TERRESTRIAL ARTHROPODS OF PEATLANDS, WITH PARTICULAR REFERENCE TO CANADA

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MEMOIRS OF
THE ENTOMOLOGICAL SOCIETY OF CANADA — No. 169
V.M. Behan-Pelletier, Editor

THE ENTOMOLOGICAL SOCIETY OF CANADA 393 Winston Avenue Ottawa K2A 1Y8
1994

HYMENOPTERA OF THE WAGNER NATURAL AREA, A BOREAL SPRING FEN IN CENTRAL ALBERTA

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Abstract

Memoirs of the Entomological Society of Canada **169**: 181–220 (1994)

The Wagner Natural Area, located 8 km west of Edmonton, Alberta (53°34′N 113°47′W), contains a boreal spring fen estimated to be 4700 years old. The site was selected in 1985 for a survey of its arthropod fauna. A transect of the site from marl pools through fen, edge effect, and treed swamp was sampled for arthropods using pan and Malaise traps. Specialized microhabitats outside the transect were identified and sampled using pan traps. The Wagner fen samples contain 2181 species of arthropods contributing to a total known biota of 2905 species in the peatland. Of those, 1410 are Hymenoptera. Although seven other peatland studies are known, the inability of systematists to name most species prevents direct comparisons among peatlands. Data obtained from the Hymenoptera collections at Wagner demonstrate a progression in species richness as one approaches the forest–fen edge from either fen or forest. A large proportion [30% (382 species)] of Hymenoptera species, termed the aerial component, is active both in the forest–fen edge and in the fen. The aerial component is a highly mobile, at least locally transient, but often uncollected component of peatland ecosystems. Presence of the aerial component is probably associated with habitat structure. Those peatlands possessing more complex vegetation architecture have greater proportions of aerial species. About 80% of Hymenoptera at Wagner are parasitoids, most of which attack larva of holometabolous hosts. Based on the host groups sought by parasitoids and the ratio of parasitoid species per host species, the fen is estimated to contain about 6000 species of arthropods.

Finnamore, A.T. 1994. Hyménoptères de la réserve naturelle Wagner, une tourbière boréale minérotrophe alimentée par des sources dans le centre de l'Alberta. *Memoirs of the Entomological Society of Canada* **169**: 181–220.

Résumé

La réserve naturelle Wagner, située à 8 km à l'ouest d'Edmonton, en Alberta (53°34′N 113°47′O), contient une tourbière boréale minérotrophe alimentée par des sources, qui remonte à environ 4700 ans. La faune des arthropodes y a été inventoriée en 1985. Un transect passant par les étangs à marne, l'écotone forêt–tourbière et la zone humide boisée a été échantillonné au moyen de pièges Malaise et de pièges à cuvettes. Les pièges à cuvettes ont également servi à échantillonner des microhabitats particuliers situés hors du transect. La tourbière minérotrophe de la réserve contient 2181 espèces d'arthropodes qui font partie des 2905 espèces du biote de la tourbière. Parmi ces espèces, 1410 sont des hyménoptères. Bien que sept autres travaux aient été effectués dans d'autres tourbières, il est impossible de comparer la faune d'une tourbière à celle d'une autre à cause de la difficulté d'identifier la plupart des espèces. Les données sur la faune des hyménoptères de la réserve indiquent qu'il y a une augmentation de la richesse en espèces à l'approche de la zone limitrophe forêt–tourbière par comparaison avec la faune de la forêt ou celle de la tourbière. Une proportion importante [30% (382 espèces)] des espèces d'hyménoptères, appelée ici la composante aérienne, est active aussi bien dans la zone limitrophe que dans la toubière. Cette composante aérienne est une composante très mobile, en transit au moins localement, mais souvent peu récoltée des écosystèmes tourbeux. La présence de cette composante aérienne est probablement reliée à la structure de l'habitat. Les tourbières qui ont une architecture végétale plus complexe comptent une proportion plus grande d'espèces aériennes. Environ 80% des hyménoptères de la réserve Wagner sont des parasitoïdes, la plupart vivant sur des larves d'hôtes holométaboles. D'après la nature des groupes d'hôtes recherchés par les parasitoïdes et le nombre d'espèces parasitoïdes par espèce hôte, on estime à 6000 le nombre d'espèces d'arthropodes présentes dans la tourbière.

[Traduit par la Rédaction]

Introduction

Peatlands comprise about 12% of the land area of Canada (Gorham 1990), yet very few arthropods have been identified from these habitats. The state of knowledge of the aquatic insects of peatlands in Canada was recently reviewed by Rosenberg and Danks (1987). Most of the information on terrestrial peatland fauna in Canada comes from Byron bog in southern Ontario [numerous papers by Judd (1957–1973)]. Although the fauna of peatlands has been neglected in the New World, several European studies (Coulson and Whittaker 1978; Gardiner 1932; Krogerus 1960) provide extensive treatment of that arthropod fauna.

The present study documents the fauna of a Canadian boreal fen (Wagner fen) and provides a baseline sample of arthropods that is comparable to similar samples from other sites. This paper focuses on the diverse assemblage of Hymenoptera found at Wagner fen. It uses an analysis of trapping sites and parasitoid host preference to assess the abundance of aerial insects in peatlands and to provide an estimate of richness of insects and spiders at the Wagner fen.

The Wagner Fen

Spring fens are minerotrophic wetlands that are fed by groundwater discharge sources such as springs (Zoltai 1988). They are characteristically long and narrow, originating from a point source. Zoltai (1988) notes that spring fens usually have patterns of treed islands on areas that receive less spring water; otherwise these fens are generally dominated by sedges. In highly minerotrophic conditions, marl deposits may be encountered. Typical vegetation is open stands of sedges and related plants (*Carex*, *Scirpus*, and *Eleocharis*) and mosses (*Scorpidium*, *Drepanocladus*, and *Campylium*), which cover about 50% of the surface. Peat thickness ranges from 1 to 2.5 m with the upper 50 cm consisting of a tough mat of roots and mosses (Zoltai 1988).

The Wagner Natural Area contains a wetland, locally known as Wagner bog (Fig. 1), which falls within Zoltai's (1988) spring fen classification. The site is located in the boreal forest 8 km west of Edmonton, Alberta (53°34′N 113°47′W). The fen, in this case, cuts through a coniferous swamp. It lies on a gentle slope with groundwater derived from adjacent uplands. Underlying deposits of glacial sand and gravel form the main aquifer, allowing groundwater to flow several kilometres downhill to the Wagner site. A major component of groundwater in these springs is calcium carbonate, typical of water from glacial gravels in the area (Prosser 1982). Calcium carbonate precipitates as a white paste called marl, forming marl pools.

In a 25-m transect at Wagner, Zoltai (1988) found the fen characterized by a few scattered trees, *Larix laricina* (Du Roi) K. Koch, and low shrubs, *Betula pumila* Linnaeus, *Andromeda polifolia* Linnaeus, and *Salix pedicellaris* Pursh. The herb layer consists of *Muhlenbergia glomerata* (Willdenow), *Eleocharis quinqueflora* (F.X. Hartmann) O. Schwarz, *Carex diandra* Schrank, *Carex aquatilis* Wahlenberg, and *Scirpus validus* Vahl. Bladderworts (*Utricularia*) occur in small pools. The moss layer consisted of *Tomenthypnum nitens* (Hedwig) Loeske, *Campylium stellatum* (Hedwig) C. Jensen, *Drepanocladus revolvens* (Sw.) Warnstorf, and *Scorpidium scorpioides* (Hedwig) Limpricht.

Peat cores taken in the area show accumulations of 157 cm in the coniferous swamp and 236 cm in the fen. Based on core samples the wetland is estimated to be 4700 years old (Johnson 1982). The basal layers of the wetland are made up of well decomposed materials indicating marshy conditions with marl pools in the lower areas. The wetland underwent a conversion to bog conditions early in its history possibly because of a shift in the fen drainage system (Zoltai 1988). Bog conditions dominated the wetland for some time before minerotrophic waters again inundated the lower areas initiating the present fen. In the surrounding coniferous swamp, bog conditions were maintained until recently when minerotrophic

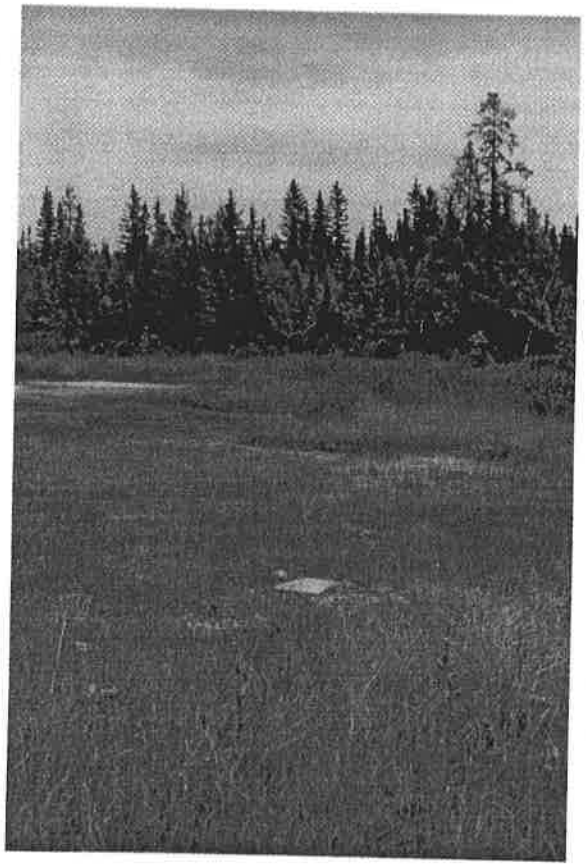

FIG. 1. The Wagner Natural Area illustrating pan trap placement on a relatively vegetation-free marl flat (site 13 in text).

groundwater rose to within reach of plant roots initiating development of a minerotrophic swamp (Zoltai 1988).

Trapping Protocol

Our objectives in sampling the Wagner fen were (1) to document the arthropod fauna in a habitat of this type; and (2) to obtain a baseline sample of arthropods from an Alberta habitat that would permit comparison with the arthropods in similar samples from vastly different habitats. Data obtained from several baseline samples will ultimately be used to assess the species richness of Alberta and possibly Canada. Data from these collections may also be used to assess changes in species richness resulting from global atmospheric changes or more localized environmental changes. Wagner spring fen was chosen as a site for a baseline sample because of its proximity to Edmonton, the threat posed by road development through the site, and the presence of an active group dedicated to preservation of this habitat.

Sampling involved use of yellow pan traps (29.9 × 23.5 × 6.4 cm) and Malaise traps supplemented by occasional sweep samples. Only terrestrial sites were considered. A 30-m transect of the fen from spring pool edge to surrounding coniferous swamp was sampled

using triple pan trap replicates at six locations determined by vegetation architecture and/or plant community. The open edge (edge–fen interface) was sampled using a single Malaise trap to obtain representatives of the aerial component in this community. The six sites selected were as follows:

(1) overhanging shore adjacent to a permanent spring fed marl pond;
(2) low shrub community interspersed with temporary potholes containing water derived from precipitation and high spring water levels;
(3) low shrub community with open expanses of sedges;
(4) open edge (edge–fen interface) (a Malaise trap was also placed at this site);
(5) closed edge (edge–forest interface);
(6) coniferous swamp.

In addition to the transect a number of specialized microhabitats were sampled. Site 7, similar to site 3, was adjacent to a colony of the ant, *Formica argentea* Wheeler. Sites 8 and 9 were relatively vegetation-free marl flats at low and high water marks, respectively. Site 10 was low bush (1 m) overhanging marl flats. Traps at sites 8 and 11–13 were subject to periodic inundation. Site 11 was similar to 10 but periodically flooded. Site 12 was among *Scirpus* standing in water and site 13 was similar to 8 on relatively vegetation-free marl flats but subject to greater inundation from fluctuating water levels for most of the season.

Sampling was carried out during 1985 from the first week of May to the last week of September; specimens were removed at about weekly intervals. Approximately 1.5 million specimens were collected, stored in 70% ethanol or methanol and sorted to order. About 45000 specimens were mounted and identified or sent to appropriate specialists for identification.

Biotic Components and the Hymenoptera of Wagner Fen

The samples from Wagner spring fen contain 2195 species of invertebrates. This is more species than have been collected in any other peatland in the western hemisphere (see Tables 1–11 located at the end of this article). Figure 2 compares the Wagner fauna to seven other sites. The Moore House (Coulson and Whittaker 1978) and Wicken fen (Gardiner 1932) sites are British studies, the rest are from two studies in southern Ontario. The Crieff, Wylde, Wainfleet, and Oliver sites are part of a monumental study (Blades 1990; Blades and Marshall 1994) undertaken by the University of Guelph. Only the Wagner and the Blades (1990) studies used similar continuous trapping devices as part of the sampling protocol. The most encompassing study is that of Krogerus (1960) listing 4316 species from 38 sites in Finland, Sweden, and Norway. The relative species richness observed at the Wagner fen is likely a collecting artifact; other peatlands will undoubtedly prove as rich as, or richer than, Wagner.

The Wagner spring fen has been visited by naturalists and scientists for the past 50 years, and much is known about its flora and fauna. There are 531 species of plants (Hrapko 1988), 179 species of vertebrates (T.W. Thormin pers. comm.), and 2181 species of arthropods known (Fig. 3). The Arthropoda known from Wagner are presented in Figure 4; only the Hymenoptera and Coleoptera represent reasonably complete lists of the fauna. The bias towards Hymenoptera and Coleoptera reflects the expertise available to identify species in these groups.

The Hymenoptera, with about 100 000 described species, is among the largest orders of insects. The order includes sawflies, ichneumons, chalcids, predatory wasps, ants, and bees. Figure 5 illustrates the major groups of wasps found at Wagner. With a total of 1410 species of Hymenoptera, the fen not only contains a diverse assemblage of wasps but it is clearly dominated by the ichneumonoid families Braconidae and Ichneumonidae.

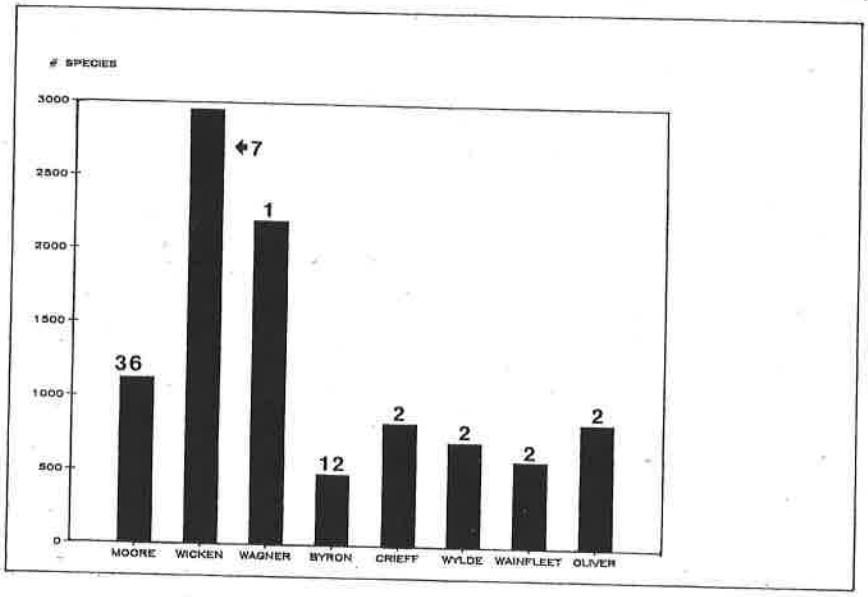

FIG. 2. Comparison of arthropod species richness in eight peatlands. Numbers at the top of each column refer to the number of years sampling occurred.

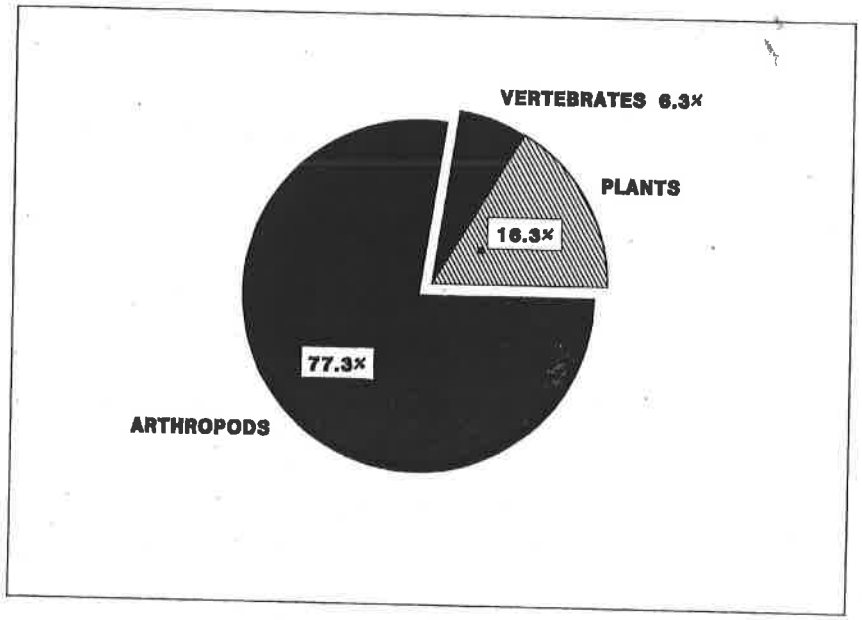

FIG. 3. The percentage composition of the known biota of Wagner fen.

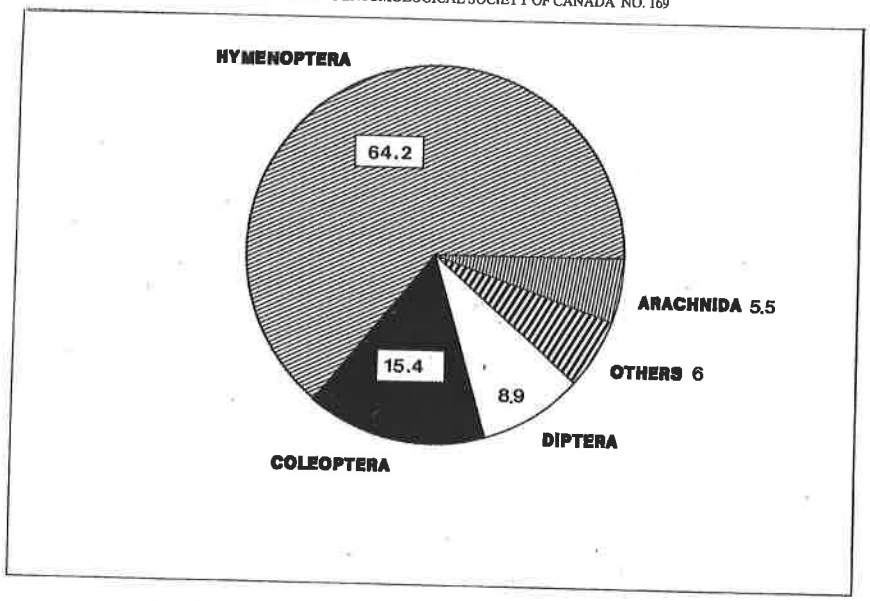

FIG. 4. The percentage composition of the known Arthropoda of Wagner fen.

