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# AN ANNOTATED LIST OF THE AQUATIC AND SEMI-AQUATIC INSECTS OF NEW ZEALAND

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*Abstract*: This annotated list includes the known aquatic and semi-aquatic freshwater and marine insect species of New Zealand and outlying island groups. 334 species are listed. The subfamily Chathamiinae (Trichoptera) is transferred from the Rhyacophilidae to the Philanisidae.

This annotated list includes the aquatic and semi-aquatic insects of New Zealand and outlying island groups—Kermadec Is., Chatham Is., Auckland Is., Campbell I., and Macquarie I. Only named species are recorded, there being 334 in all.

Aquatic species are here considered to be only those with immature stages inhabiting a water environment, such as rivers, streams, lakes, ponds, temporary pools, or the sea. Adults may or may not be able to survive in water. Semi-aquatic species are always associated, usually in both immature and mature stages, with the surfaces of similar water environments.

Many orders and families are known to be aquatic and others semi-aquatic but in many cases only a few species may be associated with an aquatic environment. Unfortunately, in New Zealand, little work has been done in rearing aquatic larvae of essentially terrestrial orders and families and there are, consequently, few records of such species. This list is the first of its kind for New Zealand. Few publications have dealt with aquatic insects as a group. In his book on New Zealand Neuroptera, Hudson (1904) included all the present-day aquatic orders—Ephemeroptera, Plecoptera, Odonata, Trichoptera, as well as the one aquatic neuropteran species. Tillyard (1920a) discussed aquatic insects in relation to trout food. His report concerned only the one aquatic neuropteran and the four aquatic orders of the hot springs region in the center of the North Island. In his work on the insects of Australia and New Zealand, Tillyard (1926) again discussed the aquatic orders and some of the aquatic families. Dickinson (1951) gave some notes on the main orders containing aquatic or semi-aquatic species. Wise (1956) recorded the aquatic and semi-

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aquatic insects on an off-shore island in the north of New Zealand. In an excellent introduction to the freshwater life of New Zealand, Marples (1962) has given a general coverage of the aquatic and semi-aquatic groups of insects mainly to the family level but occasionally to the generic or specific. Mrs Brenda May (1963) has recently written the first account of the New Zealand cave fauna, which includes many aquatic species. Most of the cave insects are classed as intolerant trogloxenes, the Tipulidae as tolerant trogloxenes, the Chironomidae as troglophiles and one species of Trichoptera is thought to be a troglophile. Most adult specimens had emerged from immature stages washed into caves by streams or floods although, in some cases, these may have hatched from eggs washed in. I have seen a number of Ephemeroptera subimagines attracted to lights but most adult insects were collected from cave walls and formations, although some were seen flying by chance. Most of the aquatic and semi-aquatic species recorded in caves are commonly found elsewhere.

In the following list only original references are given for species but any additional information is given in notations. The emphasis in the list varies according to my interest and experience in the various orders concerned. It has often been difficult to assess from literature, or even from life, whether a species is actually aquatic or not. In most cases all species of known aquatic or semi-aquatic orders and families have been listed, but in other groups only the species known to me have been included. There are, undoubtedly, aquatic species in some families excluded from the list as, *i. e.*, Rhagionidae, Tabanidae, Tanyderidae, Dolichopodidae, Empididae, Elmidae, and Dascillidae, but no information to warrant their inclusion has yet been found.

Some of this work was carried out during the period I was on the staff of the Plant Diseases Division, D. S. I. R., Auckland, N. Z., and much information is based on specimens of the Plant Diseases Division, Entomology Section collection, which has since been placed under the control of Entomology Division, D. S. I. R.

It is hoped that this list, while providing information on known species, will, at the same time, indicate where knowledge is lacking and where future research would be most profitable.

## COLLEMBOLA

There appear to be no truly aquatic Collembola but some are semi-aquatic. One difficulty is to separate the occasional occurrences—sometimes as mass outbreaks—of collembolans on water surfaces, from the continuous association with water surfaces which is the necessary condition of semi-aquatic life. Many species found regularly on ponds or pools are, in fact, associated with the surrounding vegetation or soil, the occurrences on water being entirely by chance due to disturbance of vegetation and/or the springing habit of these insects.

In New Zealand, Pritchard (1952) described the occurrence and behavior of some isotomid collembolans in the marine littoral zone and J. T. Salmon recorded several species from the seashore. It is possible that some marine littoral species are more nearly aquatic than any other collembolans. However, individuals of an inter-tidal species which remain inactive in a bubble of air while covered by the tide, being active only on wet surfaces between tides, should be classed as semi-aquatic.

Three Campbell I. species have recently been recorded as semi-aquatic (Wise 1964a) and are listed here as, from my own knowledge, they are clearly associated with streams and seepage. One other Campbell I. species is inter-tidal.

Family ISOTOMIDAE

Subfamily Isotominae Schäffer, 1896

Genus **Acanthomurus** Womersley, 1934

**Acanthomurus rivalis** Wise, 1964, Pac. Ins. Monogr. **7**: 189.
Campbell I.; freshwater semi-aquatic.

Genus **Tomocerura** Wahlgren, 1900

**Tomocerura colonavia** Salmon, 1949, Cape Exped. Ser. Bull. **4**: 31.
Campbell I.; freshwater semi-aquatic.

Genus **Parisotoma** Bagnall, 1940

**Parisotoma picea** Salmon, 1949, Cape Exped. Ser. Bull. **4**: 36.
Campbell I.; inter-tidal semi-aquatic.

Family SMINTHURIDAE

Subfamily Sminthuridinae Börner, 1906

Genus **Pseudokatianna** Salmon, 1949

**Pseudokatianna triclavata** Salmon, 1949, Cape Exped. Ser. Bull. **4**: 53.
Campbell I.; freshwater semi-aquatic.

EPHEMEROPTERA

Family SIPHLONURIDAE

Subfamily Siphlonurinae Banks, 1900

Genus **Nesameletus** Tillyard, 1933

**Nesameletus ornatus** (Eaton), 1883, Trans. Linn. Soc. Lond. (2) Zool. **3**: 208, 321 (*Chirotonetes*?).
**Nesameletus flavitinctus** (Tillyard), 1923, Trans. Proc. N. Z. Inst. **54**: 226 (*Ameletus*).

Subfamily Oniscigastrinae Lameere, 1917

Genus **Oniscigaster** McLachlan, 1873

**Oniscigaster wakefieldi** McLachlan, 1873, Ent. Mon. Mag. **10**: 110.
Recorded as being extinct by Mosely (1933) but recently rediscovered and discussed by Penniket (1962).
**Oniscigaster intermedius** Eaton, 1899, Trans. Ent. Soc. Lond. **1899**: 292.
**Oniscigaster distans** Eaton, 1899, Trans. Ent. Soc. Lond. **1899**: 293.

Subfamily Ameletopsinae Edmunds, 1957

Genus **Ameletopsis** Phillips, 1930

**Ameletopsis perscitus** (Eaton), 1899, Trans. Ent. Soc. Lond. **1899**: 291 (*Ameletus*).

Subfamily Coloburiscinae Edmunds, 1963

Genus **Coloburiscus** Eaton, 1887

**Coloburiscus humeralis** (Walker), 1853, List. Neur. Ins. Brit. Mus. **3**: 552 (*Palingenia*).
**Coloburiscus tonnoiri** Lestage, 1935, Bull. (Ann.) Soc. Ent. Belge. **75**: 353.

