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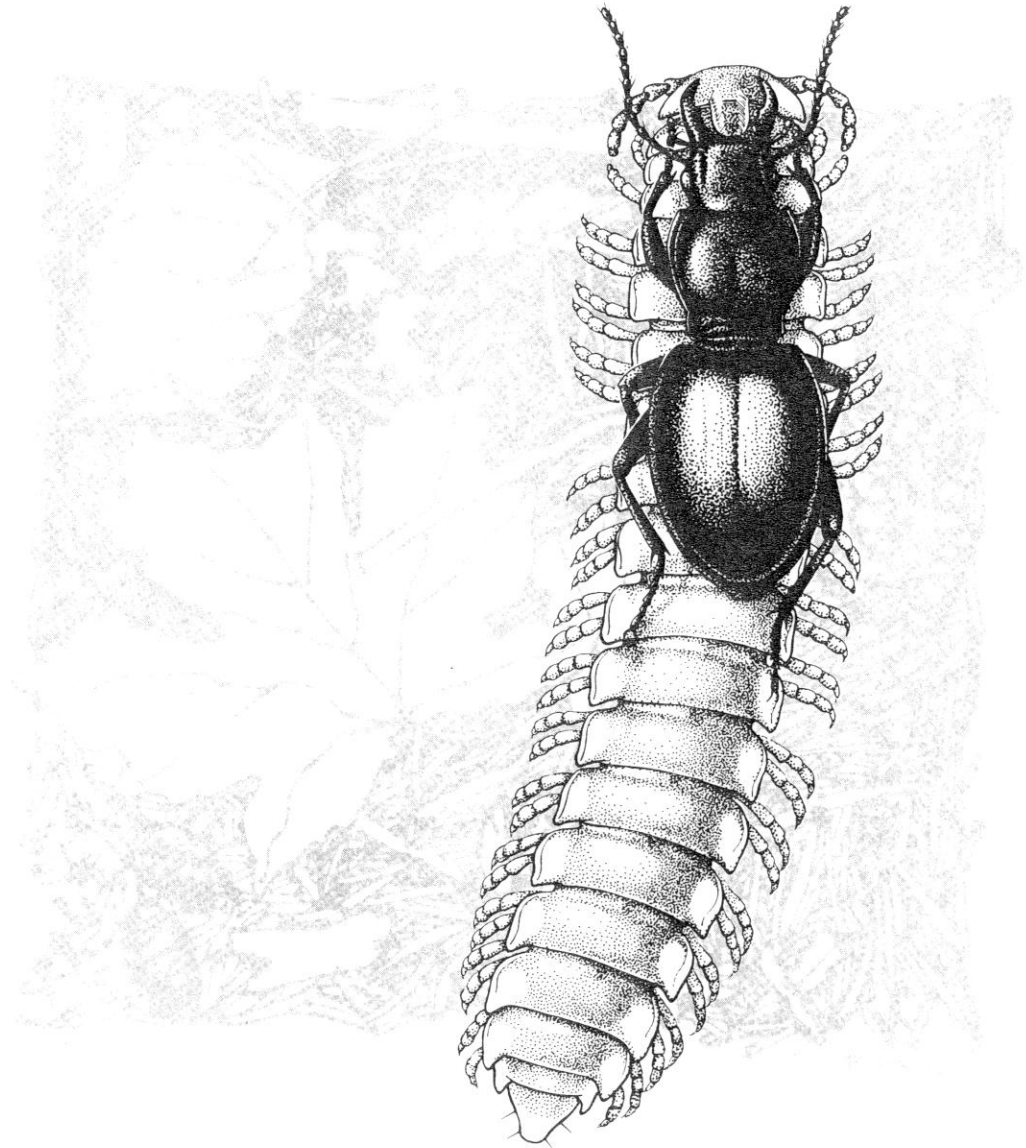
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Invertebrates of the H.J. Andrews Experimental Forest, Western Cascade Range, Oregon. V: An Annotated List of Insects and Other Arthropods

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John D. Lattin, Norman H. Anderson, Jeffrey C. Miller,
Paul Hammond, and Timothy D. Schowalter



This publication has its roots in the International Biological Programme begun in the 1960's. The H.J. Andrews Experimental Forest was a component of the Western Coniferous Forest Biome. The arthropod specimens collected formed the nucleus for the H.J. Andrews Arthropod Collection. An effort to consolidate this material and build the existing collection was initiated in 1976, leading to the present publication. My sincere thanks to the many, many people who made this document possible.

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An annotated list of species of insects and other arthropods that have been collected and studies on the H.J. Andrews Experimental forest, western Cascade Range, Oregon. The list includes 459 families, 2,096 genera, and 3,402 species. All species have been authoritatively identified by more than 100 specialists. Information is included on habitat type, functional group, plant or animal host, relative abundances, collection information, and literature references where available. There is a brief discussion of the Andrews Forest as habitat for arthropods with photographs of representative habitats within the Forest. Illustrations of selected arthropods are included as is a bibliography.

Keywords: Invertebrates, insects, H.J. Andrews Experimental forest, arthropods, annotated list, forest ecosystem, old-growth forests.

FOREWORD

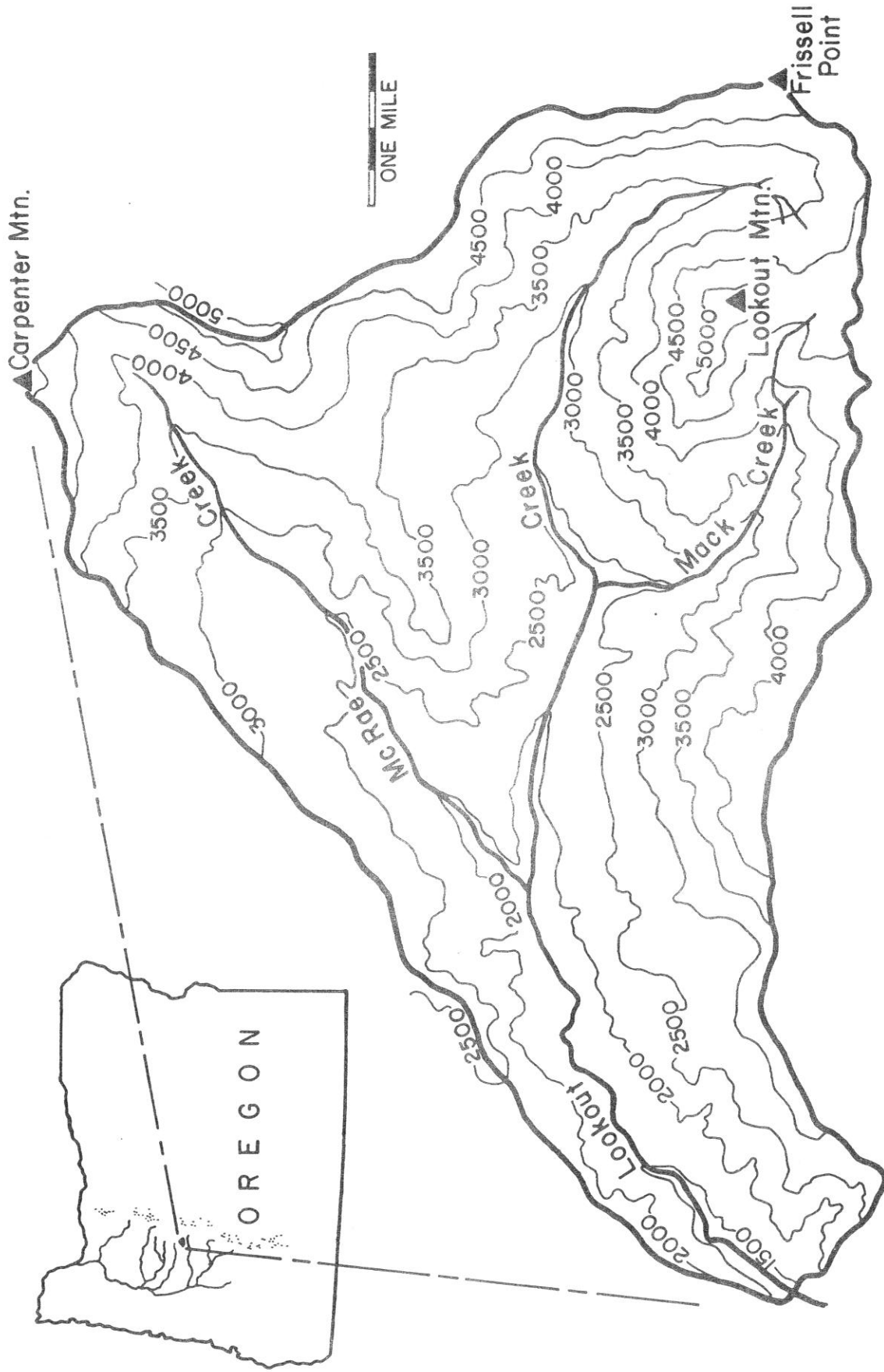
The H.J. Andrews Experimental Forest in the western Cascade Range of Oregon lies within some of the most productive coniferous forest habitat of the Pacific Northwest. The immediate region offers other opportunities: the largest expanse of montane glaciers in the contiguous 48 states (Three Sisters Wilderness), low elevation oak forests, Great Basin desert scrubland, and seacoast. The Andrews Forest has been designated as one of 17 Long Term Ecological Research Sites (LTER) in the United States by the National Science Foundation. The hallmark of the Andrews Forest is the intensive participation in research by scientists and managers over the past four decades, combined with excellent data storage and retrieval systems. Scientists of many disciplines work at every scale here. More than 800 publications compiled for easy reference in McKee and others (1987) and Blinn and others (1988) provide extensive background for investigations at the Andrews Forest.

This publication is not a pro forma species list; rather, it has been generated as the result of diverse ecological studies centered on and around the Andrews Forest during the past 41 years. No attempt has been made to exhaustively collect the area with methodologies appropriate to each invertebrate group. This list provides some insight into the enormous invertebrate diversity present in the coniferous forests of the Pacific Northwest. It provides reference material for investigators who might be engaged in ecological investigations. We hope that these data, set in an ecological context, will stimulate collaboration and facilitate the design of future research.

The Andrews Forest is the premiere site in the Pacific Northwest Conifer Biome, and we invite the scientific community to help us realize its great research potential.



In the Andrews Forest there are large tracts of undisturbed forest in which natural processes can be studied. Trees may attain heights >75 m. Two major age classes predominate (150 and 375 years) due to past wildfires. Some individual trees may be as much as 700 years old.



Elevations and drainage systems within the Andrews Forest boundaries, and location in the state.

CONTENTS

INTRODUCTION	1
EXPLANATION OF SYMBOLS	5
SOURCES OF INFORMATION	10
ACKNOWLEDGMENTS	12
ARTHROPODS	
CLASS INSECTA	19
ORDER	
ARCHAEOGNATHA	19
THYSANURA	19
EPHEMEROPTERA	19
ODONATA	20
ORTHOPTERA	21
BLATTARIA	22
ISOPTERA	22
DERMAPTERA	22
PLECOPTERA	22
PSOCOPTERA	24
PHTHIRAPTERA	25
THYSANOPTERA	25
HEMIPTERA	
HETEROPTERA	26
HOMOPTERA	34
MEGALOPTERA	37
RAPHIDIOPTERA	37
NEUROPTERA	37
COLEOPTERA	40
STREPSIPTERA	62
MECOPTERA	62
TRICHOPTERA	62
LEPIDOPTERA	66
DIPTERA	82
SIPHONAPTERA	95
HYMENOPTERA	96
CLASS COLLEMBOLA	109
CLASS PROTURA	110
CLASS DIPLURA	110
CLASS DIPLOPODA	110
CLASS CHILOPODA	112
CLASS CRUSTACEA	112

CLASS ARACHNIDA	112
SUBCLASS	
PSEUDOSCORPIONES	112
SCORPIONES	113
OPILIONES	113
ARANEAE	116
ACARI	123
 LITERATURE CITED	 132
APPENDIX A - Host Acronyms	138
APPENDIX B - List of Parasite/Host Associations ..	142
APPENDIX C - List of Apoidea Presumed to be on the Andrews Forest	147
 INDEX TO GENERA AND HIGHER TAXA	 153

Cover

The remarkable relationship between this predator and its prey influences the rate at which litter is decomposed on the forest floor. The polydesmid millipede *Harpaphe haydeniana* is an important forest detritivore. It and similar millipedes are the major consumers of coniferous and deciduous leaf litter in western coniferous forests, where earthworms are virtually absent. They chew up and digest leaves, producing feces which are a food resource accessible to many other small arthropods, fungi, and bacteria. Five adults can consume more than 95% of a full gallon can of coniferous or deciduous litter in 2 1/2 weeks. *Harpaphe* and other polydesmid millipedes secrete cyanide and are usually conspicuously colored to warn away would-be predators. The defensive reaction of *Harpaphe* is to roll up into a ball, protecting its neck. In the immature stage it is unpigmented and probably confined underground to the lower humus layers. When about half grown, it becomes pigmented and moves to the surface, where it feeds on litter. *Promecognathus laevis* is an unusual carabid beetle in that it feeds only on polydesmid millipedes, which are often much larger than itself. Jim Labonte, a student of carabid beetles, has observed the feeding behavior (personal communication), summarized as follows: approaching to within a distance of less than 1 cm, the beetle pounces on its prey, straddling and lining up parallel to the millipede's body. Moving to one end of the body, the predator constantly opens and closes its mandibles around the millipede. If *Promecognathus* chances to reach the posterior end, it quickly turns about-face and moves up to the head. Upon reaching the head, it plunges its long, scimitar-shaped mandibles down around the neck, severing or crushing the ventral nerve cord and paralyzing its prey. The beetle returns to feed on the paralyzed millipede for several days, emptying the body contents and breaking off segments as it works down the body, until only a pile of segment rings remains. It may cache its prey under a shelter between meals.

INTRODUCTION

This is an annotated list of the arthropods collected on the H.J. Andrews Experimental Forest (HJA). The Andrews Forest, one of the Long Term Ecological Research (LTER) sites established in the United States, is and represents coniferous habitats typical of the western Cascade and Coast Ranges of the Pacific Northwest. Many of the species listed here range widely throughout the region. The list has been compiled from voucher specimens in the Andrews Forest Arthropod Collection (AFAC), and from publications and other lists of arthropods prepared by scientists doing research on the site. We have included biological and ecological information for most species. The voucher specimens have been identified by recognized authorities in each taxon. Although the AFAC does not yet contain all of the arthropods that occur on the site, significant numbers of species (about 3400) have been collected and identified. Supplements will be published. This list is computerized and will be transferred to the Andrews Forest Data Base at the time of publication and updated regularly.

THE HJA STUDY AREA

The H.J. Andrews Experimental Forest, in the Willamette National Forest (Linn and Lane Counties) in the western Cascade Range of Oregon (latitude: 44°14'N, longitude: 122°11'W), was established in 1948 by the USDA Forest Service. It is administered jointly by the Forest Service, Pacific Northwest Research Station; the Willamette National Forest; and Oregon State University. The Andrews Forest covers 6400 ha (15,800 ac) and includes an entire watershed (Lookout Creek). Elevation ranges from 425 to 1620 m (1350 to 5340 ft). The climate is characterized by mild, wet winters and warm, dry summers. Mean annual temperature is 7.9 °C, with a range of -18 °C to 38 °C. Annual precipitation is about 230 cm (90 in) but is seasonal, with 75 percent falling between November and March. The substantial snowpack melts quickly at elevations below 850 m but may persist above 1350 m into June. The site is typical of the mountain landscapes in the western Cascades and elsewhere in the northwestern United States. The soils are deep, well-drained typical dystrochrept with slope gradients ranging from 20 to 60 percent. There are two major forest zones represented, the Western Hemlock Zone (300-1550 m), dominated by Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco), western hemlock (*Tsuga heterophylla* (Raf.) Sarg.), and western redcedar (*Thuja plicata* Donn. ex. D.Don), and the Pacific Silver Fir Zone (1050-1550 m), dominated by Pacific silver fir (*Abies amabilis* Dougl. ex Forbes) and noble fir (*Abies procera* Rehd.). In all, more than 480 species of plants have been recorded from the Andrews (Franklin and Dyrness 1971). When designated, about 65 percent of the Andrews Forest contained old-growth forest with dominant trees 400 or more years old. A substantial amount of this old-growth forest remains, along with mature stands containing dominants 140 years old, and a variety of natural stands and plantations from 1 to 40 years old. A wide range of forest phyto-associations and stream community types are represented. Although primarily forested, the HJA also has talus slopes, wet and dry shrub meadows, rock outcrops, and bogs. These habitats are typical of western Cascade forests (Franklin and Dyrness 1973). The Andrews Forest contains 'habitat pockets' that represent a wide variety of ecological regions, including elements typical of the valley oak-grasslands to the west, subalpine and Great Basin areas to the east and north, and drier forest types from the Klamath-Siskiyou mountains to the south. These pockets contain some species of arthropods that represent furthest known extensions from their normal geographic ranges. For example,

the California oakworm, *Phryganidia californica* Packard (Lepidoptera: Dioptidae) was previously believed to barely extend into the drier regions of southern Oregon until it was found living on oaks on low, dry, south-facing slopes in the Andrews Forest (Carmean and others 1989). The seed bug, *Malezonotus obrieni* Ashlock (Hemiptera: Heteroptera: Lygaeidae), was described from Smith Meadow, Tulare County, California (Ashlock 1963), and its occurrence here represents a sizable northward extension. These habitats and other environmental aspects of the Andrews Forest are described in more detail by Dyrness and others (1976), Hemstrom and others (1987), Swanson and James (1975), and Zobel and others (1976).

COMPILATION OF THIS LIST

This list is compiled from collections and literature representing studies of arthropods from the Andrews Forest. Arthropod studies were started during the International Biome Project when the Andrews Forest was an important part of the Western Coniferous Biome Program. A collection was assembled during that period based on the entomological investigations on this site reported by Krantz and others (1973), McBrayer and others (1977), and Mispagel and Rose (1978). When the Andrews Forest was designated an Ecological Environmental Reserve site, efforts were increased to document the arthropod fauna of the site in conjunction with the research. These efforts continued through the establishment of the HJA as an LTER site and continue today.

A substantial research program on forest ecosystems is being conducted on the site. Over 70 lead investigators working on more than 100 projects are studying the Andrews Forest and nearby Research Natural Areas. These studies, ranging from basic to applied, are funded by a variety of agencies. Extensive data bases exist on many physical, chemical, and biological phenomena that have been researched in terrestrial, aquatic, and atmospheric studies. The studies deal primarily with long-term phenomena, such as environmental changes, productivity, decomposition, and nutrient cycling. From these studies, various arthropod data bases and collections have been compiled. Major research efforts on arthropods at the Andrews Forest include: the biology and ecology of assemblages of soil and litter arthropods and their role in decomposition in a variety of habitats (Krantz and others 1973; Cromack and others, in press); surveys of canopy arthropods, particularly those associated with conifers (Schowalter 1989, Schowalter and others 1988, Voegtlin 1982); the role of arthropods associated with log decomposition (Schowalter and others, in press, Zhong and Schowalter 1989); insect and host-plant associations (Cooper 1981, Stonedahl 1982, 1984); and the ecology and biology of aquatic stream invertebrates (Anderson and others 1982, 1984, Hawkins 1982). Taxonomic groups that have received particular attention include the Orthoptera (Lightfoot 1986), Hemiptera-Heteroptera (Cooper 1981, Schwartz 1981, Stonedahl 1982, 1984), Lepidoptera, Trichoptera (Anderson and others 1982), Coleoptera, Siphonaptera (Lewis and Maser 1981), Araneae, and Oribatid mites (Moldenke and Fichter 1988). As a result, few areas of North America have been as extensively collected for invertebrates as the Andrews Forest. Over 3400 species of arthropods are now represented in the well-documented Andrews Forest Arthropod Collection, mostly as voucher specimens from the above studies. Extensive lists of arthropods have been compiled and published in only a few other sites in the United States. Two that can be compared to the Andrews Forest are Mount Desert, a large island off the coast of Maine, and the Central Plains Experimental Range (CPER), Pawnee National Grasslands, in Colorado, which is another LTER site (table 1). The Andrews

TABLE 1.
SUMMARY OF ARTHROPODS FROM THE ANDREWS FOREST

(compared to totals from Mount Desert (MD), Maine (from Procter 1946), and Central Plains Experimental Range (CPER), Colorado (Kumar and others 1976))

CLASS	FAMILIES			GENERA			SPECIES		
	ANDREWS	MD	CPER	ANDREWS	MD	CPER	ANDREWS	MD	CPER
INSECTA									
Archeognatha	1	-	-	1	-	-	1	-	-
Thysanura	1	1	-	1	1	-	1	1	-
Ephemeroptera	5	7	1	14	16	3	47	44	3
Odonata	6	8	4	8	33	6	8	81	10
Orthoptera	6	4	6	20	22	40	28	46	58
Blattaria	1	1	1	1	3	1	1	4	1
Isoptera	1	-	1	1	-	1	1	-	1
Dermaptera	1	-	-	1	-	-	1	-	-
Plecoptera	9	2	-	37	9	-	62	31	-
Psocoptera	10	6	2	12	13	2	17	25	5
Phthiraptera									
Mallophaga	1	4*	-	1	19*	-	1	180*	-
Anoplura	2	3*	1	2	6*	1	3	6*	1
Thysanoptera	3	3	4	14	7	9	24	9	14
Hemiptera									
Heteroptera	25	20	17	134	105	74	210	179	108
Homoptera	16	9	14	86	105	93	116	224	151
Megaloptera	2	1	-	2	2	-	2	7	-
Raphidioptera	2	-	-	2	-	-	6	-	-
Neuroptera	4	6	4	10	12	6	17	28	8
Coleoptera	77	75	41	476	534	244	824	1175	504
Strepsiptera	1	1	-	1	1	-	1	2	-
Mecoptera	1	1	-	1	1	-	1	5	-
Trichoptera	18	10	3	59	46	3	133	96	3
Lepidoptera	31	53	21	280	583	74	492	1479	101
Diptera	67	63	43	285	599	173	460	1626	276
Siphonaptera	3	4	1	15	7	1	24	10	1
Hymenoptera	50	43	39	348	421	209	462	1107	325
total INSECTA	344	325	206	1812	2545	940	2943	6365	1570
COLLEMBOLA	6	1	4	17	1	10	39	1	12
PROTURA	1	-	-	1	-	-	1	-	-
DIPLURA	1	1	-	1	1	-	1	1	-
DIPLOPODA	10	-	-	14	-	-	16	-	-
CHILOPODA	3	-	1	3	-	1	3	-	-
CRUSTACEA	1	-	-	1	-	-	1	-	-
ARACHNIDA									
Pseudoscorpiones	5	4	1	9	5	1	12	5	1
Scorpiones	1	-	-	1	-	-	1	-	-
Opiliones	5	1	-	11	4	-	12	7	-
Araneae	30	15	7	134	94	19	260	184	32
Acari	51	2	19	118	3	32	165	4	33
total NON-INSECTA	114	24	32	310	108	63	511	202	79
TOTAL ARTHROPODA	458	349	238	2122	2653	1003	3454	6567	1649

* = totals only indirectly estimated based on the presence of the host at MD

Forest (6400 ha) has compiled 24 insect orders, 344 families, 1812 genera, and 2943 species. Mount Desert (over 24 000 ha) lists 22 orders, 325 families, 2545 genera, and 6365 species (Procter 1946). The CPER (circa 6700 ha) lists 17 orders, 206 families, 940 genera and 1570 species (Kumar and others 1976). The Andrews Forest has a much higher diversity than the similar-sized CPER site, and still compares favorably in some aspects to Mount Desert, which is four times as large and has a much wider range of habitats. Certain species-rich taxa should be useful for intersite comparisons. Included in this category are Lygaeidae and Miridae (Hemiptera: Heteroptera); Carabidae, Chrysomelidae, Curculionidae, and Tenebrionidae (Coleoptera); Geometridae, Noctuidae, and Papilionoidea (Lepidoptera); Orthoptera; and Braconidae and Ichneumonidae (Hymenoptera).

This annotated list is a true composite of many studies and the effort of many individuals. Special mention should be made of the systematists who have cooperated in this effort and who have provided the authoritative identifications of the specimens. Their efforts establish the scientific credibility of the holdings. As biological and ecological information became available, appropriate annotations were made to the list. This information has come from many sources, including our own field work over the years. We have also included references to particular studies or publications in which individual species were recorded. These references often contain more information on the biology and ecology of the species than can be included here.

COLLECTION

The Andrews Forest Arthropod Collection (AFAC) is maintained as a separate entity by the Systematic Entomology Laboratory (SEL), Department of Entomology, Oregon State University, Corvallis, Oregon, 97331. It is the repository for voucher specimens from all arthropod studies done on the Andrews Forest. These voucher specimens provide valuable ecological and biological data, not only for an individual species, but also for populations and community assemblages. The collection consists of pinned specimens housed in drawers in California Academy-style cases, slide-mounted specimens where appropriate, and a wet collection of specimens and samples in alcohol. The collection is now comprised of more than 3400 species authoritatively identified and documented. The collection is housed in Cordley Hall, Oregon State University, within and adjacent to the OSU-Systematic Entomology Laboratory. The SEL (John D. Lattin, Director) contains over 2,500,000 specimens, ranking in the top 3 percent of such collections (from a total of 586) in North America. It provides extensive coverage of the insects and other arthropods of the Pacific Northwest and beyond. The SEL has major holdings in the Hemiptera-Heteroptera and Homoptera, Coleoptera, Hymenoptera, macrolepidoptera, Diptera, Orthoptera, Ephemeroptera, Plecoptera, Trichoptera and Odonata. The Acarology Laboratory (G.W. Krantz, Director) contains a slide collection of more than 25,000 specimens of the Acarina and also is housed in Cordley Hall, near the SEL. Both of these collections enhance the AFAC by providing additional biogeographical and ecological information about the species found on the Andrews Forest site.

EXPLANATION OF SYMBOLS USED IN THE LIST

TAXONOMIC CATEGORY

The order, family, and most current known genus and species names are given, along with the numbers of taxa represented. The term "undetermined specimens" indicates the presence of specimens in the collection that have not been identified below the family level. Names preceded by an asterisk (*) are new species that have been or will be described, based on specimens first collected on the Andrews Forest. Names followed by an (I) are insects known to be introduced into Oregon; spp. followed by a number indicates that number of unidentified species in that genus. If no number follows, two species were assumed to be the total represented.

HABITAT--ADULT/IMMATURE

Habitat is the general type of place in which the life-stage is typically found. Note that some species are found in more than one of the following habitats, but only the one where it is most commonly found is given on the species list.

- anim = noninsect animal host--adults, immature, or both are external or internal parasites of the host or are found in the host's nest, burrows, or other associated places
- aqt = aquatic sites, usually streams
- bog = boggy sites or seep areas
- carr = carrion associates--either feeding directly on the carrion or predatory on other carrion feeders
- dom = domestic sites--normally found around buildings, in stored products, or otherwise associated with humans
- dung = dung (animal feces)
- F-cn = forest canopy--on foliage, flowers, and other tree and shrub parts (includes all vegetation above the ground, including boles of trees)
- F-gd = forest ground--found moving over the surface of the forest floor or under bark, logs, and other debris on the forest floor
- F-lt = forest litter--litter layer of the forest floor or in litter accumulations in trees and stumps
- F-sl = forest soil--found in the soil below the litter layer
- fung = fungi--in or on larger fungal masses or fruiting bodies such as mushrooms and shelf and bracket fungi (species feeding on fungi in the soil, litter, or wood have these listed as their habitats instead of fungi)
- ins = insect host--immatures internal or external parasitoid of an insect host
- M-vg = meadow vegetation--above-ground foliage, flowers, and stems in natural meadows or other similar open grassy sites
- M-gd = meadow ground--found moving over the ground in meadow areas or under rocks, logs, and other objects in these areas
- M-sl = meadow soil--found in the soil and litter in meadows
- moss = found in moss located on the forest floor, on logs and stumps, and on trees
- nest = animal nest or burrow--living in nests of another organism including ant, termite, bee, rodent, and bird nests

- O-vg = open vegetation--found in open or disturbed areas that are not meadows (such as recent clearcut areas or road edges) on the above-ground vegetation (foliage, flowers, stems)
- O-gd = open ground--found moving over the ground surface of open areas or under rocks, logs, or other objects in these areas
- O-rk = open rocky areas--on rock outcroppings or rock ledges
- O-sl = open soil--found in the soil and litter of open areas
- R-vg = riparian vegetation--on vegetation in riparian areas (next to streams)
- S-Aq = Semiaquatic--along the margins and banks of streams under rocks, in gravel, on sandbars
- wood = associated with dead or living wood, including species that bore into logs, branches, and twigs; species found in or under bark; or species that are predators or parasites on wood insects

FUNCTIONAL GROUP--ADULT/IMMATURE

The functional group represents a general category based on feeding habits or mechanisms of the adult and immature stages if known. Note that these are general categories, and a given species may fit into more than one functional group. The functional group codes have separate terrestrial and aquatic listings to facilitate conventional interpretations.

Terrestrial

- A = fed by adult--food provisioned for or regurgitated to the immatures, which are confined in a nest or burrow located in the habitat listed for the immature (prey species or pollen sources provided are listed under host if known)
- D = detritivore--decomposers of litter material and decaying vegetable matter
- Dg = dung feeder
- Fl = flowers--feed on pollen, nectar, or floral parts
- Fu = fungivore--feed on fungal hyphae or spores, molds, slime molds, or other saprophytes
- Gl = gall maker on macrophytic plants
- H = herbivore--chewers, fluid suckers, and miners of above-ground foliage, stems, and flowers of macrophytic plants
- HP = hyperparasite--parasite or parasitoid on another parasitic species
- KP = kleptoparasite--immature stage of a "parasite" species reared by or using provisioned stores in nest of host species without physically harming the host
- Li = lichen feeder
- Mi = microbial feeder--feeds on bacteria, protozoa, and other microbes
- Ms = moss feeder
- nf = nonfeeding stage
- O = omnivore--normally feeds on both plant and animal life
- Pa = parasite or parasitoid--includes external feeders on blood, fur, and feathers, as well as external or internal parasitoids that develop on or in host, usually killing it during development
- Pr = predator--feed on other animals
- Rt = root feeder--feed externally on or bore into roots
- Sd = seed feeder--feed on seeds or in cones
- Sp = sap feeder--feed on plant or log exudates or fermenting fruit

Sv = scavenger-- feed on carrion, dead insects, or other dead animals
X = xylophagous - feed on wood or bark

Aquatic (based on Merritt and Cummins 1984--applicable only to immature and adult stages with aquatic habitats)

F = filterer (detritivore)--passively collect fine particulate organic matter

Ga = gatherer (detritivore)--actively collect fine particulate organic matter

Go = gougers (herb-detritivore)--chew or bore into saturated woody debris

H = herbivore--feed on aquatic macrophytes

nf = nonfeeding stage

Pr = predator--feed on animals (engulfers and piercers)

Sh = shredder (detritivore)--chew coarse particulate organic matter

Sc = scraper (herb-detritivore)--graze on mineral and organic surfaces

PLANT/ANIMAL HOST

Specific or general host plants, pollen sources, hosts for parasites and parasitoids, or prey items are given when appropriate. Acronyms are used for all hosts to save space. A key to all acronyms used in this list is given in Appendix B. Host acronyms are preceded by one of the following codes to indicate the host category:

I- = insect host

A- = other animal host

P- = plant host

An exception is "polylec", which is given for pollen collectors that are polylectic (that is, they collect pollen from a wide range of flowers to feed their young).

Acronyms are generally comprised of the first two letters of the host genus and species names (e.g., *Psme* = *Pseudotsuga menziesii*), which will be italicized. If a species is found on multiple hosts, a more general category is used, such as genus alone or a reference to a broader category (e.g., CONIF indicates multiple coniferous tree hosts). These terms will not be italicized; all capital letters will distinguish them from the specific host acronyms. Each category is further defined below with applications for the acronyms.

INSECT (I) - Insect hosts are given, if appropriate, for species that are parasitoids on insects, for species that are normally found in nests or burrows made by insects (e.g., ants, termites, bees), or for predators whose specific prey items are insects.

ANIMAL (A) - Noninsect animal hosts are given, if appropriate, for species that are external or internal parasites (e.g., fleas, lice), for species that are normally found in a specific or general host's nest or burrow, or for predators whose specific prey items are noninsects. Hosts included in this category are vertebrates such as mammals and birds, noninsect arthropods, and molluscs. Only the normal, preferred hosts are given, not accidentals.

PLANT (P) - Host-food plants for herbivorous or xylophagous species or pollen sources are given, if appropriate, for the adult, immature stages, or both. Predators may have a host plant given if they are restricted to one plant for breeding or because of prey host specificity. All plant species acronyms are taken from Garrison and Skovlin (1976).

ABUNDANCE

Abundance figures usually are not based on hard data--that is, of numbers of specimens collected in the Andrews Forest. For most species, true abundances are not known. When given, the abundance reflects general knowledge of the species based on its biology, habits, habitats, or collectability, or else reflects the abundances given in a few of the reference studies or collections.

- A = abundant--easily collected, widespread
- C = common--restricted habitat but easily collected in that habitat
- U = uncommon--not easily collected because of restricted habitats or general lower abundance
- R = rare--difficult to collect or seldom seen

COLLECTION

The pinned, alcohol, and slide collections are currently housed in the Andrews Forest Arthropod Collection (AFAC) in the Systematic Entomology Laboratory, Department of Entomology, Oregon State University, Corvallis, Oregon 97331. Species labelled with P, A, or S have voucher specimens represented in the designated collections.

- P = pinned specimens
- A = specimens in alcohol
- S = specimens on microscope slides

REFERENCES LISTING SPECIES FROM THE ANDREWS FOREST

The numbers refer to the following references that list species collected from the Andrews Forest (unless otherwise stipulated). Some of the species present in this list do not have voucher specimens deposited in the AFAC, however their presence on the Andrews Forest has been indicated in the references. References to published material are included in the Literature Cited.

1. Voegtlin 1982
2. Mispagel and Rose 1978
3. Lewis and Maser 1981
4. Anderson and others 1982
5. Mahmoud 1979
6. Cooper 1981
7. Plecoptera species from the Andrews and adjacent areas of the Cascade Mts. compiled by G.W. Courtney (OSU, Dept. of Entomology), April 1982.
8. Ephemeroptera species from the Andrews and adjacent areas of the Cascade Mts. compiled by G.W. Courtney (OSU, Dept. of Entomology), April 1982 (based on collections by D.M. Lehmkuhl and P.P. Harper)
9. Plecoptera specimens collected by G.M. Cooper and B. Frost (OSU, Dept. of Entomology) during 1978-79 and identified by B.P. Stark, August 1980
10. Spider species compiled by A.R. Moldenke and B.L. Fichter (OSU, Dept. of Entomology), 1982-83
11. Stonedahl 1982
12. Stonedahl 1984
13. Lightfoot 1986
14. Anderson and others 1984

15. Pselaphidae species collected by D.S. Chandler (Dept. of Entomology, Univ. of New Hampshire, Durham, N.H.) in June 1983. (August, 1983 personal communication)
16. Denning 1982
17. Hawkins 1982
18. Schwartz 1981
19. Plecoptera species compiled by R. Wildman (OSU, Dept. of Entomology) from identifications made by P. Harper on Mack Creek emergence trap data from riparian studies during 1982-83
20. Butterflies of the Andrews Forest, including those species collected within 5 miles in adjacent Linn Co., compiled by P. Hammond (OSU, Dept. of Entomology) (updated periodically from 1983-1989)
21. Aquatic and semiaquatic Diptera compiled by G.W. Courtney (OSU, Dept. of Entomology), 1984
22. Oribatid mites compiled by A.R. Moldenke, B.L. Fichter and D. Walter (OSU, Dept. of Entomology), 1984
23. Pselaphidae and other insects collected during the summer of 1984 by D. Chandler (Dept. of Entomology, Univ. of New Hampshire), 1985-87. Specimens in the OSU and/or UNH collection.
24. Plecoptera species from riparian studies compiled by N.H. Anderson (OSU, Dept. of Entomology), February 1985
25. Moldenke and Fichter 1988
26. Oribatid mites collected from the Andrews Forest compiled by D.E. Walter, 1985 (from a manuscript in preparation: The effects of litter type and elevation on colonization of mixed coniferous litterbags by oribatid mites)
27. André 1980
28. André and Voegtlin 1981
29. Apoidea species from the McKenzie River Drainage and adjacent areas (including the Andrews Forest), compiled by A.R. Moldenke (OSU, Dept. of Entomology, 1985) (see also Appendix C)
30. Tenthredinidae collected and identified by D. Smith (USNM), 1984-1985
31. Parasites reared from spiders compiled by A.R. Moldenke and B.L. Fichter (OSU, Dept. of Entomology), March 1985
32. Thrips (Thysanoptera) identified by Kun-Suk Woo (Seoul, South Korea, visiting OSU, Dept. of Entomology), March 1985
33. Homoptera collected in August 1980 by P. Oman (OSU, Dept. of Entomology), compiled March 1985
34. Emerson and others 1984
35. Formicidae of the Andrews compiled by S. Shattuck (manuscript in preparation)
36. Insects found in spotted owl pellets, compiled by G.L. Parsons (OSU, Dept. of Entomology), 1985, from material collected by G. Miller (OSU, Dept. of Fisheries and Wildlife) on the Andrews Forest.
37. Carabidae from the Andrews LTER Site, compiled by D. Kavanaugh (Calif. Acad. of Sciences), October 1985
38. Chandler 1986
39. Chironomidae of Mack Creek, compiled by J.K. Furnish (OSU, Dept. of Entomology), April 1986
40. Litter/soil arthropods collected during the LITCOL study 1982-85, compiled by G.L. Parsons and A.R. Moldenke (OSU, Dept. of Entomology), 1987-1989
41. Arthropods collected during the Log Decomposition Study 1986-87, compiled by T. Schowalter and G.L. Parsons (OSU, Dept. of Entomology), 1987
42. Pselaphidae of the Andrews Forest by D. Chandler (manuscript in preparation)

43. Moths collected from blacklight trap studies, compiled by J.C. Miller and P. Hammond (OSU, Dept. of Entomology), 1986-87
44. Moths reared from host plant studies, compiled by J.C. Miller, P. Hammond, and B. Scacia (OSU, Dept. of Entomology), 1986-87
45. Campbell and Chandler 1987
46. Genera of Tipulidae identified by G.W. Byers and G. Courtney from Mack Creek, compiled by N.H. Anderson (OSU, Dept. of Entomology) 1986
47. Ephemeroptera of the HJA, a revised list, compiled by N.H. Anderson (OSU, Dept. of Entomology), 1988
48. Trichoptera adults from Lookout Creek, a UV-light study, compiled by R.W. Wisseman (OSU, Dept. of Entomology), 1988
49. Schowalter 1989
50. Carmean and others 1989
51. Lepidoptera species collected from the Andrews Forest by D. Ferguson (U.S. National Museum), 1989. Specimens in the USNM collection.
52. Gardner and Shelley 1989
53. Courtney 1989
54. Schowalter and others 1988
55. Aphid species collected from the Andrews Forest by Andy Jensen (OSU, Dept. of Entomology), 1991
56. Schwartz 1989

SOURCES OF BIOLOGICAL/ECOLOGICAL INFORMATION

(see LITERATURE CITED for complete reference listing)

ARCHEOGNATHA

Smith 1970

THYSANURA

Smith 1970

EPHEMEROPTERA

Hawkins 1982, Merritt and Cummins 1984

ODONATA

Merritt and Cummins 1984

ORTHOPTERA

Helfer 1987, Lightfoot 1986

BLATTARIA

Borrer and others 1981

ISOPTERA

Furniss and Carolin 1977

DERMAPTERA

Borrer and others 1981

PLECOPTERA

Merritt and Cummins 1984

PSOCOPTERA

Borrer and others 1981

PHTHIRAPTEA

Emerson and others 1984

THYSANOPTERA

Bailey 1957, Cott 1956

HEMIPTERA-HETEROPTERA

Cooper 1981, Drake and Ruhoff 1965, Schwartz 1981, 1989
Slater and Baranowski 1978, Stonedahl 1982, 1984

HEMIPTERA-HOMOPTERA

Borrer and others 1981, Furniss and Carolin 1977

MEGALOPTERA
Merritt and Cummins 1984

RAPHIDIOPTERA
Furniss and Carolin 1977

NEUROPTERA
Furniss and Carolin 1977

COLEOPTERA
Arnett 1973, Furniss and Carolin 1977, Gordon 1985,
Hatch 1953,1957,1961,1965,1971, Lindroth 1961-69,
Linsley 1961,1962a, 1962b,1963, 1964, Linsley and Chemsak 1972,1976,
White 1983, Wood 1982

STREPSIPTERA
Borrer and others 1981

MECOPTERA
Borrer and others 1981

TRICHOPTERA
Anderson and others 1982, Merritt and Cummins 1984

LEPIDOPTERA
Ferguson 1969, Furniss and Carolin 1977, Prentice 1962,1963,1965

DIPTERA
Furniss and Carolin 1977, McAlpine and others 1981,1987, Stone and
others 1965

SIPHONAPTERA
Lewis and Maser 1981

HYMENOPTERA
Furniss and Carolin 1977, Krombein and others 1979

COLLEMBOLA
Christiansen and Bellinger 1980

PROTURA
Borrer and others 1981

DIPLURA
Borrer and others 1981

DIPLOPODA
Borrer and others 1981

CHILOPODA
Borrer and others 1981

CRUSTACEA
(collection records)

ARACHNIDA
PSEUDOSCORPIONES
(collection records)

SCORPIONES
(collection records)

OPILIONES
(collection records)

ARANEAE
Kaston 1972

ACARI
André and Voegtlin 1981, Balogh 1972, Krantz 1978, Moldenke and
Fichter 1988, Whitaker and Maser 1985

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- P. Adams (Neuroptera)
N.H. Anderson (aquatics, Trichoptera)
H.M. André (Acari)
P.D. Ashlock (Lygaeidae)
A. Asquith (Heteroptera)
G. Baker (Acari)
W. Barr (Cleridae)
J.E. Baxter (Mycetophilidae)
V. Behan-Pelletier (Oribatoid acari)
B.V. Brown (Phoridae)
G.W. Byers (Tipulidae)
J.M. Campbell (Staphylinidae)
D. Carmean (Hymenoptera)
G. Cassis (Heteroptera, general)
D.S. Chandler (Pselaphidae)
J. Cockendolpher (Opiliones)
M.D. Coffey (Diptera)
W. Coffman (Chironomidae)
G.M. Cooper (general, Heteroptera)
G. Courtney (aquatics, Deuterophlebiidae)
F. Coyle (Araneae)
R. Crawford (Araneae)
D.A. Crossley, Jr. (general)
K.W. Cummins (aquatic insects)
D.C. Darling (Hymenoptera)
D.G. Denning (Trichoptera)
J. DiGiulio (general, Hymenoptera)
C. Dondale (Araneae)
E.J. Dornfeld (Papilionoidea)
T. Eichlin (Sessiidae)
B.F. Eldridge (Culicidae)
G. Eulenson (general)
D.G. Ferguson (Lepidoptera)
G.F. Ferguson (Hymenoptera)
B.L. Fichter (Araneae, Oribatoids)
B. Frost (general collecting)
J.K. Furnish (Chironomidae)
R.J. Gagne (Cecidiomyiidae)
R.D. Gordon (Coccinellidae)
M. Goslin (Lepidoptera)
E.E. Grissel (parasitic Hymenoptera)
J. Hall (Bombyliidae)
W.D. Hamilton (subcortical insects)
P. Hammond (Lepidoptera)
P. Hanson (Hymenoptera)
D.E. Hardy (Diptera)
F. Harper (Ephemeroptera)
P. Harper (Plecoptera)
C.P. Hawkins (Ephemeroptera)
T.J. Henry (Heteroptera)
D. Hille Ris Lambers (Aphididae)
R. Hoffman (Diplopoda)
A. Jensen (Aphididae)
P.J. Johnson (Coleoptera)
G. Joseph (Isoptera)
D.H. Kavanaugh (Carabidae)
W.J. Knight (Cicadellidae)
G.W. Krantz (Acari)
J.D. Lattin (Heteroptera)
D.M. Lehmkuhl (Ephemeroptera)
R.E. Lewis (Siphonaptera)
D.C. Lightfoot (Orthoptera)
F. MacDonald (Pentatomidae)
A.A. Mahmoud (Diptera)
P.M. Marsh (parasitic Hymenoptera)
C. Maser (Phthiraptera, Siphonaptera)
L. Masner (Hymenoptera)
W.N. Mathis (Diptera)
D. McCorkle (Lepidoptera)
J. McIver (Araneae)
B. Michaels (Tingidae)
D.R. Miller (Coccoidea)
G. Miller (general)
J.C. Miller (Lepidoptera, parasitic Hymenoptera)
M.E. Mispagel (general)
E.L. Mockford (Psocoptera)
A.R. Moldenke (Apoidea, Araneae, Oribatid acari, Chironomidae, soil arthropods)
C. Murphy (Formicidae)
W.P. Nagel (general)
R. Norton (Oribatoid acari)
P.W. Oman (Homoptera)
P.A. Opler (Lepidoptera)
J. Oswald (Neuroptera)
G.L. Parsons (general, Coleoptera, soil organisms)
R. Penrose (Cerambycidae)
G.L. Peters (Coleoptera)
K. Phillips (Heteroptera)
N. Platnik (Araneae)
J. Powell (Lepidoptera)
V.D. Razafimahatratra (Heteroptera)
G. Reed (Aphididae)
C.L. Remington (general)
S.D. Rose (general)
L. Russell (Coleoptera)
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T.D. Schowalter (log decomposition study, canopy insects)
R.T. Schuh (Heteroptera)
M.D. Schwartz (Heteroptera)
G.G.E. Scudder (Lygaeidae)
R. Searles (General)
J. Sexton (log decomposition study)

S. Shattuck (Formicidae)	D.J. Voegtlin (canopy insects)
J.A. Slater (Lygaeidae)	D.E. Walter (Acari)
D.R. Smith (Symphyta)	Zun-Ming Wang (Tabanidae)
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R. Sugg (Formicidae)	P. Wygodzinsky (Heteroptera)
T. Torgerson (Ichneumonidae)	E. Yensen (Throscidae)
H.K. Townes (Ichneumonidae)	H. Zhong (log decomposition study)
W. Turner (Rhagionidae)	

The drawing of *Malezonotus obrieni* is from Ashlock 1963. All other illustrations were drawn by Bonnie Hall. The caddis, stonefly, and mayfly illustrations first appeared in Cummins and Wilzbach 1985.

Photographs, courtesy of Art McKee and Gary Parsons are from a collection of photographs of the Andrews Forest.

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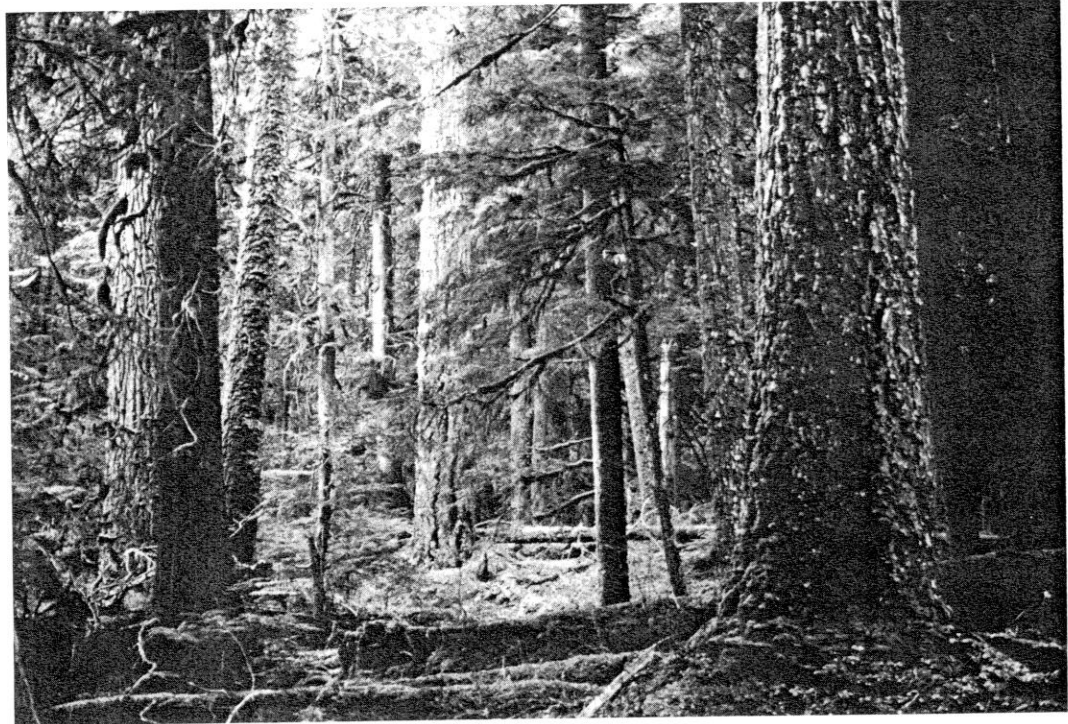
- GB 36810X : Coniferous Forest Biome Studies
- BMS 7514003: Canopy arthropods
- DEB 7803583: Canopy arthropods
- DEB 8012122: Long Term Ecological Research on the HJ Andrews Forest
- BSR 8300370: Support of the HJ Andrews Forest as a national research facility
- BSR 8306490: Nutrient cycling
- BSR 8508356: Riparian Studies on the HJ Andrews Forest
- BSR 8508452: Ectomycorrhizal mat studies
- BSR 8514325: Long Term Ecological Research on the HJ Andrews Forest
- BSR 8516590: Log decomposition/heterotroph structure
- BSR 8717434: Log decomposition/heterotroph structure



This view to the northeast shows much of the Lookout Creek watershed, which drains the Andrews Forest. The patches of snow on the ridgetop are natural meadows. Lookout Mountain is to the right of the snag.



The Cascades are relatively young mountains with steep slopes. Elevation within the Andrews Forest ranges from 300 to 1750 m. Cleared patches indicate past logging activities.



Much of the old-growth forest lacks a significant understory. The fallen trees are decay resistant, requiring 200 to 400 years for complete integration into the soil.



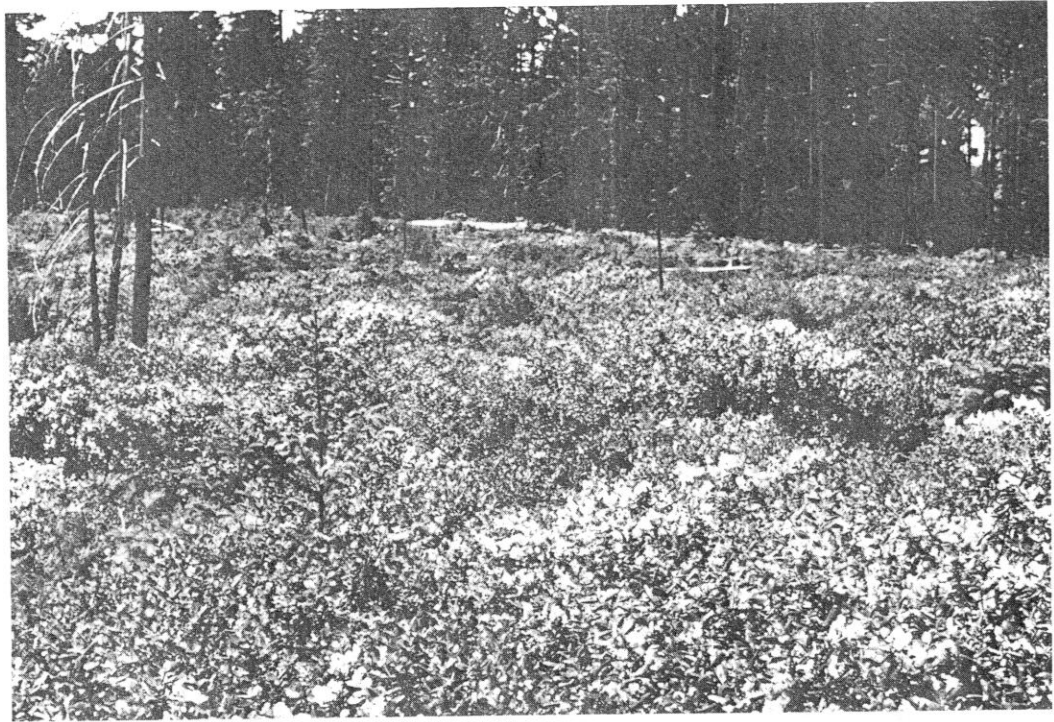
Open areas within old-growth stands contain more understory vegetation, dominated by *Rhododendron macrophyllum* and vine maple, *Acer circinatum*. Downed trunks and branches of conifers average 40 tons dry weight per hectare.



Parts of the Andrews Forest have been logged for experimental studies. The earliest stages of regrowth are usually dominated by a dense cover of low-growing broadleaved herbs and shrubs.



As succession proceeds, young conifers, here 10-year-old Douglas-fir, are subjected to competition by natural deciduous shrubs.



Subalpine meadows, at elevations over 1500 m, are fringed with noble fir, subalpine fir, Douglas-fir, hemlock, and Alaskan yellow cedar. Although seedlings appear to be actively invading the meadow, these small trees (3 to 6 feet tall) may be 50 to 100 years old.



Open ridgetops in this steep terrain, exposed to summer sun and heavy winter snow, have very thin mantles of soil and are characterized by a unique flora and fauna. On the eastern skyline is the McKenzie River drainage and The Three Sisters Wilderness.



Subalpine forests are subjected to harsh conditions, resulting in snags of assorted ages, gaunt dead limbs, and a range in canopy height. Open areas are evident, and many species of plants occur abundantly in the meadow/forest ecotone.



This cold, swift-flowing stream is typical of aquatic habitats on the Andrews Forest. Coarse woody debris has a major impact on structure and diversity in these streams.

