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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