Family Siphlaenigmatidae

Genus **Siphlaenigma** Penniket, 1962

**Siphlaenigma janae** Penniket, 1962, Rec. Cant. Mus. **7** (5): 390.

Family Leptophlebiidae

Genus **Zephlebia** Penniket, 1961

**Zephlebia** (**Zephlebia**) **versicolor** (Eaton), 1899, Trans. Ent. Soc. Lond. **1899**: 286 (*Atalophlebia*).
**Zephlebia** (**Zephlebia**) **dentata** (Eaton), 1871, Trans. Ent. Soc. Lond. **1871**: 80 (*Leptophlebia*).
**Zephlebia** (**Zephlebia**) **cruentata** (Hudson), 1904, N. Z. Neuroptera: 33 (*Atalophlebia*).
**Zephlebia** (**Zephlebia**) **borealis** (Phillips), 1923, Trans. Proc. N. Z. Inst. **61**: 356 (*Atalophlebia*).
**Zephlebia** (**Neozephlebia**) **scita** (Walker), 1853, List. Neur. Ins. Brit. Mus. **3**: 570 (*Baëtis*).
**Zephlebia** (**Neozephlebia**) **nodularis** (Eaton), 1871, Trans. Ent. Soc. Lond. **1871**: 81 (*Leptophlebia*).

Genus **Deleatidium** Eaton, 1899

**Deleatidium vernale** Phillips, 1930, Trans. Proc. N. Z. Inst. **61**: 360.
**Deleatidium lillii** Eaton, 1899, Trans. Ent. Soc. Lond. **1899**: 289.
**Deleatidium autumnale** Phillips, 1930, Trans. Proc. N. Z. Inst. **61**: 371.
**Deleatidium fumosum** Phillips, 1930, Trans. Proc. N. Z. Inst. **61**: 372.
**Deleatidium myzobranchia** Phillips, 1930, Trans. Proc. N. Z. Inst. **61**: 373.
**Deleatidium cerinum** Phillips, 1930, Trans. Proc. N. Z. Inst. **61**: 382.
**Deleatidium** (**Atalophlebioides**) **sepia** Phillips, 1930, Trans. Proc. N. Z. Inst. **61**: 383.
**Deleatidium** (**Atalophlebioides**) **cromwelli** Phillips, 1930, Trans. Proc. N. Z. Inst. **61**: 385.

Family Ephemeridae

Genus **Ichthybotus** Eaton, 1899

**Ichthybotus hudsoni** (McLachlan), 1894, Ent. Mon. Mag. (2) **5**: 270 (*Ephemera*).
**Ichthybotus bicolor** Tillyard, 1923, Trans. Proc. N. Z. Inst. **54**: 228.

## ODONATA

### Suborder ZYGOPTERA

#### Family COENAGRIIDAE

Subfamily Coenagriinae

Genus **Ischnura** Charpentier, 1840

**Ischnura aurora aurora** (Brauer), 1865, Zool-bot. Ges. Wien, Abh. **15**: 510 (*Agrion*).

Genus **Xanthocnemis** Tillyard, 1913

**Xanthocnemis zealandica** (McLachlan), 1873, Ann. Mag. Nat. Hist. ser. 4, **12**: 35 (*Telebasis*).

#### Family SYMPECMATIDAE

Subfamily Sympecmatinae

Genus **Lestes** Leach, 1815

**Lestes (Indolestes) colensonis** (White), 1846, Zool. Voy. Erebus & Terror, Ins.: Pl. 6 fig. 3 (*Agrion*).

### Suborder ANISOPTERA

#### Family PETALURIDAE

Subfamily Petalurinae

Genus **Uropetala** Selys, 1857

**Uropetala carovei carovei** (White), 1843, *In* Dieffenbach, Travels in N. Z. **2**: 281. (*Petalura*).
**Uropetala carovei chiltoni** (Tillyard), 1921, Trans. N. Z. Inst. **53**: 342 (*Uropetala chiltoni*).
This species was reduced to a subspecies by Wolfe (1953).

#### Family AESHNIDAE

Subfamily Aeshninae

Genus **Aeshna** Fabricius, 1775

**Aeshna brevistyla** Rambur, 1842, Hist. Nat. Ins. Nevropt.: 205.

Subfamily Anactinae

Genus **Hemianax** Selys, 1883

**Hemianax papuensis** (Burmeister), 1839, Handb. d. Ent. **2**: 841 (*Aeschna*).

#### Family CORDULIIDAE

Subfamily Corduliinae

Genus **Antipodochlora** Fraser, 1939

**Antipodochlora braueri** (Selys), 1871, Syn. Cordulines: 50 (*Epitheca*).

Genus **Hemicordulia** Selys, 1870

**Hemicordulia australiae** (Rambur), 1842, Hist. Nat. Ins. Névropt: 146 (*Cordulia*).

Genus **Procordulia** Martin, 1906

**Procordulia smithi** (White), 1846, Zool. Voy. Erebus & Terror, Ins.: Pl. 6 fig. 2. (*Cordulia smithii*).
**Procordulia grayi** (Selys), 1871, Syn. Cordulines: 50 (*Epitheca*).

Family LIBELLULIDAE

Subfamily Sympetrinae

Genus **Diplacodes** Kirby, 1889

**Diplacodes bipunctata** (Brauer), 1865, Zool.-bot. Ges. Wien, Abh. **15**: 503 [*Libellula* (*Diplax*)].

PLECOPTERA

Family EUSTHENIIDAE

Subfamily Stenoperlinae Tillyard, 1921

Genus **Stenoperla** McLachlan, 1866

**Stenoperla prasina** (Newman), 1845, Zoologist **3**: 852 (*Chloroperla*).

Family AUSTROPERLIDAE

Genus **Austroperla** Needham, 1905

**Austroperla cyrene** (Newman), 1845, Zoologist **3**: 853 (*Chloroperla*).

Family GRIPOPTERYGIDAE

Subfamily Gripopteryginae Enderlein, 1909

Genus **Megaleptoperla** Tillyard, 1923

**Megaleptoperla grandis** (Hudson), 1913, Trans. N. Z. Inst. **45**: 51 (*Leptoperla*).
**Megaleptoperla diminuta** Kimmins, 1938, Ann. Mag. Nat. Hist. ser. 11, **2**: 568.

Genus **Zelandobius** Tillyard, 1921

**Zelandobius confusus** (Hare), 1910, Trans. N. Z. Inst. **42**: 29 (*Leptoperla confusa*).
**Zelandobius hudsoni** (Hare), 1910, Trans. N. Z. Inst. **42**: 30 (*Leptoperla*).
**Zelandobius furcillatus** Tillyard, 1923, Trans. Proc. N. Z. Inst. **54**: 207.
**Zelandobius unicolor** Tillyard, 1923, Trans. Proc. N. Z. Inst. **54**: 208.

Genus **Aucklandobius** Enderlein, 1909

**Aucklandobius complementarius** Enderlein, 1909, Dtsch. Ent. Zschr. **1909**: 679.

Auckland and Campbell Is.
**Aucklandobius fulvescens** (Hare), 1910, Trans. N. Z. Inst. **42**: 29 (*Leptoperla*).
**Aucklandobius howesi** (Tillyard), 1923, Trans. Proc. N. Z. Inst. **54**: 209 (*Nesoperla*).
**Aucklandobius flavescens** (Kimmins), 1938, Ann. Mag. Nat. Hist. ser. 11, **2**: 570 (*Nesoperla*).
**Aucklandobius spiniger** (Tillyard), 1923, Trans. Proc. N. Z. Inst. **54**: 210 (*Nesoperla*).
**Aucklandobius trivacuata** (Tillyard), 1923, Trans. Proc. N. Z. Inst. **54**: 211 (*Nesoperla*).

Genus **Zelandoperla** Tillyard, 1923

**Zelandoperla decorata** Tillyard, 1923, Trans. Proc. N. Z. Inst. **54**: 212.
**Zelandoperla maculata** (Hare), 1910, Trans. N. Z. Inst. **42**: 29 (*Leptoperla*).
**Zelandoperla fenestrata** Tillyard, 1923, Trans. Proc. N. Z. Inst. **54**: 214.

Genus **Apteryoperla** Wisely, 1953

Species of this genus are all apterous and some, which do not live in streams, have been described as being terrestrial (Wisely 1953; Illies 1963, 1964). However, they occur in wet places at high altitudes in the New Zealand Southern Alps and in the wet higher parts of the subantarctic islands. As the order is essentially an aquatic one I am retaining the following in this list.