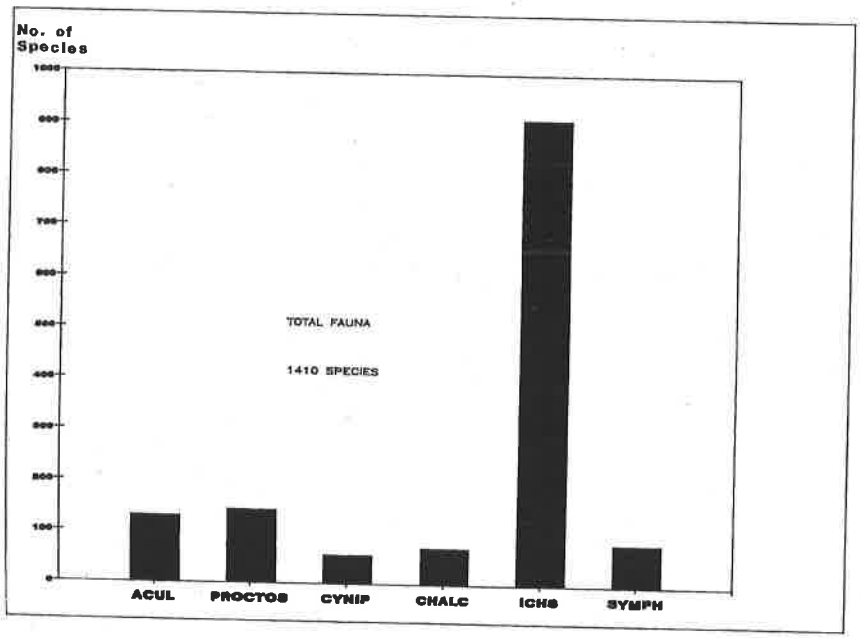

FIG. 5. The major groups of Hymenoptera collected at Wagner fen. Acul = Aculeata, Chal = Chalcidoidea, Cynip = Cynipoidea, Ichs = Ichneumonoidea, Proctos = Proctotrupoidea + Ceraphronoidea + Scelionoidea, Symph = Symphyta.

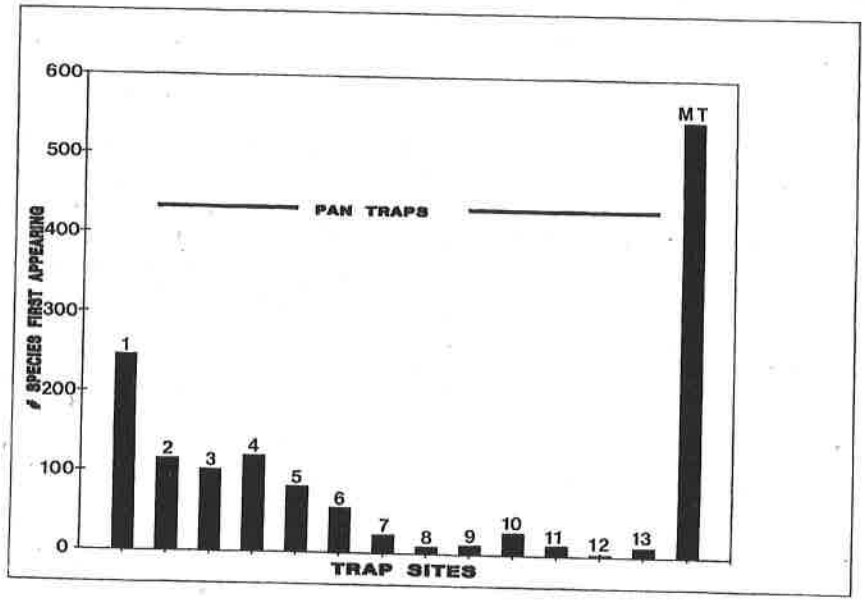

FIG. 6. Trapping effectiveness for Hymenoptera at Wagner fen. Numbers at top of columns indicate pan trap sites, MT = Malaise trap.

To compare Wagner fen with other habitats the sampling protocol must provide a more-or-less complete sample of the species present (Finnamore 1988). The effect of diminishing returns in the pan trap series is demonstrated in Figure 6. Each species is reported only once at the trap in which it is first encountered. For example, the species reported at trap 8 were not encountered at traps 1–7 and were not reported at traps 9–13 and the Malaise trap, even if they occurred at the latter sites. Figure 6 indicates that addition of further pan traps would yield only a few species new to the sample. Thus the pan trap sample has provided a more-or-less complete representation of species. However, when the Malaise trap sample is added to the pan trap sample, over 500 species of wasps appear for the first time. Addition of further Malaise traps would likely result in the documentation of many more species. Flying insects in the vegetation-free zone above ground level are inadequately sampled by pan traps. This must be borne in mind in any comparisons with other habitats.

One of the major difficulties in studies of arthropod diversity is our inadequate knowledge of many of the groups. Figure 7 presents our knowledge of the hymenopterous fauna; 70% of the Wagner fen species cannot be named. The taxonomy of many groups of Hymenoptera is incomplete.

In comparisons of species richness, the Wagner fen is more than twice as rich in species of Hymenoptera as the seven other peatlands studied. Figure 8 compares the species richness of Hymenoptera in eight peatlands. The horizontal line on the Wagner sample in Figure 8 indicates the number of species collected minus the Malaise trap sample. Even without the Malaise trap sample, the Wagner fen clearly has the richest Hymenoptera component of the sites. It is possible that this represents a sampling bias toward good sites for Hymenoptera.

The only site that is similar to Wagner in terms of the proportions of the various groups of Hymenoptera represented is Wicken fen. In that study the ichneumonoid component of the fauna represented 75% of the total Hymenoptera (Benson 1932; Hancock 1932; Kerrich

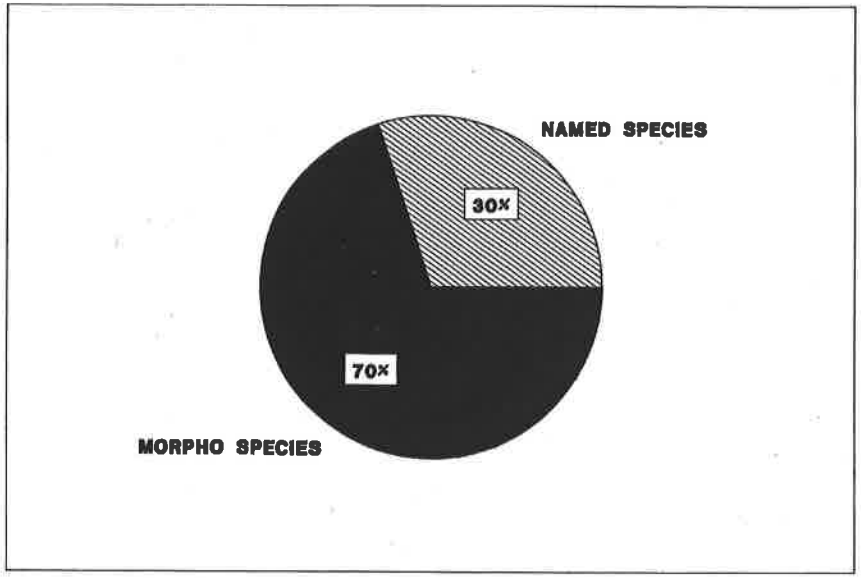

FIG. 7. The taxonomic status of Hymenoptera collected at Wagner fen. Morphospecies are those species for which keys do not exist or keys are unworkable, they most often belong in genera in need of revision; therefore species names cannot be applied with reasonable certainty. Morphospecies are delineated using morphological characters of demonstrated value in separating species in related genera. Morphospecies have no taxonomic status.

1932; Nevinson 1932). The same component from Wagner is 65% of the total while in the other sites the ichneumonoid component is about 20% (in Figure 8 the ichneumonoid component is a constituent of the parasitoid component). The reason for the high ichneumonoid representation at Wagner and Wicken is that only these studies considered the aerial faunal component in the sampling design (Malaise trap at Wagner, spot collecting at Wicken). In addition the Wicken ichneumonoid component is skewed upward due to the exclusion of microhymenoptera from that study.

I had intended to provide a more detailed comparison between the Wagner study and Blades and Marshall's (1994) southern Ontario study, but here the taxonomic impediment intrudes. The Wagner fen has only 49 named species (3.5% of its Hymenoptera) in common with the southern Ontario sites; this is far too little to allow meaningful comparison.

Figure 9 shows the number of species of Hymenoptera collected at each trap site at Wagner. The Hymenoptera are separated into major groups. Site 1 is at the marl pool, site 6 is in the coniferous swamp. The Malaise trap (designated "MT") indicates the open edge. There is an increase in species richness approaching the fen–forest edge from either closed (forest) or open (fen) sides. Samples from trap 7 are probably depauperate because of the traps proximity to an ant colony. The Ichneumonoidea (735 species in Malaise trap) dominate the fen–forest edge but are poorly represented at open, vegetation-free sites (an average of 20 species in each of pan traps 8, 9, and 13). All other groups occur in similar proportions at each site.

The importance and effectiveness of properly placed Malaise traps cannot be overstated. The single trap produced 1042 species, 74% of the Hymenoptera collected at Wagner (1410 species). The combined pan traps collected 832 species, 59% of the Hymenoptera collected. Species unique to the Malaise trap comprised 39% of the total, while species

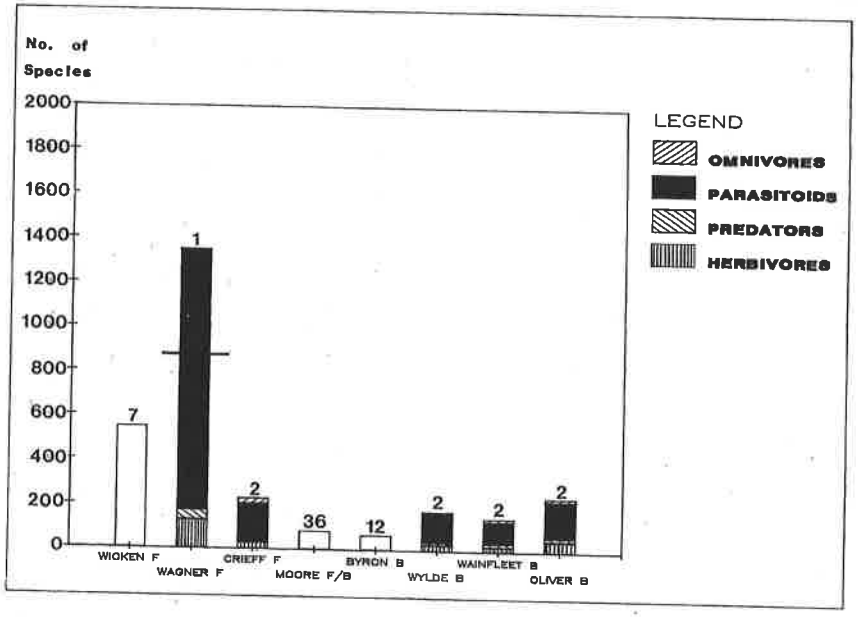

FIG. 8. Comparison of Hymenoptera species richness in eight peatlands. Numbers at the top of columns refer to the number of years sampling occurred. Horizontal bar on Wagner sample indicates the species richness when the Malaise trap component is removed. White areas indicate studies in which the various groups of Hymenoptera were not distinguished. B = bog, F = fen.

confined to the pooled pan traps comprised 24% of the total. Malaise trap samples are often considered to represent a transient component of a habitat's fauna. Many studies of species diversity concentrate on the identification of species restricted to a habitat and tend to exclude species collected in aerial trapping devices. Although no species of the aerial component are known to be restricted to peatlands they contribute the greatest component to species assemblages of insects in these habitats. The results from our sampling indicate 37% (521 species) of the Hymenoptera found in the aerial sample were also collected in pan trap samples. This indicates that a large proportion of Hymenoptera presumed active in the peatland community (those collected in pan traps) disperse from the peatland, in the broad sense, to at least the forest–fen edge, or vice versa. The fen, in the strict sense (pan traps 1–4), has 382 species, 27% of the Hymenoptera at Wagner, occurring in both pan and Malaise trap sites (382 species represent 30% of the 1280 species total of pan traps 1–4 + Malaise trap).

Discussion

There is a lot of Hymenoptera activity in peatlands. An analysis of trophic levels begins to clarify the activities of these insects (Fig. 10). The Wagner spring fen is dominated by parasitoids, comprising nearly 80% of all species of Hymenoptera collected. The only other large group is the herbivores (the sawflies, which are descendants of the basal lineages of Hymenoptera and some Chalcidoidea), including the bees which feed on pollen.

A parasitoid is an insect that requires a single host individual for larval development. The host is invariably killed. The larval parasitoid may develop externally on, or internally in, the host. Host range may be broad, but it is often confined to a single species, or a group

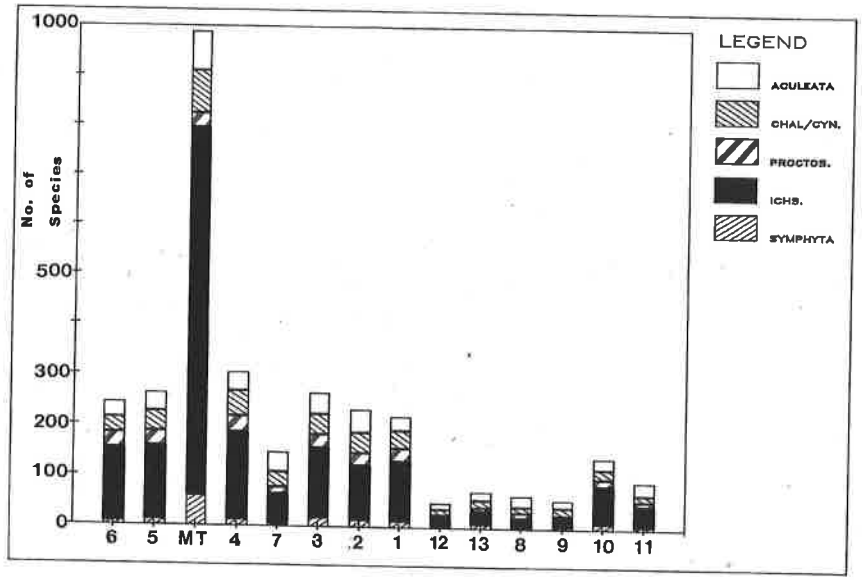

FIG. 9. The number of Hymenoptera species collected at sampling sites in Wagner fen. MT = Malaise trap, numbers on *x*-axis indicate pan trap sample sites. Chal/Cyn = Chalcidoidea + Cynipoidea, Ichs = Ichneumonoidea, Proctos = Proctotrupoidea + Ceraphronoidea + Scelionoidea.

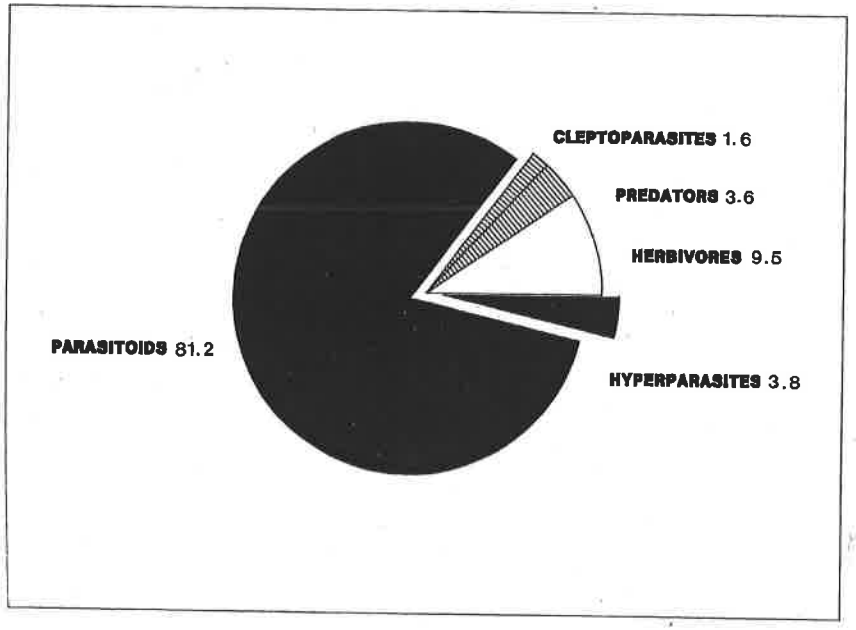

FIG. 10. The percentage composition of Hymenoptera at different trophic levels in Wagner fen.

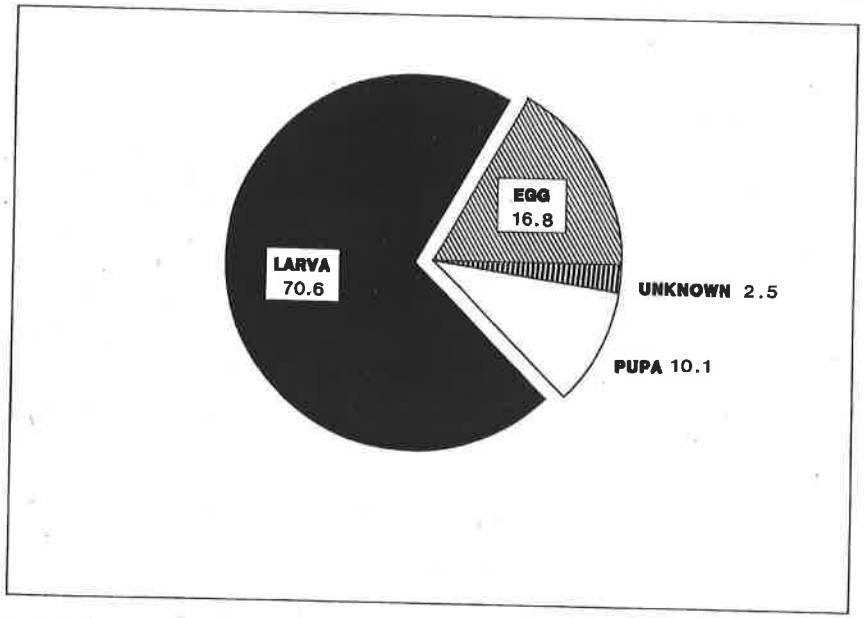

FIG. 11. The percentage composition of host development stage utilized by parasitic Hymenoptera in Wagner fen.

of related species or genera. There are two parasitoid development strategies, both of which have a bearing on the diversity found at the Wagner fen. In the idiobiont strategy host development is suspended upon parasitization; in the koinobiont strategy development of the host continues after parasitization (Gauld and Bolton 1988). Idiobiont parasitoids tend to seek concealed hosts and koinobionts attack exposed hosts. The stage parasitized may be egg, larva, or pupa. Information extracted from Krombein et al. (1979) was used to determined the host stage sought by hymenopterous parasitoids at Wagner fen. Figure 11 indicates that the larval stage is preferred by parasitic Hymenoptera at Wagner fen.

The reasons for the large diversity of parasitoids at Wagner are complex. Hawkins (1988) and Hawkins et al. (1990) indicated that plant architecture and host feeding niche are important factors in parasitoid diversity. Hawkins (1990) demonstrated the effect of distance from the equator (a proxy for climate) on parasitoid diversity. Idiobiont parasitoids tend to be generalists (accepting a range of hosts) and exhibit relatively constant diversity as latitude increases. Koinobiont parasitoids, specialists (host specific) attacking exposed hosts, show increasing diversity with increasing latitude.

A relatively constant diversity of parasitoids can be expected on hosts feeding in concealed niches such as leaf mines, stems, or galls. High parasitoid diversity can be expected in architecturally complex plant communities (trees and shrubs). At Wagner there is probably an increased diversity because of the variety of vegetation architecture available in a small area. Shrub and tree architectures occur in close proximity to grass and bare patches. This, combined with the apparently large number of available leaf mining Lepidoptera attractive to idiobiont parasitoids (based on known parasitoid biology) in a northern locality (where a large diversity of specialist parasitoids can be expected), provide a habitat conducive to exceptional parasitoid diversity.

