Ecology supplementary report – Terrestrial Invertebrates

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NZ TRANSPORT AGENCY WAKA KOTAHI
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Glossary

Term	Meaning
AEE	Assessment of Effects on the Environment Report
DOC	Department of Conservation
DOC Assessment Guidelines	DOC's *Guidelines for Assessing Ecological Values*, developed by Davis *et al.* in 2016
EcIA guidelines	Ecological Impact Assessment guidelines
EIANZ	Environment Institute of Australia and New Zealand
Project	The Mt Messenger Bypass project
Project footprint	The Project footprint includes the road footprint (i.e. the road and its anticipated batters and cuts, spoil disposal sites, haul roads and stormwater ponds), and includes the Additional Works Area (AWA) and 5m edge effects parcel.
SH3	State Highway 3
Terrestrial Invertebrate Assessment	Volume 3 AEE Technical report 7c: Assessment of Ecological Effects – Terrestrial Invertebrates
Transport Agency	New Zealand Transport Agency

1 Introduction

The NZ Transport Agency (Transport Agency) is proposing to construct and operate a new section of State Highway 3 (SH3), generally between Uruti and Ahititi to the north of New Plymouth. The Transport Agency lodged applications for resource consents and a Notice of Requirement on 15 December 2017 to alter the existing SH3 designation, to enable the Mt Messenger Bypass project (the Project) to proceed.

This application included assessments of ecological effects attached as Technical Reports 7a – 7h, in Volume 3 of the Assessment of Effects on the Environment (AEE) report. The Assessment of Ecological Effects – Terrestrial Invertebrates (Terrestrial Invertebrates Assessment) dated December 2017 was completed as part of this package. The purpose of the Terrestrial Invertebrates Assessment was to assess potential adverse effects of the Project on terrestrial invertebrates, and to inform the assessment of effects in the AEE and the proposed mitigation and offset package for the Project.

The ecology technical reports noted the conservative and precautionary approach taken in assessing potential adverse ecological effects from the Project, and that more information would be available following summer field investigations.

These field investigations, which have now concluded, have informed this supplementary report. The purpose of this report is to describe those investigations and their results as they relate to terrestrial invertebrates, and to update the original Terrestrial Invertebrates Assessment as appropriate.

2 Further ecological investigations

2.1 Introduction

The original Terrestrial Invertebrates Assessment, dated December 2017, included assessments of ecological values and potential adverse effects based on the information available at the time the assessment was completed. As noted in that report and in Section 1 above, a conservative approach was taken when assessing potential adverse effects, noting that future investigations would produce information to support and strengthen these ecological effects assessments.

2.2 Methodology

2.2.1 Field assessment methods

As recorded in the original Terrestrial Invertebrates Assessment, a search of databases and published literature found a total of 179 invertebrate taxa recorded in the vicinity of Mt Messenger (Watts 2017). Due to the seasonal constraints of sampling for invertebrates, no substantial empirical data were collected from the Project footprint for the purpose of lodging the notice of requirement and resource consent application in December 2017. The analysis in the original Terrestrial Invertebrates Assessment was informed by a desktop survey, and site walkovers carried out in February and July 2017.

The invertebrate survey summarised in this addendum to Watts (2017) occurred in November 2017, with the objective of obtaining a more comprehensive species list of invertebrate taxa, and detecting any threatened species present within the Project footprint. Due to the time constraints, the rapid qualitative survey carried out provides a 'snap-shot' of the invertebrate community present within the Project footprint.

2.2.1.1 Sampling design

Eleven plots were placed within the Project footprint (where sites could be safely accessed) in areas of native forest and scrub habitats in the Mimi catchment (Figure 2.1a) and in the Mangapepeke Valley (Figure 2.1b).

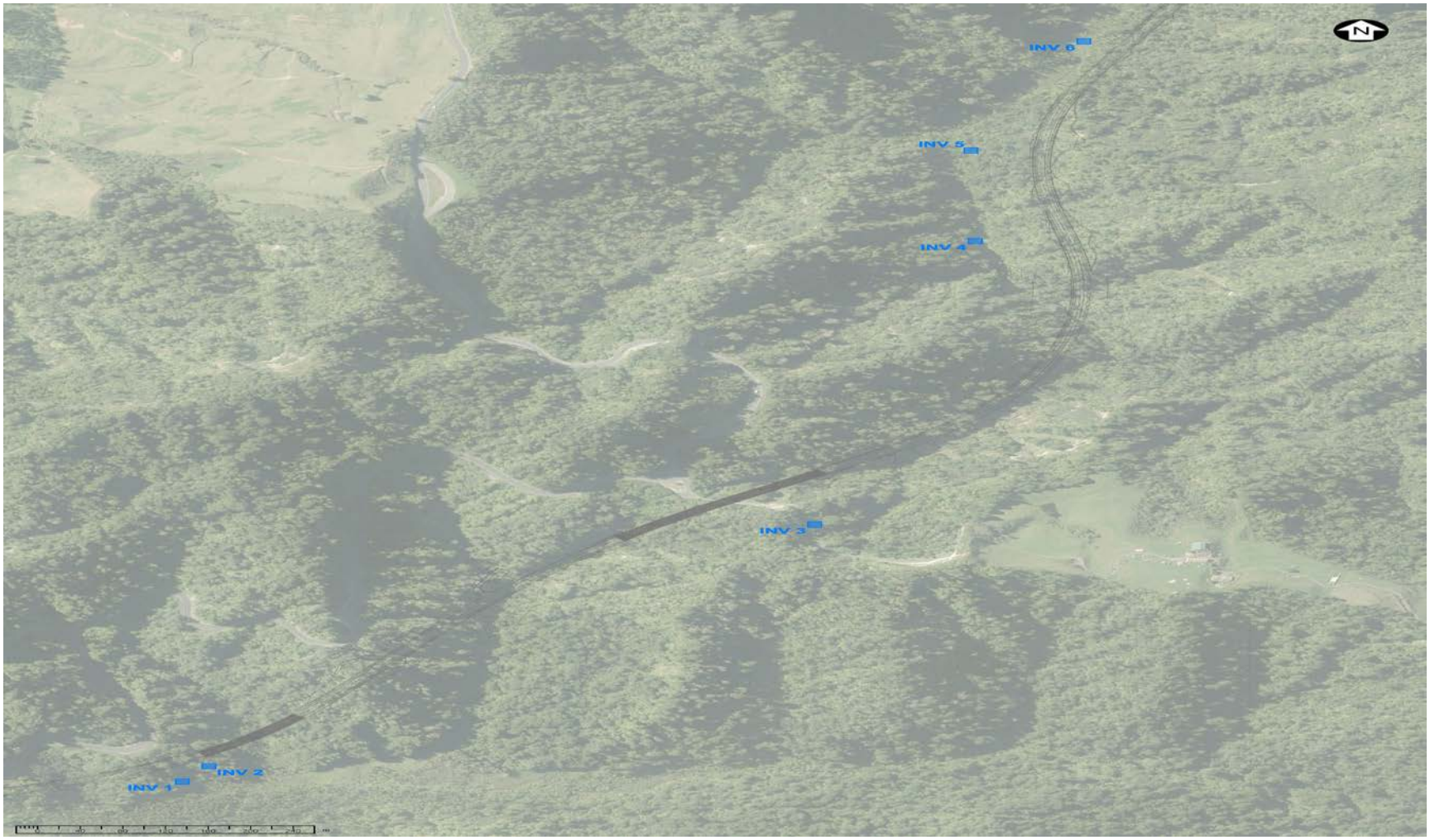

Figure 2.1a – Map of the Project footprint showing the location of invertebrate plots in the Mimi catchment (marked with a blue symbol and labelled INV1–5).

