the Marine Biota of Aotearoa New Zealand

29

Kingdom Animalia, phylum Arthropoda, class Insecta

marine insects

Brian J. Smith

CHAPTER 29

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29 Kingdom Animalia, phylum Arthropoda, class Insecta (marine insects)

Brian J. Smith

Freshwater and Estuaries Centre, National Institute of Water and Atmospheric Research, PO Box 11115, Hamilton 3251, New Zealand; brian.smith@niwa.co.nz; https://orcid.org/0000-0003-4259-2449

Summary

The total number of described extant marine species in class Insecta, from the Aotearoa New Zealand region is 219 species (incl. subspecies). The greatest number by far, are ectoparasites of seabirds and marine mammals, which are not reviewed in this chapter. Collectively, lice (Parvorder Phthiraptera) and fleas (Order Siphonaptera) on seafaring avian and marine mammal hosts comprise 190 species. The current diversity for New Zealand marine lice and fleas is about 50% of the New Zealand total and, cumulatively, less than 5% of the global total for Hexapoda. The remaining 29 truly marine insect species are from the orders Diptera (true flies, 16 spp.) (Table 29.1), Trichoptera (caddisflies, 5 spp.), Coleoptera (beetles, 7 spp.), and Hemiptera (true bugs, 1 sp.). The number of described marine insects in New Zealand has increased by six species since the previous review by Macfarlane *et al.* (2010). No new species of marine Coleoptera, Hemiptera, Phthiraptera, Siphonaptera, or Trichoptera have been described from New Zealand since Macfarlane *et al.* (2010); however, the habitats of two species of Coleoptera were previously misclassified, increasing the total of marine beetles to seven. Three new species of Diptera have been described (*Scorpiurus thorpei*, Masunaga, 2017; *S. aramoana*, Bickel & Kerr, 2018; and *Aedes* (*Ochlerotatus*) *arundinariae*, Kasper, 2020), and the presence of *Telmatogeton trochanteratum*, Edwards, 1931, an exotic, non-biting midge (Diptera, family Chironomidae) was confirmed as established in New Zealand. A checklist of extant New Zealand marine insects is provided, as well as insects that may also have an association with the beach or intertidal zone.

Introduction

Class Insecta are poorly represented in the marine environment, despite being one of the most diverse groups of organisms on earth. However, nearly 220 insect species are known to spend at least some of their life cycle living or feeding in the New Zealand marine environment, but many more are known to have a facultative relationship with beach and costal habitats (Macfarlane *et al.* 2010). Marine insects and the marine environment are defined here as individuals or hosts of parasites that are regularly living or feeding in or on the sea or below the high-tide mark (Macfarlane *et al.* 2010) (Fig. 29.1). About 90% are relatively well-documented, host-specific parasites of marine mammals and sea birds. The remainder comprise non-parasitic species in the orders of true flies (Diptera), caddisflies (Trichoptera), beetles (Coleoptera), and a true bug (Hemiptera). In New Zealand, only the dipterans and caddisflies have an aquatic larval stage, whereas the terrestrial adults have a mixture of fully winged, reduced wing length (brachypterous) or wingless (apterous, Diptera only) forms. The only insects represented in New Zealand where both the juvenile and adult stage are considered marine are a handful of beetle species and a surface-dwelling hemipteran.

The New Zealand caddisfly fauna contains approximately 250 species and is almost entirely composed of endemics (99%). Only within the unique marine case-making caddisfly family Chathamiidae are two species shared with Australia. Chathamiidae contains five native species in two genera, of which three species are considered endemic – *Chathamia brevipennis*, Tillyard, 1925; *Philanisus fasciatus*, Riek, 1976; and *P. matua*, Ward, 1995. The other two species are also present in Australia. *Philanisus plebeius* Walker, 1852 is the most common and widespread species in New Zealand, with disjunct populations also found in New South Wales, Australia (Hudson 1904; Boast 2010). A larva of the previously endemic *Chathamia integripennis* Riek, 1976 was collected from New South Wales, indicating a breeding population had also established in Australia, thereby changing its status to native. The presence of *P. plebeius* and *C. integripennis* in Australia is probably the result of recent accidental human introduction, probably via trans-Tasman shipping, rather than passive dispersal (Gibbs 2006; Boast 2010).