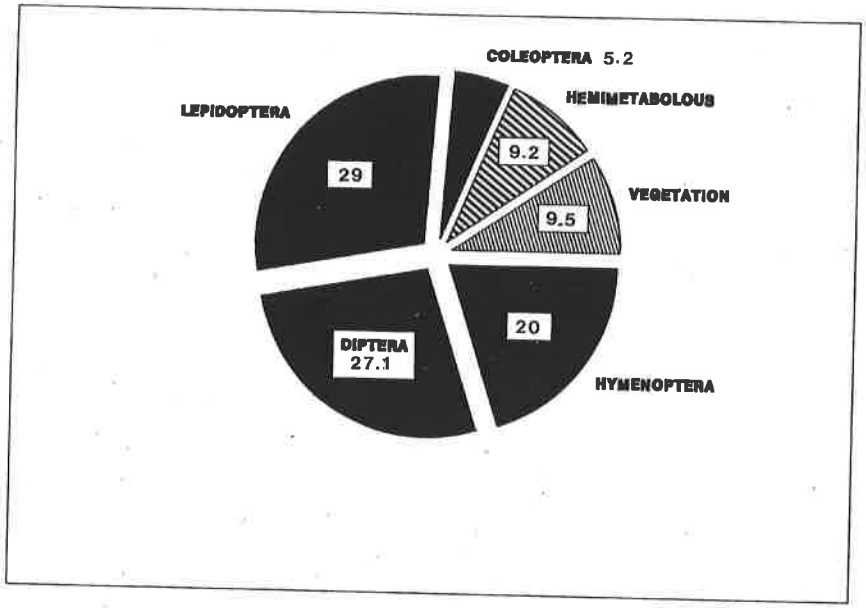

FIG. 12. The percentage composition of host groups utilized by parasitic Hymenoptera at Wagner fen.

Hosts sought by Hymenoptera at Wagner are presented in Figure 12. These host groups are divisible into three major components: plants, hemimetabolous hosts (including spiders), and holometabolous insects. Only 9% of the Hymenoptera species at Wagner parasitize hemimetabolous hosts; the majority of Hymenoptera (81%) seek holometabolous hosts. The principal groups are Lepidoptera, Diptera, and other Hymenoptera. Hymenopteran hosts include sawflies, particularly those that have an exposed lepidopterous-like caterpillar, and primary parasitoids that are sought by secondary or hyperparasitoids.

Of the host groups represented above, complete data exist only for Coleoptera and Hymenoptera. There is a ratio of about 0.2 parasitoid species per host species in the Hymenoptera and Coleoptera at Wagner. If the ratio of 0.2 parasitoid species per host species is assumed true for all faunal groups attacked by Hymenoptera at Wagner then the peatland terrestrial arthropod fauna can be estimated at about 6000 species distributed among the groups indicated in Figure 13. This fauna amounts to about 30% of insects and spiders estimated for Alberta, 20 000 species [derived from Danks (1979), based on number of biomes occurring in Alberta]. Either species richness in the boreal zone has been seriously underestimated or most species are common to most habitats in the boreal forest.

Conclusion

The Wagner Natural Area, situated in the boreal forest zone near Edmonton, Alberta, contains a fen of considerable arthropod richness. Although the Wagner fen is faunistically rich, collecting at other fens is needed to place this species richness in perspective. The sampling program at Wagner suggests that a large proportion of the aerial component of Hymenoptera is active in peatland ecosystems. Few other studies have used Malaise traps as part of the sampling protocol. This, combined with the inability of systematists to name most species, prevents direct comparisons among sites. Most species of Hymenoptera found at Wagner are parasitoids of larvae of holometabolous insects. The great species richness of

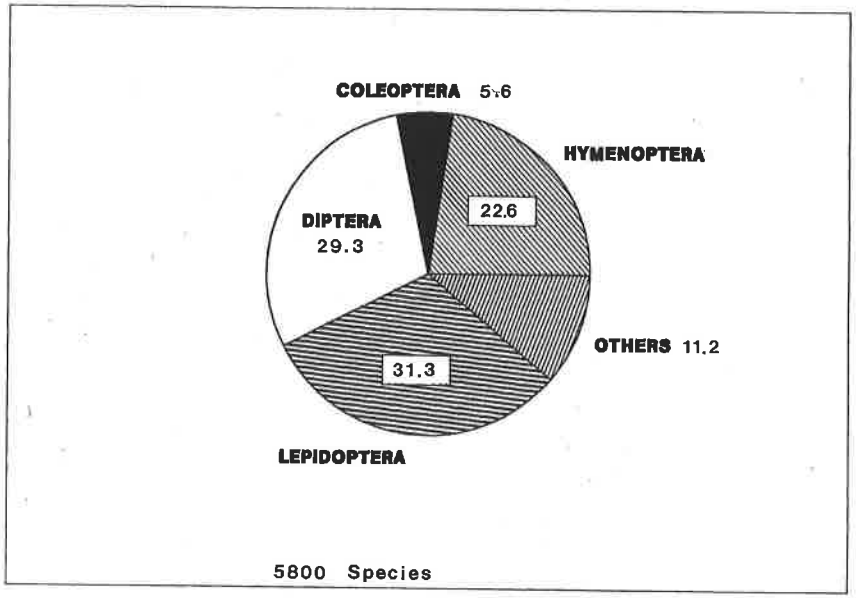

FIG. 13. Estimated percentage composition of the insect and spider fauna in Wagner fen.

Hymenoptera at the site is attributed to a range of vegetation architecture occurring in a small area as well as the presence of koinobiont parasitoids. The latter attack larvae in exposed situations and exhibit increasing diversity as distance from the equator increases. Based on the presence of parasitoid groups the Wagner fen is estimated to contain about 6000 species of arthropods.

Acknowledgments

I thank the Wagner Natural Area Society for permission to conduct this study at the Wagner site. A project of this size depends on reliable specimen determinations. The following specialists helped identify species. **Gastropoda**: D. Boag, Department of Zoology, University of Alberta, Edmonton. **Diplopoda**: R.M. Shelley, North Carolina State University, Raleigh. **Chilopoda**: E.H. Eason, Bourton on Hill, Moreton-in-marsh, Gloucester, U.K. **Pseudoscorpiones**: M.J. Sharkey, Centre for Land and Biological Resources Research, Agriculture Canada, Ottawa. **Opiliones**: R. Holmberg, Athabasca University, Athabasca, Alberta. **Acari**: V.M. Behan-Pelletier (Oribatida), E. Lindquist (Parasitiformes), I.M. Smith (Actinedida), Centre for Land and Biological Resources Research, Agriculture Canada, Ottawa. **Araneae**: R. Leech, Department of Biological Sciences, University of Alberta, Edmonton. **Odonata**: R.A. Cannings, Royal British Columbia Museum, Victoria. **Homoptera**: R. Foottit (Psyllidae), K.G.A. Hamilton (Homoptera, except Psyllidae), Centre for Land and Biological Resources Research, Agriculture Canada, Ottawa. **Hemiptera**: G.G.E. Scudder, M.D. Schwartz, Department of Zoology, University of British Columbia, Vancouver. **Thysanoptera**: B.S. Heming, Department of Entomology, University of Alberta, Edmonton. **Coleoptera**: R.S. Anderson (Coleoptera, except as follows), Canadian Museum of Nature, Ottawa; G.E. Ball, G.R. Pohl, and D. Shpeley (Carabidae), Department of Biological Sciences, University of Alberta, Edmonton; E.C. Becker (Elateridae), J.M. Campbell, A.E. Davies, and A. Smetana (Staphylinidae), Centre for Land and

Biological Resources Research, Agriculture Canada, Ottawa; J.L. and B.F. Carr (Dytiscidae), Calgary. **Neuroptera**: M. Meinander, Department of Zoology, University of Helsinki, Finland. **Diptera**: B.V. Brown (Phoridae), Natural History Museum of Los Angeles County, Los Angeles; G.C.D. Griffiths (Anthomyiidae, Muscidae), Department of Biological Sciences, University of Alberta, Edmonton; J.E. O'Hara (family sorting), D. Oliver (Chironomidae), Centre for Land and Biological Resources Research, Agriculture Canada, Ottawa; S. Marshall (Sphaeroceridae), Department of Environmental Biology, University of Guelph, Guelph; C. Saunders (Culicidae), City of Edmonton, Parks and Recreation; J. Zloty (Syrphidae), Department of Biological Sciences, University of Calgary, Calgary. **Hymenoptera**: J.R. Barron (some *Gelis*), J.M. Cumming (*Symmorphus*), G.A.P. Gibson (Aphilinidae, Encyrtidae), H. Goulet (Symphyta), J. Huber (Mymaridae), L. Masner (Ceraphronoidea, Proctotrupoidea, Scelionoidea), W.R.M. Mason (some Microgastrinae), M.J. Sharkey (Agathidinae), Centre for Land and Biological Resources Research, Agriculture Canada, Ottawa; H. Townes, D. Wahl (Ichneumoninae and various problematic Ichneumonidae), American Entomological Institute, Gainesville, Florida; D. Williams (Opiinae, Microgastrinae), Northern Forest Research Centre, Edmonton.

Technical Assistance. J. Acorn for an analysis of the Coleoptera. Laboratory assistants: T.W. Thormin, D.C.A. Blades, H. Dundas, C. Jorgensen, G. Pohl, T. Spanton, M. Wartenbe, and J. Wojcicki.

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(Date received: 9 March 1993; date accepted: 14 September 1993)

TABLE 1. Synopsis of invertebrate fauna known from Wagner fen

Invertebrate group	Number of species
Hirudinea	1
Gastropoda	13
Chilopoda	2
Diplopoda	1
Pseudoscorpionida	2
Opiliones	2
Araneae	52
Acari	69
Odonata	8
Thysanoptera	21
Homoptera	80
Hemiptera	32
Coleoptera	338
Neuroptera	1
Diptera	195
Hymenoptera	1410
Invertebrates (76% of biota)	2227 species
Plants (18% of biota)	531
Vertebrates (6% of biota)	179
Total biota known from Wagner fen	2937 species

TABLE 2. Synopsis of the Hymenoptera of Wagner fen

	No. of species	No. of specimens		No. of species	No. of specimens
SYMPHYTA			SCELIONOIDEA		
Pamphilidae	1	1	Scelionidae	28	7449
Argidae	2	3	Platygastridae	35	1436
Cimbicidae	2	9	EVANIOIDEA		
Tenthredinidae	8	813	Aulacidae	1	1
Cephidae	1	1	Gasteruptiidae	2	5
ICHNEUMONOIDEA			CHRYSIDOIDEA		
Braconidae	248	3432	Bethylidae	4	10
Ichneumonidae	665	6240	Dryinidae	8	102
CHALCIDOIDEA			Chrysididae	7	12
Aphelinidae	2	2	VESPOIDEA		
Encyrtidae	38	251	Sapygidae	1	3
Mymaridae	33	2816	Formicidae	9	997
CYNIPOIDEA			Pompilidae	14	223
Figitidae	7	10	Vespidae	14	466
Eucoilidae	34	482	APOIDEA		
Charipidae	16	111	Pemphredonidae	12	41
Cynipidae	1	1	Crabronidae	12	72
CERAPHRONOIDEA			Nyssonidae	1	1
Ceraphronidae	14	717	Colletidae	5	34
Megaspilidae	6	132	Halictidae	17	421
PROCTOTRUPOIDEA			Andrenidae	13	41
Proctotrupidae	7	205	Megachilidae	2	2
Heloridae	1	4	Apidae	14	238
Diapriidae	55	4688			
Hymenoptera total			1410 species	31 472 specimens	

TABLE 3. The Hymenoptera of Wagner fen. Numbers in parentheses following a name indicate number of specimens. Trap sites are indicated by MT for Malaise trap and the numbers 1–13 for pan trap sites. Pan trap sites connected by a hyphen are inclusive. An asterisk (*) indicates specimens collected by sweep or retained by specialists and trap site information is unavailable

SYMPHYTA

MEGALODONTOIDEA

PAMPHILIIDAE: Pamphiliinae

Pamphilius nigritibialis Rohwer (6) MT,3,4,5.

TENTHREDINOIDEA

ARGIDAE: Arginae

Arge sp. A (2) 3,5.
A. sp. B (1) 3.

CIMBICIDAE: Abiinae

Zaraea americana Cresson (8) MT, 2,3,7,10,12.

CIMBICIDAE: Cimbicinae

Trichiosoma triangulum Kirby (1) 9.

TENTHREDINIDAE: Selandriinae

Birka nordica Smith (1) MT.
Dolerus apricus (Norton) (1) MT.
D. aprilis (Norton) (2) MT,3.
D. maculicollis (Norton) (3) MT,13.
D. mimus Goulet (4) 9.
D. tibialis conjugatus MacGillivray (2) MT,1.

TENTHREDINIDAE: Nematinae

Priophorus sp. (15) MT,1,2,3,10,11,13.
Nematinus ochreatus (Rohwer) (4) 11.
Pachynematus sp. A (32) MT.
P. sp. B (6) MT.
P. sp. C (9) MT.
P. sp. D (29) MT,3.
Pristiphora sp. A (8) MT,2,8,10.
P. sp. B (5) MT.
P. sp. C (6) MT,4,11.
P. sp. D (1) MT.
P. sp. E (2) MT.
P. sp. F (21) MT,1,5,13.
P. sp. G (3) MT,3.
P. sp. H (5) MT,9.
P. sp. I (1) 2.
P. sp. J (20) MT,1,4,5,6.
Nematus sp. A (2) MT.
N. sp. B (1) MT.
N. sp. C (2) MT.
N. sp. D (2) MT,13.
N. sp. E (1) 9.
N. sp. F (1) MT.
N. sp. G (1) MT.
Pontania sp. A (4) MT.
P. sp. B (6) MT.
P. sp. C (2) MT,2.
Phyllocolpa sp. A (142) MT,1-13.
P. sp. B (2) 9,10.
P. sp. C (2) MT.
P. sp. D (1) MT.
P. sp. E (2) MT,4.
P. sp. F (1) MT.
Euura sp. (4) MT.
Amauronematus sp. A (1) 6.
A. sp. B (1) 13.
A. sp. C (1) MT.
A. sp. D (4) MT.
A. sp. E (2) MT.
A. sp. F (2) MT.
A. sp. G (2) MT,8.
Pseudodineura parva (Norton) (2) MT,4.

TENTHREDINIDAE: Heterarthrinae

Caliroa sp. (3) MT,1.
Heterarthrus nemoratus (Fallen) (1) 10.
Metallus capitalis (Norton) (1) 4.
Messa leucostoma (Rohwer) (3) 3,10,13.
Fenusa dohrnii (Tischbein) (12) 1-6,10,11.
F. pusilla (Lepeletier) (123) MT,1-7,10,11.

TENTHREDINIDAE: Blennocampinae

Blennogeneria spissipes (Cresson) (1) MT.
Phymatocera racemosae Smith (8) MT,5,6.
P. rusculla (MacGillivray) (5) MT,7.
P. similata (MacGillivray) (19) MT,4.
Monophadnoides geniculatus (Hartig) (44) MT,1-7,10,12,13.
M. pauper (Provancher) (4) 4,6,10.

TENTHREDINIDAE: Allantinae

Eriocampa ovata (Linnaeus) (17) 1,2,3,6,7.
Empria candidata (Fallen) (13) MT,10.
E. ignota (Norton) (3) MT,3.
E. *improba* (Cresson) (3) MT,2.
E. maculata (Norton) (46) MT,1-5,7,10-13.
E. sp. (28) *
Phrontosoma usta Smith (1) MT.
Ametastegia aperta (Norton) (6) MT,1,4.
A. glabrata (Fallen) (60) 1-5,8,11-13.
Allantus cinctus (Linnaeus) (3) MT,3.
A. mellipes (Norton) (3) MT,3.
Macremphytus semicornis (Say) (2) MT.
M. testaceus (Norton) (3) MT,2.
Taxonus pallicoxus (Provancher) (6) MT,1,2.

TENTHREDINIDAE: Tenthredininae

Tenthredo atra Linnaeus (4) *
T. leucostoma Kirby (1) *
T. piceocinctum (Norton) (3) *
T. xantha group sp. (6) *
Pachyprotasis rapae (Linnaeus) (10) MT.

CEPHOIDEA

CEPHIDAE: Cephinae

Janus abbreviatus (Say) (1) 5.

ICHNEUMONOIDEA

BRACONIDAE: Doryctinae

Doryctes sp. (4) MT.
Heterospilus sp. A (2) MT.
H. sp. B (1) MT.
Spathius sp. (2) MT,5.

BRACONIDAE: Braconinae

Atanycolus sp. (1) MT.
Bracon sp. A (10) MT,3,4,5.

TABLE 3. (*Continued*)

B. sp. B (3) MT.
B. sp. C (10) MT,4,5.
B. sp. D (4) MT,1,2,12.
B. sp. E (44) MT,2,3,4,7,10.
B. unassociated males (23).
Coeloides sp. (2) MT.
Habrobracon sp A (5) MT,2,6.
H. sp. B (2) MT.
H. unassociated male (1).
Iphiaulax sp. (1) MT.
Ipobracon sp. A (3) MT.
I. sp. B (1) MT.

BRACONIDAE: Exothecinae
Acrisis sp. (3) MT.
Colastes sp. (1) 5.
Gnaptodon sp. A (32) MT,2,4,10.
G. sp. B (1) 3.
G. unassociated males (56)
Hormius sp. (46) MT,1-6,10,11,13.
Monitoriella sp. (2) 2,4.
Oncophanes sp. (3) MT,11.
Pseudognaptodon curticauda Fischer (1) 3.
Rhysipolis sp. A (18) MT,1-4,10.
R. sp. B (1) 11.
R. sp. C (1) 10.
R. unassociated males (14)
Xenarcha sp. (1) 1.

BRACONIDAE: Rogadinae
Bucculatriplex sp. (13) MT.
Clinocentrus sp. A (1) 5.
C. sp. B (1) MT.
Rogas sp. A (2) MT.
R. sp. B (11) MT,4-6,10,11.
R. sp. C (6) MT,5,6,11.
R. sp. D (2) MT.
R. unassociated males (18)

BRACONIDAE: Meteorideinae
Meteoridea sp. (3) MT.

BRACONIDAE: Helconinae
Dyscoletes sp. (1) 7.
Helcon sp. (6) MT.

BRACONIDAE: Macrocentrinae
Macrocentrus sp. A (1) MT.
M. sp. B (1) 13.
M. sp. C (5) MT.
M. sp. D (5) MT,3.
M. sp. E (3) MT,4.
M. sp. F (1) 4.
M. unassociated males (9).

BRACONIDAE: Agathidinae
Bassus annulipes (Cresson) (14) MT.
B. *cinctus* (Cresson) (19) MT,1-3.
Earinus limitaris (Say) (1) 9.
E. *zeirapherae* Walley (6) MT.