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
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INSECTA

(24 orders, 344 families, 1812 genera, 2943 species)

ARCHAEOGNATHA

(1 family, 1 genus, 1 species)

MACHILIDAE (1 genus, 1 species)

undetermined specimens F-1t/F-1t 0/0 A A 2,40

THYSANURA

(1 family, 1 genus, 1 species)

LEPISMATIDAE (1 genus, 1 species)

undetermined specimens F-1t/F-1t 0/0 U AS

EPHEMEROPTERA

(5 families, 14 genera, 47 species)

BAETIDAE (2 genera, 4 species)

Baetis bicaudatus Dodds R-vg/Aqt nf/Ga A 8,47
Baetis hageni Eaton R-vg/Aqt nf/Ga A 8
Baetis tricaudatus Dodds R-vg/Aqt nf/Ga A 8,47
Diphotor hageni (Eaton) R-vg/Aqt nf/Ga A 47

EPHEMERELLIDAE (5 genera, 16 species)

Attenella delantala (Mayo) R-vg/Aqt nf/Ga A 17
Attenella margarita (Needham) R-vg/Aqt nf/Ga A 17
Caudatella cascadia (Allen & Edmunds) R-vg/Aqt nf/Ga A 17
Caudatella edmundsi (Allen) R-vg/Aqt nf/Ga A 17
Caudatella heterocaudata (McDunnough) R-vg/Aqt nf/Ga A 17,47
Caudatella hystrix (Traver) R-vg/Aqt nf/Ga A 17
Drunella coloradensis (Dodds) R-vg/Aqt nf/Pr A 17,47
Drunella doddsi (Needham) R-vg/Aqt nf/Pr A 17,47
Drunella flavilinea (McDunnough) R-vg/Aqt nf/Pr A 47
Drunella pelosa (Mayo) R-vg/Aqt nf/Pr A 17
Drunella spinifera (Needham) R-vg/Aqt nf/Pr A 17
Ephemerella infrequens McDunnough R-vg/Aqt nf/Pr A 17,47
Ephemerella sp. R-vg/Aqt nf/Pr A 47
Serratella teresa (Traver) R-vg/Aqt nf/Pr A 17
Serratella tibialis (McDunnough) R-vg/Aqt nf/Pr A 17
Serratella velmae (Allen & Edmunds) R-vg/Aqt nf/Pr A 17

HEPTAGENIIDAE (5 genera, 12 species)

Cinygma dimicki McDunnough R-vg/Aqt nf/Sc A 8,47
Cinygma integrum Eaton R-vg/Aqt nf/Sc A 47
Cinygmula par (Eaton) R-vg/Aqt nf/Sc A 8,47
Cinygmula ramaleyi (Dodds) R-vg/Aqt nf/Sc A 8,47

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
HEPTAGENIIDAE (continued)						
<i>Cinygmula reticulata</i> McDunnough	R-vg/Aqt	nf/Sc		A		8,47
<i>Cinygmula uniformis</i> McDunnough	R-vg/Aqt	nf/Sc		A		8,47
<i>Epeorus (Iron) deceptivus</i> McDunnough	R-vg/Aqt	nf/Ga		A		47
<i>Epeorus (Iron) hesperus</i> (Banks)	R-vg/Aqt	nf/Ga		A		47
<i>Epeorus (Iron) longimanus</i> (Eaton)	R-vg/Aqt	nf/Ga		A		478
<i>Epeorus (Ironopsis) grandis</i> McDunnough	R-vg/Aqt	nf/Ga		A		47
<i>Ironodes nitidus</i> (Eaton)	R-vg/Aqt	nf/Ga		A		8,47
<i>Rhithrogena robusta</i> (Dodds)	R-vg/Aqt	nf/Ga		A		8,47
LEPTOPHLEBIIDAE (1 genus, 6 species)						
<i>Paraleptophlebia aquilina</i> Harper & Harper	R-vg/Aqt	nf/Sh		A		47
<i>Paraleptophlebia debilis</i> (Walker)	R-vg/Aqt	nf/Sh		A		8,47
<i>Paraleptophlebia gregalis</i> (Eaton)	R-vg/Aqt	nf/Sh		A		8,47
<i>Paraleptophlebia sculleni</i> Traver	R-vg/Aqt	nf/Sh		A		47
<i>Paraleptophlebia temporalis</i> (McDunnough)	R-vg/Aqt	nf/Sh		A		8,47
<i>Paraleptophlebia vaciva</i> (Eaton)	R-vg/Aqt	nf/Sh		A		47
SIPHONURIDAE (1 genus, 9 species)						
<i>Ameletus amator</i> Mayo	R-vg/Aqt	nf/Ga		A		47
<i>Ameletus</i> sp. nr. <i>cooki</i> McDunnough	R-vg/Aqt	nf/Ga		A		47
<i>Ameletus</i> sp. nr. <i>dissitus</i> Traver	R-vg/Aqt	nf/Ga		A		47
<i>Ameletus exquisitus</i> Eaton	R-vg/Aqt	nf/Ga		A		47
<i>Ameletus sparsatus</i> McDunnough	R-vg/Aqt	nf/Ga		A		8
<i>Ameletus suffusus</i> McDunnough	R-vg/Aqt	nf/Ga		A		47
<i>Ameletus vancouverensis</i> McDunnough	R-vg/Aqt	nf/Ga		A		47
<i>Ameletus</i> sp. nr. <i>velox</i> Dodds	R-vg/Aqt	nf/Ga		A		47
<i>Ameletus</i> sp.	R-vg/Aqt	nf/Ga		A		47
ODONATA (6 families, 8 genera, 8 species)						
AESHNIDAE (1 genus, 1 species)						
<i>Aeshna interrupta interna</i> Walker	R-vg/Aqt	Pr/Pr				P
COENAGRIONIDAE (3 genera, 3 species)						
<i>Argia vivida</i> Hagen	R-vg/Aqt	Pr/Pr				P
<i>Enallagma</i> sp.	R-vg/Aqt	Pr/Pr				P
<i>Ischnura</i> sp.						P
CORDULEGASTRIDAE (1 genus, 1 species)						
<i>Cordulegaster dorsalis</i> Hagen	R-vg/Aqt	Pr/Pr		C		P

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
GOMPHIDAE (1 genus, 1 species)						
<i>Octogomphus specularis</i> Hagen	R-vg/Aqt	Pr/Pr		C	P	
LIBELLULIDAE (1 genus, 1 species)						
<i>Sympetrum corruptum</i> Hagen	R-vg/Aqt	Pr/Pr			P	
PETALURIDAE (1 genus, 1 species)						
<i>Tanypteryx hageni</i> Selys	R-vg/bog	Pr/Pr		R	P	
ORTHOPTERA (6 families, 20 genera, 28 species)						
ACRIDIDAE (8 genera, 12 species)						
<i>Arphia conspersa conspersa</i> Scudder	O-gd/O-gd	H/H		C	P	13
<i>Boonacris alticola</i> Rehn & Randall	M-vg/M-vg	H/H		C	P	13
<i>Chorthippus curtippennis</i> (Harris)	M-vg/M-vg	H/H		C	P	13
<i>Circotettix shastanus</i> Bruner	O-rk/O-rk	H/H		U	P	13
<i>Melanoplus femurrubrum</i> (DeGeer)	O-vg/O-vg	H/H		U	P	13
<i>Melanoplus lepidus</i> Scudder		H/H		C	P	
<i>Melanoplus sanguinipes</i> (Fabricius)	M-vg/M-vg	H/H		C	P	13
<i>Melanoplus validus</i> Scudder	M-vg/M-vg	H/H		U		13
<i>Podisma hesparus</i> (Hebard)	M-vg/M-vg	H/H		C	P	13
<i>Prumnacris rainerensis</i> (Caudell)	M-vg/M-vg	H/H		C	P	13
<i>Trimerotropis fontana</i> Thomas	O-gd/O-gd	H/H		C	P	13
<i>Trimerotropis suffusa</i> Scudder	O-gd/O-gd	H/H		C	P	13
GRYLLACRIDIDAE (2 genera, 4 species)						
<i>Pristoceuthophilus celatus</i> (Scudder)	F-gd/F-gd	O/O		U		13
<i>Pristoceuthophilus cercialis</i> Caudell	F-gd/F-gd	O/O		U		1,13
<i>Pristoceuthophilus sargentae</i> Gurney	F-gd/F-gd	O/O		U		1,13
<i>Tropidischia xanthostoma</i> (Scudder)	F-gd/F-gd	O/O		U	P	13
GRYLLIDAE (3 genera, 5 species)						
<i>Eunemobius carolinus neomexicanus</i> Scudder	O-vg/O-vg	H/H		C	P	13
<i>Gryllus veletis</i> (Alexander & Bigelow)	O-gd/O-gd	H/H		C	P	13
<i>Oecanthus californicus</i> Sanssure	O-vg/O-vg	H/H	P-SHRUB	C	P	13
<i>Oecanthus fultoni</i> Walker	F-cn/F-cn	H/H	P-DECID	C	P	13
<i>Oecanthus rilenus</i> Walker		H/H		C	P	
PROPHALANGOPSIDAE (1 genus, 1 species)						
<i>Cyphoderris monstrosa</i> Uhler	F-cn/F-cn	H/H		U	A	13
TETRIGIDAE (2 genera, 2 species)						
<i>Paratettix aztecas</i> (Sanssure)	S-Aq/S-Aq	H/H		C	P	
<i>Tetrix subulata</i> (Linnaeus)	S-Aq/S-Aq	H/H		C	P	13

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
TETTIGONIIDAE (4 genera, 4 species)						
<i>Conocephalus fasciatus vicinus</i> (Morse)	O-vg/O-vg	H/H		C	P	13
<i>Neduba convexa</i> Caudell	F-cn/F-cn	H/H		U		13
<i>Scudderia furcata</i> Brunner	O-vg/O-vg	H/H	P-SHRUB	U	P	13
<i>Steiroxys strepens</i> Fulton	M-vg/M-vg	H/H		C	P	13
BLATTARIA						
(1 family, 1 genus, 1 species)						
BLATTELLIDAE (1 genus, 1 species)						
undetermined specimen (nymph - prob. <i>Parcoblatta</i> sp.)	F-1t/F-1t	O/O		U	A	
ISOPTERA						
(1 family, 1 genus, 1 species)						
HODOTERMITIDAE (1 genus, 1 species)						
<i>Zootermopsis angusticollis</i> (Hagen)	wood/wood	X/X	P-TREES	C	PA	1,2,41
DERMAPTERA						
(1 family, 1 genus, 1 species)						
FORFICULIDAE (1 genus, 1 species)						
<i>Forficula auricularia</i> Linnaeus (I)	O-gd/O-gd	H/H		U	A	
PLECOPTERA						
(9 families, 37 genera, 62 species)						
CAPNIIDAE (4 genera, 7 species)						
<i>Capnia excavata</i> Claassen	R-vg/Aqt	H/Sh		R	A	9,19,24
<i>Capnia melia</i> Frison	R-vg/Aqt	H/Sh		R	A	7,9,19,24
<i>Eucapnopsis brevicauda</i> (Claassen)	R-vg/Aqt	H/Sh		C	A	2,7,9,19,24
<i>Mesocapnia autumnata</i> (Baumann & Gaufin)	R-vg/Aqt	H/Sh				24
<i>Mesocapnia porrecta</i> (Jewett)	R-vg/Aqt	H/Sh		U		19
<i>Mesocapnia projecta</i> (Frison)	R-vg/Aqt	H/Sh			A	1,7,9
<i>Paracapnia oswegaptera</i> Jewett	R-vg/Aqt	H/Sh			A	7,9
CHLOROPERLIDAE (6 genera, 12 species)						
<i>Alloperla delicata</i> Frison	R-vg/Aqt	H/Pr		U	A	7,9
<i>Alloperla fraterna</i> Frison	R-vg/Aqt	H/Pr		A	A	1,7,19,24
<i>Kathroperla perdita</i> Banks	R-vg/Aqt	H/Ga		U	A	7,9,19,24
<i>Paraperla frontalis</i> (Banks)	R-vg/Aqt	H/		R		7,24
<i>Plumiperla diversa</i> (Frison)	R-vg/Aqt	H/Pr			A	9,24
<i>Suwallia autumnata</i> (Hoppe)	R-vg/Aqt	H/Pr				7,24

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CHLOROPERLIDAE (continued)						
<i>Suwallia pallidula</i> (Banks)	R-vg/Aqt	H/Pr		U	A	7,9,19,24
<i>Sweltsa borealis</i> (Banks)	R-vg/Aqt	H/Pr		C	A	9,19,24
<i>Sweltsa exquisita</i> (Frison)	R-vg/Aqt	H/Pr		R		19,24
<i>Sweltsa fidelis</i> (Banks)	R-vg/Aqt	H/Pr		R	A	7,9,19,24
<i>Sweltsa oregonensis</i> (Frison)	R-vg/Aqt	H/Pr			A	1,7,9,24
<i>Sweltsa revelstoki</i> (Jewett)	R-vg/Aqt	H/Pr			A	9
LEUCTRIDAE (4 genera, 10 species)						
<i>Despaxia augusta</i> (Banks)	R-vg/Aqt	H/Sh		A	A	7,9,19,24
<i>Moselia infuscata</i> (Claassen)	R-vg/Aqt	H/Sh		A	A	7,9,19,24
* <i>Paraleuctra andersoni</i> Harper & Wildman	R-vg/Aqt	H/Sh		R		24
<i>Paraleuctra forcipata</i> Frison	R-vg/Aqt	H/Sh			A	7,9
<i>Paraleuctra jewetti</i> Nebeker & Gaufin	R-vg/Aqt	H/SH			A	9
<i>Paraleuctra occidentalis</i> (Banks)	R-vg/Aqt	H/Sh		A	A	7,9,19,24
<i>Paraleuctra purcellana</i> (Neave)	R-vg/Aqt	H/Sh		R		9,19,24
<i>Paraleuctra vershina</i> Gaufin & Ricker	R-vg/Aqt	H/Sh		R	A	9,24
<i>Perlomyia collaris</i> Banks	R-vg/Aqt	H/Sh		R		7,19,24
<i>Perlomyia utahensis</i> Needham & Claassen	R-vg/Aqt	H/Sh			A	9
NEMOURIDAE (6 genera, 12 species)						
<i>Malenka californica</i> (Claassen)	R-vg/Aqt	H/Sh				7,24
<i>Malenka cornuta</i> (Claassen)	R-vg/Aqt	H/Sh		C		7,19,24
<i>Ostracerca foersteri</i> (Ricker)	R-vg/Aqt	H/Sh		R	A	9,19,24
<i>Prostoia besametsa</i> (Ricker)	R-vg/Aqt	H/Sh		R		7,19,24
<i>Soyedina interrupta</i> (Claassen)	R-vg/Aqt	H/Sh		U	A	7,9,19,24
<i>Soyedina producta</i> (Claassen)	R-vg/Aqt	H/Sh		C	A	9,19,24
<i>Visoka cataractae</i> (Neave)	R-vg/Aqt	H/Sh		U	A	7,9,19,24
<i>Zapada cinctipes</i> (Banks)	R-vg/Aqt	H/Sh		C	A	1,7,9,19,24
<i>Zapada columbiana</i> (Claassen)	R-vg/Aqt	H/Sh			A	7,9,19,24
<i>Zapada cordillera</i> (Baumann & Gaufin)	R-vg/Aqt	H/Sh		A		24
<i>Zapada frigida</i> (Claassen)	R-vg/Aqt	H/Sh		C		7,19,24
<i>Zapada oregonensis</i> (Claassen)	R-vg/Aqt	H/Sh		C		7,19,24
PELTOPERLIDAE (2 genera, 3 species)						
<i>Soliperla campanula</i> (Jewett)	R-vg/Aqt	/Sh		U		19,24
<i>Yoraperla brevis</i> (complex) (Banks)	R-vg/Aqt	/Sh		U	A	7,9,24
<i>Yoraperla mariana</i> (Ricker)	R-vg/Aqt	/Sh		U		7,24
PERLIDAE (3 genera, 3 species)						
<i>Calineuria californica</i> (Banks)	R-vg/Aqt	/Pr		U	A	7,9,19,24
<i>Doroneuria baumanni</i> Stark & Gaufin	R-vg/Aqt	/Pr		R	A	9,19,24
<i>Hesperoperla pacifica</i> (Banks)	R-vg/Aqt	/Pr				7,9
PERLODIDAE (9 genera, 11 species)						
<i>Chernokrilus misnomus</i> (Claassen)	R-vg/Aqt	/Pr		R		19,24
<i>Frisonia picticeps</i> (Hanson)	R-vg/Aqt	/Pr		R		19,24

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	Reference
PERLODIDAE (continued)						
<i>Isoperla bifurcata</i> Szczytko & Stewart	R-vg/Aqt	/Pr		R		19,24
<i>Isoperla gravitans</i> (Needham & Claassen)	R-vg/Aqt	/Pr			A	9
<i>Kogotus nonus</i> (Needham & Claassen)	R-vg/Aqt	/Pr			A	7,9,19
<i>Megarcys subtruncata</i> Hanson	R-vg/Aqt	/Pr		R		7,19,24
<i>Perlinodes aurea</i> (Smith)	R-vg/Aqt	/Pr				7,24
<i>Rickera sorpta</i> (Needham & Claassen)	R-vg/Aqt	/Pr		R		7,19,24
<i>Setvena tibialis</i> (Banks)	R-vg/Aqt	/Pr				9
<i>Skwala curvata</i> Hanson	R-vg/Aqt	/Pr		R	A	7,9,19
<i>Skwala parallela</i> (Frison)	R-vg/Aqt	/Pr				7,19,24
PTERONARCIDAE (1 genus, 1 species)						
<i>Pteronarcys princeps</i> Banks	R-vg/aqt	/Sh		R	A	9,19,24
TAENIOPTERYGIDAE (2 genera, 3 species)						
<i>Doddsia occidentalis</i> (Banks)	R-vg/Aqt	H/Sc		R		7,19,24
<i>Taenionema nigripenne</i> (Banks)	R-vg/Aqt	H/Sc				7,24
<i>Taenionema pallidum</i> (Banks)	R-vg/Aqt	H/Sc		U	A	7,9,19,24
PSOCOPTERA (10 families, 12 genera, 17 species)						
AMPHIPSOCIDAE (1 genus, 1 species)						
<i>Teliapsocus conterminus</i> (Walsh)	F-cn/F-cn	Li/Li		C	A	1
CAECILIIDAE (1 genus, 4 species)						
<i>Caecilius boreus</i> Mockford	F-cn/F-cn	Li/Li		U		1
<i>Caecilius burmeisteri</i> Brauer	F-cn/F-cn	Li/Li		C		1
<i>Caecilius perplexus</i> Chapman	F-cn/F-cn	Li/Li		U	A	1
<i>Caecilius pinicola</i> Banks	F-cn/F-cn	Li/Li			A	
ECTOPSOCIDAE (1 genus, 2 species)						
<i>Ectopsocus californicus</i> (Banks)	F-cn/F-cn	Li/Li		C		1
<i>Ectopsocus</i> sp.	F-cn/F-cn	Li/Li		U		1
ELIPSOCIDAE (1 genus, 1 species)						
<i>Reuterella helvimacula</i> Enderlein	F-cn/F-cn	Li/Li		C		1
LACHESILLIDAE (1 genus, 2 species)						
<i>Lachesilla pacifica</i> Chapman	F-cn/F-cn	Li/Li		R		1
<i>Lachesilla yakima</i> Mockford & Aldrete	F-cn/F-cn	Li/Li			A	
LIPOSCOLIDAE (1 genus, 1 species)						
<i>Liposcelis</i> sp.	F-cn/F-cn	Li/Li		C		1

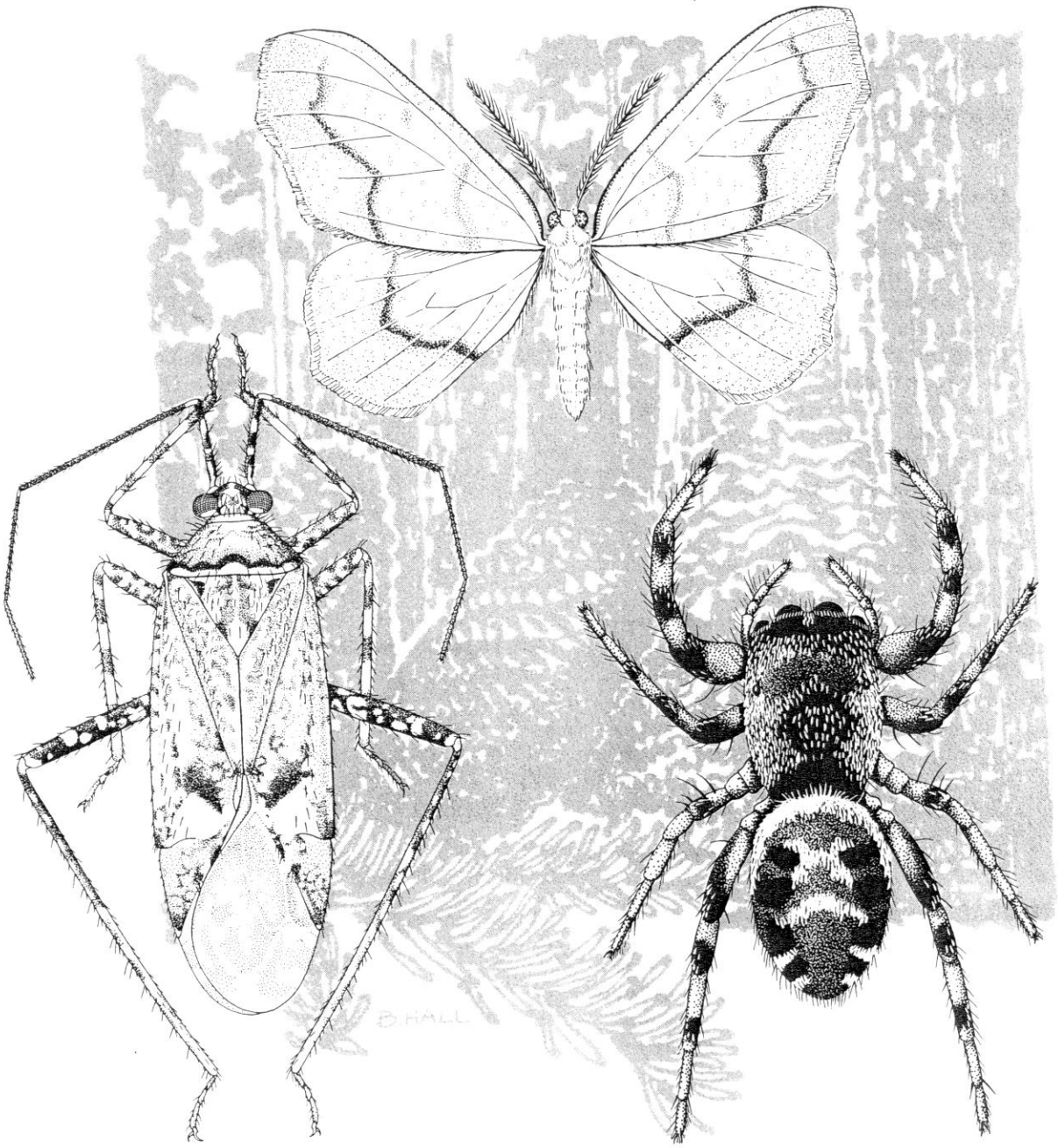
Taxonomic category	Habitat		Funct	Plant/	Ab	Co	References
	Ad/Im	Ad/Im	group	animal			
PERIPSOCIDAE (1 genus, 1 species)							
<i>Peripsocus quadrifasciatus</i> (Harris)	F-cn/F-cn	Li/Li				A	
PSOCIDAE (3 genera, 3 species)							
<i>Amphigerontia confraterna</i> (Banks)	F-cn/F-cn	Li/Li				C	1
<i>Loensia maculosa</i> (Banks)	F-cn/F-cn	Li/Li				U	1
<i>Ptycta crosbyi</i> (Chapman)	F-cn/F-cn	Li/Li				A	
STENOPSOCIDAE (1 genus, 1 species)							
<i>Graphopsocus cruciatus</i> (Linnaeus)	F-cn/F-cn	Li/Li				U A	1
TROGIIDAE (1 genus, 1 species)							
<i>Cerobasis</i> sp.	F-cn/F-cn	Li/Li				U	1
PHTHIRAPTERA							
(2 suborders, 3 families, 3 genera, 4 species)							
(suborder MALLOPHAGA) (1 family, 1 genus, 1 species)							
TRICHODECTIDAE (1 genus, 1 species)							
<i>Geomydoecus thomomyus</i> (McGregor)	anim/anim	Pa/Pa	A-Thma				34
(suborder ANOPLURA) (2 families, 2 genera, 3 species)							
HOPLOPLEURIDAE (1 genus, 2 species)							
<i>Hoplopleura ancanthopus</i> (Burmeister)	anim/anim	Pa/Pa	A-Mior				34
<i>Hoplopleura arboricola</i> Kellogg & Ferris	anim/anim	Pa/Pa	A-Euto	C			34
POLYPLACIDAE (1 genus, 1 species)							
<i>Neohaematopinus laeviusculus</i> (Grube)	anim/anim	Pa/Pa	A-Spbe				34
(SEE ALSO APPENDIX B)							
THYSANOPTERA							
(3 families, 14 genera, 24 species)							
AEOLOTHRIPIDAE (1 genus, 3 species)							
<i>Aeolothrips fasciatus</i> Linnaeus			Pr/Pr			S	32
<i>Aeolothrips vittatus</i> Haliday	F-lt/F-lt	Pr/Pr				S	32
<i>Aeolothrips vittipennis</i> Hood	F-cn/F-cn	Pr/Pr				U S	1,32

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
PHLAEOTHRIPIDAE (4 genera, 6 species)						
<i>Adraneothrips saturatus</i> Cott	F-lt/F-lt			C	S	32
<i>Bolothrips</i> sp.	F-cn/F-cn				S	32
<i>Haplothrips fasciculatus</i> (Crawford)	O-vg/O-vg	H/H	P-Eriog		S	32
<i>Haplothrips niger</i> (Osborn)	O-vg/O-vg	H/H			S	32
<i>Leptothrips mali</i> (Fitch)	F-cn/F-cn	Pr/Pr	I-EGGS	C	S	1, 32
<i>Leptothrips oribates</i> Hood	F-cn/F-cn	Pr/Pr	I-EGGS			49
THRIPIDAE (9 genera, 15 species)						
<i>Aptinothrips rufus</i> (Gmelin)	F-lt/F-lt	H/H			S	32
<i>Chirothrips aculeatus</i> Bagnall	M-vg/M-vg	H/H	P-GRASS		S	32
<i>Chirothrips mexicanus</i> Crawford	M-vg/M-vg	H/H	P-GRASS		S	32
<i>Chirothrips pini</i> Hood		H/H			S	32
<i>Frankliniella conspicua</i> Moulton	F-lt/F-lt	H/H			S	32
<i>Frankliniella insignis</i> Moulton	F-lt/F-lt	H/H			S	32
<i>Frankliniella occidentalis</i> (Pergande)	F-lt/F-lt	H/H			S	32
<i>Limothrips cerealium</i> Haliday	M-vg/M-vg	H/H	P-GRASS	C	S	1, 32
<i>Oxythrips quercicola</i> Bagnall	F-cn/F-cn	H/H		C	S	1, 32
<i>Scirtothrips</i> sp.	F-cn/F-cn	H/H		C	S	1, 32
<i>Sericothrips variabilis</i> (Beach)	O-vg/O-vg	H/H	P-Ceano		S	32
<i>Sericothrips</i> sp.		H/H			S	32
<i>Stomatothrips brunneus</i> Crawford		H/H			S	32
<i>Taeniothrips ehrhornii</i> (Moulton)	O-vg/O-vg	H/H			S	32
<i>Taeniothrips orionis</i> Treherne	O-vg/O-vg	H/H			S	32
HEMIPTERA						
(2 suborders, 41 families, 220 genera, 326 species)						
(suborder HETEROPTERA) (25 families, 134 genera, 210 species)						
ACANTHOSOMATIDAE (2 genera, 2 species)						
<i>Elasmotethus cruciatus</i> (Say)		H/H		C	P	
<i>Elasmucha lateralis</i> (Say)		H/H		C	P	
ALYDIDAE (4 genera, 7 species)						
<i>Alydus calcaratus</i> (Linnaeus)		H/H		U	P	
<i>Alydus conspersus</i> (Montandon)		H/H		U	P	
<i>Alydus pilosulus</i> (Herrich-Schaeffer)		H/H		U	P	
<i>Darmistus subvittatus</i> Stål		H/H			P	
<i>Megalotomus quinquespinosus</i> (Say)		H/H			P	
<i>Tollius curtalis</i> Stål		H/H		U	P	
<i>Tollius setosus</i> Van Duzee		H/H		U	P	
ANTHOCORIDAE (5 genera, 7 species)						
<i>Anthocoris antevolens</i> White		Pr/Pr		C	P	
<i>Anthocoris whitei</i> Reuter		Pr/Pr		U	P	
<i>Melanocoris longirostris</i> Kelton	F-cn/F-cn	Pr/Pr	P-Pinus		P	
<i>Orius tristicolor</i> (White)		Pr/Pr		U	P	
<i>Tetrableps latipennis</i> Van Duzee	F-cn/F-cn	Pr/Pr	I-Adco	C	P	41

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
ANTHOCORIDAE (continued)						
<i>Tetrableps uniformis</i> Parshley		Pr/Pr			P	
<i>Xylocoris umbrinus</i> Van Duzee	F-lt/F-lt	Pr/Pr			P	
ARADIDAE (2 genera, 4 species)						
<i>Aradus debilis</i> Uhler	wood/wood	Fu/Fu			P	1
<i>Aradus fuscomaculatus</i> Stål	wood/wood	Fu/Fu			P	
<i>Aradus heidemanni</i> Bergroth	wood/wood	Fu/Fu			P	
<i>Mezira pacifica</i> Usinger	wood/wood	Fu/Fu		C	P	
BERYTIDAE (3 genera, 3 species)						
<i>Acanthophysa echinata</i> Uhler	M-vg/M-vg	H/H		C	P	2
<i>Jalysus wickhami</i> Van Duzee	O-vg/O-vg	H/H		C	P	
<i>Neides muticus</i> (Say)	M-vg/M-vg	H/H		C	P	
CIMICIDAE (1 genus, 1 species)						
<i>Oeciacus vicarius</i> Horváth	nest/nest	Pa/Pa	A-BIRD	R	A	
COREIDAE (1 genus, 1 species)						
<i>Leptoglossus occidentalis</i> Heidemann	F-cn/F-cn	Sd/Sd	P-CONIF	U		1
CORIXIDAE (2 genera, 2 species)						
<i>Callicorixa vulnerata</i> (Uhler)	Aqt/Aqt	Pr/Pr		U		1
<i>Cenocorixa wileyae</i> Hungerford	Aqt/Aqt			U		1
CYDNIDAE (1 genus, 1 species)						
<i>Amnestus pallidus</i> Zimmer	M-sl/M-sl	Rt/Rt		U	P	2
DIPSOCORIDAE (1 genus, 1 species)						
<i>Ceratocombus</i> sp.	F-lt/F-lt	Pr/Pr		R	A	
ENICOCEPHALIDAE (2 genera, 2 species)						
<i>Boreostolis americanus</i> Wygodzinsky & Stys	S-Aq/S-Aq	Pr/Pr		R	P	
<i>Systelloderes grandes</i> Kritsky	S-Aq/S-Aq	Pr/Pr		U	P	
GELASTOCORIDAE (1 genus, 1 species)						
<i>Gelastocoris oculatus</i> (Fabricius)	S-Aq/S-Aq	Pr/Pr		U	P	
GERRIDAE (2 genera, 3 species)						
<i>Gerris incurvatus</i> Drake & Hottes	Aqt/Aqt	Pr/Pr		U	P	
<i>Gerris remigis</i> Say	Aqt/Aqt	Pr/Pr		C	P	
<i>Limnopus notabilis</i> (Drake & Hottes)	Aqt/Aqt	Pr/Pr		U	P	

Canopy

The forest canopy provides an extensive and structurally diverse habitat for arthropods and other organisms. Various conifer species dominate the overstory, but a diverse understory occurs below. The canopy in old-growth stands may extend some 60m above the forest floor, providing enormous surface area. Here photosynthetic rates are high, and abundant lichens are important as nitrogen fixers. Leaf surfaces, small and large twigs and branches, and the bark on the trunks all harbor distinct assemblages of organisms. In spite of chemical protection afforded by terpenes and endophytic fungi, leaves and cones are consumed by numerous herbivores. Hemlocks, Douglas-fir, and true firs share a variety of generalist feeders and their associated predators and parasitoids. Western redcedar is attacked by a limited number of specialist feeders. Defoliators have not been discovered on Pacific yew. The larvae of sawflies and moths make up much of this leaf-chewing community. Many of the more than 100 species of Geometridae found on the Andrews Forest, such as the hemlock looper, *Lambdina fiscellaria somnaria* (top), occur in the canopy. Aphids, some mirid bugs, leafhoppers, and thrips suck fluids from the leaves and branches. Lichens and bark fungi are fed on by springtails, oribatid mites, and bark lice. Abundant predators and parasitoids contribute to regulation of the numbers of herbivores, thus influencing their impact on the forest. Spiders such as *Metaphidippus aeneolus* (lower right) are among the most abundant generalist predators in the canopy, but also present are predaceous larvae and adults of beetles, lacewings, and snakeflies. Some predatory bugs are host-plant specific; the mirid *Phytocoris nobilis* (lower left) is found chiefly on noble fir. Hymenopterous and dipterous parasitoids abound, many attacking specific herbivores. Some of these parasitoids may in turn be hosts to hyperparasitoids.



Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
LYGAEIDAE (22 genera, 35 species)						
<i>Blissus</i> sp.				R	A	
<i>Crophius bohemani</i> Stål				U	P	
<i>Eremocoris dimidiatus</i> Van Duzee	F-lt/F-lt	Sd/Sd		C	P	
<i>Eremocoris</i> spp. (2)	F-lt/F-lt	Sd/Sd		C	P	1
<i>Gastrodes pacificus</i> (Provancher)	F-cn/F-cn	Sd/Sd	P-CONIF	U	P	1
<i>Geocoris pallens</i> Stål	O-gd/O-gd	Pr/Pr		C	P	
<i>Kleidocerys franciscanus</i> (Stål)		H/H		C	P	
<i>Kleidocerys ovalis</i> Barber	F-cn/F-cn	H/H	P-Rhma	C	P	
<i>Kleidocerys resedae fuscomaculatus</i> Barber	F-cn/F-cn	H/H	P-Alnus	C	P	
<i>Kleidocerys resedae resedae</i> (Panzer)	F-cn/F-cn	H/H	P-Rhma	C	P	
* <i>Kleidocerys</i> n.sp.		H/H		U	P	
<i>Ligyrocoris diffusus</i> (Uhler)	O-gd/O-gd	Sd/Sd	P-COMP	U	P	
<i>Ligyrocoris latimarginatus</i> Barber		Sd/Sd			P	
<i>Ligyrocoris sylvestris</i> (Linnaeus)		Sd/Sd		U	P	
<i>Lygaeospilus brevipilus</i> Scudder					P	
<i>Lygaeus kalmii</i> Stål	O-vg/O-vg	H/H	P-Ascle	U	P	
<i>Malezonotus angustatus</i> (Van Duzee)		Sd/Sd		U	P	
<i>Malezonotus grossus</i> (Van Duzee)		Sd/Sd		C	P	
<i>Malezonotus obrieni</i> Ashlock		Sd/Sd		C	P	
<i>Malezonotus sodalicus</i> (Uhler)		Sd/Sd		C	P	
<i>Megalonotus sabulicolus</i> (Thomson) (I)		Sd/Sd		C	P	
<i>Neacoryphus bicrucis</i> (Say)		H/H		U	P	
<i>Nysius niger</i> Baker		H/H		A	P	
<i>Nysius raphanus</i> Howard		H/H		C	P	
<i>Nysius tenellus</i> Barber		H/H		U	P	
<i>Ortholomus</i> sp.					P	
<i>Ozophora picturata</i> Uhler	F-lt/F-lt	Sd/Sd		U	P	
<i>Plinthisus longisetosus</i> Barber	F-lt/F-lt	Sd/Sd		U	P	
<i>Scolopstethus pacificus</i> Barber		Sd/Sd		A	P	
<i>Scolopstethus thomsonii</i> Reuter		Sd/Sd		U	P	
<i>Sphragisticus nebulosus</i> (Fallén)	O-gd/O-gd	Sd/Sd				1
<i>Stygnocoris sabulosus</i> (Schilling) (I)		Sd/Sd		U	P	
<i>Thylochromus nitidulus</i> Barber	O-vg/O-vg	Sd/Sd	P-Arcto	U	P	
* <i>Trapezonotus</i> n.sp.		Sd/Sd			P	
<i>Xyonysius californicus</i> (Stål)		Sd/Sd			P	
MIRIDAE (46 genera, 86 species)						
<i>Adelphocoris superbus</i> (Uhler)		H/H			P	
<i>Allorhinocoris speciosus</i> Bliven	F-cn/F-cn			U	P	
<i>Atractotomus cooperi</i> Stonedahl	F-cn/F-cn	H/H	P-Abpr	U	P	
<i>Atractotomus kolenati</i> (Flor)	F-cn/F-cn	H/H	P-Abpr	U	P	
<i>Atractotomus reuteri</i> Knight	O-vg/O-vg	H/H	P-Ceano	C	P	
<i>Blepharidopterus angulatus</i> (Fallén) (I)		H/H			P	
<i>Ceratocapsus apicatus</i> Van Duzee	F-cn/F-cn	Pr/Pr		U	P	
<i>Ceratocapsus</i> spp. (2)	F-cn/F-cn	Pr/Pr		U	P	1
<i>Chlamydatus</i> sp.	O-vg/O-vg	H/H	P-COMP	U	P	
<i>Deraeocoris brevis</i> (Uhler)		Pr/Pr		C	P	
<i>Deraeocoris incertus</i> Knight		Pr/Pr		U	P	6
<i>Deraeocoris piceicola</i> Knight		Pr/Pr			P	6
<i>Deraeocoris rubroclarus</i> Knight	F-cn/F-cn	Pr/Pr	P-Psme		P	

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
MIRIDAE (continued)						
<i>Diaphnocoris pellucida</i> (Uhler)		Pr/Pr		U	P	
* <i>Dichaetocoris</i> n.sp.	F-cn/F-cn	H/H	P-Psme		P	
<i>Dichrooscytus</i> sp. nr. <i>abiesi</i> Bliven	F-cn/F-cn	H/H	P-CONIF			6
<i>Dichrooscytus</i> sp. nr. <i>rainieri</i> Knight	F-cn/F-cn	H/H	P-CONIF	U	P	
<i>Dicyphus discrepans</i> Knight		H/H			P	
<i>Dicyphus hesperus</i> Knight		H/H			P	
* <i>Eurychiloptera</i> n.sp.		Pr/Pr		U		1
<i>Hadronema militaris</i> Uhler		Pr/Pr		C	P	
<i>Hadronema princeps</i> Uhler		Pr/Pr			P	
<i>Irbisia inurbana</i> Bliven	M-vg/M-vg	H/H	P-GRASS			18
<i>Irbisia serrata</i> Bliven	M-vg/M-vg	H/H	P-GRASS			1,18
<i>Labopidea nigrisetosa</i> Knight					P	
<i>Largidea pudica</i> Van Duzee	F-cn/F-cn	Pr/Pr	P-Pico	R	P	
<i>Litomiris debilis</i> (Uhler)	M-vg/M-vg	H/H	P-GRASS	C	P	
<i>Lopidea drakei</i> Knight		H/H	P-LEGUM	U	P	
<i>Lopidea nigridea</i> Uhler		H/H	P-LEGUM	U	P	
* <i>Lopidea</i> n.sp. nr. <i>johnstoni</i> Knight		H/H	P-LEGUM	U	P	
<i>Lygocoris communis</i> (Knight)	O-vg/O-vg	H/H	P-Cornu	U	P	
<i>Lygocoris pabulinus</i> (Linnaeus)	O-vg/O-vg	H/H		U	P	
<i>Lygus nubilatus</i> Knight	O-vg/O-vg	H/H	P-Hodi		P	
<i>Lygus</i> spp. (4)	M-vg/M-vg	H/H		A	P	
<i>Macrotylus essigi</i> Van Duzee		H/H		C	P	
<i>Macrotylus multipunctatus</i> Van Duzee		H/H		U	P	
<i>Megaloceroea recticornis</i> (Geoffreys) (I)	M-vg/M-vg	H/H	P-GRASS	U	P	
<i>Neoborella xanthenes</i> Herring	F-cn/F-cn	H/H	P-Arceu		P	
<i>Neurocolpus longirostris</i> Knight					P	
<i>Orectoderus obliquus</i> Uhler	M-vg/M-vg	H/H	P-Penst	U	P	
<i>Orthops scutellatus</i> (Uhler)	O-vg/O-vg	H/H	P-UMBEL	C	P	
<i>Orthotylus concolor</i> (Kirschbaum)		H/H		U	P	1,6
<i>Orthotylus</i> sp.		H/H		C	P	
<i>Paradacerla formicina</i> (Parshley)	O-vg/O-vg	Pr/Pr		U	P	6
<i>Paraproba nigrinervis</i> Van Duzee		Pr/Pr		U	P	1
<i>Parthenicus</i> sp.		H/H		U	P	
<i>Phytocoris californicus</i> Knight	O-vg/O-vg	Pr/Pr	P-Ceano	C	P	
<i>Phytocoris dumicola</i> Stonedahl	O-vg/O-vg	Pr/Pr		U	P	
<i>Phytocoris fraterculus</i> Van Duzee	F-cn/F-cn	Pr/Pr	P-Pinus	U	P	
<i>Phytocoris neglectus</i> Knight	F-cn/F-cn	Pr/Pr		U	P	6
* <i>Phytocoris nobilis</i> Stonedahl	F-cn/F-cn	Pr/Pr	P-Abies	U	P	11,12
<i>Phytocoris plenus</i> Van Duzee	O-vg/O-vg	Pr/Pr		C	P	
<i>Phytocoris sagax</i> Van Duzee	F-cn/F-cn	Pr/Pr	P-Abies	U	P	
<i>Phytocoris sewardi</i> Bliven	F-cn/F-cn	Pr/Pr	P-Cach	U	P	
<i>Phytocoris stellatus</i> Van Duzee	F-cn/F-cn	Pr/Pr	P-Pinus	U	P	
<i>Phytocoris yollabollae</i> Bliven	F-cn/F-cn	Pr/Pr	P-Psme	U	P	
<i>Phytocoris</i> sp. nr. <i>abiesi</i> Knight		Pr/Pr		U		6
<i>Phytocoris</i> spp. (<i>conspurcatus</i> group)		Pr/Pr		U	P	1,2
<i>Pilophorus americanus</i> Poppius	F-cn/F-cn	Pr/Pr	P-CONIF	U	P	2
<i>Pilophorus vicarius</i> Poppius	F-cn/F-cn	Pr/Pr	P-Salix	U	P	
<i>Pinalitus solivagus</i> (Van Duzee)	F-cn/F-cn	H/H	P-CONIF			6
<i>Pinalitus</i> sp.	F-cn/F-cn	H/H	P-CONIF	C	P	
<i>Pithanus maerkelii</i> (Herrich-Schaeffer)	M-vg/M-vg	H/H	P-GRASS	U	P	

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
MIRIDAE (continued)						
<i>Plagiognathus chrysanthemii</i> (Wolff)(I)		H/H		U	P	
<i>Plagiognathus</i> sp.		H/H		U	P	1, 2, 6
<i>Platylygus pseudotsugae</i> Kelton	F-cn/F-cn	H/H	P-CONIF	U	P	
<i>Platylygus rolfsi</i> Kelton	F-cn/F-cn	H/H	P-CONIF	U	P	
<i>Polymerus basivittis</i> (Reuter)		H/H			P	
* <i>Polymerus castilleja</i> Schwartz		H/H	P-Casti		P	56
<i>Prepops</i> sp.		H/H		U	P	
<i>Psallus</i> sp. A nr. <i>kolenatii</i> (Flor)	F-cn/F-cn	H/H	P-CONIF		P	6
<i>Psallus</i> sp. B nr. <i>kolenatii</i> (Flor)	F-cn/F-cn	H/H	P-CONIF			6
<i>Salignus distinguendus</i> (Reuter)		H/H		U	P	
<i>Sixeonotus</i> sp.					P	
<i>Stenodema trispinosa</i> Reuter	M-vg/M-vg	H/H	P-GRASS		P	
<i>Stenodema vicina</i> (Provancher)	M-vg/M-vg	H/H	P-GRASS		P	
<i>Stenotus binotatus</i> (Fabricius) (I)	M-vg/M-vg	H/H	P-GRASS	U	P	
<i>Teleorhinus</i> sp.					P	
<i>Tupiocoris confusa</i> (Kelton)					P	
<i>Tupiocoris similis</i> (Kelton)					P	
<i>Usingerella bakeri</i> (Knight)					P	
NABIDAE (2 genera, 4 species)						
<i>Nabis alternatus</i> Parshley		Pr/Pr			P	
<i>Nabis americanoferus</i> Carayon		Pr/Pr			P	
<i>Nabis roseipennis</i> Reuter		Pr/Pr		U	P	
<i>Pagasa fusca</i> (Stein)	O-gd/O-gd	Pr/Pr		C	P	2
NOTONECTIDAE (1 genus, 1 species)						
<i>Notonecta kirbyi</i> Hungerford	Aqt/Aqt	Pr/Pr		U	P	
PENTATOMIDAE (12 genera, 16 species)						
<i>Apateticus bracteatus</i> (Fitch)		Pr/Pr			P	
<i>Banasa dimidiata</i> (Say)	F-cn/F-cn	H/H	P-Vacci	C	P	
<i>Banasa sordida</i> Uhler		H/H		U	P	
<i>Brochymena quadripustulata</i> (Fabricius)	F-cn/F-cn	Pr/Pr		U	P	
<i>Carpocoris remotus</i> Horváth		H/H		U	P	
<i>Chlorochroa ligata</i> (Say)		H/H		U	P	
<i>Chlorochroa rossiana</i> Buxton & Thomas		H/H		U	P	
<i>Chlorochroa</i> sp.		H/H			P	
<i>Cosmopepla intergressa</i> (Uhler)		H/H		U	P	
<i>Cosmopepla uhleri</i> Montandon		H/H		U	P	2
<i>Euschistus conspersus</i> Uhler		H/H		C	P	
<i>Holcostethus tristis</i> (Van Duzee)		H/H		U	P	2
<i>Perillus exaptus</i> (Say)		Pr/Pr		U	P	
<i>Podisus modestus</i> Dallas		Pr/Pr	I-LEPID	U	P	
<i>Thyanta pallidovirens</i> Stål		H/H		U	P	
<i>Zircona caerulea</i> (Linnaeus)		Pr/Pr	I-Altic	U	P	
REDUVIIDAE (5 genera, 5 species)						
<i>Barce fraterna</i> (Say)		Pr/Pr			A	

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
REDUVIIDAE (continued)						
<i>Empicoris</i> sp.		Pr/Pr		R		1
<i>Rhynocoris ventralis</i> (Say)		Pr/Pr			P	
<i>Sinea</i> sp.		Pr/Pr			P	
<i>Zelus tetracanthus</i> (Stål)		Pr/Pr		R		1,2
RHOPALIDAE (4 genera, 4 species)						
<i>Arhyssus barberi</i> Harris		H/H			P	
<i>Harmostes reflexus</i> (Say)		H/H			P	
<i>Liorhyssus</i> sp.		H/H			P	
<i>Stictopleurus punctiventris</i> (Dallas)		H/H		C	P	
SALDIDAE (2 genera, 5 species)						
<i>Micracantha quadrimaculata</i> (Champion)	S-Aq/S-Aq	Pr/Pr		R	P	
<i>Saldula comatula</i> (Parshley)	S-Aq/S-Aq	Pr/Pr		U	P	
<i>Saldula lattini</i> Chapman & Polhemus	S-Aq/S-Aq	Pr/Pr		R	P	
<i>Saldula pallipes</i> (Fabricius)	S-Aq/S-Aq	Pr/Pr		C	P	
<i>Saldula saltatoria</i> (Linnaeus)	S-Aq/S-Aq	Pr/Pr		U	P	
SCUTELLERIDAE (4 genera, 6 species)						
<i>Acantholomidea porosa</i> (Germar)		H/H			P	
<i>Eurygaster alternatus</i> (Say)	M-vg/M-vg	H/H	P-GRASS	C	P	
<i>Eurygaster</i> sp.		H/H			P	
<i>Homaemus aenifrons</i> Say	M-vg/M-vg	H/H	P-GRASS	U	P	
<i>Homaemus parvulus</i> (Germar)	M-vg/M-vg	H/H	P-GRASS	U	P	
<i>Vanduzeeina borealis californica</i> Van Duzee		H/H			P	
THYREOCORIDAE (2 genera, 2 species)						
<i>Corimelaena</i> sp.		H/H		C	P	
<i>Galgupha nitiduloides</i> (Wolff)		H/H			P	
TINGIDAE (6 genera, 10 species)						
<i>Acalypta barberi</i> Drake	F-1t/F-1t	Ms/Ms		U	P	
<i>Acalypta lillianus</i> Torre-Bueno	F-1t/F-1t	Ms/Ms			P	
<i>Acalypta saundersii</i> (Downes)	F-1t/F-1t	Ms/Ms		U	P	
<i>Corythuca mollicula</i> Osborn & Drake	R-vg/R-vg	H/H	P-Salix	C	P	
<i>Corythuca padi</i> Drake	F-cn/F-cn	H/H	P-Prvid	C	P	
<i>Corythuca scitula</i> Drake	F-cn/F-cn	H/H	P-Coryl	U		1
<i>Derephysia foliacea</i> (Fallén)		H/H		U		2
<i>Melanorhopala clavata</i> Stål	F-cn/F-cn	H/H	P-Querc	U	P	
<i>Physatocheila variegata</i> Parshley		H/H		C	P	
<i>Teleonemia</i> sp.	O-vg/O-vg	H/H	P-Penst	U	P	
VELIIDAE (1 genus, 1 species)						
<i>Microvelia californiensis</i> McKinstry	Aqt/Aqt	Pr/Pr		U	A	

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
(suborder HOMOPTERA) (16 families, 86 genera, 116 species)						
ACHILIDAE (3 genera, 4 species)						
<i>Eiptera fusiformis</i> (Van Duzee)	wood/wood	H/Fu		U		1
<i>Eiptera</i> sp.	wood/wood	H/Fu			P	
<i>Juniperia</i> sp.	F-cn/F-lt				A	40
<i>Synedoche nemoralis</i> (Van Duzee)	F-cn/F-lt	H/Fu		C	P	1,23
ADELGIDAE (1 genus, 2 species)						
<i>Adelges cooleyi</i> (Gillette)	F-cn/F-cn	H/H	P-CONIF	A	S	1,2,49,54
<i>Adelges tsugae</i> Annand	F-cn/F-cn	H/H	P-Tshe	A		49
ALEYRODIDAE (1 genus, 1 species)						
undetermined specimens		H/H			P	2,54
APHIDIDAE (19 genera, 23 species)						
<i>Acyrtosiphon pisum</i> (Harris)	O-vg/O-vg	H/H	P-LEGUM		S	1
<i>Amphorophora stachyophila</i> Hille Ris Lambers	O-vg/O-vg	H/H	P-Stach		S	55
<i>Aphis ceanothi</i> Clark	O-vg/O-vg	H/H	P-Ceano			54
<i>Aphis</i> sp.		H/H				1
<i>Boernerina variabilis</i> Richards	F-cn/F-cn	H/H	P-Alnus		S	55
<i>Capitophorus eleagni</i> (del Guercio)	O-vg/O-vg	H/H	P-Cirsi		S	55
<i>Cavariella</i> sp.		H/H				1
<i>Cinara pseudotaxifoliae</i> Palmer	F-cn/F-cn	H/H	P-Psme			1,49,54
<i>Cryptomyzus ribis</i> (Linnaeus)	O-vg/O-vg	H/H	P-Stach		S	55
<i>Disaphis</i> sp.		H/H				1
<i>Essigella wilsoni</i> Hottes	F-cn/F-cn	H/H	P-Psme			1
<i>Euceraphis gillettei</i> (Davidson)	F-cn/F-cn	H/H	P-Alnus		S	55
<i>Forda formicaria</i> Von Heyden		H/H				1
<i>Forda marginata</i> (Koch)		H/H				1
<i>Metapolophium dirrhoun</i> (Walker)		H/H				1
<i>Mindarus obliqueness</i> Cholodkovsky	F-cn/F-cn	H/H	P-CONIF			1
<i>Mindarus</i> sp.	F-cn/F-cn	H/H	P-CONIF			1
<i>Nearctaphis bakeri</i> (Cowen)		H/H				1
<i>Periphyllis californiensis</i> (Shinji) (I)	F-cn/F-cn	H/H	P-Acer			1
<i>Periphyllus testudinacea</i> (Ferne)	F-cn/F-cn	H/H	P-Acer		S	55
<i>Pterocallis alni</i> (DeGeer)	F-cn/F-cn	H/H	P-Alnus		S	55
<i>Rhopalosiphum padi</i> (Linnaeus)	O-vg/O-vg	H/H	P-GRASS		S	55
<i>Uroleucon</i> sp.		H/H			S	1
CERCOPIDAE (3 genera, 4 species)						
<i>Aphrophora maculosa</i> Doering	F-cn/F-cn	H/H	P-Pinus	C	P	
<i>Aphrophora permutata</i> Uhler	F-cn/F-cn	H/H	P-CONIF			1
<i>Clastoptera ovata</i> Doering	F-cn/F-cn	H/H	P-SHRUB	U	P	
<i>Philaenus spumarius</i> (Linnaeus)	M-vg/M-vg	H/H	P-FORBS	A	P	

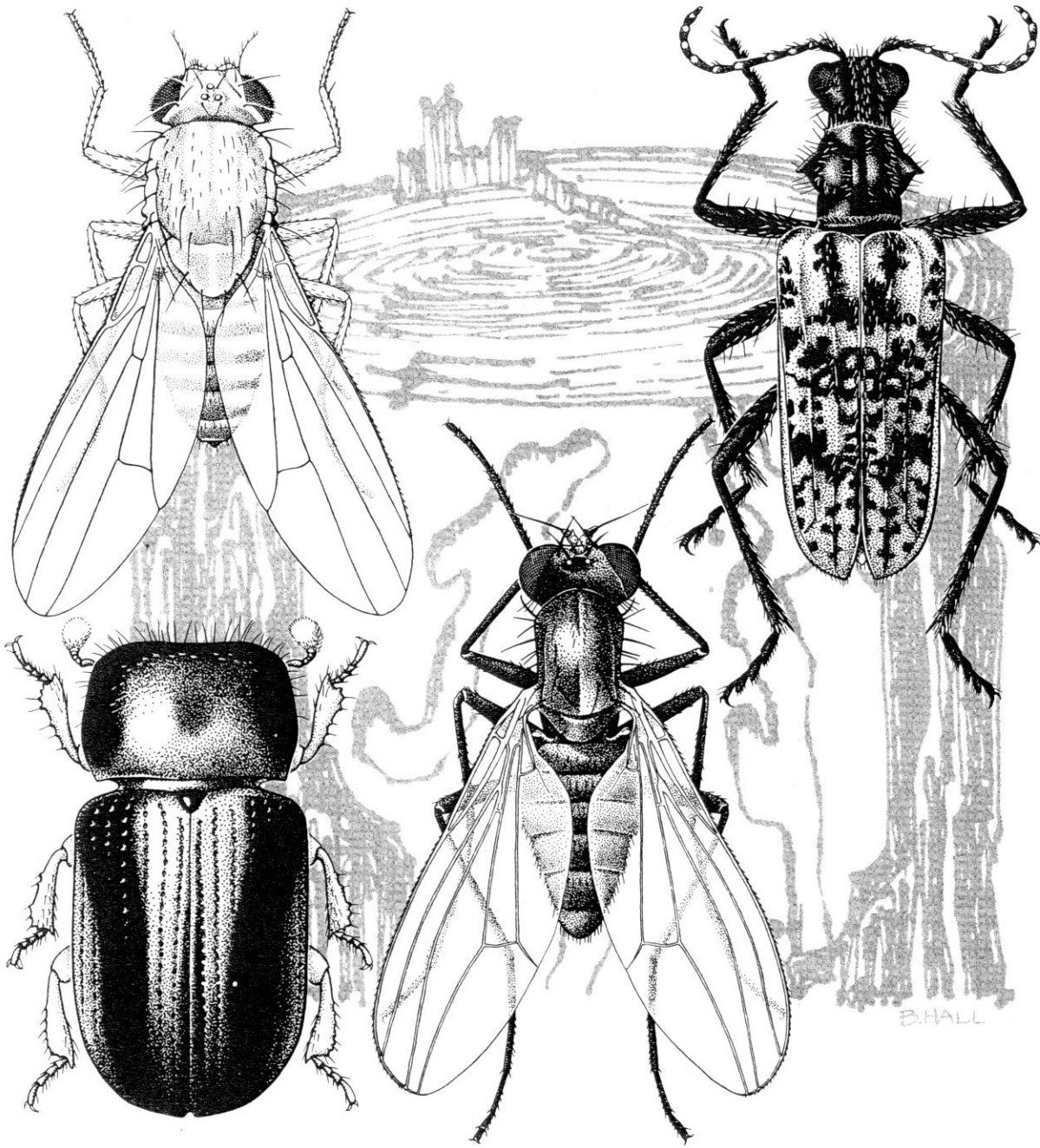
Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CICADELLIDAE (39 genera, 55 species)						
<i>Aceratagallia californica</i> (Baker)	M-vg/M-vg	H/H	P-FORBS	C	PA	1,23
<i>Aceratagallia</i> sp.	M-vg/M-vg	H/H	P-FORBS		P	2
<i>Agallia quadripunctata</i> (Provancher)	M-vg/M-vg	H/H	P-FORBS	U	P	
<i>Agalliopsis abietaria</i> Oman	O-vg/O-vg	H/H	P-Fraga			33
<i>Alconeura</i> sp.	O-vg/O-vg	H/H	P-SHRUB	U	P	
<i>Aligia</i> sp.	O-vg/O-vg	H/H	P-Lotus			33
<i>Amblysellus grex</i> (Oman)	M-vg/M-vg	H/H	P-GRASS	U	PA	1
<i>Aphrodes bicintus</i> (Schrank)	M-sl/M-sl	H/H	P-GRASS	U	P	
<i>Aphrodes</i> sp.	M-sl/M-sl	H/H	P-GRASS		P	
<i>Balclutha confluens</i> (Rey)	M-vg/M-vg	H/H	P-GRASS			23
<i>Balclutha punctata</i> (Fabricius)	M-vg/M-vg	H/H	P-GRASS	C		1
<i>Balclutha</i> sp.	M-vg/M-vg	H/H	P-GRASS		P	
<i>Ballana</i> sp.	O-vg/O-vg	H/H	P-FORBS			2
<i>Caladonus coquilletti</i> (Van Duzee)	R-vg/R-vg	H/H	P-Salix	U	P	
<i>Colladonus geminatus</i> (Van Duzee)	M-vg/M-vg	H/H	P-FORBS	U	P	
<i>Colladonus montanus</i> (Van Duzee)	M-vg/M-vg	H/H	P-FORBS	U	P	
<i>Colladonus</i> spp. (3)	M-vg/M-vg	H/H	P-FORBS		P	33
<i>Cuerna hasbroucki</i> Nielson	M-vg/M-vg	H/H	P-GRASS	U	P	2
<i>Cuerna</i> sp.	M-vg/M-vg	H/H	P-GRASS		A	1
<i>Deltocephalus fuscineruosus</i> (Van Duzee)	M-vg/M-vg	H/H	P-GRASS	U	P	
<i>Dikraneura carneola</i> (Stål)	M-vg/M-vg	H/H	P-GRASS	C	P	
<i>Dikrella</i> sp.	O-vg/O-vg	H/H	P-SHRUB	U	P	
<i>Draeculacephala crassicornis</i> (Van Duzee)	M-vg/M-vg	H/H	P-GRASS	C	P	
<i>Empoasca elongella</i> Metcalf	F-cn/F-cn	H/H	P-DECID		A	1
<i>Empoasca filamenta</i> DeLong	O-vg/O-vg	H/H	P-FORBS		A	1
<i>Erythroneura corni</i> Robinson	F-cn/F-cn	H/H	P-DECID	U	P	2,23
<i>Euscelidius variegatus</i> (Kirschbaum)	M-vg/M-vg	H/H	P-GRASS			1
<i>Exitianus exitiosus</i> (Uhler)	M-vg/M-vg	H/H	P-GRASS	U	PA	1
<i>Hecalus</i> sp.	M-vg/M-vg	H/H	P-GRASS	U	P	
<i>Hordnia circellata</i> (Baker)	R-vg/R-vg	H/H	P-Salix	U	P	
<i>Idiocerus alternatus</i> (Fitch)	R-vg/R-vg	H/H	P-Salix			1
<i>Idiocerus provancheri</i> (Van Duzee)	O-vg/O-vg	H/H	P-ROSAC	U	P	
<i>Idiocerus</i> spp.	R-vg/R-vg	H/H	P-Salix		P	
<i>Japananus hyalinus</i> (Osborn)	F-cn/F-cn	H/H	P-Acci	C	PA	1
<i>Laevicephalus</i> sp.	M-vg/M-vg	H/H	P-GRASS	U	P	
<i>Latalus</i> sp.	M-vg/M-vg	H/H	P-GRASS	U	P	
<i>Macropsis fuscula</i> (Zetterstedt)	O-vg/O-vg	H/H	P-Rubus			33
<i>Macropsis</i> sp.	R-vg/R-vg	H/H	P-Salix	U	P	
<i>Macrosteles fascifrons</i> (Stål)	M-vg/M-vg	H/H	P-GRASS	C	P	
<i>Mesamia</i> sp.	M-vg/M-vg	H/H	P-FORBS	U	P	
<i>Oncopsis</i> spp. (2)	R-vg/R-vg	H/H	P-DECID	U	P	33
<i>Osbornellus borealis</i> DeLong & Mohr		H/H	P-FORBS	U	PA	1
<i>Psammotettix</i> sp.	M-vg/M-vg	H/H	P-GRASS	U	P	
<i>Scaphotopius acutus cirrus</i> Musgrave	O-vg/O-vg	H/H	P-SHRUB	A		1,33
<i>Scaphotopius</i> sp.	O-vg/O-vg	H/H	P-SHRUB	U	P	2
<i>Scleroracus</i> sp.	O-vg/O-vg	H/H	P-Rubus			33
<i>Stenocoelidia lineata</i> (Baker)	O-vg/O-vg	H/H	P-Ceano	A		1
<i>Texanus</i> sp.	O-vg/O-vg	H/H	P-FORBS	U	P	
<i>Typhlocyba</i> sp.	F-lt/F-lt	H/H			A	40
<i>Xerophloea peltata</i> (Uhler)	F-lt/F-lt	H/H			A	40
<i>Xestocephalus desertum</i> complex	nest/nest	H/H	I-FORMI	U	P	40

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CICADIDAE (2 genera, 2 species)						
<i>Okanagana</i> sp.	F-cn/F-sl	H/Rt		U	P	2
<i>Platypedia areolata</i> Uhler	F-cn/F-sl	H/Rt		U	P	
CIXIIDAE (1 genus, 5 species)						
<i>Cixius</i> spp. (5)	F-cn/F-lt	H/Rt		U	PA	1
DELPHACIDAE (1 genus, 1 species)						
<i>Liburniella ornata</i> (Stål)	M-vg/M-vg	H/H	P-GRASS	C	P	
DERBIDAE (1 genus, 1 species)						
<i>Cedusa</i> sp.	R-vg/R-vg	H/H	P-Salix	U		33
DIASPIDIDAE (3 genera, 3 species)						
<i>Chionaspis pinifoliae</i> (Fitch)	F-cn/F-cn	H/H	P-CONIF	C		49
<i>Nuculaspis californica</i> (Coleman)	F-cn/F-cn	H/H	P-CONIF	C		1,49
<i>Stramenaspis kelloggi</i> (Coleman)	F-cn/F-cn	H/H	P-Tshe			49
DICTYOPHARIDAE (1 genus, 1 species)						
<i>Scolops</i> sp.	O-vg/O-vg	H/H	P-FORBS	U	P	
MEMBRACIDAE (3 genera, 3 species)						
<i>Stictocephala</i> sp.	M-vg/M-vg	H/H	P-FORBS	U	P	
<i>Telamona</i> sp.	F-cn/F-cn	H/H	P-Querc	U	P	
<i>Tortistilus</i> sp.	M-vg/M-vg	H/H	P-FORBS	C	P	
ORTHEZIIDAE (1 genus, 1 species)						
<i>Arctorthezia occidentalis</i> Douglas	F-sl/F-sl	Rt/Rt		C	P	40
PSYLLIDAE (6 genera, 9 species)						
<i>Aphalara</i> sp.	M-vg/M-vg	H/H	P-FORBS	U	P	1
<i>Arytaina robusta</i> Crawford	O-vg/O-vg	H/H	P-Ceano	A		54
<i>Craspedolepta</i> sp.	M-vg/M-vg	H/H	P-FORBS			1,54
<i>Euphalerus</i> spp. (2)	O-vg/O-vg	H/H	P-Arcto	U	P	
<i>Psylla minor</i> Crawford		H/H				1
<i>Trioza frontalis</i> Crawford	O-vg/O-vg	H/H	P-SHRUB			1
<i>Trioza minuta</i> Crawford	O-vg/O-vg	H/H	P-SHRUB			1
<i>Trioza</i> sp.	O-vg/O-vg	H/H	P-SHRUB		P	
PUTOIDAE (1 genus, 1 species)						
<i>Puto cupressi</i> (Coleman)	F-cn/F-cn	H/H	P-CONIF			1,49

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
MEGALOPTERA						
(2 families, 2 genera, 2 species)						
CORYDALIDAE (1 genus, 1 species)						
<i>Orohermes crepusculus</i> (Chandler)	R-vg/Aqt	nf/Pr		U	A	
SIALIDAE (1 genus, 1 species)						
<i>Sialis californicus</i> Banks	R-vg/Aqt	nf/Pr		U	PA	
RAPHIDIOPTERA						
(2 families, 2 genera, 6 species)						
INOCELLIIDAE (1 genus, 1 species)						
<i>Inocellia</i> (Negha) <i>inflata</i> (Hagen)	F-cn/wood	Pr/Pr		U	P	2,41
RAPHIDIIDAE (1 genus, 5 species)						
<i>Raphidia</i> (Agulla) <i>adnixa</i> Hagen	F-cn/wood	Pr/Pr		U	P	
<i>Raphidia</i> (Agulla) <i>assimilis</i> Albarda	F-cn/wood	Pr/Pr		U		1
<i>Raphidia</i> (Agulla) <i>herbsti</i> Esben-Petersen	F-cn/wood	Pr/Pr		U	P	1
<i>Raphidia</i> (Agulla) <i>unicolor</i> (Carpenter)	F-cn/wood	Pr/Pr		U	P	
<i>Raphidia</i> (Agulla) sp.	F-cn/wood	Pr/Pr		U	P	2
NEUROPTERA						
(4 families, 10 genera, 17 species)						
CHRYSOPIDAE (2 genera, 3 species)						
<i>Chrysopa coloradensis</i> Banks	F-cn/F-cn	Pr/Pr		U	P	
<i>Chrysopa oculata</i> Say	F-cn/F-cn	Pr/Pr		U	P	
<i>Chrysoperla carnea</i> (Stephens)	M-vg/M-vg	Pr/Pr		C	P	1
CONIOPTERYGIDAE (4 genera, 5 species)						
<i>Coniopteryx latipalpis</i> Meinander	F-cn/F-cn	Pr/Pr				1
<i>Coniopteryx</i> sp.	F-cn/F-cn	Pr/Pr			P	1
<i>Conwentzia</i> sp.	F-cn/F-cn	Pr/Pr				1
<i>Helicoconis similis</i> Meinander	F-cn/F-cn	Pr/Pr				1
<i>Semidalis angusta</i> (Banks)	F-cn/F-cn	Pr/Pr				1,49
HEMEROBIIDAE (3 genera, 8 species)						
<i>Hemerobius bistrigatus</i> Currie	F-cn/F-cn	Pr/Pr		U	P	1
<i>Hemerobius kokaneeanus</i> Currie	F-cn/F-cn	Pr/Pr				1
<i>Hemerobius neadelphus</i> Gurney	F-cn/F-cn	Pr/Pr		C	P	1
<i>Hemerobius ovalis</i> Carpenter	F-cn/F-cn	Pr/Pr		U		1
<i>Hemerobius pacificus</i> Banks	F-cn/F-cn	Pr/Pr		C	P	1
<i>Hemerobius stigma</i> Stephens	F-cn/F-cn	Pr/Pr		C	P	1

Newly Fallen Log

A newly fallen log contains vast quantities of stored nutrients unavailable for use in the forest ecosystem until they are released through decomposition. Hundreds of species of arthropods are associated with the decomposition of fallen logs in the Andrews Forest. M.A. Deyrup (1975, 1976) studied dead and dying Douglas-fir and found more than 150 different kinds of arthropods (wood feeders, predators, and parasitoids) on this one tree species alone. Some of the first insects to invade a fallen log are bark beetles, feeding on the cambium, and ambrosia beetles, such as *Trypodendron lineatum* (lower left), which burrow into the sapwood. They inoculate their initial tunnels with a diverse array of fungi, bacteria, phoretic mites, nematodes, and protozoans. A common predator of bark beetle larvae is the larva of the dolichopodid fly, *Medetera aldrichii* (lower right). After the beetle larvae are reared and the gallery is abandoned, it becomes overgrown with yeasts, bacteria, and the fruiting bodies of fungi. Fungi mobilize nutrients out of the wood and translocate them to the fruiting structures in the gallery, providing a basis for a complex ecosystem. Microarthropods, including prostigmatid and oribatid mites and springtails, feed on individual hyphae and spores. Larvae of sciarid flies and mycetophagid beetles graze on beds of fungi. Larvae of the fly *Drosophila montana* (upper left) masticate fungal hyphae to promote yeast growth and then feed on the yeast. Galleries abandoned for a year contain countless nematode worms, themselves fed upon by nematophagous mites. After the nutrient-rich cambium is decomposed, log breakdown slows. Wood-boring beetles such as the cerambycid *Rhagium inquisitor* (upper right) generally take several years to mature. As the larvae of these beetles tunnel deeper into the log, further access is opened for other arthropods and microorganisms. Many of these sapwood and heartwood feeders have evolved intricate symbiotic relationships with gut-inhabiting microbes for efficient conversion of the various components of the wood substrate.



