently only known in a single population at Burkes Pass Reserve and adjacent farmland across the road. This weevil lives on *Aciphylla aurea* (Golden Spaniard/speargrass) and possibly on other *Aciphylla* species such as *A. subflabellata*. A pinned museum specimen has been collected from the area including Mt Oakden Station. Finding another population of the weevil would be the greatest step to help save this species from extinction. The species only known population at Burkes Pass is vulnerable to fire, weeds, climate change, herbivores and predators; so rather than having 'all the eggs in one basket' a second population would be some insurance to retain this species. It makes sense to survey around areas where the species were collected from in relatively recent times as these sites may still have residual populations protected by isolation from detrimental factors. The Mt Oakden specimen was thought to be collected around the station homestead possibly in March 1873, but historic insect labels were not full of details in those days.



Canterbury knobbled weevil (Hadramphus tuberculatus). Image: Mike Bowie

### Aims

- 1. To find another population of this weevil species that would aid in its conservation.
- 2. See what other insect species of interest are present

#### **Methods**

Five properties were identified by the Coleridge Habitat Trust for assessment: Algidus Station, Peak Hill Station, Mt Oakden Station, Lake Coleridge Station and Glenthorne Station. Of these only the first two stations were prepared for me to undertake my insect survey. After talking to the owner of Peak Hill Station it was decided that the DOC part of Peak Hill would be a better place to survey. Although no access was given to survey Mt Oakden survey on this occasion, a historic survey was undertaken (with permission) in 2009-2010 summer (Pitfall trapping from 25 November to 13 January). I used these results in this report to supplement the other two sites.

Records from Canterbury Museum and the Lincoln University Research Museum were also searched to see what other species have been collected there.



Pitfall trap setup as used for this study (left) & map of the three sites surveyed (right)

#### **Results**

A low incidence of *Aciphylla* flowering was noted this season (2020-2021) - this is important as the Canterbury Knobbled Weevil feeds on pollen, probably for its reproduction, and this is the best time to observe them and how the Canterbury Knobbled Weevil was rediscovered after 70 years. None of this species were observed or captured in the pitfall traps although many other species of insects were. Most notable were a new species of *Mecodema* (a large ground beetle) and a possible new species of ground weta (*Hemiandrus*) found at Peak Hill. The unidentified *Mecodema* species has been sent for molecular analysis to determine its relationship with other close species. Four other species of ground beetles from Mt Algidus were unable to be identified and some of these could well be new species to science. Two other ground beetles (*Cerabilia* nr. striatula & *Trichopsida* nr. *debilis*) may well be new species also. Several weevil species require further work to identify the species. A giant Collembola (springtail) was also found on Mt Algidus Station which may well be a new species also. A very interesting find on My Oakden was tiny wasp called *Maamiga marrisi* which was thought to be a coastal species, given this is where this species has been found previously. Similarly, the long-nosed kauri weevil (*Mitrastethus baridioides*) was found So, this specimen is very important in terms of adding to its known distribution.



Large ground beetle (Mecodema new species) collected from Peak Hill (scale bar = 1mm)



Small wasp (Maaminga marrisi) collected from Mt Oakden (scale bar = 1mm)



Giant springtail species (Holacanthella species) like in this photograph were collected from a Mt Algidus pitfall trap

#### Discussion

Aciphylla plants are alive with invertebrate activity especially around flowering. The tall, creamy-yellow flowers are like beacons to pollen-feeding insects (including the Canterbury Knobbled Weevil).



Photo of Aciphylla aurea flower showing many insects feeding on pollen

Poor flowering this last season reduces the chances to see the weevil as they are usually observed on flowering plants. It should be said that absence of evidence is not evidence of absence (of the Canterbury Knobbled Weevil). These are hard to find in its only known location and pitfall traps

Predacious spiders including flower (*Diaea* species) and long-jawed spiders (*Tetragnatha* species) were very common on *Aciphylla* and around flowering have a feeding frenzy when flower visiting insects are present.

The prickly nature of the *Aciphylla* plant offers protection against herbivores and predators respectively. Numerous native plant species live around and amongst the *Aciphylla* plant patches and gain some protection from introduced herbivores such as hares, deer, possums, etc. Likewise, invertebrates (especially beetles) have a behavioural tendency to drop into the spiny interior of *Aciphylla* plants when disturbed. Lizards also are often seen on or within *Aciphylla* plants gaining protection from predators. Pigs however are particularly troublesome as they dig under the plants and can destroy large patches of *Aciphylla*. This type of pig damage was observed at Mt Oakden back in 2009-2010 and has been observed in the Hunter Hills, South Canterbury also.

Canterbury knobbled weevil aside, some extremely interesting species of ground beetles were found which need further work to identify them. A lack of experts on these groups is making these species difficult to determine.



Sun orchid (Thelymitra species) (left) and Celmisia, Gaultheria and fern (right) nestling amongst Aciphylla plants

### Recommendations

Aciphylla communities, rather than specific individual species (e.g. Canterbury knobbled weevil) should be protected where possible. A large diversity of plant and invertebrate species are found within these communities. Roadside patches were observed during this survey on Algidus Rd between Peak Hill and the turnoff at Homestead Rd (-43.351173, 171.539783 and -43.376887, 171.585595). There are trees at one site that will shade the *Aciphylla* and will eventually kill more plants there. Sites such as these should be protected, after all, the Canterbury knobbled weevil in the Burkes Pass Scenic Reserve are found on the roadside metres from the Fairlie-Tekapo Rd.