BRACONIDAE: Opiinae
Opius (*Thoracosema*) nr. *columbiacus* Fischer (550) MT,1-7,9-11.
O. (*T*.) nr. *pikensanus* Fischer (3) 5,6.
O. (*T*.) sp. (2) 1,4.
O. (*Gastrosema*) nr. *hancockanus* Fischer (3) MT, 1,2.
O. (*G*.) sp. (1) 3.
O. (*Nosopaea*) nr. *chapmani* Fisher (1) MT.
O. (*Pendopius*) nr. *pendulus* Haliday (1) 3.
O. (*Opiognathus*) nr. *demosthenis* Fischer (1) MT.
O. (*Nosopaeopius*) *amplus* (Ashmead) (2) MT.
O. (*N*.) nr. *basiniger* Viereck (2) *
O. (*N*.) nr. *downesi* Gahan (3) *
O. (*Allophlebus*) nr. *rheasilviae* Fischer (2) MT,4.
O. (*Apodesmia*) nr. *fulvicollis* Thomson (1) 6.
O. (*A*). nr. *ithacensis* Fischer (2) MT,6.
O (*A*). *polyzonius* Wesmael (1) MT.
O. (*A*.) sp. A (4) MT.
O. (*A*.) sp. B (2) *
O. (*Phaedrotoma*) nr. *phoenicensis* Fischer (39) MT, 1-8,10.
O. (*Phaedrotoma*) sp. A (25) 1-4.
O. (*P*.) sp. B (15) 1-5,7,10,11.
O. (*P*.) sp. C (1) 2.
O. (*P*.) sp. D (1) 3.
O. (*P*.) sp. E (4) MT,1,6.
O. (*P*.) sp. F (37) MT,1-7.
O. (*P*.) sp. G (25) MT,1-7.
O. (*P*.) sp. H (16) 2,3,7.
O. (*P*.) unassociated males (12).
O. (*Opius*) sp. A. (38) MT,1-8,10,13.
O. (*O*.) sp. B (1) 6.
O. (*O*.) sp. C (6) 4,5,7,10.
O. (*O*.) sp. D (3) 5,6.
O. (*O*.) sp. E (3) 4,5,10.
O. (*Merotrachys*) nr. *paulior* Fischer (1) *
O. (*M*.) sp. A (5) 1,2,3.
O. (*M*.) sp. B (5) MT,2,7,10.
O. (*M*.) sp. C (1) 2.
O. (*Hypocynodus*) sp. (1) 5.
O. (*Cryptonastes*) sp. (1) MT.
Ademon sp. (1) MT.
Euopius nr. *macrops* (Fischer) (1) MT.

BRACONIDAE: Alysiinae
Alysia sp. A (2) MT,4.
A. sp. B (1) 4.
A. sp. C (4) MT,1,3.
Anisocyrta sp. (2) 1,6.
Aphaereta sp. A (4) MT,1,4.
A. sp. B (9) MT,2-6,9.
A. sp. C (1) 1.
Aspilota sp. A (205) MT, 1-13.
A. sp. B (32) MT,2-5,7,9-11.
A. sp. C (6) MT,3,4,6,9.
A. sp. D (1) 6.
A. sp. E (8) MT,2,3,6,9,10.
A. sp. F (5) MT,4-6.
A. sp. G (7) MT,1,2,4,5.
A. unassociated males (122)
Coelinius sp. A (19) MT,3-7.
C. sp. B (1) MT.
C. sp. C (3) 8,12.

TABLE 3. (*Continued*)

C. sp. D (1) 12.
C. unassociated males (59).
Coloneura sp. (5) MT,4,6.
Chaenusa sp. A (3) 1,12.
C. sp. B (1) 8.
C. sp. C (1) 2.
C. unassociated males (5).
Chorebus sp. A (11) 3,9,12,13.
C. sp. B (53) MT,1-6,9,10,12,13.
C. sp. C (1) 13.
C. sp. D (2) 2,5.
C. sp. E (1) 6.
C. sp. F (8) MT,3-6.
C. sp. G (4) MT,3.
C. unassociated males (157).
Dacnusa sp. (13) MT,1-3,5,6,9,10.
Dapsilarthra sp. (3) MT.
Exotela sp. (1) MT.
Idiasta sp. (1) 6.
Orthostigma sp. A (3) MT,5,6.
O. sp. B (4) 4-6.
Phaenocarpa sp. A (7) MT,4-6,10.
P. sp. B (1) 5.
P. sp. C (4) MT,1.
Symphanes sp. (5) MT,5.
Syncrasis sp. (1) 1.
Tanycarpa sp. (1) 5.

BRACONIDAE: Cheloninae
Ascogaster sp. A (30) MT,1,3,7,11,13.
A. sp. B (62) MT,1-5,8-11,13.
A. unassociated males (227).
Chelonus (*Chelonus*) sp A (40) MT,1,3-7,10,11,13.
C. (*C.*) sp. B (1) 2.
C. (*C.*) unassociated males (5).
C. (*Microchelonus*) sp. A (4) MT,1,4.
C. (*M.*) sp. B (2) MT.
C. (*M.*) sp. C (1) MT.
C. (*M.*) unassociated males (18).
Leptodrepana sp. (2) MT.
Phanerotoma sp. (2) MT.

BRACONIDAE: Microgastrinae
Apanteles sp A (4) MT.
A. sp. B (2) MT,3.
A. sp. C (20) MT,3-7,10.
A. sp. D (3) MT,8.
A. sp. E (1) 10.
A. sp. F (1) MT.
A. sp. G (11) MT.
A. sp. H (1) MT.
A. sp. I (2) MT.
A. sp. J (1) MT.
A. sp. K (4) MT.
A. sp. L (2) MT.
A. sp. M (4) MT,10.
A. sp. N (1) MT.
A. sp. O (3) MT.
A. sp. P (1) 6.
A. sp. Q (2) MT.
A. unassociated males (43).
Mirax sp. A (1) MT.
Mirax sp. B (1) MT.
Dolichogenidea sp. (1) MT.
Pholetesor sp. A (1) MT.
P. sp. B (13) MT.
P. sp. C (9) MT,1,3,10.
P. sp. D (1) MT.
P. sp. E (1) 10.
P. sp. F (1) MT.
P. sp. G (1) MT.
P. sp. H (1) MT.
P. sp. I (2) MT.
P. sp. J (1) MT.
P. unassociated males (28).
Choeras sp. (1) MT.
Microgaster nr. *epagoges* Gahan (1) MT.
Microgaster sp. A (2) MT,3.
M. sp. B (4) MT.
M. unassociated males (26).
Paroplitis sp. A (1) MT.
P. sp. B (1) MT.
P. sp. C (2) MT.
P. sp. D (2) MT,1.
P. sp. E (6) MT.
P. sp. F (12) MT.
P. sp. G (9) MT,1,2.
P. unassociated males (40).
Cotesia sp. A (1) MT.
C. sp. B (2) MT.
C. sp. C (24) MT,3-5,10.
C. sp. D (22) MT,1,3,4.
C. sp. E (3) MT.
C. sp. F 91) MT.
C. sp. G (1) MT.
C. sp. H (1) 1.
C. sp. I (1) MT.
C. sp. J (3) MT,6.
C. sp. K (6) MT,1.
C. sp. L (1) MT.
C. sp. M (1) MT.
C. sp. N (1) MT.
C. sp. O (15) 2,3.
C. unassociated males (62).
Protapanteles sp. A (1) MT.
P. sp. B (4) MT.
Glyptapanteles sp. A (1) MT.
G. sp. B (4) 4,6.
G. sp. C (2) MT,4.
G. sp. D (4) MT,1.
G. sp. E (22) MT.
G. unassociated males (16)
Diolcogaster sp. A. (12) MT,3-7.
D. sp. B (3) MT.
D. sp. C (8) MT,2,4,13.
D. sp. D (7) MT.
D. sp. E (9) MT.
D. unassociated males (68)
Microplitis sp. A (13) 1-4.
M. sp. B (1) 6.
M. sp. C (3) MT,10.
M. unassociated males (31)
Microgastrinae unassociated males (23)

TABLE 3. (*Continued*)

BRACONIDAE: Adeliinae
Adelius sp. A (1) MT.
A. sp. B (4) MT.

BRACONIDAE: Ichneutinae
Ichneutes sp. A (9) MT.
I. sp. B (1) 4.

BRACONIDAE: Blacinae
Aliolus sp. (1) MT.
Allodorus sp. (9) MT.
Blacus sp. (22) MT,1-5,8.
Charmon sp. (1) 2.
Eubazus sp. (1) MT.
Orgilus sp. A (14) MT,2-5,11.
O. sp. B (1) 2.
O. sp. C (9) 1-4,10.
O. sp. D (5) MT,3,4,6.
O. sp. E (6) MT.
O. sp. F (1) MT.
O. unassociated males (103).

BRACONIDAE: Euphorinae
Meteorus sp. A (3) 3,5,8.
M. sp. B (21) MT,2-6,10,11,13.
M. sp. C (5) MT,6,10.
M. sp. D (1) MT.
M. sp. E (1) MT.
M. unassociated males (11)
Microctonus sp. A (5) MT,3,5,12.
M. sp. B (3) 5,7,12.
M. unassociated males (4).
Peristenus sp. (4) MT,3.

BRACONIDAE: Aphidiinae
Aphidius sp. (2) MT,1.
Boreogalba sp. (2) MT.
Ephedrus sp. A (1) MT.
E. sp. B (4) MT,2,4,5.
E. unassociated males (12).
Euaphidius sp. (2) 1,6.
Lysaphidius sp. (2) 4,8.
Lysiphlebus sp. (1) MT.
Monoctonus sp. (2) MT,4.
Pauesia sp. A (5) MT,4,6,7.
P. sp. B (5) MT,4,6.
P. sp. C (1) MT.
P. unassociated males (20)
Praon sp. (23) MT,3,4.
Trioxys sp. (7) MT.
Xenostigmus sp. (1) MT.

BRACONIDAE: unplaced genera
Bracanastrepha sp. (1) 3.
Litostolus sp. (8) MT,3.
Spathicopis sp. (1) 1.

ICHNEUMONIDAE: Pimplinae
Exeristes comstockii (Cresson) (1) MT.
Scambus (*Endromopoda*) *detritus* (Holmgren) (1) MT.
S. (*E*). *productus* Walley (4) MT.
S. (*Ateleophadnus*) *deceptor* Walley (17) MT.
S. (*A*). *granulosus* Walley (3) MT.
S. (*A*). *pterophori* (Ashmead) (4) MT,11.
S. (*Scambus*) *annulatus* (Kiss) (3) MT.
S. (*S*). *tenebrosus* Walley (1) MT.
Pimpla brevis (Morley) (4) MT.
P. macra (Cresson) (2) MT.
P. spatulata Townes (2) MT.
Dolichomitus sericeus (Hartig) (4) MT.
D. nr. *taeniatus* Townes (2) MT.
Iseropus stercorator orgyae (Ashmead) (11) MT,13.
Iseropus sp. (1) 10.
Tromatobia ovivora (Boheman) (14) MT.
T. variabilis (Holmgren) (1) MT.
Zaglyptus varipes incompletus (Cresson) (8) MT,3.
Clistopyga canadensis Provancher (10) MT.
C. maculifrons Cushman (1) MT.
C. sp. (2) MT.
Dreisbachia slossonae (Davis) (1) MT.
Schizopyga frigida Cresson (2) MT.
Acrodactyla degener (Haliday) (6) MT,5.
Oxyrrhexis carbonator texana (Cresson) (2) MT.
Polysphincta burgessii Cresson (1) MT.
Sinarachna anomala (Holmgren) (3) MT.
Zatypota percontatoria (Mueller) (4) MT.
Itoplectis curticauda brevacus Townes (1) MT.
I. quadricingulata (Provancher) (45) MT,2,3,5.
I. vesca Townes (1) MT.
Ephialtes picticornis (Cresson) (1) MT.
Coccygominus nr. *aequalis* (Provancher) (1) MT.
C. pedalis (Cresson) (4) MT.
C. stricklandi Townes (55) MT, 2,4-6,10,11,13.
C. tenuicornis (Cresson) (22) MT,11.
Delomerista borealis Walkley (1) MT.
D. texana (Cresson) (1) MT.
Pseudorhyssa maculicoxis (Kriechbaumer) (1) MT.
Poemenia albipes (Cresson) (1) MT.
P. americana nebulosa Townes (1) MT.
Neoxorides pilulus Townes (1) MT.
Rhyssa alaskensis Ashmead (1) 3.

ICHNEUMONIDAE: Tryphoninae
Phytodietus (*Phytodietus*) *burgessii* (Cresson) (1) MT.
P. (*P.*) *vulgaris* Cresson (1) 3.
Netelia (*Paropheltes*) *alaskensis* Ashmead (1) MT.
Polyblastus (*Polyblastus*) *pedalis* Cresson (1) MT.
P. (*Labroctonus*) *bimacula* Townes (1) 5.
P. (*L.*) *buccatus* Townes (1) MT.
P. (*L.*) *provancheri* Kasparyan (4) MT,2.
Ctenochira analis (Cresson) (4) MT.
C. debilis Townes (6) MT,3.
C. deplanata Townes (1) MT.
C. extricata (Davis) (1) MT.
C. frigida (Cresson) (11) MT,3.
C. infans Townes (3) MT.
C. pikonematis Townes (3) MT.
C. rufa (Ashmead) (1) MT.
C. sp. (16) MT,2-6,10.
C. unassociated males (4).
Erromenus analis Brischke (1) MT.
E. caelator Townes (5) MT.
E. dolichops Townes (5) MT,2,3,5,8.

TABLE 3. (*Continued*)

E. nasalis Townes (2) MT.
E. planus Townes (1) MT.
E. punctulatus Holmgren (3) MT,2.
E. unassociated males (2).
Tryphon (*Symboethus*) *communis* Cresson (2) MT.
T. (*S.*) *rempeli* Townes (1) MT.
T. (*S.*) *townesi* Walkley (2) MT.
T. (*S.*) *viator* Townes (14) MT.
Exyston maculosum (Provancher) (8) MT,1-3,10.
E. spinulosum Mason (2) MT.
Cteniscus scaphuloides (Mason) (2) MT,5.
Eridolius sp. A (1) MT.
E. sp. B (17) MT,1,4,5.
E. sp. C (5) MT,5.
E. sp. D (3) MT.
E. sp. E (1) MT.

ICHNEUMONIDAE: Eucerotinae
Euceros decorus Walley (28) MT.

ICHNEUMONIDAE: Adelognathinae
Adelognathus sp. A (2) MT,6.
A. sp. B (1) MT.
A. sp. C (1) 3.
A. sp. D (1) 1.
A. sp. E (1) MT.
A. sp. F (1) MT.
A. unassociated males (3).

ICHNEUMONIDAE: Phygadeuontinae
Chirotica sp. (8) MT,4-6.
Eudelus sp. (7) MT.
Acrolyta sp. A (1) MT.
A. sp. B (1) MT.
A. unassociated males (3).
Neopimpla sp. (4) MT,1.
Diaglyptidea sp. A (1) MT.
D. sp. B (3) MT,2,10.
D. sp. C (8) MT,3,10.
D. sp. D (6) MT,1,3,4.
D. sp. E (2) MT.
D. unassociated males (4).
Lysibia mandibularis (Provancher) (4) MT.
Lysibia tenax Townes (6) MT.
Obisiphaga sp. (1) MT.
Arotrephes sp. A (8) MT,6,13.
A. sp. B (2) MT,5.
A. sp. C (1) 5.
A. unassociated males (7).
Hemiteles amboniger Townes (17) MT,4,6,7.
H. sp. (1) MT.
Aclastus sp. A (2) MT,6.
A. sp. B (12) MT,2,6.
A. sp. C (2) 5.
A. sp. D (5) MT,1,5.
A. unassociated males (35).
Polyaulon bimaculatus (Ashmead) (4) MT,1,4,6.
P. sp. A (1) 1.
P. sp. B (1) MT.
P. unassociated males (4).
Notostilbus sp. (4) MT,4,6,7.
Dichrogaster nigriceps Townes (1) MT.
Dichrogaster nigrithorax nearctica Townes (2) MT.
Gelis sp. A (1) 13.
G. sp. B (10) MT.
G. sp. C (2) MT,1.
G. sp. D (1) 10.
G. sp. E (1) MT.
G. sp. F (2) MT,8.
G. sp. G (1) 1.
G. sp. H (1) 1.
G. sp. I (2) 2,5.
G. sp. J (1) 5.
G. sp. K (3) MT,4,5.
G. sp. L (1) 7.
G. sp. M (1) 3.
G. sp. N (1) 1.
G. sp. O (2) 4.
G. sp. P (2) 2,4.
G. unassociated males (69).
Mastrus sp. A (1) MT.
M. sp. B (1) 4.
Rhembobius abdominalis Provancher (11) MT,3-5,11.
Ethelurgus dorsatus Townes (1) MT.
E. opacus Townes (4) MT,4.
E. sp. A (1) MT.
E. sp. B (1) MT.
E. unassociated males (3).
Pygocryptus echthroides Townes (2) MT,1.
Charitopes sp. A (4) MT.
C. sp. B (3) MT.
C. unassociated males (3).
Medophron sp. A (2) MT.
M. sp. B (1) 3.
M. sp. C (1) MT.
M. sp. D (3) 2,7.
M. unassociated males (18).
Endasys sp. A (12) MT,2,4,6,10.
E. sp. B (1) MT.
E. unassociated males (45).
Glyphicnemis sp. (2) MT.
Bathythrix eurypyga Townes (4) MT,5,7,11.
B. triangularis Cresson (1) 6.
B. unassociated males (9).
Sulcarius nigricornis Thomson (2) MT.
S. sp. (1) 3.
Orthizema sp. A (2) MT,1.
O. sp. B (2) MT,3.
O. sp. C (3) 1,2,5.
Uchidella sp. (3) MT,5,6.
Stibutes sp. (1) 2.
Theroscopus sp. A (16) MT,1,2.
T. sp. B (4) MT,1,4,5.
Megacara impressa Townes (22) MT,1,2,4-7.
M. rusticellae Bridgman (3) MT,6.
M. vagans Gravenhorst (3) MT,2.
Phygadeuon sp. A (7) MT,3,4.
P. sp. B (18) MT,1-3,5,7.
P. sp. C (4) MT.
P. sp. D (2) 4,6.
P. sp. E (28) MT,1-6,8.
P. sp. F (9) MT,4,6.

TABLE 3. (*Continued*)

P. sp. G (14) MT,1,4,11,12.
P. sp. H (20) MT,1-6,8.
Ceratophygadeuon aciculatus Provancher (12) MT,2, 3.
C. cincticornis Provancher (3) 1,3.
C. crassidens Townes (6) MT,2-4.
C. limatulus Townes (1) MT.
C. perditus Provancher (106) MT,1-6,8-10,12,13.
C. rugifer Townes (24) 1-4,8,9,12,13.
C. sp. A (17) MT,1-4.
C. B (4) 1,3,4.
Phygadeuontina unassociated males (511).
Stilpnus sp. (10) MT,1,3,4.
Mesoleptus sp. A (118) MT,1-7,10.
M. sp. B (22) 1-5,7.
M. sp. C (13) 2,4,7.
M. sp. D (7) 1-4.
M. unassociated males (175).
Atractodes sp. A (11) MT,1,4,6,7,10.
A. sp. B (12) 3-5,7,12.
A. unassociated males (13).
Demopheles sp. (3) MT.
Javra sp. (1) 3.
Parmortha sp. (1) MT.
Cubocephalus sp. A (4) MT,1,5,13.
C. sp. B (2) MT,7.
C. sp. C (2) MT.
C. sp. D (2) MT.
Oresbius sp. A (3) 1,5.
O. sp. B (3) MT,3.
O. sp. C (1) MT.
O. sp. D (1) MT.
O. sp. E (1) 5.
O. sp. F (4) MT.
O. sp. G (1) MT.
O. sp. H (2) MT,2.
Polytribax sp. A (1) 4.
P. sp. B (5) MT,4,7.
Schenkia sp. A (22) MT,1-5.
S. sp. B (27) MT,4-7.
S. sp. C (1) MT.
Pleolophus sp. A (1) 2.
P. sp. B (55) MT,2-7.
P. sp. C (3) 4,6,11.
P. sp. D (17) MT,2-6,10.
P. sp. E (3) MT,7.
P. sp. F (13) MT,1,3,5,6,8.
Aptesis sp. A (3) MT.
A. sp. B (1) 7.
A. sp. C (1) MT.
A. sp. D (35) MT,1-5,10,11.
A. sp. E (3) 2,12.
Oxytaenia sp. A (1) 4.
O. sp. B (4) MT,11.
Echthrus sp. A (1) MT.
E. sp. B (1) MT.
Echthrini unassociated males (282).
Apsilops sp. (1) 6.
Agrothereutes sp. (2) 5,6.
Gambrus sp. A (2) MT,1.
G. sp. B (2) MT.
Aritranis sp. A (76) MT,1-7,10.
A. sp. B (3) 11,12.
A. sp. C (1) MT.
A. sp. D (1) MT.
Idiolispa sp. (11) MT,1-5,7,10.
Trychosis sp. A (16) MT,2-5.
T. sp. B (2) 7,10.
T. sp. C (1) 7.
Ischnus sp. (36) MT,2-7,10,11,13.
Itamoplex sp. (1) MT.
Xylophrurus sp. (4) MT.
Sphecophaga vesparum (Curtis) (36) MT,1,3,4,7, 10.
Mesostenini unassociated males (365).