Family Chathamiidae is one of only two case-making caddisfly families known globally that possess an oviscapt (ovipositor-like structure) for oviposition, indicating specialised egg laying behaviour or specific oviposition habitats are required for reproduction (Smith & Storey 2018). *Philanisus plebeius* uses its oviscapt to lay eggs within the coelom of common intertidal cushion stars *Patiriella regularis* (Verrill, 1867) in New Zealand and *Parvalustra exigua* (Lamarck, 1816) in Australia (Anderson *et al.* 1976; Winterbourn

& Anderson 1980). It has not been determined whether ovipositing in starfish is obligatory for the remaining Chathamiidae species (Boast 2010).

No new marine caddisflies have been discovered since *Philanisus mataua* Ward, 1995, but molecular data from Boast (2010) suggested *Chathamia integripennis* should be moved to *Philanisus,* though this suggestion has not been formally recognised in the published literature. Such a change in nomenclature would result in a total of four species of *Philanisus* from New Zealand (including the Kermadec Islands endemic *Philanisus fasciatus* Riek, 1976). This would result in the brachypterous Chatham Islands endemic *Chathamia brevipennis* Tillyard, 1925, becoming a monotypic genus by default.

The ubiquitous and wingless Pacific pelagic water strider, *Halobates sericeus* Eschscholtz, 1822, has a global distribution and is the only marine hemipteran known to occur in New Zealand waters (Macfarlane *et al.* 2010). A lack of floating oviposition habitat is often considered a reproductive barrier to marine insects (e.g., Ruxton & Humphries 2008), but *Halobates* may be one of the few marine organisms benefiting from the 'Great Pacific Garbage Patch', a collection of primarily plastic debris in the North Pacific Ocean (Goldstein *et al.* 2012). The large amount of land-derived plastic in the ocean has increased oviposition habitat for water striders and has been positively correlated with an increase in egg densities of *H. sericeus* (Goldstein *et al.* 2012).

Beetles are the most species-rich group on earth, with around 380,000 described species (e.g., Nielsen & Mound 1999), although there may be as many as 450,000 species altogether (Ślipiński *et al.* 2011). Beetles are also the most diverse of all New Zealand arthropods and almost all species are endemic and terrestrial (Macfarlane *et al.* 2010). About 5500 beetle species are described, although this may only represent half of the true diversity, as there are thought to be thousands of undescribed species (Macfarlane *et al.* 2010). Approximately 85 beetle species are described from freshwater, and although few beetles are considered to be marine, numerous species may be associated with wrack that accumulates above the high tide mark (e.g., Frank & Ahn 2011; Forgie *et al.* 2013).

Family Staphylinidae, or rove beetles as they are more commonly known, are currently the most speciose New Zealand beetle family with nearly 1500 species described. At least 45 species of rove beetle have an affinity with coastal or high-tidal zones (see Frank & Ahn 2011), with two species in the tribe Liparocephalini, *Ianmoorea zealandica* (Ahn, 2004) and *Baeostethus chiltoni* Broun, 1909, obligate intertidal marine species. The wingless *I. zealandica* occurs up to 0.5 m deep within fine gravel near low tide level but is known only from two locations: Breaker Bay, Wellington; and Moeraki in the South Island (Ahn, 2004). *Baeostethus chiltoni* is found among loose pebbles in the rocky intertidal areas of Antipodes, Auckland, and Campbell islands (Leschen *et al.* 2002). The non-endemic *Kenodactylus audouini* (Guérin-Méneville, 1830) is the only species in its genus, and the only intertidal marine ground beetle (Family Carabidae) known to occur in New Zealand. This carabid has been recorded from Dunedin, Stewart Island, the subantarctic islands (Antipodes, Auckland, Snares), and also Patagonia and the Falkland Islands (Johns 1974; Townsend 2010). The remaining four intertidal beetle species from New Zealand (genus *Hyphalus*) are within the family Limnichidae (Britton 1973, 1977). These minute beetles appear to be associated with rock crevices and barnacle crust, with *H. kuscheli* Britton, 1977 and *H. wisei* Britton 1977 inhabiting different intertidal zones on the same beach (Britton 1977). Given the incredible diversity of the New Zealand beetle fauna, particularly within the species-rich family Staphylinidae, it is highly likely that many more species will be discovered (Leschen & Newton 2015).