Invertebrates (including species such as Canterbury knobbled weevil) are very much in need of extensive surveys. Less disturbed high-country stations will contain a wealth of invertebrate diversity which may include this rare and endangered weevil and other undiscovered species. Not enough is done to protect these habitats and I find it disappointing that some landowners don't allow entomologists and ecologists to survey the flora and fauna before these species are lost forever. At least 93% of the plant species and >95% of the birds, lizards and invertebrates in the high country are endemic to New Zealand.





Two views of Aciphylla patch along the Algidus Rd between Peak Hill and the turnoff at Homestead Rd.

Mammalian herbivorous pests such as wallabies (in South Canterbury and now Central Otago), pigs, deer, and hares are a threat to *Aciphylla* as are wilding trees as they can shade out the plants that prefer full sun (see photos of weeds below).

Therefore, I propose the following recommendations:

- 1. Protection of roadside populations of *Aciphylla aurea* e.g. along Mt Algidus Rd. where trees are threatening to shade them out.
- 2. Removal of several specimens of exotic broom (*Cytisus scoparius*), *Pinus radiata* and another wilding trees (possibly Larch) from Peak Hill.
- 3. My survey only touched the surface in a vast area of potential Canterbury knobbled weevil habitat. Further invertebrate surveys should be encouraged given the lack of collecting undertaken in the Lake Coleridge. Concentration on identified rare habitat or communities would be a priority.



A patch of exotic broom is taking hold on Peak Hill to the right of the track walking up.



Pinus radiata (top) & larch (bottom) on Peak Hill.

### Acknowledgements

I wish to thank the following people for their assistance during this work:

- Toni, CHET coordinator for her assistance and understanding
- Jamie Smiley (Mt Algidus Station) for his assistance and generosity in supporting my survey work
- Stu Millar (Peak Hill) for permission to access his land and advice on best habitat

# Appendix 1: Photos of Invertebrates found in survey (scale bar is 1mm)

### **COLEOPTERA (BEETLES)**

Weevils (Curculionidae)



Chalepistes species from Peak Hill

Unknown Phrynixini species from Mt Algidus



Long-nosed Kauri Weevil Mitrastethus ?baridioides found at Mt Algidus



Eugnomus dispar from Peak Hill



**Gromilus** species from Peak Hill



Abantiadinus nodipennis from Peak Hill & Mt Algidus



Pactolotypus species from Peak Hill (left) & Unknown Cryptorhynchini species from Peak Hill & Mt Algidus



Unknown Cossoninae species from Mt Oakden

Unknown Cossoninae species from Mt Algidus

Ctenognathus species from Mt Algidus Station

### **Ground beetles (Carabidae)**



Megadromus species from Peak Hill



Mecodema new species from Mt Algidus

Megadromus antarcticus from Mt Algidus



Unidentified Carabidae species 1 from Mt Algidus



Trichopsida nr. debilis from Mt Algidus



Mecodema huttense from Peak Hill



Cerabilia nr. striatula from Mt Algidus

## Scarabidae (chafers)





## Manuka beetle (*Pyronota* species) from Peak Hill (left) and from Mt Algidus (right)





Odontria species 1 from Mt Algidus & Peak Hill

Odontria species 2 from Mt Algidus

### Click beetles (Elateridae)



Elaterid species from Peak Hill

Elaterid species from Mt Algidus

### Other beetles



Rove beetle\_Creophilus oculatus (left) and Hisparonia hystrix (right) collected at Mt Algidus Station



Selenopalpus species collected from Mt Algidus

Flat-faced longhorn beetle (Lamiinae) from Mt Algidus



Orange-spotted ladybird Coccinella leonina (left) and Rhyzobius ladybird species (right) from Mt Algidus



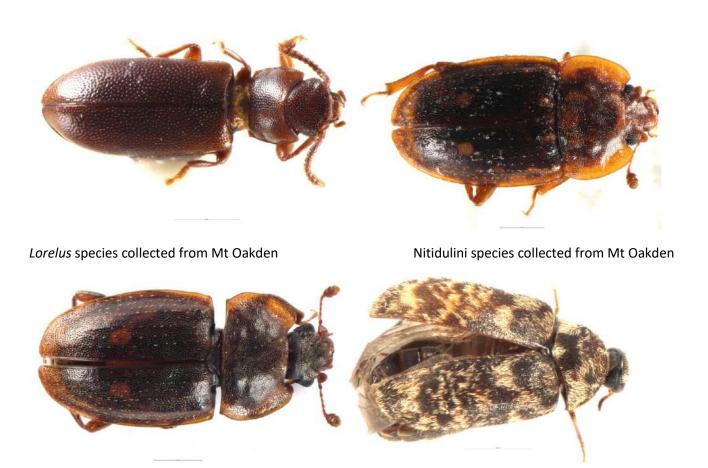
Soft-winged flower beetle (Melyridae) species from Peak Hill

Melyridae species from Mt Algidus



Mimopeus opaculus collected from Mt Oakden

Zeadelium species from Mt Algidus



Sap-feeding beetle (Nitidulidae) from Mt Algidus (left) and Trogoderma species from Peak Hill (right)



Introduced Grass Stem Anthribid Euciodes suturalis and bark beetle Notocoxelus species from Mt Algidus