**Apteryoperla monticola** Wisely, 1953, Rec. Cant. Mus. **6** (3): 220.
**Apteryoperla angularis** Wisely, 1953, Rec. Cant. Mus. **6** (3): 227.
**Apteryoperla turbotti** Illies, 1963, Rec. Dom. Mus. **4** (19): 261.
Auckland Is.
**Apteryoperla campbelli** Illies 1963, Rec. Dom. Mus. **4** (19): 264.
Campbell I.
**Apteryoperla longicauda** Illies, 1963, Rec. Dom. Mus. **4** (19): 265.
Campbell I.

Genus **Gripopteryx** Pictet, 1841

**Gripopteryx zeelandica** Samal, 1921, České Společ Ent., Casopis **18**: 20, 68.

This species has not been recognised under this name in this country but it may be a known New Zealand species or a species of a known New Zealand genus.

Family CAPNIIDAE

Subfamily Notonemourinae Ricker, 1950

Genus **Notonemoura** Tillyard, 1923

**Notonemoura latipennis** Tillyard, 1923, Trans. Proc. N. Z. Inst. **54**: 215.

Genus **Spaniocerca** Tillyard, 1923

**Spaniocerca zelandica** Tillyard, 1923, Trans. Proc. N. Z. Inst. **54**: 216.
**Spaniocerca minor** Kimmins, 1938, Ann. Mag. Nat. Hist. ser. 11, **2**: 575.

Genus **Spaniocercoides** Kimmins, 1938

**Spaniocercoides hudsoni** Kimmins, 1938, Ann. Mag. Nat. Hist. ser. 11, **2**: 577.

## ORTHOPTERA

There are no aquatic Orthoptera but the submergence of stream-side wetas (*Paraneonotus* sp., Stenopelmatidae), as recorded by Edwards (1952), is worth noting.

## HEMIPTERA

### Family SALDIDAE

Genus **Saldula** Van Duzee, 1914

**Saldula australis** (White), 1876, Ent. Mon. Mag. **13**: 106 (*Salda*).

**Saldula butleri** (White), 1878, Ent. Mon. Mag. **15**: 160 (*Salda*).

**Saldula laelaps** (White), 1878, Ent. Mon. Mag. **15**: 160 (*Salda*).

**Saldula stoneri** Drake and Hoberlandt, 1950, Acta Ent. Mus. Nat. Pragae **26** (374): 1.

### Family GERRIDAE

Genus **Halobates** Eschscholtz, 1822

**Halobates sericeus** Eschscholtz, 1822, Entomographien: 108.

Marine semi-aquatic. Widespread, recorded once (Myers 1921) from the shores of Kermadec Is. No species of this genus has been found further south in New Zealand waters.

### Family VELIIDAE

Genus **Microvelia** Westwood, 1834

**Microvelia macgregori** (Kirkaldy), 1899, Rev. Ent. Caen **18**: 91 (Transl., 1908, Trans. N. Z. Inst. **40**: 109) (*Hydroessa*).

**Microvelia halei** Esaki, 1928, Ins. of Samoa **2** (2): 69.

### Family HYDROMETRIDAE

Genus **Hydrometra** Latreille, 1796

**Hydrometra ribesci** Hungerford 1938, Pan-Pacific Ent. **14**: 76.

Recorded in North Auckland, New Zealand, by Woodward, 1952. Since taken in North Auckland and at Ohinewai, South Auckland.

### Family MESOVELIIDAE

Most species of this family are semi-aquatic. The presence of a terrestrial and a semi-aquatic species in New Zealand was recorded by Pendergrast (1959).

Family NOTONECTIDAE

Genus **Anisops** Spinola, 1840

**Anisops wakefieldi** White, 1878, Ent. Mon. Mag. **15**: 161.
**Anisops assimilis** White, 1878, Ent. Mon. Mag. **15**: 161.

Family CORIXIDAE

Genus **Sigara** Fabricius, 1775

**Sigara** (**Tropocorixa**) **arguta** (White), 1878, Ent. Mon. Mag. **15**: 161 (*Corixa*).
**Sigara** (**Tropocorixa**) **potamius** Young, 1962, Rec. Cant. Mus. **7** (5): 337.
**Sigara** (**Tropocorixa**) **limnochares** Young, 1962, Rec. Cant. Mus. **7** (5): 342.
**Sigara** (**Tropocorixa**) **infrequens** Young, 1962, Rec. Cant. Mus. **7** (5): 346.
**Sigara** (**Tropocorixa**) **uruana** Young, 1962, Rec. Cant. Mus. **7** (5): 350.

Genus **Diaprepocoris** Kirkaldy, 1897

**Diaprepocoris zealandiae** Hale, 1924, Trans. Roy. Soc. S. Aust. **48**: 9.

Order NEUROPTERA

Family CORYDALIDAE

Genus **Archichauliodes** Weele, 1909

**Archichauliodes diversus** (Walker), 1853, Cat. Neur. Ins. Brit. Mus., Pt. **2**: 205 (*Hermes*).

Order LEPIDOPTERA

Family PYRAUSTIDAE

Subfamily Nymphulinae

Genus **Nymphula** Schrank, 1802

**Nymphula nitens** (Butler), 1880, Cist. Ent. **2**: 556 (*Paraponyx*).

Order TRICHOPTERA

Family PLECTROTARSIDAE

Subfamily Kokiriinae McFarlane, 1964

Genus **Kokiria** McFarlane, 1964

**Kokiria miharo** McFarlane, 1964, Rec. Cant. Mus. **8** (1): 74.

Family SERICOSTOMATIDAE

Genus **Pycnocentria** McLachlan, 1866

**Pycnocentria funerea** McLachlan, 1866, Trans. Ent. Soc. Lond. (3) **5**: 252.

**Pycnocentria evecta** McLachlan, 1868, J. Linn. Soc. Lond. Zool. **10**: 199, 211.
**Pycnocentria forcipata** Mosely, 1953, Trichoptera Austr. & N. Z.: 38.
**Pycnocentria hawdonia** McFarlane, 1956, Rec. Cant. Mus. **7** (1): 30.

Genus **Beraeoptera** Mosely, 1953

**Beraeoptera roria** Mosely, 1953, Trichoptera Austr. & N. Z.: 53.

Genus **Helicopsyche** Hagen, 1866

**Helicopsyche iltona** Mosely, 1953, Trichoptera Austr. & N. Z.: 74.
**Helicopsyche poutini** McFarlane, 1964, Rec. Cant. Mus. **8** (1): 55.
**Helicopsyche albescens** Tillyard, 1924, Trans. Proc. N. Z. Inst. **55**: 312.
**Helicopsyche howesi** Tillyard, 1924, Trans. Proc. N. Z. Inst. **55**: 313.
**Helicopsyche zealandica** Hudson, 1904, N. Z. Neuroptera: 70.

Genus **Pycnocentrodes** Tillyard, 1924

**Pycnocentrodes chiltoni** Tillyard, 1924, Trans. Proc. N. Z. Inst. **55**: 309.
**Pycnocentrodes aureola** (McLachlan), 1868, J. Linn. Soc. Lond. Zool. **10**: 200, 212 (*Pycnocentria*).
**Pycnocentrodes aeris** Wise, 1958, Rec. Auck. Inst. Mus. **5** (1, 2): 50.
**Pycnocentrodes unicolor** Wise, 1958, Rec. Auck. Inst. Mus. **5** (1, 2): 50.

Genus **Confluens** Wise, 1962

**Confluens hamiltoni** (Tillyard), 1924, Trans. Proc. N. Z. Inst. **55**: 311 (*Pycnocentrodes*).
**Confluens olingoides** (Tillyard), 1924, Trans. Proc. N. Z. Inst. **55**: 310 (*Pycnocentrodes*).