ICHNEUMONIDAE: Acaenitinae
Coleocentrus manni Cushman (1) MT.
Spilopteron franclemonti Townes (1) 4.

ICHNEUMONIDAE: Orthopelmatinae
Orthopelma californicum Ashmead (2) MT.

ICHNEUMONIDAE: Ichneumoninae
Diadromus sp. (1) MT.
Centeterus sp. (1) MT.
Phaeogenes arcticus Cushman (11) MT.
P. callopus Wesmael (3) MT,2,9.
P. helvolus (Cresson) (18) MT,3,4,10,11.
Phaeogenes sp. A (3) MT.
P. sp. B (1) MT.
P. sp. C (1) MT,1.
P. sp. D (1) MT.
P. sp. E (2) MT.
P. sp. F (1) MT.
P. sp. G (1) MT,
P. sp. H (2) MT.
P. sp. I (2) MT,5.
P. sp. J (1) MT.
P. sp. K (1) MT.
P. sp. L (1) 11.
P. unassociated females (4).
Cratichneumon sp. A (8) MT,1.
C. sp. B (6) MT,6.
C. sp. C (1) MT.
C. sp. D (2) MT.
C. sp. E (57) MT,4-6.
C. unassociated females (10).
Homotherus sp. (3) MT,6.
Melanichneumon? sp. (1) MT.
Barichneumon sp. A (2) MT.
B. sp. B (25) MT,1-3.
B. sp. C (6) MT,2.
B. sp. D (11) MT.
B. unassociated females (5).
Vulgichneumon sp. (8) MT.
Stenobarichneumon sp. A (11) MT,2,5.
S. sp. B (4) MT.
Rubicundiella deuteromelas Heinrich (5) MT,1,4.
Ectopimorpha sp. (5) MT,10.
Eutanyacra sp. (5) 7.
Diphyus sp. A (1) 13.
D. sp. B (3) 4-6.

TABLE 3. (*Continued*)

D. sp. C (1) MT.
D. sp. D (1) MT.
D. unassociated male (1).
Tricholabus sp. (1) MT.
Ctenichneumon sp. (4) MT,3.
Stenichneumon sp. A (2) 6.
S. sp. B (1) 6.
Ichneumon sp. A (2) MT.
I. sp. B (2) MT.
I. sp. C (2) MT.
I. sp. D (2) MT.
I. sp. E (19) MT,5,6.
I. sp. F (1) MT.
I. sp. G (1) MT.
I. sp. H (1) 11.
I. sp. I (26) MT.
I. sp. J (1) MT.
I. sp. K (1) 5.
I. sp. L (80) MT,1-6,10,12,13.
I. sp. M (1) MT.
I. sp. N (10) MT,1,2,4,5,7.
I. sp. O (3) MT,3.
I. sp. P (1) MT.
I. sp. Q (1) 6.
I. sp. R (1) MT.
I. sp. S (1) 5.
I. sp. T (1) MT.
I. sp. U (1) MT.
I. sp. V (1) 2.
I. sp. W (2) MT.
I. sp. X (1) 5.
I. unassociated males (208).
Platylabus sp. (24) MT,3-6.
Asthenolabus agilis (Cresson) (5) MT.
Asthenolabus sp. A (2) MT.
A. sp. B (1) 4.
A. sp. C (3) MT,4.
Syspasis sp. (2) MT.
Coelichneumon sp. A (2) MT,6.
C. sp. B (1) 13.
C. sp. C (3) 2,3.
C. unassociated males (2).

ICHNEUMONIDAE: Metopiinae
Trieces sapineus litus Townes (1) MT.
T. s. sapineus Townes (26) MT,1,10,11.
Triclistus emarginalus (Say) (2) MT,6.
T. podagricus (Gravenhorst) (1) MT.
T. pygmaeus (Cresson) (4) MT,6.
T. unassociated males (1).
Hypsicera cuneata Townes (1) MT.
Exochus albifrons Cresson (3) MT.
E. bryanti Townes (3) MT,1,10.
E. canidens Townes (1) MT.
E. cnemidotus Townes (3) MT,10.
E. denotatus Townes (2) MT.
E. flavifrontalis Davis (3) MT.
E. megadon Townes (1) MT.
E. mesodon Townes (1) MT.
E. nigripalpis tectulum Townes (13) MT,6,7,10.
E. ostentatus Davis (2) MT.
E. peroniae Townes (10) MT.
E. signifer Townes (3) MT,4.
E. spilotus Townes (10) MT.
E. *washingtonensis* (Davis) (56) MT,1-8,10,11,13.

ICHNEUMONIDAE: Banchinae
Glypta sp. A (1) MT.
G. sp. B (3) MT,3.
G. sp. C (4) MT.
G. sp. D (1) MT.
G. sp. E (1) 6.
G. sp. F (2) MT.
G. sp. G (2) MT.
G. sp. H (1) 10.
G. sp. I (2) MT.
G. sp. J (2) MT.
G. sp. K (3) MT.
G. sp. L (1) MT.
G. unassociated males (17).
Lissonota acrobasidis Ashmead (2) MT.
L. brunnea Cresson? (3) MT.
L. coloradensis Cresson (4) MT,2,6.
L. coracina Gmelin (15) MT,2-4,7.
L. curticauda Townes (2) MT.
L. clypeator montana Cresson (1) MT.
L. c. vivida Cresson (1) MT.
L. dakrumae Ashmead (1) MT.
L. exigua exigua Cresson (1) 6.
L. exilis Cresson (8) MT,10.
L. fulvicornis Townes (1) MT.
L. jaei Townes (2) MT.
L. laevigata Cresson (1) MT.
L. leucoscelis leucoscelis Townes (1) MT.
L. nigricornis Provancher (11) MT,5,6.
L. nigromacra Townes (12) MT,4.
L. pinguicula Townes (4) MT.
L. punctata Cresson (1) 1.
L. punctiventrator punctiventrator Aubert (11) MT,4-7.
L. rasilis Townes (1) MT.
L. reniculellae Townes (3) MT.
L. subcalva Townes (5) 3,6.
L. tetrazona Townes (1) MT.
L. xanthophrys Townes (24) MT,3,11.
L. unassociated males (2).
Cryptopimpla nr. *labralis* Townes (1) 11.
C. nr. *pulloris* Townes (1) 7.
C. quadrilineata jocosa Cresson (5) MT,1,4.
Banchus canadensis Cresson (1) MT.
B. nigroflavus varians Townes (2) MT,1.

ICHNEUMONIDAE: Ctenopelmatinae
Ctenopelma sp. A (4) MT.
C. sp. B (1) MT.
C. sp. C (1) MT.
C. sp. D (2) MT.
C. sp. E (1) MT
Xenoschesis sp. A (1) MT.
X. sp. B (1) MT.
X. sp. C (4) MT,4-6.
Homaspis sp. A (1) 1.
H. sp. B (1) MT.

TABLE 3. (*Continued*)

H. sp. C (2) MT.
Ctenopelmatini unassociated males (9).
Lethades sp. (7) MT,4,5.
Trematopygus semirufus (Cresson) (2) MT.
Sympherta sp. A (1) MT.
S. sp. B (2) MT.
S. sp. C (1) MT.
S. sp. D (5) MT.
Zaplethocornia sp. A (1) MT.
Z. sp. B (2) MT.
Z. sp. C (1) MT.
Perilissus sp. (1) MT.
Lathrolestes sp. A (1) MT.
L. sp. B (1) MT.
Scolobates auriculatus (Fabricius) (2) MT.
Alexeter sp. A (4) 4-6.
A. sp. B (1) MT.
A. sp. C (5) MT,3.
A. sp. D (1) MT.
Lamachus sp. (1) MT.
Scopesis sp. (1) 10.
Himerta sp. A (4) MT.
H. sp. B (1) MT.
H. sp. C (4) MT,6.
Rhinotorus ovalis (Davis) (1) MT.
Arbelus sp. A (4) MT.
A. sp. B (2) MT.
Campodorus? sp. A (1) MT.
C.? sp. B (3) MT.
C.? sp. C (6) MT,3,4,10.
C.? sp. D (1) MT.
C.? sp. E (1) MT.
C.? sp. F (3) MT,1,4.
C.? sp. G (1) MT.
C.? sp. H (1) MT.
C.? sp. I (1) MT.
C.? sp. J (1) MT.
C.? sp. K (1) MT.
C.? unassociated males (14).
Mesoleius? sp. A (1) MT.
M.? sp. B (2) MT.
M.? sp. C (2) MT.
M.? sp. D (2) MT,6.
M.? sp. E (2) 3,10.
M.? sp. F (1) MT.
M.? sp. G (1) 4.
M.? sp. H (1) MT.
M.? sp. I (1) MT.
M.? sp. J (1) MT.
M.? sp. K (1) MT.
M.? unassociated males (32).
Saotis sp. A (5) MT,6.
S. sp. B (2) 3,7.
Anoncus sp. A (3) MT,5.
A. sp. B (6) MT,4,6.
A. sp. C (1) MT.
Synomelix sp. A (2) MT.
S. sp. B (6) MT.
S. sp. C (2) MT,5.
S. unassociated males (1).
Synodites sp. (6) MT,2.
Mesoleptidea sp. (2) MT,6.
Hadrodactylus sp. A (2) MT.
H. sp. B (1) MT.
H. sp. C (2) MT.
Syndipnus sp. A (2) MT.
S. sp. B (1) MT
Hypamblys sp. A (1) MT.
H. sp. B (1) 2.
Phobetes sp. A (1) 1.
P. sp. B (1) MT.
Euryproctus sp. A (3) MT,4.
E. sp. B (1) 4.
E. sp.,C (1) 4.
E. sp. D (1) MT.
E. sp. E (2) MT,4.
E. unassociated males (8).

ICHNEUMONIDAE: Theriinae
Barylypa sp. (1) MT.
Erigorgus nublipennis Dasch (8) MT,3.
Agrypon alpinum Davis (2) MT.
A. annulare Dasch (2) MT,4.
A. drepanae Dasch (1) MT.
A. melleum Cresson (3) MT.
A. prismaticum Norton (3) MT.
A. schizurae Dasch (4) MT.
Therion circumflexum (Linnaeus) (11) MT.
T. sassacus Viereck (3) MT.
Ophionellus foutsi (Cushman) (5) MT,10.

ICHNEUMONIDAE: Campopleginae
Sinophorus - sp. A (2) MT.
S. sp. B (5) MT,4-6.
S. sp. C (1) MT.
Campoplex sp. A (1) MT.
C. sp. B (1) MT.
C. sp. C (1) MT.
C. sp. D (3) MT.
C. sp. E (17) MT,3,10,11.
C. sp. F (1) MT.
C. sp. G (3) MT.
C. sp. H (5) MT,4-6.
C. sp. I (3) MT.
C. unassociated males (49).
Venturia sp. (1) MT.
Casinaria canadensis Walley (5) MT.
C. eupitheciae Viereck (9) MT.
C. forcipata Walley (37) MT,6.
C. genuina (Norton) (1) MT.
C. liminitidis (Haward) (3) MT.
Xylophylax sp. A (1) 10.
X. sp. B (1) MT.
X. sp. C (1) MT.
Cymodusopsis sp. (2) MT.
Pyracmon sepiellum (Holmgren) (4) MT,7.
P. sp. (6) MT,7.
Synetaeris sp. A (3) MT,5.
S. sp. B (3) MT,3,6.
S. unassociated males (4).
Campoletis sp. A (83) MT,3-8.
C. sp. B (3) MT,5,7.
C. sp. C (1) 10.

TABLE 3. (*Continued*)

C. sp. D (4) MT,1.
Dusona americanus (Ashmead) (2) MT.
D. bellula (Dalla Torre) (2) MT.
D. crassicornis (Provancher) (11) MT,4.
D. downesi (Viereck) (2) MT.
D. glauca caliginosa (Walley) (4) MT.
D. lapponica kukakensis (Ashmead) (1) MT.
D. minor (Provancher) (19) MT.
D. occidentalis (Davis) (11) MT.
D. pectoralis (Walley) (2) MT.
D. scalaria (Provancher) (11) MT,4,11.
D. seamansi (Viereck) (4) MT.
D. vara (Walley) (4) MT.
D. varicoxa (Viereck) (1) MT.
D. vicina (Provancher) (10) MT,1.
D. vitticollis (Norton) (2) MT.
Meloboris gracilis Holmgren (3) MT.
M. sp. (10) MT,3,4.
M. unassociated males (2).
Cymodusa sp. (88) MT,1-7,10,11.
Dolophron sp. (5) MT,2-4,6.
Phobocampe sp. A (1) MT.
P. sp. B (2) MT,1.
P. sp. C (5) MT,5,13.
P. sp. D (7) MT.
P. unassociated males (15).
Tranosema sp. A (3) 3,4,6.
T. sp. B (7) MT.
T. unassociated males (8).
Enytus sp. A (2) MT.
E. sp. B (1) MT.
E. sp. C (6) MT.
E. sp. D (3) MT.
E. unassociated males (18).
Diadegma sp. A (3) MT,5.
D. sp. B (4) MT.
D. sp. C (10) MT.
D. sp. D (25) MT,4-6,10.
D. sp. E (1) MT.
D. sp. F (3) MT.
D. sp. G (3) MT,2,5.
D. sp. H (2) MT.
D. sp. I (2) MT.
D. sp. J (3) MT.
Hyposoter sp. A (59) MT,1-4,6,9-11.
H. sp. B (1) MT.
H. sp. C (2) MT.
H. sp. D (1) MT.
H. sp. E (2) MT.
H. sp. F (1) MT.
H. sp. G (3) MT.
H. sp. H (3) MT.
H. sp. I (2) MT.
H. unassociated males (37).
Olesicampe sp. A (2) MT.
O. sp. B (3) MT,10.
O. sp. C (10) MT,1,10.
O. sp. D (1) MT.
O. sp. E (1) 1.
O. sp. F (15) MT,3.
Lathrostizus sp. (2) MT.
Xanthocampoplex oribitalis (Walley) (1) MT.
Porizontini unassociated males (122).

ICHNEUMONIDAE: Cremastinae
Trathalia oregona Dasch (26) MT,1,2,10.

ICHNEUMONIDAE: Tersilochinae
Probles sp. (1) 5.
Barycnemis sp. A (1) MT.
B. sp. B (1) MT.
Tersilochus sp. A (3) MT.
T. sp. B (1) 4.
T. sp. C (8) MT,1,3.
T. sp. D (1) MT.
Aneuclis sp. (3) MT,6.

ICHNEUMONIDAE: Ophioninae
Ophion sp. A (70) MT,3-5,8.
O. sp. B (1) 6.
O. sp. C (4) MT,3,4.
O. sp. D (2) MT.
O. sp. E (6) MT,1,4.
O. sp. F (3) MT.
O. sp. G (2) MT,5.
O. sp. H (3) MT,2.
O. sp. I (2) MT.

ICHNEUMONIDAE: Mesochorinae
Cidaphus occidentalis Cushman (1) MT.
Astiphromma exitiale Dasch (3) 4,5.
A. splenium (Curtis) (5) MT,3.
Mesochorus americanus Cresson (4) MT,4.
M. areolatus Provancher (1) MT.
M. calais Viereck (2) 6.
M. cupreatus Dasch (1) MT.
M. curvulus Thomson (24) MT,1,3-7,10.
M. deletus Dasch (1) MT.
M. dreisbachi Dasch (1) MT.
M. exsertus Dasch (17) MT,4-6.
M. longiscutatus Dasch (6) MT,1,3,10.
M. ottawaensi (Harrington)? (2) MT.
M. perniciosus Viereck (1) 2.
M. sylvarum Curtis (3) MT
M. unassociated males (10).

ICHNEUMONIDAE: Diplazontinae
Syrphoctonus albopictus (Davis) (1) MT.
S. fossatus (Dasch) (1) MT.
S. minimus (Cresson) (5) MT,4.
S. pacificus (Cresson) (2) MT.
S. pallipes (Gravenhorst) (35) MT,5,6.
S. pectoralis (Provancher) (4) MT.
S. quadrangularis (Dasch) (4) MT.
S. signatus (Gravenhorst) (2) 1,9.
Woldstedtius citropectoralis (Schmiedeknecht) (2) MT.
Syrphophilus bizonarius (Gravenhorst) (7) MT.
S. ichneumonoides (Provancher) (2) MT.
S. tricinctorius (Thunberg) (1) MT.
Tymmophorus fasciventris Dasch (1) MT.
T. rufiventris (Gravenhorst) (6) MT,1.
Diplazon algidus Dasch (2) MT.
D. bradleyi Dasch (7) MT.

TABLE 3. (*Continued*)

D. deletus Thomson (17) MT.
D. orbitalis (Cresson) (23) MT.
D. tetragonus (Thunberg) (12) MT.
Bioblapsis flavipes (Holmgren) (2) MT,4.
Promethes sulcator (Gravenhorst) (1) 6.
Sussaba dorsalis dorsalis (Holmgren) (3) MT.
S. elongata (Provancher) (5) MT.
S. nigrithorax Dasch (11) MT,3,4,6.
S. pulchella coriacea Dasch (4) MT.
S. punctiventris (Thomson) (4) MT,1.

ICHNEUMONIDAE: Oxytorinae
Allomacrus sp. A (1) MT.
A. sp. B (1) MT.
A. sp. C (1) MT.
Apoclima sp. (1) 2.
Cylloceria sp. (2) MT.
Aniseres sp. (2) 6.
Pantisarthrus sp. (8) MT,4-6.
Proclitus sp. (4) MT,6.
Dialipsis sp. (1) 5.
Plectiscidea sp. A (4) MT.
P. sp. B (1) 6.
P. sp. C (9) MT,5,6.
P. sp. D (4) 3,5.
P. sp. E (2) 6.
P. sp. F (4) MT,5,6.
P. unassociated males (14).
Aperileptus sp. A (24) MT,5,6.
A. sp. B (6) MT,5,6.
A. unassociated males (10).
Blapticus sp. A (1) 4.
B. sp. B (1) 6.
B. sp. C (1) MT.
Symplecis sp. (5) 3,4,6.
Catastenus sp. (2) MT,3.
Eusterinx sp. A (20) MT,4-6,10.
E. sp. B (1) MT.
E. sp. C (13) MT,1,4-6.
E. sp. D (1) 6.
E. unassociated males (20).
E. damaged females (7).
Helictes sp. A (2) MT,5.
H. sp. B (2) 6.
H. sp. C (1) 2.
H. sp. D (2) MT,3.
H. sp. E (1) MT.
H. unassociated males (1)
Megastylus sp. A (29) MT,1,3,5,6.
M. sp. B (14) MT,1.
M. sp. C (2) MT.