Table 29.1. Summary of marine Diptera diversity in the Aotearoa New Zealand region expressed as total numbers and percentage change. Data for 2010 are derived from Macfarlane *et al.* (2010: p. 236). Only data for described Diptera are included here, as no new species of marine Coleoptera, Hemiptera, Phthiraptera, Siphonaptera or Trichoptera have been described from New Zealand since Macfarlane *et al.* (2010), and the number of undescribed, truly marine Diptera in New Zealand is unknown.

	Diptera		% change
	2010	2023	
Described extant species	12	16	33
Described endemic genera	3	3	0
Described endemic species	12	15	25

Two new species of Diptera in the family Dolichopodidae (long-legged flies or saltmarsh flies), were recently described in the endemic genus *Scorpiurus.* One of these, *Scorpiurus thorpei* Masunaga, 2017, along with *S. aenescens* Parent, 1933, are sympatric in the Auckland and Nelson-Marlborough regions, whereas *S. aramoana* Bickel & Kerr, 2018 appears to be restricted to coastal Otago.

Dolichopodidae is a large cosmopolitan family of small flies (1 - 9 mm) with about 7500 species described worldwide (Bickel 2009) and is one of the most diverse fly families in New Zealand, with nearly 150 species described (Macfarlane *et al.* 2010). Macfarlane *et al.* (2010) alluded to many unnamed species that still required description, including several belonging to the rocky-shore-dwelling genus *Abatetia*. In a comprehensive survey of New Zealand coastal Diptera, LeGrice *et al.* (2022) reported Dolichopodidae were one of the most diverse families present, with adults of 30 species collected from costal environments, of which, nearly 90% were collected from rocky outcrops. Targeted collecting of Dolichopodidae adults is likely to reveal many more new species.

Adult Dolichopodidae are usually characterised by metallic green or blue bodies and long, slender legs

(Bickel 1991). The adults of most species are considered predators or scavengers, although some are known to be pollinators (Merritt *et al.* 2008). Prey may include a variety of small soft-bodied invertebrates such as aquatic worms (Bickel 1991), but *Scorpiurus aramoana* was observed feeding on intertidal amphipods at low tide (Bickel & Kerr 2018). Dolichopodid larvae are elongate and maggot-like, and although the ecology of the New Zealand species is poorly known, many species are also thought to be predatory (Bickel 1991). Dolichopodid larvae generally prefer moist habitats, including the edges of freshwater lakes and streams, as well as marine saltmarshes and the intertidal zone of seashores (Bickel 1991; Bickel & Kerr 2018) – all three *Scorpiurus* species are restricted to saltmarshes in New Zealand. Other New Zealand dolichopodids associated with intertidal and mudflat habitats are poorly known.