Genus **Conia** McFarlane, 1956

**Conia gunni** McFarlane, 1956, Rec. Cant. Mus. **7** (1): 31.

Genus **Olinga** McLachlan, 1868

**Olinga feredayi** (McLachlan), 1868, J. Linn. Soc. Lond. Zool. **10**: 198, 211 (*Olinx*).
**Olinga fumosa** Wise, 1958, Rec. Auck. Inst. Mus. **5** (1, 2): 52.

Tribe *Oeconesini* Tillyard, 1921

Genus **Oeconesus** McLachlan, 1862

**Oeconesus maori** McLachlan, 1862, Trans. Ent. Soc. Lond. (3) **1**: 303.
**Oeconesus lobatus** Wise, 1958, Rec. Auck. Inst. Mus. **5** (1, 2): 51.
**Oeconesus similis** Mosely, 1953, Trichoptera Austr. & N. Z.: 103.
**Oeconesus incisus** Mosely, 1953, Trichoptera Aust. & N. Z.: 104.

Genus **Pseudoeconesus** McLachlan, 1894

**Pseudoeconesus stramineus** McLachlan, 1894, Ent. Mon. Mag. ser. 2, **5**: 240.

**Pseudoeconesus bistirpis** Wise, 1958, Rec. Auck. Inst. Mus. **5** (1, 2) : 52.
**Pseudoeconesus tristirpis** Wise, 1958, Rec. Auck. Inst. Mus. **5** (1, 2) : 52.
**Pseudoeconesus squamosus** Mosely, 1953, Trichoptera Austr. & N. Z. : 112.
**Pseudoeconesus hudsoni** Mosely, 1953, Trichoptera Austr. & N. Z. : 112.
**Pseudoeconesus mimus** McLachlan, 1894, Ent. Mon. Mag. ser. 2, **5**: 239.
**Pseudoeconesus karoriensis** Mosely, 1953, Trichoptera Austr. & N. Z. : 116.

Genus **Tarapsyche** McFarlane, 1960

**Tarapsyche olis** McFarlane, 1960, Rec. Cant. Mus. **7** (3) : 205.

Genus **Zelandopsyche** Tillyard, 1921

**Zelandopsyche ingens** Tillyard, 1921, Trans. Proc. N. Z. Inst. **53**: 349.

Genus **Zepsyche** McFarlane, 1960

**Zepsyche acinaces** McFarlane, 1960, Rec. Cant. Mus. **7** (3) : 206.

Family PHILANISIDAE

Genus **Philanisus** Walker, 1852

**Philanisus plebeius** Walker, 1852, Cant. Neur. Ins. Brit. Mus. **1**: 116.
This marine aquatic species occurs commonly on New Zealand and New South Wales (Australia) coasts.

Subfamily Chathamiinae Tillyard, 1925

This subfamily was erected in the family Rhyacophilidae to separate the following species from the subfamily Hydrobiosinae, but the species is not a rhyacophilid. The form of the head, ♂ maxillary palpi, and ♂ genitalia, together with the absence of ocelli, indicate an affinity with *Philanisus plebeius* Walk. previously the only species in the family Philanisidae.

Genus **Chathamia** Tillyard, 1925

**Chathamia brevipennis** Tillyard, 1925, Rec. Cant. Mus. **2**: 280.
Chatham Is.

Family BERAEIDAE

Genus **Alloecentrella** Wise, 1958

**Alloecentrella magnicornis** Wise, 1958, Rec. Auck. Inst. Mus. **5** (1, 2) : 53.

Genus **Pycnocentrella** Mosely, 1953

**Pycnocentrella eruensis** Mosely, 1953, Trichoptera Austr. & N. Z. : 145.

Family HELICOPHIDAE

Genus **Zelolessica** McFarlane, 1956

**Zelolessica cheira** McFarlane, 1956, Rec. Cant. Mus. **7** (1) : 33.

Family PHILORHEITHRIDAE

Genus **Philorheithrus** Hare, 1910

**Philorheithrus agilis** (Hudson), 1904, N. Z. Neuroptera: 64 (*Pseudoeconesus*?).
**Philorheithrus lacustris** Tillyard, 1924, Trans. Proc. N. Z. Inst. **55**: 305.

Family LEPTOCERIDAE

Subfamily Triplectidinae Ulmer, 1906

Genus **Triplectides** Kolenati, 1859

**Triplectides magna** (Walker), 1852, Cat. Neur. Brit. Mus. **1**: 73 (*Leptocerus magnus*).
**Triplectides cephalotes** (Walker), 1852, Cat. Neur. Brit. Mus. **1**: 73 (*Leptocerus*).
**Triplectides obsoleta** (McLachlan), 1862, Trans. Ent. Soc. Lond. (3) **1**: 305 (*Pseudonemia*).

Genus **Triplectidina** Mosely, 1936

**Triplectidina oreolimnetes** (Tillyard), 1924, Trans. Proc. N. Z. Inst. **55**: 306 (*Triplectides*).

Genus **Hudsonema** Mosely, 1936

**Hudsonema amabilis** (McLachlan), 1868, J. Linn. Soc. Lond. Zool. **10**: 201 (*Tetracentron amabile*).
**Hudsonema aliena** (McLachlan), 1868, J. Linn. Soc. Lond. Zool. **10**: 202 [*Leptocerus* (?) *alienus*].

Subfamily Leptocerinae Ulmer, 1903

Genus **Oecetis** McLachlan, 1877

**Oecetis unicolor** (McLachlan), 1868, J. Linn. Soc. Lond. Zool. **10**: 203, 213 (*Setodes*).
**Oecetis chathamensis** Tillyard, 1925, Rec. Cant. Mus. **2**: 277.
Chatham Is.
**Oecetis iti** McFarlane, 1964, Rec. Cant. Mus. **8** (1): 57.

Family HYDROPSYCHIDAE

Subfamily Hydropsychinae Ulmer, 1903

Genus **Hydropsyche** Pictet, 1834

**Hydropsyche fimbriata** McLachlan, 1862, Trans. Ent. Soc. Lond. (3) **1**: 309.
**Hydropsyche thomasi** Wise, 1962, Rec. Auck. Inst. Mus. **5** (5, 6): 248.
**Hydropsyche colonica** McLachlan, 1871, J. Linn Soc. Lond. Zool. **11**: 131.
**Hydropsyche tepoka** Mosely, 1953, Trichoptera Austr. & N. Z.: 320.
**Hydropsyche tipua** McFarlane, 1964, Rec. Cant. Mus. **8** (1): 59.
**Hydropsyche auricoma** Hare, 1909, Trans. N. Z. Inst. **42**: 32.
**Hydropsyche occulta** (Hare), 1909, Trans. N. Z. Inst. **42**: 32 (*Hydrobiosis*).
**Hydropsyche philpotti** Tillyard, 1924, Trans. Proc. N. Z. Inst. **55**: 301.

**Hydropsyche catherinae** McFarlane, 1960, Rec. Cant. Mus. **7** (3) : 207.

Genus **Diplectrona** Westwood, 1839

**Diplectrona zealandensis** Mosely, 1953, Trichoptera Austr. & N. Z. : 340.
**Diplectrona bulla** Wise, 1958, Rec. Auck. Inst. Mus. **5** (1, 2) : 56.

Family POLYCENTROPODIDAE

Genus **Plectrocnemia** Stephens, 1836

**Plectrocnemia maclachlani** Mosely, 1953, Trichoptera Austr. & N. Z. : 355.

Genus **Polyplectropus** Ulmer, 1905

**Polyplectropus puerilis** (McLachlan), 1868, J. Linn. Soc. Lond. Zool. **10** : 204 (*Polycentropus*).
**Polyplectropus waitakerensis** Wise, 1962, Rec. Auck. Inst. Mus. **5** (5, 6) : 249.
**Polyplectropus impluvii** Wise, 1962, Rec. Auck. Inst. Mus. **5** (5, 6) : 249.
**Polyplectropus aurifusca** McFarlane, 1956, Rec. Cant. Mus. **7** (1) : 34.
**Polyplectropus puhia** McFarlane, 1956, Rec. Cant. Mus. **7** (1) : 36.