ICHNEUMONIDAE: Orthocentrinae
Orthocentrus sp. A (35) MT,5.
O. sp. B (6) MT,1.
O. sp. C (3) 5,6.
O. sp. D (2) MT.
O. sp. E (5) MT.
O. sp. F (97) MT,3-5.
O. sp. G (4) MT,5.
O. sp. H (4) MT,4,6.
O. unassociated males (30).
Stenomacrus sp. A (26) MT,4-6.
S. sp. B (4) MT,5,6.
S. sp. C (1) MT.
S. sp. D (2) MT.
S. sp. E (1) 4.
S. sp. F (12) MT,4-6,11.
S. sp. G (25) MT,1,2,6,8,11.
S. sp. H (34) MT,1-4.
S. unassociated males (64).
Leipaulus sp. A (8) MT,2,4,5,10,11.
L. sp. B (3) MT,4,6.
L. unassociated males (8).
Neurateles sp. A (1) MT.
N. sp. B (3) MT,10.
N. unassociated males (2).
Picrostigeus sp. (2) MT.

CHALCIDOIDEA
APHELINIDAE
Centrodora sp. (1) 4.
Coccobius sp. (1) MT.

ENCYRTIDAE: Tetracneminae
Anagyrus sp. (3) MT,4.
Epidinocarsis sp. (5) 5,6,10.
Leptomastix sp. (8) MT,2,6,7.
Rhopus sp. (62) 1-3,11-13.
Ericydnus sp. (10) MT,1,4,5.
Tetracnemoidea sp. (1) MT.

ENCYRTIDAE: Encyrtinae
Acerophagus sp. (9) 2,3,5,7,9.
Blastothrix sp. (2) MT,7.
Metaphycus sp. (3) MT,2,3.
Bothriothorax sp. (1) 5.
Zeteticontus sp. (1) MT.
Helegonatopus sp. (7) 3-7.
Cheiloneurus sp. (14) MT,2-5,7.
Tyndarichus sp. A (4) MT,4,11.
T. sp. B (1) *.
Copidosoma sp. (69) MT,1-7,9,10,12,13.
Encyrtus sp. (1) MT.
Avetianella sp. (1) MT.
Microterys sp. (3) 3,6.
Ooencyrtus sp. (9) MT,1-3.
Pseudencyrtus sp. (1) MT.
Trichomasthus sp. (8) MT.
Mira sp. (1) 10.
Prionomitus sp. (1) MT.
Forcipestricis sp. (3) 4,7,9.
Desobius? sp. (1) 4.
Zaomma sp. (6) MT,3,4,6,7.

ENCYRTIDAE: unplaced species
Encyrtidae sp. A (2) MT,3.
Encyrtidae sp. B (1) 4.
Encyrtidae sp. C (1) MT.
Encyrtidae sp. D (1) 5.
Encyrtidae sp. E (3) MT.
Encyrtidae sp. F (1) MT.
Encyrtidae sp. G (1) 13.
Encyrtidae sp. H (1) MT.
Encyrtidae sp. I (1) 5.

TABLE 3. (*Continued*)

Encyrtidae sp. J (3) MT,7.
Encyrtidae sp. K (1) MT.

MYMARIDAE: Alaptinae
Anagrus 4 spp. (464) MT,1-13.
Alaptus 2 spp. (115) MT,1-7,9,10,13.
Dicopus sp. (1) MT.

MYMARIDAE: Mymarinae
Gonatocerus ater group sp. (31) MT,3,7,9,10.
G. dolichocerus Ashmead (19) MT,2,4,5,7,11.
G. litoralis group 5 spp. (501) MT,1-13.
G. mexicanus Perkins (34) MT,1-7,13.
G. rivalis Girault (38) MT,1-6,8,9,13.
G. sulphuripes group sp. (118) MT,1-5,7,8,10.
Ooctonus sp. (17) MT,4,6,11.
Camptoptera sp. (3) 4,9.
Erythmelus sp. (15) MT,3,4,6-9,13.
Mymar sp. (7) 4,5.
Anaphes 5 spp. (732) MT,1-13.
Polynema 5 spp. (699) MT,1-13.

MYMARIDAE: unplaced genera
Cleruchus sp. (1) 2.
Litus sp. (5) MT,5,6,10.
Ptilomymar sp. (16) 1-4,7.

CYNIPOIDEA
FIGITIDAE: Figitinae
Xyalophora sp. (3) 2,3.
Xyalophora? sp. (1) MT.
Melanips sp. A (1) MT.
M. sp. B (1) 10.
Sarothrus sp. (1) 4.
Trischiza sp. (1) 4.
Figites sp. (2) 10.

EUCOILIDAE
Hexacola sp. A (29) MT,1,3-7.
H. sp. B (1) 4.
H. sp. C (3) 2,10,11.
H. sp. D (5) MT,2,3,6.
H. sp. E (7) MT,2-4.
H. sp. F (11) MT,1,2,7,11.
H. sp. G (6) *
H. unassociated males (32).
Hypodiranchis sp. A (4) MT,1,4.
H. sp. B (11) MT,1,2,5,7.
H. sp. C (17) MT,1-4,7.
H. unassociated males (12).
Rhoptromeris sp. A (8) 2,3,7.
R. sp. B (15) MT,1,2,4-6,10,11.
R. sp. C (19) MT,3,5,8-10,12.
R. unassociated males (55).
Didyctium sp. A (17) MT,1,2,4,7.
D. sp. B (6) MT,1,5,6.
Trybliographa sp. A (6) MT,2-4.
T. sp. B (12) MT,3,4.
T. sp. C (4) MT.
T. sp. D (2) MT.
T. sp. E (5) MT.
T. sp. F (1) MT.
T. sp. G (3) MT,5,6.
T. unassociated males (7).
Kleidotoma sp. A (1) 10.
K. sp. B (3) 4,6.
K. sp. C (7) MT,1.
K. sp. D (35) MT,1-5,9,12,13.
K. sp. E (12) MT,1-4,7,12.
K. sp. F (15) MT,1-4,10.
K. sp. G (5) 1,2,4.
K. sp. H (2) MT.
K. sp. I (2) MT.
K. unassociated males (44).
Ganaspidium sp. (19) MT.
Pentamerocera sp. (1) MT.
Eucoilidea sp. (37) MT,5.

CHARIPIDAE
Dilyta necans (Kieffer) (6) MT,3,4,7.
Hemicrisis ruficornis Foerster (3) MT,2,5.
Phaenoglyphis ambrosiae (Ashmead) (7) MT,1,5,6.
P. americana Baker (1) 5.
P. gutierrezi Andrews (2) MT.
Alloxysta anthracina Andrews (6) MT,4,8.
A. bicolor (Baker) (26) MT,1-7.
A. commensuratus Andrews (8) MT,5,6,9.
A. coniferensis Andrews (2) 5,6.
A. dicksoni Andrews (1) MT.
A. halli Andrews (22) MT,1,2,4-6.
A. *leguminosa* (Weld) (1) 1.
A. megourae group sp. (18) MT,1-5,13.
A. *rauchi* Andrews (1) MT.
A. victrix (Westwood) (5) MT,3,4,7.
A. xanthopsis (Ashmead) (2) 1,3.

CYNIPIDAE: Synerginae
Periclistus sp. (1) MT.

EVANIOIDEA
AULACIDAE
Pristaulacus canadensis (Townes) (1) MT.

GASTERUPTIDAE
Gasteruption barnstoni (Westwood) (1) MT.
G. occidentale (Cresson) (4) MT.

CERAPHRONOIDEA
MEGASPILIDAE: Megaspilinae
Megaspilus sp. (1) MT.
Conostigmus sp. A (13) MT,1-6,11,13.
C. sp. B (19) 2,4-6.
C. sp. C (4) MT,5.
C. unassociated males (54).
Dendrocerus sp. A (4) 1,4,5.
D. sp. B (19) MT,3,4,6.
D. unassociated males (19).

CERAPHRONIDAE
Ceraphron sp. A (17) MT,1,3,6,8,10,11.
C. sp. B (9) 1,3,5,8,10,11,13.
C. sp. C (2) 1,7.
C. sp. D (1) 6.
C. sp. E (2) MT,5.
C. sp. F (5) MT,4,5.
C. sp. G (75) MT,1-7,9-11,13.
C. unassociated males (218).

TABLE 3. (*Continued*)

Aphanogmus sp. A (48) MT,1-8,10,13.
A. sp. B (7) 3-6.
A. sp. C (4) MT,10.
A. sp. D (21) MT,2,3,5,6,9,10.
A. sp. E (2) 1.
A. sp. F (6) 6.
A. sp. G (1) MT.
A. unassociated males (299).

PROCTOTRUPOIDEA

PROCTOTRUPIDAE
Exallonyx sp. A (13) MT,4-6.
E. sp. B (16) MT,1,4-6.
E. sp. C (5) MT,4,6,11.
E. sp. D (1) MT.
E. unassociated males (162).
Cryptoserphus sp. (1) MT.
Phaenoserphus sp. (5) MT,1.
Tretoserphus sp. (2) 4,5.

HELORIDAE
Helorus sp. (4) MT.

DIAPRIIDAE: Belytinae
Cinetus sp. A (60) MT,1-6,8,10.
C. sp. B (12) MT,2,5,6.
C. unassociated females (186).
Belyta sp. A (1) 6.
B. sp. B (7) MT,1,4-6.
B. sp. C (116) MT,1-7,10,11.
B. sp. D (4) 1,5,6.
B. sp. E (5) 1,2,4,6.
B. unassociated males (234).
Synbelyta sp. (2) *.
Aclista sp. A (1) 4.
A. sp. B (3) 5.
A. sp. C (7) 1,3,5,6.
A. sp. D (38) MT,3-7,13.
A. sp. E (18) MT,3-6.
A. sp. F (1) 5.
A. sp. G (1) 5.
A. unassociated specimens (411).
Polypeza sp. (31) MT,1-4,8-13.
Zygota sp. A (63) MT,1,3-7.
Z. sp. B (16) MT,3-6.
Z. unassociated specimens (165).
Macrohynnis sp. A (23) MT,1-4,6,10.
M. sp. B (11) 1,3,4,6.
Miota sp. A (5) 1,4,6.
M. sp. B (30) 1-6,10.
M. sp. C (10) MT,3-7.
M. sp. D (1) 4.
M. unassociated specimens (1029).
Pantoclis sp. A (5) 2,4,6.
P. sp. B (17) MT,1,3-7.
P. sp. C (10) 2-5,7,10.
P. sp. D (38) MT,6,10,13.
P. unassociated specimens (258).
Oxylabis sp. A (2) 4,5.
O. sp. B (9) MT,1,2,3,5,6.
Opazon sp. (6) MT,2,3,4.
Scorpioteleia sp. (3) 5,6.
Meuselia sp. (1) 3.
Pantolyta sp. (1) MT.

DIAPRIIDAE: Ambositrinae
Propsilomma columbianum (Ashmead) (3) 4.

DIAPRIIDAE: Diapriinae
Basalys sp. A (35) 1-7,10,11.
B. sp. B (3) 1,6,8.
B. sp. C (1) 12.
B. sp. D (3) 2,6,10.
B. sp. E (3) 2,4,5.
B. unassociated specimens (398).
Diapria sp. (18) MT,1-4,7.
Entomacis sp. A (10) 2,3,7,8,12.
E. sp. B (2) 6,7.
Psilus sp. (3) MT,9,11.
Trichopria sp. A (33) 1-5,8,9,11-13.
T. sp. B (10) MT,1,2,8.
T. sp. C (4) 2,3,6,11.
T. sp. D (1) 12.
T. sp. E (5) 1,2.
T. sp. F (1) 8.
T. unassociated specimens (1121).
Corynopria sp. A (16) MT,2-5,8,10,11.
C. sp. B (6) 2,5,7,8,10.
C. unassociated specimens (106).
Paramesius sp. A (6) MT,1,3,10.
P. sp. B (13) MT,1,2,7-9,11-13.
P. unassociated specimens (22).
Idiotypa sp. (21) 1-3,7,9,10,13.

SCELIONOIDEA

SCELIONIDAE: Scelioninae
Baeus sp. (576) 1-13.
Scelio sp. A (11) 1-3,5,8-10.
S. sp. B (2) 3,7.
S. sp. C (3) 7,8.
S. unassociated specimens (24).
Holoteleia bicolor (Harrington) (139) 1,2,8-11,13.
Psilanteris bicolor (Kieffer) (57) 1-5,7-13.
Gyron sp. A (2) 7,8.
G. sp. B (7) MT,1,2.
G. unassociated specimens (36).
Sparasion sp. (1) 5.
Tiphodytes sp. (2) 1,5.

SCELIONIDAE: Teleasinae
Trimorus sp. A (1) 1.
T. sp. B (1) MT.
T. sp. C (6) 4,6,7.
T. sp. D (2) 11.
T. sp. E (30) 2,3,8,10-13.
T. sp. F (7) 1,12,13.
T. sp. G (1) MT.
T. sp. H (2) 1,13.
T. sp. I (4) 8,9,12,13.
T. unassociated specimens (3061).

SCELIONIDAE: Telenominae
Telenomus sp. A (16) MT,1,4-6,10.
T. sp. B (53) MT,1-7,9-13.
T. sp. C (2) 2.

TABLE 3. (*Continued*)

T. sp. D (1) 2.
T. sp. E (1) 3.
T. sp. F (7) MT,1-4,7.
T. sp. G (1) MT.
T. unassociated specimens (3384).
Trissolcus sp. A (5) MT,3,10.
T. sp. B (1) 13.
T. unassociated males (4).

PLATYGASTRIDAE: Inostemmatinae
Allotropa sp. (7) MT.
Inostemma sp. A (7) MT.
I. sp. B (16) MT,4-7,10,11.
Iphitrachelus sp. (4) MT,4,5,11.
Isostasius sp. (2) 3,11.

PLATYGASTRIDAE: Sceliotrachelinae
Amitus sp. (1) MT.

PLATYGASTRIDAE: Platygastrinae
Synopeas sp. A (5) MT,1.
S. sp. B (1) MT.
S. sp. C (11) MT,2,3,7,10,11.
S. sp. D (1) 7.
S. sp. E (4) MT,11.
S. sp. F (6) MT,6,10.
S. sp. G (2) MT.
S. sp. H (5) MT,5.
S. sp. I (3) MT,5.
S. unassociated specimens (132).
Amblyaspis sp. A (12) MT,1,3,6,7,10.
A. sp. B (3) 6,11.
A. sp. C (1) 5.
A. sp. D (5) MT,6.
A. unassociated specimens (464).
Pyrgaspis sp. (3) MT,4.
Piestopleura sp. (5) MT,1.
Trichacis sp. (1) MT.
Isocybus sp. (8) MT,5,7.
Euxestonotus sp. (7) MT,4.
Platygaster sp. A (4) MT,2,6.
P. sp. B (7) MT,1,3,5.
P. sp. C (7) MT,5,6.
P. sp. D (3) MT,5,6.
P. sp. E (5) MT,3,13.
P. sp. F (2) MT,2.
P. unassociated specimens (637).
Leptacis sp. A (3) 4-6.
L. sp. B (29) MT,1-6,10.
L. sp. C (2) MT,4.

PLATYGASTRIDAE: unplaced genera
Aceroleta sp. (7) MT.
Anopedias sp. (20) MT,1-7.

CHRYSIDOIDEA

BETHYLIDAE: Epyrinae
Laelius sp. (3) MT.
Plastanoxus chittendenii (Ashmead) (1) MT.

BETHYLIDAE: Bethylinae
Bethylus amoenus Fouts (5) 11,12.
Goniozus columbianus Ashmead (1) MT.

DRYINIDAE: Aphelopinae
Aphelopus varicornis Brues (47) MT,4.

DRYINIDAE: Anteoninae
Lonchodryinus bakeri (Kieffer) (1) MT.
Anteon popenoei (Ashmead) (1) 2.
A. puncticeps Ashmead (21) MT,6.
A. xanthothorax (Bradley) (1) MT.

DRYINIDAE: Gonatopodinae
Dicondylus americanus (Perkins) (4) MT,1.
Gonatopus cyphonotus Bradley (1) *.
G. sp. (1) *.
Gonatopodinae unassociated specimens (25).

CHRYSIDIDAE: Elampinae
Omalus (*Omalus*) *aeneus* (Fabricius) (1) MT.
O. (*O.*) *iridescens* (Norton) (1) 3.
Hedychrum confusum Buysson (1) 7.

CHRYSIDIDAE: Chrysidinae
Chrysis cembricola Krombein (4) MT.
C. coerulans Fabricius (2) MT.
C. dorsalis Aaron (1) *.
Trichrysis (*Lorochrysis*) *doriae* (Gribodo) (2) MT,6.

VESPOIDEA

SAPYGIDAE
Sapyga sp. (3) MT.

FORMICIDAE: Myrmicinae
Myrmica incompleta incompleta Provancher (32) MT,3,5,6,9-12.
M. lobicornis lobifrons Pergande (146) 1-8,10-13.
Leptothorax (*Leptothorax*) *muscorum* (Nylander) (6) 1,2,4,6.
L. (*L.*) *provancheri* Emery (1) 5.
Myrmicinae unassociated reproductives (90).

FORMICIDAE: Formicinae
Camponotus (*Camponotus*) *herculeanus* (Linnaeus) (142) MT,1-7,9-13.
Formica argentea Wheeler (330) MT,1-13.
F. integra (Nylander) (1) 1.
F. neoclara Emery (120) MT,1-8,10,13.
F. subnuda Emery (22) 2,4,6-8,10,11,13.
Formicinae unassociated reproductives (107).

POMPILIDAE: Pepsinae
Priocnemis (*Priocnemis*) *aequalis* (Banks) (1) 9.
P. (*P.*) *cornica* (Say) (4) 8.
Calicurgus hyalinatus borealis (Banks) (1) 10.
Dipogon (*Deuteragenia*) *sayi sayi* Banks (1) 6.
Auplopus caerulescens subcorticalis (Walsh) (1) 6.

POMPILIDAE: Pompilinae
Evagetes parvus (Cresson) (6) MT,10.
Episyron biguttatus biguttatus (Fabricius) (1) MT.
Anoplius (*Anoplius*) *imbellis* Banks (39) MT,1-3,5-7,11.
A. (*A.*) *nigerrimus* (Scopoli) (77) MT,1-8,10-13.
A. (*A.*) *tenuicornis* (Tournier) (27) 1-7,13.
A. (*A.*) *virginiensis* (Cresson) (1) 6.
Ammosphex imbecillus ojibwae (Evans) (1) 3.

TABLE 3. (*Continued*)

Arachnospila fumipennis fumipennis (Zetterstedt) (1) 11.
Anoplochares apicatus (Provancher) (62) MT,1-8,10,11.

VESPIDAE: Eumeninae
Eumenes verticalis Say (6) MT,9.
Ancistrocerus bustamente bustamente (Saussure) (1) 9.
A. catskill albophaleratus (Saussure) (9) MT,1,2.
Symmorphus albomarginatus albomarginatus (Saussure) (3) MT.
S. canadensis (Saussure) (2) MT,3.
S. cristatus (Saussure) (9) MT,2-5.

VESPIDAE: Vespinae
Vespula (*Vespula*) *acadica* (Sladen) (71) MT,1-8,10,11,13.
V. (*V.*) *austriaca* (Panzer) (7) MT,1,6,8.
V. (*V.*) *consobrina* (Saussure) (25) MT,1-4,7,9,13.
V. (*V.*) *vulgaris* (Linnaeus) (194) MT,1-13.
V. (*Dolichovespula*) *arenaria* (Fabricius) (77) MT,1-7,10,13.
V. (*D.*) *arctica* Rohwer (2) 2,13.
V. (*D.*) *maculata* (Linnaeus) (27) MT,5,6.
V. (*D.*) *norvegicoides* (Sladen) (33) MT,2-7,11.

APOIDEA

PEMPHREDONIDAE: Pseninae
Mimumesa clypeata (Fox) (1) 13.
M. propinqua (Kincaid) (4) MT,1,2.