In 2020, a previously misidentified Chatham Islands mosquito (Family Culcidae) was described as a new species, *Aedes* (*Ochlerotatus*) *arundinariae* Kasper, 2020. This species is the third mosquito species known from the Chatham Islands and the second species considered endemic to the islands. The other endemic is *Ae.* (*Nothoskusea*) *chathamicus* (Dumbleton, 1962) with which *Ae.* (*Och.*) *arundinariae* was consistently misidentified by a number of workers (Cane & Courtney, 2009). The larvae of both *Aedes* species are associated with saline environments; however, the larvae of *Ae.* (*Och.*) *arundinariae* have been collected from inland saltmarshes, whereas those of *Ae.* (*No.*) *chathamicus* (Dumbleton, 1962) are restricted to coastal rock pools. *Opifex fuscus* Hutton, 1902, is perhaps the most widespread endemic marine insect in New Zealand, and best known as a painful daytime biter (Miller & Phillips 1952). As for *Ae.* (*No.*) *chathamicus*, it is the only other endemic mosquito species where the larvae and pupae live in intertidal rock pools (Belkin 1968).

Adults of the Chilean seaweed midge, *Telmatogeton trochanteratum* Edwards, 1931 (Family Chironomidae, subfamily Telmatogetoninae), were first detected in 1998 on an algal-covered rock in the intertidal zone at Hokitika on the west coast of New Zealand and were found again in 2009 on Ward Beach in the Marlborough district (Leader 2010). There are now three species of *Telmatogeton* recorded from the New Zealand region, including two endemic species, *T. mortoni* Leader, 1975 and *T. antipodensis* Sublette & Wirth, 1980. *Telmatogeton mortoni* is known only from type specimens from northern New Zealand, but is likely to be more widespread, at least in the North Island, while *T. antipodensis* is restricted to the Antipodes Islands. The larvae of *T. trochanteratum*, an exotic midge, were found in silken tubes attached to the same habitat from which the adults were collected, whereas the larvae of *T. antipodensis* occur in holes and crevices in rocks associated with sea lettuce (*Ulva* spp.), and filamentous red algae (*Bostrychia* spp.). The larval habitat for *T. mortoni* is likely to be similar to that of other *Telmatogeton* species. It is unclear how *T. trochanteratum* arrived in New Zealand, although *Telmatogeton* larvae are able to tolerate harsh conditions, have an extended larval stage of several months, and are known to attach their silken, tubular retreats to the hulls of ships (Wirth 1947; Brodin & Anderson 2008). It is highly probable that *T. trochanteratum* is now widespread in the coastal regions of the South Island of New Zealand (Leader 2010), but it was not detected at any of the 47 coastal sites sampled by LeGrice *et al.* (2022). The adults and larvae of *T. trochanteratum* possibly overlap the habitats of endemic intertidal midge species, but the ecological effects, if any, of this exotic intertidal midge on native New Zealand species are yet to be determined. Endemic marine midge larvae of either *Semiocladius reinga* (Leader, 1975) or *S. whangaroa* (Leader, 1975), were discovered inside the mantle cavity of the invasive Pacific oyster, *Crassostrea gigas* (Thunberg, 1793), in northern New Zealand (Dinamani 1986). However, unlike the larva of *Xenochironomus canterburiensis* (Freeman, 1959), a commensal endemic midge that causes irritation to its freshwater mussel host, *Echyridella menziesi* (Gray, 1843) (Forsyth & McCallum 1978), *Semiocladius* was considered to have an insignificant impact to the oyster (Dinamani 1986).

Diptera is one of the most diverse insect orders in New Zealand, with nearly 3500 described species, almost all of which are endemic, and approximately another 2000 species to be described (Macfarlane *et al.* 2010). Many species within taxonomically rich orders such as Diptera are known, but undescribed from the intertidal zone. While the coastal marine habitats of New Zealand are known to support about 3% of the dipteran fauna (Macfarlane & Andrew 2001), it is highly likely that many more marine-associated species will be discovered in the vast array of habitats along the 15,000 km of coastline. This may be particularly true for highly diverse families such as Tipulidae (craneflies), which is likely to contain many more than the 10 species reported by Macfarlane *et al.* (2010).