Family PSYCHOMYIDAE

Subfamily Ecnominae Ulmer, 1907

Genus **Ecnomina** Kimmins, 1953

**Ecnomina zealandica** Wise, 1958, Rec. Auck. Inst. Mus. **5** (1, 2) : 57.

Subfamily Psychomyinae Ulmer, 1907

Genus **Zelandoptila** Tillyard, 1924

**Zelandoptila moselyi** Tillyard, 1924, Trans. Proc. N. Z. Inst. **55** : 301.
Recently transferred from the Hydroptilidae by McFarlane (1964).

Family PHILOPOTAMIDAE

Genus **Dolophilodes** Ulmer, 1909

**Dolophilodes (Hydrobiosella) stenocerca** (Tillyard), 1924, Trans. Proc. N. Z. Inst. **55** : 289 (*Hydrobiosella*).
Recently recorded as a possible troglophile (May 1963). This species is nocturnal when mature while immature stages occur in shaded bush streams and below the surface of the substrate in open streams and shingle fans. It is thus preadapted for cave life. It is also the most common aquatic insect found in North Island caves, the adults, both dead and alive, sometimes being discovered in large numbers on cave walls.

**Dolophilodes (Hydrobiosella) tonela** (Mosely), 1953, Trichoptera Austr. & N. Z. : 397 (*Zelobiosella*).

Genus **Neobiosella** Wise, 1958

**Neobiosella irrorata** Wise, 1958, Rec. Auck. Inst. Mus. **5** (1, 2): 58.

## Family RHYACOPHILIDAE

### Subfamily Hydrobiosinae Ulmer, 1905

#### Genus **Hydrobiosis** McLachlan, 1868

**Hydrobiosis styx** McFarlane, 1951, Rec. Cant. Mus. **5** (5) : 260.
**Hydrobiosis spatulata** McFarlane, 1951, Rec. Cant. Mus. **5** (5) : 258.
**Hydrobiosis gollanis** Mosely, 1953, Trichoptera Austr. & N. Z. : 408.
**Hydrobiosis umbripennis** McLachlan, 1868, Proc. Linn. Soc. Lond. Zool. **10** : 208, 213.
**Hydrobiosis parumbripennis** McFarlane, 1951, Rec. Cant. Mus. **5** (5) : 256.
**Hydrobiosis falcis** Wise, 1958, Rec. Auck. Inst. Mus. **5** (1, 2) : 58.
**Hydrobiosis budgei** McFarlane, 1960, Rec. Cant. Mus. **7** (3) : 210.
**Hydrobiosis copis** McFarlane, 1960, Rec. Cant. Mus. **7** (3) : 210.
**Hydrobiosis styracine** McFarlane, 1960, Rec. Cant. Mus. **7** (3) : 212.
**Hydrobiosis silvicola** McFarlane, 1951, Rec. Cant. Mus. **5** (5) : 258.
**Hydrobiosis kiddi** McFarlane, 1951, Rec. Cant. Mus. **5** (5) : 257.
**Hydrobiosis harpidiosa** McFarlane, 1951, Rec. Cant. Mus. **5** (5) : 257.
**Hydrobiosis frater** McLachlan, 1868, J. Linn. Soc. Lond. Zool. **10** : 207, 213.
**Hydrobiosis soror** Mosely, 1953, Trichoptera Austr. & N. Z. : 421.
**Hydrobiosis clavigera** McFarlane, 1951, Rec. Cant. Mus. **5** (5) : 259.
**Hydrobiosis charadraea** McFarlane, 1951, Rec. Cant. Mus. **5** (5) : 259.
**Hydrobiosis ingenua** Hare, 1909, Trans. N. Z. Inst. **42** : 33.

#### Genus **Psilochorema** McLachlan, 1866

**Psilochorema mimicum** McLachlan, 1866, Trans. Ent. Soc. Lond. (3) **5** : 274.
**Psilochorema vomerharpax** McFarlane, 1964, Rec. Cant. Mus. **8** (1) : 61.
**Psilochorema tautoru** McFarlane, 1964, Rec. Cant. Mus. **8** (1) : 62.
**Psilochorema nemorale** McFarlane, 1951, Rec. Cant. Mus. **5** (5) : 262.
**Psilochorema macroharpax** McFarlane, 1951, Rec. Cant. Mus. **5** (5) : 263.
**Psilochorema bidens** McFarlane, 1951, Rec. Cant. Mus. **5** (5) : 262.
**Psilochorema mataura** McFarlane, 1956, Rec. Cant. Mus. **7** (1) : 39.
**Psilochorema leptoharpax** McFarlane, 1951, Rec. Cant. Mus. **5** (5) : 261.
**Psilochorema donaldsoni** McFarlane, 1960, Rec. Cant. Mus. **7** (3) : 213.
**Psilochorema folioharpax** McFarlane, 1956, Rec. Cant. Mus. **7** (1) : 40.

#### Genus **Edpercivalia** McFarlane, 1964

**Edpercivalia cassicola** (McFarlane), 1939, Trans. Proc. Roy. Soc. N. Z. **69** : 333 (*Percivalia*).
**Edpercivalia maxima** (McFarlane), 1939, Trans. Proc. Roy. Soc. N. Z. **69** : 331 (*Percivalia*).
**Edpercivalia fusca** (McFarlane), 1939, Trans. Proc. Roy. Soc. N. Z. **69** : 332 (*Percivalia*).
**Edpercivalia shandi** (McFarlane), 1951, Rec. Cant. Mus. **5** (5) : 263 (*Percivalia*).
**Edpercivalia banksiensis** (McFarlane), 1939, Trans. Proc. Roy. Soc. N. Z. **69** : 234 (*Percivalia*).
**Edpercivalia borealis** (McFarlane), 1951, Rec. Cant. Mus. **5** (5) : 264 (*Percivalia*).
**Edpercivalia thomasoni** (McFarlane), 1960, Rec. Cant. Mus. **7** (3) : 214 (*Notiobiosis*).

Genus **Synchorema** Tillyard, 1924

**Synchorema zygoneura** Tillyard, 1924, Trans. Proc. N. Z. Inst. **55**: 297.
**Synchorema zelandica** Mosely, 1953, Trichoptera Austr. & N. Z.: 464.
**Synchorema tillyardi** McFarlane, 1964, Rec. Cant. Mus. **8** (1): 71.

Genus **Neurochorema** Tillyard, 1924

**Neurochorema confusum** (McLachlan), 1868, J. Linn Soc. Lond. **10**: 210, 214 (*Psilochorema*).
**Neurochorema armstrongi** McFarlane, 1951, Rec. Cant. Mus. **5** (5): 254.
**Neurochorema pilosum** McFarlane, 1964, Rec. Cant. Mus. **8** (1): 67.
**Neurochorema forsteri** McFarlane, 1964, Rec. Cant. Mus. **8** (1): 68.

Genus **Hydrochorema** Tillyard, 1924

**Hydrochorema crassicaudatum** Tillyard, 1924, Trans. Proc. N. Z. Inst. **55**: 293.
**Hydrochorema tenuicaudatum** Tillyard, 1924, Trans. Proc. N. Z. Inst. **55**: 295.

Genus **Atrachorema** McFarlane, 1964

**Atrachorema mangu** McFarlane, 1964, Rec. Cant. Mus. **8** (1): 63.

Genus **Costachorema** McFarlane, 1939

**Costachorema callistum** McFarlane, 1939, Trans. Proc. Roy. Soc. N. Z. **69**: 337.
**Costachorema brachyptera** McFarlane, 1939, Trans. Proc. Roy. Soc. N. Z. **69**: 338.
**Costachorema xanthoptera** McFarlane, 1939, Trans. Proc. Roy. Soc. N. Z. **69**: 336.
**Costachorema psaroptera** McFarlane, 1939, Trans. Proc. Roy. Soc. N. Z. **69**: 335.