### **ORTHOPTERA (WETA, GRASSHOPPERS)**



Hemiandrus species from Peak Hill & Mt Algidus

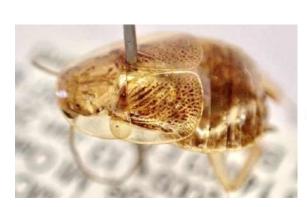
*Isoplectron armatum* from Mt Oakden

Hemideina maori from Mt Oakden



Spur-throated grasshopper *Paprides nitidus* from Peak Hill

### **COCKROACHES**



Parellipsidion pachycercum from Mt Oakden



Celatoblatta sp. from Mt Oakden & Mt Algidus

## **HYMENOPTERA (WASPS, BEES AND ANTS)**



Maaminga marrisi collected from Mt Oakden

Dracula ant (Fulakora saundersi) from Peak Hill



Betyla Rangatira collected from Mt Oakden

Spilomicrus species from Mt Algidus



Spider wasp (Priocnemis conformis) from Mt Algidus

Ichneumonidae from Mt Algidus

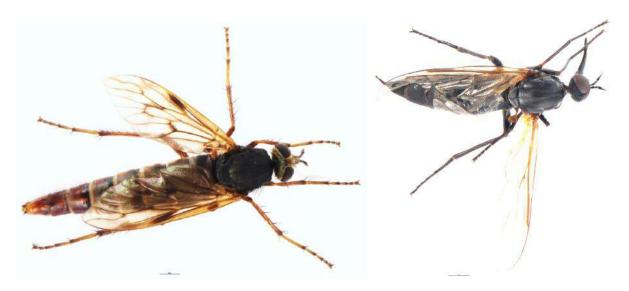


Southern ant Chelaner antarcticus from Mt Algidus (left) and native bee (Leioproctus species) Peak Hill (right)



Native bee (Lasioglossum species) at Peak Hill

## **DIPTERA (FLIES)**



Stiletto fly (Ectinorhynchus species) from Mt Algidus

Dance fly (Superfamily Empidoidea) from Mt Algidus



Bristle fly Peremptor kumaraensis (left) and (right) unidentified marsh fly (Sciomyzidae) from Mt Algidus



Copulating cranefly Leptotarsus species (left) and bush fly Scaptia species (right) from Peak Hill



Cranefly *Leptotarsus vulpinus* from Peak Hill (left), hoverfly *Allograptus* sp. from Mt Algidus (middle) & Peak Hill (right)

### **LEPIDOPTERA (MOTHS & BUTTERFLIES)**



Canterbury alpine boulder copper (*Lycaena tama*) from Mt Algidus (left) and tussock butterfly (*Argyrophenga antipodum*) from Peak Hill (right)

### **HEMIPTERA (TRUE BUGS)**



Dirt-coloured Seed Bugs (Rhyparochromidae) – dorsal view (left), ventral view (right) from Mt Algidus



Dirt-coloured Seed Bugs (Rhyparochromidae) & Rhypodes species, from Mt Oakden & Mt Algidus



Brown Soldier Bug Cermatulus nasalis from Mt Algidus



Black Stonefly Austroperla cyrene (left) and large green stonefly Stenoperla species from Mt Algidus



Endemic cicada Kikihi species and parasitised native Aciphylla aphid (Paradoxaphis species) from Mt Algidus

## Mites (Acari)



Velvet mite (Thrombidiodea) from Mt Algidus

Unknown mite from Mt Algidus



Velvet mite (Thrombidiodea) from Mt Algidus

## <u>Harvestman</u>



Harvestmen (Triaenonychidae) from Mt Algidus & Pristobunus species from Mt Algidus

## **Spiders**



Cambridgea species from Mt Algidus

Anoteropsis hilaris or A. adumbrata from Mt Algidus



Clubiona species from Mt Algidus

Sidymella species from Mt Algidus



Novaranea queribunda from Mt Algidus (lefta) and Tetragnatha species with fly from Peak Hill (right)

## **MOLLUSCS** (Snails)



Unidentified Punctoidea species (left) and Charopidae species (right) from Mt Algidus



Unidentified and Charopidae species (left) and *Therasia* species (right) from Mt Algidus

## **PLANTS**



Single specimen of Aciphylla scott-thomsonii found at Peak Hill

APPENDIX 2: 0 MUSEUM & TI	COLLATED SPECIES LIST FRO	OM LAKE COLERIDGE ARE	A FROM LINCOLI	N UNIVERSITY M	USEUM, CANTERBURY	
	th prefix are "LUNZ" are Lin ix are Canterbury Museum	•	· ·	ens. Numbers		
System ID*	Classification		Collector	Date Collected	Location Collected	Field Coll Site
	Genus	species				
	Moths & Butterflies /Le	 epidoptera				
572296	Asaphodes	abrogata		01 Mar 1873	Oakden's Station, Canterbury, Lake Coleridge, among native grasses	
574448	Notoreas	mechanitis		01 Mar 1873-07 Mar 1873	Lake Coleridge, Canterbury, on blossom of Ake Ake	
574578	Paranotoreas	brephosata		01 Mar 1873	Oakden's Station, Canterbury, Lake Coleridge, among native grass	
589325	Scaptia	adrel	Mr John W Early	18/01/1976	Lake Coleridge, MC, in Convolvulus flower	
591671	Neolimnia	repo	Vida Stout	16/12/1962	North Shore, Lake Coleridge, MC	
596474	Aletia	moderata		01 Mar 1873-07 Mar 1873	Mount Oakdens, near Lake Coleridge, Canterbury, at sugar	
596946	Graphania	lignana		01 Mar 1873-07 Mar 1873	Oakden's Sation, near Lake Coleridge, Canterbury	
597511	Graphania	plena		01 Mar 1873-07 Mar 1873	Oakley Station, MC, near Lake Coleridge, at sugar	