Knowledge gaps, research progress and future priorities

Macfarlane *et al.* (2010) produced the last comprehensive checklist of New Zealand arthropods that included marine insects. While one study (Forgie *et al.* 2013) has since examined invertebrate communities on New Zealand gravel beaches, and LeGrice *et al.* (2022) conducted a New Zealand-wide assessment of coastal Diptera, there is a general paucity of biodiversity and habitat assessment studies that specifically target marine and coastal insect fauna. Without such targeted studies, knowledge of the distributions and ecological requirements of non-parasitic marine insects, including rare species and species of conservation interest, is unlikely to advance, to the detriment of effective conservation and management.

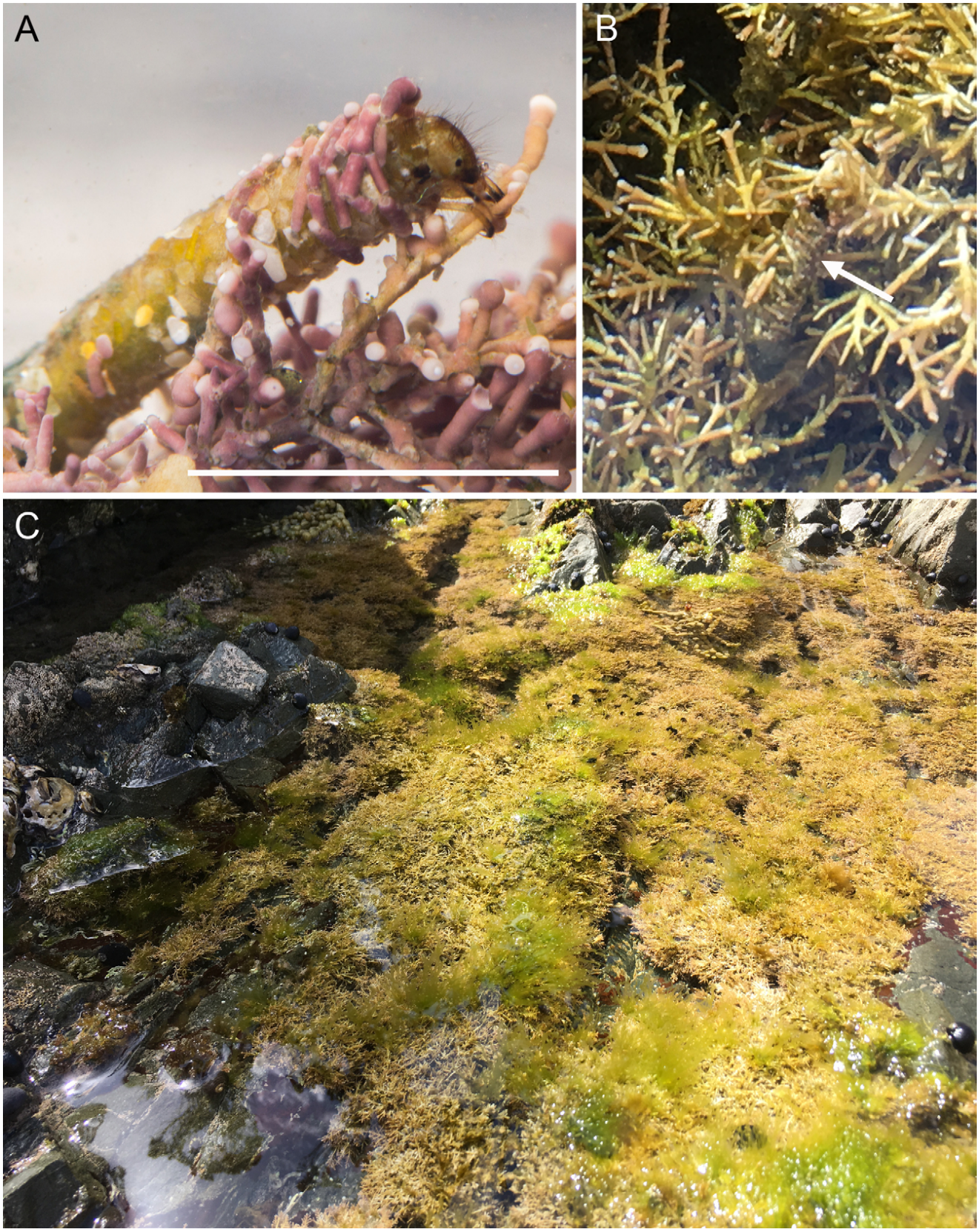

Figure 29.1. The larva and habitat of a New Zealand marine caddisfly (*Philanisus* sp., family Chathamiidae): **A.** Close-up of a marine caddisfly larva, image courtesy of Christine Carruth Frandsen, scale = 6 mm; **B.** A well-camouflaged caddis larva; **C.** Rocky intertidal shore with coralline algae, the preferred habitat of marine caddisflies. Images reproduced with permission of the photographer.

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Checklist of extant marine and beach Insecta known from the New Zealand EEZ

The checklist is arranged according to the currently accepted systematics and classificatory scheme employed by the World Register of Marine Species (WoRMS) (https://www.marinespecies.org/). Note, the Dolichopodidae genera *Scorpiurus* and *Atatetia*, and the mosquito *Aedes* (*Ochlerotatus*) *arundinariae* Kasper, 2020 are yet to be listed in WoRMS. The marine carabid beetle, *Kenodactylus audouini* (Guérin-Méneville, 1830), is categorised as terrestrial in WoRMS but considered a marine species by Johns (1974) and Townsend (2010). The following list includes fully marine insects, brackish insects, and insects that have an association with the beach or intertidal zone, but excludes parasitic