Genus **Tiphobiosis** Tillyard, 1924

**Tiphobiosis montana** Tillyard, 1924, Trans. Proc. N. Z. Inst. **55**: 299.
**Tiphobiosis fulva** Tillyard, 1924, Trans. Proc. N. Z. Inst. **55**: 300.
**Tiphobiosis intermedia** Mosely, 1953, Trichoptera Austr. & N. Z.: 491.
**Tiphobiosis veniflex** McFarlane, 1960, Rec. Cant. Mus. **7** (3): 216.
**Tiphobiosis plicosta** McFarlane, 1960, Rec. Cant. Mus. **7** (3): 217.

Family HYDROPTILIDAE

Genus **Oxyethira** Eaton, 1873

**Oxyethira albiceps** (McLachlan), 1862, Trans. Ent. Soc. Lond. (3) **1**: 304 (*Hydroptila*).

The common New Zealand hydroptilid. Recently recorded (Wise 1964b) from Campbell, Auckland, and Chatham Is.

Genus **Paroxyethira** Mosely, 1924

**Paroxyethira hendersoni** Mosely, 1924, Trans. Proc. N. Z. Inst. **55**: 673.
**Paroxyethira eatoni** Mosely, 1924, Trans. Proc. N. Z. Inst. **55**: 673.

**Paroxyethira tillyardi** Mosely, 1924, Trans. Proc. N. Z. Inst. **55**: 670.

## DIPTERA

### Family TIPULIDAE

Many tipulids are aquatic, either in fresh water or marine-littoral habitats. Larvae have frequently been collected in fresh water but the species are not known to me. The following species are all associated with the marine-littoral zone.

#### Genus **Limonia** Meigen, 1803

Alexander (1959) stated that all species of the subgenus *Idioglochina* are probably marine.

**Limonia (Idioglochina) fumipennis** (Butler), 1875, Cist. Ent. **1**: 355 (*Limnobia*).

I have collected adults, on the open coast of Gt. Barrier I., swarming above the shore rock platform at low tide.

**Limonia (Idioglochina) allani** Alexander, 1959, Ann. Mag. Nat. Hist. ser. 13, **1**: 674.

Larvae and pupae recorded (Alexander 1959) in coralline algae between tide-marks.

**Limonia (Idioglochina) kronei** (Mik), 1881, Verh. Zool.-bot. Ges. Wien **31**: 199(*Dicranomyia*).

Adults inhabit the sea shore of the Auckland and Campbell Is.

**Limonia (Dicranomyia) gracilis** (Edwards), 1923, Proc. N. Z. Inst. **54**: 283 (*Dicranomyia*).

Recorded by Alexander (1924) as a maritime species of New Zealand and Chatham Is.

**Limonia (Dicranomyia) subviridis** (Alexander), 1922, Ann. Ent. Soc. Amer. **15**: 223 (*Dicranomyia*).

Adults of this species have been reared, by me, from larvae and pupae in a compact red alga, *Gelidium pusillum*, in the inter-tidal zone near Auckland.

**Limonia (Dicranomyia) wiseana** Alexander, 1955, Ann. Mag. Nat. Hist. ser. 12, **8**: 669.

The holotype adult specimen was taken flying in association with the marine caddis-fly, *Philanisus plebeius*, at the Hen and Chicken Islands. Alexander (1955) recorded it as marine but this needs confirmation by discovery of the larva. Adults, which appeared to be this species, were taken by me on the shore of Little Barrier I.

### Family DIXIDAE

#### Genus **Dixa** Meigen, 1818

**Dixa (Dixa) campbelli** Alexander, 1922, Insecutor Inscitiae Menstruus **10**: 20.
**Dixa (Dixa) otagensis** Alexander, 1922, Insec. Insc. Menst. **10**: 147.
**Dixa (Dixa) septentrionalis** Tonnoir, 1924, Rec. Cant. Mus. **2** (4): 226.
**Dixa (Dixa) philpotti** Tonnoir, 1924, Rec. Cant. Mus. **2** (4): 227.
**Dixa (Paradixa) neozelandica** Tonnoir, 1924, Rec. Cant. Mus. **2**(4): 228.
**Dixa (Paradixa) harrisi** Tonnoir, 1925, Rec. Cant. Mus. **2** (5): 311.
**Dixa (Paradixa) fuscinervis** Tonnoir, 1924, Rec. Cant. Mus. **2** (4): 229.

#### Genus **Neodixa** Tonnoir, 1925

**Neodixa minuta** Tonnoir, 1924, Rec. Cant. Mus. **2** (4): 230.

## Family PSYCHODIDAE

Some New Zealand species are aquatic. Satchell (1954) recorded *Pericoma* larvae on wet stones splashed by a waterfall.

### Genus **Psychoda** Latreille, 1796

**Psychoda alternata** Say, 1824, Narrative Exped. Source St. Peter's River **2**: 358.
Recorded as aquatic by Miller & Watt (1915), under the name of *conspicillata.*

## Family CULICIDAE

### Subfamily Culicinae

### Genus **Tripteroides** Giles, 1904

**Tripteroides argyropus** (Walker), 1848, List Dipt. Brit. Mus. **1**: 2 (*Culex*).

### Genus **Theobaldinella** Blanchard, 1905

**Theobaldinella tonnoiri** (Edwards), 1925, Bull. Ent. Res. **15**: 258 (*Theobaldia*).

### Genus **Mansonia** Blanchard, 1901

**Mansonia iracundus** (Walker), 1848, List Dipt. Brit. Mus. **1**: 6 (*Culex*).
**Mansonia tenuipalpus** (Edwards), 1924, Bull. Ent. Res. **14**: 366 [*Taeniorhynchus* (*Coquillettidia*)].

### Genus **Opifex** Hutton, 1902

**Opifex fuscus** Hutton, 1902, Trans. N. Z. Inst. **34**: 188.
A marine-littoral species which has been discussed in recent years by Marks (1958) and Dumbleton (1962). It has been collected by me, at Whitianga on the east coast of the North Island.

### Genus **Aedes** Meigen, 1818

**Aedes** (**Aedimorphus**) **vexans** (Meigen), 1830, Syst. Beschr. Zweifl. Insekt. **6**: 241 (*Culex*).
**Aedes** (**Pseudoskusea**) **australis** (Erichson), 1842, Arch. Naturg. **8**: 470 (*Culex*).
Only recently recorded in New Zealand by Nye (1962).
**Aedes** (**Ochlerotatus**) **antipodeus** (Edwards), 1920, Bull. Ent. Res. **10**: 132 (*Ochlerotatus*).
The subgenus *Ochlerotatus* has recently been reviewed for New Zealand by Marks & Nye (1963).
**Aedes** (**Ochlerotatus**) **subalbirostris** Klein and Marks 1960, Proc. Linn. Soc. N. S. W. **85**: 115.
Discussed by Marks & Nye (1963) and Dumbleton (1963a).
**Aedes** (**Finlaya**) **notoscriptus** (Skuse), 1889, Proc. Linn. Soc. N. S. W. (2) **3**: 1738 (*Culex*).
**Aedes** (**Nothoskusea**) **chathamicus** Dumbleton, 1962, N. Z. J. Sci. **5**: 20.
A marine-littoral species on the Chatham Is.

### Genus **Culex** Linnaeus, 1758

A common Australian species, *Culex annulirostris* Skuse, has been found in New Zealand

once but is not established.
**Culex fatigans** Wiedemann, 1828, Aussereur, zweifl. Ins. **1**: 10.
**Culex pervigilans** Bergroth, 1889, Wien. Ent. Ztg. **8**: 295.