Taxonomic category	Habitat Ad/Im	Funct group		Plant/ animal host	Ab	Co	References
		Ad/Im	Pr/Pr				
HEMEROBIIDAE (continued)							
<i>Micromus variolus</i> Hagen	F-cn/F-cn	Pr/Pr			U	P	1
<i>Wesmaelius longifrons</i> (Walker)	F-cn/F-cn	Pr/Pr			U	P	
MYRMELEONTIDAE (1 genus, 1 species)							
undetermined larval specimens	O-vg/O-sl	Pr/Pr			U	A	
COLEOPTERA (77 families, 476 genera, 824 species)							
ALLECULIDAE (3 genera, 7 species)							
<i>Hymenorus caurinus</i> Fall	F-cn/wood	Fl/X			U	P	
<i>Hymenorus megops</i> Hatch	F-cn/wood	Fl/X			R	P	1
<i>Hymenorus sinuatus</i> Fall	F-cn/wood	Fl/X			R	P	2,41
<i>Mycetochara caseyi</i> Hatch	F-cn/wood	Fl/X			U	P	
<i>Mycetochara malkini</i> Hatch	F-cn/wood	Fl/X			R		2
<i>Mycetochara procera</i> Casey	F-cn/wood	Fl/X			U	P	2,40,41
<i>Pseudocistela pacifica</i> (Hopping)	F-cn/wood	Fl/X			U	P	40
AMPHIZOIDAE (1 genus, 1 species)							
<i>Amphizoa insolens</i> LeConte	Aqt/Aqt	Pr/Pr			U	P	
ANOBIIDAE (10 genera, 11 species)							
<i>Caenochara blanchardi</i> Fall	F-cn/fung	Fu/Fu			R	P	41
<i>Ernobius conicola</i> Fisher	F-cn/F-cn	Sd/Sd	P-CONIF		U	P	
<i>Ernobius gentilis</i> Fall					R	P	2
<i>Hadrobregmus quadrulus</i> (LeConte)	/wood	/X	P-TREES		U	P	41
<i>Hemicoelus gibbicollis</i> (LeConte)	/wood	/X	P-TREES		U	P	41
<i>Ptilinus basilis</i> LeConte	/wood	/X	P-DECID		U	P	2
<i>Stegobium paniceum</i> (Linnaeus) (I)	dom/dom	O/O			U	P	1
<i>Tricorynus nubilis</i> (Fall)	/wood	/X			R	P	
<i>Xestobium affine</i> LeConte	/wood	/X			U	P	41
<i>Xyletinus</i> sp.	/wood	/X					1
<i>Xyletomerus arbuti</i> (Fisher)	/wood	/X	P-Arme		R	P	41
ANTHICIDAE (3 genera, 3 species)							
<i>Anthicus cervinus</i> LaFerté		Sv/Sv			U	P	23
<i>Ischyropalpus nitidulus</i> (LeConte)	F-lt/F-lt	Sv/Sv			U	P	
<i>Lappus nitidulus</i> LeConte		Fl/Sv			U	P	
BRUCHIDAE (1 genus, 1 species)							
<i>Acanthoscelides pauperculus</i> LeConte		Sd/Sd			C	P	2
BUPRESTIDAE (7 genera, 18 species)							
<i>Agrilus arbuti</i> Fisher	O-vg/wood	Fl/X	P-Arme		U	P	40
<i>Agrilus politus</i> Say	O-vg/wood	Fl/X	P-DECID		C	P	2

Taxonomic category	Habitat	Funct	Plant/	Ab	Co	References
	Ad/Im	group	animal			
BUPRESTIDAE (continued)						
<i>Anthaxia aenescens</i> Casey	O-vg/wood	Fl/X	P-CONIF	R	P	
<i>Anthaxia deleta</i> LeConte	O-vg/wood	Fl/X	P-CONIF	C	P	1,2
<i>Anthaxia expansa</i> LeConte	O-vg/wood	Fl/X	P-CONIF	C	P	1,2
<i>Buprestis adjecta</i> LeConte	F-cn/wood	H/X	P-CONIF	U	P	
<i>Buprestis aurulenta</i> Linnaeus	F-cn/wood	H/X	P-CONIF	C	P	40,41
<i>Buprestis intricata</i> Casey	F-cn/wood	H/X	P-CONIF	U	P	
<i>Buprestis langi</i> Mannerheim	F-cn/wood	H/X	P-DECID	U	P	
<i>Buprestis rusticorum</i> Kirby	F-cn/wood	H/X	P-CONIF	C	P	
<i>Chrysobothris grandis</i> Chamberlin	F-cn/wood	/X	P-Pinus	U		2
<i>Chrysobothris mali</i> Horn	F-cn/wood	/X	P-DECID	U	P	
<i>Chrysobothris pseudotsugae</i> VanDyke	F-cn/wood	/X	P-CONIF	R	P	
<i>Chrysophana placida</i> LeConte	F-cn/wood	/X	P-CONIF	U	P	
<i>Dicerca crassicollis</i> LeConte	F-cn/wood	/X		U	P	
<i>Dicerca horni</i> Crotch	F-cn/wood	/X	P-DECID	U	P	
<i>Melanophila acuminata</i> (DeGeer)	F-cn/wood	/X	P-CONIF	U	P	
<i>Melanophila drummondi</i> Kirby	F-cn/wood	H/X	P-CONIF	C	P	1,2,41
BYRRHIDAE (5 genera, 6 species)						
<i>Byrrhus stolidus</i> Casey	F-1t/F-1t	H/H		U	P	2
<i>Byrrhus wickhami</i> Casey	F-1t/F-1t	H/H		U	P	40
<i>Cytilus alternatus</i> Say	F-1t/F-1t	H/H		U	P	40
<i>Lioon simplicipes</i> Mannerheim	F-1t/F-1t	Ms/Ms		U	P	2,40
<i>Listemus formosus</i> Casey	F-1t/F-1t	Ms/Ms		C	P	2,40,41
<i>Morychus oblongus</i> LeConte	F-1t/F-1t	H/H		U	P	2
CANTHARIDAE (4 genera, 21 species)						
<i>Malthodes dorotheae</i> Fender	F-cn/	/Pr		U	P	2
<i>Malthodes flexuosus</i> Fender	F-cn/	/Pr		C	P	1,2
<i>Malthodes oregonus</i> Fender	F-cn/	/Pr		C	P	2
<i>Podabrus cascadiensis</i> Fender	F-cn/F-1t	Pr/Pr		R	P	
<i>Podabrus cavicollis hatchi</i> Fender	F-cn/F-1t	Pr/Pr		C	P	1,2
<i>Podabrus cavicollis albrighti</i> Fender	F-cn/F-1t	Pr/Pr		C	P	
<i>Podabrus conspiratus</i> Fall	F-cn/F-1t	Pr/Pr		U	P	2
<i>Podabrus hackerae</i> Fender	F-cn/F-1t	Pr/Pr				2
<i>Podabrus macer</i> LeConte	F-cn/F-1t	Pr/Pr		R	P	2
<i>Podabrus piceatus</i> Fender	F-cn/F-1t	Pr/Pr		U	P	40,41
<i>Podabrus piniphilus</i> Dejean	F-cn/F-1t	Pr/Pr		A	P	1,2,40,41
<i>Podabrus pruinus diversipes</i> Fall	F-cn/F-1t	Pr/Pr		C	P	1,2,40
<i>Podabrus pustulatus</i> Fender	F-cn/F-1t	Pr/Pr		U	P	
<i>Podabrus scaber</i> LeConte	F-cn/F-1t	Pr/Pr		R	P	41
<i>Podabrus schuhi</i> Fender	F-cn/F-1t	Pr/Pr		R	P	
<i>Silis atra</i> LeConte	F-cn/	/Pr		U	P	
<i>Silis difficilis</i> LeConte	F-cn/	/Pr		U	P	
<i>Silis insperata</i> Green	F-cn/	/Pr		C	P	2
<i>Silis lutea</i> LeConte	F-cn/	/Pr		C	P	1
<i>Silis pallida</i> Mannerheim	F-cn/	/Pr		U	P	40
<i>Silis vulnerata</i> LeConte	F-cn/	/Pr		U	P	
<i>Troglomethes oregonensis</i> Wittmer	F-cn/	/Pr		U	P	2,41

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CARABIDAE (34 genera, 93 species)						
(CICINDELIDAE excluded)						
<i>Agonoderus comma</i> Fabricius	O-gd/O-sl	Pr/Pr		U		37
<i>Agonoderus rugicollis</i> LeConte	O-gd/O-sl	Pr/Pr		U	P	37
<i>Agonum aeneolum</i> LeConte	S-Aq/S-Aq	Pr/Pr		C	P	37
<i>Agonum cupripenne</i> Say	O-gd/O-sl	Pr/Pr		U	P	37
<i>Agonum funebre</i> LeConte		Pr/Pr		U	P	23
<i>Agonum propinquum</i> Gemminger & Harold	S-Aq/S-Aq	Pr/Pr		U		37
<i>Agonum subsericeum</i> LeConte	S-Aq/S-Aq	Pr/Pr		U	P	37
<i>Amara aenea</i> DeGeer		Sd/Pr				23
<i>Amara familiaris</i> Duftschmid	O-gd/O-sl	Sd/Pr		U		23,37
<i>Amara idahoana</i> Casey	O-gd/O-sl	Sd/Pr		U		23
<i>Amara littoralis</i> Mannerheim	O-gd/O-sl	Sd/Pr		C	P	2,37,40
<i>Amara lunicollis</i> Schiodte	O-gd/O-sl	Sd/Pr		U	P	40
<i>Amara sanjuanensis</i> Hatch	O-gd/O-sl	Sd/Pr		U	P	40
<i>Amara sinuosa</i> Casey	O-gd/O-sl	Sd/Pr		C	P	2,40
<i>Amara</i> sp.	O-gd/O-sl	Sd/Pr			P	2
<i>Anisodactylus binotatus</i> Fabricius	S-Aq/S-Aq	Pr/Pr		U	P	37
<i>Anisodactylus californicus</i> Dejean	O-gd/O-sl	Pr/Pr		U	P	37
<i>Anisodactylus sanctaegrucis</i> Fabricius	S-Aq/S-Aq	Pr/Pr		U	P	37
<i>Anisodactylus similis</i> LeConte	O-gd/O-sl	Pr/Pr		U	P	40
<i>Apristus constrictus</i> Casey	S-Aq/S-Aq	Pr/Pr		U		23
<i>Bembidion flebile</i> Casey	S-Aq/S-Aq	Pr/Pr		U	P	37
<i>Bembidion gebleri</i> Gebler	S-Aq/S-Aq	Pr/Pr		U		37
<i>Bembidion gordonii</i> Lindroth	S-Aq/S-Aq	Pr/Pr		U		37
<i>Bembidion haruspex</i> Casey	S-Aq/S-Aq	Pr/Pr		U		37
<i>Bembidion incertum</i> Motschulsky	O-gd/O-sl	Pr/Pr		U	P	37
<i>Bembidion iridescens</i> LeConte	S-Aq/S-Aq	Pr/Pr		C	P	2,37
<i>Bembidion kuprianovi</i> Mannerheim	S-Aq/S-Aq	Pr/Pr		U	P	23,37
<i>Bembidion nigrocoeruleum</i> Hayward	S-Aq/S-Aq	Pr/Pr		U	P	23,37
<i>Bembidion osculans</i> Casey	O-gd/O-sl	Pr/Pr		C	P	2
<i>Bembidion planatum</i> LeConte	S-Aq/S-Aq	Pr/Pr		U	P	37
<i>Bembidion planiusculum</i> Mannerheim	S-Aq/S-Aq	Pr/Pr		U	P	37
<i>Bembidion pseudocrasum</i> Lindroth		Pr/Pr				23
<i>Bembidion quadrimaculatum dubitans</i> (LeConte)		Pr/Pr				23
<i>Bembidion quadrulum</i> LeConte		Pr/Pr				23
<i>Bembidion reticolle</i> LeConte	S-Aq/S-Aq	Pr/Pr		U		37
<i>Bembidion sierracola</i> Casey	S-Aq/S-Aq	Pr/Pr		U	P	23
<i>Bembidion spectabile</i> Mannerheim	F-gd/F-sl	Pr/Pr		R	P	41
<i>Bembidion transversale</i> Dejean	S-Aq/S-Aq	Pr/Pr		U	P	37
<i>Bembidion</i> (incertum group) spp. (2)		Pr/Pr		U		37
<i>Bradycellus conformis</i> Fall	O-gd/O-sl	Pr/Pr		U	P	40
<i>Bradycellus nigrinus</i> Dejean	M-gd/M-sl	Pr/Pr		R	P	2,40
<i>Bradycellus nubifer</i> LeConte	O-gd/O-sl	Pr/Pr		U	P	37,40
<i>Bradycellus politus</i> Fall	O-gd/O-sl	Pr/Pr		U	P	2
<i>Calathus ruficollis</i> Dejean	O-gd/O-sl	Pr/Pr		U	P	
<i>Calosoma tepidum</i> LeConte	O-gd/O-gd	Pr/Pr		U	P	40
<i>Carabus taedatus</i> Fabricius	M-gd/M-gd	Pr/Pr		C	P	37,40
<i>Cychrus tuberculatus</i> Harris	F-gd/F-gd	Pr/Pr	A-SNAIL	C	P	2,37,40
<i>Cymindis seriata</i> Hatch	O-gd/O-sl	Pr/Pr		R	P	40
<i>Diplous californicus</i> Motschulsky	S-Aq/S-Aq	Pr/Pr		U		37
<i>Diplous filicornis</i> Casey	S-Aq/S-Aq	Pr/Pr		U	P	37
<i>Elaphropus anthrax</i> (LeConte)		Pr/Pr		U	P	23

Taxonomic category	Habitat		Funct	Plant/	Ab	Co	References
	Ad/Im	Ad/Im	group	animal			
CARABIDAE (continued)							
<i>Harpalus animosus</i> Casey	M-gd/M-sl	Sd/Pr			U	P	40
<i>Harpalus cautus</i> LeConte	O-gd/O-sl	Sd/Pr			C	P	40
<i>Harpalus fuliginosus</i> Duftschmid	O-gd/O-sl	Sd/Pr			U	P	37,40
<i>Harpalus innocuus</i> LeConte	O-gd/O-sl	Sd/Pr			U	P	2,40
<i>Lebia perita</i> Casey	O-vg/ins	Pr/Pa	I-CHRY	S	U	P	23,37
<i>Lebia viridus</i> Say	O-vg/insl	Pr/Pa	I-Altic	S	C	P	2
<i>Metabletus americanus</i> Dejean	O-gd/O-sl	Pr/Pr			U	P	37,40
<i>Metrius contractus</i> Eschscholtz	F-gd/F-lt	Pr/Pr			U	P	40
<i>Microlestes nigrinus</i> Mannerheim	S-Aq/S-Aq	Pr/Pr			U	P	2,40
<i>Nebria eschscholtzii</i> Ménétriès	S-Aq/S-Aq	Pr/Pr			C	P	37
<i>Nebria mannerheimii</i> Fischer	S-Aq/S-Aq	Pr/Pr			U	P	23,37
<i>Nebria sahlbergii sahlbergii</i> Fischer	S-Aq/S-Aq	Pr/Pr			U	P	37
<i>Nebria virescens</i> Horn	O-gd/O-sl	Pr/Pr			U	P	40
<i>Notiophilus sylvaticus</i> Eschscholtz	F-lt/F-lt	Pr/Pr			C	P	2,37,40,41
<i>Omopron ovalis</i> Horn	S-Aq/S-Aq	Pr/Pr			U	P	37
<i>Phrypon rickseckeri</i> Hayward	S-Aq/S-Aq	Pr/Pr			U	P	23,37
<i>Promecognathus laevis</i> Dejean	F-gd/F-lt	Pr/Pr	A-DIPLO	A	P		2,37,40
<i>Psydru</i> <i>piceus</i> LeConte	wood/wood	Pr/Pr	P-CONIF	R	P		41
<i>Pterostichus amethystinus</i> Mannerheim	F-gd/F-lt	Pr/Pr			C	P	2,37,40
<i>Pterostichus campbelli</i> Bousquet	F-gd/F-lt	Pr/Pr			R	P	40
<i>Pterostichus castaneus</i> Dejean	F-gd/F-lt	Pr/Pr			C	P	2,37,40
<i>Pterostichus crenicollis</i> LeConte	F-gd/F-lt	Pr/Pr			U	P	37,40
<i>Pterostichus herculeanus</i> Mannerheim	F-gd/F-lt	Pr/Pr			A	P	2,37,40,41
<i>Pterostichus inanis</i> Horn	F-gd/F-lt	Pr/Pr			U	P	
<i>Pterostichus inopinus</i> (Casey)	F-lt/F-lt	Pr/Pr			C	P	2,37,40
<i>Pterostichus lama</i> Ménétriès	F-gd/F-lt	Pr/Pr			C	P	2,37,40,41
<i>Pterostichus neobrunneus</i> Lindroth	F-gd/F-lt	Pr/Pr			U	P	37
<i>Pterostichus protractus</i> LeConte	F-gd/F-lt	Pr/Pr			C	P	40
<i>Pterostichus tuberculo-femoratus</i>							
	Hatch	F-gd/F-lt	Pr/Pr		U	P	40
<i>Scaphinotus angulatus</i> Harris	F-gd/F-gd	Pr/Pr	A-SNAIL	C	P		2,37,40
<i>Scaphinotus angusticollis angusticollis</i>							
	Mannerheim	F-gd/F-gd	Pr/Pr	A-SNAIL	C	P	
<i>Scaphinotus marginatus</i> Fischer	F-gd/F-lt	Pr/Pr	A-SNAIL	C	P		2,40
<i>Scaphinotus rugiceps rugiceps</i> Horn	F-gd/F-gd	Pr/Pr	A-SNAIL	C	P		2,37,40
<i>Schizogenius depressus</i> LeConte	S-Aq/S-Aq	Pr/Pr			U	P	37
<i>Stenolophus anceps</i> LeConte	S-Aq/S-Aq	Pr/Pr			U	P	37
<i>Stenolophus conjunctus</i> Say	O-gd/O-sl	Pr/Pr			U	P	37,40
<i>Stenolophus plebejus</i> Dejean		Pr/Pr			U		37
<i>Tachys falli</i> Hayward	wood/wood	Pr/Pr			U	P	37
<i>Trachypachus holmbergi</i> Mannerheim	S-Aq/S-Aq	Pr/Pr			U	P	37,40
<i>Trechus obtusus</i> Erichson (I)	O-gd/O-sl	Pr/Pr			U	P	40
<i>Trichocellus cognatus</i> Gyllenhal	F-gd/F-lt	Pr/Pr				P	40
<i>Zacotus matthewsii</i> LeConte	F-gd/F-lt	Pr/Pr			C	P	2,40

CEPHALOIDAE (1 genus, 2 species)

<i>Cephaloon pacificum</i> VanDyke	F-cn/wood	Fl/X			U	P	41
<i>Cephaloon tenuicornis bicolor</i> Horn	F-cn/wood	Fl/X			U	P	2,41

CERAMBYCIDAE (37 genera, 46 species)

<i>Anastrangalia laetifica</i> (LeConte)	O-vg/wood	Fl/X	P-CONIF	U	P		
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Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CERAMBYCIDAE (continued)						
<i>Atimia confusa dorsalis</i> LeConte	F-cn/wood	/X	P-CONIF	U	P	41
<i>Brachyleptura dehiscens</i> (LeConte)	O-vg/wood	Fl/X	P-Pinus	U	P	2
<i>Brachyleptura vexatrix</i> (Mannerheim)	O-vg/wood	Fl/X		C	P	
<i>Callidium cicatricosum</i> Mannerheim	F-cn/wood	/X	P-CONIF	U	P	41
<i>Clytus pacificus</i> VanDyke	F-cn/wood	Fl/X	P-Psme	U	P	1,41
<i>Clytus planifrons</i> LeConte	F-cn/wood	Fl/X	P-Abies	U	P	
<i>Cosmosalia chrysocoma</i> Kirby	O-vg/wood	Fl/X	P-CONIF	U	P	
<i>Desmocerus auripennis lacustris</i> Linsley & Chemsak	O-vg/wood	/X	P-Sagl	U	P	
<i>Dicentrus bidentatus</i> (Champion & Knull)	F-cn/wood	/X		U	P	
<i>Dicentrus bluthneri</i> LeConte	F-cn/wood	/X	P-CONIF	U	P	2,41
<i>Ergates spiculatus</i> LeConte	F-cn/wood	/X	P-CONIF	U		36
<i>Eumichthus oedipus</i> LeConte	F-cn/wood	Fl/X	P-Psme	U	P	1
<i>Evodinus monticola vancouveri</i> Casey	O-vg/wood	Fl/X	P-CONIF	C	P	2,41
<i>Grammoptera molybdica</i> LeConte	O-vg/wood	Fl/X	P-Lide	U	P	
<i>Hybodera tuberculata</i> LeConte	F-cn/wood	/X	P-Acer	U	P	41
<i>Judolia instabilis</i> (Haldeman)	O-vg/wood	Fl/X	P-Pinus	U	P	
<i>Leptalia macilentata</i> (Mannerheim)	O-vg/wood	Fl/X	P-DECID	U	P	
<i>Leptura oblitterata</i> Haldeman	O-vg/wood	Fl/X	P-CONIF	C	P	2,41
<i>Lepturopsis dolorosa</i> (LeConte)	O-vg/wood	Fl/X	P-Psme	C	P	2,41
<i>Megasemum asperum</i> (LeConte)	F-cn/wood	/X	P-CONIF	U	P	1,41
<i>Molorchus longicollis</i> LeConte	O-vg/wood	Fl/X	P-DECID	U	P	1
<i>Monochamus oregonensis</i> LeConte	F-cn/wood	H/X	P-CONIF	U	P	
<i>Neanthophylax tenebrosus</i> (LeConte)	F-cn/wood	/X	P-Psme	U	P	
<i>Neoalosterna rubida</i> (LeConte)	O-vg/wood	/X	P-CONIF	U	P	41
<i>Opsimus quadrilineatus</i> Mannerheim	F-cn/wood	/X	P-CONIF	C	P	2
<i>Ortholeptura valida</i> (LeConte)	F-cn/wood	/X	P-CONIF	U	P	1
<i>Pachyta armata</i> LeConte	O-vg/wood	/X	P-CONIF	U	P	
<i>Phymatodes aeneus</i> LeConte	F-cn/wood	/X	P-TREES	U	P	
<i>Phymatodes nitidus</i> LeConte	F-cn/wood	/X	P-CONIF	U	P	41
<i>Pidonia gnathoides</i> (LeConte)	O-vg/wood	/X		R	P	41
<i>Pidonia quadrata</i> Hopping	O-vg/wood	/X		U	P	2,41
<i>Pidonia scripta</i> LeConte	O-vg/wood	Fl/X	P-Querc	C	P	2
<i>Rhagium inquisitor</i> Linnaeus	F-cn/wood	/X	P-CONIF	U	P	41
<i>Semanotus ligneus amplus</i> (Casey)	F-cn/wood	/X	P-CONIF	U	P	41
<i>Stenocorus flavolineatus</i> (LeConte)	O-vg/wood	Fl/X		R	P	
<i>Stenocorus vestitus</i> Haldeman	O-vg/wood	Fl/X	P-CONIF	U	P	
<i>Stenostrophia amabilis</i> (LeConte)	O-vg/wood	Fl/X	P-Pinus	U	P	2,41
<i>Stictoleptura canadensis cribripennis</i> (LeConte)	O-vg/wood	Fl/X	P-CONIF	U	P	2
<i>Tetropium velutinum</i> LeConte	F-cn/wood	/X	P-CONIF	U	P	41
<i>Trachysida aspera</i> (LeConte)	O-vg/wood	Fl/X	P-CONIF	U	P	2
<i>Tragosoma depsarius</i> Linnaeus	F-cn/wood	/X	P-CONIF	U	P	
<i>Ulochaetes leoninus</i> LeConte	F-cn/wood	/X	P-CONIF	U	P	
<i>Xestoleptura behrensi</i> (LeConte)	O-vg/wood	Fl/X	P-CONIF	U	P	41
<i>Xestoleptura crassipes</i> (LeConte)	O-vg/wood	Fl/X	P-CONIF	C	P	2,40,41
<i>Xestoleptura tibialis</i> (LeConte)	O-vg/wood	Fl/X	P-CONIF	U	P	
CHRYSOMELIDAE (22 genera, 30 species)						
<i>Altica ambiens</i> LeConte	F-cn/F-sl	H/Rt	P-Alnus	C	P	
<i>Altica tombacina</i> Mannerheim	F-cn/F-sl	H/Rt	P-Epilo	C	P	2,40

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CHRYSOMELIDAE (continued)						
<i>Anisostena californica</i> VanDyke		H/H		U	P	
<i>Bromius obscurus</i> Linnaeus	O-vg/	H/H	P- <i>Epilo</i>	C	P	1,2,23,40
<i>Chrysolina quadrigemina</i> (Suffrian)(I)	O-vg/O-vg	H/H	P- <i>Hype</i>	C	P	23,40
<i>Chrysomela interna</i> Brown	F-cn/	H/H	P- <i>Alnus</i>	U	P	
<i>Cryptocephalus sanguinicollis</i>						
	Suffrian	R-vg/	H/H	P- <i>Salix</i>	U	P
<i>Diachus auratus</i> Fabricius	R-vg/	H/H	P- <i>Salix</i>	U	P	
<i>Dibolia</i> sp.		H/H			P	
<i>Galeruca rudis</i> LeConte	O-vg/	H/H	P- <i>Lupin</i>	U	P	
<i>Longitarsus</i> spp. (2)	O-vg/	H/H			P	40
<i>Monoxia angularis</i> LeConte	O-vg/	H/H		U	P	2
<i>Orsodacne atra</i> Ahrens		H/H		U	P	2
<i>Pachybrachis circumcinctus</i> Crotch		H/H		U	P	2
<i>Pachybrachis melanostichus</i> Suffrian	R-vg/	H/H	P- <i>Salix</i>	U	P	2
<i>Phaedon prasinellus</i> LeConte	O-vg/	H/H		U	P	40
<i>Phyllotreta denticornis</i> Horn	O-vg/	H/H	P-CRUCI	U	P	40
<i>Phyllotreta</i> sp.	O-vg/	H/H	P-CRUCI	U	P	40
<i>Plateumaris emarginata</i> (Kirby)	S-Aq/S-Aq	H/H		U	P	23
<i>Pseudoluperus longulus</i> LeConte		H/H		U	P	
<i>Psylliodes</i> sp.	O-vg/	H/H		U	P	40
<i>Pyrrhalta carbo</i> LeConte	R-vg/	H/H	P- <i>Salix</i>	C	P	2
<i>Pyrrhalta punctipennis</i> Mannerheim	R-vg/	H/H	P- <i>Salix</i>	U	P	
<i>Scelolyperus hatchi</i> Wilcox		H/H		U	P	
<i>Scelolyperus varipes</i> LeConte		H/H		U	P	2,54
<i>Syneta carinata</i> Mannerheim	F-cn/	H/H	P-CONIF	U	P	41
<i>Syneta hamata</i> Horn	F-cn/	H/H	P-TREES	U	P	1,2,23,41
<i>Syneta simplex</i> LeConte	F-cn/	H/H	P- <i>Quga</i>	U	P	2,41
<i>Timarcha intricata</i> Haldeman	F-cn/	H/H	P-SHRUB	C	P	2,40
CICINDELIDAE (2 genera, 3 species)						
<i>Cicindela longilabris</i> Say	O-gd/O-sl	Pr/Pr		U	P	
<i>Cicindela oregona</i> LeConte	O-gd/O-sl	Pr/Pr		U	P	2,37
<i>Omus dejeani</i> Reiche	F-gd/F-sl	Pr/Pr		A	P	2,37,40
CIIDAE (3 genera, 6 species)						
<i>Cis americanus</i> Mannerheim	fung/fung	Fu/Fu		U	P	41
<i>Cis fuscipes</i> Mellie	fung/fung	Fu/Fu		U	P	41
<i>Cis hystriculus</i> Casey	fung/fung	Fu/Fu		U	P	41
<i>Cis maritimus</i> (Hatch)	fung/fung	Fu/Fu		U	P	40,41
<i>Dolichocis manitoba</i> Dury	fung/fung	Fu/Fu		U	P	41
<i>Octotemnus laevis</i> Casey	fung/fung	Fu/Fu		U	P	40,41
CLAMBIDAE (2 genera, 2 species)						
<i>Clambus gibbulus</i> (LeConte)	F-lt/F-lt	Fu/Fu		R	P	23
<i>Empelus brunnipennis</i> (Mannerheim)	F-lt/F-lt	Fu/Fu		U	P	2
CLERIDAE (6 genera, 9 species)						
<i>Corinthiscus fasciatus</i> LeConte		Pr/Pr		U	P	
<i>Cymatodera decipiens</i> Fall	wood/wood	Pr/Pr		U		1,2

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CLERIDAE (continued)						
<i>Enoclerus eximius</i> (Mannerheim)	wood/wood	Pr/Pr	I-COLEO	U		1,2
<i>Enoclerus schaefferi</i> Barr	F-cn/F-cn	Pr/Pr	I-LEPID	U		1,2
<i>Enoclerus sphegeus</i> (Fabricius)	wood/wood	Pr/Pr	I-SCOLY	U	P	2,41
<i>Phyllobaenus humeralis</i> (Say)	F-cn/F-cn	Pr/Pr		U	P	1,2
<i>Phyllobaenus scaber</i> LeConte	F-cn/F-cn	Pr/Pr		U	P	2
<i>Thanasimus undatulus</i> (Say)	wood/wood	Pr/Pr	I-SCOLY	U	P	41
<i>Trichodes ornatus</i> Say	O-vg/nest	Fl/Pr		U	P	
COCCINELLIDAE (16 genera, 30 species)						
<i>Adalia bipunctata</i> (Linnaeus) (I)	O-vg/O-vg	Pr/Pr	I-APHID	U	P	
<i>Anatis rathvoni</i> (LeConte)	F-cn/F-cn	Pr/Pr	I-APHID	U	P	1,2,23
<i>Calvia quatuordecimguttata</i> (Linnaeus)	O-vg/O-vg	Pr/Pr	I-APHID	R	P	
<i>Chilocorus fraternus</i> LeConte	F-cn/F-cn	Pr/Pr	I-COCCD	U	P	1
<i>Coccinella californica</i> Mannerheim	O-vg/O-vg	Pr/Pr	I-APHID	U		23
<i>Coccinella trifasciata subversa</i> LeConte	O-vg/O-vg	Pr/Pr	I-APHID	C	P	2,23
<i>Cycloneda polita</i> Casey	O-vg/O-vg	Pr/Pr	I-APHID	C	P	2,23
<i>Hippodamia apicalis</i> Casey	O-vg/O-vg	Pr/Pr	I-APHID	U	P	
<i>Hippodamia convergens</i> Guerin	O-vg/O-vg	Pr/Pr	I-APHID	A	P	1,2
<i>Hyperaspis postica</i> LeConte	F-cn/F-cn	Pr/Pr	I-COCCD	U	P	2,40
<i>Microwisea misella</i> (LeConte)	F-cn/F-cn	Pr/Pr	I-COCCD	R	P	1
<i>Mulsantina picta</i> (Randall)	F-cn/F-cn	Pr/Pr	I-APHID	C	P	1,2
<i>Myzia subvittata</i> (Mulsant)	F-cn/F-cn	Pr/Pr	I-APHID	U	P	
<i>Nephus atramentarius</i> (Boheman)		Pr/Pr	I-APHID		P	
<i>Psyllobora borealis</i> Casey	F-cn/F-cn	Fu/Fu		A	P	
<i>Psyllobora vigintimaculata</i> (Say)	F-cn/F-cn	Fu/Fu		A	P	1,2
<i>Scymnus ardelio</i> Horn	F-cn/F-cn	Pr/Pr		U	P	2
<i>Scymnus aridus</i> Casey	F-cn/F-cn	Pr/Pr			P	
<i>Scymnus calaveras</i> Casey	F-cn/F-cn	Pr/Pr			P	
<i>Scymnus caurinus</i> Horn	F-cn/F-cn	Pr/Pr		C	P	2,40
<i>Scymnus difficilis</i> Casey	F-cn/F-cn	Pr/Pr			P	23
<i>Scymnus impletus</i> Gordon	F-cn/F-cn	Pr/Pr			P	
<i>Scymnus lacustris</i> LeConte	F-cn/F-cn	Pr/Pr		C	P	2,23
<i>Scymnus marginicollis</i> Mannerheim	F-cn/F-cn	Pr/Pr		U	P	23
<i>Scymnus nebulosus</i> LeConte	F-cn/F-cn	Pr/Pr		U	P	41
<i>Scymnus pacificus</i> Crotch	F-cn/F-cn	Pr/Pr		R	P	
<i>Scymnus tahoensis</i> Casey	F-cn/F-cn	Pr/Pr			P	
<i>Stethorus punctillum</i> Weise (I)	F-cn/F-cn	Pr/Pr	A-ACARI	U	P	2
<i>Stethorus punctum picipes</i> Casey	F-cn/F-cn	Pr/Pr	A-ACARI	U	P	1
<i>Zilus aterrimus</i> (Horn)	F-cn/F-cn	Pr/Pr		R	P	1,2
COLYDIIDAE (6 genera, 6 species)						
<i>Colydium lineola</i> Say	wood/wood	Pr/Pr		U	P	41
<i>Lapethus discretus</i> Casey				R	P	41
<i>Lasconotus intricatus</i> Kraus	wood/wood	Pr/Pr	I-SCOLY	U	P	2,41
<i>Megataphrus tenuicornis</i> Casey	F-lt/F-lt	Pr/Pr		U	P	40
<i>Namunaria pacifica</i> Horn	wood/wood	Fu/Fu		U	P	41
<i>Oxylaemus californicus</i> Crotch	wood/wood	Pr/Pr		U	P	41

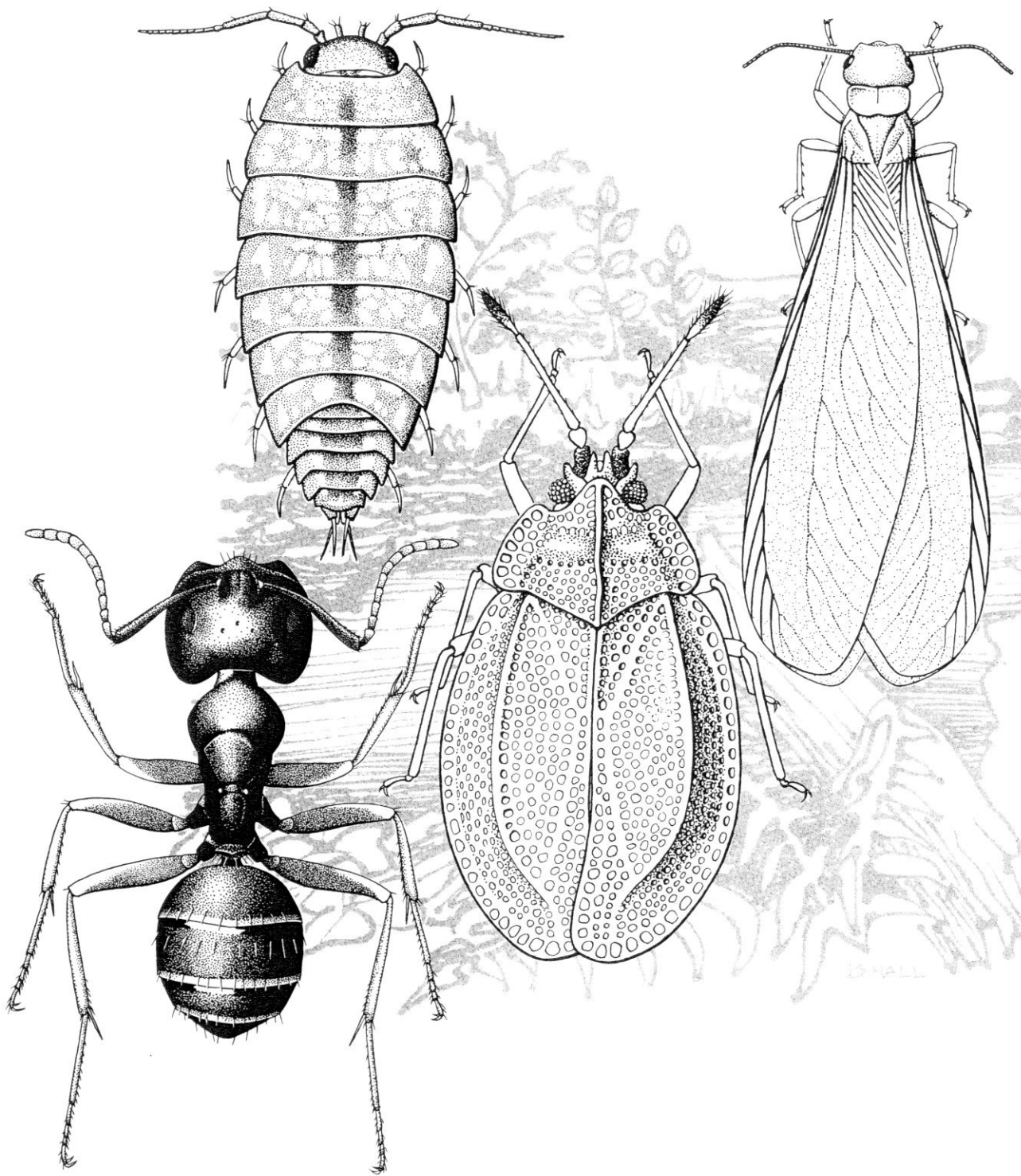
Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CORYLOPHIDAE (1 genus, 1 species)						
<i>Orthoperus scutellaris</i> LeConte	F-lt/F-lt	Pr/		U	P	41
CRYPTOPHAGIDAE (6 genera, 8 species)						
<i>Anchicera gonodera</i> Casey				U	P	2
<i>Anchicera ochracea</i> Zimmerman	F-lt/F-lt	D/D		U	P	41
<i>Atomeria longipennis</i> Casey				R	P	41
<i>Atomeria stricticollis</i> Casey		D/D		R	P	2
<i>Cryptophagus tuberculatus</i> Mäklin	F-lt/F-lt	D/D		U	P	1,41
<i>Henoticoides lorna</i> Hatch	wood/wood	Fu/Fu		R	P	40,41
<i>Pteryngium crenatum</i> Gyllenhal				R	P	41
<i>Salebius octodentatus</i> Mäklin				R	P	
CUCUJIDAE (6 genera, 7 species)						
<i>Cryptolestes ferrugineus</i> Stephens (I)	dom/dom	sd/sd		U	P	40
<i>Cucujus clavipes</i> Fabricius	wood/wood	Pr/Pr		U	P	41
<i>Dendrophagus glaber</i> LeConte	wood/wood	Pr/Pr		R	P	41
<i>Laemophloeus biguttatus</i> Say	wood/wood	Pr/Pr		U	P	
<i>Pediacus depressus</i> Herbst	wood/wood	Pr/Pr		C	P	1,2,41
<i>Silvanus bidentatus</i> Fabricius (I)	wood/wood	Pr/Pr		U	P	
<i>Silvanus planatus</i> Germar	wood/wood	Pr/Pr		U	P	1
CURCULIONIDAE (33 genera, 55 species)						
<i>Agasphaerops nigra</i> Horn	O-gd/O-sl	H/H	P-LILIA	U	P	40
<i>Anthonomus haematopus</i> Boheman	R-vg/R-vg	H/H	P-Salix	U	P	
<i>Anthonomus</i> sp.		H/H			P	
<i>Apion cribricolle</i> LeConte	O-vg/O-vg	H/Sd	P-Lotus	U	P	
<i>Apion</i> sp.		H/Sd			P	
<i>Auleutes cruralis</i> (LeConte)		H/		U	P	
<i>Cimberis comptus</i> LeConte	F-cn/F-cn	H/X		U	P	1
<i>Cnemogonus lecontei</i> Dietz		H/			P	2,40
<i>Cossonus ponderosae</i> VanDyke	wood/wood	X/X		U	P	41
<i>Cryptorhyncus lapathi</i> Linnaeus (I)	F-cn/F-cn	H/X	P-DECID	U	P	
<i>Cylindrocopturus furnissi</i> Buchanan	F-cn/F-cn	H/X	P-CONIF	C	P	2
<i>Cylindrocopturus longulus</i> LeConte	F-cn/F-cn	H/X	P-CONIF	U	P	
<i>Deporaus glastinus</i> LeConte	F-cn/	H/	P-Querc		P	2
<i>Dorytomus mannerheimi</i> Gemminger	R-vg/R-vg	H/Sd	P-Salix	U	P	
<i>Dorytomus</i> sp.	R-vg/R-vg	H/Sd			P	
<i>Dyslobus granicollis</i> (LeConte)	F-cn/F-sl	H/Rt	P-SHRUB	C	P	2,40
<i>Dyslobus lecontei</i> Casey	F-cn/F-sl	H/Rt		C	P	2,40,41
<i>Dyslobus productus</i> Hatch	F-cn/F-sl	H/Rt		U	P	40
<i>Geodercodes latipennis</i> Casey	F-lt/F-sl	H/		C	P	2,40
<i>Gymnaetron pascuorum</i> Gyllenhal (I)	O-vg/O-vg	H/Sd	P-Plant	U	P	2
<i>Lechriops californica</i> (LeConte)	F-cn/F-cn	H/X	P-Pinus	U	P	2,41
<i>Lobosoma horridum</i> Mannerheim	F-lt/F-sl	H/		C	P	2,40
<i>Magdalis alutacea</i> LeConte	F-cn/F-cn	H/X	P-Picea	U	P	1
<i>Mecinus pyraeter</i> (Herbst)		H/			P	
<i>Nemocestes incomptus</i> Horn	F-cn/F-cn	H/Rt		U	P	2,40
<i>Nemocestes puncticollis</i> Casey	F-cn/F-cn	H/Rt		C	P	2,40
<i>Otiorhyncus ovatus</i> (Linnaeus) (I)	O-vg/O-sl	H/Rt	P-SHRUB	U	P	40
<i>Otiorhyncus rugosostriatus</i> (Goeze) (I)	O-vg/O-sl	H/Rt	P-SHRUB	U	P	40

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CURCULIONIDAE (continued)						
<i>Otiiorhyncus sulcatus</i> (Fabricius) (I)	O-vg/O-sl	H/Rt	P-SHRUB	U	P	
<i>Panscopus abruptus</i> Casey	M-vg/M-sl	H/Rt		U	P	
<i>Panscopus gemmatus</i> LeConte	F-cn/F-sl	H/Rt	P-CONIF	U	P	40
<i>Phyllotrox rutilus</i> (Fall)		H/		U	P	1
<i>Pissodes fasciatus</i> LeConte	F-cn/F-cn	H/X	P-CONIF	C	P	2,41
<i>Pissodes piperi</i> Hopkins	F-cn/F-cn	H/X	P-CONIF	U	P	41
<i>Pissodes utahensis</i> Hopkins	F-cn/F-cn	H/X	P-Abies	U	P	
<i>Pissodes yosemite</i> Hopkins	F-cn/F-cn	H/X	P-Pinus	U	P	
<i>Plinthodes taeniatus</i> LeConte	F-cn/F-sl	H/Rt		U	P	2,40
<i>Pseudopanscopus costatus</i> Buchanan	F-cn/F-sl	H/Rt		U	P	40
<i>Rhynchaenus parvicollis</i> LeConte	R-vg/R-vg	H/H	P-Salix	U	P	2
<i>Rhynchaenus rufipes</i> LeConte	R-vg/R-vg	H/H	P-Salix	U	P	2
<i>Rhynchites bicolor</i> Fabricius	O-vg/O-vg	H/H	P-Rubus	C	P	
<i>Rhyncolus brunneus</i> Mannerheim	wood/wood	X/X	P-CONIF	C	P	2,40,41
<i>Rhyncolus cylindricollis</i> Wollaston	wood/wood	X/X	P-CONIF	U	P	2
<i>Sciopithes obscurus</i> Horn	F-cn/F-sl	H/Rt		C	P	
<i>Scythropus elegans</i> (Couper)	F-cn/F-sl	H/Rt	P-CONIF	U	P	
<i>Scythropus ferrugineus</i> Casey	F-cn/F-sl	H/Rt	P-Pinus	A	P	2
<i>Sitona californicus</i> Fahraeus	O-vg/O-sl	H/Rt	P-Lupin	U	P	2,40
<i>Sitona hispidulus</i> (Fabricius) (I)	M-vg/M-sl	H/Rt	P-Vicia	U	P	40
<i>Sitona lepidus</i> Gyllenhal (I)		H/Rt		U	P	
<i>Sitona lineatus</i> (Linnaeus) (I)	M-vg/M-sl	H/Rt	P-Vicia	U	P	40
<i>Sitona scissifrons</i> Say (I)	M-vg/M-sl	H/Rt	P-Vicia	U	P	
<i>Steremnius carinatus</i> Boheman	F-lt/Wood	H/X	P-CONIF	A	P	2,40,41
<i>Steremnius tuberosus</i> Gyllenhal	F-lt/wood	H/X		U	P	
<i>Tychius picirostris</i> (Fabricius) (I)	O-vg/O-vg	H/Sd	P-Trifo	U	P	2
<i>Tychius stepheni</i> Schönherr (I)	O-vg/O-vg	H/Sd	P-Trifo	U	P	40
DASCILLIDAE (3 genera, 3 species)						
<i>Anchycteis velutina</i> Horn	F-cn/Aqt	Pr/Pr		R	P	
<i>Araeopidius monachus</i> LeConte	F-cn/Aqt	Pr/Pr		U	P	2,23
<i>Macropogon piceus</i> LeConte	F-cn/	Pr/Pr		C	P	1,2
DERMESTIDAE (6 genera, 7 species)						
<i>Anthrenus castaneae</i> Melsheimer	O-vg/nest	Fl/Sv		U	P	
<i>Anthrenus lepidus</i> LeConte	O-vg/nest	Fl/Sv		U	P	2
<i>Attagenus piceus</i> Olivier (I)	O-vg/	Fl/Sv		U	P	
<i>Dearthrus stebbensii</i> Beal	O-vg/	Fl/Sv		U	P	2
<i>Dermestes talpinus</i> Mannerheim	carr/carr	Sv/Sv		U	P	40
<i>Orphilus niger</i> (Rossi)	O-vg/	Fl/Sv		U	P	2
<i>Trogoderma inclusum</i> LeConte	O-vg/nest	Fl/Sv		U	P	1,2
DERODONTIDAE (3 genera, 4 species)						
<i>Derodontus trisignatus</i> Mannerheim	fung/fung	Fu/Fu		U	P	40
<i>Laricobius laticollis</i> LeConte	F-cn/F-cn	Pr/Pr	I-APHID	U	P	1,2
<i>Laricobius nigrinus</i> Fender	F-cn/F-cn	Pr/Pr	I-APHID	U	P	1
<i>Peltastica tuberculata</i> Mannerheim	wood/wood	Sp/Sp		U	P	1,2,23,41

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
DYTISCIDAE (2 genera, 2 species)						
<i>Acilius semisulcatus abbreviatus</i> Mannerheim	Aqt/Aqt	Pr/Pr		U	P	
<i>Agabinus glabrellus</i> Motschulsky	Aqt/Aqt	Pr/Pr				23
ELATERIDAE (18 genera, 57 species)						
<i>Agriotella occidentalis</i> Brown				U	P	
<i>Agriotes apicalis</i> LeConte	/O-sl	/H		U	P	23,41
<i>Agriotes oregonensis</i> Beck	/O-sl	/H		U	P	40
<i>Alaus melanops</i> LeConte	wood/wood	/Pr	P-CONIF	U	P	
<i>Ampedus anthracinus</i> LeConte	wood/wood	/X		U	P	23,41
<i>Ampedus apicatus</i> Say	wood/wood	/X		U	P	2
<i>Ampedus brevis</i> VanDyke	wood/wood	/X		R	P	41
<i>Ampedus carbonicolor</i> Eschscholtz	wood/wood	/X		U	P	1
<i>Ampedus cordifer</i> LeConte	wood/wood	/X	P-Querc	U		2
<i>Ampedus dimidiatus</i> LeConte	wood/wood	/X		U	P	41
<i>Ampedus melinus</i> LeConte	wood/wood	/X		U		23
<i>Ampedus moerens</i> LeConte	wood/wood	/X		U	P	
<i>Ampedus occidentalis</i> Lane	wood/wood	/X		U	P	41
<i>Ampedus oregonus</i> Schaeffer	wood/wood	/X		U	P	2,23,41
<i>Ampedus nigrinus</i> Herbst	wood/wood	/X		U	P	41
<i>Ampedus phoenicopterus</i> Germar	wood/wood	/X		U	P	23,41
<i>Ampedus rhodopus</i> LeConte	wood/wood	/X		U	P	1,40,41
<i>Ampedus varipilis</i> VanDyke	wood/wood	/X		U	P	2
<i>Athous imitans</i> Fall	0-vg/O-sl			R	P	41
<i>Athous rufiventris</i> Eschscholtz	0-vg/O-sl			U	P	2,41
<i>Athous scissus</i> LeConte	0-vg/O-sl			U	P	41
<i>Athous varius</i> Lane	0-vg/O-sl			U	P	2,40,41
<i>Athous vittiger</i> LeConte	0-vg/O-sl			U	P	41
<i>Cardiophorus</i> sp.	S-Aq/S-Aq			U	P	2
<i>Ctenicera bombacina</i> (Germar)	/M-sl	/H		U	P	
<i>Ctenicera columbiana</i> (Brown)	/M-sl	/H		U	P	2,41
<i>Ctenicera comes</i> Brown		/H		U	P	41
<i>Ctenicera dolorosa</i> VanDyke		/H		U		23
<i>Ctenicera falsifica angularis</i> LeConte	/M-sl	/H		U	P	1,23,40,41
<i>Ctenicera nebraskensis</i> (Bland)	/M-sl	/H		U	P	2
<i>Ctenicera nigricollis</i> Bland		/H		U	P	41
<i>Ctenicera opacula</i> (LeConte)	/M-sl	/H		U	P	1,40,41
<i>Ctenicera resplendens</i> (Eschscholtz)	/M-sl	/H		U	P	
<i>Ctenicera sylvatica</i> (VanDyke)	/M-sl	/H		U	P	
<i>Ctenicera suckleyi</i> (LeConte)	/M-sl	/H		U	P	2,41
<i>Ctenicera umbricola</i> Eschscholtz		/H		U	P	41
<i>Ctenicera umbripennis</i> (LeConte)	/M-sl	/H		U	P	2,41
<i>Ctenicera volitans</i> (Eschscholtz)	/M-sl	/H		U	P	41
<i>Ctenicera xanthonomus</i> Horn		/H		R	P	41
<i>Ctenicera</i> sp.	/M-sl	/H			P	1
<i>Dalopius</i> sp.				U	P	41
<i>Eanus striatipennis</i> Brown	bog/	/H		R	P	
<i>Hemicrepidius morio</i> LeConte				U	P	2,40,41
<i>Hemicrepidius pallidipennis</i> Mannerheim				U	P	41
<i>Hypolithus funebris</i> (Candèze)				U	P	23
<i>Hypolithus squalidus</i> LeConte				U		23
<i>Lacon rorulentus</i> (LeConte)	wood/wood	/Pr		U	P	

Decomposed Log

Conifer forests in the Pacific Northwest are characterized by the greatest quantities of coarse woody debris of any ecosystem in the world. Much of the physical degradation of logs is accomplished by a succession of arthropods associated with each advancing stage of decomposition. In the middle stages of decay, nutrients within the remaining sapwood and heartwood are often more difficult to use. Carpenter ants, such as *Camponotus modoc* (lower left), remove vast quantities of wood in constructing their nests. The dampwood termite, *Zootermopsis angusticollis* (upper right), is able to use remaining wood as a food source with the aid of symbiotic gut bacteria. In the later stages of decay, the remaining punky wood is processed into the soil system through the feeding activity of the terrestrial isopod *Ligidium gracile* (upper left) and other organisms typically associated with litter decomposition. Complete decomposition may take 200 years or more. Decaying logs also offer refuge sites for small mammals, salamanders, and many other creatures that live on the forest floor. Logs in shaded old-growth forests provide a good substrate for mosses, which in turn are food for the flightless lace bug *Acalypta saundersi* (center). Flightlessness is a characteristic of many arthropods inhabiting old growth, as distinct from those inhabiting younger forests. For example, *Acalypta* has two common species in the Andrews Forest--*A. saundersi* in mature and old-growth forests and *A. barberi* in open sunny habitats. *A. saundersi* is always flightless, but *A. barberi* is dimorphic, having both fully winged and flightless individuals. The flightless condition of *A. saundersi* appears to have developed in conjunction with long-term stability of habitat. Related flightless species of *Acalypta* in North America also have associations with habitat permanence.



Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
ELATERIDAE (continued)						
<i>Limonium maculicollis</i> Motschulsky	O-vg/O-sl	H/H		U	P	40,41
<i>Limonium nitidulus</i> Horn	O-vg/O-sl	H/H		U	P	23,40
<i>Limonium pictus</i> VanDyke	F-cn/			U	P	41
<i>Limonium</i> sp.				U	P	41
<i>Megapenthes caprella</i> (LeConte)	F-cn/	/H		A	P	1,2,40,41
<i>Micrathous brevis</i> (VanDyke)				U	P	40
<i>Negastrius gradarius</i> (Horn)				U	P	23
<i>Negastrius</i> sp.	S-Aq/S-Aq			U	P	2
<i>Pityobius murrayi</i> (LeConte)	F-cn/			R	P	
<i>Sericus silaceus</i> (Say)				U	P	41
ELMIDAE (1 genus, 1 species)						
<i>Lara avara</i> LeConte	Aqt/Aqt	Go/Go		U	A	
ENDOMYCHIDAE (5 genera, 5 species)						
<i>Endomychus limbata</i> Horn	fung/fung	Fu/Fu		U	P	
<i>Mycetina idahoensis</i> Fall	fung/fung	Fu/Fu		U	P	1,41
<i>Phymaphora californicus</i> Horn	fung/fung	Fu/Fu		R	P	41
<i>Stethorhanis borealis</i> Blaisdell	fung/fung	Fu/Fu		R	P	2,40
<i>Xenomycetes laversi</i> Hatch	fung/fung	Fu/Fu		R	P	2,40
EROTYLIDAE (2 genera, 2 species)						
<i>Dacne californica</i> Horn	fung/fung	Fu/Fu		U	P	40
<i>Triplax californicus</i> LeConte	fung/fung	Fu/Fu		U	P	2
EUCINETIDAE (1 genus, 1 species)						
<i>Eucinetus infumatus</i> LeConte	wood/wood	Fu/Fu		U	P	41
EUCNEMIDAE (6 genera, 8 species)						
<i>Dirhagus pectinatus</i> (LeConte)	wood/wood	/X		R	P	41
<i>Dromaeolus basalis</i> LeConte	wood/wood	/X	P-CONIF	U	P	1
<i>Dromaeolus californicus</i> Bonvouloir	wood/wood	/X		R	P	41
<i>Epiphanis cornutus</i> Eschscholtz	wood/wood	/X		U	P	2,41
<i>Hylis terminalis</i> LeConte	wood/wood	/X		U	P	
<i>Isorhipis obliqua</i> Say	wood/wood	/X		U	P	40
<i>Melasis rufipennis</i> Horn	wood/wood	/X	P-CONIF	U	P	41
<i>Melasis tsugae</i> G. Hopping	wood/wood	/X	P-CONIF	U	P	
EUGLENIDAE (1 genus, 1 species)						
<i>Phomalus brunnipennis</i> LeConte	F-cn/	Fl/		R	P	1
HELODIDAE (2 genera, 5 species)						
<i>Cyphon brevicollis</i> LeConte	R-vg/Aqt	/F		U	P	
<i>Cyphon concinnus</i> LeConte	R-vg/Aqt	/F		U	P	
<i>Elodes angusta</i> Hatch	R-vg/Aqt	/F		U		2
<i>Elodes apicalis</i> LeConte	R-vg/Aqt	/F		U	P	

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	References	
				Ab	Co
HELODIDAE (continued)					
<i>Elodes</i> sp.	R-vg/Aqt	/F		P	2
HETEROCERCIDAE (1 genus, 1 species)					
<i>Lanternarius brunneus</i> (Melsheimer)	S-Aq/S-Aq	Pr/Pr		C P	
HISTERIDAE (5 genera, 6 species)					
<i>Gnathoncus interceptus</i> LeConte	F-1t/F-1t	Pr/Pr		R	23
<i>Isolomalus mancus</i> Casey	wood/wood	Pr/Pr	I-SCOLY	U P	2,41
<i>Psiloscelis subopaca</i> LeConte	nest/nest	Pr/Pr	I-Formi	R P	
<i>Saprinus lubricus</i> LeConte	carr/carr	Pr/Pr		U P	40
<i>Saprinus lugens</i> Erichson	carr/carr			U P	40
<i>Stictostix californicus</i> Horn	S-Aq/S-Aq	Pr/Pr		U P	23
HYDROPHILIDAE (7 genera, 8 species)					
<i>Ametor scabrosus</i> Horn	Aqt/Aqt	H/Pr		U P	
<i>Cercyon</i> sp.	dung/dung	/Pr		U P	40
<i>Crenitis rufiventris</i> Horn	Aqt/Aqt	H/Pr		U P	40
<i>Crenitis snoqualmie</i> Miller	Aqt/Aqt	H/Pr		U P	2,40
<i>Cymbiodyta dorsalis</i> Motschulsky	Aqt/Aqt	H/Pr		U P	
<i>Laccobius carri</i> d'Orch	Aqt/Aqt	H/Pr		U P	
<i>Megasternum posticatum</i> Mannerheim		/Pr		U P	2,40,41
<i>Sphaeridium bipustulatum</i> Fabricius (I)	dung/dung	Du/Pr		U P	
LAMPYRIDAE (3 genera, 3 species)					
<i>Ellychnia hatchi</i> Fender	F-cn/F-1t	/Pr	A-WORM	U P	2,40,41
<i>Phausis skelleyi</i> Fender	F-cn/F-1t	/Pr		U P	40
<i>Pterotus obscuripennis</i> LeConte	F-cn/F-1t	/Pr	A-SNAIL	R P	
LATHRIDIIDAE (6 genera, 10 species)					
<i>Aridius nodifer</i> Westwood (I)	F-1t/F-1t	Fu/Fu		U P	1,40,41
<i>Corticaria dentigera</i> LeConte	wood/wood	Fu/Fu		R P	1
<i>Enicmus cordatus</i> Belon	F-1t/F-1t	Fu/Fu		U P	40
<i>Enicmus tenuicornis</i> LeConte	wood/wood	Fu/Fu		U P	41
<i>Melanophthalma distinguenda</i> Comolli (I)	F-cn/	Fu/Fu		C P	2,40
<i>Melanophthalma gibbosa</i> Herbst (I)	F-cn/	Fu/Fu		U P	40
<i>Melanophthalma pumila</i> LeConte	F-cn/	Fu/Fu		U P	2
<i>Melanophthalma villosa</i> Zimmerman	F-cn/	Fu/Fu		U P	
<i>Stephostethus liratus</i> LeConte	F-cn/	Fu/Fu		U P	2
<i>Thes laeiventris</i> (Fall)	F-cn/	Fu/Fu		R P	41
LEIODIDAE (13 genera, 24 species) (includes LEPTODIRIDAE)					
<i>Agathidium concinnum</i> Mannerheim	fung/fung	Fu/Fu		U P	41
<i>Agathidium contiguum</i> Fall	fung/fung	Fu/Fu		U P	41
<i>Agathidium jasperinum</i> Fall	fung/fung	Fu/Fu		U P	2,40,41

Taxonomic category	Habitat Ad/Im	Funct Plant/ group animal		Ab	Co	References
		Ad/Im	host			
LEIODIDAE (continued)						
<i>Agathidium maculosum</i> Brown	fung/fung	Fu/Fu		U	P	2
<i>Agathidium pulchrum</i> LeConte	fung/fung	Fu/Fu		U	P	2,40,41
<i>Anisotoma fenderi</i> Hatch	fung/fung	Fu/Fu		U	P	41
<i>Caenocyrtia picipennis</i> LeConte		Fu/Fu		U	P	40,41
<i>Catopocerus capizzii</i> Hatch	F-1t/F-1t	Sv/Sv		C	P	2,40
<i>Catopocerus tibialis</i> Hatch	F-1t/F-1t	Sv/Sv		U	P	
<i>Catops basilaris</i> (Say)	F-1t/F-1t	Sv/Sv		C	P	2,40,41
<i>Catops graciosus</i> Blanchard	F-1t/F-1t	Sv/Sv		U	P	41
<i>Catoptrichus frankenhaeuseri</i> (Mannerheim)	F-1t/F-1t	Sv/Sv		U	P	40,41
<i>Colon</i> sp.	F-1t/F-1t	Sv/Sv		U	P	2,40,41
<i>Hydnobius lobatus</i> Hatch		Fu/Fu		U	P	
<i>Hydnobius longulus</i> LeConte		Fu/Fu		U	P	2,40
<i>Hydnobius pumilus</i> LeConte		Fu/Fu		U	P	40
<i>Hydnobius simulator</i> Brown		Fu/Fu		U	P	40
<i>Leiodes grossa</i> Hatch	fung/fung	Fu/Fu		U	P	2,23
<i>Leiodes horni</i> Hatch	fung/fung	Fu/Fu		U	P	40
<i>Leiodes morula</i> (LeConte)	fung/fung	Fu/Fu		U	P	40
<i>Nemadus decipiens</i> Horn	F-1t/F-1t	Sv/Sv		C	P	40
<i>Neocyrtusa sternita</i> Hatch		Fu/Fu		U	P	2,40
<i>Platycholeus opacellus</i> Fall	F-1t/F-1t	Sv/Sv		R	P	2,40
<i>Triarthron lecontei</i> Horn		Fu/Fu		R	P	40,41
LEPTINIDAE (1 genus, 1 species)						
<i>Leptinus occidentoamericanus</i> Peck	anim/nest	Sv/Sv	A-RODNT	U	P	23,40
LIMNICHIDAE (1 genus, 1 species)						
<i>Lichminus tenuicornis</i> (Casey)	S-aq/S-aq			R	P	2,41
LUCANIDAE (3 genera, 3 species)						
<i>Ceruchus striatus</i> LeConte	wood/wood	nf/X	P-CONIF	U	P	
<i>Platyceroides laticollis</i> Casey	F-gd/wood	nf/X	P-DECID	U	P	2,40
<i>Platycerus oregonensis</i> Westwood	wood/wood	nf/X	P-DECID	U	P	41
LYCIDAE (1 genus, 2 species)						
<i>Dictyoapterus hamatus</i> Mannerheim	F-cn/F-1t	Pr/Pr		U	P	41
<i>Dictyoapterus simplicipes</i> Mannerheim	F-cn/F-1t	Pr/Pr		C	P	1,41
MELANDRYIDAE (11 genera, 17 species)						
<i>Anaspis atrata</i> Champion	O-vg/wood	Fl/		C	P	1
<i>Anaspis duryi</i> Liljeblad	O-vg/wood	Fl/		U	P	
<i>Anaspis olympiae</i> Hatch	O-vg/wood	Fl/		U	P	
<i>Anaspis rufa</i> Say	O-vg/wood	Fl/		A	P	1,40,41
<i>Anaspis seposita</i> Liljeblad	O-vg/wood	Fl/		C	P	40
<i>Anaspis sericea</i> Mannerheim	O-vg/wood	Fl/		U		23
<i>Emmesa testacea leeperi</i> Malkin	F-cn/wood			U	P	1,41
<i>Hallomenus scapularis</i> Melsheimer	F-cn/wood	Fu/Fu		U	P	41
<i>Holostrophus impressicollis</i> LeConte	F-cn/wood			R	P	

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
MELANDRYIDAE (continued)						
<i>Orchesia ornata</i> Horn	F-cn/wood			R	P	41
<i>Phryganophilus collaris</i> LeConte	F-cn/wood			U	P	41
<i>Prothalia holmbergii</i> Mannerheim	F-cn/wood			U	P	2,41
<i>Rushia californica</i> Fall	F-cn/wood			U	P	
<i>Serropalpus substriatus</i> Haldeman	F-cn/wood	/X	P-CONIF	U	P	41
<i>Synstrophus repandus</i> Horn	F-cn/wood	/X		R	P	41
<i>Xylita laevigata</i> Hellenius	F-cn/wood	/X	P-CONIF	U	P	1
<i>Xylita livida</i> Sahlberg	F-cn/wood	/X	P-CONIF	U	P	2,41
MELOIDAE (2 genera, 3 species)						
<i>Epicauta puncticollis</i> Mannerheim	O-vg/O-sl	Fl/Pr	I-ACRID	C	P	
<i>Lytta lugubris</i> Horn	O-vg/nest	Fl/Pr	I-BEES	U	P	
<i>Lytta stygica</i> LeConte	O-vg/nest	Fl/Pr	I-BEES	C	P	2,40
MELYRIDAE (7 genera, 10 species)						
<i>Amecocerus larsoni</i> Hatch	F-cn/	Fl/Pr		U	P	
<i>Amecocerus</i> sp.	F-cn/	Fl/Pr			P	2
<i>Anthocomus mirandus</i> LeConte	F-cn/wood	Pr/Pr		R	P	1
<i>Anthocomus mixtus</i> Horn	F-cn/wood	Pr/Pr		C	P	1,2
<i>Anthocomus thevenetii</i> Horn	F-cn/wood	Pr/Pr		U	P	
<i>Dasyrhadus impressicollis</i> Fall		Pr/Pr		U	P	2,40
<i>Dasytes cruralis</i> LeConte		Pr/Pr		U	P	2,40
<i>Eurelymis atra</i> LeConte	F-cn/	Pr/Pr		C	P	2
<i>Hoppingiana hudsonica</i> (LeConte)	F-cn/	Pr/Pr		U	P	2
<i>Hypebaeus bicolor</i> LeConte		Pr/Pr		U	P	2
MICROPEPLIDAE (1 genus, 2 species)						
<i>Micropeplus brunneus</i> Mäklin	wood/			U	P	41
<i>Micropeplus punctatus</i> LeConte	F-lt/F-lt			U	P	23
MORDELLIDAE (3 genera, 3 species)						
<i>Mordella atrata</i> Melsheimer	O-vg/wood	H/Pr		A	P	2,40
<i>Mordellistena aspersa</i> Melsheimer	O-vg/	H/Pr		U	P	40
<i>Tomoxia borealis</i> LeConte	O-vg/	H/Pr		U	P	
MYCETOPHAGIDAE (1 genus, 2 species)						
<i>Mycetophagus californicus</i> Horn	fung/fung	Fu/Fu		U	P	40,41
<i>Mycetophagus pluriguttatus</i> LeConte	fung/fung	Fu/Fu		U	P	2,23,40
NITIDULIDAE (8 genera, 12 species)						
<i>Colopterus truncatus</i> Randall	wood/wood	Sp/		U	P	
<i>Epuraea aestiva</i> Linnaeus	F-cn/	Fl/		C	P	2
<i>Epuraea ambigua</i> Mannerheim	F-cn/			U	P	2
<i>Epuraea avara</i> Randall	F-cn/	Sp/		A	P	1,2,41
<i>Epuraea obtusicollis</i> Reitter	F-lt/	Fu/Fu		U	P	40
<i>Epuraea truncatella</i> Mannerheim				U	P	41
<i>Heterhelus sericans</i> (LeConte)	F-cn/	Fl/	P-Sambu	U	P	

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
NITIDULIDAE (continued)						
<i>Meligethes nigrescens</i> Stephens	F-cn/	Fl/		C	P	2
<i>Omosita discoidea</i> Fabricius (I)	carr/carr	Sv/Sv		U	P	2
<i>Pityophagus rufipennis</i> Horn				U	P	41
<i>Pocadius fulvipennis</i> Erichson				U	P	1,2,40,41
<i>Thalycra murrayi</i> Horn	F-lt/F-lt	Fu/Fu		U	P	40,41
OEDEMERIDAE (5 genera, 7 species)						
<i>Asclera discolor</i> LeConte	F-cn/wood	Fl/X		U	P	41
<i>Asclera nigra</i> LeConte	F-cn/wood	Fl/X		U	P	2,41
<i>Calopus angustus</i> LeConte	F-cn/wood	Fl/X	P-TREES	U	P	1,2,41
<i>Ditylus gracilis</i> LeConte	F-cn/wood	Fl/X	P-CONIF	C	P	1,2,40,41
<i>Ditylus quadricollis</i> LeConte	F-cn/wood	Fl/X	P-CONIF	C	P	
<i>Oxaxis bicolor</i> (LeConte)	F-cn/wood	Fl/X		U	P	1,2
<i>Xanthochroa testacea</i> Horn	F-cn/wood	Fl/X		C	P	2,40
PEDILIDAE (1 genus, 4 species)						
<i>Pedilus abnormis</i> Horn	F-cn/			U	P	
<i>Pedilus flabellatus</i> (Horn)	F-cn/			R	P	41
<i>Pedilus monticola</i> Horn	F-cn/			U	P	
<i>Pedilus picipennis</i> Fall	F-cn/			U	P	
PHALACRIDAE (2 genera, 2 species)						
<i>Phalacrus penicillatus</i> Say	F-lt/F-lt	Fu/Fu		C	P	
<i>Stilbus apicalis</i> Melsheimer	F-lt/F-lt	Fu/Fu		U	P	
PHENGODIDAE (1 genus, 1 species)						
<i>Zarhipis integripennis</i> LeConte	F-cn/F-lt	Pr/Pr	A-DIPLO	R	PA	2
PLATYPODIDAE (1 genus, 1 species)						
<i>Platypus wilsoni</i> Swaine	wood/wood	X/X		U	P	1,41
PROSTOMIDAE (1 genus, 1 species)						
<i>Prostomis mandibularis</i> Fabricius	wood/wood	Pr/Pr		U	P	41
PSELAPHIDAE (17 genera, 35 species)						
<i>Abdiungus fenderi</i> Park & Wagner	moss/moss	Pr/Pr		U	P	2,23,42
<i>Actium barri</i> Grigarick & Schuster	F-lt/F-lt	Pr/Pr		C	P	23,42
<i>Actium microphthalmum</i> Park & Wagner	F-lt/F-lt	Pr/Pr		C	P	2,15,23,42
<i>Actium retractum</i> Casey	F-lt/F-lt	Pr/Pr		R	P	23,42
<i>Actium tentum</i> Grigarick & Schuster	F-lt/F-lt	Pr/Pr		R		23
<i>Actium wawonaensis</i> Grigarick & Schuster	F-lt/F-lt	Pr/Pr		R		23
<i>Batrisodes albionicus</i> (Aube)	F-lt/F-lt	Pr/Pr		C	P	1,2,15,40,42
<i>Cupila clavicornis</i> (Mäklin)	F-lt/F-lt	Pr/Pr				2
<i>Cupila excavata</i> Park & Wagner	F-lt/F-lt	Pr/Pr		C	P	23,42

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
PSELAPHIDAE (continued)						
<i>Euboarhexius sinus</i> Grigarick & Schuster	F-lt/F-lt	Pr/Pr		R	P	23,42
<i>Euplecturga impressicollis</i> Park & Wagner	F-lt/F-lt	Pr/Pr		R		23,42
<i>Euplectus silvicolus</i> Chandler	wood/wood	Pr/Pr	P-CONIF	R		42
<i>Hylotychnus cognatus</i> (LeConte)	F-lt/F-lt	Pr/Pr		R	P	23,42
<i>Hylotychnus dentatus</i> Schuster & Grigarick	O-sl/O-sl	Pr/Pr		U	P	42
<i>Hylotychnus intellectus</i> Schuster & Grigarick	F-lt/F-lt	Pr/Pr		U		23,42
<i>Hylotychnus stellatus</i> Schuster & Grigarick	F-lt/F-lt	Pr/Pr			P	23
<i>Lucifotychnus impellus</i> Park & Wagner	F-lt/F-lt	Pr/Pr		C	P	2,15,23,42
<i>Mayetia</i> sp.	F-lt/F-lt	Pr/Pr		R	P	40,42
<i>Megarafonus</i> sp.	F-lt/F-lt	Pr/Pr			P	2
<i>Oropodes dybasi</i> Grigarick & Schuster	F-lt/F-lt	Pr/Pr		U	P	23,42
* <i>Oropus microphthalmus</i> Chandler	F-lt/F-lt	Pr/Pr		R	P	23,38,42
<i>Oropus schusteri</i> Chandler	F-lt/F-lt	Pr/Pr		U	P	23,42
<i>Oropus striatus</i> (LeConte)	F-lt/F-lt	Pr/Pr		C	P	23,42
<i>Pselaptrichus intimus</i> Schuster & Marsh	F-lt/F-lt	Pr/Pr		U	P	23,42
<i>Pselaptrichus proprius</i> Schuster & Marsh	F-lt/F-lt	Pr/Pr				2
<i>Pselaptrichus rothi</i> Park	F-lt/F-lt	Pr/Pr		C	P	15,23,40,42
<i>Pselaptrichus vanus</i> Schuster & Marsh	F-lt/F-lt	Pr/Pr				2
<i>Reichenbachia fusticornis</i> Casey	F-lt/F-lt	Pr/Pr		R		15,23,42
* <i>Sonoma cascadia</i> Chandler	F-lt/F-lt	Pr/Pr		R		23,38,42
<i>Sonoma conifera</i> Chandler	F-lt/F-lt	Pr/Pr		R	P	23,38,42
<i>Sonoma hespera</i> Park & Wagner	F-lt/F-lt	Pr/Pr		U	P	23,42
<i>Sonoma margemina</i> Park & Wagner	F-lt/F-lt	Pr/Pr		R		15,23,42
<i>Sonoma olycalida</i> Park & Wagner	F-lt/F-lt	Pr/Pr		U	P	15,23,42
<i>Sonoma parviceps</i> (Mäklin)	F-lt/F-lt	Pr/Pr		R	P	23,42
<i>Trisignis marshi</i> Park & Wagner	F-lt/F-lt	Pr/Pr		U	P	15,23,42
PSEPHENIDAE (1 genus, 1 species)						
<i>Acneus</i> sp.	Aqt/Aqt	nf/Sc		R	A	21
PTILIIDAE (1 genus, 3 species)						
<i>Acrotrichus cognata</i> Matthews	F-lt/F-lt	Fu/Fu		U	P	
<i>Acrotrichus diffinis</i> Matthews	F-lt/F-lt	Fu/Fu		C	P	1
<i>Acrotrichus dohrnii</i> Matthews	F-lt/F-lt	Fu/Fu		U	P	
PTINIDAE (1 genus, 1 species)						
<i>Ptinus fallax</i> Fall	nest/nest	Sv/Sv		U	P	1
PYROCHROIDAE (2 genera, 2 species)						
<i>Dendroides ephemeroides</i> (Mannerheim)	F-cn/wood	/Fu		R	P	
<i>Ischalia vancouverensis</i> Harris	F-lt/wood	/Fu		R	P	40

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab Co		References
				Ab	Co	
RHIZOPHAGIDAE (2 genera, 2 species)						
<i>Macreurops longicollis</i> Horn	wood/wood			U	P	
<i>Rhizophagus scalpturatus</i> Mannerheim	wood/wood	Pr/Pr		U	P	40,41
RHYSODIDAE (1 genus, 1 species)						
<i>Clinidium calcaratum</i> LeConte	wood/wood	Fu/Fu		R	P	2,40
SALPINGIDAE (3 genera, 4 species)						
<i>Priognathus monilicornis</i> (Randell)	wood/wood	Pr/Pr		U	P	41
<i>Pytho americanus</i> Kirby	wood/wood	Pr/Pr		R	P	41
<i>Pytho seidlitzi</i> Blair	wood/wood	Pr/Pr		R	P	41
<i>Rhinosimus viridiaeneus</i> Randell	F-cn/	Pr/Pr		U	P	41
SCAPHIDIIDAE (1 genus, 1 species)						
<i>Scaphisoma castaneum</i> Motschulsky	F-lt/F-lt	Fu/Fu		C	P	41
SCARABAEIDAE (7 genera, 20 species)						
<i>Aegialia blanchardi</i> Horn	S-Aq/S-Aq	D/D		U	P	
<i>Aegialia lacustris</i> LeConte	S-Aq/S-Aq	D/D		R	P	41
<i>Aegialia montanus</i> Brown	S-Aq/S-Aq	D/D		U	P	41
<i>Aegialia opaca</i> Brown	S-Aq/S-Aq	D/D		U		23
<i>Aphodius aleutus</i> Eschscholtz	dung/dung	Dg/Dg		U	P	40,41
<i>Aphodius cribratulus</i> Schmidt	dung/dung	Dg/Dg		U	P	40
<i>Aphodius fossor</i> Linnaeus (I)	dung/dung	Dg/Dg		U	P	
<i>Aphodius haemorrhoidalis</i> (Linnaeus) (I)	dung/dung	Dg/Dg		U	P	2,40
<i>Aphodius opacus</i> LeConte	dung/dung	Dg/Dg		C	P	2,23,40,41
<i>Aphodius pectoralis</i> LeConte	dung/dung	Dg/Dg		U	P	2,41
<i>Aphodius rogersi</i> Hatch	dung/dung	Dg/Dg		U	P	40
<i>Aphodius vittatus</i> Say	dung/dung	Dg/Dg		U	P	
<i>Aphodius</i> sp. nr <i>denticulatus</i> Haldeman	dung/dung	Dg/Dg		U	P	40
<i>Bolboceras obesus</i> (LeConte)	0-sl/0-sl	D/D		U	P	2,40,41
<i>Boreocanthon simplex</i> (LeConte)	dung/dung	Dg/Dg		U	P	40
<i>Dichelonyx backii</i> Kirby	F-cn/F-sl	H/Rt	P-CONIF	C	P	2,23
<i>Dichelonyx vicina</i> Fall	F-cn/F-sl	H/Rt	P-CONIF	U	P	2,41
<i>Polyphylla decimlineata</i> (Say)	F-cn/F-sl	H/Rt	P-CONIF	U		36
<i>Serica anthracina</i> LeConte	M-vg/M-sl	H/Rt		U	P	
<i>Serica curvata</i> LeConte	F-cn/F-sl	H/Rt		U	P	1,2,40
SCOLYTIDAE (15 genera, 26 species)						
<i>Carphoborus vandykei</i> Bruck	wood/wood	X/X	P-Psme	U	P	1,2
<i>Dendroctonus pseudotsugae</i> Hopkins	wood/wood	X/X	P-Psme	C	P	1,2,23,41
<i>Dolurgus pumilus</i> (Mannerheim)	wood/wood	X/X	P-CONIF	U	P	2
<i>Dryocetes autographus</i> (Ratzeburg)	wood/wood	X/X	P-CONIF	U	P	23,41
<i>Gnathotrichus retusus</i> (LeConte)	wood/wood	Fu/Fu	P-CONIF	U	P	2,23,41
<i>Gnathotrichus sulcatus</i> (LeConte)	wood/wood	Fu/Fu	P-CONIF	U	P	1,23,41
<i>Hylastes longicollis</i> Swaine	wood/wood	H/X	P-Pinus	U	P	2
<i>Hylastes nigrinus</i> (Mannerheim)	wood/wood	H/X	P-CONIF	U	P	2,40,41
<i>Hylurgops porosus</i> (LeConte)	wood/wood	X/X	P-Pinus	U	P	23

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
SCOLYTIDAE (continued)						
<i>Hylurgops rugipennis</i> (Mannerheim)	wood/wood	X/X	P-CONIF	U	P	41
<i>Ips latidens</i> (LeConte)	wood/wood	X/X	P-Pinus	U	P	2
<i>Ips pini</i> (Say)	wood/wood	X/X	P-Pinus	U	P	41
<i>Phloeosinus punctatus</i> LeConte	wood/wood	X/X	P-CONIF	U	P	23,41
<i>Phloeosinus sequoiae</i> Hopkins	wood/wood	X/X	P-Thpl	U	P	2,41
<i>Pityokteines elegans</i> Swaine	wood/wood	X/X	P-CONIF	U	P	
<i>Pseudohylesinus granulatus</i> (LeConte)	wood/wood	X/X	P-CONIF	U	P	2,41
<i>Pseudohylesinus nebulosus</i> (LeConte)	wood/wood	X/X	P-Psme	A	P	1,2,23,41
<i>Pseudohylesinus sericeus</i> (Mannerheim)	wood/wood	X/X	P-CONIF	U	P	2,41
<i>Scolytus oregoni</i> Blackman	wood/wood	X/X	P-CONIF	U	P	1,41
<i>Scolytus tsugae</i> (Swaine)	wood/wood	X/X	P-CONIF	U	P	2
<i>Scolytus unispinosus</i> LeConte	wood/wood	X/X	P-CONIF	C	P	1,2,41
<i>Scolytus ventralis</i> LeConte	wood/wood	X/X	P-CONIF	U	P	41
<i>Trypodendron lineatum</i> (Olivier)	wood/wood	Fu/Fu	P-CONIF	A	P	1,2,41
<i>Trypodendron retesum</i> (LeConte)	wood/wood	Fu/Fu	P-Popul	U		23
<i>Xyleborinus saxeseni</i> (Ratzeburg)	wood/wood	Fu/Fu	P-CONIF	U	P	23,41
<i>Xyleborus dispar</i> (Fabricius) (I)	wood/wood	Fu/Fu	P-DECID	U	P	41
SCYDMAENIDAE (4 genera, 5 species)						
<i>Cephennum</i> sp.	F-lt/F-lt	Pr/	A-ORIBA	U	P	40
<i>Eutheia morae</i> Marsh	F-lt/F-lt			U	P	40,41
<i>Eutheia scitula</i> Mäklin	F-lt/F-lt			U	P	2,40
<i>Lophoderus similis</i> Marsh	F-lt/F-lt			C	P	1,2,40,41
<i>Scydmaenus fuchsi</i> Brendel	F-lt/F-lt			U	P	
SILPHIDAE (3 genera, 5 species) (includes AGYRTIDAE)						
<i>Ipelates latus</i> (Mannerheim)	fung/fung	Fu/Fu		U	P	23
<i>Necrophilus hydrophiloides</i> Guérin-Méneville	carr/carr	Sv/Sv		U	P	40
<i>Nicrophorus defodiens</i> Mannerheim	carr/carr	Sv/Sv		C	P	2,40
<i>Nicrophorus guttula</i> Motschulsky	carr/carr	Sv/Sv		U	P	
<i>Nicrophorus investigator</i> Zetterstedt	carr/carr	Sv/Sv		C	P	40
SPHAERITIDAE (1 genus, 1 species)						
<i>Sphaerites politus</i> Mannerheim	fung/fung	Fu/Fu		U	P	2,41
SPHINDIDAE (1 genus, 1 species)						
<i>Odontosphindus clavicornis</i> Casey		Fu/Fu		U	P	41
STAPHYLINIDAE (54 genera, 108 species)						
ALEOCHARINAE spp. undetermined	F-lt/F-lt	Pr/Pr			P	40,41
<i>Amphicroum maculatum</i> Horn	F-cn/	Fl/Pr		C	P	1,2,23,40,41
<i>Anotylus nitidulus</i> Gravenhorst	F-lt/F-lt	Pr/Pr		U	P	40
<i>Anthobium fimetarium</i> Mannerheim	carr/	Sv/		U	P	2,40
<i>Anthobium sinuosum</i> Hatch	F-cn/	Fl/		C		1
<i>Astenus longiusculus</i> Mannerheim	F-lt/F-lt	Pr/Pr		U	P	2,40
<i>Astenus robustulus</i> Casey	F-lt/F-lt	Pr/Pr		U	P	40

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
STAPHYLINIDAE (continued)						
<i>Atrechus macrocephalus</i> Nordmann	wood/	Pr/Pr		U	P	41
<i>Atrechus newtoni</i> Smetana	wood/	Pr/Pr			P	23
<i>Atrechus punctiventris</i> (Fall)	wood/	Pr/Pr		U	P	23,40
<i>Atrechus quadripennis</i> Casey	wood/	Pr/Pr		U		2
<i>Bolitobius kremeri</i> (Malkin)	F-1t/F-1t			U	P	40,41
<i>Coprophilus sexualis</i> Leech	F-1t/F-1t			R		2
<i>Coryphium arizonense</i> (Bernhauer)	F-1t/F-1t	Pr/Pr		R	P	40
<i>Creophilus maxillosus</i> Linnaeus	carr/carr	Pr/Pr	I-DIPT	U	P	
<i>Dianous nitidulus</i> LeConte	S-Aq/S-Aq	Pr/Pr		U	P	23
<i>Elonium crenulata</i> (Hatch)	F-cn/	Fl/		C	P	1
<i>Elonium rugosa</i> (Hatch)	F-cn/	Fl/		U	P	40
<i>Eusphalerum farrarae</i> Hatch	F-cn/	Fl/		C	P	2
<i>Eusphalerum fenyesi</i> Bernhauer	F-cn/	Fl/		U	P	41
<i>Eusphalerum minskae</i> Hatch	F-cn/	Fl/		C	P	2
<i>Eusphalerum pothos</i> Mannerheim	F-cn/	Fl/		C	P	
<i>Fenderia capizzii</i> Hatch	F-1t/F-1t	Pr/Pr		C	P	23,40
<i>Gabrius</i> sp.	F-1t/	Pr/Pr			P	2,40
<i>Haida keeni</i> Keen				R		23
<i>Hapalareae stouti</i> (Hatch)	F-cn/			C		1
<i>Hesperolinus piceus</i> Casey	F-1t/F-1t	Pr/		R	P	
<i>Heterothops fuscus</i> LeConte					P	23
<i>Homaeotarsus californicus</i> LeConte	F-1t/F-1t	Pr/Pr		U	P	40
<i>Linohesperus pilosus</i> Smetana	F-1t/F-1t	Pr/Pr			P	23
<i>Lithocaris obsoleta</i> Nordmann	F-1t/F-1t			U	P	2,40
<i>Lobrathium subseriatum</i> LeConte	F-1t/F-1t	Pr/Pr		U	P	40
<i>Lordithon bimaculatus</i> (Cowper)	fung/			U		23
<i>Lordithon difficilis</i> Campbell	fung/			U	P	23
<i>Lordithon fungicola</i> Campbell	fung/			U	P	23
<i>Lordithon obsoletus</i> Say	fung/			U	P	41
<i>Lordithon oregonus</i> Campbell	fung/			U	P	23
<i>Lordithon poecilis</i> (Mannerheim)	fung/			R	P	23
<i>Lordithon thoracicus</i> (Fabricius)	fung/			U	P	2,23,41
<i>Lordithon vandykei</i> Dethlephson	fung/			U	P	41
<i>Mathrilaenum subcostatum</i> (Mäklin)	F-cn/F-1t	Fl/		C	P	2,23,40,41
<i>Medon shastanicum</i> Casey	F-1t/F-1t			U	P	2,40
<i>Megarthus pictus</i> Motschulsky	F-1t/F-1t			U	P	2,23,40
<i>Mycetoporus consors</i> LeConte	F-1t/F-1t			U	P	40
<i>Mycetoporus punctatissimus</i> Hatch	F-1t/F-1t			U	P	1,2,40
<i>Neobisnius senilis</i> Horn	S-Aq/S-Aq	Pr/Pr		U	P	23
<i>Omalium rivulare</i> Paykull				U	P	41
* <i>Omalorphanus aenigma</i> Campbell & Chandler	F-1t/F-1t			U	P	23,45
<i>Ontholestes cingulatus</i> Gravenhorst	carr/carr	Pr/Pr	I-DIPT	U	P	40
<i>Orobatus tarsalis</i> Hatch				U	P	40
<i>Orus punctatus</i> Casey	F-1t/F-1t			U	P	2
<i>Orus shastanus</i> Casey	F-1t/F-1t			U	P	2,40
<i>Oxytelus montanus</i> Casey	F-1t/F-1t	Pr/Pr		U	P	40
<i>Pelecomalium opaculum</i> Casey	F-cn/	Fl/		U	P	2,23
<i>Pelecomalium puberulum</i> (Fauvel)	F-cn/	Fl/		C	P	2,23
<i>Pelecomalium testaceum</i> Mannerheim	F-cn/	Fl/		C	PA	1,2,23,40,41
<i>Philonthus cruentatus</i> Gmelin (I)	F-1t/	Pr/Pr		C	P	2,40
<i>Philonthus ochropus</i> Gravenhorst (I)	dung/	Pr/Pr		U	P	2
<i>Phlaeopterus houkiae</i> Hatch				U		23

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
STAPHYLINIDAE (continued)						
<i>Phlaeopterus lagrandeuri</i> Hatch				U	P	2, 23, 40, 41
<i>Phlaeopterus longipalpus</i> Casey				U	P	40
<i>Phloeonomus pusillus</i> Gravenhorst	wood/	Pr/Pr		U	P	41
<i>Platystethus americanus</i> Erichson	dung/	Pr/Pr		U	P	2
<i>Proteinus basalis</i> Mäklin	carr/carr	Pr/Pr		U	P	2, 40
<i>Proteinus limbatus</i> Mäklin	F-lt/F-lt	Pr/Pr		U	P	40
<i>Pseudopsis sulcata</i> Newman	F-lt/F-lt	Pr/Pr		U	P	41
<i>Quedius aenescens</i> Mäklin	F-lt/F-lt	Pr/Pr		U	P	2, 23
<i>Quedius explanatus</i> LeConte	F-lt/F-lt	Pr/Pr		U	P	40
<i>Quedius fenderi</i> Hatch	F-lt/F-lt	Pr/Pr		U	P	23
<i>Quedius laevigatus</i> Gyllenhal	F-lt/F-lt	Pr/Pr		U	P	2
<i>Quedius marginalis</i> Mäklin	F-lt/F-lt	Pr/Pr		U	P	2
<i>Quedius oculens</i> Casey	F-lt/F-lt	Pr/Pr		R	P	2, 23
<i>Quedius prostans</i> Horn	F-lt/F-lt	Pr/Pr			P	23
<i>Quedius seriatus</i> Horn	F-lt/F-lt	Pr/Pr			P	23
<i>Quedius transparens</i> Hatch	F-lt/F-lt	Pr/Pr			P	23
<i>Quedius vilis</i> Smetana	F-lt/F-lt	Pr/Pr			P	23
<i>Quedius (Microsaurus) sp.</i>	F-lt/F-lt	Pr/Pr			P	2
<i>Renardia nigrellus</i> (LeConte)	wood/wood	Pr/Pr		R	P	41
<i>Staphylinus pleuralis</i> LeConte	F-gd/F-sl	Pr/Pr		U	P	40
<i>Staphylinus rutilicauda</i> Horn	S-Aq/S-Aq	Pr/Pr		U	P	2, 40
<i>Staphylinus saphyrinus</i> LeConte	S-Aq/S-Aq	Pr/Pr		U	P	
<i>Stenus costalis</i> Casey	F-lt/F-lt	Pr/Pr		U	P	40
<i>Stenus latissimus hatchi</i> Sanderson		Pr/Pr			P	23
<i>Stenus maritimus</i> Motschulsky	S-Aq/S-Aq	Pr/Pr		U	P	2, 23
<i>Stenus mundulus</i> Casey		Pr/Pr			P	23
<i>Stenus parallelopedus</i> Motschulsky		Pr/Pr			P	23
<i>Subhaida ingrata</i> (Hatch)		Fl/		U	P	1, 23
<i>Tachinus angustatus</i> Horn	F-lt/			U		23
<i>Tachinus basalis</i> Erichson	dung/			U	P	23, 40
<i>Tachinus contortus</i> Hatch	F-lt/			U		2, 23
<i>Tachinus crotchii</i> Horn	F-lt/			U		23
<i>Tachinus debilis</i> Horn	F-lt/			U	P	23
<i>Tachinus lanei</i> Hatch	F-lt/			U	P	
<i>Tachinus maculicollis</i> Mäklin	F-lt/			C	P	40
<i>Tachinus mimus</i> Horn	F-lt/			U	P	23
<i>Tachinus nigricornis</i> Hatch	dung/			U		23
<i>Tachinus semirufus</i> Horn	F-lt/			C	P	2, 23, 40, 41
<i>Tachinus tachyporoides</i> Horn	F-lt/			U		23
<i>Tachyporus californicus</i> Horn	F-lt/	Pr/		U		23
<i>Tachyporus chrysomelinus</i> Linnaeus (I)	F-cn/	Pr/		U	P	2
<i>Trigonodemus fasciatus</i> Leech				U	P	
<i>Trigonurus crotchii</i> LeConte	wood/wood			U	P	23, 41
<i>Trigonurus dilaticollis</i> VanDyke	wood/wood			R	P	2, 41
<i>Xestolinus frontalis</i> Hatch	F-lt/F-lt	Pr/Pr		U	P	2, 40
<i>Xylodromus concinnus</i> Marsh (I)	F-lt/F-lt			U	P	1, 2
<i>Zalobius serricollis</i> LeConte	F-lt/F-lt			U	P	40, 41
<i>Zalobius spinicollis</i> LeConte	F-lt/F-lt			U		23

TENEBRIONIDAE (7 genera, 9 species)

<i>Coelocnemis californicus</i> Mannerheim	O-gd/wood	H/X		C	P	2, 40
<i>Helops californicus</i> Mannerheim	F-gd/			U	P	

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
TENEBRIONIDAE (continued)						
<i>Helops edwardsii</i> Horn	F-gd/			U	P	2,40,41
<i>Helops pernitens</i> LeConte	F-gd/			C	P	40
<i>Iphthimus serratus</i> Mannerheim	wood/wood	/X		C	P	2,40
<i>Phthora americana</i> Horn	wood/wood	/X		C	P	2,40,41
<i>Platydemia oregonense</i> LeConte	fung/fung	Fu/Fu		U	P	41
<i>Scaphidema pictum</i> Horn	S-Aq/S-Aq			U	P	
<i>Uloma longula</i> LeConte	wood/wood	/X		U	P	40.41
THROSCIDAE (3 genera, 4 species)						
<i>Aulonthroscus validus</i> LeConte	F-cn/F-lt	Pr/Pr		U	P	2,40,41
<i>Pactopus hornii</i> LeConte	F-cn/F-lt	/Pr		C	P	1,2,40,41
<i>Trixagus mendax</i> Horn	F-cn/F-lt	/Pr		U	P	1,2
<i>Trixagus sericeus</i> LeConte	F-cn/F-lt	/Pr		U	P	2,40
TROGOSITIDAE (5 genera, 6 species)						
<i>Calitys scabra</i> (Thunberg)	fung/fung	Fu/Fu		R	P	
<i>Eronyxa pallidus</i> (Motschulsky)	F-cn/	Fl/		C	P	1,2,23,40
<i>Nemosoma punctulata</i> VanDyke	wood/wood	Pr/Pr	I-SCOLY	R	P	2
<i>Ostoma ferruginea</i> (Linnaeus)	wood/fung	Fu/Fu		R	P	41
<i>Ostoma pippinskoeldi</i> (Mannerheim)	wood/fung	Fu/Fu		U	P	41
<i>Temnochila chlorodia</i> (Mannerheim)	wood/wood	Pr/Pr		U	P	2
ZOPHERIDAE (3 genera, 3 species)						
<i>Phellopsis porcata</i> LeConte	wood/fung	Fu/Fu		C	P	2,40,41
<i>Usechimorpha barberi</i> Blaisdell	F-lt/F-lt	Fu/Fu		R	P	40
<i>Usechus nucleatus</i> Casey	F-lt/F-lt	Fu/Fu		R	P	2,40,41
STREPSIPTERA						
(1 family, 1 genus, 1 species)						
STYLOPIDAE (1 genus, 1 species)						
(literature record only to family)	O-vg/ins	Pa/Pa	I-HYMEN	R		2
MECOPTERA						
(1 family, 1 genus, 1 species)						
PANORPODIDAE (1 genus, 1 species)						
<i>Brachypanorpa oregonensis</i> (MacLachan)	F-cn/F-lt	Pr/Sv		R	P	
TRICHOPTERA						
(18 families, 59 genera, 133 species)						
ARCTOPSYCHIDAE (2 genera, 3 species)						
<i>Arctopsyche grandis</i> (Banks)	R-vg/Aqt	/F		C	A	4,14,48

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
ARCTOPSYCHIDAE (continued)						
<i>Parapsyche almota</i> Ross	R-vg/Aqt	/F		U	A	
<i>Parapsyche elsis</i> Milne	R-vg/Aqt	/F		C	A	4, 14, 48
BRACHYCENTRIDAE (3 genera, 5 species)						
<i>Amiocentrus aspilus</i> (Ross)	R-vg/Aqt	/Ga		U	A	1, 4, 48
<i>Brachycentrus americanus</i> (Banks)	R-vg/Aqt	/F		A	A	1, 4, 48
<i>Micrasema bactro</i> Ross	R-vg/Aqt	/H		C	A	4, 14, 48
<i>Micrasema onisca</i> Ross	R-vg/Aqt	/H		R	A	4
* <i>Micrasema oregona</i> Denning	R-vg/Aqt	/H		R	A	1, 4, 16
CALAMOCERATIDAE (1 genus, 1 species)						
<i>Heteroplectron californicum</i> McLachlan	R-vg/Aqt	/Sh		C	A	1, 4, 14, 48
GLOSSOSOMATIDAE (4 genera, 10 species)						
<i>Agapetus occidentis</i> Denning	R-vg/Aqt	/Sc		A	A	1, 4, 48
<i>Anagapetus bernea</i> Ross	R-vg/Aqt	/Sc		C	A	4, 14
<i>Glossosoma califica</i> Denning	R-vg/Aqt	/Sc		C	A	1, 4, 48
<i>Glossosoma oregonense</i> Ling	R-vg/aqt	/Sc		R		4
<i>Glossosoma penitum</i> Banks	R-vg/Aqt	/Sc		C	A	4, 14, 48
<i>Glossosoma pyroxum</i> Ross	R-vg/Aqt	/Sc		A	A	1, 4, 48
<i>Glossosoma traviatum</i> Banks	R-vg/Aqt	/Sc		R	A	48
<i>Glossosoma velona</i> Ross	R-vg/Aqt	/Sc		R	A	4, 48
<i>Glossosoma wenatchee</i> Ross & Spencer	R-vg/Aqt	/Sc		R	A	48
<i>Protoptila coloma</i> Ross	R-vg/Aqt	/Sc		R	A	48
GOERIDAE (2 genera, 2 species)						
<i>Goera archaon</i> Ross	R-vg/Aqt	/Sc		C	A	48
<i>Goeracea genota</i> (Ross)	R-vg/Aqt	/Sc		U	A	4
HYDROPSYCHIDAE (2 genera, 6 species)						
<i>Homoplectra luchia</i> Denning	R-vg/Aqt	/F		U	A	4
<i>Hydropsyche amblis</i> Ross	R-vg/Aqt	/F		U	A	48
* <i>Hydropsyche andersoni</i> Denning	R-vg/Aqt	/F		U	A	1, 4, 16
<i>Hydropsyche centra</i> Ross	R-vg/Aqt	/F		R	A	48
<i>Hydropsyche occidentalis</i> Banks	R-vg/Aqt	/F		C	A	48
<i>Hydropsyche oslari</i> Banks	R-vg/Aqt	/F		A	A	4, 48
HYDROPTILIDAE (6 genera, 7 species)						
<i>Agraylea multipunctata</i> Curtis	R-vg/Aqt	/H		R	A	4
<i>Agraylea saltesea</i> Ross	R-vg/Aqt	/H		U	A	1, 4, 48
<i>Hydroptila arctia</i> Ross	R-vg/Aqt	/H		U	A	1, 48
<i>Neotrichia okopa</i> Ross	R-vg/Aqt			R	A	48
<i>Ochrotrichia</i> sp. <i>logona-lometa</i> complex	R-vg/Aqt	/Ga		U	A	48
<i>Palaeagapetus nearcticus</i> Banks	R-vg/Aqt	/Sh		R	A	4, 14
<i>Stactobiella delira</i> (Ross)	R-vg/Aqt			U	A	48

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
LEPIDOSTOMATIDAE (1 genus, 11 species)						
<i>Lepidostoma hoodi</i> Ross	R-vg/Aqt	/Sh		R	A	4, 14, 48
<i>Lepidostoma jewetti</i> Ross	R-vg/Aqt	/Sh		R	A	48
<i>Lepidostoma podager</i> (McLachlan)	R-vg/Aqt	/Sh		U	A	4, 48
<i>Lepidostoma rayneri</i> Ross	R-vg/Aqt	/Sh		R	A	48
<i>Lepidostoma recina</i> Denning	R-vg/Aqt	/Sh		U	A	1, 4, 48
<i>Lepidostoma roafi</i> (Milne)	R-vg/Aqt	/Sh		A	A	1, 4, 14, 48
<i>Lepidostoma unicolor</i> (Banks)	R-vg/Aqt	/Sh		C	A	4, 14, 48
<i>Lepidostoma veroda</i> Ross	R-vg/Aqt	/Sh		R	A	4, 14, 48
<i>Lepidostoma</i> sp. <i>cascadense-mira</i> complex	R-vg/Aqt	/Sh		A	A	1, 4, 14, 48
<i>Lepidostoma</i> sp. nr. <i>goedeni</i> Denning	R-vg/Aqt	/Sh		R	A	48
<i>Lepidostoma</i> sp. nr. <i>knulli</i> Ross	R-vg/Aqt	/Sh		R	A	48
LEPTOCERIDAE (5 genera, 6 species)						
<i>Ceraclea annulicornis</i> (Stephens)	R-vg/Aqt	/Ga		R	A	48
<i>Ceraclea cancellata</i> (Betten)	R-vg/Aqt	/Ga		R	A	48
<i>Mystacides alafimbriata</i> Hill-Griffin	R-vg/Aqt	/Ga		R	A	4, 48
<i>Nectopsyche</i> sp.	R-vg/Aqt	/Sh		R	A	48
<i>Oecetis inconspicua</i> (Walker)	R-vg/Aqt	/Pr		U	A	1, 4, 48
<i>Triaenodes tarda</i> Milne	R-vg/Aqt	/Sh		U	A	1, 4, 48
LIMNEPHILIDAE (21 genera, 36 species)						
<i>Allocosmoecus partitus</i> Banks	R-vg/Aqt	/Sc		U	A	1, 4, 14, 48
<i>Apatania sorex</i> (Ross)	R-vg/Aqt	/Sc		U	A	1, 4, 14, 48
<i>Clostoea disjuncta</i> (Banks)	R-vg/Aqt	/Sh		R	A	48
<i>Cryptochia pilosa</i> (Banks)	R-vg/Aqt	/Sc		U	A	4, 14
<i>Dicosmoecus atripes</i> (Hagen)	R-vg/Aqt	/Sc		U	A	48
<i>Dicosmoecus gilvipes</i> (Hagen)	R-vg/Aqt	/Sc		C	A	4, 48
<i>Ecclisocosmoecus scylla</i> Milne	R-vg/Aqt	/Sc		U	A	4
<i>Ecclisomyia conspersa</i> Banks	R-vg/Aqt	/Ga		R		14, 48
<i>Ecclisomyia maculosa</i> Banks	R-vg/Aqt	/Ga		U	A	4, 14
<i>Grammotaulius betteni</i> Hill-Griffin	R-vg/Aqt			R	A	48
<i>Halesochila taylori</i> (Banks)	R-vg/Aqt	/Sh		U	A	4, 48
<i>Hesperophylax alaskensis</i> (Banks)	R-vg/Aqt	/Sh		R	A	48
<i>Homophylax andax</i> Ross	R-vg/Aqt	/Sh		R	A	48
<i>Homophylax</i> sp. nr. <i>insulas</i> Denning	R-vg/Aqt	/Sh		R	A	48
<i>Hydatophylax hesperus</i> (Banks)	R-vg/Aqt	/Sh		U	A	4, 48
<i>Lenarchus rho</i> (Milne)	R-vg/Aqt	/Ga		R	A	48
<i>Lenarchus vastus</i> (Hagen)	R-vg/Aqt	/Ga		U	A	1, 4, 48
<i>Limnephilus externus</i> Hagen	R-vg/Aqt	/Sh		R	A	4
<i>Limnephilus fagus</i> Ross	R-vg/Aqt	/Sh		R	A	48
<i>Limnephilus lunonus</i> Ross	R-vg/Aqt	/Sh		R	A	48
<i>Limnephilus nogus</i> Ross	R-vg/Aqt	/Sh		U	A	1, 4, 14, 48
<i>Limnephilus occidentalis</i> Banks	R-vg/Aqt	/Sh		U	A	4, 48
<i>Limnephilus sitchensis</i> (Kolenati)	R-vg/Aqt	/Sh		U	A	4, 48
<i>Neophylax occidentis</i> Banks	R-vg/Aqt	/Sc		C	A	1, 4, 14, 48
<i>Neophylax rickeri</i> Milne	R-vg/Aqt	/Sc		C	A	1, 4, 48
<i>Neophylax splendens</i> Denning	R-vg/Aqt	/Sc		C	A	4, 14, 48
<i>Oligophlebodes mostbento</i> Schmid	R-vg/Aqt	/Sc		R		14
<i>Oligophlebodes</i> sp. <i>minutus-sierra</i> complex	R-vg/Aqt	/Sc		U	A	1, 4, 14, 48

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal		References
			host	Ab Co	
LIMNEPHILIDAE (continued)					
<i>Onocosmoecus unicolor</i> (Banks)	R-vg/Aqt	/Sh	C	A	1,4,48
<i>Pedomoecus sierra</i> Ross	R-vg/Aqt	/Sc	U	A	1,4,48
<i>Philocasca rivularis</i> Wiggins	R-vg/Aqt	/Sh	U	A	4
<i>Pseudostenophylax edwardsi</i> (Banks)	R-vg/Aqt	/Sh	U	A	4,48
<i>Psychoglypha avigo</i> (Ross)	R-vg/Aqt	/Sh	U	A	4,48
<i>Psychoglypha bella</i> (Banks)	R-vg/Aqt	/Sh	U	A	4,48
<i>Psychoglypha browni</i> Denning	R-vg/Aqt	/Sh	C	A	4,14
<i>Psychoglypha subborealis</i> (Banks)	R-vg/Aqt	/Sh	U	A	1,4,48
ODONTOCERIDAE (2 genera, 2 species)					
<i>Namamyia plutonis</i> Banks	R-vg/Aqt	/Ga	R	A	4
<i>Parthina linea</i> Denning	R-vg/Aqt	/Sh	R	A	4
PHILOPOTAMIDAE (2 genera, 8 species)					
<i>Dolophilodes aequalis</i> (Banks)	R-vg/Aqt	/F	R	A	48
<i>Dolophilodes dorcus</i> (Ross)	R-vg/Aqt	/F	A	A	1,4,14,48
<i>Dolophilodes novusamericanus</i> (Ling)	R-vg/Aqt	/F	C	A	4,14,48
<i>Dolophilodes pallidipes</i> (Banks)	R-vg/Aqt	/F	C	A	4,14,48
<i>Dolophilodes sisko</i> (Ross)	R-vg/Aqt	/F	C	A	4,14,48
<i>Wormaldia anilla</i> (Ross)	R-vg/Aqt	/F	C	A	4,14
<i>Wormaldia gabriella</i> (Banks)	R-vg/Aqt	/F	C	A	4,48
<i>Wormaldia occidea</i> (Ross)	R-vg/Aqt	/F	U		14
PHYRGANEIDAE (1 genus, 1 species)					
<i>Agrypnia improba</i> (Hagen)	R-vg/Aqt	/Pr	R	A	48
POLYCENTROPODIDAE (1 genus, 2 species)					
<i>Polycentropus denningi</i> Smith	R-vg/Aqt	/Pr	U	A	48
<i>Polycentropus variegatus</i> Banks	R-vg/Aqt	/Pr	C	A	1,4,14,48
PSYCHOMYIIDAE (2 genera, 2 species)					
<i>Psychomyia lumina</i> (Ross)	R-vg/Aqt	/Ga	C	A	4,48
<i>Tinodes cascadia</i> Denning	R-vg/Aqt	/Sc	R	A	4
RHYACOPHILIDAE (2 genera, 29 species)					
<i>Himalopsyche phryganea</i> (Ross)	R-vg/Aqt	/Pr	U	A	4,14,48
<i>Rhyacophila angelita</i> Banks	R-vg/Aqt	/Pr	C	A	4,14,48
<i>Rhyacophila arnaudi</i> Denning	R-vg/Aqt	/Pr	U	A	4,14,48
<i>Rhyacophila bifila</i> Banks	R-vg/Aqt	/Pr	R	A	48
<i>Rhyacophila blarina</i> Ross	R-vg/Aqt	/Pr	U	A	4,48
<i>Rhyacophila brunnea</i> Banks	R-vg/Aqt	/Pr	C	A	4
<i>Rhyacophila ecosia</i> Ross	R-vg/Aqt	/Pr	U	A	4,14
<i>Rhyacophila fenderi</i> Ross	R-vg/Aqt	/Pr	R	A	4,48
<i>Rhyacophila grandis</i> Banks	R-vg/Aqt	/Pr	U	A	4
<i>Rhyacophila iranda</i> Ross	R-vg/Aqt	/Pr	U	A	4
<i>Rhyacophila jenniferae</i> Peck	R-vg/Aqt	/Pr	U	A	4,48
<i>Rhyacophila jewetti</i> Denning	R-vg/Aqt	/Pr	U	A	4,14,48

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
RHYACOPHILIDAE (continued)						
<i>Rhyacophila leechi</i> Denning	R-vg/Aqt			R	A	48
<i>Rhyacophila narvae</i> Navás	R-vg/Aqt	/Pr		C	A	4,14,48
<i>Rhyacophila norcuta</i> Ross	R-vg/Aqt	/Pr		R		14
<i>Rhyacophila oreta</i> Ross	R-vg/Aqt	/Pr		R	A	4,14,48
<i>Rhyacophila perda</i> Ross	R-vg/Aqt	/Pr		R	A	4,14
<i>Rhyacophila tucula</i> Ross	R-vg/Aqt	/Pr		U	A	4,14,48
<i>Rhyacophila vaccua</i> Milne	R-vg/Aqt	/Pr		C	A	4,14,48
<i>Rhyacophila vaefes</i> Milne	R-vg/Aqt	/Pr		R	A	4,14
<i>Rhyacophila vagrita</i> Milne	R-vg/Aqt	/Pr		R		14
<i>Rhyacophila valuma</i> Milne	R-vg/Aqt	/Pr		U	A	4,14,48
<i>Rhyacophila vao</i> Milne	R-vg/Aqt	/Pr		U	A	4,14
<i>Rhyacophila vedra</i> Milne	R-vg/Aqt	/Pr		U	A	4,48
<i>Rhyacophila verrula</i> Milne	R-vg/Aqt	/H		C	A	4,14,48
<i>Rhyacophila vocala</i> Milne	R-vg/Aqt	/Pr		U	A	4,14,48
<i>Rhyacophila vuzana</i> Banks	R-vg/Aqt	/Pr		U	A	4,14,48
<i>Rhyacophila willametta</i> Ross	R-vg/Aqt	/Pr		R	A	4,48
<i>Rhyacophila</i> sp. nr. <i>vaccua</i> Milne	R-vg/Aqt	/Pr		C	A	48
SERICOSTOMATIDAE (1 genus, 1 species)						
<i>Gumaga</i> sp.	R-vg/Aqt	/Sh		R	A	48
UENOIDAE (1 genus, 1 species)						
<i>Neothremma didactyla</i> Ross	R-vg/Aqt	/Sc		A	A	4
LEPIDOPTERA (31 families, 280 genera, 492 species)						
(?) collected within 5 miles of HJ Andrews in adjacent Linn Co., probably present at the Andrews Forest						
ARCTIIDAE (7 genera, 10 species)						
<i>Clemensia albata</i> Packard	F-cn/F-cn	/Li		C	P	1
<i>Grammia ornata</i> (Packard)	O-vg/O-vg	/H	P-FORBS	U	P	43,51
<i>Hemihyalea edwardsii</i> (Packard)	F-cn/F-cn	/H	P-Querc		P	43
<i>Lophocampa argentata</i> (Packard)	F-cn/F-cn	/H	P-CONIF	C	P	1,43
<i>Lophocampa maculata agassizii</i> (Packard)	F-cn/F-cn	/H	P-DECID	C	P	1,43
<i>Pyrrharctia isabella</i> (J.E.Smith)	O-vg/O-vg	/H	P-FORBS	C	P	1
<i>Spilosoma pteridis</i> Hy. Edwards	O-vg/O-vg	/H	P-SHRUB		P	43
<i>Spilosoma vestalis</i> Packard	O-vg/O-vg	/H	P-FORBS	U	P	43
<i>Spilosoma virginica</i> (Fabricius)	O-vg/O-vg	/H	P-GENER	C	P	1,43
<i>Tyria jacobaeae</i> (Linnaeus) (I)	O-vg/O-vg	/H	P-Seja	U	P	43
BLASTOBASIDAE (1 genus, 1 species)						
<i>Holcocera</i> (<i>Holcocerina</i>) sp.	F-cn/F-cn	/H	P-CONIF			1