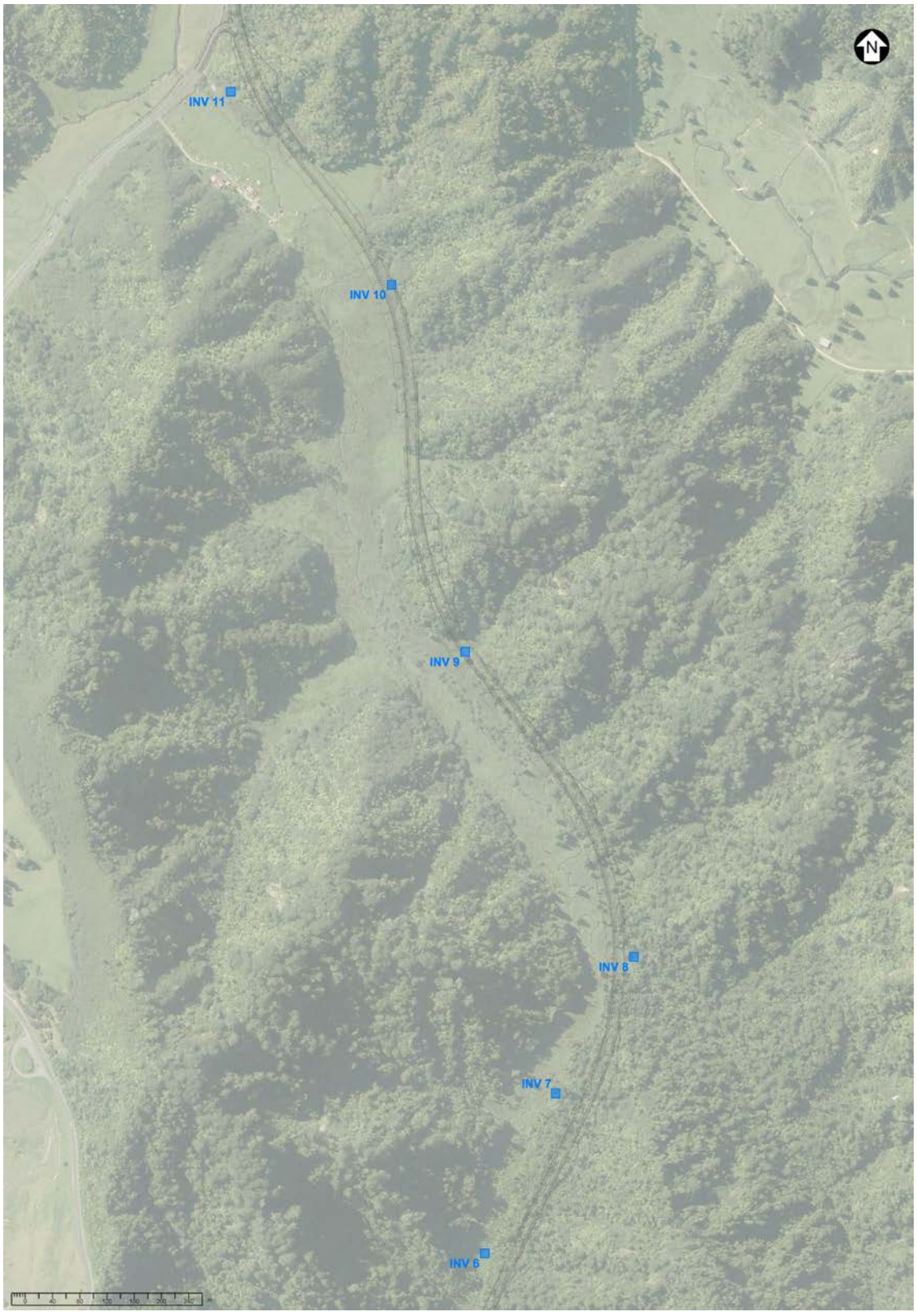

Figure 2.1b – Map of the Project footprint showing the location of invertebrate plots in the Mangapepeke Valley (marked with a blue symbol and labelled INV6–11).

2.2.1.2 Invertebrate sampling techniques

Numerous techniques are available for sampling invertebrate communities, including:

- pitfall traps
- malaise traps
- visual searching
- suction traps
- insecticide fogging
- sticky traps
- light traps, and
- sweep-netting

These techniques guarantee rapid acquisition of considerable collections and provide researchers with specimens. The method chosen for sampling often depends on the invertebrate group selected for study. In the present study, malaise traps were used to collect the flying insect fauna inhabiting foliage and pitfall traps were used to sample the ground-dwelling invertebrate fauna. Both types of traps are passive, easily transported and installed in the field, and can be left unattended for several weeks. As the potential adverse effects of the Project on the terrestrial invertebrate communities are most likely to occur during the construction phase, additional sampling occurred below-ground, focussing on earthworms.

Malaise trap sampling

Malaise traps, which resemble open-sided tents made of fine mesh cloth, were used to collect insects that fly or are blown into the trap (Townes 1972; Mooed & Meads 1987; Hutcheson 1990; Hutcheson & Jones 1999). The standard malaise trap design used in forest ecosystems was modified to endure the increased exposure to the wind in New Zealand and has smaller dimensions (Figure 2.2). The two end poles were each secured to a flat wooden plate on the ground for increased stability. This trap design has been extensively tested and is now used routinely to sample invertebrates within New Zealand wetlands and forest (Watts et al. 2012, 2015).

Figure 2.2 – A malaise trap used to collect flying insects, particularly flies, wasps and beetles.

At each invertebrate plot (11 in total), one malaise trap was placed in the centre of a 10 x 10 m plot (Figure 2.3). The collecting jar containing 150ml of 50% monopropylene glycol was orientated northward. Traps were set for one month from 30 October to 26 November 2017 and invertebrates were collected at the end of the sampling and preserved in 70% ethanol.

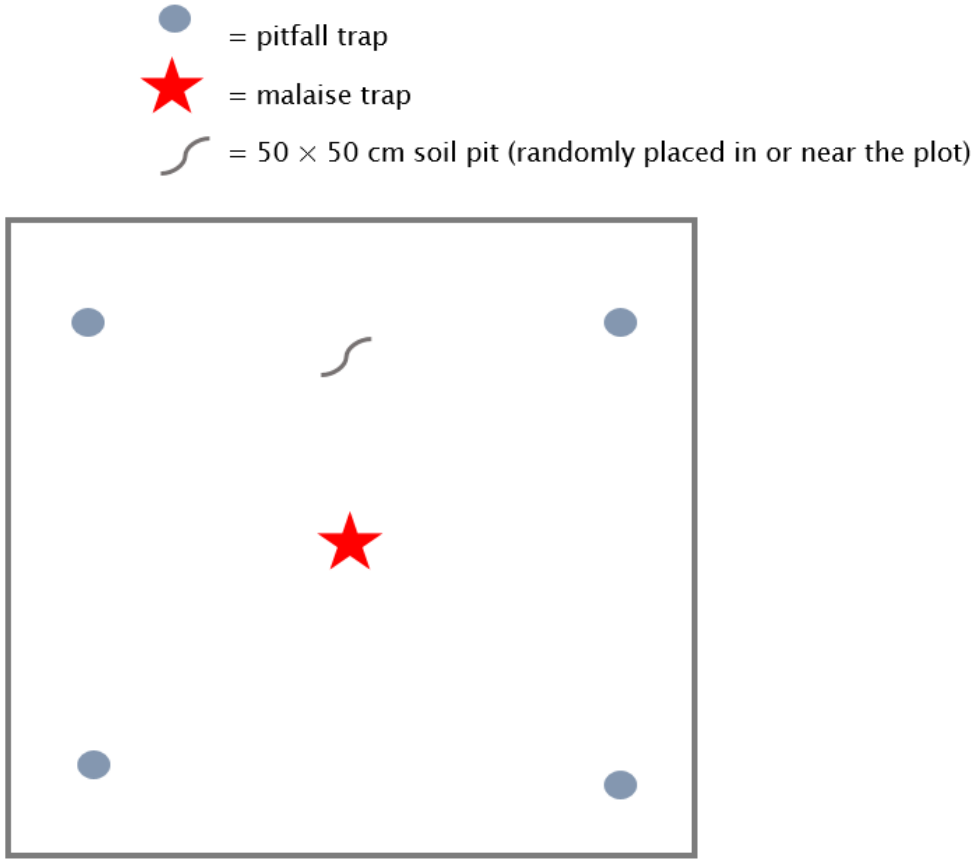

Figure 2.3 – Layout of sampling points within the 10 x 10 m plot.

Captured invertebrates were sorted to Order level using a binocular microscope. Some taxa (Acari, Collembola, Diptera – Cecidomyiidae; Chirononmidae: Orthocladiiindae and Psychodidae) were not counted due to their small size and high abundances in the samples. Other taxa were not counted once more than >25, 50 or 100 individuals were found in the samples. These methods are routine when dealing with invertebrate samples that have a number of specimens. Remaining specimens were identified as far as taxonomically known by taxonomist Stephen Thorpe and counted. Any ecological trait data known about the specimens, including trophic group and native/introduced status, were noted.

Pitfall trap sampling

Pitfall traps have been used extensively to sample ground-dwelling invertebrates in New Zealand (Moeed & Meads 1985; Kuschel 1990; Crisp et al. 1998; Reay & Norton 1999; Watts & Gibbs 2002; Watts et al. 2008). They rely on the invertebrate falling into the trap, which contains a chemical solution that kills and preserves the specimens. Ground-dwelling invertebrates were sampled using pitfall traps consisting of a 100mm-deep plastic cup (105mm diameter) containing 100ml of 50% monopropylene glycol (Figure 2.4). Four pitfall traps were placed around every malaise trap, each 5m away from a corner of the malaise trap within the 10 x 10 m plot (total of 44 pitfall traps). Traps were set for one month from 30 October to 26 November 2017, and invertebrates were collected at the end of the sampling and preserved in 70% ethanol.

Invertebrates captured in the pitfall traps were sorted to Order level using a binocular microscope. Some taxa (Acari, Collembola, Diptera – Psychodidae, Hemiptera – Aphididae) were not counted due to their small size and high abundance in the samples. This is standard practice of sorting invertebrate samples that contain a large number of individuals. Specimens were identified as far as taxonomically known by expert Stephen Thorpe and counted. Any ecological trait data known about specimens identified to species level were noted.

Figure 2.4 – A pitfall trap used to collect ground-dwelling invertebrates. A plastic cup was sunk vertically into the ground so that the rim of the cup was flush with the ground. A cover (placed beside the trap for the purpose of the photo) was positioned a few centimetres immediately above the trap to minimise the amount of debris and water entering the trap.

Earthworm surveys

Up to two 50 × 50 cm pits were excavated and randomly dug within or near to each of the 11 invertebrate plots to survey earthworms in October and December 2017. In total, 22 earthworm pits were dug (Figure 2.5a and Figure 2.5b). Three layers were hand-searched using a headlamp: litter, top 10cm of soil, and 10–30 cm deep soil. All soil was returned and litter placed back on top. In the laboratory, each earthworm was weighed and identified to recognised taxonomic units (hereafter referred to as species). Any earthworms collected in the pitfall traps were extracted and identified.

Figure 2.5a – Map of the Project footprint showing the location of the earthworm pits in the Mimi catchment (marked with an orange symbol and labelled EW1–22).