PEMPHREDONIDAE: Pemphredoninae
Pemphredon (*Cemonus*) *inornata* Say (9) MT,2,3,5,7,8.
P. (*Pemphredon*) *confirtim* Fox (1) 5.
P. (*P.*) *foxii* Rohwer? (1) MT.
P. (*P.*) *montana* Dahlbom (2) MT.
Diodontus bidentatus Rohwer (1) 2.
D. occidentalis Fox (5) MT.
Passaloecus annulatus (Say) (2) MT,5.
P. cuspidatus Smith (4) MT.
P. monilicornis Dahlbom (6) MT,4-6.
Stigmus americanus Packard (5) MT.

CRABRONIDAE: Larrinae
Trypoxylon aldrichi Sandhouse (31) MT,1-6,10-12.
T. sculleni Sandhouse (22) 1-5,10-12.

CRABRONIDAE: Crabroninae
Oxybelus uniglumis (Linnaeus) (2) MT,5.
Rhopalum (*Rhopalum*) *clavipes clavipes* (Linnaeus) (1) MT.
Crossocerus (*Blepharipus*) *impressifrons* (Smith) (2) MT.
C. (*B.*) *maculipennis* (Smith) (2) MT.
C. (*B.*) *nigricornis* (Provancher) (3) MT,1.
Crabro tenuiglossa Packard (2) 1,3.
Ectemnius (*Ectemnius*) *borealis* (Zetterstedt) (2) 3,5.
E. (*Clytochrysus*) *lapidarius* (Panzer) (2) MT.
E. (*C.*) *ruficornis ruficornis* (Zetterstedt) (2) MT.
E. (*Hypocrabro*) *continuus continuus* (Fabricius) (1) MT.

NYSSONIDAE: Gorytinae
Gorytes sp. (1) 1.

COLLETIDAE
Hylaeus sp. A (11) 2,4-6.
H. sp. B (2) 5,12.
H. sp. C (2) 3,11.
H. sp. D (1) 10.
H. unassociated males (17).
Colletes sp. (1) MT.

ANDRENIDAE
Andrena (*Andrena*) sp. (3) MT.
A. (*Melandrena*) *nivalis* Smith (1) MT.
A. (*M.*) *vicina* Smith (3) 3.
A. (*M.*) *illinoiensis* Robertson (9) MT,2-4,10,11.
A. (*M.*) *salictaria* Robertson (6) 2-4,7,9.
A. (*Thysandrena*) *medionitens* Cockerell (3) 10,13.
A. (*Trachandrena*) *amphibola* (Viereck) (2) MT.
A. (*T.*) *cyanophila* Cockerell (1) 2.
A. (*T.*) *forbesii* Robertson (4) MT,4.
A. (*T.*) *miranda* Smith (2) MT,5.
A. (*T.*) *salicifloris* Cockerell (4) MT,3.
A. (*T.*) *striatifrons* Cockerell (1) 2.
Perdita sp. (2) 9,11.

HALICTIDAE: Halictinae
Halictus (*Halictus*) *rubicundus* (Christ) (4) 4,7,8.
H. (*Seladonia*) *confusus confusus* Smith (14) 2,3,5-8.
Lasioglossum athabascense (Sandhouse) (1) 3.
L. leucozonium (Schrank) (1) 4.
L. zonulum (Smith) (16) MT,1,3,4,7,8,10-13.
Evylaeus aberrans (Crawford) (1) 2.
E. comagensis Knerer & Atwood (28) 2-5,7.
E. niger (Viereck) (56) MT,2-6.
E. unassociated males (8).
Dialictus atriventris (Crawford)? (22) MT,2,3,8.
D. cressonii (Robertson) (2) 5.
D. laevissimus (Smith) (1) 4.
D. perpunctatulus Knerer & Atwood (119) MT,1-7,10,11.
D. viridatus (Lovell)? (112) MT,1-12.
D. unassociated males (34).
Sphecodes sp. A (1) 13.
S. sp. B (1) 3.
S. sp. C (1) 2.

MEGACHILIDAE: Megachilinae
Megachile sp. (1) 9.
Coelioxys sp. (1) MT.

APIDAE: Anthophorinae
Nomada sp. A (4) MT,2,7,11.
N. sp. B (2) 8,9
Anthophora urbana urbana Cresson (7) MT,4.
Melissodes sp. (5) 7,8,11,12.

APIDAE: Apinae
Bombus borealis Kirby (4) MT,7.
B. griseocollis (DeGeer) (27) MT,2,3,5,7-9,11,13.
B. perplexus Cresson (4) MT,7.
B. polaris polaris Curtis (18) MT,2,7.

TABLE 3. (*Concluded*)

B. rufocinctus Cresson (114) MT,2-5,7-13.
B. ternarius Say (12) MT,1,4,5,7,8.
B. terricola terricola Kirby (8) MT,4,6.
B. vagans vagans Smith (10) MT,2,3,7,8.
Psithyrus ashtoni (Cresson) (23) MT,2-4,6-8,10,11.
Apis mellifera Linnaeus (12) MT,2,3,5,7,9,11,13.

TABLE 4. The Diptera of Wagner fen

CULICIDAE
Aedes (*Aedes*) *canadensis canadensis* (Theobald)
A. (*A.*) *cinereus* Meigen
A. (*A.*) *excrucians* (Walker)
Culiseta (*Culiseta*) *inornata* (Williston)

CHIRONOMIDAE
Procladius (*Halotanypus*) sp.
Procladius sp.
Pentaneurini sp.
Parachironomus potamageti (Townes)
Acricotopus lucens (Zetterstedt)
Acricotopus sp.
Chaetocladius sp.
Corynoneura sp.
Cricotopus sp.
Limnophyes immurcronatus Saether
Limnophyes sp.
Metriocnemus sp.
Paraphaenocladius nasthecus Saether
Paraphaenocladius sp.
Pseudosmittia nanseni (Kieffer)
Pseudosmittia sp.
Smittia - 2 species
Orthocladinae sp.

PHORIDAE
Gymnophora luteiventris Schmitz
G. subarcuata Schmitz
Lecanocerus compressiceps Borgmeier
Conicera barberi (Malloch)
Chaetopleurophora erythronota (Strobl)
Beckerina luteola Malloch
Phora sp.
Megaselia sp.
Puliciphora sylvatica Brues

SYRPHIDAE
Xylota atlantica Shannon
X. bigelowi (Curran)
X. flavifrons Walker
X. ovelletti Curran
Xylota sp.
Ameroxylota flukei (Curran)
Chalcosyrphus (*Xylotodes*) *parvus* (Williston)
Chalcosyrphus (*Xylotodes*) sp.
C. (*X.*) *nemorum* (Fabricius)
Lejops (*Polydontomyia*) *curvipes* (Wiedeman)
L. (*Anasimyia*) *bilinearis* Williston
L. (*A.*) *lunulatus* Meigen
L. (*A.*) *perfidiosus* (Hunter)
L. (*Arctosyrphus*) *willingii* (Smith)
Parhelophilus divisus Loew
P. porcus Walker
Helophilus latifrons Loew
H. obscurus Loew
Helophilus sp.
Eristalis nemorum (Linnaeus)
E. tenax (Linnaeus)
Cheilosia alaskensis Hunter
C. nigrophasciata Curran
Cheilosia sp.
Neoascia metallica (Williston)
Sphaerophoria asymmetrica Knutson
S. brevipilosa Knutson
S. philanthus (Meigen)
S. pyrrhina Bigot
Trichopsomyia sp.
Pipiza sp.
Cnemodon elongatus (Curran)?
Chrysotoxum derivatum Walker
Sericomyia militaris Walker
Syrphus ribesii (Linnaeus)
Eupeodes latifasciatus (Macquart)
Parasyrphus sp.
Baccha elongata (Fabricius)
Platycheirus caerulescens Williston
P. clypeatus (Meigen)
P. peltatus (Meigen)
Sphaegina (*Sphaegina*) sp.
Chrysogaster sp.

SPHAEROCERIDAE
Opacifrons coxata (Stenhammar)
Pullimosina (*Dahlimosina*) *dahli* (Dudd)
P. (*Pullimosina*) *longicosta* (Spuler)
P. (*P.*) *pullula* (Zetterstedt)
Pullimosina sp.
Minilimosina (*Minilimosina*) *parva* (Malloch)
M. (*M.*) *parvula* (Stenhammar)
M. (*M.*) *fungicola* (Haliday)
Minilimosina (*Minilimosina*) sp.
M. (*Svarciella*) *vitripennis* Zetterstedt
M. (*Svarciella*) sp.
Spelobia clunipes (Meigen)
S. semioculata Richards
S. *maculipennis* Spuler
S. algida Marshall
S. bifrons (Stenhammar)
S. luteilabris (Rondani)
Rudolfina sp.

TABLE 4. (*Concluded*)

Phthitia ovicercus Marshall
P. quadricercus Marshall
Opalimosina mirabilis (Collin)
Telomerina flavipes (Meigen)
Trachyopella nuda Marshall & Rohacek
Pteremis wirthi Marshall
Elachisoma atterima (Haliday)
Ischiolepta pusilla (Fallen)
Halidayina spinipennis (Haliday)

ANTHOMYIIDAE
Pegomya geniculata (Bouche)
P. notabilis (Zetterstedt)
P. stagnalis Griffiths
P. terminalis (Rondani)
P. versicolor (Meigen)
P. winthemi (Meigen)
Eutrichota flavicans (Stein)
E. frigida (Zetterstedt)
E. incompleta (Stein)
E. lipsia (Walker)
E. nigrifemur (Stein)
E. parkeri (Malloch)
E. tarsata (Wulp)
Pegoplata nigroscutellata (Stein)
Alliopsis angustitarsis (Malloch)
A. brunneigena (Schnabl)
Delia alaba (Walker)
D. cupricrus (Walker)
D. florilega (Zetterstedt)
D. platura (Meigen)
D. platura/florilega
D. radicum (Linnaeus)
Leucophora depressa (Malloch)
Hydrophoria "altilega" sensu Huckett
H. borealis (Malloch)
H. implicata Huckett
H. lineatocollis (Zetterstedt)
H. wierzejskii (Mik)
H. zetterstedtii (Ringdahl)
Paregle cinerella (Fallen)
Botanophila sp.
Pegohylemyia betarum (Lintner)
P. norvegica Ringdahl
Pegohylemyia - 2 species
Lasiomma octoguttatum (Zetterstedt)
Acrostilpna atricauda (Zetterstedt)
A. replicata (Huckett)
Hylemyza partita (Meigen)
Strobilomyia sp.
Egle hinei (Malloch)
E. minuta (Meigen)

MUSCIDAE
Fannia fuscula (Fallen)
Thricops innocuus (Zetterstedt)
Azelia cilipes (Haliday)
Alloeostylus diaphanus (Wiedemann)
Drymeia sp.
Hydrotaea meteorica (Linnaeus)
H. scambus (Zetterstedt)
Muscina assimilis (Fallen)
M. stabulans (Fallen)
Polietes griseocaerulea (Malloch)
P. orichalceoides (Huckett)
Morellia micans (Macquart)
Musca domestica Linnaeus
Phaonia bysia (Walker)
P. consobrina (Zetterstedt)
P. deleta (Stein)
P. errans (Meigen)
Phaonia - 4 species
Helina cinerella (Wulp)
H. cothurnata (Rondani)
H. nigripennis (Walker)
Helina - 2 species
Mydaea discimana Malloch
Mydaea sp.
Myospila meditabunda (Fabricius)
Graphomya maculata (Scopoli)
Limnophora discreta Stein
L. nigripes (Robineau-Desvoidy)
Spilogona surda (Zetterstedt)
S. suspecta (Malloch)
Spilogona - 4 species
Lispe cotidiana Snyder
Tetramerinx sp.
Pseudocoenosia sp.
Caricea nearctica (Huckett)
C. varians (Malloch)
C. vitripennis (Ringdahl)
Macrorchis ausoba (Walker)
Coenosia argenticeps Malloch
C. cilicauda Malloch
C. conforma Huckett
C. pallipes Stein
C. nr. *frisoni* Malloch
Schoenomyza chrysostoma Loew

TABLE 5. The Coleoptera of Wagner fen

CICINDELIDAE
Cicindela duodecimguttata Dejean

CARABIDAE: Carabinae
Carabus maeander Fischer von Waldheim
C. serratus Say
Scaphinotus marginatus Fischer von Waldheim
Nebria intermedia Van Dyke
Blethisa multipunctata Linnaeus
B. *quadricollis* Haldeman
Elaphrus californicus Mannerheim
E. clairvillei Kirby
E. fuliginosus Say
E. olivaceus LeConte
Loricera pilicornis Fabricius
Dyschirius integer LeConte
D. nigricornis Motschulsky
Patrobus foveocollis Eschscholtz
P. lecontei Chaudoir
P. stygicus Chaudoir
Trechus apicalis Motschulsky
Bembidion bimaculatum Kirby
B. fortestriatum Motschulsky
B. incrematum LeConte
B. morulum LeConte
B. mutatum Gemminger & Harold
B. nigripes Kirby
B. quadrimaculatum oppositum Say
B. sordidum Kirby
B. timidum LeConte
B. transparens Gebler
Pterostichus adstrictus Eschscholtz
P. caudicalis Say
P. corvinus Dejean
P. luctuosus Dejean
P. lucublandus Say
P. melanarius Illiger
P. patruelis Dejean
P. pensylvanicus Say
P. punctatissimus Randall
Calathus ingratus Dejean
Agonum affine Kirby
A. anchomenoides Randall
A. corvus LeConte
A. cupreum Dejean
A. cupripenne Say
A. gratiosum Mannerheim
A. nigriceps LeConte
A. picicornoides Lindroth
A. placidum Say
A. sordens Kirby
A. subsericeum LeConte
A. thoreyi Dejean
Platynus decentis Say
P. mannerheimi Dejean
Amara apricaria LeConte
A. cupreolata Putzeys
A. lacustris LeConte
Harpalus pleuriticus Kirby

CARABIDAE: Carabinae
Bradycellus lecontei Csiki
Stenolophus fuliginosus Dejean
Diplocheila undulata Carr
Chlaenius alternatus Horn
C. lithophilus Say
C. niger Randall

HALIPLIDAE
Haliplus immaculicollis Harris

DYTISCIDAE: Hydroporinae
Hygrotus canadensis Fall
Hydroporus rufinasus Mannerheim
H. tristis (Paykull)
Hydroporus sp.
Liodessus affinis (Say)

DYTISCIDAE: Colymbetinae
Agabus confinis Gyllenhal
A. phaeopterus (Kirby)
A. wasastjernae Sahlberg
Ilybius discedens Sharp
Neoscutopterus horni (Crotch)

DYTISCIDAE: Dytiscinae
Dytiscus circumcinctus Ahrens

HYDROPHILIDAE: Helophorinae
Helophorus nitiduloides Motschulsky
H. orientalis d'Orch

HYDROPHILIDAE: Hydrobiinae
Laccobius agilis Randall
Hydrobius fuscipes (Linnaeus)
Paracymus despectus LeConte
P. subcupreus (Say)
Crenitis inornata Horn
C. paradigma d'Orch
Anacaena limbata (Fabricius)
Enochrus cinctus (Say)
E. hamiltoni (Horn)
Cymbiodytes vindicata Fall

HYDROPHILIDAE: Sphaeridiinae
Sphaeridium lunatum Fabricius
Cercyon herceus frigidus Smetana
C. marinus Thomson

HYDRAENIDAE: Hydraeninae
Ochthebius kaszabi Janssens
Hydraena angulicollis Notman

STAPHYLINIDAE: Micropeplinae
Micropeplus obliquus LeConte
M. sculptus (LeConte)

STAPHYLINIDAE: Oxytelinae
Carpelimus - 3 species
Anotylus sobrinus (LeConte)
Anotylus tetracariniatus Block
Anotylus sp.
Platystethus americanus Erichson
Bledius turgidus Casey
Thinobius sp.

STAPHYLINIDAE: Omaliinae
Eucnecosum brunnescens Sahlberg

TABLE 5. (*Continued*)

E. tenue (LeConte)
Olophrum boreale (Paykull)
O. consimile Gyllenhal
O. rotundicolle (Sahlberg)
Acidota crenata Fabricius
Pycnoglypta aptera Campbell
P. lurida (Gyllenhal)
Phloenomus lapponicus Zetterstedt

STAPHYLINIDAE: Oxyporinae
Oxyporus occipitalis Fauvel

STAPHYLINIDAE: Steninae
Stenus (*Stenus*) *egenus* Erichson
S. (*S.*) *mammops* Casey
S. (*S.*) *morio* Gravenhorst
S. (*S.*) *shoshonis* Casey
S. (*S.*) *venustus* Casey
S. (*S.*) *vicinoides* Puthz
S. (*Tesnus*) *formiceforum* Mannerheim
S. (*Hypostenus*) *dissentiens* Casey?
S. (*H.*) *reconditus brevipusculus* Puthz

STAPHYLINIDAE: Euaesthetinae
Euaesthetus sp.

STAPHYLINIDAE: Paederinae
Lithocharis (*Pseudomedon*) sp.
Scopaeus brunnipes LeConte
Lathrobium (*Lathrobium*) *fauveli* Duvivier
L. (*L.*) *sparsellum* (Casey)
L. (*L.*) *washingtoni* Casey
L. (*Tetratopeus*) *nigrum* LeConte
Paederus littorarius Gravenhorst
Cryptobium cinctum Say

STAPHYLINIDAE: Staphylininae
Staphylinus pleuralis LeConte
Erichsonius nanus (Horn)
Neobisnius occidentoides Frank
Philonthus aurulentus Horn
P. furvus group sp.
P. instabilis Horn
P. micans group sp.
P. palliatus (Gravenhorst)
P. puberulus group sp.
Neohypnus obscurus (Erichson)
Gabrius picipennis Mannerheim
Gabrius - 2 species
Tympanophorus puncticollis Erichson
Acylophorus pronus Erichson
Heterothops minor Smetana
Quedius frigidus Smetana
Q. impar Smetana
Q. labradorensis labradorensis Smetana
Q. simulator Smetana

STAPHYLINIDAE: Tachyporinae
Lordithon fungicola Campbell
L. thoracicus thoracicus (Fabricius)
Bolitobius cingulatus Mannerheim
Bryoporus rufescens LeConte
Mycetoporus - 3 species
Tachinus fumipennis (Say)
T. scrutator Gemm. & Harris
T. tachyporoides Horn
Tachyporus abdominalis (Fabricius)
T. borealis Campbell
T. flavipennis Campbell
T. *maculicollis* Campbell
T. mexicanus Sharp
T. nitidulus (Fabricius)

STAPHYLINIDAE: Hypocyphtinae
Hypocyphtus crotchii Horn

STAPHYLINIDAE: Aleocharinae
Myllaena arcana Casey
M. ludificans Casey
Gyrophaena sp.
Falagria dissecta Erichson
Atheta sp.
nr. *Aloconota* sp.
Athetini? - 3 species
Ocalea sp.
Oxypodini - 3 species
Aleocharinae sp.

PSELAPHIDAE: Pselaphinae
Mayetia sp.
Pselaptrichus sp.
Pselaphus ulkei Bow.

SILPHIDAE: Silphinae
Thanatophilus lapponicus (Herbst)

SILPHIDAE: Nicrophorinae
Nicrophorus vespilloides Herbst

LEIODIDAE: Catopinae
Nemadus sp.
Catops alsiosus (Horn)
Catops sp.
Sciodrepoides fumatus terminans (LeConte)
S. *watsoni hornianus* (Blanchard)

LEIODIDAE: Coloninae
Colon - 2 species

LEIODIDAE: Leiodinae
Leiodes sp.
Cyrtusa luggeri Hatch

PTILIIDAE: Ptiliinae
Ptilium sp.
Ptenidium pusillum Gyllenhal
Acratrichus sp.