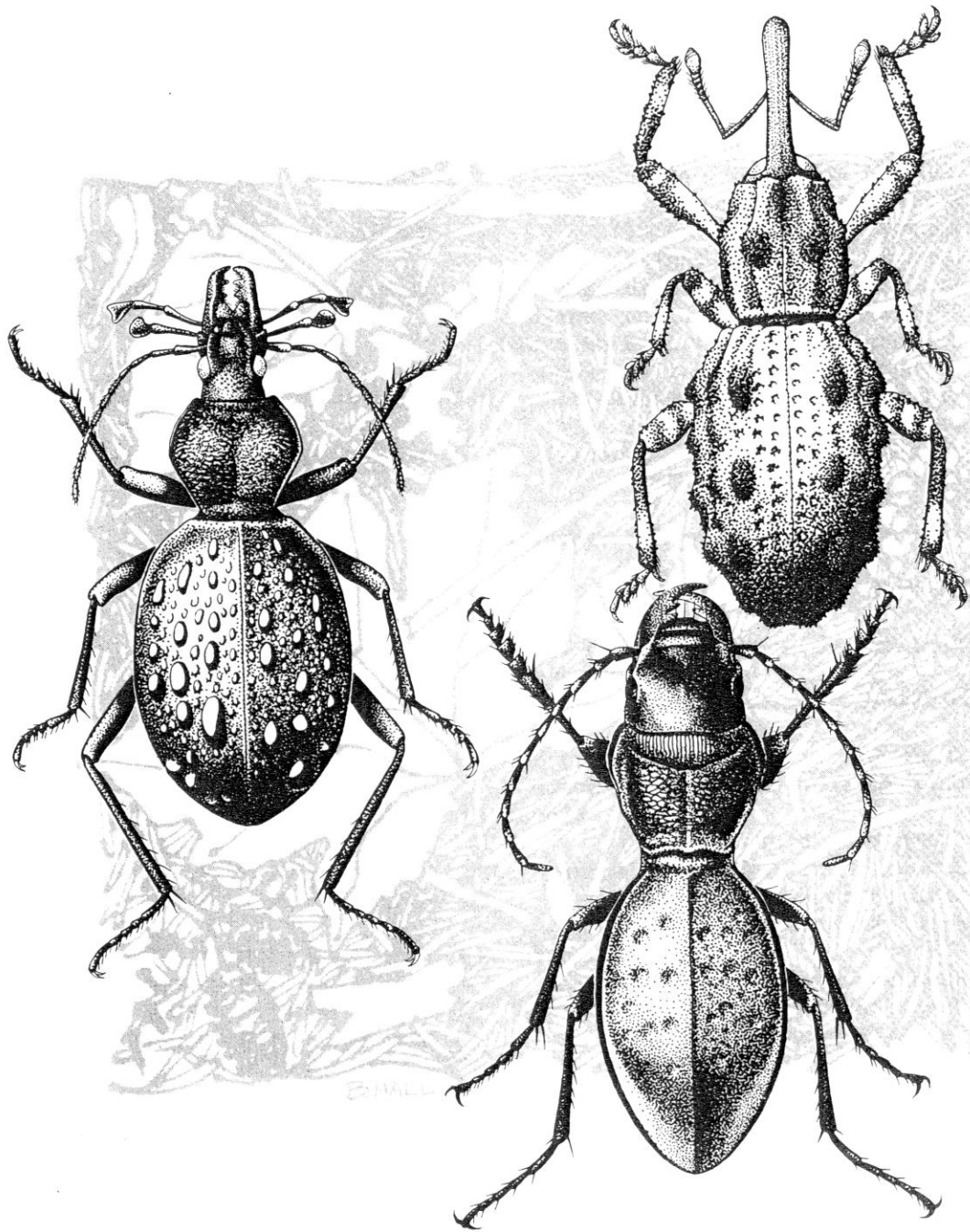
Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
COCHYLIDAE (1 genus, 1 species)						
<i>Henricus fuscodorsanus</i> (Kearfott)	F-cn/F-cn	/H	P-CONIF			1
COLEOPHORIDAE (1 genus, 2 species)						
<i>Coleophora</i> spp.	F-cn/F-cn	/H	P-DECID			1
COSMOPTERIGIDAE (1 genus, 1 species)						
<i>Walshia miscecolorella</i> (Chambers)	O-vg/O-vg	/Rt	P-LEGUM	U	P	51
COSSIDAE (1 genus, 1 species)						
undetermined specimens	F-cn/wood	/H			P	43
DIOPTIDAE (1 genus, 1 species)						
<i>Phryganidia californica</i> Packard	F-cn/F-cn	/H	P-Cach	U	P	43,44,50
DREPANIDAE (1 genus, 2 species)						
<i>Drepana arcuata</i> Walker	F-cn/F-cn	/H	P-Alnus	U	P	
<i>Drepana bilineata</i> Packard	F-cn/F-cn	/H	P-Alnus		P	
GELECHIIDAE (2 genera, 3 species)						
<i>Chionodes</i> sp.	F-cn/F-cn	/H				1
<i>Coleotechnites</i> sp. nr. <i>atrupictella</i> (Dietz)	F-cn/F-cn	/H				1
<i>Coleotechnites</i> sp. nr. <i>milleri</i> (Busek)	F-cn/F-cn	/H				1
GEOMETRIDAE (72 genera, 132 species)						
<i>Anagoga occiduaria</i> (Walker)	F-cn/F-cn	/H	P-TREES			51
<i>Anavitrinella pampinaria</i> (Guenée)	F-cn/F-cn	/H	P-DECID		P	
<i>Anticlea multiferata</i> (Walker)		/H				51
<i>Anticlea vasiliata</i> (Guenée)	O-vg/O-vg	/H	P-SHRUB		P	43
<i>Apodrepanuletrix lataria</i> Hulst		/H		U	P	
<i>Biston betularia</i> (Guenée)	F-cn/F-cn	/H	P-DECID	C	P	1
<i>Campaea perlata</i> Guenée	F-cn/F-cn	/H	P-DECID	U	P	1
<i>Caripeta aequalaria</i> Grote	F-cn/F-cn	/H	P-Psme	U	P	1,43
<i>Caripeta divisata</i> Walker	F-cn/F-cn	/H	P-CONIF		P	43
<i>Ceratotalia gueneata</i> Packard		/H			P	43
<i>Chlorosea banksaria</i> Sperry	O-vg/O-vg	/H	P-Ceano	U	P	
<i>Coryphista meadii</i> (Packard)	F-cn/F-cn	/H	P-Berbe			51
<i>Cyclophora dataria</i> (Hulst)		/H			P	44,51
<i>Cyclophora pendulinaria</i> (Guenée)	F-cn/F-cn	/H	P-SHRUBS		P	44
<i>Dasyfidonia avuncularia</i> (Guenée)		/H				51
<i>Drepanulatrix baueraria</i> Sperry		/H				51
<i>Drepanulatrix carnearia</i> (Hulst)	O-vg/O-vg	/H	P-Ceano		P	43
<i>Drepanulatrix falcataria</i> (Packard)	O-vg/O-vg	/H	P-Ceano	U	P	43
<i>Drepanulatrix foeminaria</i> (Guenée)		/H			P	43
<i>Drepanulatrix hulstii</i> (Dyar)		/H			P	43

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
GEOMETRIDAE (continued)						
<i>Drepanulatrix monicaria</i> (Guenée)		/H				51
<i>Drepanulatrix pulveraria</i> (Hulst)		/H			P	43
<i>Drepanulatrix quadraria</i> (Grote)		/H			P	43
<i>Drepanulatrix unicalcararia</i> (Guenée)	O-vg/O-vg	/H	P-Ceano	U	P	1,43
<i>Dysstroma citrata</i> (Linnaeus)	O-vg/O-vg	/H	P-SHRUB	U	P	1
<i>Dysstroma mancipata halstata</i> (Taylor)		/H			U P	
<i>Dysstroma truncata</i> (Hufnagel)	F-cn/F-cn	/H	P-DECID		P	43
<i>Dysstroma</i> sp. nr. <i>citrata</i> (Linnaeus)		/H			U P	
<i>Dysstroma</i> sp.		/H			U P	1
<i>Ecliptoptera silaceata</i> (Denis & Schiffermüller)	O-vg/O-vg	/H	P-FORBS	U	P	1
<i>Ectropis crepuscularia</i> (Denis & Schiffermüller)	F-cn/F-cn	/H	P-CONIF		P	43
<i>Elpiste lorquinaria</i> (Guenée)		/H			P	43
<i>Ennomos magnaria</i> (Guenée)	F-cn/F-cn	/H	P-DECID	U	P	1,43
<i>Enypia packardata</i> Taylor	F-cn/F-cn	/H	P-CONIF	U	P	1
<i>Enypia venata</i> (Grote)		/H			P	43,44
<i>Epirrhoe alternata</i> (Müller)	O-vg/O-vg	/H	P-Galiu			51
<i>Epirrita autumnata omissa</i> Harris		/H			P	43
<i>Erannis tiliaria vancouverensis</i> Hulst	F-cn/F-cn	/H	P-DECID	U	P	43
<i>Euclaena mollisaria</i> (Hulst)	F-cn/F-cn	/H			P	43
<i>Euclaena tigrinaria</i> Guenée	F-cn/F-cn	/H	P-Querc	U	P	
<i>Eudrepanulatrix rectifascia</i> (Hulst)		/H			P	43,44
<i>Eulithis destinata harveyata</i> (Taylor)		/H			P	44
<i>Eulithis propulsata</i> (Walker)	R-vg/R-vg	/H	P-Salix		P	43
<i>Eulithis xyлина</i> (Hulst)		/H			P	43
<i>Euphyia unangulata intermediata</i> (Guenée)	O-vg/O-vg	/H	P-FORBS		P	44,51
<i>Eupithecia georgii</i> McDunnough		/H				51
<i>Eupithecia gilvipennata</i> Cassino & Swett	F-cn/F-cn	/H			P	43
<i>Eupithecia graefii</i> (Hulst)	F-cn/F-cn	/H	P-Arme		P	43
<i>Eupithecia miserulata zela</i> Swett & Cassino	O-vg/O-vg	/H	P-FORBS			51
<i>Eupithecia misturata</i> (Hulst)	O-vg/O-vg	/H	P-Ceano		P	43
<i>Eupithecia nevadata</i> Packard		/H			U P	43
<i>Eupithecia ravocostaliata</i> Packard		/H			P	43
<i>Eupithecia sabulosata</i> McDunnough		/H			P	44
<i>Eupithecia subcolorata</i> (Hulst)		/H			P	43
<i>Eustroma semiatrata</i> (Hulst)	O-vg/O-vg	/H	P-Epilo	U	P	1,43
<i>Gabriola dyari</i> Taylor	F-cn/F-cn	/H	P-Psme	U	P	1
<i>Gabriola sierrae</i> McDunnough		/H			C P	
<i>Hesperumia latipennis</i> (Hulst)	F-cn/F-cn	/H			P	43
<i>Hesperumia sulphuraria</i> Packard	F-cn/F-cn	/H	P-ROSAC	U	P	1,43
<i>Hydria undulata</i> (Linnaeus)	F-cn/F-cn	/H	P-SHRUB	U	P	
<i>Hydriomena furcata</i> (Thunberg)		/H			P	43
<i>Hydriomena manzanita</i> Taylor	F-cn/F-cn	/H	P-Arme		P	43
<i>Hydriomena marinata exasperata</i> (Barnes & McDunnough)		/H			P	43
<i>Hydriomena nubilofasciata</i> (Packard)	F-cn/F-cn	/H	P-DECID		P	43
<i>Hydriomena renunciata</i> (Walker)	F-cn/F-cn	/H	P-Alnus	U	P	1
<i>Hydriomena speciosata</i> (Packard)		/H			P	43
<i>Iridopsis emasculata</i> (Dyar)	F-cn/F-cn	/H	P-DECID	C	P	1

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
GEOMETRIDAE (continued)						
<i>Itame colata</i> (Grote)		/H			P	43
<i>Itame decorata</i> (Hulst)	F-cn/F-cn	/H	P-DECID			51
<i>Itame exauspicata</i> (Walker)		/H	P-DECID			51
<i>Itame quadrilinearia</i> (Packard)	F-cn/F-cn	/H	P-DECID		P	44
<i>Lambdina fiscellaria somniaria</i> (Hulst)	F-cn/F-cn	/H	P-DECID	C	P	1
<i>Lobophora simsata</i> Swett		/H			P	43
<i>Melanolophia imitata</i> (Walker)	F-cn/F-cn	/H	P-CONIF	C	P	1,43
<i>Mesoleuca gratulata</i> (Walker)	F-cn/F-cn	/H	P-Querc		P	43
<i>Nematocampa limbata</i> (Haworth)	F-cn/F-cn	/H	P-CONIF	U	P	1
<i>Nemoria darwiniata</i> (Dyar)	R-vg/R-vg	/H	P-Salix	U	P	43
<i>Nemoria glaucomarginaria</i> (Barnes & McDunnough)	F-cn/F-cn	/H			P	44
<i>Nemoria pulcherrima</i> (Barnes & McDunnough)	F-cn/F-cn	/Fl	P-Querc		P	43
<i>Nealcis californiaria</i> (Packard)	F-cn/F-cn	/H	P-CONIF	U	P	43
<i>Neoterpes trianguliferata</i> (Packard)	O-vg/O-vg	/H	P-Ribes		P	43
<i>Nepytia phantasmaria</i> (Strecker)	F-cn/F-cn	/H	P-CONIF	C	P	1,43
<i>Nepytia umbrosaria nigrovenaria</i> Packard	F-cn/F-cn	/H	P-CONIF	C	P	1
<i>Operophthera occidentalis</i> (Hulst)	F-cn/F-cn	/H	P-DECID	U	P	1,43
<i>Orthonama centrostrigaria</i> (Wollaston)	O-vg/O-vg	/H	P-POLYG		P	43
<i>Perizoma costiguttata</i> (Hulst)		/H			P	43
<i>Perizoma curvilinea</i> (Hulst)		/H			P	43,44
<i>Perizoma grandis</i> (Hulst)		/H		U	P	1'
<i>Pero behrensarius</i> (Packard)	F-cn/F-cn	/H	P-CONIF	C	P	
<i>Pero mizon</i> (Rindge)		/H		C	P	1
<i>Pero morrisonarius</i> (Hy. Edwards)	F-cn/F-cn	/H	P-CONIF	U	P	
<i>Pero occidentalis</i> (Hulst)		/H			P	43
<i>Phigalia plumogeraria</i> (Hulst)	F-cn/F-cn	/H	P-DECID		P	43
<i>Plagodis phlogosaria</i> (Guenée)	F-cn/F-cn	/H	P-DECID		P	43
<i>Plemyria georgii</i> Hulst		/H			P	43
<i>Probole alienaria</i> Herrich-Schaeffer	F-cn/F-cn	/H	P-SHRUB			51
<i>Probole amicaria</i> (Herrich-Schaeffer)	F-cn/F-cn	/H	P-SHRUB	U	P	
<i>Prochoerodes forficaria</i> (Guenée)	F-cn/F-cn	/H			P	44
<i>Protitame matilda</i> (Dyar)		/H		U	P	
<i>Protitame subalbaria</i> (Packard)		/H				51
<i>Rheumaptera subhastata</i> (Nolcken)	F-cn/F-cn	/H	P-SHRUB		P	43
<i>Sabulodes edwardsata</i> (Hulst)		/H		U	P	
<i>Scopula junctaria quinquilinearia</i> (Packard)	O-vg/O-vg	/H	P-POLYG	U	P	
<i>Scopula sideraria</i> (Guenée)		/H				51
<i>Selenia alcipheararia</i> Walker	F-cn/F-cn	/H	P-DECID		P	43
<i>Semiothisa arubrescens</i> McDunnough		/H				51
<i>Semiothisa burneyata</i> McDunnough		/H			P	44,51
<i>Semiothisa californiaria</i> (Packard)	F-cn/F-cn	/H			P	44
<i>Semiothisa neptaria</i> Guenée	F-cn/F-cn	/H	P-DECID	U	P	
<i>Semiothisa signara signaria</i> (Walker)	F-cn/F-cn	/H	P-CONIF	U	P	1
<i>Semiothisa unipunctaria</i> Wright	F-cn/F-cn	/H	P-DECID	C	P	1
<i>Semiothisa</i> sp.		/H			P	43
<i>Sericosema juturnaria</i> Guenée	F-cn/F-cn	/H	P-RHAMN	U	P	1
<i>Sicya crocearia</i> Packard	O-vg/O-vg	/H	P-SHRUB		P	43

Forest Floor/Litter

In Pacific Northwest coniferous forests, the litter layer is a seasonally renewed mixture of deciduous leaves, conifer needles, and small twigs and branches raining down from the canopy. Mosses, lichens, and fungi are abundant. This assemblage provides a stable habitat supporting a rich assortment of characteristic species of arthropods. Within the Andrews Forest, as many as 200 species per square foot of forest floor can be found. Detritivores, such as the millipede *Harpaphe haydeniana* (see cover), Collembola, and oribatid mites are very abundant, processing the litter material into humus. Because herbaceous plants are not abundant, true herbivores are scarce, although snails and slugs abound. Many root-feeding beetles, such as the weevil *Lobosoma horridum* (top right), probably feed on both living and dead plant material. Seeds dropping to the forest floor are eaten by lygaeid bugs and a diverse assemblage of other seed-feeding insects. Mushrooms provide food for fungivorous beetles and fly larvae. Many canopy insects use the forest floor litter layer as a pupation or hibernation site. A variety of predators, such as spiders, beetles, and centipedes, occur here. The smaller forms crawl through the litter, while the larger ones patrol the surface. The large, nocturnal, flightless tiger beetle, *Omus dejeani* (bottom), wanders through the forest attacking any small arthropod it encounters. Its larval stage is hooked securely in a burrow, from which it springs out to grab passing prey. Slugs and snails are pursued by specialized snail-eating carabid beetles. *Cychrus tuberculatus* (left), which has an elongated head and mouthparts adapted for reaching into the narrow opening of a snail shell, is an example. These larger surface-wandering arthropods are in turn fed upon by salamanders, birds, and shrews.



Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
GEOMETRIDAE (continued)						
<i>Spargania magnoliata quadripunctata</i> (Packard)	O-vg/O-vg	/H	P-FORBS	C	P	
<i>Stannoctenis pearsalli</i> (Swett)		/H		U	P	
<i>Stannodes blackmorei</i> Swett		/H		U	P	
<i>Stenoporpia pulmonaria albescens</i> (Hulst)	F-cn/F-cn	/H	P-CONIF	U	P	1
<i>Synaxis cervinaria</i> (Packard)	F-cn/F-cn	/H	P-DECID	U	P	43
<i>Synaxis fuscata</i> Hulst		/H			P	43
<i>Synaxis jubararia</i> (Hulst)	F-cn/F-cn	/H	P-SHRUB	U	P	
<i>Synaxis pallulata</i> (Hulst)		/H		U	P	1
<i>Synchlora aerata</i> (Fabricius)	O-vg/O-vg	/H	P-FORBS		P	43
<i>Thallophaga nigroseriata</i> (Packard)		/H		U	P	
<i>Trichodezia californiata</i> (Packard)		/H			P	43
<i>Triphosa californiata</i> (Packard)	F-cn/F-cn	/H	P-SHRUB		P	43
<i>Triphosa haesitata</i> (Guenée)	F-cn/F-cn	/H	P-SHRUB		P	43
<i>Venusia pearsalli</i> (Dyar)		/H			P	43
<i>Xanthorhoë defensaria</i> (Guenée)	F-cn/F-cn	/H	P-SHRUB		P	43
<i>Xanthorhoë fossaria</i> Taylor		/H			P	43
<i>Xanthorhoë</i> sp.		/H				51
<i>Zenophleps lignicolorata</i> (Packard)		/H			P	43
HEPIALIDAE (1 genus, 1 species)						
<i>Hepialus californicus</i> Boisduval		/H	P-Monot		P	
HESPERIDAE (8 genera, 12 species)						
<i>Amblyscirtes vialis</i> (Edwards)	M-vg/M-vg	Fl/H	P-GRASS		P	20
<i>Carterocephalus palaemon mandan</i> (Edwards)	M-vg/M-vg	Fl/H	P-GRASS	U	P	20
<i>Epargyreus clarus</i> (Cramer)	O-vg/O-vg	Fl/H	P-LEGUM	U	P	20
<i>Erynnis icelus</i> (Scudder & Burgess)	R-vg/R-vg	Fl/H	P-Salix		P	20
<i>Erynnis persius</i> (Scudder)	R-vg/R-vg	Fl/H	P-Salix		P	20
<i>Erynnis propertius</i> (Scudder & Burgess)	F-cn/F-cn	Fl/H	P-Querc		P	20
<i>Euphyes vestris</i> (Boisduval)	M-vg/M-vg	Fl/H	P-GRASS			20
<i>Hesperia comma oregonia</i> (Edwards)	O-rk/O-rk	Fl/H	P-GRASS			20
<i>Hesperia juba</i> (Scudder)	M-vg/M-vg	Fl/H	P-GRASS			20
<i>Ochlodes sylvanoides</i> (Boisduval)	M-vg/M-vg	Fl/H	P-GRASS	C	P	20
<i>Pyrgus communis</i> (Grote)	O-vg/O-vg	Fl/H	P-MALVA	U	P	20
<i>Pyrgus ruralis</i> (Boisduval)	O-vg/O-vg	Fl/H	P-MALVA	U	P	20
LASIOCAMPIDAE (3 genera, 5 species)						
<i>Malacosoma californicum</i> (Packard)	F-cn/F-cn	/H	P-DECID		P	43
<i>Malacosoma disstria</i> Hübner	F-cn/F-cn	/H	P-DECID		P	43
<i>Phyllodesma americana</i> (Harris)	F-cn/F-cn	/H	P-DECID	C	P	43
<i>Tolyte dayi</i> Blackmore	F-cn/F-cn	/H	P-DECID		P	43
<i>Tolyte distincta</i> French	F-cn/F-cn	/H	P-DECID	C	P	1
LYCAENIDAE (14 genera, 23 species)						
<i>Callophrys</i> sp. nr. <i>viridis</i> Edwards	O-rk/O-rk	Fl/H	P-POLYG	U		20

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
LYCAENIDAE (continued)						
<i>Celastrina argiolus echo</i> (Edwards)	O-vg/O-vg	Fl/H	P-SHRUB	C	P	20
<i>Euphilotes enoptes columbiae</i> Mattoni	O-rk/O-rk	Fl/H	P-POLYG		P	20
<i>Everes amyntula</i> (Boisduval)	O-vg/O-vg	Fl/H	P-LEGUM		P	20
<i>Everes comyntas</i> (Godart)	O-vg/O-vg	Fl/H	P-LEGUM		P	20
<i>Glaucopsyche lygdamus columbia</i> Skinner	O-vg/O-vg	Fl/H	P-LEGUM		P	20
<i>Habrodais grunus</i> (Boisduval)	F-cn/F-cn	Fl/H	P-Querc		P	20
<i>Icaricia acmon</i> (Westwood & Hewitson)	O-vg/O-vg	Fl/H	P-FORBS		P	20
<i>Icaricia icarioides</i> (Boisduval)	O-vg/O-vg	Fl/H	P-LEGUM		P	20
? <i>Incisalia augustinus iroides</i> (Boisduval)	O-vg/O-vg	Fl/H	P-ERICA			20
? <i>Incisalia mossii</i> (Hy. Edwards)	O-rk/O-rk	Fl/H	P-Sedum			20
<i>Lycaeides idas</i> (Cross)	M-vg/M-vg	Fl/H	P-LEGUM	U	P	20
? <i>Lycaena helloides</i> (Boisduval)	O-vg/O-vg	Fl/H	P-POLYG			20
<i>Lycaena heteronea</i> (Boisduval)	O-rk/O-rk	Fl/H	P-POLYG			20
<i>Lycaena mariposa</i> Reakirt	M-vg/M-vg	Fl/H	P-POLYG			20
<i>Lycaena nivalis browni</i> dos Passos	M-vg/M-vg	Fl/H	P-POLYG			20
? <i>Mitoura johnsoni</i> (Skinner)	F-cn/F-cn	Fl/H	P-LORAN			20
<i>Mitoura nelsoni rosneri</i> Johnson	F-cn/F-cn	Fl/H	P-CUPR		P	20
? <i>Mitoura spinetorum</i> (Hewitson)	F-cn/F-cn	Fl/H	P-LORAN			20
? <i>Plebejus saepiolus</i> (Boisduval)	M-vg/M-vg	Fl/H	P-LEGUM			20
<i>Satyrium saepium</i> (Boisduval)	F-cn/F-cn	Fl/H	P-SHRUB			20
<i>Satyrium sylvinus</i> (Boisduval)	R-vg/R-vg	Fl/H	P-Salix			20
<i>Strymon melinus</i> Hübner	O-vg/O-vg	Fl/H	P-LEGUM		P	20
LYMANTRIDAE (2 genera, 2 species)						
<i>Dasychira grisefacta</i> (Dyar)	F-cn/F-cn	/H	P-CONIF	U	P	1
<i>Orygia pseudotsugata morosa</i> Ferguson	F-cn/F-cn	/H	P-CONIF	C	P	1
MICROPTERYGIDAE (1 genus, 1 species)						
<i>Epimartyria pardella</i> (Walshingham)	F-cn/F-cn	/Ms		R	P	23
NOCTUIDAE (96 genera, 193 species)						
<i>Abagrotis erratica</i> (Smith)	O-vg/O-vg	/H	P-SHRUB		P	43
<i>Abagrotis nefascia</i> (Smith)		/H			P	43
<i>Abagrotis trigona</i> (Smith)		/H			P	43
<i>Acerra normalis</i> Grote	F-cn/F-cn	/H	P-DECID		P	43
<i>Achytonix epipaschia</i> (Grote)	F-cn/F-cn	/H	P-Psme	U	P	1,43
<i>Acronicta grisea</i> Walker	F-cn/F-cn	/H	P-DECID			51
<i>Acronicta hesperida</i> Smith	F-cn/F-cn	/H	P-DECID	U	P	1,43
<i>Acronicta impleta</i> Walker	F-cn/F-cn	/H	P-DECID		P	43
<i>Acronicta impressa</i> Walker	F-cn/F-cn	/H	P-DECID			51
<i>Acronicta marmorata</i> Smith	F-cn/F-cn	/H	P-Querc		P	43,44
<i>Acronicta perditia</i> Grote	F-cn/F-cn	/H	P-DECID		P	43
<i>Adelphagrotis indeterminata</i> (Walker)		/H			P	43
<i>Agrochola pulchella</i> (Smith)		/H			P	43
<i>Agroperina dubitans</i> (Walker)	O-vg/O-vg	/H	P-GRASS			51
<i>Agrotis aeneipennis</i> Grote	O-vg/O-vg	/H	P-FORBS		P	43
<i>Agrotis ipsilon</i> (Hufnagel)	O-vg/O-vg	/H	P-FORBS	U	P	1
<i>Agrotis vancouverensis</i> Grote	O-vg/O-vg	/H	P-FORBS		P	43

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal		References
			Ad/Im	host	
<i>Agrotis volubilis</i> Harvey	O-vg/O-vg	/H	P-FORBS		P 43
<i>Aletia oxygala</i> (Grote)	M-vg/M-vg	/H	P-GRASS		P 43
<i>Alypia langtoni</i> Couper	O-vg/O-vg	/H	P-FORBS	U	P
<i>Amphipoea americana</i> (Speyer)	O-vg/O-vg	/H	P-GRASS		P 43
<i>Amphipyra pyramidoides</i> Guenée	F-cn/F-cn	/H	P-DECID	U	P 43
<i>Anaplectoides prasina</i> Denis & Schiffermüller	O-vg/O-vg	/H	P-SHRUB		P 43,44
<i>Anaplectoides pressus</i> (Grote)	O-vg/O-vg	/H	P-SHRUB		P 43
<i>Androloma maccullochi</i> (Kirby)	O-vg/O-vg	/H	P-DECID	U	P
<i>Andropolia aedon</i> (Grote)	F-cn/F-cn	/H	P-DECID		P
<i>Andropolia theodori</i> (Grote)		/H			P 44
<i>Anepia ectrapela</i> (Smith)		/H			P 43
<i>Anhimella contrahens</i> (Walker)		/H			P 43
<i>Anomogyna infimatus</i> (Grote)	F-cn/F-cn	/H	P-CONIF	U	P
<i>Anomogyna mustelina</i> (Smith)	F-cn/F-cn	/H	P-CONIF	U	P
<i>Anomogyna vernilis</i> (Grote)	F-cn/F-cn	/H	P-CONIF		P 43
<i>Apamea alia</i> (Guenée)		/H			P 43
<i>Apamea amputatrix</i> (Fitch)	F-cn/F-cn	/H	P-DECID	U	P 43
<i>Apamea antennata</i> (Smith)		/H			P 43
<i>Apamea castanea</i> (Grote)	F-cn/F-cn	/H	P-DECID	U	P 1,43
<i>Apamea occidens</i> (Grote)		/H			P 43
<i>Aseptis adnixa</i> (Grote)	F-cn/F-cn	/H	P-ROSAC		1
<i>Aseptis binotata</i> (Walker)	F-cn/F-cn	/H	P-DECID		P 44
<i>Aseptis ethnica</i> (Smith)	F-cn/F-cn	/H	P-Arcto		P 44
<i>Aseptis fumosa</i> (Grote)	F-cn/F-cn	/H		U	P 1
<i>Asticta victoria</i> (Grote)		/H			P 43
<i>Autographa californica</i> (Speyer)	O-vg/O-vg	/H	P-FORBS	U	P 1
<i>Autographa corusca</i> (Strecker)	F-cn/F-cn	/H	P- <i>Alnus</i>		P 43
<i>Behrensia conchiformis</i> Grote	F-cn/F-cn	/H	P-SHRUB		P 43
<i>Bleptina caradrinalis</i> Guenée	F-lt/F-lt	/D			P 43
<i>Bomolocha abalienalis</i> (Walker)	F-cn/F-cn	/H	P-DECID	U	P
<i>Bomolocha bijugalis</i> (Walker)	F-cn/F-cn	/H	P-Cornu		P 43,44
<i>Caenurgina caerulea</i> (Grote)	M-vg/M-vg	/H	P-FORBS	U	P
<i>Caenurgina erechtea</i> (Cramer)	M-vg/M-vg	/H	P-FORBS		P 43
<i>Callierges tropicalis</i> Shaus		/H		U	P
<i>Catocola relictata</i> Walker	F-cn/F-cn	/H	P-DECID		P 43
<i>Cissusa indiscreta</i> (Hy. Edwards)	F-cn/F-cn	/H	P- <i>Querc</i>		P 43
<i>Crymodes devastator</i> (Brace)	M-vg/M-vg	/H	P-FORBS		P 43
<i>Dargida procincta</i> (Grote)	M-vg/M-vg	/H	P-FORBS	U	P 1
<i>Diarsia esurialis</i> (Grote)		/H			P 43
<i>Diarsia rosaria</i> (Grote)	M-vg/M-vg	/H	P-GRASS		P 43
<i>Diarsia rubifera</i> (Grote)		/H			P 43
<i>Dryotype opina</i> (Grote)		/H			P 43,44
<i>Egira crucialis</i> (Harvey)	F-cn/F-cn	/H		U	P
<i>Egira hiemalis</i> (Grote)		/H			P 43
<i>Egira perlubens</i> (Grote)		/H			P 43
<i>Egira rubrica</i> (Harvey)	F-cn/F-cn	/H	P-DECID		P 43
<i>Egira simplex</i> (Walker)	F-cn/F-cn	/H	P-TREES	U	P 1
<i>Eosphropteryx thyatyroides</i> (Guenée)	O-vg/O-vg	/H	P-FORBS		P 43
<i>Euplexia benesimilis</i> McDunnough	F-cn/F-cn	/H	P-DECID		P 43
<i>Eurois nigra</i> Smith	F-cn/F-cn	/H	P-DECID	U	P 1
<i>Euxoa auxiliaris</i> (Grote)		/H			P 43
<i>Euxoa comosa</i> (Morrison)		/H			P 43

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
NOCTUIDAE (continued)						
<i>Euxoa declarata</i> Walker		/H			P	43
<i>Euxoa divergens</i> (Walker)	O-vg/O-vg	/H	P-FORBS		P	
<i>Euxoa infausta</i> (Walker)		/H			P	43
<i>Euxoa plagigera</i> (Morrison)		/H			P	43
<i>Euxoa satis</i> (Harvey)		/H			P	43
<i>Euxoa tessellata</i> (Harris)	O-vg/O-vg	/H	P-FORBS		P	43
<i>Euxoa vetusta</i> (Walker)		/H			P	43
<i>Euxoa</i> sp.		/H			P	44
<i>Feltia herilis</i> (Grote)	O-vg/O-vg	/H	P-FORBS	U	P	1,43
<i>Feralia comstocki</i> (Grote)	F-cn/F-cn	/H	P-CONIF		P	43
<i>Feralia deceptiva</i> McDunnough	F-cn/F-cn	/H	P- <i>Psme</i>		P	43
<i>Fishia evelina</i> (French)		/H			P	
<i>Galgula partita</i> Guenée	F-cn/F-cn	/H	P-FORBS		P	43
<i>Heliothis phloxiphaga</i> Grote & Robinson	M-vg/M-vg	/H	P-FORBS		P	43
<i>Heliothis zea</i> (Boddie)	O-vg/O-vg	/H	P-FORBS		P	43
<i>Hemeroplanis finitima</i> Smith		/H			P	43
<i>Homoglaea californica</i> (Smith)		/H			P	43
<i>Homorthodes communis</i> (Dyar)		/H			P	43
<i>Homorthodes hanhami</i> (Barnes & McDunnough)		/H			P	43
<i>Hyppa indistincta</i> Smith		/H				51
<i>Idia aemula</i> Hübner	F-lt/F-lt	/D			P	
<i>Idia americalis</i> (Guenée)	F-cn/F-cn	/Li		U	P	1
<i>Lacanobia dodii</i> (Smith)		/H			P	43
<i>Lacanobia liquida</i> (Grote)	M-vg/M-vg	/H	P-FORBS		P	43
<i>Lacanobia lutra</i> (Guenée)	F-cn/F-cn	/H	P-DECID		P	
<i>Lacanobia subjuncta eleanora</i> Barnes & McDunnough	F-cn/F-cn	/H	P-DECID	U	P	1
<i>Lacanobia tacoma</i> Strecker	F-cn/F-cn	/H	P-Rubus	C	P	
<i>Lacinipolia circumcincta</i> (Smith)		/H			P	43
<i>Lacinipolia cuneata</i> (Grote)	F-cn/F-cn	/H	P-SHRUB	U	P	1
<i>Lacinipolia illaudabilis</i> (Grote)		/H			P	43
<i>Lacinipolia olivacea</i> (Morrison)	O-vg/O-vg	/H	P-FORBS		P	43
<i>Lacinipolia patalis</i> (Grote)	O-vg/O-vg	/H	P-ROSAC		P	43
<i>Lacinipolia stricta</i> (Walker)	O-vg/O-vg	/H	P-FORBS		P	43
<i>Lacinipolia strigicollis</i> (Wallengren)		/H			P	43
<i>Lacinipolia vicina</i> (Grote)		/H			P	43
* <i>Lacinipolia</i> n.sp. nr. <i>pensilis</i> (Grote)		/H			P	43
<i>Leucania farcta</i> Grote	M-vg/M-vg	/H	P-GRASS		P	43
<i>Leucania insueta</i> Guenée	M-vg/M-vg	/H	P-GRASS		P	43
<i>Lithacodia albidula</i> (Guenée)		/H				51
<i>Lithophane baileyi</i> Grote	F-cn/F-cn	/H	P-DECID		P	43
<i>Lithophane contenta</i> Grote	F-cn/F-cn	/H	P- <i>Querc</i>		P	43,44
<i>Lithophane dilatocula</i> Smith	F-cn/F-cn	/H	P-DECID		P	43
<i>Lithophane innominata</i> (Smith)	F-cn/F-cn	/H	P-DECID		P	43
<i>Lithophane georgii</i> Grote	F-cn/F-cn	/H	P-DECID		P	43
<i>Lithophane petulca</i> Grote	F-cn/F-cn	/H	P-DECID		P	43,44
<i>Litocala sexsignata</i> (Harvey)	F-cn/F-cn	/H	P- <i>Cach</i>		P	44
<i>Melanchra adjuncta</i> (Guenée)	F-cn/F-cn	/H	P-SHRUB	U	P	1
<i>Melipotis jucunda</i> Hübner	R-vg/R-vg	/H	P- <i>Salix</i>		P	43
<i>Metalepsis cornuta</i> (Grote)		/H		C	P	

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
NOCTUIDAE (continued)						
<i>Miselia variolata</i> (Smith)		/H			P	44
<i>Mniotype versuta</i> (Smith)		/H			P	43
<i>Nycteola columbiana</i> (Hy. Edwards)		/H			P	43
<i>Nycteola frigidana</i> (Walker)	R-vg/R-vg	/H	P-Salix			51
<i>Oligia illocata</i> (Guenée)	F-cn/F-cn	/H	P-DECID	U	P	43
<i>Oligia indirecta</i> (Grote)	M-vg/M-vg	/H	P-GRASS		P	43
<i>Oligia tonsa</i> (Grote)		/H			P	43
<i>Oncocnemis chorda</i> (Grote)		/H			P	43
<i>Oncocnemis dunbari</i> (Harvey)	O-vg/O-vg	/H	P-Hodi		P	44
<i>Oncocnemis youngi</i> McDunnough		/H			P	43
<i>Orthosia ferrigera</i> (Smith)	F-cn/F-cn	/H	P-DECID		P	43
<i>Orthosia hibisci</i> (Guenée)	F-cn/F-cn	/H	P-DECID		P	43
<i>Orthosia mys</i> (Dyar)		/H				51
<i>Orthosia pacifica</i> (Harvey)	F-cn/F-cn	/H	P-DECID		P	43
<i>Orthosia praeses</i> (Grote)	F-cn/F-cn	/H			P	43
<i>Orthosia pulchella</i> (Harvey)	F-cn/F-cn	/H	P-DECID	U	P	
<i>Orthosia revicta</i> (Morrison)	F-cn/F-cn	/H	P-DECID		P	43
<i>Orthosia transparens</i> (Grote)	F-cn/F-cn	/H	P-DECID		P	43
<i>Panthea portlandia</i> (Grote)	F-cn/F-cn	/H	P-CONIF	C	P	1,43
<i>Panthea virginaria</i> (Grote)	F-cn/F-cn	/H	P-CONIF	U	P	1
<i>Papestra brenda</i> (Barnes & McDunnough)		/H				51
<i>Peridroma saucia</i> (Hübner)	O-vg/O-vg	/H	P-FORBS		P	43
<i>Perigonica angulata</i> Smith		/H			P	43
<i>Phlogophora periculosa</i> Guenée	F-cn/F-cn	/H	P-CONIF		P	43
<i>Phobolosa anfracta</i> (Hy. Edwards)		/H			P	43
<i>Platyperigea extima</i> (Walker)		/H			P	43
<i>Platypolia contadina</i> (Smith)	F-cn/F-cn	/H	P-Vacci		P	44
<i>Pleromella opter</i> Dyar		/H			P	43
<i>Pleromelloida conserta</i> (Grote)	F-cn/F-cn	/H	P-SHRUB		P	43
<i>Pleromelloida obliquata</i> (Smith)		/H			P	43
<i>Polia discalis</i> (Grote)		/H			P	43
<i>Polia nimbose</i> (Guenée)	O-vg/O-vg	/H	P-Ribes		P	43
<i>Polia piniae</i> Buckett & Bauer	F-cn/F-cn	/H		U	P	
<i>Polia purpurissata</i> (Grote)	F-cn/F-cn	/H	P-SHRUB	U	P	
<i>Properigea niveirena</i> (Harvey)		/H			P	43
<i>Protorthodes curtica</i> (Smith)		/H		U	P	1,43
<i>Pseudoglaea olivata</i> (Harvey)		/H			P	43
<i>Pseudoglaea</i> sp.	O-vg/O-vg	/H	P-Arcto		P	43,44
<i>Pseudorthodes irrorata</i> (Smith)		/H			P	43
<i>Pseudorthodes virgula</i> (Grote)	O-vg/O-vg	/H	P-SHRUB		P	43
<i>Pseudorthosia variabilis</i> Grote	O-vg/O-vg	/H	P-FORBS	U	P	1
<i>Rhizagrotis cloanthoides</i> (Grote)		/H				43
<i>Rhyacia quadrangula</i> (Zetterstedt)		/H				51
<i>Rhynchagrotis exsertistigma</i> (Morrison)	O-vg/O-vg	/H	P-FORBS	U	P	
<i>Rhynchagrotis insularis</i> (Grote)		/H			P	43
<i>Scoliopteryx libatrix</i> (Linnaeus)	R-vg/R-vg	/H	P-Salix	U	P	
<i>Setagrotis atrifrons</i> (Grote)		/H			P	43
<i>Setagrotis cinereicollis</i> (Grote)		/H			P	43
<i>Sideridis rosea</i> (Harvey)	O-vg/O-vg	/H	P-SHRUB		P	43
<i>Spaelotis havilae</i> Grote	O-vg/O-vg	/H	P-FORBS	U	P	1
<i>Spargaloma sexpunctata</i> Grote	O-vg/O-vg	/H	P-APOCY		P	43
<i>Stretchia muricana</i> (Grote)	O-vg/O-vg	/H	P-SHRUB		P	43

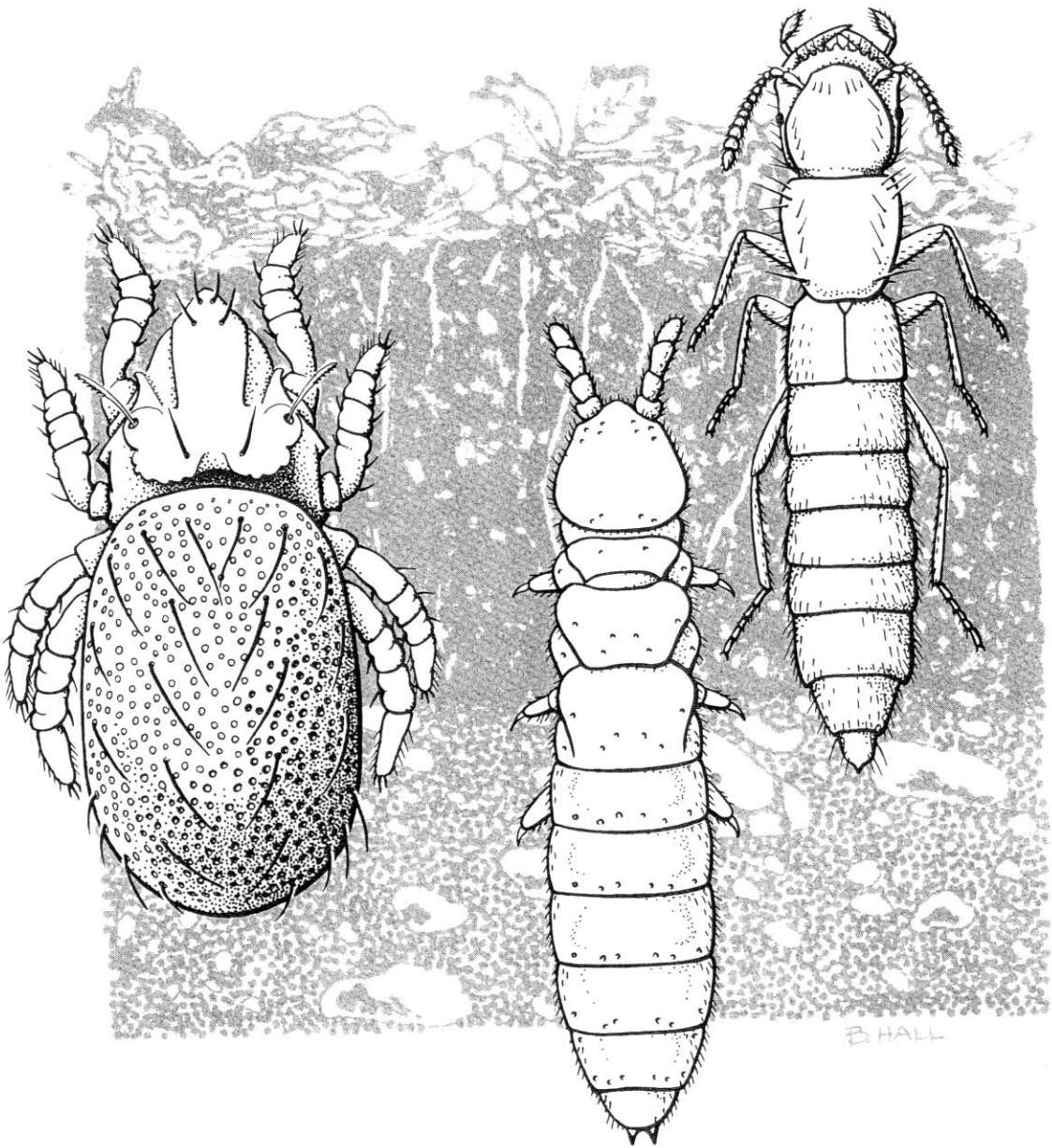
Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
NOCTUIDAE (continued)						
<i>Stretchia</i> sp.		/H			P	43
<i>Sunira decipiens</i> (Grote)		/H			P	43
<i>Synedoida adumbrata</i> (Behr)	0-vg/0-vg	/H			P	43
<i>Synedoida divergens</i> (Behr)		/H			P	43
<i>Synedoida edwardsi</i> Behr	0-vg/0-vg	/H	P-SHRUB		P	43
<i>Synedoida nichollae</i> (Hampson)		/H			P	43
<i>Synedoida ochracea</i> (Behr)	0-vg/0-vg	/H		U	P	
<i>Synedoida sabulosa</i> Hy. Edwards		/H			P	43
<i>Syngrapha celsa</i> (Hy. Edwards)	F-cn/F-cn	/H	P-CONIF	U	P	
<i>Syngrapha epigaea</i> (Grote)	F-cn/F-cn	/H	P-TREES		P	43
<i>Syngrapha rectangula</i> (W. Kirby)	F-cn/F-cn	/H	P-CONIF	U	P	43
<i>Syngrapha selecta</i> (Walker)		/H			P	43
<i>Syngrapha viridisigma</i> (Grote)	F-cn/F-cn	/H	P-CONIF	U	P	
<i>Xestia dolosa</i> Franclemont	0-vg/0-vg	/H	P-FORBS		P	43
<i>Xestia oblata streckeri</i> (Barnes & Benjamin)	F-cn/F-cn	/H	P-SHRUB	U	P	1,44
<i>Xestia smithii</i> (Snellen)	0-vg/0-vg	/H	P-FORBS		P	43
<i>Xylena curvimacula</i> (Morrison)	F-cn/F-cn	/H	P-DECID	U	P	43
<i>Xylena nupera</i> Lintner	0-vg/0-vg	/H	P-FORBS		P	43
<i>Zale lunata salicis</i> (Behr)	0-vg/0-vg	/H	P-SHRUB	U	P	1
<i>Zale minerea</i> (Guenée)		/H	P-DECID		P	43
<i>Zale termina</i> (Grote)		/H			P	43
<i>Zosteropoda hirtipes</i> Grote	0-vg/0-vg	/H	P-FORBS		P	43
<i>Zothea tranquilla</i> Grote	0-vg/0-vg	/H	P-Sambu		P	43
NOTODONTIDAE (7 genera, 11 species)						
<i>Clostera apicalis</i> (Walker)	F-cn/F-cn	/H	P-DECID	U	P	43
<i>Furcula scolopendrina</i> (Boisduval)	R-vg/R-vg	/H	P-Salix	U	P	
<i>Gluphisia lintneri</i> (Grote)	F-cn/F-cn	/H	P-DECID		P	43
<i>Gluphisia severa</i> Hy. Edwards	F-cn/F-cn	/H	P-DECID		P	43
<i>Nadata gibbosa</i> (J.E. Smith)	F-cn/F-cn	/H	P-DECID	C	P	1
<i>Nadata oregonensis</i> Butler	F-cn/F-cn	/H	P-DECID			51
<i>Oligocentria pallida</i> (Strecker)	F-cn/F-cn	/H	P-DECID	U	P	1
<i>Oligocentria semirufescens</i> (Walker)	F-cn/F-cn	/H	P-DECID	U	P	43
<i>Pheosia portlandia</i> Hy. Edwards	F-cn/F-cn	/H	P-DECID	U	P	43
<i>Schizura ipomoeae</i> Doubleday	F-cn/F-cn	/H	P-DECID	U	P	
<i>Schizura unicornis conspecta</i> (Hy. Edwards)	F-cn/F-cn	/H	P-SHRUB	U	P	
NYMPHALIDAE (10 genera, 23 species)						
<i>Adelpha bredowii californica</i> Butler	F-cn/F-cn	Fl/H	P-DECID		P	20
<i>Boloria epithore</i> (Edwards)	0-vg/0-vg	Fl/H	P-VIOLA	C	P	20
<i>Chlosyne hoffmani segregata</i> (Barnes & McDunnough)	M-vg/M-vg	Fl/H	P-COMP	U	P	20
<i>Chlosyne palla</i> (Boisduval)	M-vg/M-vg	Fl/H	P-COMP		P	20
<i>Euphydryas chalcedona colon</i> (Edwards)	0-vg/0-vg	Fl/H	P-SCROP	C	P	20
<i>Euphydryas editha colonia</i> (Wright)	0-rk/0-rk	Fl/H	P-SCROP		P	20
<i>Limnitis lorquini burrisonii</i> Maynard	R-vg/R-vg	Fl/H	P-Salix		P	20
<i>Nymphalis antiopa</i> (Linnaeus)	R-vg/R-vg	Fl/H	P-Salix	U	P	20
<i>Nymphalis californica</i> (Boisduval)	0-vg/0-vg	Fl/H	P-RHAMN		P	2,20
? <i>Nymphalis milberti furcillata</i> (Say)	M-vg/M-vg	Fl/H	P-URTIC			20

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
NYMPHALIDAE (continued)						
<i>Phyciodes campestris</i> (Behr)	M-vg/M-vg	Fl/H	P-COMP			20
<i>Phyciodes mylitta</i> (Edwards)	O-vg/O-vg	Fl/H	P-COMP		P	20
<i>Polygonia faunus rusticus</i> (Edwards)	R-vg/R-vg	Fl/H	P-DECID	U	P	20
<i>Polygonia satyrus neomarsyas</i> dos Passos	R-vg/R-vg	Fl/H	P-URTIC	U	P	20
<i>Polygonia zephyrus</i> (Edwards)	F-cn/F-cn	Fl/H	P- <i>Ribes</i>	U	P	20
<i>Speyeria atlantis dodgei</i> (Gunder)	M-vg/M-vg	Fl/H	P-VIOLA		P	20
<i>Speyeria callippe elaine</i> dos Passos & Grey	O-vg/O-vg	Fl/H	P-VIOLA		P	20
<i>Speyeria cybele pugetensis</i> Chermock & Frechin	R-vg/R-vg	Fl/H	P-VIOLA	U	P	20
<i>Speyeria hydasphe rhodope</i> (Edwards)	O-vg/O-vg	Fl/H	P-VIOLA		P	20
? <i>Vanessa atalanta rubria</i> (Fruhstorfer)	R-vg/R-vg	Fl/H	P-URTIC	U		20
<i>Vanessa cardui</i> (Linnaeus)	O-vg/O-vg	Fl/H	P-COMP	U		20
<i>Vanessa carye annabella</i> (Field)	O-vg/O-vg	Fl/H	P-MALVA	U	P	20
<i>Vanessa virginiensis</i> (Drury)	O-vg/O-vg	Fl/H	P-MALVA	U	P	20
OECOPHORIDAE (2 genera, 2 species)						
<i>Decantha stonda</i> Hodges	F-cn/F-cn	/D				1
ETHMIINAE undetermined sp.		/H			P	
PAPILIONIDAE (2 genera, 5 species)						
<i>Papilio eurymedon</i> Lucas	F-cn/F-cn	Fl/H	P-RHAMN	U	P	20
<i>Papilio multicaudatus</i> Kirby	R-vg/R-vg	Fl/H	P-ROSAC	U		20
<i>Papilio rutulus</i> Lucas	R-vg/R-vg	Fl/H	P- <i>Salix</i>		P	20
<i>Papilio zelicaon</i> Lucas	M-vg/M-vg	Fl/H	P-UMBEL	C	P	20
<i>Parnassius clodius</i> Menetries	O-vg/O-vg	Fl/H	P-FUMAR	C	P	20
PIERIDAE (4 genera, 7 species)						
<i>Anthocharis sara flora</i> (Wright)	M-vg/M-vg	Fl/H	P-CRUCI	U	P	20
<i>Colias alexandra</i> Edwards	M-vg/M-vg	Fl/H	P-LEGUM			20
<i>Colias eurytheme</i> Boisduval	M-vg/M-vg	Fl/H	P-LEGUM		P	20
<i>Neophasia menapia tau</i> (Scudder)	F-cn/F-cn	Fl/H	P-CONIF		P	20
<i>Pieris napi marginalis</i> Scudder	O-vg/O-vg	Fl/H	P-CRUCI		P	20
<i>Pieris occidentalis</i> Reakirt	O-vg/O-vg	Fl/H	P-CRUCI			20
? <i>Pieris rapae</i> (Linnaeus) (I)	O-vg/O-vg	Fl/H	P-CRUCI			20
PLUTELLIDAE (1 genus, 1 species)						
<i>Plutella xylostella</i> (Linnaeus) (I)	O-vg/O-vg	/H	P-CRUCI	U	P	
PTEROPHORIDAE (1 genus, 1 species)						
undetermined specimens		/H		U	P	
PYRALIDAE (16 genera, 19 species)						
<i>Crambus leachellus</i> (Zincken)		/H			P	43
<i>Dasypyga alternosquamella</i> Ragonot	F-cn/F-cn	/H	P-LORAN	U		1
<i>Dioryctria abietivorella</i> (Grote)	F-cn/F-cn	/H	P-CONIF	U	P	1

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
PYRALIDAE (continued)						
<i>Ephesiodes gilvescentella</i> Ragonot		/H				1
<i>Evergestis funalis</i> (Grote)		/H			P	43
<i>Herpetogramma pertextalis</i> (Lederer)		/H			P	43
<i>Myelopsis alatella</i> (Hulst)		/H		U	P	
<i>Myelopsis conielia</i> (Ragonot)	F-cn/F-cn	/H	P- <i>Alnus</i>	U	P	
<i>Phobus curvatellus</i> (Ragonot)		/H		U	P	
<i>Phycitodes albatella mucidella</i> (Ragonot)		/H		U	P	
<i>Pima</i> sp.		/H				51
<i>Pyla fusca</i> (Haworth)		/H			P	43
<i>Pyrausta perrubralis</i> (Packard)		/H			P	43
<i>Saucrobotys fumoferalis</i> (Hulst)		/H				51
<i>Scoparia biplagiata fernaldalis</i> Dyar		/H		C	P	1
<i>Udea itysalis</i> (Walker)		/H	P-HERB		P	
<i>Udea profundalis</i> (Packard)		/H			P	43
<i>Vitula edmandsi</i> (Packard)		/H		U	P	
<i>Vitula</i> sp. nr. <i>lugubrella</i> Ragonot		/H		U	P	
SATURNIIDAE (4 genera, 4 species)						
<i>Antheraea polyphemus</i> (Cramer)	F-cn/F-cn	/H	P-DECID	U	P	43
<i>Coloradia pandora</i> Blake	F-cn/F-cn	/H	P- <i>Pinus</i>	U	P	43
<i>Hemileuca eglanterina</i> (Boisduval)	O-vg/O-vg	/H	P-ROSAC	U	P	
<i>Hyalophora euryalus</i> Boisduval	O-vg/O-vg	/H	P-RHAMN	U	P	43
SATYRIDAE (3 genera, 5 species)						
<i>Cercyonis oetus</i> (Boisduval)	O-rk/O-rk	Fl/H	P-GRASS			20
<i>Cercyonis pegala boopis</i> (Behr)	O-vg/O-vg	Fl/H	P-GRASS		P	20
<i>Cercyonis sthenele silvestris</i> (Edwards)	F-gd/O-vg	Fl/H	P-GRASS		P	20
<i>Coenonympha tullia eunomia</i> Dornfeld	O-vg/O-vg	Fl/H	P-GRASS		P	20
<i>Oeneis nevadensis</i> (Felder & Felder)	F-gd/M-vg	Fl/H	P-GRASS			20
SESIIDAE (=AEGERIIDAE) (1 genus, 1 species)						
undetermined specimens		Fl/H			P	2
SPHINGIDAE (5 genera, 8 species)						
<i>Hemaris diffinis</i> (Boisduval)	O-vg/O-vg	Fl/H	P-CAPRI	U	P	
<i>Hyles lineata</i> (Fabricius)	O-vg/O-vg	Fl/H	P-ONAGR	U	P	
<i>Proserpinus clarkiae</i> (Boisduval)	O-vg/O-vg	Fl/H	P-ONAGR	U	P	
<i>Proserpinus flavofasciata</i> (Walker)	O-vg/O-vg	Fl/H	P- <i>Epilo</i>	R	P	51
<i>Smerinthus cerisyi</i> Kirby	R-vg/R-vg	Fl/H	P- <i>Salix</i>	U	P	
<i>Sphinx chersis</i> (Hübner)	F-cn/F-cn	Fl/H	P-DECID		P	43
<i>Sphinx perelegans</i> Hy. Edwards		Fl/H			P	43
<i>Sphinx vashti</i> Strecker	O-vg/O-vg	Fl/H	P-CAPRI	U	P	
THYATIRIDAE (4 genera, 6 species)						
<i>Ceranemota improvisa</i> (Hy. Edwards)	F-cn/F-cn	/H	P-DECID		P	43
<i>Ceranemota tearlei</i> (Hy. Edwards)		/H			P	43

Humus/Soil

The humus layer is a zone of important biological activity where small pieces of litter are broken down into base nutrients by arthropods, fungi, and microbes. These nutrients percolate into the underlying soil where they are taken up by the roots of plants and returned to the canopy biomass. The humus/soil habitat is relatively uniform and stable, supporting a specialized arthropod fauna. Soil dwellers tend to be small, flightless, blind, and, in the case of springtails like *Onychiurus* sp. (center), with reduced spring mechanisms. Individual numbers and species richness of oribatid mites and springtails are comparable to the richest soil faunas reported anywhere in the world. More than 100 species of oribatid mites, like *Nanhermannia* sp. (left), with up to 150,000 individuals per m², are present in Andrews Forest soils. Some 40 species of springtails, with up to 15,000 individuals per m², have been recorded as well. Although most species are generally widespread, abundance is usually related to a specific stage of forest succession or a narrow range within a temperature-moisture gradient. Detritivores drive the soil ecosystem by reducing large pieces of litter into small particles readily attacked by microbes and fungi. These are then grazed by oribatid and prostigmatid mites, springtails, and a great diversity of insects. Subterranean predators include geophilomorph centipedes, pseudoscorpions, gamasid mites, and pselaphid, carabid, cantharid, and staphylinid beetles, of which *Fenderia capizzii* (right) is an example.



Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
THYATIRIDAE (continued)						
<i>Euthyatira lorata</i> (Grote)	F-cn/F-cn	/H	P-Cornu	U	P	43
<i>Euthyatira semicircularis</i> (Grote)		/H		U	P	43
<i>Habrosyne scripta</i> Gosse	O-vg/O-vg	/H	P-Rubus	U	P	1,43
<i>Pseudothyatira cymatophoroides</i> Guenée	F-cn/F-cn	/H	P-SHRUB	U	P	
TORTRICIDAE (7 genera, 8 species)						
<i>Archips argyrosbila</i> (Walker)	F-cn/F-cn	/H	P-DECID			1
<i>Archips rosana</i> (Linnaeus)	F-cn/F-cn	/H	P-DECID		P	43
<i>Argyrotaenia provana</i> (Kearfott)	F-cn/F-cn	/H	P-CONIF			1
<i>Choristoneura lambertiana subretiniana</i> Obraztsov	F-cn/F-cn	/H	P-Pinus	C	P	
<i>Decodes montanus</i> Powell	F-cn/F-cn	/H			P	44
<i>Epinotia johnsonana</i> Kearfott	F-cn/F-cn	/H			P	44
<i>Sparganothis</i> sp.	F-cn/F-cn	/H	P-DECID	U	P	
<i>Zeiraphera hesperiana</i> Mutuura & Freeman	F-cn/F-cn	/H	P-Psme			49
DIPTERA (67 families, 285 genera, 460 species)						
ACARTOPHTHALMIDAE (1 genus, 1 species)						
<i>Acartophthalmus</i> sp.		/wood				2
ACROCERIDAE (3 genera, 3 species)						
<i>Acrocera</i> sp.	O-vg/anim	/Pa	A-SPID	U		31
<i>Eulonchus tristis</i> Loew	O-vg/anim	Fl/Pa	A-SPID	C	P	2,31,41
<i>Ogcodes</i> sp.	O-vg/anim	/Pa	A-SPID	R	P	31
AGROMYZIDAE (1 genus, 1 species)						
<i>Liriomyza</i> sp. undetermined specimens	F-cn/F-cn	/H			P	1 2
ANISOPODIDAE (2 genera, 2 species)						
<i>Mycetobia divergens</i> Walker	F-cn/F-lt	Sp/D			P	2,41
<i>Sylvicola fenestralis</i> (Scopali) undetermined specimens	F-cn/F-lt	Sp/D			A P	1
ANTHOMYIIDAE (3 genera, 3 species)						
<i>Alliopsis</i> sp.		/D				1
<i>Eremomyia humeralis</i> Stein		/D				1
<i>Pegomya triseta</i> Malloch undetermined specimens		/D			PA	1 2
ASILIDAE (6 genera, 8 species)						
<i>Asilus auriannulatus</i> (Hine)		Pr/Pr		U	P	

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
ASILIDAE (continued)						
<i>Asilus</i> sp.		Pr/Pr		U	P	
<i>Coleomyia</i> sp.		Pr/Pr		U	P	
<i>Cophura</i> sp.		Pr/Pr		U	P	
<i>Cyrtopogon</i> sp.	F-cn/	Pr/Pr		U	P	
<i>Laphria gilva</i> (Linnaeus)	F-cn/wood	Pr/Pr	I-COLEO	U	P	
<i>Laphria sackeni</i> Wilcox	F-cn/wood	Pr/Pr		U	P	
<i>Nicocles canadensis</i> Curran		Pr/Pr		U	P	
AULACIGASTRIDAE (1 genus, 1 species)						
<i>Aulacigaster leucopeza</i> (Meigan)	F-cn/F-cn	/Sp		U	P	2
AXYMYIIDAE (1 genus, 1 species)						
* <i>Axymyia</i> n.sp.	R-vg/wood	/X		R	P	
BIBIONIDAE (2 genera, 3 species)						
<i>Bibio xanthopus</i> (Weidemann)	F-cn/F-1t	Fl/D		U	PA	1
<i>Bibio</i> sp.	F-cn/F-1t	Fl/D		U	P	2
<i>Dilophus breviceps</i> Loew	F-cn/F-1t	Fl/D		U	P	
BLEPHARICERIDAE (4 genera, 5 species)						
<i>Agathon comstocki</i> (Kellogg)	R-vg/Aqt	/Sc		U	PA	21
<i>Blepharicera jordani</i> Kellogg	R-vg/Aqt	/Sc		U		21
<i>Blepharicera ostensackeni</i> Kellogg	R-vg/Aqt	/Sc		U		21
<i>Dioplopsis aylmeri</i> (Garrett)	R-vg/Aqt	/Sc		U		21
<i>Philorus californicus</i> Hogue	R-vg/Aqt	/Sc		U		21
BOMBYLIIDAE (7 genera, 14 species)						
<i>Anthrax irroratus irroratus</i> (Say)	O-vg/nest	Fl/Pa	I-BEES	U	P	
<i>Anthrax melanopogon</i> (Bigot)	O-vg/nest	Fl/Pa	I-BEES	U	P	
<i>Bombylius albicapillus</i> (Loew)	O-vg/nest	Fl/Pa	I-BEES	U	P	
<i>Bombylius lancifer</i> (Osten Sacken)	O-vg/nest	Fl/Pa	I-BEES	U	P	
<i>Bombylius major</i> (Linnaeus)	O-vg/nest	Fl/Pa	I-BEES	U	P	23
<i>Conophorus nigripennis</i> (Loew)	O-vg/			U	P	
<i>Conophorus rufulus</i> (Osten Sacken)	O-vg/			U	P	
<i>Hemipenthes</i> sp.	O-vg/nest	Fl/Pa	I-HYMEN	U	P	
<i>Phthiria</i> sp.	O-vg/			U	P	
<i>Thevenemyia celer</i> (Cole)	F-cn/			U	P	
<i>Thevenemyia magna</i> (Osten Sacken)	F-cn/			U	P	
<i>Thevenemyia marginata</i> (Osten Sacken)	F-cn/			U	P	
<i>Thevenemyia muricata</i> (Osten Sacken)	F-cn/			U	P	
<i>Villa lateralis</i> (Say)	O-vg/O-vg	/Pa	I-NOCT	U	P	
CALLIPHORIDAE (1 genus, 1 species)						
<i>Calliphora terraenovae</i> Marcquart undetermined specimens	O-vg/carr	/Sv				1 P

Taxonomic category	Habitat Ad/Im	Funct Plant/ group animal		Ab	Co	References
		Ad/Im	host			
CECIDIOMYIIDAE (5 genera, 7 species)						
<i>Contarinia</i> spp.	F-cn/F-cn	/Gl		C	A	1,54
<i>Cordylomia</i> sp.		/Fu		U	A	
<i>Dasineura</i> sp.	F-cn/F-cn	/Gl		U	A	1
<i>Lestodiplosis</i> spp.	F-cn/F-cn	/Pr		C		1,54
<i>Monardia</i> sp.	F-cn/fung	/Fu		U		21
CERATOPOGONIDAE (5 genera, 8 species)						
<i>Atrichopogon</i> spp.	R-vg/S-Aq	Pr/Pr		C	A	1
<i>Culicoides</i> sp. (<i>piliferus</i> group)		/Pr				1
<i>Forcipomyia cilipes</i> Coquillett	F-cn/F-lt	/D				1
<i>Forcipomyia macswaini</i> Wirth	F-cn/F-lt	/D			A	1
<i>Forcipomyia</i> sp. (<i>cinctipes</i> group)	F-cn/F-lt	/D				1
<i>Palpomyia armatipes</i> Wirth		/Pr				1
<i>Serromyia</i> sp.		Pr/Pr		C	A	
undetermined specimens					P	
CHAMAEMYIIDAE (1 genus, 1 species)						
<i>Leucopsis</i> sp.	F-cn/F-cn	/Pr				2
undetermined specimens					P	
CHIRONOMIDAE (49 genera, 106 species)						
<i>Alotanypus venustus</i> Coquillett	R-vg/Aqt				S	39
<i>Arctopelopia flavifrons</i> (Johannsen)	R-vg/Aqt	/Pr			S	39
<i>Boreochlus sinuaticornis</i> Brundin	R-vg/Aqt	/Sc			S	39
<i>Boreoheptagyia lurida</i> (Garrett)	R-vg/Aqt	/Ga			S	39
<i>Brillia flavifrons</i> (Johannsen)	R-vg/Aqt	/Sh			S	39
<i>Brillia</i> sp. nr. <i>par</i> (Coquillett)	R-vg/Aqt	/Sh			S	39
<i>Brillia</i> sp. nr. <i>retifinis</i> Saether	R-vg/Aqt	/Sh			S	39
<i>Brundinella eumorpha</i> (Sublette)	R-vg/Aqt				S	39
<i>Cardocladius</i> sp.	R-vg/Aqt	/Pr	I-SIMUL		S	39
* <i>Chaetocladius</i> n.sp.	R-vg/Aqt				S	39
<i>Conchapelopia currani</i> (Walley)	R-vg/Aqt	/Pr			S	39
<i>Conchapelopia pallens</i> (Coquillett)	R-vg/Aqt	/Pr			S	39
<i>Conchapelopia pilicaudata</i> (Walley)	R-vg/Aqt	/Pr			S	39
<i>Corynoneura</i> spp. (3)	R-vg/Aqt	/Ga			S	39
<i>Cricotopus</i> sp. nr. <i>fuscus</i> Kieffer	R-vg/Aqt	/Sh			S	39
<i>Cricotopus nostocicola</i> Wirth	R-vg/Aqt	/Sh			S	39
<i>Cricotopus</i> sp. nr. <i>pirifer</i> Hirvenoja	R-vg/Aqt	/Sh			S	39
<i>Cricotopus tremulus</i> (Linnaeus)	R-vg/Aqt	/Sh			S	39
<i>Cricotopus</i> spp. (2- <i>bicinctus</i> group)	R-vg/Aqt	/Sh			S	39
<i>Cricotopus</i> spp. (3- <i>tibialis</i> group)	R-vg/Aqt	/Sh			S	39
<i>Cricotopus (Isocricotopus)</i> sp.	R-vg/Aqt	/Sh			S	39
<i>Cryptotendipes</i> sp.	R-vg/Aqt				S	39
<i>Diamesa chorea</i> Lundbeck	R-vg/Aqt	/Ga			S	39
<i>Diamesa garretti</i> Sublette & Sublette	R-vg/Aqt	/Ga			S	39
<i>Diamesa greysoni</i> Edwards	R-vg/Aqt	/Ga			S	39
<i>Diamesa heteropes</i> (Coquillett)	R-vg/Aqt	/Ga			S	39
<i>Diamesa leoniella</i> Hansen & Cook	R-vg/Aqt	/Ga			S	39
<i>Diamesa sommermani</i> Hansen & Cook	R-vg/Aqt	/Ga			S	39

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CHIRONOMIDAE (continued)						
<i>Eukiefferiella</i> sp. nr. <i>brevicalcar</i> (Kieffer)	R-vg/Aqt	/Ga		S		39
<i>Eukiefferiella</i> sp. nr. <i>calvescens</i> (Edwards)	R-vg/Aqt	/Ga		S		39
<i>Eukiefferiella</i> sp. nr. <i>claripennis</i> (Lundbeck)	R-vg/Aqt	/Ga		S		39
<i>Eukiefferiella</i> sp. nr. <i>coerulescens</i> (Kieffer)	R-vg/Aqt	/Ga		S		39
<i>Eukiefferiella</i> sp. nr. <i>devonica</i> (Edwards)	R-vg/Aqt	/Ga		S		39
<i>Eukiefferiella</i> sp. nr. <i>dittmari</i> Lehmann	R-vg/Aqt	/Ga		S		39
<i>Eukiefferiella</i> sp. nr. <i>excellens</i> Brundin	R-vg/Aqt	/Ga		S		39
<i>Eukiefferiella</i> sp. nr. <i>lobifera</i> Goetghebuer	R-vg/Aqt	/Ga		S		39
<i>Eukiefferiella</i> sp. nr. <i>minor</i> (Edwards)	R-vg/Aqt	/Ga		S		39
<i>Eukiefferiella</i> sp. nr. <i>pseudomontana</i> Goetghebuer	R-vg/Aqt	/Ga		S		39
* <i>Eukiefferiella</i> n.sp.	R-vg/Aqt	/Ga		S		39
<i>Euryhapsis</i> sp.	R-vg/Aqt			S		39
<i>Heleniella</i> sp. nr. <i>curtistila</i> Saether	R-vg/Aqt			S		39
<i>Heterotrissocladius</i> sp. (<i>marcidus</i> group)	R-vg/Aqt	/Ga		S		39
<i>Hydrobaenus</i> sp.	R-vg/Aqt	/Sc		S		39
<i>Krenosmittia</i> sp. nr. <i>boreoalpina</i> (Goetghebuer)	R-vg/Aqt	/Ga		S		39
<i>Larsia sequoiaensis</i> (Sublette)	R-vg/Aqt	/Pr		S		39
<i>Limmophyes</i> sp.	R-vg/Aqt	/Ga		S		39
<i>Macropelopia</i> sp.	R-vg/Aqt	/Pr		S		39
<i>Metriocnemus</i> sp.	R-vg/Aqt	/Ga		S		39
<i>Micropsectra groenlandica</i> Anderson	R-vg/Aqt	/Ga		S		39
<i>Micropsectra</i> spp. (2) nr. <i>groenlandica</i> Anderson	R-vg/Aqt	/Ga		S		39
<i>Micropsectra</i> spp. (3)	R-vg/Aqt	/Ga		S		39
<i>Orthocladius</i> sp. nr. <i>appersoni</i> Soponis	R-vg/Aqt	/Ga		S		39
<i>Orthocladius curtiseta</i> Saether	R-vg/Aqt	/Ga		S		39
<i>Orthocladius</i> sp. nr. <i>dentifer</i> Brundin	R-vg/Aqt	/Ga		S		39
<i>Orthocladius doreus</i> (Roback)	R-vg/Aqt	/Ga		S		39
<i>Orthocladius</i> sp. nr. <i>frigidus</i> (Zetterstedt)	R-vg/Aqt	/Ga		S		39
<i>Orthocladius lignicola</i> (Kieffer)	R-vg/Aqt	/Ga		S		39
<i>Orthocladius nigritus</i> Malloch	R-vg/Aqt	/Ga		S		39
<i>Orthocladius</i> sp. nr. <i>saxosus</i> Tokunaga	R-vg/Aqt	/Ga		S		39
<i>Orthocladius</i> sp. nr. <i>thienemanni</i> (Kieffer)	R-vg/Aqt	/Ga		S		39
<i>Orthocladius</i> (<i>Eudactylocladius</i>) sp.	R-vg/Aqt	/Ga		S		39
<i>Orthocladius</i> (<i>Euorthocladius</i>) sp.	R-vg/Aqt	/Ga		S		39
* <i>Orthocladius</i> (<i>Orthocladius</i>) n.sp.	R-vg/Aqt	/Ga		S		39
<i>Pagastia partica</i> (Roback)	R-vg/Aqt			S		39
* <i>Pagastia</i> n.sp.	R-vg/Aqt			S		39

Taxonomic category	Habitat Ad/Im	Funct group		Plant/ animal host	Ab	Co	References
		Ad/Im					
CHIRONOMIDAE (continued)							
<i>Pagastia</i> sp.	R-vg/Aqt					S	39
<i>Paracricotopus</i> sp.	R-vg/Aqt	/Ga				S	39
<i>Parakiefferiella</i> sp.	R-vg/Aqt	/Ga				S	39
<i>Parametriocnemus</i> sp. nr. <i>lundbecki</i> (Johannsen)	R-vg/Aqt	/Ga				S	39
<i>Parametriocnemus</i> spp. (2)	R-vg/Aqt	/Ga				S	39
<i>Paraorthocladus</i> sp.	R-vg/Aqt	/Ga				S	39
<i>Paraphenocladus</i> sp.	R-vg/Aqt	/Ga				S	39
<i>Paratanytarsus</i> sp.	R-vg/Aqt					S	39
<i>Paratendipes</i> sp.	R-vg/Aqt	/Ga				S	39
<i>Paratrachocladus</i> sp.	R-vg/Aqt	/Ga				S	39
<i>Phaenopsectra</i> sp.	R-vg/Aqt	/Sc				S	39
<i>Polypedilum</i> (<i>Pentapedilium</i>) sp.	R-vg/Aqt	/Sh				S	39
<i>Polypedilum</i> (<i>Tripodura</i>) sp.	R-vg/Aqt	/Sh				S	39
<i>Psectrotanypus dyari</i> (Coquillett)	R-vg/Aqt	/Pr				S	39
<i>Pseudodiamesa</i> spp. (2)	R-vg/Aqt					S	39
<i>Psilometriocnemus</i> sp. nr. <i>triannulatus</i> Saether	R-vg/Aqt	/Ga				S	39
<i>Rheocricotopus</i> sp. (<i>effusus</i> group)	R-vg/Aqt	/Ga				S	39
<i>Rheocricotopus</i> sp.	R-vg/Aqt	/Ga				S	39
<i>Rheotanytarsus</i> sp. nr. <i>distinctissimus</i> Brundin	R-vg/Aqt	/F				S	39
<i>Rheotanytarsus</i> sp. nr. <i>exiguus</i> Johannsen	R-vg/Aqt	/F				S	39
<i>Stempellinella</i> sp. nr. <i>brevis</i> (Edwards)	R-vg/Aqt					S	39
<i>Stempellinella</i> sp.	R-vg/Aqt					S	39
<i>Stilocladus</i> sp.	R-vg/Aqt					S	39
<i>Synorthocladus</i> sp. nr. <i>semivirens</i> (Kieffer)	R-vg/Aqt	/Ga				S	39
<i>Tanytarsus</i> sp. (<i>brundini</i> group)	R-vg/Aqt	/Ga				S	39
<i>Tanytarsus</i> sp. (<i>eminulus</i> group)	R-vg/Aqt	/Ga				S	39
<i>Tanytarsus</i> sp. (<i>excavatus</i> group)	R-vg/Aqt	/Ga				S	39
<i>Thienemanniella</i> sp. nr. <i>acuticornis</i> Kieffer	R-vg/Aqt	/Ga				S	39
<i>Thienemannimyia</i> sp.	R-vg/Aqt	/Pr				S	39
<i>Tvetenia</i> sp. (<i>bavarica</i> group)	R-vg/Aqt					S	39
<i>Zavreliomyia thryptica</i> (Sublette)	R-vg/Aqt	/Pr				S	39
<i>Zavreliomyia</i> sp.	R-vg/Aqt	/Pr				S	39
undetermined specimens	R-vg/Aqt					PA	1,2

CHLOROPIDAE (4 genera, 4 species)

<i>Elachiptera flaviceps</i> Sabrosky						P	23
<i>Fiebrigella</i> sp.	M-vg/M-vg	/H	P-GRASS	C			1
<i>Hapleginella conicola</i> (Greene)	F-cn/F-cn	/Sd	P-Abies	C			1
<i>Thaumatomyia annulata</i> (Walker)	M-vg/M-vg	/H	P-GRASS	C			1

CONOPIIDAE (3 genera, 7 species)

<i>Physocephala burgessi</i> (Williston)	O-vg/ins	Fl/Pa	I-BEES	U	P		
<i>Thecophora</i> spp.	O-vg/ins	Fl/Pa	I-BEES	U	P		
<i>Zodion</i> spp. (4?)	O-vg/ins	Fl/Pa	I-BEES	U	P		

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CULICIDAE (1 genus, 1 species)						
<i>Aedes sierrensis</i> (Ludlow) undetermined specimens	R-vg/Aqt				P	1
CUTEREBRIDAE (1 genus, 1 species)						
<i>Cuterebra</i> sp.	O-vg/anim	nf/Pa		U	P	
DEUTEROPHLEBIIDAE (1 genus, 2 species)						
<i>Deuterophlebia inyoensis</i> Kennedy	R-vg/Aqt	/Sc		U		21, 53
<i>Deuterophlebia coloradensis</i> Pennak	R-vg/Aqt	/Sc		U		21, 53
DIXIDAE (1 genus, 1 species)						
<i>Dixa</i> sp. undetermined specimens	R-vg/Aqt	/Ga			P	1
DOLICHOPODIDAE (1 genus, 2 species)						
<i>Medetera</i> spp. undetermined specimens	F-cn/wood	Pr/Pr	I-SCOLY	U	P	1, 41
DROSOPHILIDAE (3 genera, 5 species)						
<i>Amiota</i> sp.	R-vg/R-vg	/Sp				2
<i>Drosophila montana</i> Stone, Griffen, & Patterson	F-cn/wood	/Fu			P	41
<i>Drosophila</i> sp.	F-cn/					1
<i>Scaptomyza</i> spp. undetermined specimens	R-vg/S-Aq	/H			P	1, 2
DRYOMYZIDAE (1 genus, 1 species)						
undetermined specimens	F-cn				P	
EMPIDIDAE (17 genera, 18 species)						
<i>Bicellaria</i> sp.		Pr/Pr		U	P	
<i>Clinocera</i> sp.		Pr/Pr		U	P	
<i>Dolicocephala</i> sp.	R-vg/Aqt	Pr/Pr		U	P	
<i>Empis</i> spp.		Pr/Pr		U	P	
<i>Heleodromia</i> sp.		Pr/Pr		U	P	
<i>Hemerodromia</i> sp.	R-vg/Aqt	Pr/Pr		U		21
<i>Hilara</i> sp.		Pr/Pr		U	P	
<i>Leptopeza</i> sp.		Pr/Pr		U	P	
<i>Metachela</i> sp.		Pr/Pr		U	P	
<i>Micrempis</i> sp.		Pr/Pr		U	P	
<i>Microphorus</i> sp.		Pr/Pr		C	P	
<i>Oreothalia</i> sp.		Pr/Pr		U	P	
<i>Philetus</i> sp.		Pr/Pr		U	P	
<i>Platypalpus</i> sp.		Pr/Pr		U	P	
<i>Rhamphomyia</i> sp.	R-vg/Aqt	Pr/Pr		C	P	
<i>Tachypeza</i> sp.		Pr/Pr		U	P	

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
EMPIDIDAE (continued)						
<i>Weidemannia</i> sp.	R-vg/Aqt	Pr/Pr		U		21
EPHYDRIDAE (6 genera, 8 species)						
<i>Ditricophora argyrostoma</i> (Cresson)	R-vg/Aqt					1,2
<i>Hydrellia griseola</i> (Fallén)	R-vg/Aqt	/H		P		1,2
<i>Parydra</i> sp.	R-vg/Aqt	/Sc		P		2
<i>Philygria debilis</i> Loew	R-vg/Aqt	/H				1
<i>Philygria nigrescens</i> (Cresson)	R-vg/Aqt	/H		P		23
<i>Philygria opposita</i> Loew	R-vg/Aqt	/H		P		23
<i>Psilopa compta</i> (Meigen)	R-vg/Aqt	/Ga				2,23
<i>Scatella paludum</i> (Meigen)						23
HELEOMYZIDAE (4 genera, 6 species)						
<i>Amoebaleria infuscata</i> Gill	F-cn/F-cn	/D				2
<i>Borboropsis fulviceps</i> (Strobl)	F-cn/F-cn	/D				23
<i>Borboropsis steyskali</i> Mathis	F-cn/F-cn	/D				1,2
<i>Suillia nemorum</i> (Meigen)	F-cn/F-cn	/D				1
<i>Suillia plumata</i> (Loew)	F-cn/F-cn	/D		P		
<i>Tephrochlamys rufiventris</i> (Meigen)	F-cn/F-cn	/D				1
HIPPOBOSCIDAE (1 genus, 1 species)						
<i>Lipoptena depressa</i> (Say)	anim/anim	Pa/Pa	A-DEER		P	
LAUXANIIDAE (2 genera, 4 species)						
<i>Homoneura</i> sp.	F-cn/F-lt	/D		U		1
<i>Minettia flaveola</i> Coquillett	F-cn/F-lt	/D		U		2
<i>Minettia lupulina</i> (Fabricius)	F-cn/F-lt	/D		U		2
<i>Minettia (Flaveola)</i> sp.	F-cn/F-lt	/D		U		1
undetermined specimens					P	
LONCHAEIDAE (1 genus, 1 species)						
<i>Lonchaea albitarsis</i> Zetterstedt	F-cn/wood	/Pr	I-COLEO	U		1
undetermined specimens					P	
LONCHOPTERIDAE (1 genus, 1 species)						
<i>Lonchoptera</i> sp.				C	P	2
MILICHIIDAE (4 genera, 7 species)						
<i>Desmometopa mannigrum</i> (Zetterstedt)	O-vg/					1
<i>Leptometopa latipes</i> (Meigen)	O-vg/dung					1
<i>Neophyllomyza</i> spp. (3)	O-vg/					1
<i>Phyllomyza</i> spp. (2)	O-vg					1
undetermined specimens					P	

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
MUSCIDAE (3 genera, 3 species)						
<i>Lasiops diaphanus</i> (Weidemann)						1
<i>Schoenomyza litorella</i> (Fallén)				C	P	2, 23
<i>Spilogona</i> sp.						1
undetermined specimens					P	
MYCETOPHILIDAE (23 genera, 42 species)						
<i>Allodia</i> sp.	F-cn/			U		1
<i>Boletina imitator</i> Johannsen	F-cn/fung	/Fu				23
<i>Boletina obscura</i> Johannsen	F-cn/fung	/Fu			P	23
<i>Boletina profectus</i> Fisher	F-cn/fung	/Fu			P	23
<i>Boletina</i> spp.	F-cn/fung	/Fu			P	
<i>Bolitophila bilobata</i> Garrett	F-cn/fung	/Fu				23
<i>Bolitophila bucera</i> Shaw	F-cn/fung	/Fu				23
<i>Bolitophila recurva</i> Garrett	F-cn/fung	/Fu		C	P	1, 23
<i>Cordyla</i> sp.	F-cn/			U		1
<i>Diadocidia</i> sp.	F-cn/				P	
<i>Dynatosoma</i> spp.	F-cn/				P	
<i>Dziedzickia</i> sp.	F-cn/				P	
<i>Exechia</i> sp.	F-cn/			U	A	1
<i>Keroplatus</i> sp.	F-cn/				P	
<i>Macrocera</i> sp.	F-cn/			U	A	1
<i>Mycetophila caurina</i> (Laffoon)	F-cn/fung	/Fu		C		1
<i>Mycetophila falcata</i> Johannsen	F-cn/fung	/Fu		C		1
<i>Mycetophila fatua</i> Johannsen	F-cn/fung	/Fu		U		1
<i>Mycetophila fungorum</i> (DeGeer)	F-cn/fung	/Fu		U		1
<i>Mycetophila ocellus</i> Walker	F-cn/fung	/Fu		C		1
<i>Mycetophila paula</i> (Loew)	F-cn/fung	/Fu		U	A	1
<i>Mycetophila signatoides</i> Dziedzicki	F-cn/fung	/Fu		U	A	1
<i>Mycetophila</i> sp. nr. <i>sertata</i> (Laffoon)	F-cn/fung	/Fu		U		1
<i>Mycetophila</i> spp.	F-cn/fung	/Fu			P	
<i>Mycomya</i> sp.	F-cn/			C		1
<i>Neuratelia</i> sp.	F-cn/				P	
<i>Orfelia</i> sp.	F-cn/				P	
<i>Phronia flavipes</i> Winnertz	F-cn/			U		1
<i>Phronia matilei</i> Hackman	F-cn/			U		1
<i>Phronia willistoni</i> Dzeidzicki	F-cn/			U		1
<i>Platyura</i> sp.	F-cn/				P	
<i>Rymosia</i> sp.	F-cn/			U	A	1
<i>Sceptonia</i> sp.	F-cn/			U		1
<i>Sciophila</i> sp.	F-cn/			U		1
<i>Syntemma</i> sp.	F-cn/				P	
<i>Tarnaria</i> sp.	F-cn/			U		21
<i>Tetragoneura</i> sp.	F-cn/				P	
* <i>Trichonta</i> n.sp.	F-cn/			U		1
<i>Trichonta</i> sp.	F-cn/			U		1
ODINIIDAE (1 genus, 1 species)						
<i>Odinia</i> sp.	F-cn/wood	/Fu				2

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
OPOMYZIDAE (1 genus, 1 species)						
<i>Geomyza</i> sp.	M-vg/M-vg	/H	P-GRASS	U	P	
PALLOPTERIDAE (1 genus, 1 species)						
<i>Palloptera terminalis</i> Loew	F-cn/wood	/Pr		U	P	1
PERISCELIDIDAE (1 genus, 1 species)						
<i>Periscelis</i> sp.	F-cn/wood	/Sp		U	P	2
PHORIDAE (14 genera, 28 species)						
<i>Aenigmatias</i> sp.	F-cn/			U		40
<i>Anevrina macateei</i> (Malloch)	F-cn/			U	P	23,40
<i>Anevrina spinipes</i> (Coquillett)	F-cn/			U		40
<i>Anevrina sulcatifemur</i> Borgmeier	F-cn/			U		40
<i>Apocephalus</i> sp.	F-cn/			U		40
<i>Beckerina aliena</i> Malloch	F-cn/			U		40
<i>Beckerina orphnephiloides</i> Malloch	F-cn/			U		40
<i>Beckerina</i> sp.	F-cn/			U		40
<i>Borophaga verticalis</i> Borgmeier	F-cn/			U	P	23
<i>Chaetopleurophora atra</i> Borgmeier	F-cn/			C		40
<i>Chaetopleurophora</i> sp.	F-cn/			U		40
<i>Conicera aldrichi</i> Brues	F-cn/			U		40
<i>Conicera barberi</i> (Malloch)	F-cn/			C		40
<i>Gymnophora subarcuata</i> Schmitz	F-cn/			C		1,40
<i>Gymnophora</i> sp.	F-cn/			A		40
<i>Megaselia</i> spp. (5)	F-cn/			A		1,40
<i>Phora</i> sp.	F-cn/			U		40
<i>Puliciphora glacialis</i> Malloch	F-cn/			U		40
<i>Puliciphora</i> sp.	F-cn/			U		40
<i>Spiniphora trispinosa</i> (Malloch)	F-cn/			C		40
* <i>Triphleba</i> n.sp.	F-cn/			U		40
<i>Triphleba</i> spp.	F-cn/			A		40
<i>Trophodeinus</i> sp.	F-cn/			U		40
undetermined specimens					P	
PIOPHILIDAE (1 genus, 1 species)						
<i>Piophila costalis</i> (Melander)	F-cn/fung	/Fu				1
PIPUNCULIDAE (1 genus, 1 species)						
undetermined specimens	/ins	/Pa	I-HOMOP	P		2
PLATYPEZIDAE (1 genus, 1 species)						
undetermined specimens	F-cn/fung	/Fu		P		2
PSILIDAE (1 genus, 1 species)						
undetermined specimens	F-cn/			P		2

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
PSYCHODIDAE (3 genera, 4 species)						
<i>Maruina</i> sp.	R-vg/Aqt	/Sc				21
<i>Psychoda phalaenoides</i> Linnaeus	R-vg/Aqt	/Ga		A		1
<i>Psychoda umbracola</i> Quate	R-vg/Aqt	/Ga				1
<i>Trichomyia sequoiae</i> Quate	F-cn/wood			A		1
undetermined specimens				P		
PTYCHOPTERIDAE (1 genus, 1 species)						
<i>Bittacomorpha clavipes</i> (Fabricius)	R-vg/Aqt	/Ga		R		21
RHAGIONIDAE (3 genera, 12 species)						
<i>Bolbomyia</i> sp.		/Pr				1
<i>Rhagio costatus</i> (Loew)	F-cn/F-lt	/Pr		U	P	
<i>Rhagio maculifer concavus</i> Leonard	F-cn/F-lt	/Pr		U	P	
<i>Symphoromyia atripes</i> Bigot	F-cn/F-lt	/Pr		C	P	
<i>Symphoromyia cervivora</i> Turner & Chillcott	F-cn/F-lt	/Pr		U	P	
<i>Symphoromyia inconspicua</i> Turner & Chillcott	F-cn/F-lt	/Pr		U	P	
<i>Symphoromyia kinkaidi</i> Aldrich	F-cn/F-lt	/Pr		U	P	
<i>Symphoromyia pachyceras</i> Williston	F-cn/F-lt	/Pr		C	P	
<i>Symphoromyia plagens</i> Williston	F-cn/F-lt	/Pr		U	P	
<i>Symphoromyia sackeni</i> Aldrich	F-cn/F-lt	/Pr		U	P	
<i>Symphoromyia truncata</i> Turner & Chillcott	F-cn/F-lt	/Pr		C	P	
* <i>Symphoromyia</i> n.sp. nr. <i>kinkaidi</i> Aldrich	F-cn/F-lt	/Pr		U	P	
SARCOPHAGIDAE (1 genus, 1 species)						
undetermined specimens	O-vg/	/Sv			P	2
SCATHOPHAGIDAE (1 genus, 2 species)						
<i>Scathophaga</i> spp.		/D			P	
SCATOPSIDAE (1 genus, 1 species)						
<i>Anapausis</i> sp.	F-cn/	/D				1
undetermined specimens					P	
SCENOPINIDAE (1 genus, 1 species)						
(literature record only to family)						2
SCIARIDAE (2 genera, 3 species)						
<i>Bradysia</i> spp.	F-cn/	Sp/D		C	A	1
<i>Lestremia</i> sp.	F-cn/	/D			A	
undetermined specimens					P	2

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
SCIOMYZIDAE (2 genera, 2 species)						
<i>Limnia</i> sp.	R-vg/Aqt	/Pa	A-SNAIL	U	P	2
<i>Pherbellia nana</i> (Fallén)	R-vg/Aqt	/Pa	A-SNAIL			1
SEPSIDAE (1 genus, 1 species)						
<i>Sepsis</i> sp. undetermined specimens	F-cn/				P	2
SIMULIIDAE (3 genera, 6 species)						
<i>Parasimulium stonei</i> Peterson	R-vg/Aqt			R		21
* <i>Parasimulium</i> n.sp.	R-vg/Aqt			R		21
<i>Prosimulium esselbaughi</i> Sommerman	R-vg/Aqt	/F				21
<i>Prosimulium fulvum</i> (Coquillett)	R-vg/Aqt	/F				21
<i>Simulium arcticum</i> Malloch	R-vg/Aqt	/F				21
<i>Simulium pugetense</i> (Dyar & Shannon)	R-vg/Aqt	/F				21
SPHAEROCERIDAE (10 genera, 12 species)						
<i>Copromyza equina</i> Fallén	F-cn/F-1t	/D				1
<i>Leptocera</i> spp.	F-cn/F-1t	/D				1, 2
<i>Lotophila atra</i> (Meigen)	F-cn/F-1t	/D		P		2, 23
<i>Minilimosina nasuta</i> (Spuler)						23
<i>Minilimosina parva</i> (Malloch)						23
<i>Nearcticorpus canadense</i> Rohacek & Marshall				P		23
<i>Opalimosina mirabilis</i> (Collin)						23
<i>Pullimosina heteroneura</i> (Haliday)						23
<i>Spelobia fungivora</i> Marshall				P		23
<i>Sphaerocera</i> sp.	F-cn/F-1t	/D				2
<i>Telomerina flavipes</i> (Meigen)						23
undetermined specimens					P	
STRATIOMYIDAE (2 genera, 2 species)						
<i>Sargus</i> sp.				U	P	
<i>Zabrachia</i> sp. undetermined specimens	/wood	/Pr		U	P	41
					P	2
SYRPHIDAE (17 genera, 23 species)						
<i>Blera nigra</i> Williston	O-vg/wood	Fl/			P	23
<i>Brachyopa</i> sp.	/wood	Fl/Sp		C	P	41
<i>Chrysotoxum occidentale</i> Curran		Fl/Pr		U	P	
<i>Chrysotoxum</i> sp.	F-cn/	Fl/Pr		U	P	
<i>Dasysyrphus venustus</i> Meigen	F-cn/F-cn	Fl/Pr	I-APHID		P	1, 23
<i>Eriozona laxa</i> (Osten Sacken)	F-cn/	Fl/			P	23
<i>Eristalis temporalis</i> Thomson	/S-Aq	Fl/D		U	P	
<i>Melangyna</i> sp.		Fl/		U	P	
<i>Melanostoma mellinum</i> (Linnaeus)		Fl/Pr			P	23
<i>Meliscaeva cinctella</i> Zetterstedt		Fl/			P	23
<i>Metasyrphus fumipennis</i> (Thomson)		Fl/Pr	I-APHID		P	23
<i>Metasyrphus latifasciatus</i> (Macquart)		Fl/Pr	I-APHID			23

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
SYRPHIDAE (continued)						
<i>Platycheirus albimanus</i> (Fabricius)		Fl/Pr	I-APHID			23
* <i>Platycheirus nearcticus</i> Vockeroth		Fl/Pr	I-APHID			23
<i>Platycheirus obscurus</i> Say		Fl/Pr	I-APHID		P	23
<i>Scaeva pyrastris</i> (Linnaeus)		Fl/Pr	I-APHID		P	23
<i>Sericomyia chalcopyga</i> Loew	/S-Aq	Fl/D		U	P	
<i>Sphaerophoria sulphuripes</i> (Thomson)		Fl/Pr	I-APHID			23
<i>Sphegina punctata</i> Cole		Fl/				23
<i>Sphegina californica</i> Malloch		Fl/				23
<i>Syrphus opinator</i> Osten Sacken		Fl/Pr	I-APHID		P	23
<i>Syrphus torvus</i> Osten Sacken		Fl/Pr	I-APHID		P	23
<i>Toxomerus occidentalis</i> Curran		Fl/Pr	I-APHID			23
TABANIDAE (6 genera, 23 species)						
<i>Atolytus incisuralis</i> Marquart	R-vg/Aqt	Fl/Pr		U	P	5
<i>Chrysops asbestos</i> Philip	R-vg/Aqt	Fl/Ga				5
<i>Chrysops excitans</i> Walker	R-vg/Aqt	Fl/Ga		U	P	5
<i>Chrysops noctifer pertinax</i> Williston	R-vg/Aqt	Fl/Ga		U	P	5
<i>Chrysops proclivis</i> Osten Sacken	R-vg/Aqt	Fl/Ga		C	P	5
<i>Chrysops surdus</i> Osten Sacken	R-vg/Aqt	Fl/Ga		C	P	5
<i>Hybomitra atrobasis</i> McDunnough	R-vg/Aqt	Fl/Pr		U	P	5
<i>Hybomitra californica</i> (Marten)	R-vg/Aqt	Fl/Pr		C	P	5
<i>Hybomitra captonis</i> (Marten)	R-vg/Aqt	Fl/Pr		C	P	5
<i>Hybomitra fulvilateralis</i> (Marquart)	R-vg/Aqt	Fl/Pr		U	P	
<i>Hybomitra melanorhina</i> (Bigot)	R-vg/Aqt	Fl/Pr		U	P	
<i>Hybomitra procyon</i> (Osten Sacken)	R-vg/Aqt	Fl/Pr		C	P	5, 23
<i>Hybomitra rhombica</i> (Osten Sacken)	R-vg/Aqt	Fl/Pr				5
<i>Hybomitra sequax</i> (Williston)	R-vg/Aqt	Fl/Pr		U	P	5
<i>Hybomitra sonomensis</i> (Osten Sacken)	R-vg/Aqt	Fl/Pr				5
<i>Hybomitra zygota</i> (Philip)	R-vg/Aqt	Fl/Pr		U	P	
<i>Pilmas californica</i> (Bigot)	R-vg/Aqt	Fl/		U	P	
<i>Silvius gigantulus</i> (Loew)	R-vg/Aqt	Fl/				5
<i>Tabanus aegrotus</i> Osten Sacken	R-vg/Aqt	Fl/Pr		U	P	5
<i>Tabanus fratellus</i> Williston	R-vg/Aqt	Fl/Pr		U	P	5
<i>Tabanus kesseli</i> Philip	R-vg/Aqt	Fl/Pr		C	P	5
<i>Tabanus monoesis</i> Hine	R-vg/Aqt	Fl/Pr		U	P	
<i>Tabanus punctifer</i> Osten Sacken	R-vg/Aqt	Fl/Pr		U	P	
TACHINIDAE (9 genera, 11 species)						
<i>Bombyliopsis</i> sp.	O-vg/ins	Fl/Pa	I-ARCTI	R	P	
<i>Ceranthia</i> sp.	O-vg/ins	Fl/Pa	I-LEPID			50
<i>Cylindromyia</i> spp. (2)	O-vg/ins	Fl/Pa	I-PENT	U	P	
<i>Epalpus</i> sp.	O-vg/ins	Fl/Pa	I-NOCT	U	P	
<i>Gonia</i> sp.	O-vg/ins	Fl/Pa		U	P	
<i>Gymnosoma</i> sp.	O-vg/ins	Fl/Pa	I-PENT	U	P	
<i>Hyphantrophaga virilis</i> (Aldrich & Webber)	O-vg/ins	Fl/Pa	I-LEPID			50
<i>Nowickia</i> spp. (2)	O-vg/ins	Fl/Pa	I-NOCT	C	P	
<i>Patelloa pachpyga</i> (Aldrich & Webber)						23
undetermined specimens	/ins	/Pa			P	2

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
TEPHRITIDAE (6 genera, 8 species)						
<i>Neotephritis finalis</i> (Loew)	O-vg/Ovg	Fl/Fl	P-COMP			1,23
<i>Orellia occidentalis</i> (Snow)		/H		C	P	
<i>Paracantha genalis</i> Malloch				U	P	2
<i>Rhagoletis tabellaria</i> (Fitch)	F-cn/F-cn	Fl/H	P-Ribes	C	P	
<i>Trupanea californica</i> Malloch	O-vg/O-vg	Fl/H	P-COMP	U	P	
<i>Trupanea pseudovicina</i> Hering	O-vg/O-vg	Fl/H	P-COMP	C	P	
<i>Trupanea signata</i> Foote				U	P	
<i>Trypeta angustigena</i> Foote				U	P	
THAUMALEIDAE (1 genus, 1 species)						
<i>Thaumalea</i> sp.	R-vg/S-Aq	/H			P	
THEREVIDAE (1 genus, 2 species)						
<i>Thereva</i> spp. (2)		/Pr		R	P	2
TIPULIDAE (18 genera, 23 species)						
<i>Antocha monticola</i> Alexander	R-vg/Aqt	/Ga		A		1,46
<i>Austrolimnophila badia</i> (Doane)	R-vg/S-Aq	/Go		A		46
<i>Chionea</i> sp.	R-vg/					1
<i>Cladura macnabi</i> Alexander	R-vg/S-Aq			A		46
<i>Dactylolabis</i> sp.	R-vg/Aqt	/Sh		A		46
<i>Dicranoptycha stenophallus</i> Alexander	R-vg/			A		1
<i>Dicranota</i> sp.	R-vg/	/Pr		A		21,46
<i>Elliptera</i> sp.	R-vg/Aqt	/Sh		A		46
<i>Erioptera cana</i> (Walker)	R-vg/S-Aq	/D		A		1
<i>Erioptera (Symplecta)</i> sp.	R-vg/Aqt	/Ga		A		46
<i>Gnophomyia</i> sp.	R-vg/			A		46
<i>Gonomyia</i> sp.	R-vg/			A		46
<i>Limnophila</i> sp.	R-vg/Aqt	/Pr		A		46
<i>Limonia nebeculosa sciophila</i> (Osten Sacken)	R-vg/			A		1
<i>Limonia (Dicranomyia)</i> sp.	R-vg/Aqt	/Sh		A		46
<i>Lipsothrix fenderi</i> Alexander	R-vg/Aqt	/Go		A		46
<i>Paradelphomyia</i> sp.	R-vg/Aqt	/Ga		A		46
<i>Pedicia aperta</i> (Coquillett)	R-vg/Aqt	/Pr		A		1,46
<i>Pedicia townesiana</i> Alexander	R-vg/Aqt	/Pr		A		46
<i>Pilaria</i> sp.	R-vg/Aqt	/Pr		A		46
<i>Tipula (Tipula)</i> sp.	R-vg/Aqt	/Sh		A		46
<i>Tipula (Trichotipula)</i> sp. nr. <i>repulsa</i> Alexander	R-vg/			A		1
<i>Ulomorpha</i> sp.	R-vg/Aqt	/Pr		A		46
undetermined specimens					P	
TRICHO CERIDAE (1 genus, 1 species)						
<i>Trichocera colombiana</i> Alexander	F-cn/F-lt			C	A	1
undetermined specimens					P	

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
TRIXOSCELIDIDAE (1 genus, 1 species)						
<i>Trixoscelis</i> sp. undetermined specimens					P	1 2
XYLOPHAGIDAE (1 genus, 3 species)						
<i>Xylophagus cinctus</i> DeGeer	F-cn/wood	/Pr		U	P	41
<i>Xylophagus decorus</i> Williston	F-cn/wood	/Pr		U	P	1,23,41
<i>Xylophagus gracilis</i> Williston	F-cn/wood	/Pr		R	P	41
SIPHONAPTERA (3 families, 15 genera, 24 species)						
CERATOPHYLLIDAE (6 genera, 9 species)						
<i>Diammus montanus</i> (Baker)	anim/nest	Pa/Sv	A-Spbe	C		3
<i>Foxella ignota recula</i> (Jordan & Rothschild)	anim/nest	Pa/Sv	A-Thma	R		3
<i>Malaraeus telchinus</i> (Rothschild)	anim/nest	Pa/Sv	A-RODNT	C		3
<i>Megabothris abantis</i> (Rothschild)	anim/nest	Pa/Sv	A-Zatr	R		3
<i>Monopsyllus ciliatus protinus</i> (Jordan)	anim/nest	Pa/Sv	A-Euto	A		3
<i>Monopsyllus cyrturus</i> (Jordan)	anim/nest	Pa/Sv	A-Euto	R		3
<i>Monopsyllus wagneri</i> (Baker)	anim/nest	Pa/Sv	A-Pema	U		3
<i>Opisodasys keeni keeni</i> (Baker)	anim/nest	Pa/Sv	A-Pema	C		3
<i>Opisodasys vespertalis</i> (Jordan)	anim/nest	Pa/Sv	A-Glsa	C		3
HYSTRICHOPSYLLIDAE (8 genera, 13 species)						
<i>Catallagia sculleni chamberlini</i> Hubbard	anim/nest	Pa/Sv	A-RODNT	C		3
<i>Corypsylla jordani</i> Hubbard	anim/nest	Pa/Sv	A-Negi	R		3
<i>Corypsylla kohlsi</i> Hubbard	anim/nest	Pa/Sv	A-Sorex	U		3
<i>Corypsylla ornata</i> C.Fox	anim/nest	Pa/Sv	A-Scor	U		3
<i>Delotelis hollandi</i> Smit	anim/nest	Pa/Sv	A-RODNT	R		3
<i>Epitedia scapani</i> (Wagner)	anim/nest	Pa/Sv	A-Sorex	U		3
<i>Epitedia stewarti</i> Hubbard	anim/nest	Pa/Sv	A-RODNT	R		3
<i>Epitedia wenmanni wenmanni</i> (Rothschild)	anim/nest	Pa/Sv	A-Pema	R		3
<i>Hystrichopsylla dippiei spinata</i> Holland	anim/nest	Pa/Sv	A-Euto	R		3
<i>Hystrichopsylla occidentalis</i> <i>occidentalis</i> Holland	anim/nest	Pa/Sv	A-RODNT	U		3
<i>Megarthrogllossus procus</i> Jordan & Rothschild	anim/nest	Pa/Sv	A-SQUIR	R		3
<i>Nearctopsylla martyoungi</i> Hubbard	anim/nest	Pa/Sv	A-Sorex	U		3
<i>Rhadinopsylla sectilis sectilis</i> Jordan & Rothschild	anim/nest	Pa/Sv	A-RODNT	R		3
LEPTOPSYLLIDAE (1 genus, 2 species)						
<i>Peromyscopsylla hesperomys pacifica</i> Holland	anim/nest	Pa/Sv	A-Pema	U		3

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
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LEPTOPSYLLIDAE (continued)

Peromyscopsylla selenis (Rothschild) anim/nest Pa/Sv A-Clca C 3

HYMENOPTERA

(50 families, 348 genera, 462 species)

ANDRENIDAE (2 genera, 3 species)

Andrena spp. 0-vg/0-sl Fl/A P 29
Panurginus sp. 0-vg/0-sl Fl/A P 29
 (SEE ALSO APPENDIX C)

ANTHOPHORIDAE (6 genera, 9 species)

Anthophora spp. 0-vg/0-sl Fl/A polylec A P 29
Ceratina pacifica Smith 0-vg/0-vg Fl/A polylec U P 29
Ceratina sp. 0-vg/0-vg Fl/A polylec A P 29
Melissodes sp. 0-vg/0-sl Fl/A A P 29
Nomada spp. 0-vg/nest Fl/KP I-Andre A P 29
Synhalonia sp. 0-vg/0-sl Fl/A polylec A P 29
Xeromelecta californica (Cresson) 0-vg/nest Fl/KP I-Antho C P 29
 (SEE ALSO APPENDIX C)

APHELINIDAE (2 genera, 3 species)

Aphelinus spp. (2) 0-vg/ins /Pa I-APHID R P 40
Encarsia sp. 0-vg/ins /Pa I-ALEYR R P 40

APHIDIIDAE (1 genus, 1 species)

Pauesia sp. /ins /Pa I-APHID P
 undetermined specimens /ins /Pa I-APHID P

APIDAE (3 genera, 8 species)

Apis mellifera Linnaeus (I) 0-vg/F-cn Fl/A polylec A P 2,29
Bombus bifarius nearcticus Handlirsch 0-vg/0-sl Fl/A polylec A P 2,29
Bombus melanopygus Nylander 0-vg/0-sl Fl/A polylec C P 29
Bombus mixtus Cresson 0-vg/0-sl Fl/A polylec C P 29
Bombus occidentalis Greene 0-vg/0-sl Fl/A polylec A P 2,29
Bombus sitkensis Nylander 0-vg/0-sl Fl/A polylec C P 29
Bombus vosnesenski Radoszkowski 0-vg/0-sl Fl/A polylec A P 2,29
Psithyrus insularis (Smith) 0-vg/nest Fl/KP I-Bombu C P 29
 (SEE ALSO APPENDIX C)

ARGIDAE (1 genus, 1 species)

Arge clavicornis (Fabricius) F-cn/F-cn /H P-SHRUB U P 2

AULACIDAE (1 genus, 2 species)

Pristaulacus editus (Cresson) wood/ins /Pa I-COLEO U P
Pristaulacus oregonus Townes wood/ins /Pa I-COLEO U P

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
BETHYLIDAE (1 genus, 1 species)						
undetermined specimens	/ins	/Pa			P	
BRACONIDAE (27 genera, 27 species)						
<i>Apanteles</i> sp.	F-cn/ins	/Pa	I-LEPID		P	1
<i>Ascogaster</i> sp.	/ins	/Pa	I-LEPID		P	
<i>Aspilota</i> sp.	/ins	/Pa			P	
<i>Bracon</i> sp.	F-cn/ins	/Pa			P	
<i>Chelonus</i> sp.	/ins	/Pa	I-LEPID		P	
<i>Chorebus</i> sp.	/ins	/Pa	I-DIPT		P	
<i>Coeloides</i> sp.	wood/ins	/Pa	I-SCOLY		P	
<i>Crassomicrodus</i> sp.	/ins	/Pa			P	
<i>Cremnops</i> sp.	O-vg/ins	/Pa	I-LEPID		P	
<i>Dendrosoter</i> sp.	wood/ins	/Pa	I-SCOLY		P	
<i>Doryctes</i> sp.	wood/ins	/Pa	I-COLEO		P	
<i>Earinus</i> sp.	F-cn/ins	/Pa	I-LEPID		P	
<i>Elasmosoma</i> sp.	/ins	/Pa	I-FORMI		P	
<i>Entsira</i> sp.	/ins	/Pa			P	
<i>Helconidia necydalidis</i> Cushman	F-cn/ins	/Pa	I-CERAM		P	41
<i>Heterospilus</i> sp.	/ins	/Pa	I-COLEO		P	1
<i>Meteorus</i> sp.	/ins	/Pa	I-LEPID		P	
<i>Microgaster</i> sp.	/ins	/Pa	I-LEPID		P	
<i>Microplitis</i> sp.	/ins	/Pa	I-LEPID		P	
<i>Oncophanes</i> sp.	F-cn/ins	/Pa	I-LEPID		P	
<i>Ontsira</i> sp.	wood/ins	/Pa	I-COLEO		P	
<i>Opius</i> sp.	F-cn/ins	/Pa	I-DIPT		P	
<i>Orthopelma californicum</i> Ashmead	F-cn/ins	/Pa	I-CYNIP		P	
<i>Protomicroplitis</i> sp.	/ins	/Pa	I-LEPID		P	
<i>Rogas</i> sp.	/ins	/Pa	I-NOCT		P	1
<i>Spathius</i> sp.	wood/ins	/Pa	I-SCOLY		P	
<i>Wroughtonia</i> sp.	wood/ins	/Pa	I-COLEO		P	
CERAPHRONIDAE (2 genera, 9 species)						
<i>Aphanogmus</i> sp.	F-cn/ins	/Pa	I-DIPT			1,40
<i>Ceraphron</i> spp. (8)	F-cn/ins	/Pa		A		1,40
undetermined specimens					P	
CHALCIDIDAE (2 genera, 2 species)						
<i>Brachymeria</i> sp.	/ins	/Pa			P	
<i>Spilochalcis</i> sp.	/ins	/Pa			P	
CHRYSIDIDAE (5 genera, 6 species)						
<i>Chrysis praestans</i> Buys	/ins	/Pa	I-HYMEN	U	P	
<i>Chrysis</i> sp.	/ins	/Pa	I-HYMEN	U	P	
<i>Chrysur</i> sp.	/ins	/Pa	I-HYMEN	U	P	
<i>Hedychridium dimidiatum</i> (Say)	/ins	/Pa	I-HYMEN	U	P	
<i>Omalus aeneus</i> (Fabricius)	/ins	/Pa	I-SPHEC	U	P	
<i>Trichrysis</i> sp.	/ins	/Pa	I-SPHEC	U	P	

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
CIMBICIDAE (2 genera, 2 species)						
<i>Trichiosoma triangulum</i> Kirby	F-cn/F-cn	/H	P-DECID	U	P	
<i>Zaraea americana</i> Cresson	F-cn/F-cn	/H	P-Symph	U	P	2
COLLETIDAE (1 genus, 1 species)						
<i>Hylaeus</i> sp. (SEE ALSO APPENDIX C)	0-vg/0-vg	Fl/A	polylec	A	P	29
DIAPRIIDAE (6 genera, 8 species)						
<i>Basalys</i> spp. (2)	/ins	/Pa		U		40
<i>Belyta</i> sp.	/ins	/Pa	I-DIPT	U		40
<i>Cinetus</i> spp. (2)	F-cn/ins	/Pa		U		40
<i>Psilus</i> sp.	/ins	/Pa	I-DIPT		P	41
<i>Trichopria</i> sp.	/ins	/Pa	I-DIPT	U		40
<i>Zygota</i> sp.	/ins	/Pa		U		40
undetermined specimens	/ins	/Pa	I-DIPT		P	2
DIPRIONIDAE (1 genus, 2 species)						
<i>Neodiprion scutellatus</i> Rohwer	F-cn/F-cn	/H	P-Psme	U	P	
<i>Neodiprion</i> sp.	F-cn/F-cn	/H	P-CONIF			1
DRYINIDAE (1 genus, 1 species)						
<i>Aphelopus</i> sp.	F-lt/ins	/Pa	I-HOMOP	U	A	40
EMBOLEMIDAE (1 genus, 1 species)						
<i>Embolemus nearcticus</i> (Brues)	/ins	/Pa			P	
ENCYRTIDAE (11 genera, 11 species)						
<i>Cheiloneurus</i> sp.	/ins	/Pa	I-COCCD			1
<i>Copidosoma bakeri</i> (Howard)	F-cn/ins	/Pa	I-LEPID	C		1
<i>Ginsiana</i> sp.	/ins	/Pa			P	
<i>Lamennasia</i> sp.	/ins	/Pa			P	
<i>Metaphycus</i> sp.	F-cn/ins	/Pa	I-COCCD			1
<i>Ooencyrtus</i> sp.	/ins	/Pa			P	
<i>Prionomitus</i> sp.	/ins	/Pa			P	
<i>Pseudaphycus</i> sp.	F-cn/ins	/Pa	I-PCOCC			1
<i>Psyllaephagus</i> sp.	/ins	/Pa			P	
<i>Rhopus</i> sp.	/ins	/Pa			P	
<i>Syrphophagus</i> sp.	/ins	/Pa			P	40
EUCHARITIDAE (1 genus, 1 species)						
<i>Pseudochalcura gibbosa</i> (Provancher)	/ins	/Pa	I-FORMI		P	2,40
EUCOILIDAE (3 genera, 3 species)						
<i>Eucoila</i> sp.	/ins	/Pa	I-DIPT		P	
<i>Eucoilidea</i> sp.	/ins	/Pa	I-DIPT		P	

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
EUCOILIDAE (continued)						
<i>Pseudocoila</i> sp.	/ins	/Pa	I-DIPT		P	
EULOPHIDAE (18 genera, 19 species)						
<i>Achrysocharis</i> sp.	/ins	/Pa		U		1
<i>Ceranisus</i> sp.	/ins	/Pa	I-THRIP	U		40
<i>Chrysocharis</i> sp.	/ins	/Pa		U	P	40
<i>Chrysonotomyia</i> sp.	/ins	/Pa		U	P	40
<i>Cirrospilus</i> sp.	/ins	/Pa		U	P	1
<i>Diglyphus</i> sp.	/ins	/Pa	I-AGROM	U	P	1
<i>Euderomphale</i> sp.	/ins	/Pa	I-ALEYR	U		40
<i>Euderus</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Eupelmella</i> sp.				U	P	
<i>Euplectrus</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Melittobia</i> sp.	/ins	/Pa	I-HYMEN	U		1,40
<i>Notanisomorpha</i> sp.	/ins	/Pa	I-AGROM	U	P	
<i>Omphale</i> sp.				U	P	40
<i>Pediobius</i> sp.	/ins	/Pa		U	P	
<i>Pnigalio</i> sp.	/ins	/Pa	I-LEAFM	U	P	
<i>Sympiesis</i> sp.	/ins	/Pa		U	P	
<i>Tetrastichus</i> spp.	/ins	/Pa		U	PS	1,40
<i>Zagrammosoma nigroli/neatum</i> Crawford	/ins	/Pa	I-LEPID	U	P	
EUMENIDAE (5 genera, 5 species)						
<i>Ancistrocerus</i> sp.	F-cn/wood	Pr/A	I-LEPID	U	P	
<i>Eumenes</i> sp.	F-cn/F-cn	Pr/A	I-LEPID	U	P	
<i>Euodynerus</i> sp.	F-cn/wood	Pr/A	I-LEPID	U	P	
<i>Stenodynerus</i> sp.	F-cn/	Pr/A	I-LEPID	U	P	40
<i>Symmorphus</i> sp.	F-cn/	Pr/A	I-CHRYS	U	P	
EUELMIDAE (1 genus, 1 species)						
<i>Calosota</i> sp.	M-vg/ins	/Pa		C		1
undetermined specimens					P	
EURYTOMIDAE (1 genus, 2 species)						
<i>Eurytoma</i> spp.	/ins	/Pa			P	
FIGITIDAE (2 genera, 2 species)						
<i>Anacharis</i> sp.	/ins	/Pa	I-NEURO	U	P	
<i>Xyalaspis</i> sp.	/ins	/Pa	I-NEURO	U	P	
FORMICIDAE (13 genera, 28 species)						
<i>Amblyopone oregonense</i> (Wheeler)	wood/wood	Pr/A		U	P	35
<i>Aphaenogaster</i> sp.	F-gd/F-gd	/A				1,35
<i>Brachymyrmex dipilis</i> Emery	F-gd/F-gd	/A				35
<i>Camponotus essigi</i> M.R.Smith	wood/wood	O/A				35
<i>Camponotus laevigatus</i> (F.Smith)	wood/wood	O/A		C	P	35
<i>Camponotus modoc</i> Wheeler	wood/wood	O/A		A	P	35,49,54