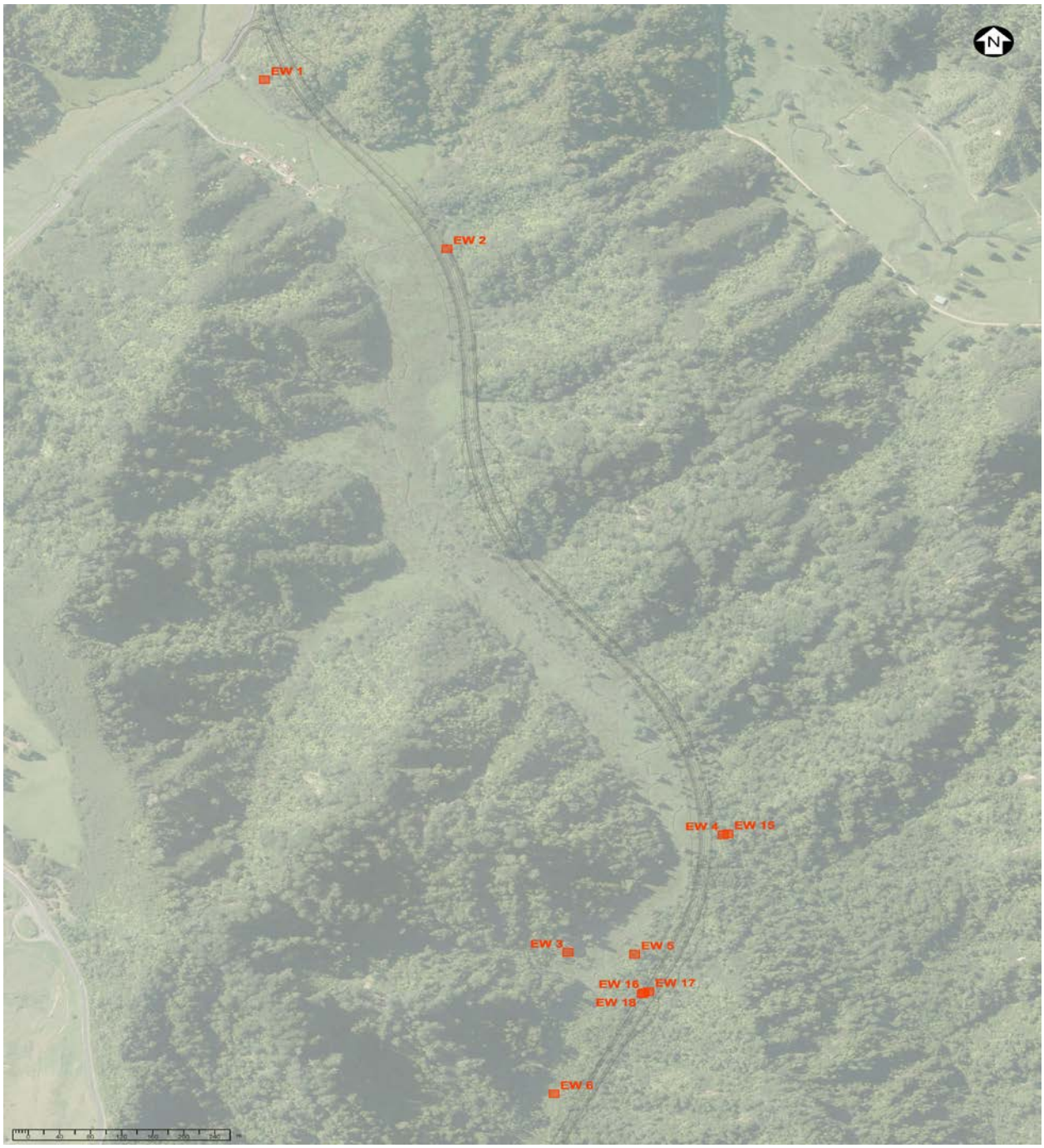

Figure 2.5b – Map of the Project footprint showing the location of the earthworm pits in the Mangapepeke Valley (marked with an orange symbol and labelled EW1–22).

2.2.2 Assessment of effects methodology

As in the December 2017 report, the assessment of effects based on the summer investigations broadly follows the EcIA Guidelines (EIANZ, 2015), with some adaptation, including to allow for expert opinion to be applied within the context of the EIANZ framework. Section 2.3 of the December 2017 report sets out the methodology in full including the three-step assessment of ecological values, magnitude of unmitigated effects, and the level of unmitigated effects.

2.3 Results from further investigations

As no invertebrate community surveys have occurred at Mt Messenger within the immediate surrounds of the Project footprint, the sampling programme has addressed the lack of knowledge of invertebrates known from the area. The rapid qualitative survey carried out provided a 'snap-shot' of the invertebrate community present and the sampling occurred over one month in late spring. A one-month sampling period is a routine sampling period and the timing of the sampling was appropriate to obtain a robust dataset.

2.3.1 Invertebrates collected using malaise traps

In total, 4,987 invertebrates from 259 taxa in 24 Orders were collected (Appendix A). Diptera (53%), Hymenoptera (15%) and Coleoptera were the most abundant Orders caught (excluding the Orders containing species that were too small and/or too numerous to count). The most species-rich Orders in the samples were Diptera (87), Coleoptera (72), Hymenoptera (31), and Hemiptera (27).

Four species of fly, all caught as singletons or doubles, were found in the malaise traps and are noteworthy. The first was Chelipoda n.sp, a new species. The New Zealand representatives of this genus were revised by Plant (2007), based on large numbers of specimens from all over the country. A single specimen from samples collected from the Project footprint is quite unlike anything recorded by Plant (2007), and so almost certainly represents a new species. This specimen is the only known specimen of this species (S Thorpe, pers. comm. 2018).

The second species, G*ondwanamyia zealandica*, is in the genus of minute flies that was only very recently recognised (Sinclair *et al.* 2016). There are two known species, one in Chile and the other in New Zealand. The single specimen found within the Project footprint is only the second record for the New Zealand species. The first specimen was found in native forest near Auckland.

The third species is *Parentia whirinaki*, a Dolichopodid fly that is predacious. This species is known from two specimens collected in Whirinaki Forest (Bickel 1991) and is listed by Andrew et al. (2012) as having a New Zealand Threat Classification of 'Naturally Uncommon'.

The final fly species is *Zealantha thorpei*, an Anthomyzid fly whose larvae live in grasses or sedges. This species is listed by Andrew et al. (2012) as having a New Zealand Threat Classification of 'Naturally Uncommon'. It is known from the North Island and northern South Island (Rohacek 2007). More recently it has been found to be very common in

suburban Auckland so it is likely that its threat classification will be revised (S Thorpe, pers. comm).

Ecological trait data including trophic group, and native versus introduced status, were obtained for each taxa sampled in the malaise traps (Appendix A). The majority (95%) of taxa found were native (Appendix A). The invertebrates collected were from a variety of trophic guilds.

2.3.2 Invertebrates collected with pitfall traps

A total of 2,391invertebrates (excluding groups that were not counted), comprising 172 taxa from 21 Orders were captured (Appendix B). Aside from Acari and Collembola which were not counted, Coleoptera (20%), Hymenoptera (19%), Amphipoda (18%), and Diperta (16%) were the most abundant Orders. Coleoptera were also the most species-rich group, with 87 species found.

Two important taxa found in the pitfall traps were *Peripatoides suteri* (Figure 2.6) and *Peripatoides novaezealandiae*. These species are live bearing (ovoviviparous), with *P. suteri* having 16 pairs of legs, while *P. novaezealandiae* has 15 pairs of legs. One specimen of *P. suteri* was found at Invertebrate plot 3 in nikau-dominated vegetation (Figure 2.1), while another specimen was found at Invertebrate plot 10 in modified kānuka-pasture vegetation (Figure 2.1). This species is found in Taranaki, Coromandel, Whakapapa, and the Waitakere Ranges (Department of Conservation 2014). It is only known from a few sites within native forests in Taranaki (Gleeson, pers. comm. 2018). This species is listed as 'Vulnerable' on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species (IUCN 2012). An additional record of this species was also found under loose bark on a totara tree along one of the pest lines west of the Project footprint (Lizard survey team, pers. comm. 2018). A smaller specimen of *P. novaezealandiae* was also found at Invertebrate plot 10. This species is the mostly widely distributed form within New Zealand; however, it is actually a species complex, which is currently under revision. Subsequently all ovoviviparous forms with 15 pairs of legs with 3 distal papillae on the feet are considered to be *P. novaezealandiae*. Its current threat status is unclear (Oliveira et al. 2012). Two species of peripatus are included in the most recent New Zealand Threat Classification listing - *Ooperipatellus nanus* (Naturally Uncommon) and *P. indigo* (Data Deficient) (Buckley et al. 2012).

Figure 2.6 – One of the specimens of Peripatoides suteri found in a pitfall trap at Invertebrate plots 3 and 10 within the Project footprint.

Ecological trait data including trophic group and 'native versus introduced' status, were also obtained for each taxa sampled in the pitfall traps (Appendix B). Native taxa dominated (94%) the pitfall trap samples collected (Appendix B). The invertebrates found were from a variety of trophic guilds.

2.3.3 Earthworm surveys

A total of 39 native earthworms (representing 8 species) and 18 introduced earthworms (representing five species) were collected, as were 11 specimens that were not identifiable due to sampling damage or their juvenile state (Appendix C). Of the native earthworms collected, three likely represent new species, one is classed as "Data Deficient" and four are considered "Not Threatened" (Buckley et al. 2012).

2.3.4 Assessment of effects

In light of the findings from the summer field surveys outlined above, the assessment of effects of the Project on terrestrial invertebrates outlined in Watts (2017) still holds, and remains as 'High'. The ecological value of the Project footprint for terrestrial invertebrates is also assessed as 'High'.

The assessment of effects on terrestrial invertebrates outlined in Watts (2017) took a conservative and precautionary approach. This approach to the assessment of effects on invertebrates has been continued in this supplementary report, and is discussed in relation to individual species in the following section.

This assessment is based on the potential (and also now known) presence of high value species in the Project footprint (e.g. *Peripatoides suteri)*. It also considers a conservative approach regarding what constitutes a 'moderate' loss or alteration of baseline conditions, and a conservative assessment of the possibility that there will be a 'moderate' loss of

known populations and ranges of relevant species (noting that less than 1% of the available habitat in the wider Project area will be affected by the Project). In practice, it is likely that the true magnitude of unmitigated effects on terrestrial invertebrates will be 'Low' to 'Moderate'. In any event, a range of mitigation measures that will benefit invertebrates are proposed in respect of the Project.