597950	Meterana	meyricci		01 Mar	Oakley Station, MC, near	
		-		1873-07 Mar	Lake Coleridge, at sugar	
				1873		
598202	Persectania	aversa		01 Mar	Oakden's Station near	
				1873-07 Mar	Lake Coleridge,	
				1873	Canterbury, at sugar	
598320	Tmetolophota	alopa		01 Mar	Oakden's Station near	
				1873-07 Mar	Lake Coleridge,	
				1873	Canterbury, at sugar	
598344	Tmetolophota	atristriga		01 Mar	Oakden's Station near	
				1873-07 Mar	Lake Coleridge,	
				1873	Canterbury, at sugar	
598503	Tmetolophota	propria		07 Mar 1873	Oakden's Station near	
					Lake Coleridge,	
					Canterbury, at sugar	
598790	Agrotis	ipsilon		01 Mar	Oakden's Station near	
		aneituma		1873-07 Mar	Lake Coleridge,	
				1873	Canterbury, at sugar	
603248	Pterophorus	innotatalis		01 Mar	Mount Oakdens, near	
				1873-07 Mar	Lake Coleridge, amoung	
				1873	tussock near ? ?	
609323	Scoparia	tetracycla		01 Mar	Oakley Station near Lake	
				1873-07 Mar	Coleridge, Canterbury, ??	
				1873	grass	
572086	Zermizinga	indocilisaria		16/07/1923	Mount Oakden,	
					Canterbury, Homestead	
565354	Orocrambus	xanthogrammu	Mr R W	Mar 1873	Lake Coleridge, MC	
		S	Fereday			
1072076	Notoreas	simplex		01 Mar	Lake Coleridge on	Lake Coleridge;
				1873-07 Mar	blossom of akeake.	Canterbury Land
				1873		District/New Zealand
						Land Districts
565589	Heliothela	atra		01 Mar	Lake Coleridge, MC, on	
				1873-07 Mar	leaves of Akia Akia, west?	
				1873	of the lake in bush line	

	Lycaena	tama	Mike Bowie	21/02/2021	Mt Algidus	Photo - iNaturalist
	Argyrophenga	antipodum	Mike Bowie	24/01/2021	Peak Hill	Photo - iNaturalist
	Flies/Diptera					
563079	Helophilus	hochstetteri	Mr John W Early	12/11/1977	Ryton River, Lake Coleridge, MC - on Hymeranthera alpina	
	Peremptor kumaraensis		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Sciomyzidae		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Allograpta	species 1	Mike Bowie	21/02/2021	Mt Algidus	Photo - iNaturalist
	Allograpta	species 2	Mike Bowie	24/01/2021	Peak Hill	Photo - iNaturalist
	Scaptia		Mike Bowie	24/01/2021	Peak Hill	Photo - iNaturalist
	Ectinorhynchus		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Empidoidea		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Craneflies/Tipulids					
837839	Leptotarsus/Macromastix	tapleyi	Margaret Johns	19/03/1961	Kaka Hill, Lake Coleridge	
838190	Leptotarsus/Macromastix	zeylandiae	Margaret Johns	19/03/1961	Kaka Hill, Lake Coleridge	
	Leptotarsus vulpinus		Mike Bowie		Peak Hill	Photo - iNaturalist
	Ants, bees, Wasps/Hymenop	 tera				
611385	Huberia	striata	W E Moore	5/01/1938	Lake Coleridge, Canterbury	
611995	Priocnemis (Trichocurgus)	carbonarius		Mar 1873	Mount Oakdens, near Lake Coleridge, Canterbury	
	Maaminga	marrisi	Mike Bowie	13/01/2010	Mt Oakden, Lake Coleridge	Pitfall trap
	Fulakora	saundersi	Mike Bowie	25/11/2009	Mt Oakden, Lake Coleridge	Pitfall trap
	Betyla	rangatira	Mike Bowie	25/11/2009	Mt Oakden, Lake Coleridge	Pitfall trap

	Chelaner	antarcticus	Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Leioproctus		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Photo - iNaturalist
	Lasioglossum		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Photo - iNaturalist
	Priocnemis	conformis	Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Spilomicrus		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Springtails/Collembola					
	Holacanthella		Mike Bowie	21/02/2021	Mt Algidus	
	Weta & grasshoppers/Ortho	optera				
732930	Isoplectron	armatum	Peter Johns	11/03/1960	Logs. Lake Coleridge, Kaka Hill, bush near top	
872164	Hemideina	maori	Peter Johns	18/10/1963	Mount Gideon, Rolleston Range, Rakaia River valley	
	Hemideina	maori		25/11/2009	Mt Oakden	Inside old <i>Aciphylla</i> flower stem
	Hemiandrus		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Hemideina	maori	Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Isoplectron	armatum	Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Paprides	nitidus	Mike Bowie	25/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Acrididae		Mike Bowie	21/02/2021	Mt Algidus	Photo - iNaturalist
	Millipedes					
799224	Eumastigonus	hallelujah		15/10/1961	Coleridge Road, Red Hill, near Lake Lyndon	
821288	Icosidesmus	variegatus	Peter Johns	13/03/1960	Kaka Hill, Lake Coleridge	
821355	Icosidesmus	variegatus	Margaret Johns	17/01/1960	Between Scamander Stream and Simois Stream, Lake Coleridge	
830249	Icosidesmus		Peter Johns	18/10/1963	Mount Gideon, Rolleston Range	
821283	Icosidesmus	variegatus	Margaret Johns	18/04/1960	Kaka Hill, NE side	