Taxonomic category	Habitat Ad/Im	Funct Plant/ group animal		Ab	Co	References
		Ad/Im	host			
FORMICIDAE (continued)						
<i>Camponotus novaeboracensis</i> (Fitch)	wood/wood	O/A		A	P	1, 35
<i>Camponotus vicinus</i> Mayr	F-gd/F-gd	O/A		C	P	35
<i>Formica accreta</i> Francouer	F-gd/F-gd	Pr/A		U	P	
<i>Formica argentea</i> Wheeler	F-gd/F-gd	Pr/A		U	P	
<i>Formica fusca</i> Linnaeus	F-gd/F-gd	Pr/A		C	P	
<i>Formica lasioides</i> Emery	M-gd/M-gd	/A		U	P	
<i>Formica neorufibarbis</i> Emery	wood/wood	Pr/A		U	P	
<i>Formica pacifica</i> Francouer	F-gd/F-gd	Pr/A		C	P	
<i>Formica subnuda</i> Emery	F-gd/F-gd	/A		C	P	
<i>Lasius pallitarsis</i> (Provancher)	F-gd/F-gd	O/A			P	1, 35
<i>Lasius vestitus</i> Wheeler	F-gd/F-gd	O/KP			P	
<i>Lasius (Chthonolasius) sp.</i>	F-gd/F-gd	O/KP			P	
<i>Leptothorax muscorum</i> (Nylander)	wood/wood	/A		C	P	35
<i>Leptothorax nevadensis</i> Wheeler	O-gd/O-gd	/A				35
<i>Leptothorax rugulatus</i> Emery	F-gd/F-gd	/A		C		1
<i>Manica hunteri</i> (Wheeler)	F-gd/F-gd	/A		U		35
<i>Myrmica sp.</i>		Pr/A				1, 35
<i>Polyergus breviceps</i> Emery	F-gd/F-gd	/A				35
<i>Solenopsis molesta</i> (Say)	O-gd/O-gd	O/A		U	P	35
<i>Stenammas</i> spp. (2)	F-gd/F-gd	Pr/A				35
<i>Tapinoma sessile</i> (Say)	F-gd/F-gd	/A		U	P	1, 35
GASTERUPTIIDAE (1 genus, 1 species)						
<i>Gasteruption septentrionale</i> Schletterer)	/ins	Fl/Pa	I-HYMEN	U	P	2
HALICTIDAE (5 genera, 5 species)						
<i>Dialictus sp.</i>	O-vg/O-sl	Fl/A	polylec	A	P	29
<i>Evylaeus sp.</i>	O-vg/O-sl	Fl/A	polylec	A	P	29, 41
<i>Halictus sp.</i>	O-vg/O-sl	Fl/A	polylec	A	P	29
<i>Lasioglossum sp.</i>	O-vg/O-sl	Fl/A	polylec	A	P	29
<i>Sphecodes sp.</i>	O-vg/nest	Fl/KP	I-HALIC	A	P	29
(SEE ALSO APPENDIX C)						
ICHNEUMONIDAE (118 genera, 127 species)						
<i>Acrodactyla sp.</i>	/anim	/Pa	A-SPID	U	P	
<i>Acrolyta sp.</i>	/ins	/HP	I-BRACO	U	P	
<i>Acropimpla sp.</i>	/ins	/Pa	I-LEPID	U	P	
<i>Adelognathus sp.</i>	/ins	/Pa	I-TENTH	U	P	
<i>Agrothereutes sp.</i>	/ins	/Pa	I-TENTH	U	P	
<i>Alexeter sp.</i>	/ins	/Pa	I-TENTH	U	P	
<i>Alloplasta sp.</i>	/ins	/Pa	I-LEPID	U	P	
<i>Anoncus sp.</i>	/ins	/Pa	I-TENTH	U	P	
<i>Aoplus sp.</i>	/ins	/Pa	I-LEPID	U	P	
<i>Aplomerus robustus</i> Townes	wood/ins	/Pa	I-BUPR	C	P	
<i>Arotrepes sp.</i>	M-vg/ins	/Pa		U	P	
<i>Asthenolabus sp.</i>	/ins	/Pa	I-LEPID	U	P	
<i>Atractodes sp.</i>	/ins	/Pa	I-DIPT	U	P	
<i>Banchus sp.</i>	/ins	/Pa	I-LEPID	U	P	1
<i>Barycnemis sp.</i>	/ins	/Pa	I-COLEO	C	P	

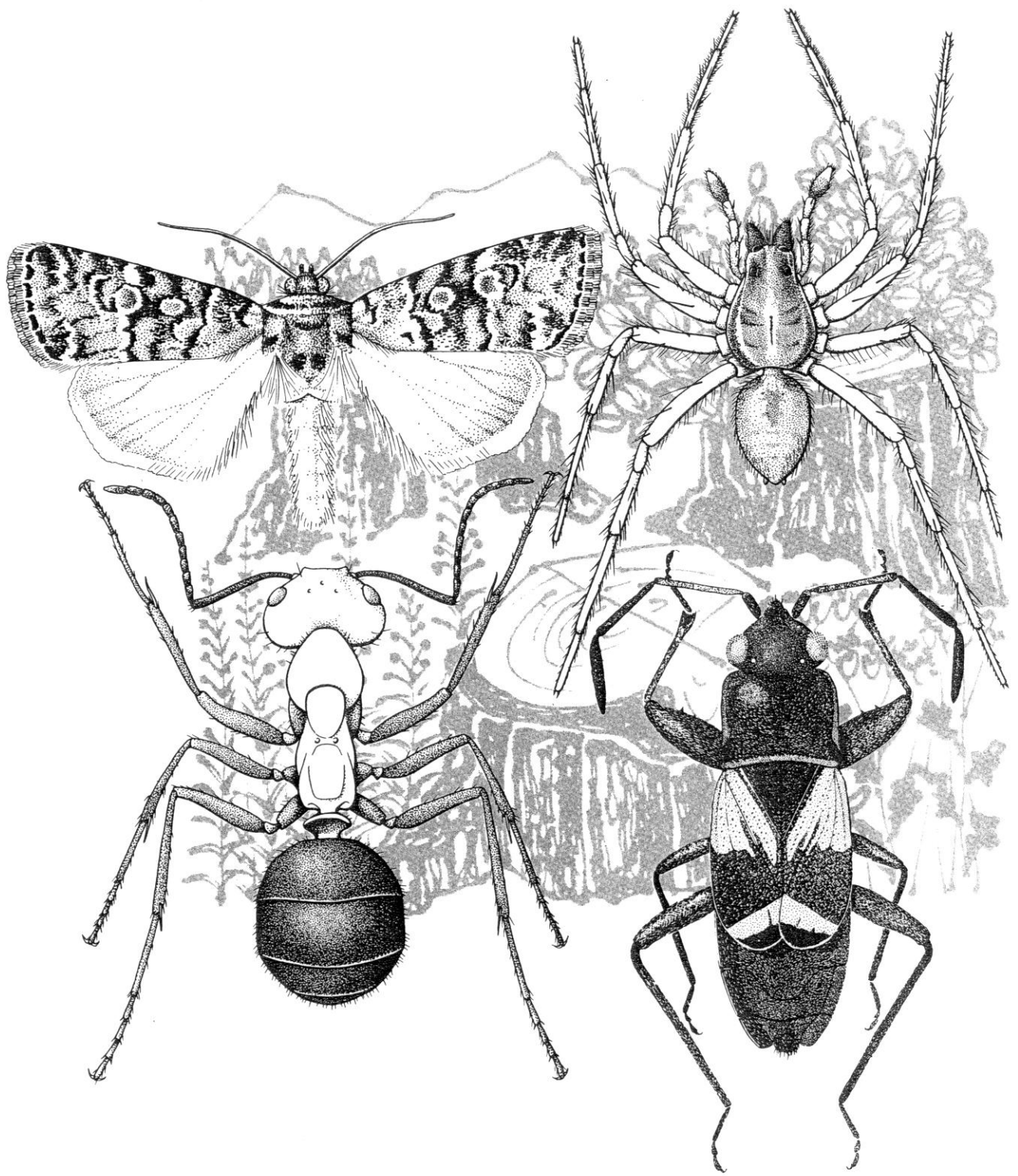
Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
ICHNEUMONIDAE (continued)						
<i>Bathythrix</i> sp.	/ins	/Pa	I-HYMEN	U	P	
<i>Blaptichus</i> sp.	/ins	/Pa		U	P	
<i>Caenocryptus</i> sp.	/ins	/Pa	I-TENTH	C	P	
<i>Campodorus</i> sp.	/ins	/Pa		U	P	
<i>Campoletis</i> sp.	M-vg/ins	/Pa	I-NOCT	C	P	
<i>Campoplex</i> sp.	F-cn/ins	/Pa	I-LEPID	C	P	
<i>Casinaria</i> sp.	/ins	/Pa	I-LEPID	C	P	
<i>Castatenos</i> sp.	/ins	/Pa		U	P	
<i>Charitopes</i> sp.	/ins	/Pa		U	P	
<i>Chorinaeus</i> sp.	F-cn/ins	/Pa	I-LEPID	U	P	
<i>Coccygomimus varians</i> Townes	F-cn/ins	/Pa	I-LEPID	U	P	
<i>Coccygomimus</i> sp.	F-cn/ins	/Pa	I-LEPID	U	P	
<i>Coleocentrus manni</i> Cushman	wood/ins	/Pa	I-COLEO	U	P	
<i>Coleocentrus occidentalis</i> Cresson	wood/ins	/Pa	I-COLEO	U	P	
<i>Colpomeria quadrisculpta</i> (Gravenhorst)	/anim	/Pa	A-SPID	U		31
<i>Cratichneumon</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Cryptus</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Ctenichneumon</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Ctenochira</i> sp.	/ins	/Pa	I-TENTH	U	P	
<i>Cubocephalus</i> sp.	/ins	/Pa	I-TENTH	C	P	
<i>Cyclolabus</i> sp.	F-cn/ins	/Pa	I-GEOM	U	P	
<i>Delomerista</i> sp.	F-cn/ins	/Pa	I-TENTH	U	P	
<i>Demopheles</i> sp.	wood/ins	/Pa	I-COLEO	U	P	
<i>Diadegma</i> sp.	/ins	/Pa	I-LEPID	C	P	
<i>Diaglyptidea</i> sp.	/ins	/HP	I-HYMEN	U	P	
<i>Diaparsis</i> sp.	/ins	Fl/Pa	I-COLEO	U	P	
<i>Diphyus</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Diplazon</i> sp.	/ins	/Pa	I-SYRPH	U	P	
<i>Dolichomitus imperator</i> (Kriechbaumer)	wood/ins	/Pa	I-CERAM	U	P	
<i>Dolichomitus</i> sp.	wood/ins	/Pa	I-COLEO	U	P	
<i>Dusona</i> sp.	F-cn/ins	/Pa	I-LEPID	U	P	
<i>Earobia</i> sp.	/ins	/Pa	I-COLEO	U	P	
<i>Echthrus abdominalis vancouverensis</i> (Bradley)	wood/ins	/Pa	I-COLEO	U	P	41
<i>Endasys</i> sp.	/ins	/Pa	I-TENTH	A	P	
<i>Enizemum</i> sp.	/ins	/Pa	I-SYRPH	U	P	
<i>Enytus montanus</i> (Ashmead)	/ins	/Pa	I-LEPID	U	P	1
<i>Enytus</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Eridolius</i> sp.	/ins	/Pa		U	P	
<i>Erromenus</i> sp.	/ins	/Pa	I-TENTH	U	P	
<i>Ethelurgus</i> sp.	/ins	/Pa	I-DIPT	U	P	1
<i>Euceros</i> sp.	/ins	/HP	I-ICHNE	U	P	
<i>Euryproctus</i> sp.	/ins	/Pa	I-TENTH	U	P	
<i>Eusterinx</i> sp.	/ins	/Pa		U	P	1
<i>Excaverus</i> sp.	F-cn/ins	/Pa	I-TENTH	U	P	
<i>Exenterus</i> sp.	F-cn/ins	/Pa	I-DIPRI	C	P	
<i>Exochus</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Exyston</i> sp.	/ins	/Pa	I-TENTH	U	P	
<i>Gelis tenellus</i> (Say)	/ins	/HP	I-HYMEN	U		1
<i>Gelis</i> sp.	/ins	/Pa		U	P	1
<i>Helcostizus</i> sp.	wood/ins	/Pa	I-COLEO	U	P	
<i>Helictes</i> sp.	/ins	/Pa		U	P	

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
<i>Himerta</i> sp.	/ins	/Pa	I-TENTH	U	P	
<i>Hoplismenus</i> sp.	/ins	/Pa	I-NYMPH	U	P	
<i>Hyplamblys</i> sp.	/ins	/Pa	I-TENTH	U	P	
<i>Hyposoter fuscitarsus</i> (Viereck)	F-cn/ins	/Pa	I-LEPID	U		1
<i>Hyposoter</i> sp.	/ins	/Pa	I-LEPID	U	P	1
<i>Ichneumon</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Ischnus</i> sp.	F-cn/ins	/Pa	I-LEPID	U	P	
<i>Itopectis evetriae</i> (Viereck)	F-cn/ins	/Pa	I-LEPID	U		1
<i>Lamachus</i> sp.	F-cn/ins	/Pa	I-DIPRI	U	P	
<i>Lathrolestes</i> sp.	/ins	/Pa	I-TENTH	U	P	
<i>Lissonota</i> sp.	/ins	/Pa	I-LEPID	U	P	1
<i>Lysibia</i> sp.	/ins	/HP	I-BRACO	U	P	
<i>Mastrus</i> sp.	/ins	/Pa	I-HYMEN	C	P	1
<i>Megastylus</i> sp.	/ins	/Pa		U	P	
<i>Mesochorus</i> sp.	/ins	/HP	I-DIPT	U	P	1,50
<i>Mesoleius</i> sp.	F-cn/ins	/Pa	I-TENTH	U	P	
<i>Mesostenus</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Messatoporus</i> sp.	/ins	/Pa	I-HYMEN	U	P	
<i>Metoa</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Metopius</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Monoblastus</i> sp.	/ins	/Pa	I-TENTH	U	P	
<i>Nemeritis</i> sp.	/ins	/Pa		U	P	
<i>Nepiera</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Odontocolon parvum</i> Townes	wood/ins	/Pa	I-COLEO	U	P	
<i>Olesicampe</i> sp.	/ins	/Pa	I-TENTH	U	P	
<i>Ophion</i> sp.	/ins	/Pa	I-LEPID	U		1
<i>Orthocentrus</i> sp.	/ins	/Pa	I-MYCET	U		1
<i>Phaeogenes</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Phobetres</i> sp.	/ins	/Pa	I-TENTH	U	P	
<i>Phobocampe</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Phrudus</i> sp.	/ins	/Pa	I-COLEO	U	P	
<i>Phygadeuon</i> sp.	/ins	/Pa	I-DIPT	U	P	
<i>Pimpla spatulata</i> Townes	wood/ins	/Pa	I-EUMEN	U	P	
<i>Platylabus</i> sp.	F-cn/ins	/Pa	I-GEOM	U	P	
<i>Plectiscidea</i> sp.	/ins	/Pa		U	P	
<i>Polyaulon</i> sp.	/ins	/Pa		U	P	
<i>Polyblastus</i> sp.	/ins	/Pa	I-TENTH	U	P	
<i>Polysphincta koebelei</i> Howard	/anim	/Pa	A-SPID	U		31
<i>Probles</i> sp.	/ins	/Pa	I-COLEO	U	P	
<i>Pterocormus</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Pygocryptus</i> sp.	/ins	/Pa		C	P	
<i>Rhimproctopna</i> sp.	F-cn/ins	/Pa	I-LEPID	U	P	
<i>Rhorus</i> sp.	/ins	/Pa	I-TENTH	U	P	
<i>Rhyssa alaskensis</i> Ashmead	wood/ins	/Pa	I-SIRIC	U	P	41
<i>Scambus deceptor</i> Walley	/ins	/Pa	I-LEPID	U	P	
<i>Scambus</i> sp.	/ins	/Pa		U	P	
<i>Sinarachna anomela</i> (Holmgren)	/anim	/Pa	A-SPID	U		31
<i>Sinarachna strigis</i> (Howard)	/anim	/Pa	A-SPID	U	P	
<i>Sinophorus</i> sp.	M-vg/ins	/Pa	I-LEPID	U	P	
<i>Stibeutes</i> sp.	/ins	/Pa		U	P	
<i>Sussaba</i> sp.	/ins	/Pa	I-SYRPH	U	P	
<i>Synodites</i> sp.	/ins	/Pa	I-TENTH	U	P	
<i>Syrphoctonus</i> sp.	/ins	/Pa	I-SYRPH	U	P	

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
ICHNEUMONIDAE (continued)						
<i>Temelucha</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Tersilochus</i> sp.	/ins	/Pa	I-COLEO	U	P	
<i>Therion</i> sp.	/ins	/Pa	I-LEPID	U	P	
<i>Triclistus podagricus</i> (Gravenhorst)	/ins	/Pa	I-LEPID	U		1
<i>Trychosis</i> sp.	/anim	/Pa	A-SPID	U	P	
<i>Xorides cincticornis</i> (Cresson)	wood/ins	/Pa	I-COLEO	C	P	
<i>Zatypota patellata</i> Townes	/anim	/Pa	A-SPID	U		31
<i>Zatypota percontatoria</i> (Müller)	/anim	/Pa	A-SPID	U		31
MEGACHILIDAE (7 genera, 9 species)						
<i>Anthidium</i> sp.	0-vg/0-sl	Fl/A		U	P	29
<i>Chelostoma</i> sp.	0-vg/0-vg	Fl/A	P-Phace	R	P	29
<i>Chelostomopsis rubifloris</i> (Cockerell)	0-vg/0-vg	Fl/A	polylec	R	P	29
<i>Coelioxys</i> spp.	0-vg/nest	Fl/KP	I-Megac	A	P	29
<i>Hoplitis</i> sp.	0-vg/0-vg	Fl/A	polylec	R	P	29
<i>Osmia</i> spp.	0-vg/	Fl/A		C	P	29
<i>Stelis</i> sp.	0-vg/nest	Fl/KP	I-Osmia	U	P	29
(SEE ALSO APPENDIX C)						
MEGASPILIDAE (2 genera, 7 species)						
<i>Conostigmus</i> spp. (6)	/ins	/PA	I-DIPT	U		1,40
<i>Lagynodes</i> sp.	F-cn/ins	/Pa		A		40
MYMARIDAE (6 genera, 7 species)						
<i>Alaptus</i> sp.	F-cn/ins	/Pa	I-PSOC*	U	S	
<i>Anagrus</i> sp.	/ins	/Pa	I-CICDL*U			40
<i>Anaphes</i> sp.	/ins	/Pa	I-EGGS	U	P	
<i>Gonatocerus</i> sp. (ater group)	/ins	/Pa	I-CICDL*U	P		40
<i>Gonatocerus</i> sp. (littoralis group)	/ins	/Pa	I-CICDL*U	P		40
<i>Ooctonus</i> sp.	/ins	/Pa	I-CICDL*U			40
<i>Polynema</i> sp.	/ins	/Pa	I-EGGS	U	P	40
undetermined specimens	/Ins	/Pa	I-EGGS		S	2
(* all species are egg parasites on the hosts listed)						
ORMYRIDAE (1 genus, 1 species)						
<i>Ormyrus</i> sp.	/ins	/HP	I-GALL	U	P	
ORUSSIDAE (1 genus, 1 species)						
<i>Orussus thoracicus</i> (Ashmead)	wood/ins	/Pa	I-BUPR	U	P	
PAMPHILIDAE (1 genus, 1 species)						
undetermined specimens	F-cn/F-cn	/H	P-Abam		A	
PERILAMPIDAE (1 genus, 1 species)						
<i>Perilampus</i> sp.	/ins	/Pa			P	

Clearcut

The Andrews Forest contains many small stands where, for research purposes, the trees have been cut and removed at various times over the past 40 years. These cut areas include complete clearcuts with and without the slash burned, various conifer replanting schemes, cuts with shelterwood retained for natural seeding, and selective tree removal with minimal understory disturbance. In the early stages of regrowth, annual plants and deciduous shrubs are dominant. The arthropod fauna found in clearcuts is a complex mixture of immigrants from adjacent forested land, remnants from the mature pre-logged forest, immigrants from natural meadow and forest gap communities, and some exotic species. A few species associated with forest trees can be found on seedlings as well. The diverse fauna associated with deciduous and annual plants elevates species richness to levels greater than those found in later stages of forest succession. In the early stages of regrowth, herbivores comprise a significant portion of the fauna. Most conspicuous are winged grasshoppers (not the wingless taxa common in natural meadows), sucking bugs, and caterpillars such as the larva of the adult noctuid moth, *Oncocnemis dunbari* (top left). In the open, sunny, hot places typical of clearcuts, seed-feeding carabid beetles and lygaeid bugs, such as *Malezonotus obrieni* (lower right) display great species richness and abundance. The major predators in clearcuts include large carabid beetles, wandering spiders such as the wolf spider, *Schizocosa mccooki* (upper right), and ants such as *Formica neorufibarbis* (lower left).



Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
PLATYGASTERIDAE (5 genera, 11 species)						
<i>Amblyaspis</i> sp.	/ins	/Pa	I-CECID	P		40
<i>Inostemma</i> sp.	/ins	/Pa	I-CECID			2,40
<i>Leptacis</i> sp.	/ins	/Pa	I-CECID			40
<i>Platygaster</i> sp. prob. <i>pseudotsugae</i> MacGaun	/ins	/Pa	I-CECID			40
<i>Platygaster</i> spp. (6)	/ins	/Pa	I-CECID	P		1,40
<i>Synopeas</i> sp.	/ins	/Pa	I-CECID	P		
POMPILIDAE (10 genera, 17 species)						
<i>Ageniella euphorbiae</i> (Viereck)	O-gd/	Pr/A	A-SPID	U	P	40
<i>Anoplus relativus</i> (Fox)	O-gd/O-sl	Pr/A	A-SPID	U	P	40
<i>Anoplus tenebrosus</i> (Cresson)	O-gd/O-sl	Pr/A	A-SPID	U	P	
<i>Aporinellus completus</i> (Banks)	O-gd/O-sl	Pr/A	A-SPID	U	P	40
<i>Aporus luxus assimilis</i> (Banks)	O-gd/O-sl	Pr/A	A-SPID	U	P	40
<i>Auplopus architectus metallicus</i> (Banks)	O-gd/O-sl	Pr/A	A-SPID	U	P	40
<i>Ceropales</i> sp.	O-gd/O-sl	Pr/A	A-SPID		P	
<i>Dipogon papago papago</i> (Banks)	F-cn/wood	Pr/A	A-SPID	U	P	
<i>Evagetes hyacinthinus</i> (Cresson)	O-gd/O-sl	Pr/A	A-SPID	U	P	40
<i>Pompilus arctus</i> Cresson	O-gd/O-sl	Pr/A	A-SPID	U	P	40
<i>Pompilus luctuosus luctuosus</i> Cresson	O-gd/O-sl	Pr/A	A-SPID	U	P	40
<i>Pompilus parvulus</i> (Banks)	O-gd/O-sl	Pr/A	A-SPID	U	P	40
<i>Pompilus scelestus</i> Cresson	O-gd/O-sl	Pr/A	A-SPID	U	P	40
<i>Pompilus silvivagus</i> Evans	O-gd/O-sl	Pr/A	A-SPID	C	P	40
<i>Priocnemis notha occidentis</i> Banks	O-vg/O-sl	Pr/A	A-SPID	U	P	40
<i>Priocnemis oregona</i> Banks	O-vg/O-sl	Pr/A	A-SPID	C	P	40
<i>Priocnemis</i> sp.	O-vg/O-sl	Pr/A	A-SPID		P	
PROCTOTRUPIDAE (1 genus, 1 species)						
undetermined specimens	/ins	/Pa	I-COLEO	P		2
PTEROMALIDAE (2 genera, 3 species)						
<i>Gastrancistrus</i> sp.	/ins	/Pa	I-CECID			2,40
<i>Spalangiopecta apotherisma</i> Darling & Hanson	F-lt/ins	/Pa				40
<i>Spalangiopecta felonia</i> Darling & Hanson	F-lt/ins	/Pa				40
undetermined specimens					P	
SAPYGIDAE (1 genus, 1 species)						
<i>Sapyga</i> sp.	/ins	/Pa	I-MEGAC	U	P	
SCELIONIDAE (8 genera, 16 species)						
<i>Ceratobaeus</i> sp.	/anim	/Pa	A-SPID*	U		40
<i>Exon californicum</i> Masner	/ins	/Pa	I-EGGS	U		40
<i>Gyron</i> spp.	/ins	/Pa	I-HETER*	U		40
<i>Scelio</i> sp.	/ins	/Pa	I-ACRID*	U		40
<i>Teleas</i> sp.	/ins	/Pa	I-EGGS	U		40

Taxonomic category	Habitat	Funct	Plant/	Ab	Co	References
	Ad/Im	group	animal			
SCELIONIDAE (continued)						
<i>Telenomus</i> spp. (7)	/ins	/Pa	I-EGGS	U		1,40
<i>Trimorus</i> spp.	/ins	/Pa	I-EGGS	U		40
<i>Trissolcus</i> sp.	/ins	/Pa	I-HETER*	U	P	
(* all species are egg parasites on the hosts listed)						
SIGNIPHORIDAE (1 genus, 1 species)						
<i>Thysanus</i> sp.	/ins	/Pa	I-DIASP			1
SIRICIDAE (2 genera, 2 species)						
<i>Urocerus albicornis</i> (Fabricius)	F-cn/wood	/X		U	P	41
<i>Xeris morrisoni</i> (Cresson)	F-cn/wood	/X	P-CONIF	U	P	41
SPHECIDAE (26 genera, 34 species)						
<i>Ammophila acuta</i> (Fernald)	O-vg/O-gd	Pr/A	I-LEPID	U	P	
<i>Ammophila azteca azteca</i> Cameron	O-vg/O-gd	Pr/A	I-LEPID	U	P	40
<i>Ammophila dysmica</i> Menke	O-vg/O-gd	Pr/A	I-LEPID	U	P	40
<i>Ancistromma corrugata</i> (Bohart & Bohart)	O-gd/	Pr/A	I-ORTH	U	P	40
<i>Astata</i> sp.	O-vg/O-gd	Pr/A	I-PENT	U	P	
<i>Cerceris aequalis</i> Provancher	O-vg/O-gd	Pr/A	I-COLEO		P	
<i>Cerceris nigrescens</i> F. Smith	O-vg/O-gd	Pr/A	I-CURC	U	P	
<i>Crabro</i> spp.	O-vg/O-gd	Pr/A	I-DIPT	U	P	
<i>Crossocerus</i> sp.	O-vg/O-gd	Pr/A	I-DIPT	C	P	
<i>Didineis nodosa</i> Fox	O-vg/	Pr/A	I-CICDL	U	P	40
<i>Dryudella rhimpa</i> Parker	O-gd/	Pr/A	I-LYGAE	R	P	40
<i>Ectemnius lapidarius</i> (Panzer)	/wood	Pr/A	I-SYRPH	U	P	
<i>Ectemnius ruficornis</i> (Zetterstedt)		Pr/A		U	P	40
<i>Ectemnius</i> sp.	/wood	Pr/A		U	P	
<i>Gorytes</i> sp.	O-vg/O-gd	Pr/A	I-HOMOP	U	P	
<i>Mimesa basirufus</i> Packard	O-vg/O-gd	Pr/A	I-CICDL	U	P	
<i>Nysson</i> sp.		Pr/A		U	P	40
<i>Oxybelus emarginatus</i> Say	O-vg/O-gd	Pr/A	I-DIPT	U	P	
<i>Passaloecus melanocrus</i> Rohwer	F-cn/wood	Pr/A	I-APHID			1
<i>Passaloecus melanognathus</i> Rohwer	F-cn/wood	Pr/A	I-APHID			1
<i>Pemphredon inornatus</i> Say	F-cn/wood	Pr/A	I-APHID	U	P	
<i>Pisonopsis triangularis</i> Ashmead	O-vg/O-gd	Pr/A	A-SPID	U	P	40
<i>Podalonia communis</i> (Cresson)	O-vg/O-gd	Pr/A	I-LEPID	U	P	
<i>Psenulus frontalis</i> (Fox)	F-cn/wood	Pr/A	I-APHID	U	P	
<i>Rhopalum (Corynopus)</i> sp.	F-cn/wood	Pr/A	I-DIPT		P	
<i>Rhopalum (Rhopalum)</i> sp.	F-cn/wood	Pr/A	I-PSOC		P	
<i>Sceliphron caementarium</i> (Drury)	O-vg/O-gd	Pr/A	A-SPID	U	P	
<i>Solierella blaisdelli</i> (Bridwell)	O-vg/O-gd	Pr/A	I-LYGAE	U	P	40
<i>Spilomena</i> sp.	F-cn/wood	Pr/A	I-THYSP	U	P	
<i>Stigmus americanus</i> Packard	F-cn/wood	Pr/A	I-APHID	U	P	
<i>Tachysphex</i> sp.	O-vg/O-gd	Pr/A	I-ORTH	U	P	40
<i>Trypargilium tridentatum</i> (Packard)	F-cn/	Pr/A	A-SPID	R	P	40
<i>Trypoxylon sculleni</i> Sandhouse	F-cn/wood	Pr/A	A-SPID	C	P	

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
TENTHREDINIDAE (21 genera, 46 species)						
<i>Aglaostigma rubens</i> (Cresson)		/H		U	P	
<i>Allantus cinctus</i> (Linnaeus)	O-vg/O-vg	/H	P-ROSAC			1
<i>Ametastegia pallipes</i> Spinola		/H	P-HERBS	U		23
<i>Ametastegia tener</i> (Fallen)		/H	P-HERBS	U		23
<i>Aneugmenus padi</i> (Linnaeus) (I)	M-vg/M-vg	/H	P-Ptaq	U	P	30
<i>Dolerus aeneiceps</i> Goulet		/H		U	P	
<i>Empria ignota</i> (Norton)	R-vg/R-vg	/H	P-Salix	U	P	23,30
<i>Empria maculata</i> (Norton)	O-vg/O-vg	/H	P-ROSAC	C	P	23,30
<i>Empria multicolor</i> (Norton)	F-cn/F-cn	/H	P-Alnus	U	P	23
<i>Empria obscurata</i> (Cresson)	O-vg/O-vg	/H	P-Fraga			23
<i>Euura</i> sp.	R-vg/R-vg	/H	P-Salix	U	P	
<i>Loderus genucinctus niger</i> Rohwer	R-vg/R-vg	/H	P-Equis	U	P	30
<i>Macrophya fumator</i> Norton		/H		U	P	30
<i>Monophadnoides atratus</i> (MacGillivray)	O-vg/O-vg	/H	P-ROSAC	U	P	
<i>Monophadnoides geniculatus</i> (Hartig)	O-vg/O-vg	/H	P-Rubus	C	P	23,30
<i>Monophadnoides typicus</i> (Rohwer)	O-vg/O-vg	/H	P-ROSAC	U	P	
<i>Monophadnus assaracus</i> MacGillivray	O-vg/O-vg	/H	P-ROSAC	U	P	
<i>Nematus iridescens</i> Cresson	R-vg/R-vg	/H	P-Salix	C	P	
<i>Nematus oligospilus</i> Forester	R-vg/R-vg	/H	P-Salix	C	P	
<i>Nematus unicolor</i> (Marlatt)		/H		U	P	
<i>Nematus vancouverensis</i> (Marlatt)	R-vg/R-vg	/H	P-Popul	U	P	
<i>Nematus</i> spp. (3)		/H			P	
<i>Pachynematus</i> sp.		/H		U	P	
<i>Pachyprostasis rapae</i> (Linnaeus)		/H			P	23
<i>Paracharactus montivagus</i> (Cresson)		/H	P-GRASS			23
<i>Phylacolpa</i> sp.	R-vg/R-vg	/H	P-Salix	U	P	
<i>Phymatocera offensa</i> (MacGillivray)	F-cn/F-cn	/H	P-Smila	U	P	
<i>Phymatocera similata</i> (MacGillivray)	F-cn/F-cn	/H	P-Smila	U	P	23,30
<i>Pristiphora pallidiventris</i> (Fallén)	O-vg/O-vg	/H	P-ROSAC	U	P	
<i>Pristiphora serrula</i> Wong & Ross		/H		U	P	
<i>Pristiphora sycophanta</i> Walsh	R-vg/R-vg	/H	P-Salix	U	P	
<i>Pristola macnabi</i> Ross	F-cn/F-cn	/H	P-Vame	U	P	
<i>Rhogogaster addenda</i> (Cresson)		/H		U	P	30
<i>Strongylogaster distans</i> Norton	M-vg/M-vg	/H	P-Ptaq	C	P	30
<i>Strongylogaster tibialis</i> Cresson	M-vg/M-vg	/H	P-Ptaq	C	P	23,30
<i>Tenthredo ferrugineipes</i> Cresson		Fl/H		U	P	
<i>Tenthredo maxima</i> (Norton)		Fl/H		U	P	
<i>Tenthredo pectoralis</i> Norton		Fl/H		U	P	
<i>Tenthredo repleta</i> MacGillivray		Fl/H		U	P	
<i>Tenthredo rhammisia</i> MacGillivray		Fl/H		C	P	30
<i>Tenthredo subcoerulea</i> Eschscholtz		Fl/H		U	P	
<i>Tenthredo varipicta</i> Norton		Fl/H		U	P	30
<i>Tenthredo</i> spp. (2)		Fl/H			P	30
TORYMIDAE (2 genera, 2 species)						
<i>Megastigmus</i> sp.	F-cn/F-cn	/Sd				1,40
<i>Torymus</i> sp.	/ins	/Pa			P	
TRICHOGRAMMATIDAE (3 genera, 3 species)						
<i>Aphelinoidea</i> sp.	/ins	/Pa	I-EGGS	U		40
<i>Lathromeris</i> sp.	/ins	/Pa	I-EGGS	U		40

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	References	
				Ab	Co

TRICHOGRAMMATIDAE (continued)

Xiphogramma sp. /ins /Pa I-EGGS U 40

VESPIDAE (3 genera, 9 species)

Dolichovespula arctica Rohwer F-cn/F-cn Pr/A U P
Dolichovespula arenaria (Fabricius) F-cn/F-cn Pr/A C P 40
Dolichovespula maculata (Linnaeus) F-cn/F-cn Pr/A C P 1
Dolichovespula norvegicoides (Sladen) F-cn/F-cn Pr/A U P
Polistes fuscatus aurifer Saussure F-cn/ Pr/A I-LEPID U P
Vespula acadica (Sladen) F-cn/F-gd Pr/A U P 40
Vespula consobrina (Saussure) F-cn/F-gd Pr/A U P
Vespula pennsylvanica (Saussure) F-cn/F-gd Pr/A U P
Vespula vulgaris (Linnaeus) F-cn/F-gd Pr/A C P 1

COLLEMBOLA

(1 order, 6 families, 17 genera, 39 species)

COLLEMBOLA

(6 families, 17 genera, 39 species)

ENTOMOBRYIDAE (4 genera, 7 species)

Entomobrya triangularis Schott F-1t/F-1t U A 1,40
Entomobrya unostrigata Stach (I) F-1t/F-1t C 1
Entomobrya sp. F-1t/F-1t U A 40
Lepidocyrtus sp. F-1t/F-1t U A 40
Sinella sexoculata (Schott) F-1t/F-1t R 1
Sinella sp. F-1t/F-1t U A 40
Tomocerus flavescens Tullberg F-1t/F-1t A A 1,40

ISOTOMIDAE (5 genera, 11 species)

Isotoma arborea (Linnaeus) wood/wood Fu/Fu 1
Isotoma monochaeta Kos 1
Isotoma sensibilis Tullberg wood/wood Fu/Fu 1
Isotoma sp. nr *nigrifrons* (Folsom) C 1
Isotoma sp. (3) F-1t/F-1t A A 40
Metisotoma grandiceps (Reuter) F-1t/F-1t D/D C A 1,40
Proisotoma sp. F-1t/F-1t A A 40
Tetracanthella christianseni Cassagnau F-cn/F-cn Li/Li C A 1,40
**Uzelia* n.sp. F-cn/F-cn 1

HYPOGASTRURIDAE (3 genera, 10 species)

Hypogastrura pseudoarmata (Folsom) F-1t/F-1t C 1
Hypogastrura spp. (4) F-1t/F-1t A A 40
Neanura setosa Canby F-1t/F-1t C 1
Neanura spp. (3) F-1t/F-1t A A 40
Xenylla humicola (O.Fabricius) F-1t/F-1t C 1

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
NEELIDAE (1 genus, 1 species)						
<i>Neelus</i> sp.	F-lt/F-lt			C	A	40
ONYCHIURIDAE (1 genus, 4 species)						
* <i>Onychiurus voegtlini</i> Christiansen & Bellinger	F-cn/F-cn	Li/Li		U		1
<i>Onychiurus</i> spp. (3)	F-lt/F-lt			A	A	40
SMINTHURIDAE (3 genera, 6 species)						
<i>Arrhopalites diversus</i> Mills	F-lt/F-lt			U		1
<i>Arrhopalites</i> sp.	F-lt/F-lt			U	A	40
<i>Dicyrtoma beta</i> Christiansen & Bellinger	F-lt/F-lt			C		1
<i>Dicyrtoma maculosa</i> (Schott)	F-lt/F-lt			A	A	1,40
<i>Sminthurinus quadrimaculatus</i> (Ryder)	F-lt/F-lt			C		1
<i>Sminthurinus</i> sp.	F-lt/F-lt			U	A	40
PROTURA						
(1 order, 1 family, 1 genus, 1 species)						
PROTURA						
(1 family, 1 genus, 1 species)						
undetermined specimens	F-sl/F-sl	D/D			AS	
DIPLURA						
(1 order, 1 family, 1 genus, 1 species)						
DIPLURA						
(1 family, 1 genus, 1 species)						
CAMPODEIDAE (1 genus, 1 species)						
undetermined specimens	F-sl/F-sl	D/D		C	A	
DIPLOPODA						
(6 orders, 10 families, 14 genera, 16 species)						
CHORDEUMATIDA						
(3 families, 5 genera, 5 species)						
CASEYIDAE (3 genera, 3 species)						
<i>Caseya denrogonia</i> Gardner & Shelley	F-lt/F-lt	D/D		A	A	40,52
<i>Ochrogramma bentona</i> (Chamberlin)	F-lt/F-lt	D/D			A	40,52
<i>Vashingtonia irritans</i> (Chamberlin)	F-lt/F-lt	D/D			A	40,52

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CONOTYLIDAE (1 genus, 1 species)						
<i>Taiyutyla corvallis</i> Chamberlin	F-1t/F-1t	D/D			A	
STRIARIIDAE (1 genus, 1 species)						
<i>Amplaria</i> sp.	F-1t/F-1t	D/D		A	A	40
JULIDA (1 family, 1 genera, 1 species)						
PARAJULIDAE (1 genus, 1 species)						
<i>Bollmaniulus</i> sp.	F-1t/F-1t	D/D		U	A	40
POLYDESMIDA (3 families, 5 genera, 5 species)						
NEARCTODESMIDAE (1 genus, 1 species)						
<i>Nearctodesmus</i> sp.	F-1t/F-1t	D/D		A	A	40
POLYDESMIDAE (1 genus, 1 species)						
<i>Scytonotus</i> sp.	F-1t/F-1t	D/D		A	A	40
XESTODESMIDAE (2 genera, 2 species)						
<i>Chonaphe</i> sp.	F-1t/F-1t	D/D				2
<i>Harpaphe haydeniana haydeniana</i> (Wood)	F-1t/F-1t	D/D		A	A	2,40
FAMILY UNKNOWN (1 genus, 1 species)						
*New Genus, n.sp.	F-1t/F-1t	D/D		R	A	40
POLYXENIDA (1 family, 1 genus, 1 species)						
POLYXENIDAE (1 genus, 1 species)						
<i>Polyxenus pugetensis</i> Kinkaid	F-1t/F-1t	D/D		A	A	2,40
POLYZONIDA (1 family, 1 genus, 1 species)						
POLYZONIIDAE (1 genus, 1 species)						
<i>Bdellozonium rothi</i> Cook & Loomis	F-1t/F-1t	D/D		R	A	40

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
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SPIROBOLIDA

(1 family, 1 genus, 2 species)

SPIROBOLIDAE (1 genus, 2 species)

<i>Tylobius deses</i> Cook	M-sl/M-sl	D/D		A	A	40
undetermined specimens	F-lt/F-lt	D/D			A	2

CHILOPODA

(3 orders, 3 families, 3 genera, 3 species)

GEOPHILOMORPHA

(1 family, 1 genus, 1 species)

undetermined specimens	F-lt/F-lt	Pr/Pr			A	2
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LITHOBIOMORPHA

(1 family, 1 genus, 1 species)

undetermined specimens	F-lt/F-lt	Pr/Pr			A	2
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SCOLOPENDROMORPHA

(1 family, 1 genus, 1 species)

undetermined specimens	F-lt/F-lt	Pr/Pr			A	2
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CRUSTACEA (MALACOSTRACA)

(1 order, 1 family, 1 genus, 1 species)

ISOPODA

(1 family, 1 genus, 1 species)

LIGIIDAE (1 genus, 1 species)

<i>Ligidium gracile</i> Dana	F-lt/F-lt	D/D			A	2
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ARACHNIDA

(5 subclasses, 90 families (includes 30 ORIBATIDA superfamilies), 242 genera, 381 species)

PSEUDOSCORPIONES

(5 families, 9 genera, 12 species)

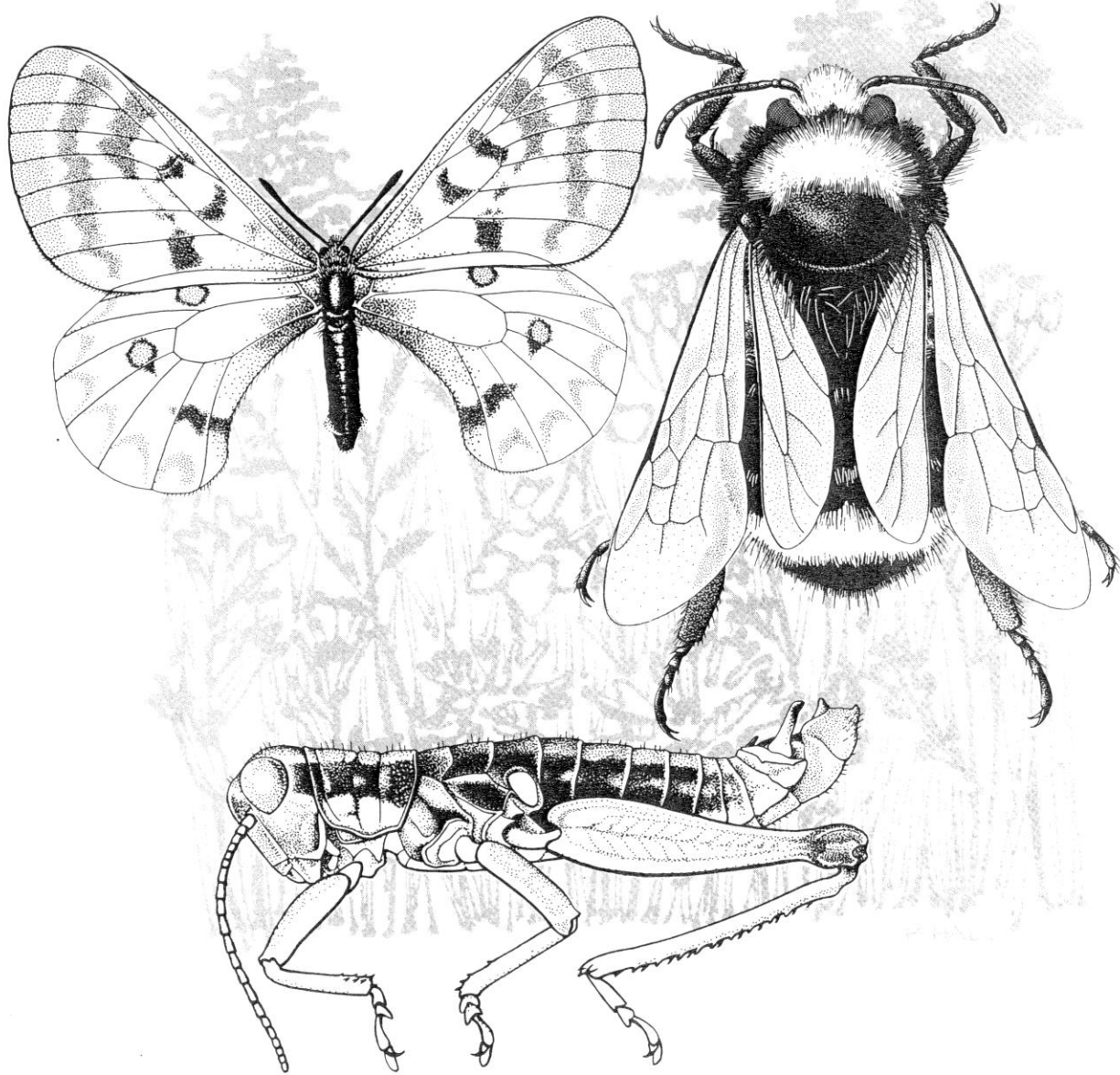
CHEIRIDIDAE (1 genus, 1 species)

<i>Apocheiridium</i> sp.	F-cn/F-cn	Pr/Pr		R	A	10
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Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CHELIFERIDAE (2 genera, 3 species)						
<i>Chelifer cancroides</i> (Linnaeus) (I)	F-1t/F-1t	Pr/Pr		R	A	40
<i>Parachelifer</i> spp.	F-1t/F-1t	Pr/Pr		R	A	10
CHTHONIIDAE (3 genera, 5 species)						
<i>Apochthonius minimus</i> Schuster	F-1t/F-1t	Pr/Pr		A	A	40
<i>Apochthonius occidentalis</i> Chamberlin	F-1t/F-1t	Pr/Pr		A	A	40
<i>Mundochthonius erosidens</i> Chamberlin	F-1t/F-1t	Pr/Pr		C	A	40
<i>Mundochthonius pacificus</i> (Banks)	F-1t/F-1t	Pr/Pr		C	A	40
<i>Pseudotyranochthonius incognitus</i> (Schuster)	F-1t/F-1t	Pr/Pr		U	A	40,41
NEOBISIIDAE (2 genera, 2 species)						
<i>Microcreagris</i> sp.	F-1t/F-1t	Pr/Pr		C	A	40
<i>Parobisium</i> sp.	F-1t/F-1t	Pr/Pr			A	
SYARINIDAE (1 genus, 1 species)						
<i>Syarinus</i> sp.	F-1t/F-1t	Pr/Pr		U	A	40
SCORPIONES (1 family, 1 genus, 1 species)						
VEJOVIDAE (1 genus, 1 species)						
<i>Uroctonus mordax</i> Thorell	O-gd/O-gd	Pr/Pr		U	A	40
OPILIONES (5 families, 11 genera, 12 species)						
ISCHYROPSALIDIDAE (3 genera, 3 species)						
<i>Hesperonemastoma modestum</i> (Banks)	F-1t/F-1t	Pr/Pr		U	A	40
<i>Sabacon siskiyou</i> Sheer	F-1t/F-1t	Pr/Pr		A	A	40
<i>Taracus</i> sp.	F-1t/F-1t	Pr/Pr		C	A	40
NEMASTOMATIDAE (2 genera, 2 species)						
<i>Ceratolasma tricantha</i> Goodnight & Goodnight	F-1t/F-1t	Pr/Pr		U	A	40
<i>Dendrolasma mirabile</i> Banks	F-1t/F-1t	Pr/Pr		C	A	40
PHALANGIIDAE (2 genera, 2 species)						
<i>Leiobunum paessleri</i> Roewer	F-1t/F-1t	Pr/Pr		C	A	40
<i>Leuronychus parvulus</i> Banks	F-1t/F-1t	Pr/Pr		A	A	40

Meadow

The few natural meadows found on the Andrews Forest are primarily at the higher elevations. They range from xeric, shallow-soil types with exposed bedrock and soil as found on ridgetops, to lush, moist, deep-soil types on hillsides. Grasses, sedges, and a variety of annual and perennial flowering plants are the predominant vegetation. Meadows are extremely rich in characteristic arthropods that are generally not shared with the forest habitat. The xeric ridgetop communities contain isolated populations of species generally characteristic of dry habitats east of the Cascade Range, of warm communities to the south, and of scrub communities in the far north. Some species of the meadow fauna, wolf spiders and winged locusts for example, invade newly clearcut regions. However, many of the native meadow insects, such as the grasshopper *Boonacris alticola* (bottom), are flightless and not vagile. They may represent remnants of formerly widespread meadow communities that existed during xeric periods. Meadow communities support diverse and abundant pollinator faunas. Butterflies such as *Parnassius clodius* (top left), syrphid flies, bee-flies, bees, and wasps abound on flowers. Nearly all bee species are generalist foragers, as is the bumble bee *Bombus vosnesenski* (top right). A few bee species specialize on one plant family or even a single genus of plant.



Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
SIRONIDAE (1 genus, 1 species)						
<i>Siro acaroides</i> (Ewing)	F-1t/F-1t	Pr/Pr		A	A	40
TRIAENONYCHIDAE (2 genera, 3 species)						
<i>Metanonychus setulus cascadius</i> Briggs	F-1t/F-1t	Pr/Pr		C	A	40
<i>Metanonychus nigricans oregonus</i> Briggs	F-1t/F-1t	Pr/Pr		A	A	40
<i>Paranonychus brunneus</i> (Banks)	F-1t/F-1t	Pr/Pr		C	A	40
FAMILY UNASSIGNED (1 genus, 1 species)						
<i>Protolophus niger</i> Goodnight & Goodnight	F-1t/F-1t	Pr/Pr		U	A	40
ARANEAE (30 families, 134 genera, 260 species)						
AGELENIDAE (11 genera, 20 species)						
<i>Agelenopsis oregonensis</i> Chamberlin & Ivie	O-vg/O-vg	Pr/Pr		C	A	10,40
<i>Blabomma oregonensis</i> Chamberlin & Ivie	F-1t/F-1t	Pr/Pr			A	10,40
<i>Calymmaria emertoni</i> (Simon)	F-1t/F-1t	Pr/Pr		C	A	10,40
<i>Cicurina jonesi</i> Chamberlin & Ivie	F-1t/F-1t	Pr/Pr			A	10,40
<i>Cicurina simplex</i> Simon	F-1t/F-1t	Pr/Pr			A	10,40
<i>Cicurina tersa</i> Simon	F-1t/F-1t	Pr/Pr			A	10,40
<i>Cryphoea peckhami</i> Simon	F-1t/F-1t	Pr/Pr		C		10
<i>Cybaeina confusa</i> Chamberlin & Ivie	F-1t/F-1t	Pr/Pr		C	A	10,40
<i>Cybaeota</i> spp.	F-1t/F-1t	Pr/Pr		C		10
<i>Cybaeus cascadius</i> Roth	F-1t/F-1t	Pr/Pr		C	A	10,40
<i>Cybaeus eutypus</i> Chamberlin & Ivie	F-1t/F-1t	Pr/Pr		C	A	10,40
<i>Cybaeus morosus</i> Simon	F-1t/F-1t	Pr/Pr		C	A	10,40
<i>Cybaeus multnoma</i> Chamberlin & Ivie	F-1t/F-1t	Pr/Pr		C	A	10,40
<i>Cybaeus reticulatus</i> Simon	F-1t/F-1t	Pr/Pr		C	A	10,40
<i>Cybaeus scopulatus</i> Chamberlin & Ivie	F-1t/F-1t	Pr/Pr		C	A	10,40
<i>Cybaeus simplex</i> Roth	F-1t/F-1t	Pr/Pr		C	A	10,40
<i>Hololena</i> sp.	F-1t/F-1t	Pr/Pr			A	40
<i>Novalena intermedia</i> (Chamberlin & Gertsch)	F-cn/F-cn	Pr/Pr		U	A	10,40
<i>Tegenaria domestica</i> (Clerck)	dom/dom	Pr/Pr		R		10
AMAUROBIIDAE (2 genera, 6 species)						
<i>Callioplus macarius</i> Chamberlin	F-1t/F-1t	Pr/Pr			A	40
<i>Callobius deces</i> Chamberlin & Ivie	F-1t/F-1t	Pr/Pr		C		10
<i>Callobius nevadensis</i> (Simon)	F-1t/F-1t	Pr/Pr		C		10
<i>Callobius nomeus</i> (Chamberlin)	F-1t/F-1t	Pr/Pr		C	A	10,40
<i>Callobius pictus</i> (Simon)	F-1t/F-1t	Pr/Pr		U		10
<i>Callobius severus</i> (Simon)	F-1t/F-1t	Pr/Pr		C	A	10,40

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
ANAPIDAE (1 genus, 1 species)						
<i>Chasmocephalon shantzi</i> Gertsch	F-lt/F-lt	Pr/Pr		R		10
ANTRODIAETIDAE (1 genus, 4 species)						
<i>Antrodiaetus montanus</i> (Chamberlin & Ivie)	F-sl/F-sl	Pr/Pr		R		10
<i>Antrodiaetus occultus</i> Coyle	F-sl/F-sl	Pr/Pr		C	A	40
<i>Antrodiaetus pacificus</i> (Simon)	F-sl/F-sl	Pr/Pr		A	A	10,40
<i>Antrodiaetus pugnax</i> (Chamberlin)	F-sl/F-sl	Pr/Pr		R	A	10,40
ANYPHAENIDAE (1 genus, 2 species)						
<i>Anyphaena aperta</i> (Banks)	F-cn/F-cn	Pr/Pr		R		10
<i>Anyphaena pacifica</i> (Banks)	F-cn/F-lt	Pr/Pr		A	A	1,10,40
ARANEIDAE (11 genera, 20 species)						
<i>Aculepeira packardi</i> (Thorell)	M-vg/M-vg	Pr/Pr		R		10
<i>Araneus bispinosus</i> (Keyserling)	M-vg/M-vg	Pr/Pr		R		10
<i>Araneus diadematus</i> Clerck (I)	F-cn/F-cn	Pr/Pr		A		10
<i>Araneus gemma</i> (McCook)	F-cn/F-cn	Pr/Pr		U		10
<i>Araneus gemmoides</i> Chamberlin & Ivie	F-cn/F-cn	Pr/Pr		A		1,10
<i>Araneus marmoreus</i> Clerck	F-cn/F-cn	Pr/Pr		C		10
<i>Araneus nordmanni</i> (Thorell)	F-cn/F-cn	Pr/Pr		A		10
<i>Araneus saevus</i> (L.Koch)	F-cn/F-cn	Pr/Pr		A		10
<i>Araneus trifolium</i> (Hentz) (I)	O-vg/O-vg	Pr/Pr		R		10
<i>Araniella displicata</i> (Hentz)	F-cn/F-cn	Pr/Pr		A	A	1,10
<i>Cyclosa conica</i> (Pallas)	F-cn/F-cn	Pr/Pr		A	A	1,10
<i>Eustala anastera</i> (Walckenaer)	F-cn/F-cn	Pr/Pr		R		10
<i>Eustala rosae</i> Chamberlin & Ivie	F-cn/F-cn	Pr/Pr		R		10
<i>Meta</i> sp.		Pr/Pr		R		1
<i>Metellina mimetoides</i> Chamberlin & Ivie	F-cn/F-cn	Pr/Pr		U		10
<i>Metepeira foxi</i> Gertsch & Ivie	M-vg/M-vg	Pr/Pr		R		10
<i>Metepeira grandiosa</i> Chamberlin & Ivie	M-vg/M-vg	Pr/Pr		C		10
<i>Neoscona</i> sp.	dom/dom	Pr/Pr		R		10
<i>Nuctenea patagiata</i> (Clerck)	F-cn/F-cn	Pr/Pr		A		10
<i>Zygiella carpenteri</i> Archer	F-cn/F-cn	Pr/Pr		C		1,10
CLUBIONIDAE (8 genera, 17 species)						
<i>Agroeca</i> spp.	F-lt/F-lt	Pr/Pr		A		10
<i>Castianeira longipalpa</i> (Hentz)	M-gd/M-gd	Pr/Pr		U	A	10,40
<i>Cheiracanthium inclusum</i> (Hentz) (I)	F-lt/F-lt	Pr/Pr		U		10
<i>Clubiona canadensis</i> Emerton	F-cn/F-cn	Pr/Pr		A		10
<i>Clubiona mimula</i> Chamberlin	F-lt/F-lt	Pr/Pr		U		10
<i>Clubiona trivialis</i> C.L.Koch	F-lt/F-lt	Pr/Pr		U	A	10,40
<i>Clubiona</i> spp.		Pr/Pr		C		1,10
<i>Corinna</i> spp.	F-lt/F-lt	Pr/Pr				10
<i>Phrurolithus</i> spp.	F-lt/F-lt	Pr/Pr				10
<i>Phrurotimpus borealis</i> (Emerton)	F-lt/F-lt	Pr/Pr			A	10,40
<i>Phrurotimpus</i> sp.	F-lt/F-lt	Pr/Pr				10
<i>Trachelas</i> spp.	F-lt/F-lt	Pr/Pr		R		10

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CTENIZIDAE (1 genus, 1 species)						
(literature record only to family)		Pr/Pr				2
DICTYNIDAE (2 genera, 7 species)						
<i>Dictyna annulipes</i> (Blackwall)	M-vg/M-vg	Pr/Pr		R		10
<i>Dictyna calcarata</i> Banks	M-vg/M-vg	Pr/Pr		R	A	10,40
<i>Dictyna major</i> Menge	M-vg/M-vg	Pr/Pr		R		10
<i>Dictyna peragrata</i> (Bishop & Ruderman)	F-cn/F-cn	Pr/Pr		A		1
<i>Dictyna tridentata</i> Bishop & Ruderman	F-cn/F-cn	Pr/Pr		U	A	40
<i>Mallos niveus</i> O.Pickard-Cambridge	M-vg/M-vg	Pr/Pr		R		10
<i>Mallos pallidus</i> Banks	F-cn/F-cn	Pr/Pr		U		10
DIPLURIDAE (1 genus, 1 species)						
<i>Microhexura idahoana</i> Chamberlin & Ivie	F-lt/F-lt	Pr/Pr		U	A	10,40
GNAPHOSIDAE (9 genera, 16 species)						
<i>Callilepis eremella</i> Chamberlin	F-lt/F-lt	Pr/Pr		U	A	10,40
<i>Callilepis pluto</i> Banks	F-lt/F-lt	Pr/Pr		U	A	10,40
<i>Drassodes</i> spp.	M-gd/M-gd	Pr/Pr		C		10
<i>Gnaphosa californica</i> Banks	F-lt/F-lt	Pr/Pr		C		10
<i>Gnaphosa muscorum</i> (L.Koch)	F-lt/F-lt	Pr/Pr		C	A	10,40
<i>Herpyllus propinquus</i> (Keyserling)	M-gd/M-gd	Pr/Pr		C		10
<i>Micaria pulicaria</i> (Sundevall)	M-vg/M-vg	Pr/Pr		U	A	10,40
<i>Micaria utahna</i> Gertsch	M-vg/M-vg	Pr/Pr		U	A	10,40
<i>Orodrassus</i> sp.	F-lt/F-lt	Pr/Pr		U	A	40
<i>Sergiolus columbianus</i> (Emerton)	F-cn/F-cn	Pr/Pr		U	A	10,40
<i>Sergiolus montanus</i> (Emerton)	F-cn/F-cn	Pr/Pr		C		10
<i>Scotophaeus blackwalli</i> (Thorell) (I)	F-cn/F-cn	Pr/Pr		C		10
<i>Zelotes fratris</i> Chamberlin	F-lt/F-lt	Pr/Pr		C	A	10,40
<i>Zelotes josephine</i> Platnick & Shadab	F-lt/F-lt	Pr/Pr		C	A	40
<i>Zelotes puritanus</i> Chamberlin	F-lt/F-lt	Pr/Pr		U	A	40
HAHNIIDAE (1 genus, 2 species)						
<i>Neoantistea agilis</i> (Keyserling)	F-lt/F-lt	Pr/Pr		R		10
<i>Neoantistea magna</i> (Keyserling)	F-lt/F-lt	Pr/Pr		R		10
HYPOCHILIDAE (1 genus, 1 species)						
<i>Hypochilus petrunkevitchi</i> Gertsch	O-rk/O-rk	Pr/Pr		R		2,10
LEPTONETIDAE (1 genus, 1 species)						
<i>Leptoneta sylva</i> Chamberlin & Ivie	F-lt/F-lt	Pr/Pr		U	A	40
LINYPHIIDAE (+ MICRYPHANTIDAE) (34 genera, 60 species)						
<i>Acartauchenius</i> sp.	F-lt/F-lt	Pr/Pr		U	A	40
<i>Agyneta</i> sp.	F-lt/F-lt	Pr/Pr		U	A	40
<i>Aphileta</i> sp.	F-lt/F-lt	Pr/Pr		U	A	40