2.4 Discussion and recommended mitigation

Within the plots in the Project footprint, diverse invertebrate fauna from a range of trophic groups were found, and these varied with vegetation type. It is encouraging that the invertebrate fauna sampled along the Project footprint were dominated by native taxa. This indicates that these habitats are useful for native invertebrate conservation and that the invertebrate communities of these habitats, even within highly modified forest, have a high resistance to invasion. The knowledge obtained from the addition of the ecological trait data does not influence the assessment of effects as outlined in Watts (2017).

Two species of peripatus, *P. suteri* and *P. novaezealandiae,* were found within the Project footprint. The record of *Peripatoides suteri,* classified as 'Vulnerable' on the IUCN Red List of Threatened Species (IUCN 2012), in Invertebrate plots 3 and 10 is important. Peripatus inhabit damp environments within and beneath logs and leaf litter (Department of Conservation 2014). This species can reach quite high densities despite its very restricted distribution (Gleeson, pers. comm. 2018). The presence of peripatus in the highly modified kanuka-pasture habitat of Invertebrate plot 10 is intriguing. Peripatus have been found in marginal habitats, such as in logs in tussock grassland and exotic plantations, and under rocks near glaciers (see references in Department of Conservation (2014)) elsewhere in New Zealand.

The potential effects of the Project on peripatus during construction and operation are:
1. direct mortality of peripatus during vegetation clearance and/or earthworks,
2. habitat loss, and
3. habitat modification and disturbance.

Due to these potential effects on peripatus and their habitat, and given the threat status of *P. suteri*, a peripatus management plan is recommended. This plan should take insights from the translocation of *P. novaezealandie* in the Caversham Valley in Dunedin, undertaken in association with the widening of SH1. In that case, mitigation involved translocation of *P. novaezealandie* in their woody habitat, translocation of individual animals, and creation of new woody material to compensate for the removal of 0.5ha of peripatus habitat (MacGibbon 2012; NZTA 2017). Although monitoring six months after the translocations failed to detect any peripatus in artificial monitoring stacks (Connolly 2013), peripatus were found within the stacks two years after translocation. While it remains unknown whether these individuals were translocated animals or offspring of translocated animals (MacGibbon 2017), the presence and persistence of peripatus at the site indicates that the artificial habitat is favourable.

In addition to actions that will be proposed in the peripatus management plan, finding peripatus within the Project footprint reiterates the importance of 'recycling' habitat

elements such as logs as during vegetation clearance (Watts 2017). These logs represent vital habitat for peripatus and other invertebrates and could be placed into existing forest or into roadside areas that are being replanted after construction.

Two fly species (*Parentia whirinaki* and *Zealantha thorpei*) with a New Zealand Threat Classification of 'Naturally Uncommon' were found. This category is generally reserved for taxa that need to be further qualified or whose distribution is confined to specific geographic areas (Townsend et al. 2008; Andrew et al. 2012). The classification of *Z. thorpei* is likely to be revised to 'Not Threatened' when it is next reassessed, and the classification of *P. whirinaki* may also change (S Thorpe, pers. comm. 2018). Finding these two taxa within the Project footprint is unlikely to have any implications on the assessment of effects outlined by Watts (2017).

New species of native earthworms are to be expected in surveys such as the one at Mt Messenger. Historical earthworm sampling has been limited and recent surveys have discovered multiple new species, and even new genera (Buckley et al. 2011) due to New Zealand's diverse earthworm fauna. The discovery of possible new species from the predominantly lower North Island and South Island genera *Eodrilus* and *Maoridrilus*, at the same location as the other species that are more often encountered north of Mt Messenger, confirms that the Project area is indeed located near the boundary of earthworm "faunal areas" as defined by Lee (1959). The *Maoridrilus* and *Rhododrilus* species are small and similar to other known species so it is quite possible they may be found in other locations with further sampling effort. The *Eodrilis* species by comparison is a medium-large earthworm that can excrete a bright green glowing mucous when disturbed; both of these characteristics would have made this species more likely to be discovered earlier, if it was not restricted to the previously poorly sampled Mt Messenger area alone. If further investigation confirms these three species as new species then they would all most appropriately be classified as 'Data Deficient – One Locality'. However, this is unlikely to have any implications on the assessment of effects outlined in Watts (2017).

This survey has provided the first record of the native earthworm species *Dinodriloides beddardi* (Not Threatened) in the Taranaki region, although it has been found from National Park northwards. In addition, *Rhododrilus aduncocystis* (Not Threatened) and *Rhododrilus intermedius* have not been recorded from Taranaki, with all previous records being from the Waikato Region (Lee, 1959). *Rhododrilus intermedius* has not been collected since 1950, and only from three sites around the Ohura/Taumarunui area, this record in the Tongaporutu catchment represents a significant update to this 'Data Deficient' species on the New Zealand Threat Classification. Despite this species being classified as 'Data Deficient', it is unlikely to have any implications on the assessment of effects outlined by Watts (2017). *Rhododrilus benhami* (Not Threatened) and *Diporochaeta obtusa* (Not Threatened) are both widely distributed species.

One of New Zealand's most threatened butterflies, the forest ringlet (*Dodonidia helmsii*), has been found near Mt Messenger. This butterfly has been observed within 6km of Mt Messenger at Uruti (Museum of New Zealand Te Papa Tongarewa Entomology Online Collection). Larvae of the forest ringlet are known to feed on *Gahnia* and *Chionochloa*

species on the edges of forest clearings (Wheatley 2017). *Gahnia pauciflora* and *G. setifolia* have been occasionally observed within the Project footprint (Singers 2017 Ecological Effects Assessment: Vegetation (Technical report 7a, Volume 3 of the AEE)) so it is possible the forest ringlet could be present within the wider Project area (and Project footprint). No ringlets were captured in the malaise traps, and searching *Gahnia* plants during fieldwork within the Project footprint detected no adults or sign of larvae activity. However, the restoration actions for forest ringlet outlined in Watts (2017), including planting areas on the edge of the forest with *G. pauciflora* and *G. setifolia,* particularly when rehabilitating the new road margins, should still be considered.

This survey has significantly increased the knowledge of the invertebrate fauna in the Project footprint. A one-month sampling period, although constrained, is nevertheless routine sampling period and the timing of the sampling was appropriate to obtain a robust dataset. The recommendations made by Watts (2017) remain unchanged for the majority of the invertebrate fauna found in the present supplementary study. However, the presence of peripatus within the Project footprint has resulted in additional recommendations, including the recommendation that a peripatus management plan is prepared, and that the need for pre-translocation surveys and salvage surveys during construction are evaluated.

3 Conclusions

The invertebrate survey from within the Project footprint found a diverse invertebrate fauna, dominated by native taxa, from a range of trophic groups. Two Dipterans (*Parentia whirinaki* and *Zealantha thorpei*) were found that have a New Zealand Threat Classification of 'Naturally Uncommon'. In addition, the earthworm *Rhododrilus intermedius* is classified as 'Data Deficient' in the New Zealand Threat Classification. Finding taxa within the Project footprint that are listed on the New Zealand Threat Classification list, along with new species, is unlikely to have any implications on the assessment of effects outlined by Watts (2017). The assessment of effects carried out by Watts (2017) was on a conservative, precautionary basis. Accordingly, the ecological value of the Project footprint for terrestrial invertebrates is assessed as 'High' and the unmitigated magnitude of effect is classified as 'Low' to 'Moderate' (despite less than 1% of the available habitat in the wider Project area being affected by the Project). A 'value' assessment of 'High' combined with an unmitigated 'magnitude of effects' assessment of 'Low' to 'Moderate' correlates to an conservative overall level of unmitigated effects of 'High', when applying Step 3 of the EcIA guidelines.

Two species of peripatus, *P. suteri* and *P. novaezealandiae* were found within the Project footprint. The record of *P. suteri*, classified as 'Vulnerable' on the IUCN Red List of Threatened Species (IUCN 2012) within the Project footprint is important. Accordingly, it is recommended that a peripatus management plan is prepared. The plan would outline the recommended procedure for site preparation, translocation timing, peripatus and habitat transportation, the re-positioning of peripatus-occupied material, and possibly the monitoring of success post-translocation. This procedure has been developed and refined on the basis of existing knowledge of the Caversham Highway Improvements Peripatus Translocation Plan and associated monitoring (MacGibbon 2012; Connolly 2013; Randle 2014; Mac Gibbon 2017).

The recommendations of Watts (2017) remain unchanged for the remaining invertebrate fauna found in the present study. A range of ecological mitigation and offset measures are proposed for the Project. These measures include pest control, habitat enhancement, and restoration planting, as well as measures that specifically target invertebrates. As there is a strong correlation between invertebrate assemblages and habitat structure, enhancements to habitat quality will benefit invertebrates.

The measures proposed in the Mitigation and Offset Report will appropriately and adequately address the potential adverse effects of the Project on terrestrial invertebrates. It is likely (though difficult to determine conclusively) that the overall effects of the Project on terrestrial invertebrates will be positive, given the full range of ecological offset measures proposed.