marine Insecta. Endemic taxa are indicated by 'E' for those found within the New Zealand EEZ. Non-indigenous species are indicated by 'NI'. All other taxa are considered native by default, i.e. naturally occurring in New Zealand and elsewhere. F = freshwater; Be = beach; SW = fully saline to brackish. More than two taxonomic authorities have been abbreviated to 'first author *et al.*' in the checklist.

Phylum ARTHROPODA
Class INSECTA
Subclass PTERYGOTA
Order COLEOPTERA
Suborder ADEPHAGA
Kenodactylus audouini (Guerin-Meneville, 1830) SW
Suborder POLYPHAGA
Family LIMNICHIDAE
Hyphalus kuscheli Britton, 1977 E SW
Hyphalus prolixus Britton, 1977 E SW
Hyphalus ultimus Britton, 1977 E SW
Hyphalus wisei Britton, 1971 E SW
Family STAPHYLINIDAE
Arena fultoni Cameron, 1945 E Be
Baeostethus chiltoni Broun, 1909 E SW
Blediotrogus cordicollis (Broun, 1907) E Be
Blediotrogus cribricollis Fauvel, 1900 E Be
Blediotrogus guttiger Sharp, 1900 E Be
Bledius amplicollis Fauvel, 1900 E Be
Bledius bidentifrons Broun, 1912 E Be
Bledius salinus Cameron, 1947 E Be
Crymus kronii (Kiesenwetter, 1877) E Be
Hadrotes wakefieldi Cameron, 1945 E Be
Halobrecta algophila (Fenyes, 1909) E Be
Halobrecta flavipes Thomson, 1861 E Be
Ianmoorea zealandica (Ahn, 2004) E SW
Macralymma punctiventre Cameron, 1945 E Be
Marecon rufipennis (Broun, 1880) E Be
Mecrona algophila (Broun, 1886) E Be
Microsilpha litorea Broun, 1886 E Be
Omaliomimus actobius (Broun, 1893) E Be
Omaliomimus albipennis (Kiesenwetter, 1877) E Be
Omaliomimus carinigerus (Broun, 1893) E Be
Omaliomimus chalmeri (Broun, 1893) E Be
Omaliomimus conicus (Fauvel, 1878) E Be
Omaliomimus laetipennis (Broun, 1910) E Be
Omaliomimus litoreus (Broun, 1886) E Be
Omaliomimus robustus (Broun, 1911) E Be
Omaliomimus setipes (Broun, 1909) E Be
Omaliomimus venator (Broun, 1909) E Be
Quediocafus hudsoni Cameron, 1945 E Be
Quediocafus insolitus (Sharp, 1886) E Be
Quediocafus taieriensis (Broun, 1894) E Be
Teropalpus coloratus (Sharp, 1900) E Be
Teropalpus maritimus (Broun, 1903) E Be
Teropalpus unicolor (Sharp, 1900) Be