1016936	Schedotrigonidae		Peter Johns	8/10/1963	Mount Gideon, Rolleston	
					Range	
1016811	Schedotrigonidae		Miss I. M.	19/05/1960	Mount Algidus,	
			MCDONALD		Canterbury	
801892	Pseudoprionopeltis	cinereus	Margaret	17/01/1960	Near Lake Coleridge	
			Johns			
802173	Pseudoprionopeltis	cinereus	Mr I. A. D.	19/05/1960	Mount Algidus, Rakaia	
			MACDONAL		River	
			D			
802190	Pseudoprionopeltis	cinereus	Peter Johns	13/03/1960	Kaka Hill, near Lake	
	, ,			, .	Coleridge	
801949	Pseudoprionopeltis	cinereus	Margaret	18/04/1960	Kaka Hill bush	
	, ,		Johns	' '		
802028	Pseudoprionopeltis	cinereus	Peter Johns	15/10/1961	Red Hill, near Lake	
		5.11.51.53.5		-5, -5, -5 -	Lyndon	
					2,	
	Mayfly/Ephemeroptera					
770168	Deleatidium	fumosum	Terry	24/01/1996	Fisher Stream,	
			Hitchings		Glenthorne Station	
818753	Deleatidium	myzobranchia	Terry	24/01/1996	Fisher Stream,	
		,	Hitchings		Glenthorne Station	
818814	Deleatidium	myzobranchia	Phyllis E	8/11/2001	Lake Coleridge, tributary	
		,	Penney		,	
			,			
	Stonefly/Plecoptera					
	Austroperla	cyrene	Mike Bowie	21/02/2021	Mt Algidus	Photo - iNaturalist
	Stenoperla		Mike Bowie	21/02/2021	Mt Algidus	Photo - iNaturalist
					_	
	Caddisflies/Tricoptera					
123449	Hydrobiosis	harpidiosa	Alexander	30/03/1968	Scamander	
		·	Grant		Stm.,L.Coleridge	
			Mcfarlane			
126959	Hydrobiosis	copis	Alexander	17/12/1964	L. Coleridge, Homestead	
-	<b>,</b>	'	Grant	, , , , , , , , , , , , , , , , , , ,	Stm	
			Mcfarlane			

128695	Hudsonema	amabile	Alexander	10/12/1967	L.COLERIDGE	
			Grant			
			Mcfarlane			
129804	Paroxyethira	hendersoni	Alexander	15/10/1967	L.COLERIDGE,RYTON BAY	
			Grant			
			Mcfarlane			
129886	Psilochorema	bidens	Alexander	4/11/1969	SCAMANDER	
			Grant		STM.,L.COLERIDGE	
			Mcfarlane			
130589	Oecetis	unicolor	Alexander	6/03/1969	L.COLERIDGE,HYDRO	
			Grant		OUTLET	
			Mcfarlane			
132826	Beraeoptera	roria	Alexander	12/12/1965	L.COLERIDGE	
			Grant			
			Mcfarlane			
149750	Notidanus				Coleridge Creek ?	
	True bugs/Hemiptera					
	Rhyparochromidae	species 1	Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Rhyparochromidae	species 2	Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Rhypodes		Mike Bowie	21/02/2021	Mt Algidus & Mt Oakden	Pitfall trap
				&		
				25/11/2009		
	Cermatulus	nasalis	Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Kikihi		Mike Bowie	22/02/2021	Mt Algidus	Pitfall trap
	Cockroach			/		
819553	Celatoblatta	pallidicauda	Margaret	10/07/1960	Kaka Hill, Lake Coleridge	
422242	Calabattatt		Johns	40/07/4066	1.1.6.1.21 1/1 1/11	
122248	Celatoblatta	pallidicauda	Margaret	10/07/1960	Lake Coleridge, Kaka Hill	
227276			Johns	10/10/1055	(top)	
827076	Celatoblatta		Peter Johns	18/10/1963	Mount Gideon, Rolleston Range	
	Parellipsidion	pachycercum	Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap

	Centipede					
838369	Craterostigmus	crabilli	Peter Johns	15/10/1961	Red Hill, near Lake Coleridge	
825075	Lamyctes	emarginatus	Peter Johns		Rakaia River, near Lake Coleridge outlet	
823287	Steneurytion	antipodum	Peter Johns		Kaka Hill, Lake Coleridge	
825133	Zelanion	morbosus	Peter Johns		Red Hill, bush on hill, near Lake Coleridge	
825159	Zelanion	morbosus	Mr I. A. D. MACDONAL D		Mount Algidus, Rakaia River	
	Pseudoscorpion					
947494	Pseudoscorpiones		Peter Johns	13/03/1960	Kaka Hill near Lake Coleridge	
947526	Pseudoscorpiones		Margaret Johns	17/01/1960	near Lake Coleridge	
947735	Pseudoscorpiones		lan Macdonald	19/05/1960	Mount Algidus	
948125	Synsphyronus		Peter Johns	13/03/1960	Kaka Hill near Lake Coleridge	
	Litter hopper/Amphipod					
1087551	Parorchestia	sylvicola	T Hall	1/12/1913	Mt Algidus, Rakaia Gorge	
	Beetles/Coleoptera					
707685	Quedius	fulgidus		Mar 1873	Mount Oakdens, near Lake Coleridge, Canterbury	
507301	Staphylinidae/Aleocharinae		Peter Johns	13/02/1960	Kaka Hill, Lake Coleridge - leaf litter	
529511	Mitua	tuberculicostata	F Murray	7/05/1983	Mount Algidus, MC - in woods on ground	
530792	Mimopeus	opaculus		15/10/1961	Red Hill, near Lake Coleridge, MC -	Nothofagus cliffortioides forest