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Appendices

Appendix A: Invertebrate taxa sampled from malaise traps

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
Acari			Unknown	Various	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Amphipoda	Talitridae		Native	Detritivore				1	2						
Araneae															
	Clubionidae		Native	Predator	3		1				1				1
	Gnaphosidae		Native	Predator		1		1				1			2
	Hexathelidae	*Hexathele* sp.	Native	Predator		1									
	Micropholcommatidae	*Taphiassa punctata*	Native	Predator				1							
	Salticidae		Native	Predator	3		2	1	1		4	2			
	Thomisidae	*Sidymella* sp.	Native	Predator			5					1			1
			Native	Predator	1	2	3	1	3	2	9	1	3	11	1
Blattodea	Juveniles		Native	Scavenger							2			3	2
Chilopoda			Native	Predator							1				
Coleoptera	Aderidae	*Scraptogetus* sp.	Native	?	1				1		2				

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Aderidae		Native	?							1				
Coleoptera con't	Anthicidae	*Macratria* sp.	Native	Omnivorous			1		1	9	4				
	Anthribidae	*Helmoreus sharpi*	Native	Fungivore?		1									
	Cantharidae	*Asilis* sp(p.)	Native	Herbivore	2									1	
	Carabidae	*Ctenognathus* sp.	Native	Predator					1		1				
	Carabidae	*Demetrida* sp.	Native	Predator										1	
	Cerambycidae	*Calliprason sinclairi*	Native	Herbivore							1				
	Cerambycidae	LAMIINAE	Native	Herbivore							1	2		4	
	Cerambycidae	*Oemona hirta*	Native	Herbivore								1			
	Cerambycidae	*Somatidia* sp.	Native	Herbivore							2				
	Cerambycidae	*Spilotrogia maculata*	Native	Herbivore							2				1
	Cerambycidae	*Tenebrosoma* sp.	Native	Herbivore											1
	Cerambycidae	*Xylotoles* spp.	Native	Herbivore				1			1	1		1	
	Chrysomelidae	*Adoxia* sp.	Native	Herbivore	1		3								
	Chrysomelidae	*Alema paradoxia*	Native	Herbivore					2						
	Chrysomelidae	*Arnomus* sp.	Native	Herbivore									1	1	

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Chrysomelidae	*Eucolaspis* sp(p.)	Native	Herbivore	6	3					5	3	2		
	Chrysomelidae	*Peniticus* sp.	Native	Herbivore			2	1			5	4			
Coleoptera con't	Cleridae	*Phymatophaea* sp.	Native	Predator					4						
	Coccinellidae	*Rhyzobius* spp.	Native	Fungivore? Predator?			1	1	1			2	1	4	
	Coccinellidae	*Stethorus* sp.	Native	Predator					2						
	Corylophidae	*Arthrolips* sp.	Native	Fungivore									2		
	Corylophidae	*Holopsis* sp.	Native	Fungivore									3		
	Corylophidae	*Orthoperus atomarius*	Introduced	Fungivore			1								
	Corylophidae	*Sericoderus* sp.	Unknown	Fungivore		1	1	5	1	10	2	3			1
	Cryptophagidae	*Paratomaria* sp.	Native	Fungivore? Pollen?			1								
	Cryptophagidae		Native	Fungivore? Pollen?			2				1			1	
	Curculionidae	*Arecophaga varia*	Native	Herbivore associated with nikau				1							

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Curculionidae	*Baeosomus* sp.	Native	Herbivore						1					
	Curculionidae	*Catoptes binodis*	Native	Herbivore							3				
	Curculionidae	COSSONINAE	Native	Herbivore	1		1		1			2			6
Coleoptera con't	Curculionidae	CRYPTORHYNCHINAE	Native	Herbivore	2	1	5	1	1	1	7	1		2	3
	Curculionidae	*Hiiracalles scitus*	Native	Herbivore		1						1			
	Curculionidae	*Psepholax* sp(p.)	Native	Herbivore		1							1		
	Curculionidae	*Rhopalomerus* spp.	Native	Herbivore		1			1				2	1	
	Curculionidae	*Sympedius* spp.	Native	Herbivore	1										1
	Curculionidae	*Trinodicalles conicollis*	Native	Herbivore											1
	Curculionidae	*Tychanus verrucosus*	Native	Herbivore	4		1								
	Curculionidae	*Tysius bicornis*	Native	Herbivore			1								
	Elateridae	*Amphiplatys lawsoni*	Native	Herbivore			1	1			1				1
	Elateridae	*Protelater* sp.	Native	Herbivore											1
	Elateridae	*Sphaenelater collaris*	Native	Herbivore							1			1	
	Elateridae		Native	Herbivore	4	2		1	6		3	3	2	4	2

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Erotylidae	*Cryptodacne* sp.	Native	Fungivore								1			
	Erotylidae	*Hapalips prolixus*	Native	Fungivore?						1					
	Eucnemidae		Native	Herbivore?					1						
	Euxestidae	*Hypodacnella rubripes*	Native	Fungivore?						1					
Coleoptera con't	Hydrophilidae	*Cercyon* sp.	Introduced	Saprophage (dung), larvae are predators									1		
	Latridiidae	CORTICARIINAE	Native	Fungivore? Pollen?	2		14	6	100	7	40	3	8	2	
	Latridiidae	*Enicmus* spp.	Native	Fungivore? Pollen?			2		2		1	1			
	Leiodidae	*Agyrtodes hunuensis*	Native	Fungivore					1						
	Leiodidae	CHOLEVINAE	Native	Saprophage			2		1	1	1				
	Melandryidae	*Allopterus ornatus*	Native	Fungivore?							5				3
	Melyridae	*Halyles* sp.	Native	Predator? Pollen?					1		3	1			

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Nemonychidae	*Rhinorhynchus rufulus*	Native	Herbivore on podocarps						1					
	Nitidulidae	*Epuraea* sp.	Native	Saproxylic/ fungivore?							1				1
	Nitidulidae	*Omosita* sp.	Introduced	Saprophage (carrion)									1		
	Ptinidae	*Ptinus maorianus*	Native	Scavenger							1				
	Scarabaeidae	*Odontria* sp.	Native	Herbivore	1									1	
Coleoptera con't	Scarabaeidae	*Sericospilus costellus*	Native	Herbivore (possibly associated with *Carpodetus serratus*)					2						
	Scirtidae	*Amplectopus* sp.	Native	Larvae may be predatory, adults may be pollen feeding		1	2		2	2					

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Scirtidae		Native	Larvae may be predatory, adults may be pollen feeding	7	5	7	2	6	2	52	1	2	12	
	Scraptiidae	*Nothotelus* spp.	Native	Adults feed on pollen?	1		1	2			11				
	Silvanidae	*Cryptamorpha brevicornis*	Native	Fungivore?					1						
	Staphylinidae	ALEOCHARINAE	Native	Predator or fungivore	2		1	1		1			2		
	Staphylinidae	PSELAPHINAE	Native	Predator						2					
Coleoptera con't	Staphylinidae	SCAPHIDIINAE	Native	Fungivore							1				
	Staphylinidae	STAPHYLININAE	Native	Predator			1						1		
	Staphylinidae	TACHYPORINAE	Native	Predator or fungivore					2				1		
	Tenebrionidae	*Xylochus* sp.	Native	Probably omnivorous		2									
	Zopheridae	*Epistranus* sp.	Native	Saproxylic/ fungivore?	1										

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
Collembola			Native	Detritvore	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Diplopoda	Schedotrigonidae	*Schedotrigona* sp.	Native	Herbivore	2										
	Sphaerotheriidae	*Procyliosoma* sp.	Native	Herbivore				1							
Diptera	Agromyzidae	*Cerodontha* spp.	Native	Herbivore		1			19	94	10	6	25	34	
	Agromyzidae	*Liriomyza* sp.	Native	Herbivore						2		1	25		
	Agromyzidae	*Phytoliriomyza* sp.	Native	Herbivore					1						
	Agromyzidae	*Phytomyza* sp(p.)	Native	Herbivore						18			25		
	Anisopodidae	*Sylvicola* sp.	Native	Saprophage	1				2				2	1	
	Anthomyzidae	*Zealantha thorpei*	Native	Larvae live in grasses or sedges.									1		
Diptera con't	Asilidae		Native	Predator					1		2				
	Bibionidae	*Dilophus* spp.	Native	Saprophage	4		2		10	2	3		3	1	
	Brachystomatidae	*Ceratomerus lobipennis*	Native	Predator						1					
	Brachystomatidae	*Ceratomerus* sp.	Native	Predator							1				
	Brachystomatidae	*Gondwanamyia zealandica*	Native	Predator			1								

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Cecidomyiidae		Native	Mostly herbivores or fungivores	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	Ceratopogonidae		Native	Predator		3	2	2	25	13	1	1	2	25	2
	Chironomidae	ORTHOCLADIINAE	Native	Larvae aquatic	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	Chironomidae		Native	Larvae aquatic					1					5	
	Chloropidae	*Aphanotrigonum huttoni*	Native	Herbivore							2				
	Chloropidae	CHLOROPINAE	Native	Herbivore						5			4	6	
	Chloropidae	*Tricimba tinctipennis*	Native	Herbivore	1		9		6		1				
	Chloropidae		Native	Herbivore			1			6			8		
	Cypselosomatidae	Pseudopomyza sp.	Native	Herbivore					1		1	1	1		
Diptera con't	Ditomyiidae	*Nervijuncta* spp.	Native	Fungivore?	3	1	1	1	1	2	1	2		3	1
	Dixidae		Native	Larvae aquatic										1	
	Dolichopodidae	*Paraclius aeotearoa*	Native	Predator	1										
	Dolichopodidae	*Parentia restricta*	Native	Predator					1				1		
	Dolichopodidae	*Parentia titirangi*	Native	Predator							1				

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Dolichopodidae	*Parentia whirinaki*	Native	Predator						1			1		
	Dolichopodidae	*Parentia* spp.	Native	Predator					2	3			5		
	Dolichopodidae	*Sympycnus albinotatus*	Native	Predator					1						
	Dolichopodidae	*Sympycnus* spp.	Native	Predator	3					23			16	3	
	Dolichopodidae		Native	Predator	25		9		11	114	18	6	25	24	1
	Drosophilidae	*Drosophila* sp.	Native	Herbivore	1										
	Drosophilidae	*Scaptomyza* sp(p.)	Native	Herbivore						1		1	2		
	Empididae	*Chelipoda oblinita*	Native	Predator			1								
	Empididae	*Chelipoda* n.sp.	Native	Predator			1								
	Empididae	*Chelipoda* spp.	Native	Predator	21	5	7		16	2	7		3	3	1
	Empididae	*Empidadelpha* sp.	Native	Predator										1	
Diptera con't	Empididae	HEMERODROMIINAE	Native	Predator						1	2			1	
	Empididae	*Monodromia fragilis*	Native	Predator	1			1	1		2				
	Empididae	*Phyllodromia flexura*	Native	Predator	3	4	4		2						
	Empididae	*Phyllodromia proiecta*	Native	Predator							1				