Subfamily Chaoborinae

Genus **Corethrella** Coquillet, 1902

**Corethrella novaezealandiae** Tonnoir, 1927, Rec. Cant. Mus. **3** (2): 107.

Family BLEPHAROCERIDAE

Aquatic. The family has recently been reviewed by Dumbleton (1963b).

Genus **Neocurupira** Lamb, 1913

**Neocurupira** (**Neocurupira**) **hudsoni** Lamb, 1913, Trans. Proc. N. Z. Inst. **45**: 73.
**Neocurupira** (**Paracurupira**) **chiltoni** (Campbell), 1921, Trans. Proc. N. Z. Inst. **53**: 260 (*Curupira*).
**Neocurupira** (**Paracurupira**) **tonnoiri** Dumbleton, 1963, N. Z. J. Sci. **6** (2): 238.
**Neocurupira** (**Paracurupira**) **campbelli** Dumbleton, 1963, N. Z. J. Sci. **6** (2): 242.

Genus **Peritheates** Lamb, 1913

**Peritheates turrifer** Lamb, 1913, Trans. Proc. N. Z. Inst. **45**: 75.
**Peritheates intermedius** Tillyard, 1922, N. Z. J. Sci. Tech. **5**: 107.
**Peritheates harrisi** (Campbell), 1921, Trans. Proc. N. Z. Inst. **53**: 262 (*Apistomyia*).

Family THAUMALEIDAE

Genus **Austrothaumalea** Tonnoir, 1927

**Austrothaumalea neozealandica** Tonnoir, 1927, Rec. Cant. Mus. **3** (2): 110.
**Austrothaumalea appendiculata** Tonnoir, 1927, Rec. Cant. Mus. **3** (2): 112.

Family SIMULIIDAE

Genus **Austrosimulium** Tonnoir, 1925

**Austrosimulium vexans** (Mik), 1881, Verh. Zool.-bot. Ges. Wien **31**: 201(*Simulium*).
Auckland Is, Campbell I.
**Austrosimulium ungulatum** Tonnoir, 1925, Bull. Ent. Res. **15** (3): 250.
**Austrosimulium australense** (Schiner), 1869, Reise Fregatte Novara, Zool. **2**: 15 (*Simulium*).
**Austrosimulium tillyardi** Tonnoir, 1925, Bull. Ent. Res. **15** (3): 253.
**Austrosimulium laticorne** Tonnoir, 1925, Bull. Ent. Res. **15** (3): 253.
**Austrosimulium multicorne** Tonnoir, 1925, Bull. Ent. Res. **15** (3): 254.
**Austrosimulium longicorne** Tonnoir, 1925, Bull. Ent. Res. **15** (3): 254.

Family CHIRONOMIDAE

Subfamily Tanypodinae

Genus **Pentaneura** Phillipi, 1865

**Pentaneura (Pentaneura) harrisi** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7**(9): 400.
**Pentaneura (Ablabesmyia) malus** (Hutton), 1902, Trans. Proc. N. Z. Inst. **34**: 187 (*Tanypus*)

Genus **Anatopynia** Johannsen, 1905

**Anatopynia antarctica** (Hudson), 1892, Manual N. Z. Entomology: 43 (*Corethra*).
**Anatopynia apicincta** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 403.
**Anatopynia languidus** (Hutton), 1902, Trans. Proc. N. Z. Inst. **34**: 186 (*Tanypus*).
**Anatopynia debilis** (Hutton), 1902, Trans. Proc. N. Z. Inst. **34**: 186 (*Tanypus*).
**Anatopynia quinquepunctata** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9): 405.
**Anatopynia flavipes** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 405.
**Anatopynia apicinella** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 406.
**Anatopynia umbrosa** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 406.
**Anatopynia quadricincta** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 407.
**Anatopynia cana** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 408.

Subfamily Podonominae

Genus **Podonomus** Phillipi, 1865

**Podonomus ohakunensis** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 409.

Subfamily Diamesinae

Genus **Lobodiamesa** Pagast, 1947

**Lobodiamesa campbelli** Pagast, 1947, Arch. Hydrobiol. **41**: 446.

Genus **Maoridiamesa** Pagast, 1947

**Maoridiamesa harrisi** Pagast, 1947, Arch. Hydrobiol. **41**: 448.

Subfamily Orthocladiinae

Genus **Metriocnemus** Wulp, 1874

**Metriocnemus lobifer** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 412.

Genus **Cricotopus** Wulp, 1874

**Cricotopus zealandicus** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 413.
**Cricotopus cingulatus** (Hutton), 1902, Trans. Proc. N. Z. Inst. **34**: 184 (*Orthocladius*).

Genus **Trichocladius** Kieffer, 1906

**Trichocladius pluriserialis** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 414.

Genus **Diplocladius** Kieffer, 1908

**Diplocladius lacuniferus** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 416.
**Diplocladius pictus** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 416.

Genus **Chaetocladius** Kieffer, 1911

**Chaetocladius harrisi**, Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 418.

Genus **Orthocladius** Wulp, 1874

**Orthocladius pictipennis** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 419.

Genus **Smittia** Holmgren, 1869

**Smittia verna** (Hutton), 1902, Trans. Proc. N. Z. Inst. **34**: 185 (*Camptocladius vernus*).

Subfamily Chironominae

Genus **Riethia** Kieffer, 1917

**Riethia zeylandica** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 422.

Genus **Chironomus** Meigen, 1803

**Chironomus** (**Chironomus**) **zealandicus** Hudson, 1892, Manual N. Z. Ent., 43.

This species, which often swarms in large numbers about lakes, has become a pest in recent years, about the Auckland Metropolitan Drainage Board oxidation ponds at Mangere, Auckland, as there are residential areas nearby. Large swarms of adult midges, rising in the early evenings, have been attracted to house lights, with consequent annoyance and discomfort to householders. Chironomids have also begun to breed in oxidation ponds in other areas but different species are involved.

**Chironomus** (**Chironomus**) **analis** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 425.

**Chironomus** (**Dicrotendipes**) **canterburyensis** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 425.

**Chironomus** (**Cryptochironomus**) **cylindricus** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 425.

Genus **Harrisius** Freeman, 1959

**Harrisius pallidus** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 426.

Genus **Ophryophorus** Freeman, 1959

**Ophryophorus ramiferus** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 428.

Genus **Paucispinigera** Freeman, 1959

**Paucispinigera approximata** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9) : 429.

Genus **Polypedilum** Kieffer, 1913

**Polypedilum (Polypedilum) pavidus** (Hutton), 1902, Trans. Proc. N. Z. Inst. **34**: 183 (*Chironomus*).
**Polypedilum (Polypedilum) longicrus** Kieffer, 1921, Ann. Soc. Sci. Brux. **40** (1): 101.
**Polypedilum (Polypedilum) opimus** (Hutton), 1901, Trans. Proc. N. Z. Inst. **34**: 182 (*Chironomus*).
**Polypedilum (Polypedilum) harrisi** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7**(9): 433.
**Polypedilum (Polypedilum) digitulus** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7**(9): 433.
**Polypedilum (Polypedilum) cumberi** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7**(9): 434.
**Polypedilum (Polypedilum) ignavus** (Hutton), 1902, Trans. Proc. N. Z. Inst. **34**: 183 (*Chironomus*).
**Polypedilum (Polypedilum) canum** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7**(9): 434.

Genus **Tanytarsus** Wulp, 1874

**Tanytarsus (Tanytarsus) vespertinus** Hutton, 1902, Trans. Proc. N. Z. Inst. **34**: 185.
**Tanytarsus (Tanytarsus) funebris** Freeman, 1959, Bull. Brit. Mus. (Nat. Hist.) Ent. **7** (9): 436.

Subfamily Clunioninae

Genus **Halirytus** Eaton, 1875

**Halirytus macquariensis** Brundin, 1962, Pacific Ins. **4** (4): 945.
Macquarie I. Brundin (1962) also recorded an unnamed species of *Smittia* (Orthocladiinae) from Macquarie.