531005	Mimopeus	opaculus	Peter Johns	13/03/1960	Kaka Hill, Lake Coleridge, MC	
	Mimopeus	opaculus	Mike Bowie	13/01/2010	Mt Oakden	pitfall trap
531438	Mimopeus	thoracicus	F Murray	8/05/1983	Mount Algidus, MC - in	
					old shed on farm	
537615	Elateridae		E Moore	5/11/1938	Lake Coleridge	
549225	Xylotoles			Mar 1873	Mount Oakdens, Lake	
					Coleridge, MC	
555965	Rhantus	pulverosus	Wakefield	Mar 1873	Oakdens Station, Lake	
					Coleridge, MC	
556052	Lancetes	lanceolatus	J Crumpton	9/03/1969	Coleridge Kettle, Lake	
					Coleridge, MC	
556167	Dytiscidae		J Crumpton	22/11/1969	Coleridge Kettle, Lake	
					Coleridge, MC	
556194	Antiporus	strigosulus	J Crumpton	9/03/1969	Coleridge Kettle, Lake	
					Coleridge, MC	
556291	Berosus		J Crumpton	22/11/1969	Coleridge Kettle, Lake	
					Coleridge, MC	
558073	Hydora		J Crumpton	22/11/1969	Coleridge Kettle, Lake	
					Coleridge, MC	
568695	Scydmaenidae/Scydmaeninae		Peter Johns	13/02/1960	Kaka Hill, Lake Coleridge,	
					MC - leaf litter	
884301	Pyronota		Mr John W	23/11/1974	Lake Coleridge, South	
			Early		Island	
	Pyronota		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	
				& 21/2/2021	& Mt Algidus	
911235	Zeadelium		Peter Johns	13/02/1960	Kaka Hill, Lake Coleridge	
	Zeadelium		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Odontria	species 1	Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
				& 21/2/2021	& Mt Algidus	
	Odontria	species 2	Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Elateridae		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Melyridae		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Trogoderma		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap

	Mimopeus opaculus		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Lorelus		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Euciodes suturalis		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Notocoxelus		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Selenopalpus		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
532475	Zolodinus	zelandicus	Peter Johns	15/10/1961	Red Hill, near Porters	
					Pass, MC	
	Weevils/Curculionidae					
	Chalepistes		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Eugnomus dispar		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Eugnomus dispar		Mike Bowie	28/02/2021	Mt Algidus	Pitfall trap
	Gromilus		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Cossoninae		Mike Bowie	25/11/2009	Mt Oakden, Lake Coleridge	Pitfall trap
	Cossoninae		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Abantiadinus nodipennis		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Abantiadinus nodipennis		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Pactolotypus		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Cryptorhynchini		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Cryptorhynchini		Mike Bowie	24/01/2021	Peak Hill, Lake Coleridge	Pitfall trap
	Entiminae		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Phrynixini		Mike Bowie	21/02/2021	Mt Algidus	Pitfall trap
	Mitratethus	baridioides	Mike Bowie	28/02/2021	Mt Algidus	Kauri weevil is an unusual find here!
568919	Curculionidae		Peter Johns	13/02/1960	Kaka Hill, Lake Coleridge, MC - leaf litter	
568575	Curculionidae		Peter Johns	13/02/1960	Kaka Hill, Lake Coleridge, MC - leaf litter	
	Ground beetles/Carabidae					
LUNZ00008256	Actenonyx	bembidioides	Muir, C.A.	29/11/1977	Wilberforce River	Under stones
LUNZ00008257	Actenonyx	bembidioides	Muir, C.A.	29/11/1977	Wilberforce River	Under stones

LUNZ00008258	Actenonyx	bembidioides	Muir, C.A.	29/11/1977	Wilberforce River	Under stones
LUNZ00008259	Actenonyx	bembidioides	Muir, C.A.	29/11/1977	Wilberforce River	Under stones
499403	Actenonyx	bembidioides	E Moore	5/11/1938	Lake Coleridge	
LUNZ00007004	"Anchomenus"	sp. indet.	Sweney, W.J.	29/11/1977	Mount Algidus, near homestead	Under logs
LUNZ00007009	"Anchomenus"	sp. indet.	Emberson, R.M.	29/11/1977	Mount Algidus	Under logs, Nothfagus cliffortoides forest
LUNZ00007005	"Anchomenus"	sp. indet.	Muir, C.A.	29/11/1977	Mount Algidus	Under logs
LUNZ00007006	"Anchomenus"	sp. indet.	Muir, C.A.	29/11/1977	Mount Algidus	Under logs
LUNZ00007007	"Anchomenus"	sp. indet.	Emberson, R.M.	29/11/1973	Mount Algidus	Under bark and logs Nothofagus cliffortioides forest
LUNZ00007008	"Anchomenus"	sp. indet.	Emberson, R.M.	29/11/1973	Mount Algidus	Under bark and logs Nothofagus cliffortioides forest
LUNZ00007010	"Anchomenus"	sp. indet.	Emberson, R.M.	29/11/1973	Mount Algidus	Under bark and logs Nothofagus cliffortioides forest
LUNZ00008953	Anisodactylus	binotatus	Sweney, W.J.	29/11/1977	Mount Algidus	Under logs, Nothofagus solandri
LUNZ00003488	Bembidion	charile	Emberson, R.M.	29/11/1977	Wilberforce River	Under stones
LUNZ00003489	Bembidion	charile	Emberson, R.M.	29/11/1977	Wilberforce River	Under stones
LUNZ00003490	Bembidion	charile	Emberson, R.M.	29/11/1977	Wilberforce River	Under stones
LUNZ00003491	Bembidion	charile	Emberson, R.M.	29/11/1977	Wilberforce River	Under stones
LUNZ00003492	Bembidion	charile	Sweney, W.J.	29/11/1977	Wilberforce River, west bank, Mount Algidus	Under rock
897610	Cerabilia	oblonga	Peter Johns	15/10/1961	Red Hill near Lake Lyndon	
-	Cerabilia	nr. <i>striatula</i>	Mike Bowie	21/02/2021	Mount Algidus	Pitfall trap
LUNZ00001446	Cicindela	latecincta	Early, J.W.	1/01/1989	Lake Coleridge	