SCYDMAENIDAE: Scydmaeninae
Euconnus longiceps Fall
Drastophus sp.

HISTERIDAE: Histerinae
Hister albertanus Casey

SCARABAEIDAE: Scarabaeinae
Onthophagus nuchicornis (Linnaeus)

SCARABAEIDAE: Aphodiinae
Aphodius fimetarius (Linnaeus)
A. hamatus Say

TABLE 5. (*Continued*)

A. pinquellus Brown

HELODIDAE: Helodinae
Cyphon padi Linnaeus
C. *variabilis* Thunberg

BYRRHIDAE: Byrrhinae
Cytilus alternans Say
Byrrhus americanus LeConte

BYRRHIDAE: Syncalyptinae
Syncalypta echinata LeConte

HETEROCERIDAE
Heterocerus tristis Mannerheim

BUPRESTIDAE: Buprestinae
Melanophila drummondi (Kirby)
Anthaxia expansa LeConte
Chrysobothris trinerva (Kirby)
Chrysobothris sp.

ELATERIDAE: Elaterinae
Megapenthes stigmosus (LeConte)
Ampedus mixtus (Herbst)
Ctenicera cruciatus (Linnaeus)
C. kendalli Kirby
C. lobata pygnaea (Van Dyke)
C. *nitidula* (LeConte)
C. triundulatus Randall
Eanus decoratus (Mannerheim)
Dalopius sp.

ELATERIDAE: Hypolithinae
Hypolithus impressicollis (Mannerheim)

CANTHARIDAE: Cantharinae
Podabrus nigritulus LeConte
P. rectus Melsheimer
Podabrus sp.
Malthodes sp.

LYCIDAE: Lycinae
Celetes basalis LeConte

LAMPYRIDAE: Lampryinae
Pyractomena lucifera (Melsheimer)
Lucidota corrusca Linnaeus
L. fenestralis (Melsheimer)

LAMPYRIDAE: Photurinae
Photuris pennsylvanica (DeGeer)

CLERIDAE: Clerinae
Thanasimus dubius (Fabricius)

MORDELLIDAE: Mordellinae
Mordella - 2 species
Mordellistena - 2 species

SALPINGIDAE: Salpinginae
Sphaeriestes virescens (LeConte)

PYROCHROIDAE: Pyrochroinae
Schizotus cervicallis Newman

MELANDRYIDAE: Tetraominae
Hallomenus debilis LeConte

ANTHICIDAE: Anthicinae
Notoxus *anchora* Hentz
Anthicus coracinus LeConte

NITIDULIDAE: Nitidulinae
Omosita discoidea (Fabricius)
Nitidula rufipes (Linnaeus)

NITIDULIDAE: Cryptarchinae
Glischrochilus siepmanni Brown

RHIZOPHAGIDAE: Rhizophaginae
Rhizophagus dimidiatus Mannerheim

RHIZOPHAGIDAE: Monotominae
Monotoma picipes Herbst

CRYPTOPHAGIDAE: Cryptophaginae
Cryptophagus nodangulus Zimmermann

CRYPTOPHAGIDAE: Atomarinae
Anchicera ephippiata Zimmermann

COCCINELLIDAE: Scymninae
Scymnus coniferarum Crotch
S. lacustris LeConte
Scymnus - 4 species
Hyperaspis consimilis LeConte
H. disconotata Mulsant
H. lateralis Mulsant
H. quadrivittata LeConte
H. undulata (Say)

COCCINELLIDAE: Coccidulinae
Coccidula lepida LeConte

COCCINELLIDAE: Coccinellinae
Anisostictia bitriangularis (Say)
Macronaemia episcopalis (Kirby)
Hippodamia sinuata crotchi Casey
H. tredecimpunctata tibialis (Say)
Adalia bipunctata (Linnaeus)
Coccinella transversoguttata richardsoni Brown
Psyllobora vigintimaculata (Say)

ORTHOPERIDAE: Orthoperinae
Orthoperus scutellaris LeConte

LATHRIDIIDAE: Lathridiinae
Lathridius sp.
Corticaria elongata Gyllenhal
C. valida Fall
Melanophthalma americana Mannerheim
M. distinguenda Comolli
M. sinuata Gyllenhal

CERAMBYCIDAE: Lepturinae
Xestoleptura tibialis (LeConte)
Acmaeops proteus (Kirby)

CERAMBYCIDAE: Cerambycinae
Molorchus bimaculatus Say
Semanotus ligneus (Fabricius)
Neoclytus muricatulus (Kirby)

CERAMBYCIDAE: Lamiinae
Monochamus scutellatus (Say)
Pogonocherus parvulus LeConte

TABLE 5. (*Concluded*)

CHRYSOMELIDAE: Donaciinae
Donacia sp.

CHRYSOMELIDAE: Orsodacinae
Orsodacne atra (Ahrens)

CHRYSOMELIDAE: Eumolpinae
Adoxus obscurus Linnaeus

CHRYSOMELIDAE: Chrysomelinae
Phaedon armoracicae Linnaeus
P. oviformis LeConte
Gastrophysa polygoni Linnaeus

CHRYSOMELIDAE: Gallerucinae
Trirhabda convergens LeConte
Gallerucella notata Fabricius
Erynephala sp.
Pyrrhalta decora (Say)
P. punctipennis (Mannerheim)

CHRYSOMELIDAE: Alticinae
Distigmoptera borealis Blake
D. pillosa (Illiger)
Oedionychus vians Illiger
Haltica sp.
Orestioides pallida Fall
Crepidodera sp.
Hippuriphila mancula LeConte
Chaetocnema confinis Crotch
C. irregularis LeConte
C. protensa LeConte
Longitarsus sp.
Phyllotreta abionica LeConte
P. vittata Fall
Psylliodes punctulata Melsheimer

CHRYSOMELIDAE: Cassidinae
Cassida flaveola Thunberg

ANTHRIBIDAE: Anthribinae
Trigonorhinus limbatus Say

APIONIDAE: Nanophyinae
Nanodes canadensis (Brown)

CURCULIONIDAE: Brachyderinae
Sitona ssissifrons Say
Sitona sp.

CURCULIONIDAE: Otiorhynchinae
Otiorhynchus ovatus (Linnaeus)

CURCULIONIDAE: Cylindrorhinae
Listronotus californicus (Dietz)
L. oregonensis (LeConte)

CURCULIONIDAE: Hyperinae
Hypera nigrirostris (Fabricius)

CURCULIONIDAE: Hylobiinae
Lepyrus sp.
Hylobius warreni Wood

CURCULIONIDAE: Pissodinae
Pissodes rotundatus LeConte
P. schwarzi Hopkins

CURCULIONIDAE: Erirrhininae
Grypus equiseti (Fabricius)
Notaris bimaculatus (Fabricius)
Tanysphyrus lemnae (Fabricius)
Bagous mamillatus Say

CURCULIONIDAE: Magdalinae
Magdalis alutacea LeConte
M. hispoides LeConte

CURCULIONIDAE: Anthonominae
Anthonomus corvulus LeConte
A. rubidus (LeConte)
Anthonomus sp.

CURCULIONIDAE: Tychiinae
Tychius picirostris (Fabricius)

CURCULIONIDAE: Ceutorhynchinae
Rhinoncus asperulus (Dietz)

CURCULIONIDAE: Rhynchophorinae
Sphenophorus costipennis (Horn)

SCOLYTIDAE: Scolytinae
Scolytus piceae (Swaine)

SCOLYTIDAE: Ipinae
Orthotomicus caelatus Eichhoff
Pityophthorus carmiceps group sp.
Pityophthorus sp.

TABLE 6. The Homoptera of Wagner fen

MEMBRACIDAE
Ceresa (*Stictocephala*) *basalis* Walker

CERCOPIDAE
Philaenarcys bilineata (Say)
Aphrophora gelida (Walker)
Lepyronia quadrangularis (Say)

CICADELLIDAE: Aphrodinae
Stroggylocephalus mixtus (Say)
Balclutha confluens (Rey)
B. punctata (Thunberg)
Limotettix (*Limotettix*) *ferganiensis* Dubovsky
L. (*L.*) *utahnus* (Lawson)
L. (*Scleroracus*) *dasidus* (Medler)
L. (*S.*) *plutonius* (Uhler)
Macrosteles binotatus (Sahlberg)
M. fascifrons (Stal)
M. quadrilineatus (Forbes)
M. slossonae (Van Duzee)
M. variatus (Fallen)
Paraphlepsius continuus (DeLong)
P. maculosus (Osborn)
P. varispinus Hamilton
Chlorotettix unicolor (Fitch)
Idiodonus aurantiacus (Provancher)
I. morsei (Osborn)
Elymana inornata (Van Duzee)
Colladonus clitellarius (Say)
C. eburatus (Van Duzee)
C. waldanus (Ball)
C. youngi Neilson
Thamnotettix confinis (Zetterstedt)
Scaphytopius acutus (Say)
S. magdalensis (Provancher)
Cicadula smithi (Van Duzee)
C. subcupraea (Provancher)
Hecalus sp.
Xestocephalus superbus (Provancher)
Amplicephalus (*Endria*) *inimicus* (Say)
Latalus personatus Beirne
Psammotettix alienus (Dahlbom)
P. lividellus (Zetterstedt)
Sorhoanus (*Sorhoanus*) *xanthoneurus* (Fieber)
S. (*Zelenius*) *orientalis* (DeLong & Davidson)
Laevicephalus acus (Sanders & DeLong)
Rosenus cruciatus (Osborn & Ball)
Deltocephalus balli Van Duzee
Diplocolenus (*Diplocolenus*) sp.
D. (*Verdanus*) *evansi* (Ashmead)
Euscelis (*Euscelidius*) *maculipennis* DeLong & Davidson
E. (*Macustus*) *alpina* Ball

CICADELLIDAE: Cicadellinae
Cuerna septentrionalis (Walker)
Draeculacephala antica (Walker)
D. manitobiana Ball
Evacanthus orbitalis Fitch
Helochara communis Fitch
Neokolla hieroglyphica (Say)

CICADELLIDAE: Eurymelinae
Aceratagallia nana Oman
Agalliota quadripunctata (Provancher)
Agalliopsis ancistra Oman
Oncopsis sp.

CICADELLIDAE: Scarinae
Gyponana salsa DeLong
G. serpenta DeLong

CICADELLIDAE: Typhlocybinae
Arborida sp.
Dikraneura mali (Provancher)
D. rubrala DeLong & Caldwell
Empoasca andresia Ross
E. copula DeLong
E. *curvata* Ross
E. distracta DeLong & Caldwell
E. gelbata DeLong & Davidson
E. ovalis Ross
E. ratio DeLong & Davidson
Erythroneura macra Beamer
Erythroneura sp.
Ossiannilssonola volans (McAtee)
Typhlocyba gillettei (Van Duzee)

DELPHACIDAE
Stenocranus sp.
Liburnia sp.

CIXIIDAE
Cixius meridionalis Beirne
C. nike Kramer
C. pini Fitch

ACHILIDAE
Epiptera confusa Beirne

PSYLLIDAE
Aphalara sp.

TABLE 7. The Hemiptera of Wagner fen

THYREOCORIDAE
Corimelaena pulicaria (Germar)

SCUTELLERIDAE
Cosmopepla bimaculata (Thomas)
Eurygaster alternatus (Say)

LYGAEIDAE
Emblethis vicarius Horvath
Eremocoris borealis (Dallas)
Kleidocerys resedae (Panzer)
Ligyrocoris diffusus Uhler
L. sylvestris (Linnaeus)
Nysius sp.
Peritrechus saskatchewanensis Barber
Scolopostethus thomsoni Reuter

TINGIDAE
Acalypta lillianis Torre Bueno
A. nyctalis Drake
Corythuca 2 species
Galeatus spinifrons (Fallen)
Physatocheila plexa (Say)

ANTHOCORIDAE
Anthocoris musculus (Say)
Orius tristicolor (White)

MIRIDAE
Deraeocoris brevis (Uhler)
Lygus borealis (Kelton)
L. lineolaris (Pallisot de Beauvois)
L. shulli Knight
Plagiognathus sp.
Psallus piceicola Knight
Stenodema trispinosa Reuter
Trigonotylus coelestialium (Kirkaldy)

DIPSOCORIDAE
Ceratocombus sp.

GERRIDAE
Gerris buenoi Kirkaldy

SALDIDAE
Lampracanthia crassicornis (Uhler)
Teloleuca pellucens (Fabricius)

TABLE 8. Miscellaneous Insecta of Wagner fen

THYSANOPTERA

Aeolothripidae
Aeolothrips auricestus Treherne
A. fasciatus (Linnaeus)

Thripidae
Anaphothrips cameroni (Bagnall)
A. obscurus (Muller)
Baliothrips dispar (Haliday)
Chirothrips manicatus Haliday
C. patruelis Hood
C. nr. *patruelis* Hood
Ctenothrips bridwelli Franklin
Frankliniella nr. *andrei* Moulton
F. fusca (Hinds)
F. tritici (Fitch)
Limothrips denticornis Haliday
Thrips nr. *funebris* Bagnall
T. nr. *fascipennis* Haliday
T. tabaci Lindeman
T. vulgatissimus Haliday
T. trehernei Priesner

Phlaeothripidae
Bolothrips bicolor (Heeger)
Cephalothrips monilicornis (Reuter)
Lissothrips muscorum Hood

NEUROPTERA

Coniopterygidae
Conwentzia californica Meinander?

ODONATA

Lestidae
Lestes congener Hagen

Aeshnidae
Aeshna sitchensis Hagen

Libellulidae
Leucorrhinia borealis Hagen
Libellula quadrimaculata Linnaeus
Sympetrum costiferum (Hagen)
S. danae (Sulzer)
S. internum Montgomery
S. obtrusum (Hagen)

TABLE 9. The Araneae of Wagner fen

AGELENIDAE
Agelenopsis actuosa (Gertsch & Ivie)
A. utahana (Chamberlin & Ivie)

AMAUROBIIDAE
Amaurobius borealis Emerton
Cybaeopsis euoplus (Bishop & Crosby)

CLUBIONIDAE
Clubiona abboti L. Koch
C. bishopi Edwards
C. *bryantae* Gertsch
C. furcata Emerton
C. kulczynski Lessert
C. moesta Banks
C. norvegica Strand
C. opeongo Edwards
C. riparia L. Koch
C. trivalis C.L. Koch
Scotinella pugnata (Emerton)

GNAPHOSIDAE
Micaria aenea Thorell
M. pulicaria (Sundevall)

HAHNIIDAE
Antistea brunnea (Emerton)
Neoantistea magna (Keyserling)

MIMETIDAE
Ero canionis Chamberlin & Ivie

PHILODROMIDAE
Ebo iviei Sauer & Platnick
Philodromus cespitum (Walckenaer)
P. imbecillus Keyserling
P. mysticus Dondale & Redner
P. placidus Banks
Thanatus coloradensis Keyserling
T. formicinus (Clerck)
T. striatus (Koch)
Tibellus maritimus (Menge)
T. oblongus (Walckenaer)

PISAURIDAE
Dolomedes striatus Giebel
D. triton (Walckenaer)

THERIDIIDAE
Dipoena nigra (Emerton)
Enoplognatha intrepida (Soerensen)
E. marmorata (Hentz)
Robertus arcticus (Chamberlin & Ivie)
R. borealis (Kaston)
Robertus sp.
Steatoda borealis (Hentz)
Theridion differens Emerton

THOMISIDAE
Coriarachne utahensis (Gertsch)
Misumena vatia (Clerck)
Ozyptila gertschi Kurata
O. sincera canadensis Dondale & Redner
Xysticus acquiescens Emerton
X. britcheri Gertsch
X. emertoni Keyserling
X. ferox (Hentz)
X. luctuosus (Blackwall)
X. obscurus Collett
X. triangulosus Emerton
X. triguttatus Keyserling

TABLE 10. The Acari of Wagner fen

GAMASIDA
PARASITIDAE
Gamasodes bispinosus (Halbert)

ASCIDAE
Cheiroseius nr. *curtipes* (Halbert)

IXODIDA
IXODIDAE
Haemaphysalis leporis palustris (Packard)

ACTINEDIDA
EUPODIDAE
Linopodes sp.

BDELLIDAE
Cyta sp.
Bdellodea - 2 species
Bdella sp.
Spinibdella sp.

STIGMAEIDAE
Stigmaeidae sp.

TETRANYCHIDAE
Bryobia sp.

ANYSTIDAE
Anystis sp.

CALYPTOSTOMATIDAE
Calyptostoma sp.

ERYTHRAEIDAE
Leptus sp.
Erythraeus sp.
Balaustium sp.
Abrolophus - 3 species

JOHNSTONIANIDAE
Johnstoniana - 2 species
Centrothrombidium sp.
Atractothrombium - 2 species
Valgothrombium - 3 species
Podothrombium sp.
Eutrombidium sp.

TABLE 10. (*Concluded*)

Allothrombium sp.
Paratrombium - 3 species

HYDRYPHANTIDAE
Pseudohydryphantes sp.

LIMNESIIDAE
Tyrrellia sp.

UNIONICOLIDAE
Neumania sp.

PIONIDAE
Piona sp.

ARRENURIDAE
Arrenurus sp.

ORIBATIDA

EUPHTHIRACARIDAE
Rhysotritia ardua (C.L. Koch)

NOTHRIDAE
Nothrus palustris C.L. Koch

CAMISIIDAE
Camisia biurus (C.L. Koch)
C. spinifer (C.L. Koch)
Heminothrus thori (Berlese)
Platynothrus peltifer (C.L. Koch)

TRHYPOCHTHONIIDAE
Trhypochthoniellus badius (Berlese)
T. excavatus (Willmann)
T. setosus (Willmann)
T. cladonicolus (Willmann)

NAUHERMANNIIDAE
Nauhermannia sp.

HERMANNIELLIDAE
Hermanniella robusta Ewing

LIODIDAE
Platyliodes scaliger (C.L. Koch)

METRIOPPIIDAE
Ceratoppia bipilis (Herman)
C. quadridentata arctica Hammer

AMERONOTHRIDAE
Ameronothrus lapponicus Dalenius

CYMBAEREMAEIDAE
Scapheremaeus palustris (Sellnick)

ORIBATULIDAE
Oribatula tibialis (Nicolet)
Rhauloppia boletorum (Ewing)
Zygoribatula bulanovae Kulijew

HAPLOZETIDAE
Peloribates pilosus Hammer
Xylobates nr. *oblongus* (Ewing)

MOCHLOZETIDAE
Podoribates longipes (Berlese)

PARAKALUMMIDAE
Neoribates aurantiacus (Oudemans)

CERATOZETIDAE
Diapterobates notatus (Thorell)
Trichoribates nr. *striatus* Hammer
Fuscozetes fuscipes (C.L. Koch)

PHENOPELOPIDAE
Eupelops septentrionalis (Tragardh)

TEGORIBATIDAE
Tegoribates americanus Hammer

ACHIPTERIIDAE
Achipteria coleoptrata (Linnaeus)
Parachipteria nivalis (Hammer)

TABLE 11. Miscellaneous Arthropoda of Wagner fen

OPILIONES

PHALANGIIDAE
Phalangium opilio Linnaeus
Odiellus pictus (Wood)

PSEUDOSCORPIONES

NEOBISIIDAE
Microbisium brunneum (Hagen)

CHEIRIDIIDAE
Cheiridium sp.

CHILOPODA

HENICOPIDAE
Lamyctes fulvicornis Meinert
Zygethobius columbiensis Chamberlin ?

DIPLOPODA

PARAJULIDAE
Oriulus sp.