Family CERATOPOGONIDAE

Aquatic larvae of this family have been collected but the species concerned are not known to me.

Family STRATIOMYIDAE

Some species are aquatic but only one is known to me.

Genus **Eulalia** Meigen, 1800

**Eulalia atrovirens** (Bigot), 1879, Ann. Soc. Ent. France ser. 5, **9**: 214 (*Odontomyia*).
Larvae have been found amongst slime-weed in stagnant pools near sea-level and Myers (1922) recorded them from sphagnum moss beside mountain tarns.

Family SYRPHIDAE

Subfamily Tubiferinae

All species of this subfamily are probably aquatic but only the following two species are known to me.

Genus **Tubifera** Meigen, 1800

**Tubifera tenax** (Linnaeus), 1758, Syst. Nat. Ed. **10**: 591 (*Musca*).

Genus **Helophilus** Meigen, 1822

**Helophilus trilineatus** (Fabricius), 1775, Syst. Ent.: 766 (*Syrphus*).

Family EPHYDRIDAE

Many species are aquatic but few have been reared for determination.

Genus **Brachydeutera** Loew, 1862

**Brachydeutera sydneyensis** Malloch, 1924, Proc. Linn. Soc. N. S. W. **49**: 335.
Aquatic pupae were reared at Auckland (Harrison 1959).

Genus **Ephydrella** Tonnoir and Malloch, 1926

**Ephydrella aquaria** (Hutton), 1901, Trans. Proc. N. Z. Inst. **33**: 90 (*Ephydra*).
Recorded from saline pools on the sea-shore by Miller (1910) and saline pools, Central Otago, by Benham (1905).

Genus **Ephydra** Fallén, 1810

**Ephydra macquariensis** Womersley, 1937, B. A. N. Z. A. R. E. Rep. (B) **4**(3): 77.
Macquarie I. Immature stages were first recorded as aquatic tipulids (Tillyard 1920b).

Family MUSCIDAE

Some species are aquatic. I have reared one species from larvae in the marine-littoral zone in association with marine tipulid larvae.

COLEOPTERA

Family DYTISCIDAE

Genus **Homoeodytes** Régimbart, 1879

**Homoeodytes hookeri** (White), 1846, Zool. Voy. Erebus & Terror, Ins.: 6 (*Cybister*).
**Homoeodytes scutellaris** (Germar), 1824, Linn. Ent. **3**: 171 (*Cybister*).

Genus **Rhantus** Lacordaire, 1835

**Rhantus pulverosus** (Stephens), 1835, Illust. Brit. Ent. **5**: 395 (*Colymbetes*).
The common New Zealand species; has been recorded in an intertidal sea-water pool (Chilton 1906), in mineral spring-water (Wise 1958), in a cave pool (May 1963), and at Chatham Is. (Hutton 1898).
**Rhantus plantaris** Sharp, 1882, Sci. Trans. R. Dublin Soc. (2) **2**: 608.

Genus **Lancetes** Sharp, 1882

**Lancetes lanceolatus** (Clark), 1863, J. of Ent. **2**: 14 (*Colymbetes*).

Genus **Antiporus** Sharp, 1882

**Antiporus uncifer** Sharp, 1882, Sci. Trans. R. Dublin Soc. (2) **2**: 411 (*Hydroporus*).
**Antiporus wakefieldi** (Sharp), 1876, Ent. Mon. Mag. **13**: 20 (*Hydroporus*).
**Antiporus duplex** (Sharp), 1876, Ent. Mon. Mag. **13**: 21 (*Hydroporus*).
**Antiporus strigosulus** (Broun), 1880, Man. N. Z. Coleoptera: 72 (*Hydroporus*).

Genus **Hyphydrus** Illiger, 1802

**Hyphydrus elegans** (Montrozier), 1860, Ann. Ent. Soc. France: 245 (*Pachytes*).
**Hyphydrus elegans** var. **nitidicornis** (Broun), 1880, Man. N. Z. Coleoptera: 73 [*Hydroporus* (?) *nitidicornis*].

Genus **Bidessus** Sharp, 1882

**Bidessus impressus** Sharp, 1882, Sci. Trans. R. Dublin Soc. (2) **2**: 360.
**Bidessus plicatus** Sharp, 1882, Sci. Trans. R. Dublin Soc. (2) **2**: 360.
**Bidessus huttoni** Sharp, 1882, Sci. Trans. R. Dublin Soc. (2) **2**: 361.

Genus **Huxelhydrus** Sharp, 1882

**Huxelhydrus syntheticus** Sharp, 1882, Sci. Trans. R. Dublin Soc. (2) **2**: 369.
**Huxelhydrus virgatus** Broun, 1893, Man. N. Z. Coleoptera **5**: 1014.

Genus **Copelatus** Erichson, 1832

**Copelatus sharpi** Broun, 1893, Man. N. Z. Coleoptera **5**: 1014.

Family GYRINIDAE

Genus **Gyrinus** Linnaeus, 1733

**Gyrinus huttoni** Pascoe, 1877, Ann. Mag. Nat. Hist. ser. 4, **19**: 141.

Family HYDROPHILIDAE

Undoubtedly many species are aquatic but only few of these are known to me.

Subfamily Sphaeridiinae

Genus **Stygnohydrus** Broun, 1893

**Stygnohydrus femoralis** Broun, 1910, Bull. N. Z. Inst. **1**: 12.

Subfamily Hydrophilinae

Genus **Limnoxenus** Motschoulsky, 1853

**Limnoxenus zealandicus** (Broun), 1880, Man. N. Z. Coleoptera: 77 (*Hydrobius*).

Genus **Laccobius** Erichson, 1837

**Laccobius arrowi** d'Orchymont, 1925, Bull. (Ann.) Soc. Ent. Belge **65**: 68.

Genus **Enochrus** Thomson, 1859

**Enochrus (Lumetus) tritus** (Broun), 1880, Man. N. Z. Coleoptera : 78 (*Philhydrus*).

Genus **Berosus** Leach, 1817

**Berosus (Phelerosus) pallidipennis** (Sharp), 1884, Trans. Ent. Soc. Lond. **1884** : 480 (*Phelerosus*).

Family DRYOPIDAE

Larvae of some species are aquatic, adults may be aquatic or sub-aquatic. Only species known to me to be associated with fresh water are listed here.

Genus **Hydora** Broun, 1882

**Hydora picea** (Broun), 1881, Man. N. Z. Coleoptera **2** : 672 (*Pachycephala piceum*).
**Hydora nitida** Broun, 1885, N. Z. J. Sci. **2** (8) : 385.
**Hydora vestita** Broun, 1914, Bull. N. Z. Inst. **1** (3) : 153.
**Hydora subaenea** Broun, 1914, Bull. N. Z. Inst. **1** (3) : 154.

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# A NEW SPECIES OF DENDROSOTER WESMAEL FROM THE PHILIPPINE ISLANDS (Hymenoptera: Braconidae)

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*Abstract*: The genus *Dendrosoter* Wesmael is recorded for the first time from the Philippines and a new species, *enervatus*, is described. The species was reared from a scolytid in *Achras sapota* at Lipa, Batangas.

The genus *Dendrosoter* was characterized by Wesmael (1838) as having callus-like swellings on each side of the frons and a stigma present in the hindwing of the male. Subsequent workers have given a much broader interpretation of this genus. Nixon (1938), in reviewing the Indian and African species, stated that the only character of generic value which those species have in common is the swellings on the frons. According to Picard (1928) there are certain Old World species in which the male does not have a stigma in the hindwing. The species described below has the essential features of the genus *Dendrosoter* as I interpret it; viz., calli on each side of the frons, forewing with the recurrent vein entering the second cubital cell, and the subdiscoideus interstitial with the discoideus. However, *D. enervatus* is quite different from other species of the genus in that the first intercubitus is, at most, only weakly defined (similar to *Heterospilus*) and the male lacks a stigma in the hindwing. Because of the much broader interpretation now