Order DERMAPTERA
Family CARCINOPHORIDAE
Anisolabis littorea (White, 1846) E Be

Order DIPTERA
Suborder BRACHYCERA
Family AUSTRALIMYZIDAE
Australimyza kaikoura Brake & Mathis, 2007 E Be
Australimyza longiseta Harrison, 1959 E Be
Australimyza salicorniae Harrison, 1959 E Be
Family CALLIPHORIDAE
Lucilia sericata (Meigen, 1826) NI Be
Ptilonesia auronotata (Macquart, 1855) NI? Be
Xenocalliphora hortona (Walker, 1849) E Be
Family CANACIDAE
Isocanace crosbyi Mathis, 1999 E Be
Family CHLOROPIDAE
Apotropina tonnoiri (Sabrosky, 1955) E Be
Family COELOPIDAE
Baeopterus philpotti (Malloch, 1933) E Be
Baeopterus robustus Lamb, 1909 E Be
Chaetocoelopa littoralis (Hutton, 1881) E Be
Coelopella curvipes Hutton, 1902 E Be
Icaridion debile (Lamb, 1909) E Be
Icaridion nasutum Lamb, 1909 E Be
Icaridion nigrifrons (Lamb, 1909) E Be
Family DOLICHOPODIDAE
Abatetia robusta (Parent, 1933) E Be
Abatetia spp. nov. (4) Andrew, Bickel *in* Macfarlane *et al.* 2010 E Be SW
Chrysotus sp. nov. Macfarlane *et al.*, 2010 SW
Hydrophorus praecox (Lehmann, 1822) NI SW
Scorpiurus aenescens Parent, 1932 E SW
Scorpiurus aramoana Bickel & Kerr, 2018 E SW
Scorpiurus thorpei Masunaga, 2017 E SW
Thinophilus milleri Parent, 1933 E Be SW
Family EMPIDIDAE
Chimerothalassius ismayi Shamshev & Grootaert, 2002 E Be
Thinempis brouni (Hutton, 1901) E Be
Thinempis otakouensis (Miller, 1910) E Be SW?
Thinempis takaka Bickel, 1996 E Be
Family EPHYDRIDAE
Hecamede granifera (Thomson, 1869) NI Be
Family FANNIIDAE
Fannia sp. nov. Macfarlane *et al.*, 2010 E Be
Family HELCOMYZIDAE
Maorimyia bipunctata (Hutton, 1901) E Be
Family SPHAEROCERIDAE
Thoracochaeta alia Marshall & Rohacek, 2000 E Be
Thoracochaeta ancudensis (Richards, 1931) Be
Thoracochaeta conglobata Marshall & Rohacek, 2000 E Be
Thoracochaeta harrisoni Marshall & Rohacek, 2000 E Be
Thoracochaeta imitatrix Marshall & Rohacek, 2000 E Be
Thoracochaeta mucronata Marshall & Rohacek, 2000 E Be
Thoracochaeta zealandica (Harrison, 1959) E Be
Family THEREVIDAE
Anabarhynchus arenarius Lyneborg, 1992 E Be
Anabarhynchus completus Lyneborg, 1992 E Be
Anabarhynchus curvistylus Lyneborg, 1992 E Be
Anabarhynchus farinosus Lyneborg, 1992 E Be
Anabarhynchus gibbsi Lyneborg, 1992 E Be
Anabarhynchus huttoni Lyneborg, 1992 E Be
Anabarhynchus innotatus (Walker, 1856) E Be
Anabarhynchus lateripilosus Lyneborg, 1992 E Be