LUNZ00001447	Cicindela	latecincta	Early, J.W.	1/01/1989	Lake Coleridge	
502170	Ctenognathus		F Murray	7/05/1983	Mount Algidus, under wood	
	Ctenognathus		Mike Bowie	21/02/2021	Mount Algidus	Pitfall trap
911670	Demetrida	dieffenbachii	Peter Johns	2/06/1962	Dry Stream, Castle Hill Peak basin	
LUNZ00007851	Dicrochile	thoracica	Butcher, M.R.	28/02/1977	Mount Algidus	Under logs
LUNZ00007852	Dicrochile	thoracica	Butcher, M.R.	28/02/1977	Mount Algidus	Under logs
LUNZ00008514	Dicrochile	thoracica	Butcher, M.R.	28/02/1977	Mount Algidus	Under logs
LUNZ00008515	Dicrochile	thoracica	Butcher, M.R.	28/02/1977	Mount Algidus	Under logs
LUNZ00007752	Dicrochile	thoracica	Muir, C.A.	29/11/1977	Mount Algidus	Under logs, Nothofagus forest
LUNZ00007853	Dicrochile	thoracica	Muir, C.A.	29/11/1977	Mount Algidus	Under logs, Nothofagus forest
LUNZ00007854	Dicrochile	thoracica	Jesson, K.E.	29/11/1977	Mount Algidus	Under logs, Nothofagus forest
LUNZ00003138	Mecylcothorax	rotundicollis		29/11/1977	Mount Algidus	Under logs
430573	Mecodema	fulgidum	Peter Johns	15/10/1961	Red Hill,	
	Mecodema	fulgidum	Mike Bowie	13/01/2010	Mt Oakden	
LUNZ00002462	Mecodema	huttense	Butcher, M.R.	29/11/1977	Mount Algidus	Under logs, Nothofagus forest
LUNZ00002463	Mecodema	huttense	Emberson, R.M.	29/11/1973	Mount Algidus	Under bark and logs Nothofagus cliffortioides forest
LUNZ00002464	Mecodema	huttense	Butcher, M.R.	29/11/1977	Mount Algidus	Under logs, Nothofagus forest
	Mecodema	huttense	Mike Bowie	24/01/2021	Peak Hill	
	Mecodema	new species?	Mike Bowie	24/01/2021	Peak Hill	
494878	Megadromus	antarcticus	Peter Johns	13/03/1960	Kaka Hill, Lake Coleridge	

494905	Megadromus	antarcticus	Margaret Johns	3/09/1961	Kaka Hill	
LUNZ00004802	Megadromus	antarcticus	Butcher, M.R.	29/11/1977	Mount Algidus	Under logs, Nothofagus forest
LUNZ00004803	Megadromus	antarcticus	Butcher, M.R.	29/11/1977	Mount Algidus	Under logs, Nothofagus forest
LUNZ00004804	Megadromus	antarcticus	Butcher, M.R.	29/11/1977	Mount Algidus	Under logs, Nothofagus forest
LUNZ00004812	Megadromus	antarcticus	Sweney, W.J.	29/11/1977	Mount Algidus	Under logs, larch plantation, edge of trees
LUNZ00004814	Megadromus	antarcticus	Muir, C.A.	29/11/1977	Mount Algidus	
LUNZ00004815	Megadromus	antarcticus	Muir, C.A.	29/11/1977	Mount Algidus	
LUNZ00004816	Megadromus	antarcticus	Emberson, R.M.		Mount Algidus	Under logs, Nothofagus cliffortioides forest
	Megadromus	antarcticus	Mike Bowie	21/02/2021	Mount Algidus	
LUNZ00005060	Megadromus	enysi	Sweney, W.J.	29/11/1977	Mount Algidus, near homestead	Under logs
LUNZ00005061	Megadromus	enysi	Sweney, W.J.	29/11/1977	Mount Algidus, near homestead	Under logs
LUNZ00005062	Megadromus	enysi	Sweney, W.J.	29/11/1977	Mount Algidus, near homestead	Under logs
LUNZ00005063	Megadromus	enysi	Sweney, W.J.	29/11/1977	Mount Algidus, near homestead	Under logs
LUNZ00005056	Megadromus	enysi	Sweney, W.J.	29/11/1977	Mount Algidus (east aspect)	Under logs, larch plantation, edge of trees
LUNZ00005052	Megadromus	enysi	Jackson, T.	29/11/1977	Mount Algidus	Under logs
LUNZ00005053	Megadromus	enysi	Jackson, T.	29/11/1977	Mount Algidus	Under logs
LUNZ00005044	Megadromus	enysi	Butcher, M.R.	29/11/1977	Mount Algidus	Under logs
LUNZ00005045	Megadromus	enysi	Butcher, M.R.	29/11/1977	Mount Algidus	Under logs