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Empididae	*Phyllodromia scopulifera*	Native	Predator	2					1					
	Empididae	*Phyllodromia* sp. indet. (Female)	Native	Predator		3	1	1		2	4		1		
	Empidioidea		Native	Predator	6		3	2	8	16	6		25	2	
	Ephydridae	*Ditrichophora* sp.	Native	Phytophagous						80	1				
	Ephydridae	*Hyadina* sp.	Native	Phytophagous						1			1		
	Ephydridae	*Hydrellia* spp.	Native	Phytophagous					3	100		1	25	8	1
	Ephydridae	*Parahyadina* sp(p.)	Native	Phytophagous					1	27			1		
	Ephydridae	*Parydra neozelandica?*	Native	Phytophagous						1					
	Ephydridae	*Scatella* sp(p.)	Native	Phytophagous					1	9			25		
	Heleomyzidae	*Allophylopsis* spp.	Native	Phytophagous	14		1		1	4	6		6	1	
Diptera con't	Heleomyzidae	*Allophylina albitarsis*	Native	Phytophagous		1									
	Hybotidae	*Isodrapetis* sp.	Native	Predator			2		8	3	3		3	2	2
	Hybotidae	*Oropezella* sp(p.)	Native	Predator		2									
	Keroplatidae	*Macrocera* spp.	Native	Fungivore (larvae)		1	1			1			2	1	

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Keroplatidae		Native	Fungivore (larvae)		1	1			4	1		7	3	2
	Lauxaniidae	*Poecilohetaerus punctatifacies*	Native	Larvae are saprophagous, adults feed on nectar/pollen?	1		2				5				
	Lauxaniidae	*Sapromyza* sp.	Native	Larvae are saprophagous, adults feed on nectar/pollen?							1				
	Lauxaniidae	*Trypetisoma* sp.	Native	Larvae are saprophagous, adults feed on nectar/pollen?		1									
	Limoniidae	*Discobola* sp.	Native	Phytophagous	1										
Diptera con't	Limoniidae	*Elephantomyia* sp.	Native	Phytophagous	1	1									
	Limoniidae	*Gynoplistia* spp.	Native	Phytophagous	19		2	2	11	4	10	1	8	5	

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Limoniidae	*Toxorhina* sp.	Native	Phytophagous	2				1		1				
	Limoniidae		Native	Phytophagous	42	6	35	1	17	84	26	6	25	89	7
	Milichiidae	*Stomosis* sp.	Native	Phytophagous					1	2			1		
	Muscidae	*Idiohelina* sp.	Native	Saprophagous or predatory?							2				
	Muscidae		Native	Saprophagous or sometimes predatory			1			11	1		2		
	Mycetophilidae	*Manota* sp(p.)	Native	Fungivore	2	1	3	1			7			5	3
	Mycetophilidae		Native	Fungivore	100	28	39	3	25	14	25	5	25	100	14
	Phoridae	*Sciadocera rufomaculata*	Introduced	Predator	1										
	Phoridae		Unknown	Herbivore	19	1	35		6	37	11	2	25	43	
	Pipunculidae		Native	Parasitoid of Hemiptera						1					
	Psychodidae		Unknown	Larvae feed on bacteria?	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Diptera con't	Rangomaramidae	*Ohakunea bicolor*	Native	Fungivore?		1									

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Rangomaramidae	*Rangomarama* sp.	Native	Fungivore?										1	1
	Scatopsidae		Native	Saprophagous	1					2	1		17		
	Sciaridae		Unknown	Larvae fungivorous	23	6	23	4	25	25	25	10	25	50	6
	Sciomyzidae		Native	Parasitoid of Gastropoda						1				1	
	Simuliidae	*Austrosimulium* sp.	Native	Adult females feed on blood, males on nectar, larvae are scavengers						1					
	Sphaeroceridae	LIMOSININAE	Unknown	Saprophagous	1				2	23			25		
	Stratiomyidae	BERIDINAE	Native	Saprophagous	2						13	2	1		2
	Syrphidae	*Helophilus* sp.	Native	Nectar and pollen						1					
	Syrphidae	*Melanostoma fasciatum*	Native	Nectar and pollen						2			1		

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Syrphidae	*Orthoprosopa bilineata*	Native	Nectar and pollen										1	
Diptera con't	Syrphidae	*Platycheirus* sp.	Native	Nectar and pollen							1		1		
	Tachinidae		Native	Parasitoids, adults feed on nectar (pollen?)	1		1			2	3		4	3	1
	Therevidae		Native	Predator											1
	Tipulidae		Native	Herbivore	1						1				
Ephemeroptera			Native	Aquatic larvae, adult non-feeding					1				1		
Hemiptera	Acanthosomatidae	*Oncacontias vittatus*	Native	Herbivore	2				1				2	2	
	Acanthosomatidae	*Rhopalimorpha* sp.	Native	Herbivore on sedges						1			1		
	Anthocoridae	*Cardiastethus* spp.	Native	Predator	1		1		1	1	1				
	Aphalaridae	*Ctenarytaina* sp(p.)	Native	Herbivore							1		25	15	1

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Aphididae	*Tuberolachnus slignus*	Introduced	Herbivore on Salix									1		
	Aphididae		Unknown	Herbivore	2		1	2	3	78	2	1	25	1	
	Aradidae	*Aneurus* sp.	Native	Fungivore									1		
Hemiptera con't	Ceratocombidae	*Ceratocombus* sp.	Native	Predator									1		
	Cicadellidae	*Anzygina ramsayi*	Native	Herbivore on *Dracophyllum*										13	
	Cicadellidae	TYPHLOCYBINAE	Native	Herbivore	4		1	1	4	5	2	1	2		
	Cicadellidae	*Xestocephalus ovalis*	Native	Herbivore						1					
	Cicadellidae		Native	Herbivore			1			4			4	1	1
	Cicadidae		Native	Herbivore									2		
	Cixiidae	*Koroana rufifrons*	Native	Herbivore									5		
	Cixiidae	*Tiriteana clarkei*	Native	Herbivore	2			1	5						
	Cixiidae	*Zeoliarus* sp(p.)	Native	Herbivore						3			14		
	Cixiidae		Native	Herbivore							6				
	Coccoidea		Native	Herbivore		2			1						
	Delphacidae	*Ugyops* sp.	Native	Herbivore			2					1			

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Delphacidae		Native	Herbivore						6					
	Derbidae	*Eocenchrea maorica*	Native	Herbivore				1			1				
	Flatidae	*Siphanta acuta* nymphs?	Introduced	Herbivore		1					1				
	Miridae		Native	Herbivore									1		
Hemiptera con't	Pentatomidae	*Cermatulus nasalis*	Native	Predator						1					
	Rhyparochromidae	*Targarema stali*	Native	Herbivore										1	
	Saldidae		Native	Predator						1			2		
	Triozidae	*Trioza* sp.	Native	Herbivore	3		6				2		3		
Hymenoptera	Bethylidae	*Cephalonomia pinkfloydi*	Native	Parasitoid		1									
	Braconidae	ALYSIINAE	Native	Parasitoid	1		4		4		6		3		
	Braconidae	APHIDIINAE	Unknown	Parasitoid of aphids					2	36	1	1	67	1	
	Braconidae	*Ascogaster* sp.	Native	Parasitoid						3	1				
	Braconidae	*Chorebus rodericki*	Native	Parasitoid				1	1	7	1		11	1	
	Braconidae		Native	Parasitoid					9	34	10	2	46	6	1

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Chalcidoidea		Native	Parasitoid	1	4	3		2	7	3		23	4	
	Crabronidae	*Spilomena* sp.	Native	Parasitoid/ predator							1				
	Crabronidae		Native	Parasitoid/ predator		2								1	1
	Diapriidae		Native	Parasitoid	4	2	5	4	31	14	15	1	20	11	
Hymenoptera	Dryinidae	*Gonatopus alpinus*	Native	Parasitoid									1		
con't	Figitidae	*Anacharis zealandica*	Native	Parasitoid									1		
	Figitidae	*Hexacola* sp.	Unknown	Parasitoid									1		
	Figitidae		Native	Parasitoid									1		
	Formicidae	*Huberia striata*	Native	Scavenger											1
	Formicidae	*Monomorium antarcticum*	Native	Scavenger		2		1			1		1		1
	Formicidae	*Prolasius advena*	Native	Scavenger				4			4				
	Ichneumonidae	*Diplazon laetatorius*	Introduced	Parasitoid									1		
	Ichneumonidae	*Netelia* sp.	Native	Parasitoid						1					
	Ichneumonidae	*Ophion peregrinus*	Native	Parasitoid					1						

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Ichneumonidae	TERSILOCHINAE	Native	Parasitoid			1		1		1				
	Ichneumonidae		Native	Parasitoid	19	9	6		15	39	51	3	18	17	4
	Maamingidae	*Maaminga rangi*	Native	Parasitoid										1	
	Megaspilidae	*Lagynodes gastroleius*	Native	Parasitoid										1	
	Megaspilidae		Native	Parasitoid			1								
	Mymaridae		Native	Parasitoid	3	3	5		7	1	1		5	9	
Hymenoptera	Platygastridae	*Archaeoteleia karere*	Native	Parasitoid					1						
con't	Platygastridae		Native	Parasitoid	7	3	4		9	7	5	1	12	10	1
	Pompilidae	*Epipompilus insularis*	Native	Parasitoid/ predator	1									1	
	Pompilidae		Native	Parasitoid/ predator		3	1		2	3	6	3	8	3	
	Proctotrupidae		Native	Parasitoid					2				1		
Isopoda			Native	Scavengers	3						1	1			15
Lepidoptera	Geometridae	*Ischalis gallaria*	Native	Herbivore of ferns			1								
	Geometridae		Native	Herbivore							29		1	2	