Anabarhynchus microphallus Lyneborg, 1992 E Be
Anabarhynchus nebulosus Hutton, 1901 E Be
Anabarhynchus nigrofemoratus Krober, 1932 E Be
Anabarhynchus ruficoxa Lyneborg, 1992 E Be
Anabarhynchus schlingeri Lyneborg, 1992 E Be
Anabarhynchus tricoloratus Lyneborg, 1992 E Be
Anabarhynchus waitarerensis Lyneborg, 1992 E Be
Anabarhynchus westlandensis Lyneborg, 1992 E Be
Megathereva albopilosa Lyneborg, 1992 E Be
Megathereva atritibia Lyneborg, 1992 E Be
Megathereva bilineata (Fabricius, 1775) E Be
Suborder NEMATOCERA
Family CERATOPOGONIDAE
Leptoconops (*Styloconops*) *myersi* (Tonnoir, 1924) E Be
Family CHIRONOMIDAE
Subfamily CHIRONOMINI
Chironomus zealandicus Hudson, 1892 F E SW
Subfamily ORTHOCLADIINAE
Clunio sp. Tortell, 1981 E SW
Semiocladius kuscheli Sublette & Wirth, 1980 E Be SW
Semiocladius reinga (Leader, 1975) E SW
Semiocladius whangaroa (Leader, 1975) E SW
Subfamily TELMATOGETONINAE
Telmatogeton antipodensis Sublette & Wirth, 1980 E Be SW
Telmatogeton mortoni Leader, 1975 E Be SW
Telmatogeton trochanteratum Edwards, 1931 NI SW
Family CULICIDAE
Aedes (*Ochlerotatus*) *arundinariae* Kasper, 2020 E SW
Halaedes australis (Erichson, 1842) NI SW
Opifex chathamicus (Dumbleton, 1962) E SW
Opifex fuscus Hutton, 1902 E SW
Family TIPULIDAE
Geranomyia sp. nov. Macfarlane *et al.*, 2010 E SW
Idioglochina fumipennis (Butler, 1875) E SW
Idioglochina kronei (Mik, 1881) E SW
Limonia fulviceps (Alexander, 1925) E SW
Limonia kermadecensis Alexander, 1973 E SW
Limonia nebulifera (Alexander, 1922) E SW
Limonia subviridis (Alexander, 1922) E SW
Rhabdomastix sp. nov. Macfarlane *et al.*, 2010 E SW
Zelandoglochina canterburiana (Alexander, 1923) E SW

Order HEMIPTERA
Suborder HETEROPTERA
Family GERRIDAE
Subfamily HALOBATINAE
Halobates sericeus Eschscholtz, 1822 SW

Order THYSANOPTERA
Suborder TEREBRANTIA
Family THRIPIDAE
Anaphothrips zealandicus Mound, 1978 E Be
Suborder TUBULIFERA
Family PHLAEOTHRIPIDAE
Haplothrips salicorniae Mound & Walker, 1986 E Be
Podothrips orarius Mound & Walker, 1986 E Be
Yarnkothrips kolourus Mound & Walker, 1986 E Be

Order TRICHOPTERA
Suborder INTEGRIPALPIA
Family CHATHAMIIDAE
Chathamia brevipennis Tillyard, 1925 E SW
Chathamia integripennis Riek, 1976 SW
Philanisus fasciatus Riek, 1976 E SW
Philanisus matua Ward, 1995 E SW
Philanisus plebeius Walker, 1852 SW

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