LUNZ00005046	Megadromus	enysi	Butcher, M.R.	29/11/1977	Mount Algidus	Under logs
LUNZ00005047	Megadromus	enysi	Butcher, M.R.	29/11/1977	Mount Algidus	Under logs
LUNZ00005069	Megadromus	enysi	Sweney, W.J.	29/11/1977	Mount Algidus	Under logs
LUNZ00005049	Megadromus	enysi	Emberson, R.M.	29/11/1977	Mount Algidus	Under logs, Nothfagus cliffortoides forest
LUNZ00005050	Megadromus	enysi	Emberson, R.M.	29/11/1977	Mount Algidus	Under logs, Nothfagus cliffortoides forest
LUNZ00005054	Megadromus	enysi	Jesson, K.E.	29/11/1977	Mount Algidus	Under logs, Nothofagus forest
LUNZ00005055	Megadromus	enysi	Jesson, K.E.	29/11/1977	Mount Algidus	Under logs, Nothofagus forest
LUNZ00005057	Megadromus	enysi	Muir, C.A.	29/11/1977	Mount Algidus	Under logs, Nothofagus forest
LUNZ00005058	Megadromus	enysi	Muir, C.A.	29/11/1977	Mount Algidus	Under logs, Nothofagus forest
495482	Megadromus	walkeri	Margaret Johns	30/10/1960	Kaka Hill	
495478	Megadromus	walkeri	Peter Johns	15/10/1961	Red Hill	
LUNZ00003035	Metaglymma	moniliferum	Butcher, M.R.	28/04/1977	Mount Algidus	
LUNZ00003039	Metaglymma	moniliferum	Sweney, W.J.	29/11/1977	Mount Algidus	Under logs
LUNZ00003033	Metaglymma	moniliferum	Emberson, R.M.	29/11/1973	Mount Algidus	Under bark and logs Nothofagus cliffortioides forest
LUNZ00003034	Metaglymma	moniliferum	Emberson, R.M.	29/11/1973	Mount Algidus	Under bark and logs Nothofagus cliffortioides forest
LUNZ00003036	Metaglymma	moniliferum	Muir, C.A.	29/11/1977	Mount Algidus	Under logs Nothofagus forest
LUNZ00003037	Metaglymma	moniliferum	Butcher, M.R.	29/11/1977	Mount Algidus	Under logs <i>Nothofagus</i> forest

LUNZ00003038	Metaglymma	moniliferum	Sweney, W.J.	29/11/1977	Mount Algidus, near homestead	Under logs
	Metaglymma	moniliferum	Mike Bowie	13/01/2010	Mount Oakden, near Lake Coleridge	Pitfall trap
499468	Notagonum	submetallicum		Mar 1873	Mount Oakden, near Lake Coleridge	
	Oregus	aereus	Mike Bowie	13/01/2010	Mount Oakden, near Lake Coleridge	Pitfall trap
LUNZ00008201	Scopodes	laevigatus	Sweney, W.J.	29/11/1977	Mount Algidus	Under stones, fellfield
LUNZ00008202	Scopodes	laevigatus	Sweney, W.J.	29/11/1977	Mount Algidus	Under stones, fellfield
LUNZ00008203	Scopodes	laevigatus	Emberson, R.M.	29/11/1977	Mount Algidus	Under stones, fellfield
LUNZ00008204	Scopodes	laevigatus	Emberson, R.M.	29/11/1977	Mount Algidus	Under stones, fellfield
LUNZ00008226	Scopodes	edwardsii	Sweney, W.J.	29/11/1977	Mount Algidus	Under stones, fellfield
LUNZ00008227	Scopodes	edwardsii	Emberson, R.M.	29/11/1977	Mount Algidus	Under stones, fellfield
LUNZ00008228	Scopodes	edwardsii	Emberson, R.M.	29/11/1977	Mount Algidus	Under stones, fellfield
LUNZ00008229	Scopodes	edwardsii	Emberson, R.M.	29/11/1977	Mount Algidus	Under stones, fellfield
LUNZ00008230	Scopodes	edwardsii	Emberson, R.M.	29/11/1977	Mount Algidus	Under stones, fellfield
LUNZ00008225	Scopodes	edwardsii	Butcher, M.R.	29/11/1977	Mount Algidus	Under rocks on summit
499802	Scopodes	edwardsii	E Moore	5/11/1938	Lake Coleridge	
499917	Scopodes	fossulatus	Peter Johns	18/10/1963	Mount Gideon, Rolleston Range	
LUNZ00003117	Selenochilus	syntheticus	Sweney, W.J.	29/11/1977	Mount Algidus	Under logs, Nothofagus solandri
LUNZ00003116	Selenochilus	syntheticus	Butcher, M.R.	29/11/1977	Mount Algidus	Under logs

LUNZ00003114	Selenochilus	syntheticus	Emberson,	29/11/1977	Mount Algidus	Under logs,
			R.M.			Nothofagus
						cliffortioides forest
LUNZ00003115	Selenochilus	syntheticus	Emberson,	29/11/1977	Mount Algidus	Under logs,
			R.M.			Nothofagus
						cliffortioides forest
LUNZ00003118	Selenochilus	syntheticus	Jesson, K.E.	29/11/1977	Mount Algidus	Under logs,
						Nothofagus forest
LUNZ00003119	Selenochilus	syntheticus	Jesson, K.E.	29/11/1977	Mount Algidus	Under logs,
						Nothofagus forest
LUNZ00003120	Selenochilus	syntheticus	Muir, C.A.	29/11/1977	Mount Algidus	Under logs,
						Nothofagus forest
911048	Trichopsida	diversa	Peter Johns	18/10/1963	Mount Gideon, Rolleston	
					Range	
·	Trichopsida	nr. <i>debilis</i>	Mike Bowie	21/02/2021	Mount Algidus	Pitfall trap