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Lecithoceridae	*Compsistis bifaciella*	Native	Herbivore	4		1	4			10	4		1	1
	Micropterigidae	*Sabatinca doroxena*	Native	Herbivore					3		6		11	5	
	Oecophoridae	*Tingena compsogramma*	Native	Herbivore or detritivore				1			1			1	
			Native	Herbivore or detritivore	4	5	4	4	33	106	30	13	100	38	1
Neuroptera	Coniopterygidae		Introduced	Predator										1	
	Hemerobiidae	*Micromus tasmaniae*	Introduced	Predator						1			3	2	
Opiliones	Neopilionidae		Native	Scavenger	2		1		5		1			5	1
Orthoptera	Anostostomatidae	Juveniles	Native	Omnivore										4	
	Rhaphidophoridae		Native	Omnivore	3		2		2		1			3	2
	Tettigoniidae	*Caedicia simplex*	Native	Herbivore									1		
Phasmatodea			Native	Herbivore										3	
Platyhelminthes	Geoplanidae		Native	Predator		1		2				2	1		
Plecoptera			Native	Herbivore	3								2		
Pseudoscorpiones			Native	Predator										1	

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
Psocoptera	Caeciliusidae		Native	Scavenger/ herbivore/ fungivore	6	11	5	4	2	10	8	2	1	5	6
	Ectopsocidae	*Ectopsocus gracilis*	Native	Scavenger/ herbivore/ fungivore	1						1				
	Ectopsocidae	*Ectopsocus* sp.	Native	Scavenger/ herbivore/ fungivore			1		3					1	
Psocoptera con't	Elipsocidae		Native	Scavenger/ herbivore/ fungivore		1									
	Lepidopsocidae	*Echmepteryx* sp.	Native	Scavenger/ herbivore/ fungivore						1			1		
	Philotarsidae	*Haplophallus maculatus*	Native	Scavenger/ herbivore/ fungivore									8	1	

ORDER	FAMILY	SPECIES/ RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Pseudocaeciliidae	*Austropsocus hyalinus*	Native	Scavenger/ herbivore/ fungivore			1								
Thysanoptera	Phlaeothripidae		Native	Fungivore?										1	1
	Terebrantia		Native	Herbivore?						1					
Trichoptera			Native	Herbivore	1				5	7			6	5	

Appendix B: Invertebrate taxa sampled from pitfall traps

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
Acari			Unknown	Various	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Amphipoda	Talitridae		Native	Detritvore	65	1	35	36	19	6	32	11	124	7	91
Araneae	Anapidae	*Holarchaea* sp.	Native	Predator	1										
	Lycosidae		Native	Predator						4					
	Malkaridae		Native	Predator		1						1			
	Micropholcommatidae	*Taphiassa punctata*	Native	Predator				1							1
	Pararchaeidae	*Forstrarchaea rubra*	Native	Predator					1						
			Native	Predator	5	5	4	4	7		3	6	22	8	9
Archaeognatha	Machilidae	*Nesomachilis* sp.	Native	Herbivore			1				2			3	1
Chilopoda			Native	Predator			2	1	4			1			
Coleoptera	Agyrtidae	*Zeanecrophilus thayerae*	Native	Carrion feeder				1							
	Anthicidae	*Macratria* sp.	Native	Omnivorous						1					
	Anthicidae	*Sapintus pellucidipes*	Native	Omnivorous									1		

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Byrrhidae	*Microchaetes* sp.	Native	Herbivore					1						
Coleoptera con't	Byrrhidae	*Synorthus* sp.	Native	Herbivore	2		1		1						
	Carabidae	*Allocinopus smithi*	Native	Phytophagous	6			3	4						
	Carabidae	*Aulacopodus* sp.	Native	Predator							1				1
	Carabidae	*Clivina* sp.	Introduced	Predator									2		
	Carabidae	*Ctenognathus bidens*	Native	Predator	8	6	9	3	5		15	1			
	Carabidae	*Ctenognathus* sp(p.)	Native	Predator			1		1		1				
	Carabidae	*Meonochilus amplipennis*	Native	Predator				1							
	Carabidae	*Gaioxenus pilipalpis*	Native	Predator	1	6	11	2			1				
	Carabidae	*Holcaspis mordax*	Native	Predator		7		3	1						
	Carabidae	*Holcaspis* sp.	Native	Predator	1			1	1						
	Carabidae	*Lecanomerus sharpi*	Native	Predator			2								4
	Carabidae	*Mecodema crenaticolle*	Native	Predator	8		5	1	2		2				1
	Carabidae	*Notagonum* sp.	Native	Predator						2					

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Carabidae	*Pedalopia* sp.	Native	Predator	2		2	1	1		1				1
	Carabidae	*Platycoelus politissimus*	Native	Predator						1					
Coleoptera con't	Carabidae	*Plocamostethus planiusculus*	Native	Predator	5			1	1						
	Carabidae	*Rhytisternus miser*	Introduced	Predator									1		
	Carabidae	*Trichopsida pretiosa*	Native	Predator								3			1
	Cerambycidae	*Ptinosoma* sp.	Native	Herbivore			1								
	Cerambycidae	*Somatidia* sp.	Native	Herbivore											1
	Chrysomelidae	*Aphilon* sp.	Native	Herbivore					1						
	Chrysomelidae	*Eucolaspis* sp.	Native	Herbivore	1							1			
	Chrysomelidae	*Peniticus* sp.	Native	Herbivore			1		1		1	2			
	Ciidae		Native	Fungivore				1						1	
	Clambidae	*Clambus* sp.	Native	Fungivore								1			
	Clambidae		Native	Fungivore				1							
	Coccinellidae	*Rhyzobius rarus*	Native	Fungivore			1				1				
	Corylophidae	*Holopsis* sp.	Native	Fungivore				1							

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Corylophidae	*Sericoderus* sp.	Unknown	Fungivore				1	1	1					
	Cryptophagidae		Native	Fungivore? Pollen?	2				1						
Coleoptera con't	Curculionidae	*Agacalles* sp.	Native	Herbivore (ferns?)			1		1		1				
	Curculionidae	*Catoptes binodis*	Native	Herbivore			1								
	Curculionidae	COSSONINAE	Native	Herbivore						1					
	Curculionidae	*Crisius fasciculatus*	Native	Herbivore							1				
	Curculionidae	CRYPTORHYNCHINAE	Native	Herbivore	1										
	Curculionidae	*Geochus* sp.	Native	Herbivore	4										
	Curculionidae	*Gromilus* sp.	Native	Herbivore			1								
	Curculionidae	*Paelocharis* sp.	Native	Herbivore	1		1		2						1
	Curculionidae	*Paromalia vestita*	Native	Herbivore					1		2				
	Curculionidae	*Phrynixus* sp.	Native	Herbivore	2				2			1			
	Curculionidae	*Scelodolichus* sp.	Native	Herbivore					1			1			
	Curculionidae	TROPIPHORINI	Native	Herbivore	1		9		1		1				

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Dryopidae	*Parnida* sp.	Native	?							1				
	Elateridae	*Amphiplatys lawsoni*	Native	Phytophagous							1				
	Elateridae		Native	Phytophagous	1		3					1			1
	Endomychidae	*Holoparamecus* sp.	Native	Fungivore			1				1				
Coleoptera con't	Euxestidae	*Hypodacnella rubripes*	Native	Detritivore							1				
	Hydrophilidae	*Adolopus* sp.	Native	Saprophage (dung), larvae are predators										1	
	Hydrophilidae	*Exydrus gibbosus*	Native	Saprophage (dung), larvae are predators				1							
	Latridiidae	CORTICARIINAE	Native	Fungivore? Pollen?			2		1						
	Leiodidae	*Camiarus* sp.	Native	Fungivore?			1								
	Leiodidae	CHOLEVINAE	Native	Saprophagous	1	2	5		7		1	2			
	Leiodidae	*Zeadolopus* sp(p.)	Native	Fungivore?	1		7		3		2	1			
	Limnichidae	*Pelochares* sp.	Native	Detritivore						1					

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Melandryidae	*Hylobia* spp.	Native	Fungivore?					2						
	Melandryidae	ORCHESIINI	Native	Fungivore?			1								
	Mycetophagidae	*Nototriphyllus* sp.	Native	Fungivore			1								
	Nitidulidae	*Epuraea* sp.	Native	Saproxylic	2						4	1			
	Ptiliidae	*Notoptenidium* sp.	Native	Fungivore?			1							1	3
Coleoptera con't	Scarabaeidae	*Saphobius* spp.	Native	Saprophage (dung etc.)	1	1	12	22	6		4				
	Scirtidae	*Amplectopus* sp.	Native	Larvae likely predatory, adults likely pollen feeding		1									
	Scirtidae		Native	Larvae likely predatory, adults likely pollen feeding		1			1		1				
	Silvanidae	*Cryptamorpha brevicornis*	Native	Fungivore?							1				
	Staphylinidae	ALEOCHARINAE	Native	Predator or fungivore	9	1	5	9	15	2	2				7

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Staphylinidae	OMALIINAE	Native	Fungi or pollen							1				
	Staphylinidae	OSORIINAE	Native	Detritivore	1		1	1							
	Staphylinidae	OXYTELINAE	Native	?						1					
	Staphylinidae	PSELAPHINAE	Native	Predator	4		2					2	2	6	4
	Staphylinidae	SCAPHIDIINAE	Native	Fungivore	1		1		3		7			1	4
Coleoptera con't	Staphylinidae	SCYDMAENINAE	Native	Predator			2				2			3	1
	Staphylinidae	TACHYPORINAE	Native	Predator or fungivore	3			3	4						
	Staphylinidae	*Thyreocephalus orthodoxus*	Introduced	Predator						2					
	Staphylinidae	*Tramiathaea cornigera*	Native	Predator or fungivore	1		1	9	13		1				
	Tenebrionidae	*Archaeoglenes costipennis*	Native	Probably omnivorous			1								
	Tenebrionidae	*Kaszabadelium aucklandicum*	Native	Probably omnivorous		1									

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Tenebrionidae	*Menimus* sp.	Native	Probably omnivorous	1				1			1			1
	Tenebrionidae	*Periatrum* sp.	Native	Probably omnivorous	1										
	Tenebrionidae	*Stenadelium striatum*	Native	Probably omnivorous		1	1								
	Zopheridae	*Ablerus* sp.	Native	Saproxylic/ fungivore?							1				
Coleoptera con't	Zopheridae	*Glenentela* sp.	Native	Saproxylic/ fungivore?								1			
	Zopheridae	*Pycnomerus* sp.	Native	Saproxylic/ fungivore?				1							
	Zopheridae	*Rytinotus squamulosus*	Native	Saproxylic/ fungivore?						1					
	Zopheridae	*Syncalus* spp.	Native	Saproxylic/ fungivore?	2		3		2		2	2			
Collembola			Native	Detritivore	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Diplopoda			Native	Herbivore	22		46	13	21		10	5	3	7	10
Diptera	Agromyzidae	*Cerodontha* sp.	Native	Herbivore						2			4		

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Anisopodidae	*Sylvicola* sp.	Native	Saprophage	1		1		1				1		
	Calliphoridae		Native	Larvae saprophagous, adults feed on nectar/pollen?	2		1		2			1			18
	Cecidomyiidae		Native	Mostly herbivores or fungivores					74						
	Ceratopogonidae		Native	Predator									1		
Diptera con't	Chloropidae	*Tricimba tinctipennis*	Native	Herbivore			10	1	1		5	1			3
	Cypselosomatidae	*Pseudopomyza* sp.	Native	Detritivore				3							1
	Ditomyiidae	*Nervijuncta* sp.	Native	Fungivore?					1						
	Dolichopodidae		Native	Predator	2	2	1		4			1			2
	Drosophilidae		Native	Herbivore					1		1	2			1
	Empidoidea		Native	Predator										1	
	Ephydridae		Native	Phytophagous						2			12		
	Heleomyzidae	*Allophylopsis* sp.	Native	Phytophagous	2		4		2						

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Heleomyzidae	*Fenwickia* sp.	Native	Phytophagous									1		
	Helosciomyzidae		Native	?			4								1
	Limoniidae	*Discobola* sp.	Native	Phytophagous					1						
	Limoniidae	*Gynoplistia* sp.	Native	Phytophagous							2	1		1	2
	Limoniidae	*Rhamphophila* sp.	Native	Phytophagous					1						
	Muscidae	*Calliphoroides antennatis*	Native	Saprophagous ?		1									
	Mycetophilidae		Native	Fungivore		1	1							1	
	Phoridae		Native	Predator			3	5	5	10		1			
Diptera con't	Psychodidae		Unknown	Larvae feed on bacteria?	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	Scatopsidae		Native	Saprophagous									1		
	Sciaridae		Unknown	Larvae fungivorous				1	23	14				16	
	Sphaeroceridae	*Howickia* spp.	Native	Saprophagous	27		11	11	18		1	8	1		12
	Sphaeroceridae	LIMOSININAE	Native	Saprophagous				1	4	6		1	1	1	1
	Stratiomyidae	BERIDINAE	Native	Saprophagous											2

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Tachinidae		Native	Parasitoids, adults feed on nectar (pollen?)			1								
Gastropoda			Native	Herbivore or predator	4			1	1	16			4		1
Hemiptera	Aphalaridae	*Ctenarytaina* sp.	Native	Herbivore										1	
	Aphididae		Unknown	Herbivore	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	Ceratocombidae	*Ceratocombus* sp.	Native	Predator	4				1	3	1		1		
	Cicadellidae		Native	Herbivore									2		
	Cixiidae	*Zeoliarus* sp.	Native	Herbivore									3		
Hemiptera con't	Coccoidea		Native	Herbivore											2
	Enicocephalidae	*Systelloderes* sp.	Native	Predator?					1						
	Mesoveliidae	*Mniovelia kuscheli*	Native	Predator or scavenger										1	
	Myerslopiidae		Native	Herbivore	2										1
	Ortheziidae	*Newsteadia* sp.	Native	Herbivore					1				1	9	
	Rhyparochromidae	*Targarema stali*	Native	Herbivore								1			

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Rhyparochromidae	TARGAREMINI	Native	Herbivore									1		
Hymenoptera	Braconidae	ALYSIINAE	Native	Parasitoids of aphids				3							
	Braconidae	APHIDIINAE	Unknown	Parasitoids of aphids						1				1	
	Braconidae		Native	Parasitoid			1				1				
	Diapriidae		Native	Parasitoid	1		1	1		4		1	4		
	Formicidae	*Austroponera* sp.	Native	Scavenger	25	2	27	6	2	1	8	14	105	5	4
	Formicidae	*Discothyrea antarctica*	Native	Scavenger								1			
	Formicidae	*Heteroponera brouni*	Native	Scavenger				6	2		8	12		7	4
Hymenoptera	Formicidae	*Huberia brouni*	Native	Scavenger			3				1				
con't	Formicidae	*Huberia striata*	Native	Scavenger			14	6				3		15	2
	Formicidae	*Monomorium antarcticum*	Native	Scavenger				4		10	4		8	6	3
	Formicidae	*Prolasius advena*	Native	Scavenger		30	4	4	1		43			11	
	Formicidae	*Stigmatomma saundersi*	Native	Scavenger	1		1					1			

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
	Ichneumonidae		Native	Parasitoid					1			2	1		
	Mymaridae	*Scleromymar* sp.	Native	Parasitoid										1	
	Mymaridae		Native	Parasitoid							1				
	Platygastridae		Native	Parasitoid			1			5	3			2	
	Pompilidae	*Priocnemis monachus*	Native	Parasitoid/ predator									1		
	Pompilidae	*Sphictostethus nitidus*	Native	Parasitoid/ predator			1							1	1
	Pompilidae		Native	Parasitoid/ predator						1					
Isopoda			Native	Scavengers	9	2	15	3	5		3	2		2	40
Lepidoptera			Native	Herbivore or detritivore				1			4	2	5		1
Neuroptera	Hemerobiidae	Micromus sp.	Native	Predator						1			4		
Oligochaeta			Native	Saprophagous	1		1	3	2	1	2	1	4		
Onychophora	Peripatopsidae	*Peripatoides suteri*	Native	Predator			1							1	
	Peripatopsidae	*Peripatoides novaezealandiae*	Native	Predator										1	

ORDER	FAMILY	SPECIES/RTU	STATUS	ECOLOGY DATA	Invertebrate plot 1	Invertebrate plot 2	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8	Invertebrate plot 9	Invertebrate plot 10	Invertebrate plot 11
Opiliones	Caddidae	*Acropsopilio neozelandiae*	Native	Scavenger										1	
	Neopilionidae		Native	Scavenger	6		11		2		3			6	1
	Triaenonychidae		Native	Scavenger	10		26	2	4		3	5		9	14
Orthoptera	Anostostomatidae	*Hemiandrus* sp.	Native	Omnivore			2	1				1		5	
	Gryllidae		Native	Omnivore		1				12			12		
	Rhaphidophoridae		Native	Omnivore	5	23	4	7	1		1	3	1	4	6
Platyhelminthes			Native	Predator									14		1
Pseudoscorpiones			Native	Predator					1		1	1		3	3

Appendix C: Earthworm taxa excavated from pits

FAMILY	SPECIES/RTU	Status	Earthworm plot 1	Earthworm plot 2	Earthworm plot 3	Earthworm plot 4	Earthworm plot 5	Earthworm plot 6	Earthworm plot 7	Earthworm plot 8	Earthworm plot 9	Earthworm plot 10	Earthworm plot 11	Earthworm plot 12	Earthworm plot 13	Earthworm plot 14	Earthworm plot 15	Earthworm plot 16	Earthworm plot 17	Earthworm plot 18	Earthworm plot 19	Earthworm plot 20	Earthworm plot 21	Earthworm plot 22	Direct collect	Invertebrate plot 1	Invertebrate plot 3	Invertebrate plot 4	Invertebrate plot 5	Invertebrate plot 6	Invertebrate plot 7	Invertebrate plot 8
Acanthodrilidae	*Rhododrilus aduncocystis*	Native	8																													
Lumbricidae	*Octolasion cyaneum*	Exotic			4																											
Lumbricidae	*Lumbricus rubellus*	Exotic			3			1																								
Acanthodrilidae	*Rhododrilus intermedius*	Native				1			1					2	1	2		2		2			1	1								
Lumbricidae	Lumbricidae sp. 1	Exotic					1			4																					1	
Lumbricidae	*Aporectodea rosella*	Exotic						1																								
Acanthodrilidae	*Eodrilus nov. sp.1*	Native								1												1										
Acanthodrilidae	*Rhododrilus benhami*	Native										1													2							1
Acanthodrilidae	*Dinodriloides beddardi*	Native														1																
Acanthodrilidae	*Rhododrilus nov. sp.1*	Native																1								1	1	1			1	
Acanthodrilidae	*Rhododrilus aduncocystis*	Native																						1								
Acanthodrilidae	*Maoridrilus nov. sp.1*	Native																							2					1		
Megascolecidae	*Diporochaeta obtusa*	Native																					1									
Megascolecidae	*Amynthas sp1*	Exotic																													3	
Unidentified Oligochaeta (fragments or juveniles)		?		2					3	2			1										1	2				1	2			