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
LINYPHIIDAE (continued)						
<i>Arcuphantes</i> sp.	F-lt/F-lt	Pr/Pr		U	A	40
<i>Bathyphantes alameda</i> Ivie	F-lt/F-lt	Pr/Pr		U	A	40
<i>Bathyphantes alascensis</i> (Banks)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Bathyphantes chico</i> Ivie	F-lt/F-lt	Pr/Pr		U	A	40
<i>Bathyphantes keeni</i> (Emerton)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Bathyphantes orica</i> Ivie	F-lt/F-lt	Pr/Pr		U	A	40
<i>Centromerus</i> sp.	F-lt/F-lt	Pr/Pr		U	A	40
<i>Ceraticelus armaticeps</i> (Cambridge)	F-cn/F-cn	Pr/Pr		C		10
<i>Ceratinella alaska</i> Chamberlin & Ivie	O-sl/O-sl	Pr/Pr		U	A	40
<i>Ceratinella</i> sp.	O-sl/O-sl	Pr/Pr		U	A	40
<i>Ceratinops inflata</i> (Emerton)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Coreorgonal monoceros</i> (Simon)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Coreorgonal petulcus</i> (Millidge)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Eperigone trilobata</i> (Emerton)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Erigone dentosa</i> O. Pickard-Cambridge	F-cn/F-lt	Pr/Pr		A	A	10,40
<i>Erigone</i> spp.	F-lt/F-lt	Pr/Pr		A		10
<i>Frontinella</i> spp.	F-cn/F-cn	Pr/Pr		A		10
<i>Gnathantes ferosa</i> Chamberlin & Ivie	F-cn/F-cn	Pr/Pr		C		1,10
<i>Helophora orinoma</i> (Chamberlin)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Lepthyphantes mercedes</i> Chamberlin & Ivie	F-lt/F-lt	Pr/Pr		U	A	40
<i>Lepthyphantes tenuis</i> (Blackwall)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Lepthyphantes zebra</i> (Emerton)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Lepthyphantes zelatus</i> Zorsch	F-lt/F-lt	Pr/Pr		U	A	40
<i>Lepthyphantes zibus</i> Zorsch	F-lt/F-lt	Pr/Pr		U	A	40
<i>Linyphantes pualla</i> Chamberlin & Ivie	F-lt/F-lt	Pr/Pr		C	A	40
<i>Linyphantes</i> sp.	F-lt/F-lt	Pr/Pr		U	A	40
<i>Meioneta</i> spp. (3)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Microlinyphia dana</i> (Chamberlin & Ivie)	F-cn/F-cn	Pr/Pr		A		10
<i>Microneta viaria</i> (Blackwall)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Neriere litigiosa</i> (Keyserling)	F-cn/F-cn	Pr/Pr		A		1,10
<i>Oreonetides filicatus</i> (Crosby)	F-cn/F-cn	Pr/Pr		U	A	40
<i>Pelecopsis sculptum</i> (Emerton)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Pimoa altiocolata</i> (Keyserling)	F-cn/F-cn	Pr/Pr		A	A	10,40
<i>Pityohyphantes costatus</i> (Hentz)	F-cn/F-cn	Pr/Pr		A	A	10
<i>Pityohyphantes rubrofasciatus</i> Keyserling	F-cn/F-cn	Pr/Pr		A		1
<i>Pocadicnemis pumila</i> (Blackwall)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Scironis sima</i> Chamberlin	F-lt/F-lt	Pr/Pr		U	A	40
<i>Scotinotylus</i> spp.	F-lt/F-lt	Pr/Pr		U	A	10,40
<i>Spirembolus demonologicus</i> (Crosby)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Spirembolus mendax</i> Millidge	F-lt/F-lt	Pr/Pr		U	A	40
<i>Spirembolus mundus</i> Chamberlin & Ivie	F-cn/F-cn	Pr/Pr		C		10
<i>Spirembolus vasingtonius</i> Chamberlin	F-lt/F-lt	Pr/Pr		U	A	40
<i>Symmigma minimum</i> (Emerton)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Tachygyna sonoma</i> Millidge	F-lt/F-lt	Pr/Pr		U	A	40
<i>Tachygyna vancouverana</i> Chamberlin & Ivie	F-lt/F-lt	Pr/Pr		U	A	40
<i>Walckenaeria columbia</i> Millidge	F-lt/F-lt	Pr/Pr		U	A	40
<i>Walckenaeria monoceras</i> (Chamberlin & Ivie)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Walckenaeria oregona</i> Millidge	F-lt/F-lt	Pr/Pr		U	A	40

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
LINYPHIIDAE (continued)						
<i>Walckenaeria subspiralis</i> Millidge	F-lt/F-lt	Pr/Pr		U	A	40
<i>Wubana atypica</i> Chamberlin & Ivie	F-lt/F-lt	Pr/Pr		U	A	40
<i>Wubana pacifica</i> (Banks)	F-cn/F-cn	Pr/Pr		U	A	10,40
<i>Zygottus corvallis</i> Chamberlin	F-lt/F-lt	Pr/Pr		U	A	40
LYCOSIDAE (8 genera, 15 species)						
<i>Allocosa subparva</i> Dondale & Redner	O-gd/O-gd	Pr/Pr		U	A	40
<i>Alopecosa kochi</i> (Keyserling)	M-gd/M-gd	Pr/Pr		C	A	10,40
<i>Arctosa</i> spp.	M-gd/M-gd	Pr/Pr		A		10
<i>Lycosa</i> spp.	M-gd/M-gd	Pr/Pr		A		2
<i>Pardosa californica</i> Keyserling	M-gd/M-gd	Pr/Pr		U	A	40
<i>Pardosa dorsalis</i> Banks	M-gd/M-gd	Pr/Pr		A	A	10,40
<i>Pardosa dorsuncata</i> Lowrie & Dondale	M-gd/M-gd	Pr/Pr		A		10
<i>Pardosa lowriei</i> Kronestedt	M-gd/M-gd	Pr/Pr		C		40
<i>Pardosa mackenziana</i> (Keyserling)	M-gd/M-gd	Pr/Pr		A		10
<i>Pardosa wyuta</i> Gertsch	M-gd/M-gd	Pr/Pr		C	A	40
<i>Pirata piraticus</i> (Clerk)	S-Aq/S-Aq	Pr/Pr		R		10
<i>Schizocosa mccooki</i> (Montgomery)	O-gd/O-gd	Pr/Pr		U	A	40
<i>Trochosa terricola</i> Thorell	M-gd/M-gd	Pr/Pr		U		10
MECICOBOTHRIDAE (1 genus, 2 species)						
<i>Hexura picea</i> Simon	F-lt/F-lt	Pr/Pr		U		10
<i>Hexura rothi</i> Gertsch & Platnick	F-lt/F-lt	Pr/Pr		R		10
MIMETIDAE (1 genus, 1 species)						
<i>Mimetus hesperus</i> Chamberlin	F-cn/F-cn	Pr/Pr	A-SPID	R		10
NESTICIDAE (1 genus, 1 species)						
<i>Nesticus</i> sp.	F-lt/F-lt	Pr/Pr		U	A	40
OECOBIIDAE (1 genus, 1 species)						
<i>Oecobius annulipes</i> Lucas	F-cn/F-cn	Pr/Pr		R		1,10
OXYOPIDAE (1 genus, 1 species)						
<i>Oxyopes scalaris</i> Hentz	M-vg/M-vg	Pr/Pr		A		10
PHILODROMIDAE (5 genera, 15 species)						
<i>Apollophanes margareta</i> Lowrie & Gertsch	F-cn/F-cn	Pr/Pr		A		10
<i>Ebo evansae</i> Sauer & Platnick	F-lt/F-lt	Pr/Pr		U	A	10,40
<i>Philodromus alascensis</i> Keyserling	M-gd/M-gd	Pr/Pr		R		10
<i>Philodromus californicus</i> Keyserling	F-cn/F-cn	Pr/Pr		R		10
<i>Philodromus cespitum</i> (Walckenaer)	M-vg/M-vg	Pr/Pr		R		10
<i>Philodromus gertschi</i> Schick	F-cn/F-cn	Pr/Pr		U		10
<i>Philodromus insperatus</i> Schick (I)	O-vg/O-vg	Pr/Pr		R		10
<i>Philodromus rufus pacificus</i> Banks	F-cn/F-cn	Pr/Pr		A	A	1,10,40

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
PHILODROMIDAE (continued)						
<i>Philodromus quercicola</i> Schick	F-cn/F-cn	Pr/Pr		U	A	40
<i>Philodromus speciosus</i> Gertsch	F-cn/F-cn	Pr/Pr		A		10
<i>Philodromus spectabilis</i> Keyserling	F-cn/F-cn	Pr/Pr		A	A	1,10,40
<i>Thanatus formicinus</i> (Clerck)	O-rk/O-rk	Pr/Pr		U	A	40
<i>Thanatus striatus</i> C.L.Koch	O-rk/O-rk	Pr/Pr		R		10
<i>Tibellus gertschi</i> Chamberlin & Ivie	M-vg/M-vg	Pr/Pr		R		10
<i>Tibellus oblongus</i> (Walckenaer)	M-vg/M-vg	Pr/Pr		A		10
PHOLCIDAE (1 genus, 1 species)						
<i>Pholcus phalangioides</i> (Fuesslin) (I)	dom/dom	Pr/Pr		U		10
SALTICIDAE (13 genera, 22 species)						
<i>Eris marginata</i> (Walckenaer)	M-vg/M-vg	Pr/Pr		C		10
<i>Euophrys monadnock</i> Emerton	F-lt/F-lt	Pr/Pr		U	A	40
<i>Evarcha hoyi</i> (G. & E. Peckham)	M-vg/M-vg	Pr/Pr		C	A	10,40
<i>Habronattus hirsutus</i> (Peckham)	F-cn/F-cn	Pr/Pr		U		10
<i>Habronattus oregonensis</i> (G. & E. Peckham)	F-lt/F-lt	Pr/Pr		U	A	40
<i>Habronattus</i> spp. (2)	F-cn/F-cn	Pr/Pr		U	A	40
<i>Icius similis</i> Banks	M-vg/M-vg	Pr/Pr		R		10
<i>Metaphidippus aeneolus</i> Curtis	F-cn/F-cn	Pr/Pr		A	A	1,10,40,49
<i>Metaphidippus albeolus</i> Maddison	F-cn/F-cn	Pr/Pr		C		10
<i>Metaphidippus dematus</i> Maddison	M-vg/M-vg	Pr/Pr		R		10
* <i>Metaphidippus</i> n.sp.	F-cn/F-cn	Pr/Pr		U		1,10
<i>Neon ellamae</i> Gertsch & Ivie	F-lt/F-lt	Pr/Pr		U		10
<i>Neon pixii</i> Gertsch & Ivie	F-lt/F-lt	Pr/Pr		U		10
<i>Neon reticulatus</i> Blackwall	F-lt/F-lt	Pr/Pr		U	A	40
<i>Peckhamia</i> sp.	M-vg/M-vg	Pr/Pr		R		10
<i>Pellenes</i> spp.	M-gd/M-gd	Pr/Pr		A		10
<i>Phidippus johnsoni</i> (G. & E. Peckham)	M-vg/M-vg	Pr/Pr		A	A	10,40
<i>Platycryptus californicus</i> (Peckham)	M-vg/M-vg	Pr/Pr		U		10
<i>Sassacas papenhoei</i> G. & E. Peckham	M-vg/M-vg	Pr/Pr		U		10
<i>Synagles</i> sp.	F-lt/F-lt	Pr/Pr		U	A	40
TELEMIDAE (1 genus, 1 species)						
<i>Usofila pacifica</i> (Banks)	F-lt/F-lt	Pr/Pr		R	A	40
TETRAGNATHIDAE (1 genus, 4 species)						
<i>Tetragnatha laboriosa</i> Hentz	M-vg/M-vg	Pr/Pr		U		10
<i>Tetragnatha versicolor</i> (Walckenaer)	S-Aq/R-vg	Pr/Pr		C	A	1,40
<i>Tetragnatha</i> spp.		Pr/Pr				1
THERIDIIDAE (7 genera, 19 species)						
<i>Achaearanea tepidariorum</i> (C.L.Koch)	dom/dom	Pr/Pr		U		10
<i>Argyrodes fictilium</i> (Hentz)	F-cn/F-cn	Pr/Pr		U		10
<i>Dipoena malkini</i> Levi	F-cn/F-cn	Pr/Pr	I-FORMI	U		10
<i>Dipoena nigra</i> (Emerton)	F-cn/F-cn	Pr/Pr	I-FORMI	A		10
<i>Enoplognatha ovata</i> (Clerck) (I)	F-cn/F-cn	Pr/Pr		R		10

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
THERIDIIDAE (continued)						
<i>Euryopsis formosa</i> Banks	F-cn/F-cn	Pr/Pr	I-FORMI	C	A	1,10,40
<i>Steatoda albomaculata</i> (DeGeer)	F-cn/F-cn	Pr/Pr		R	A	10,40
<i>Steatoda fulva</i> (Keyserling)	F-cn/F-cn	Pr/Pr		U		10
<i>Steatoda hespera</i> Chamberlin & Ivie	F-cn/F-cn	Pr/Pr		A		10
<i>Theridion aurantium</i> Emerton	F-cn/F-cn	Pr/Pr		U		10
<i>Theridion californicum</i> Banks	F-cn/F-cn	Pr/Pr		U		10
<i>Theridion differens</i> Emerton	F-cn/F-cn	Pr/Pr		A		1,10
<i>Theridion crispulum</i> Simon	F-cn/F-cn	Pr/Pr		U		1,10
<i>Theridion lawrencei</i> (Gertsch & Archer)	F-cn/F-cn	Pr/Pr		A		1,10
<i>Theridion melanurum</i> Hahn	M-vg/M-vg	Pr/Pr		C		10
<i>Theridion michelbacheri</i> Levi	M-vg/M-vg	Pr/Pr		R		10
<i>Theridion murarium</i> Emerton (I)	F-cn/F-cn	Pr/Pr		A		1,10
<i>Theridion neomexicanum</i> Banks	F-cn/F-cn	Pr/Pr		U		10
<i>Theridion sexpunctatum</i> Emerton	F-cn/F-cn	Pr/Pr		A	A	10,40
THOMISIDAE (6 genera, 16 species)						
<i>Coriarachne brunneipes</i> Banks	F-lt/F-lt	Pr/Pr		A		10
<i>Coriarachne utahensis</i> (Gertsch)	F-lt/F-lt	Pr/Pr		U		10
<i>Misumena vatia</i> (Clerck) (I)	O-vg/O-vg	Pr/Pr		C	A	10,40
<i>Misumenops celer</i> (Hentz)	M-vg/M-vg	Pr/Pr		A		10
<i>Misumenops importunus</i> (Keyserling)	M-vg/M-vg	Pr/Pr		C		10
<i>Misumenops sierrensis</i> Schick	M-vg/M-vg	Pr/Pr		U	A	10,40
<i>Ozyptila yosemitica</i> Schick	F-lt/F-lt	Pr/Pr		U	A	40
<i>Tmarus angulatus</i> (Walckenaer)	F-cn/F-cn	Pr/Pr		C		1,10
<i>Xysticus benefactor</i> Keyserling	O-gd/O-gd	Pr/Pr		U	A	40
<i>Xysticus californicus</i> Keyserling	F-lt/F-lt	Pr/Pr		U	A	40
<i>Xysticus gosiutus</i> Gertsch	M-vg/M-vg	Pr/Pr		U	A	10,40
<i>Xysticus gulosus</i> Keyserling	F-lt/F-lt	Pr/Pr		U		10
<i>Xysticus locuples</i> Keyserling	F-cn/F-cn	Pr/Pr		A	A	10,40
<i>Xysticus montanensis</i> Keyserling	F-cn/F-cn	Pr/Pr		A	A	10,40
<i>Xysticus pretiosus</i> Gertsch	F-lt/F-lt	Pr/Pr		U	A	40
<i>Xysticus punctatus</i> Keyserling	F-cn/F-cn	Pr/Pr		R		10
ULOBORIDAE (1 genus, 1 species)						
<i>Hyptiotes gertschi</i> Chamberlin & Ivie	F-cn/F-cn	Pr/Pr		A		10
ZORIDAE (1 genus, 1 species)						
<i>Zora</i> sp.	F-lt/F-lt	Pr/Pr		U	A	40

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	References	
				Ab	Co

ACARI

(2 orders, 5 suborders, 28 superfamilies (ORIBATIDA only) + 23 families (all except ORIBATIDA), 118 genera, 165 species)

PARASITIFORMES

(2 suborders, 6 families, 6 genera, 6 species)

(suborder **IXODIDA**) (1 family, 1 genus, 1 species)

IXODIDAE (1 genus, 1 species)

Ixodes pacificus Cooley & Kohls anim/anim Pa/Pa C A

(suborder **GAMASIDA (=MESOSTIGMATA)**) (5 families, 5 genera, 5 species)

PARASITIDAE (1 genus, 1 species)

Schizothetus vicarius Athias-Henriot F-cn/F-cn Pr/Pr 1

PHYTOSEIIDAE (1 genus, 1 species)

Typhlodromus sp. F-cn/F-cn Pr/Pr C 1

SCUTACARIDAE (1 genus, 1 species)

undetermined specimens A

UROPODIDAE (1 genus, 1 species)

undetermined specimens A

ZERCONIDAE (1 genus, 1 species)

Zercon sp. F-cn/F-cn Fu/Fu 1

(SEE ALSO APPENDIX B)

ACARIFORMES

(3 suborders, 28 superfamilies (ORIBATIDA only) + 17 families (ACTENIDIDA + ACARIDIDA only), 113 genera, 159 species)

(suborder **ACTINEDIDA (=PROSTIGMATA)**) (15 families, 18 genera, 19 species)

BDELLIDAE (3 genera, 3 species)

Bdella sp. F-cn/F-cn Pr/Pr U 1

Cyta sp. nr. *latirostris* (Herman) F-cn/F-cn Pr/Pr U 1

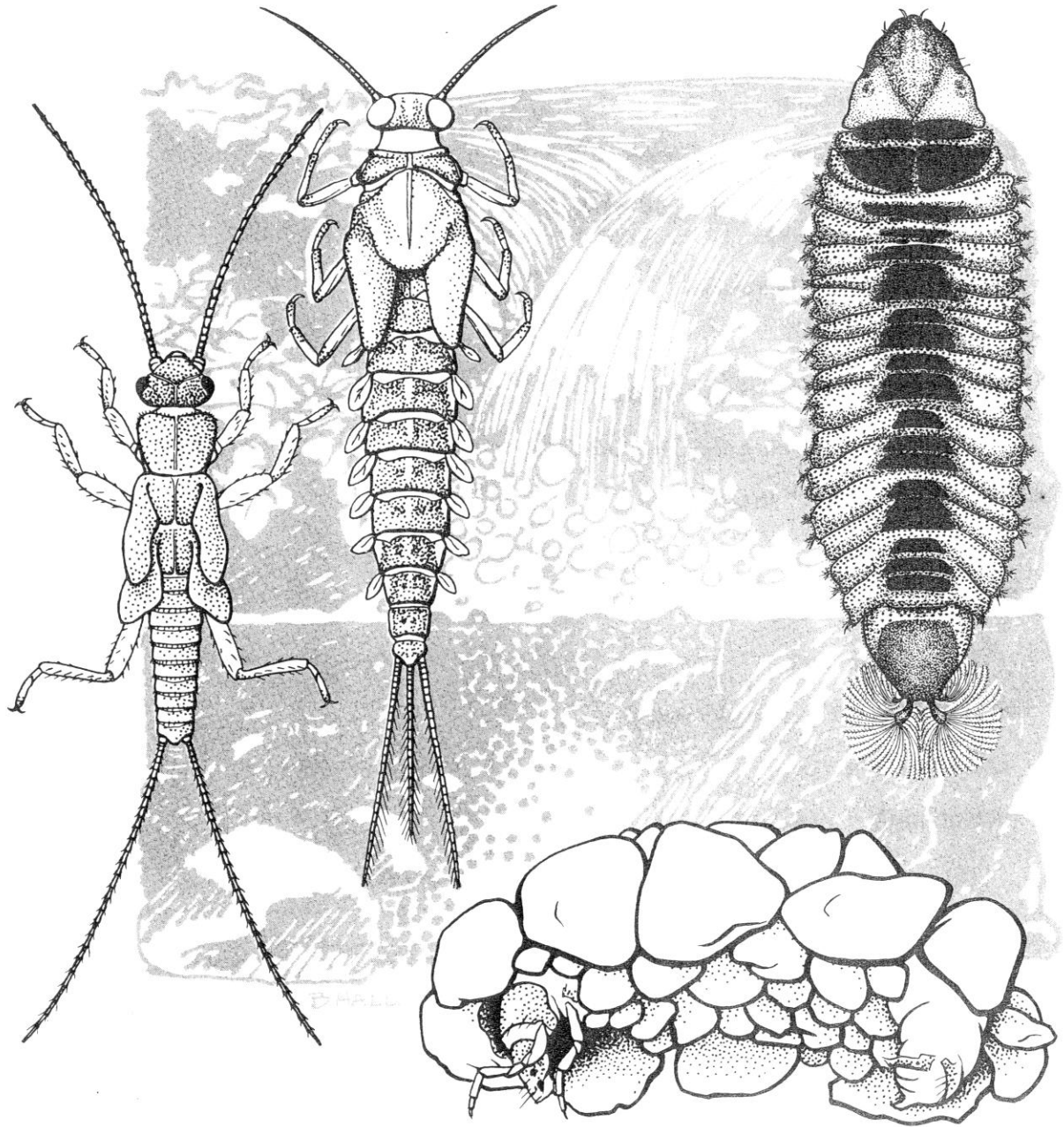
Spinibdella sp. F-cn/F-cn Pr/Pr U 1

CAECULIDAE (1 genus, 1 species)

Caeculus krantzi Coineau F-lt/F-lt Pr/Pr U A 40

Aquatic

Aquatic habitats on the Andrews Forest are dominated by cold, clear, steep-gradient streams. Flows are typically high after fall rains and winter snow-melt, and low during the summer. Large amounts of coarse woody debris along with boulders of all sizes create a diverse habitat of riffles, falls, and pools. Substrates are mostly gravels and sands. The forest and clearcuts provide various degrees of shading to the streams, with abundant riparian vegetation contributing organic material. The full array of aquatic and semi-aquatic microhabitats is effectively used by a rich and abundant fauna, which has been intensively studied. Mayflies, stoneflies, and caddisflies are especially well represented, as are the stream-dwelling Diptera. Many unique adaptations are exhibited for coping with the rigors of the stream environment. Larvae of the psychodid fly *Maruina lanceolata* (upper right) inhabit rocks in the splash zone where they maintain position by means of ventral sucker-like disks. Glossosomatid caddisfly larvae (bottom) use materials at hand for building protective cases carried about as they graze on plant and animal material. Stoneflies (left) patrol the substrate where some are shredders of organic material and others prey on aquatic organisms. Mayfly naiads (center) are found in strong current, feeding on passing organic particles.



Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CALIGONELLIDAE (1 genus, 1 species)						
<i>Caligonella</i> sp.	F-cn/F-cn	Pr/Pr		C		1
CHEYLETIDAE (1 genus, 1 species)						
<i>Cheletogenes</i> sp.	F-cn/F-cn	Pr/Pr		U		1
CRYPTOGNATHIDAE (1 genus, 2 species)						
<i>Cryptognathus</i> (<i>imbricatus</i> group) sp.	F-cn/F-cn			C		1
<i>Cryptognathus</i> sp.	F-cn/F-cn			C		1
CUNAXIDAE (1 genus, 1 species)						
<i>Cunaxoides</i> sp.	F-cn/F-cn	Pr/Pr		U		1
ENDEOSTIGMATIDES (1 genus, 1 species)						
(literature record only to supercohort)	F-cn/F-cn					1
NANORCHESTIDAE (1 genus, 1 species)						
<i>Nanorchestes</i> sp.	F-cn/F-cn	Fu/Fu		C		1
PARATYDEIDAE (1 genus, 1 species)						
<i>Tanytydeus</i> sp.	F-cn/F-cn	Fu/Fu		C		1
PENTHALODIDAE (1 genus, 1 species)						
<i>Penthalodes</i> sp.	F-cn/F-cn	Pr/Pr		U		1
RHAGIDIIDAE (1 genus, 1 species)						
(literature record only to family)	F-cn/F-cn	Pr/Pr		C		1
SMARIDIDAE (1 genus, 1 species)						
<i>Sphaerotarsus</i> sp.	F-cn/ins	Pr/Pa		U		1
TERPNACARIDAE (1 genus, 1 species)						
*N.Gen. (?)	F-cn/F-cn	Fu/Fu		U		1
TETRANYCHIDAE (1 genus, 1 species)						
(literature record only to family)	F-cn/F-cn	H/H		U		1
TYDEIDAE (2 genera, 2 species)						
<i>Homotydeus</i> sp.	F-cn/F-cn			C		1
<i>Metatriphytydeus</i> sp.	F-cn/F-cn			U		1

(SEE ALSO APPENDIX B)

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab Co	References
(suborder ACARIDIDA (=ASTIGMATA))	(2 families, 2 genera, 2 species)				
ACARIDAE (1 genus, 1 species)					
(literature record only to family)	F-cn/F-cn	Fu/Fu		U	1
GLYCYPHAGIDAE (1 genus, 1 species)					
(literature record only to family)	F-cn/F-cn	Fu/Fu		U	1
(SEE ALSO APPENDIX B)					
(suborder ORIBATIDA (=CRYPTOSTIGMATA))	(28 superfamilies, 92 genera, 138 species)				
ARCHEONOTHROIDEA (2 genera, 2 species)					
<i>Acaronychus tragardhi</i> Grandjean	F-1t/F-1t	Mi/Mi		U	22, 26
<i>Zachvatkinella</i> sp.	F-1t/F-1t	Mi/Mi		U	22, 26
ATOPOCHTHONOIDEA (=PHYLLOCHTHONOIDEA) (2 genera, 2 species)					
<i>Atopochthonius artiodactylus</i> Grandjean	F-1t/F-1t	Mi/Mi		U	22
<i>Pterochthonius</i> sp.	F-1t/F-1t	Mi/Mi		U	26
BRACHYCHTHONOIDEA (5 genera, 5 species)					
<i>Brachychthonius</i> sp.	F-1t/F-1t	Mi/Mi		C	22, 25
<i>Eobrachychthonius</i> sp.	F-1t/F-1t	Mi/Mi		U	22
<i>Liochthonius</i> sp.	F-1t/F-1t	Mi/Mi		C	22
<i>Sellnickochthonius</i> sp.	F-1t/F-1t	Mi/Mi		R	22
<i>Synchthonius</i> sp.	F-1t/F-1t	Mi/Mi		U	22
CARABODOIDEA (3 genera, 4 species)					
<i>Carabodes</i> spp. (2)	F-1t/F-1t	Fu/Fu		A	22, 25, 26
<i>Exechocephus</i> sp.	F-1t/F-1t	Fu/Fu		R	22
<i>Tectocephus</i> sp.	F-1t/F-1t	Fu/Fu		A	22, 25, 26
CEPHEOIDEA (2 genera, 3 species)					
<i>Eupterotegaeus</i> sp.	F-1t/F-1t	Fu/Fu		U	22
<i>Sphdrocephus anthelionus</i> Woolley & Higgens	F-1t/F-1t	Fu/Fu		U	22, 25, 26
<i>Sphdrocephus tridactylus</i> Woolley & Higgens	F-1t/F-1t	Fu/Fu		U	22, 25
CERATOZETOIDEA (8 genera, 13 species)					
<i>Ceratozetes</i> spp. (4)	F-1t/F-1t	Fu/Fu		A	22, 25, 26
<i>Dentizetes</i> sp.	F-1t/F-1t	Fu/Fu		R	26
<i>Hypozetes</i> sp.	F-cn/F-cn	Li/Li		C	1
<i>Jugatata tuberosa</i> Ewing	F-cn/F-cn	Li/Li		A	1, 22
<i>Jugatata</i> sp.				U	22

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
CERATOZETOIDEA (continued)						
<i>Melanozetes</i> sp.	F-1t/F-1t	Fu/Fu		R		22
<i>Mycobates</i> sp.	F-cn/F-cn	Li/Li		U		22
<i>Propelops canadensis</i> (Hammer)	F-1t/F-1t	Mi/Mi		C		22, 25, 26
<i>Propelops monticolus</i> (Ewing)	F-1t/F-1t	Mi/Mi		U		22
<i>Sphaerozetes</i> sp.	F-1t/F-1t	Fu/Fu		U		22, 23
CROTONIOIDEA (=NOTHROIDEA) (6 genera, 10 species)						
<i>Camisia carrolli</i> André	F-cn/F-cn	Li/Li		A		1, 22, 27, 28, 49
<i>Camisia horrida</i> (Hermann)	F-1t/F-1t	Fu/Fu		U		22
<i>Camisia segnis</i> (Hermann)	F-cn/F-cn	Li/Li		R		22
<i>Camisia</i> sp.	F-1t/F-1t	Fu/Fu		R		26
<i>Malaconothrus monodactylus</i> (Michael)				U		22
<i>Nothrus sylvestris</i> Nicolet	F-1t/F-1t	D/D		C		22
<i>Platynothrus banksi</i> (Michael)	F-1t/F-1t	D/D		R		22
<i>Platynothrus peltifer</i> (Koch)	F-1t/F-1t	D/D		R		22
<i>Trhypochthonius americanus</i> Ewing	F-1t/F-1t	Fu/Fu		R		22
<i>Trimalaconothrus simplex</i> (Banks)				U		22
CTENACAROIDEA (2 genera, 2 species)						
<i>Aphelacrus acarinus</i> (Berlese)				R		22
<i>Ctenacarus</i> sp.				R		22
CYMBAEREMAEOIDEA (2 genera, 3 species)						
<i>Ametroproctus oresbios</i> Higgins & Woolley	F-cn/F-cn	Fu/Fu		C		1, 26
<i>Ametroproctus</i> sp.	F-1t/F-1t	Fu/Fu		U		22
<i>Scapheremaeus</i> sp.	F-cn/F-cn	Li/Li		A		1, 22
DAMAEOIDEA (=BELBOIDEA) (5 genera, 9 species)						
<i>Belba californica</i> (Banks)	F-1t/F-1t	Fu/Fu		R		22
<i>Caenobelba</i> spp. (3)	F-1t/F-1t	Fu/Fu		A		22, 25
<i>Epidamaeus</i> spp. (3)	F-1t/F-1t	Fu/Fu		C		22, 26
<i>Hungarobelba</i> sp.	F-1t/F-1t	Fu/Fu		C		22, 25
*undescribed new genus & species	F-1t/F-1t	Fu/Fu		U		22
EPILOHMANNIOIDEA (1 genus, 1 species)						
<i>Epilohmannia</i> sp.	wood/wood	X/X		C		22, 25
EREMAEOIDEA (2 genera, 4 species)						
<i>Eremaeus</i> sp. (arboreal)	F-cn/F-cn	Li/Li		A		1
<i>Eremaeus</i> spp. (2) (ground)	F-1t/F-1t	Fu/Fu		C		22, 25, 26
<i>Megeremaeus</i> sp.	F-1t/F-1t	Fu/Fu		U		22
EULOHMANNIOIDEA (1 genus, 1 species)						
<i>Eulohmannia ribagai</i> Berlese	F-sl/F-sl	Mi/Mi		U		22

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
EUPHTHRACAROIDEA (4 genera, 6 species)						
<i>Euphthiracarus tanythrix sierriensis</i> Walker	wood/wood	X/X		A		22, 25, 26
<i>Maerkelotritia</i> sp. nr. <i>gibbera</i> (Walker)	wood/wood	X/X		C		22
<i>Maerkelotritia</i> sp.	wood/wood	X/X		C		22, 26
<i>Microtritia paeniminnia</i> (Walker)	wood/wood	X/X		U		22, 26
<i>Microtritia</i> sp.	wood/wood	X/X		A		22
<i>Oribotritia megale</i> (Walker)	wood/wood	X/X		C		22, 25
GALUMNOIDEA (2 genera, 2 species)						
<i>Galumma</i> sp.	F-1t/F-1t	Fu/Fu		R		22
<i>Pergalumma</i> sp.	F-1t/F-1t	Pr/Pr		R		22
GUSTAVIOIDEA (=LIACAROIDEA) (11 genera, 15 species)						
<i>Ceratoppia</i> sp. nr. <i>bipilis</i> (Hermann)	F-1t/F-1t	Fu/Fu		C		22, 25, 26
<i>Cultroribula</i> sp. (<i>biculturata</i> complex)	F-1t/F-1t	Fu/Fu		U		22, 26
<i>Furcoribula</i> sp.	F-1t/F-1t	Fu/Fu		U		22
<i>Gustavia microcephala</i> (Nicolet)	F-1t/F-1t	Mi/Mi		C		22, 25, 26
<i>Leuroxenillus</i> sp. nr. <i>trichionus</i> Woolley & Higgins	F-1t/F-1t	Fu/Fu		C		22, 26
<i>Liacarus bidentatus</i> Woolley	F-1t/F-1t	Fu/Fu		C		22, 26
<i>Liacarus</i> sp. nr. <i>robustus</i> Woolley	F-1t/F-1t	Fu/Fu		C		22, 26
<i>Liacarus</i> sp. nr. <i>spiniger</i> Jacot	F-1t/F-1t	Fu/Fu		C		22
<i>Liacarus</i> spp. (2)	F-1t/F-1t	Fu/Fu		C		22
<i>Metrioppia oregonensis</i> Woolley & Higgins	F-1t/F-1t	Fu/Fu		A		22, 25, 26
<i>Peltenuiala pacifica</i> Norton	F-1t/F-1t	Fu/Fu		C		22, 26
<i>Stonyxenillus</i> sp.	F-1t/F-1t	Fu/Fu		C		22
<i>Tenuiala nuda</i> Ewing	F-1t/F-1t	Fu/Fu		R		22
<i>Xenillus</i> sp.	F-1t/F-1t	Fu/Fu		C		22
HERMANNIELLOIDEA (1 genus, 3 species)						
<i>Hermanniella</i> spp. (3)	F-1t/F-1t	Fu/Fu		A		22
HYPOTHONIOIDEA (5 genera, 5 species)						
<i>Cosmochthonius</i> sp. nr. <i>lanatus</i> (Michael)	F-1t/F-1t	Mi/Mi		R		22
<i>Eniochthonius minutissimus</i> (Berlese)	F-1t/F-1t	Mi/Mi		U		22, 26
<i>Eohypochthonius</i> sp.	F-1t/F-1t	Mi/Mi		U		22, 25
<i>Hypochthonius rufulus</i> Koch	F-1t/F-1t	D/D		C		22, 25
<i>Sphaerochthonius</i> sp.	F-1t/F-1t	Mi/Mi		U		22
LIODOIDEA (1 genus, 1 species)						
<i>Platyliodes macroprionus</i> Woolley & Higgins	F-cn/F-cn	Li/Li		A		1, 22

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal host	Ab	Co	References
NANHERMANNIOIDEA (1 genus, 1 species)						
<i>Nanhermannia</i> sp.	F-1t/F-1t	Fu/Fu		U		22,26
ORIBATELLOIDEA (3 genera, 9 species)						
<i>Achipteria</i> sp.	F-1t/F-1t	Fu/Fu		A		22,25,26
<i>Anachipteria</i> spp. (3)	F-1t/F-1t	Fu/Fu		A		22,25,26
<i>Oribatella</i> spp. (5)	F-1t/F-1t	Fu/Fu		A		22,25,26
ORIPODOIDEA (=ORIBATULOIDEA) (5 genera, 12 species)						
<i>Eporibatula</i> sp.	F-1t/F-1t	Fu/Fu		U		22
<i>Oribatula</i> sp.	F-1t/F-1t	Fu/Fu		R		26
<i>Phauloppia</i> spp. (2)	F-cn/F-cn	Li/Li		A		1
<i>Scheloribates</i> sp. (arboreal)	F-cn/F-cn	Li/Li		A		1
<i>Scheloribates</i> spp. (6) (ground)	F-1t/F-1t	Fu/Fu		A		1,22,25,26
<i>Zygoribatula</i> sp.	F-1t/F-1t	Fu/Fu		C		22,25
PARHYPOCHTHONOIDEA (2 genera, 2 species)						
<i>Gehypochthonius rhadamanthus</i> Jacot	wood/wood	X/X		C		22
<i>Parhypochthonius</i> sp.	wood/wood	X/X		U		22
PELOPOIDEA (2 genera, 2 species)						
<i>Eupelops</i> sp.	F-1t/F-1t	Mi/Mi		U		22,26
<i>Peloptulus</i> sp.	F-1t/F-1t	Mi/Mi		R		22
PERLOHMANNIOIDEA (1 genus, 2 species)						
<i>Perlohmanna</i> spp. (2)	F-1t/F-1t			U		22
PHTHIRACAROIDEA (1 genus, 2 species)						
<i>Phthiracarus</i> spp. (2)	wood/wood	X/X		A		22,25,26
PLATEREMEOIDEA (=GYMNODAMAEOIDEA) (3 genera, 3 species)						
<i>Jacotella</i> sp.	F-1t/F-1t	Fu/Fu		C		22,25
<i>Joshuella</i> sp.	F-1t/F-1t	Fu/Fu		R		22
<i>Odontodamaeus veriornatus</i> Hammer	F-1t/F-1t	Fu/Fu		A		1,22
THYRISOMOIDEA (=OPPIOIDEA) (9 genera, 14 species)						
<i>Autogneta</i> sp.	F-1t/F-1t	Fu/Fu		R		26
<i>Oppia</i> sp.	F-1t/F-1t	Fu/Fu		C		22
<i>Oppiella nova</i> (Oudemans)	F-1t/F-1t	Fu/Fu		A		22,25,26
<i>Oppiella</i> spp. (3)	F-1t/F-1t	Fu/Fu		A		22,25,26
<i>Oribella</i> sp.	F-cn/F-cn	Li/Li		U		1
<i>Quadroppia</i> sp. nr. <i>quadricarinata</i> (Michael)	F-1t/F-1t	Mi/Mi		A		1,22,25,26
<i>Rhinosuctobelba</i> sp. nr. <i>dicerosa</i> Woolley & Higgins	F-1t/F-1t	Mi/Mi		A		22,25,26
<i>Rhynchobelba</i> sp.	F-1t/F-1t	Mi/Mi		C		22

Taxonomic category	Habitat		Funct group	Plant/ animal	Ab	Co	References
	Ad/Im	Ad/Im	Ad/Im	host			
THYRISOMOIDEA (continued)							
<i>Suctobelba</i> sp.	F-1t/F-1t		Mi/Mi		R		22
<i>Suctobelbella</i> spp.	F-1t/F-1t		Mi/Mi		A		22,25,26
<i>Veloppia</i> sp.	F-1t/F-1t		Fu/Fu		R		26

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APPENDIX A: HOST ACRONYMS

Listed below are all the acronyms used under the host category in this list. They are subdivided into Animal (A-), Insect (I-), and Plant (P-) hosts. Acronyms generally relate to a family, genus, or specific name for the host, although sometimes a more general name is used. The acronym "polylec" is included at the end of the plant list.

ANIMAL (A-)

A-ACARI = mites
A-BIRD = birds
A-Clca = *Clethrionomys californicus* (Merriam), California red-backed vole
A-DEER = deer and elk(?)
A-DIPLO = DIPLOPODA - millipedes
A-Euto = *Eutamias townsendii* (Bachman), Townsend chipmunk
A-Glsa = *Glaucomys sabrinus* (Shaw), northern flying squirrel
A-Mior = *Microtus oregoni* (Bachman), creeping vole
A-Negi = *Neurotrichus gibbsii* (Baird), shrew-mole
A-ORIBA = oribatid mites
A-Pema = *Peromyscus maniculatus* (Wagner), deer mouse
A-RODNT = rodents (+/- shrews)
A-Scor = *Scapanus orarius* True, coast mole
A-SNAIL = snails and slugs
A-Sorex = *Sorex* spp., shrews
A-Spbe = *Spermophilus beechyi* (Richardson), California ground squirrel
A-SPID = spiders (ARANEAE)
A-SQUIR = squirrels and chipmunks
A-Thma = *Thomomys mazama* Merriam, Mazama pocket gopher
A-WORM = annelid worms
A-Zatr = *Zapus trinotatus* Rhoads, Pacific jumping mouse

INSECT (I-)

I-ACRID = ACRIDIDAE (ORTHOPTERA), grasshoppers
I-Adco = *Adelges cooleyi* (Gillette) (HEMIPTERA:HOMOPTERA;ADELGIDAE)
I-AGROM = AGROMYZIDAE (DIPTERA), agromyzid leafminer flies
I-Altic = *Altica* spp. (COLEOPTERA;CHRYSOMELIDAE), flea beetles
I-ALEYR = ALEYRODIDAE (HEMIPTERA:HOMOPTERA), whiteflies
I-Andre = *Andrena* spp. (HYMENOPTERA;ANDRENIDAE), andrenid bees
I-Antho = *Anthophora* spp. (HYMENOPTERA;ANTHOPHORIDAE), anthophorid bees
I-APHID = APHIDOIDEA (HEMIPTERA:HOMOPTERA), aphids, adelgids, etc.
I-ARCTI = ARCTIIDAE (LEPIDOPTERA), tiger moths
I-BEES = various bees (HYMENOPTERA;APOIDEA)
I-BRACO = BRACONIDAE (HYMENOPTERA), braconid parasitic wasps
I-Bombu = *Bombus* spp. (HYMENOPTERA;APIDAE), bumble bees
I-BUPR = BUPRESTIDAE (COLEOPTERA), metallic wood-boring beetles
I-CECID = CECIDIOMYIDAE (DIPTERA), cecidiomyid gall midges
I-CERAM = CERAMBYCIDAE (COLEOPTERA), long-horned wood-boring beetles
I-CHRYC = CHRYSOMELIDAE (COLEOPTERA), leaf beetles
I-CICDL = CICADELLIDAE (HEMIPTERA:HOMOPTERA), leaf hoppers
I-COCCD = COCCOIDEA (HEMIPTERA:HOMOPTERA), scale insects
I-COLEO = COLEOPTERA, beetles
I-Colle = *Colletes* spp. (HYMENOPTERA;COLLETIDAE), colletid bees
I-CURC = CURCULIONIDAE (COLEOPTERA), weevils
I-CYNIP = CYNIPIDAE (HYMENOPTERA), gall wasps
I-DIASP = DIASPIDIDAE (HEMIPTERA:HOMOPTERA), armored scales

I-DIPRI = DIPRIONIDAE (HYMENOPTERA), conifer sawflies
 I-DIPT = DIPTERA, flies
 I-EGGS = insect eggs
 I-EUCER = EUCERINI (HYMENOPTERA;ANTHOPHORIDAE), *Melissodes* & *Synhalonia* spp.
 I-EUMEN = EUMENIDAE (HYMENOPTERA), eumenid wasps
 I-Formi = *Formica* spp. (HYMENOPTERA;FORMICIDAE), thatch nest ants
 I-FORMI = FORMICIDAE (HYMENOPTERA), ants
 I-GALL = gall forming insects (DIPTERA, HYMENOPTERA)
 I-GEOM = GEOMETRIDAE (LEPIDOPTERA), measuring worms
 I-HALIC = HALICTIDAE (HYMENOPTERA), halictid bees
 I-HETER = HEMIPTERA:HETEROPTERA, true bugs
 I-HOMOP = HEMIPTERA:HOMOPTERA, leafhoppers, aphids, scales, etc.
 I-HYMEN = HYMENOPTERA, bees and wasps
 I-ICHNE = ICHNEUMONIDAE (HYMENOPTERA), ichneumonid parasitic wasps
 I-LEAFM = leafmining insects (LEPIDOPTERA, DIPTERA)
 I-LEPID = LEPIDOPTERA, moths and butterflies
 I-LYGAE = LYGAEIDAE (HEMIPTERA:HETEROPTERA), seed bugs
 I-MEGAC = MEGACHILIDAE (HYMENOPTERA), megachilid leafcutting bees
 I-Megac = *Megachile* spp. (HYMENOPTERA;MEGACHILIDAE), leafcutting bees
 I-MYCET = MYCETOPHILIDAE (DIPTERA), fungus gnats
 I-NEURO = NEUROPTERA, lacewings
 I-NOCT = NOCTUIDAE (LEPIDOPTERA), noctuid moths
 I-NYMPH = NYMPHALIDAE (LEPIDOPTERA), brush-footed butterflies
 I-ORTH = ORTHOPTERA, grasshoppers, crickets, etc.
 I-Osmia = *Osmia* spp. (HYMENOPTERA;MEGACHILIDAE), bees
 I-PCOCC = PSEUDOCOCCIDAE (HEMIPTERA:HOMOPTERA), mealybugs
 I-PENT = PENTATOMIDAE (HEMIPTERA:HETEROPTERA), stink bugs
 I-PSOC = PSOCOPTERA, bark lice
 I-SCOLY = SCOLYTIDAE (COLEOPTERA), bark beetles
 I-SIMUL = SIMULIIDAE (DIPTERA), black flies
 I-SIRIC = SIRICIDAE (HYMENOPTERA), horntail wasps
 I-SPHEC = SPHECIDAE (HYMENOPTERA), sphecid wasps
 I-SYRPH = SYRPHIDAE (DIPTERA), syrphid flies
 I-TENTH = TENTHREDINOIDEA (HYMENOPTERA), sawflies
 I-THRIP = THRIPIDAE (THYSANOPTERA), thrips
 I-THYSP = THYSANOPTERA, thrips

PLANT (P-)

P-Abam = *Abies amabilis* (Dougl.) Forbes (PINACEAE), Pacific silver fir
 P-Abpr = *Abies procera* Rehder (PINACEAE), noble fir
 P-Abies = *Abies* spp. (PINACEAE), firs
 P-Acci = *Acer circinatum* Pursh (ACERACEAE), vine maple
 P-Acer = *Acer* spp. (ACERACEAE), maples
 P-Alnus = *Alnus* spp. (BETULACEAE), alder
 P-APOCY = APOCYNACEAE, dogbane Family
 P-Arcto = *Arctostaphylos* spp. (ERICACEAE), manzanita
 P-Arme = *Arbutus menziesii* Pursh (ERICACEAE), Pacific madrone
 P-Arceu = *Arceuthobium* sp. (LORANTHACEAE), dwarf mistletoe
 P-Ascle = *Asclepias* spp. (ASCLEPIADACEAE), milkweed
 P-Berbe = *Berberis* spp. (BERBERIDACEAE), barberry, Oregon grape
 P-Cach = *Castanopsis chrysophylla* (Dougl.) A.DC. (FAGACEAE), golden chinkapin
 P-Caloc = *Calocortus* spp. (LILLIACEAE), mariposa lily
 P-Campa = *Campanula* spp. (CAMPANULACEAE), bellflower
 P-CAPRI = CAPRIFOLIACEAE, honeysuckle Family
 P-Casti = *Castilleja* spp. (SCROPHULARIACEAE), paintbrush
 P-Ceano = *Ceanothus* spp. (RHAMNACEAE), ceanothus, buckbrush
 P-Cirsi = *Cirsium* spp. (COMPOSITAE), thistles
 P-COMP = COMPOSITAE, aster Family

P-CONIF = coniferous tree hosts
P-Cornu = *Cornus* spp. (CORNACEAE), dogwoods
P-Coryl = *Corylus* sp. (BETULACEAE), hazelnut
P-CRUCI = CRUCIFERAE, mustard Family
P-CUPR = CUPRESSACEAE, cypress Family
P-DECID = deciduous tree hosts
P-Epilo = *Epilobium* spp. (ONAGRACEAE), fireweed, willowweed
P-Equis = *Equisetum* spp. (EQUISETACEAE), horsetail, scouring rush
P-ERICA = ERICACEAE, heath Family
P-Eriog = *Eriogonum* spp. (POLYGONACEAE), buckwheat
P-Fraga = *Fragaria* spp. (ROSACEAE), strawberry
P-FORBS = a variety of forb hosts
P-FUMAR = FUMARIACEAE, fumitory Family
P-Galiu = *Galium* spp. (RUBIACEAE), bedstraw
P-GENER = generalist feeder on a wide range of plants
P-GRASS = a variety of grass hosts
P-Hodi = *Holodiscus discolor* (Pursh) Maxim. (ROSACEAE), cream bush, ocean spray
P-Hype = *Hypericum perforatum* L. (HYPERICACEAE), klamath weed
P-LEGUM = LEGUMINOSAE, pea Family
P-Lide = *Libocedrus decurrens* Torr. (CUPRESSACEAE), incense cedar
P-LILIA = LILIACEAE, lily Family
P-LORAN = LORANTHACEAE, mistletoe Family
P-Lotus = *Lotus* spp. (LEGUMINOSAE), deerweed
P-Lupin = *Lupinus* spp. (LEGUMINOSAE), lupine
P-MALVA = MALVACEAE, mallow Family
P-Merte = *Mertensia* spp. (BORAGINACEAE), bluebells
P-Monot = *Monotropa* sp. (ERICACEAE), indian pipe
P-ONAGR = ONAGRACEAE, evening-primrose Family
P-Penst = *Penstemon* spp. (SCROPHULARIACEAE), penstemon
P-Phace = *Phacelia* spp. (HYDROPHYLLACEAE), phacelia
P-Picea = *Picea* spp. (PINACEAE), spruce
P-Pico = *Pinus contorta* Dougl. ex Loud. (PINACEAE), lodgepole pine
P-Pinus = *Pinus* spp. (PINACEAE), pine
P-Plant = *Plantago* spp. (PLANTAGINACEAE), plantain
P-POLYG = POLYGONACEAE, buckwheat Family
P-Popul = *Populus* sp. (SALICACEAE), cottonwood
P-Poten = *Potentilla* spp. (ROSACEAE), cinquefoil
P-Prvid = *Prunus virginiana demissa* (Nutt.) Torr. (ROSACEAE), western
chokecherry
P-Psme = *Pseudotsuga menziesii* (Mirbel) Franco (PINACEAE), Douglas-fir
P-Ptaq = *Pteridium aquilinum* (L.) Kuhn (POLYPODIACEAE), bracken fern
P-Querc = *Quercus* spp. (FAGACEAE), oaks
P-Quga = *Quercus garryana* Dougl. (FAGACEAE), Oregon white oak
P-Ranun = *Ranunculus* spp. (RANUNCULACEAE), buttercup
P-RHAMN = RHAMNACEAE, buckthorn Family
P-Rhma = *Rhododendron macrophyllum* G. Don (ERICACEAE), Pacific rhododendron
P-Ribes = *Ribes* spp. (GROSSULARIACEAE), currant, gooseberry
P-ROSAC = ROSACEAE, rose Family
P-Rubus = *Rubus* spp. (ROSACEAE), blackberry
P-Salix = *Salix* spp. (SALICACEAE), willows
P-Sagl = *Sambucus glauca* Nutt. (CAPRIFOLIACEAE), blue elderberry
P-Sambu = *Sambucus* spp. (CAPRIFOLIACEAE), elderberry
P-SCROP = SCROPHULARIACEAE, figwort Family
P-Sedum = *Sedum* sp. (CRASSULACEAE)
P-Seja = *Senecio jacobaea* L. (COMPOSITAE), tansy ragwort
P-SHRUB = a variety of shrub hosts
P-Sidal = *Sidalcea* spp. (MALVACEAE), checker-mallow
P-Smila = *Smilacina* spp. (LILIACEAE), Solomon-plume
P-Stach = *Stachys* spp. (LABIATAE), hedge-nettle
P-Symph = *Symphoricarpos* spp. (CAPRIFOLIACEAE), snowberry

P-*Thpl* = *Thuja plicata* Donn. (CUPRESSACEAE), western redcedar
P-TREES = a variety of tree hosts
P-*Trifo* = *Trifolium* spp. (LEGUMINOSAE), clover
P-UMBEL = UMBELLIFERAE, parsley Family
P-URTIC = URTICACEAE, nettle Family
P-*Vacci* = *Vaccinium* spp. (ERICACEAE), blueberry, huckleberry
P-*Vame* = *Vaccinium membranaceum* Dougl. (ERICACEAE), big whortleberry
P-*Vicia* = *Vicia* spp. (LEGUMINOSAE), vetch
P-VIOLA = VIOLACEAE, violet Family
polylec = polylectic: gathers pollen from a wide range of flowers (generalist)

**APPENDIX B:
LIST OF PARASITES ASSOCIATED WITH HOSTS
KNOWN TO BE PRESENT IN THE ANDREWS FOREST**

These parasites are known to be associated with hosts present on the Andrews Forest. Most parasites are fairly specific in their host associations and probably are present wherever their hosts are found. No actual collections of these parasites have been made in the few studies where the hosts were collected. Most of these parasite/host associations have been made on hosts collected elsewhere in Oregon, and thus probability is high that they also occur here. Those parasites definitely known from collections of hosts from the Andrews are included in the main list. This information was provided by Chris Maser, Forest Science Laboratory, Oregon State University (see Emerson and others 1984, and Whitaker and Maser 1985). Species followed by an asterisk (*) are associated with hosts known to be present, however, these parasites have not yet been recorded from Oregon but could occur here. A host list with scientific names is given at the end of the parasite list. Mammal host names are from Hall 1981 and Chapman and Feldhamer 1982.

Taxonomic category of parasite	Hosts at Andrews Forest
PHTHIRAPTERA (from Emerson and others 1984)	
(suborder) MALLOPHAGA	
BOOPIDAE	
<i>Heterodoxus spiniger</i> (Enderlein)	dog, coyote
TRICHODECTIDAE	
<i>Bovicola concavifrons</i> (Hopkins) *	elk
<i>Bovicola longicornis</i> (Nitzsch) *	elk
<i>Eutrichophilus setosus</i> (Giebel)	porcupine
<i>Felicola</i> spp. *	mountain lion, bobcat
<i>Neotrichodectes minutus</i> (Paine)	long-tailed weasel
<i>Neotrichodectes osborni</i> Keler	spotted skunk
<i>Stachiella erminea</i> Hopkins	short-tailed weasel
<i>Stachiella larseni</i> Emerson	mink
<i>Stachiella retusa martis</i> Werneck *	marten
<i>Trichodectes canis</i> (de Geer)	coyote
<i>Trichodectes octomaculatus</i> Paine *	raccoon
<i>Tricholipeurus lipeuroides</i> (Megnin)	mule deer
<i>Tricholipeurus parallelus</i> (Osborn)	mule deer
<i>Tricholipeurus pinquis euarctidos</i> (Hopkins) *	black bear
(suborder) ANOPLURA	
ENDERLEINELLIDAE	
<i>Enderleinellus osborni</i> Kellogg & Ferris	Beechy ground squirrel
<i>Enderleinellus tamiasciuri</i> Kim	chickaree
<i>Microphthirus incinatus</i> (Ferris)	northern flying squirrel
HOPLOPLEURIDAE	
<i>Hoplopleura hesperomydis</i> (Osborn)	deer mouse
<i>Hoplopleura sciuricola</i> Ferris	chickaree
<i>Hoplopleura trispinosa</i> (Kellogg & Ferris)	northern flying squirrel

Taxonomic category of parasite	Hosts at Andrews Forest
LINOGNATHIDAE	
<i>Linognathus setosus</i> (van Olfers)	coyote, dog
POLYPLACIDAE	
<i>Neohaematopinus inornatus</i>	Kellogg & Ferris bushy-tailed woodrat
<i>Neohaematopinus sciuropteri</i> (Osborn)	northern flying squirrel
<i>Neohaematopinus semifasciatus</i> Ferris	chickaree
<i>Polyplax auricularis</i> Kellogg & Ferris	deer mouse
ACARI (from Whitaker & Maser, 1985)	
ACARIDAE	
<i>Acotyledon</i> sp. nr. <i>paradoxus</i> Oudemans	northern flying squirrel
CHEYLETIDAE	
<i>Acaropsellina summersi</i>	Smiley & Whitaker northern flying squirrel (nest)
<i>Camincheyletus glaucomys</i>	Smiley & Whitaker northern flying squirrel (nest)
<i>Eucheyletia bishoppi</i> Baker	Trowbridge's shrew, spotted skunk
<i>Eucheyletia oregonensis</i>	Smiley & Whitaker northern flying squirrel (nest)
CHIRODISCIDAE	
<i>Alabidocarpus calcaratus</i> Lawrence	California myotis bat
CHORTOGLYPHIDAE	
<i>Aplodontopus latus</i> Fain	mountain beaver
DERMANYSSIDAE	
<i>Dermanyssus gallinoides</i> Moss	northern flying squirrel
GLYCYPHAGIDAE	
<i>Dermacarus hylandi</i> Fain	creeping vole
<i>Dermacarus jonesi</i> Fain & Whitaker	Townsend's chipmunk
<i>Dermacarus newyorkensis</i> Fain	Pacific jumping mouse
<i>Dermacarus spermophilus</i>	Fain & Whitaker Townsend's chipmunk, golden-mantled ground squirrel
<i>Dermacarus tamiasciuri</i>	Rupes, Yunker & Wilson northern flying squirrel, chickaree
<i>Glycyphagus hypudaei</i> (Koch)	shrews, many rodents, short-tailed weasel
<i>Gohieria</i> sp.	northern flying squirrel
<i>Microlabidopus americanus</i> Fain	mountain beaver
<i>Orycteroxenus soricis</i> (Oudemans)	shrews
<i>Xenorytes latiporus</i> Fain & Whitaker	spotted skunk
<i>Zibethacarus ondatrae</i>	(Rupes & Whitaker) creeping vole
LAELAPIDAE	
<i>Alphalaelaps aplodontiae</i> (Jellison)	shrews, mountain beaver, Townsends chipmunk
<i>Androlaelaps casalis</i> (Berlese)	mole, shrews, northern flying squirrel, deer mouse

Taxonomic category of parasite	Hosts at Andrews Forest
LAELAPIDAE (continued)	
<i>Androlaelaps fahrenheiti</i> (Berlese)	mole, shrews, many rodents, carnivores
<i>Androlaelaps geomys</i> (Strandtmann)	Mazama pocket gopher
<i>Echinonyssus affinis</i> (Jameson)	Townsend's chipmunk
<i>Echinonyssus cynomys</i> (Radford)	long-tailed weasel
<i>Echinonyssus</i> nr. <i>cynomys</i>	northern flying squirrel
<i>Echinonyssus isabellinus</i> (Oudemans)	shrews, many rodents
<i>Echinonyssus longichelae</i> (Allred & Beck)	northern flying squirrel, gopher, long-tailed weasel
<i>Echinonyssus neotomae</i> (Eads & Hightower)	bushy-tailed woodrat
<i>Echinonyssus obsoletus</i> (Jameson)	shrews, California red-backed vole, deer mouse, weasels
<i>Echinonyssus staffordi</i> (Strandtmann & Hunt)	long-tailed weasel, spotted skunk
<i>Echinonyssus thomomys</i> (Allred & Beck)	Mazama pocket gopher, long-tailed weasel
<i>Echinonyssus utahensis</i> (Allred & Beck)	pica, deer mouse, short-tailed weasel
<i>Eubrachylaelaps debilis</i> Jameson	Trowbridge's shrew, chipmunk, deer mouse, weasel
<i>Eubrachylaelaps stabularis</i> (Koch)	shrews, mole, many rodents, weasel, skunk
<i>Haemogamasus occidentalis</i> (Keegan)	shrews, moles, many rodents
<i>Haemogamasus onychmydis</i> (Ewing)	Mazama pocket gopher
<i>Haemogamasus pontiger</i> (Berlese)	northern flying squirrel, bushy-tailed woodrat
<i>Haemogamasus reidi</i> Ewing	many shrews, moles, rodents
<i>Haemogamasus thomomysi</i> Williams, Smiley, & Redington	Mazama pocket gopher
<i>Haemogamasus</i> sp.	mountain beaver
<i>Haemogamasus</i> n.sp.	California red-backed vole, <i>Microtus</i> spp.
<i>Laelaps alaskensis</i> Grant	water vole, Mazama pocket gopher
<i>Laelaps kochi</i> Oudemans	shrew-mole, <i>Microtus</i> spp., deer mouse
<i>Patriyssus hubbardi</i> (Jameson)	mountain beaver
LISTROPHORIDAE	
<i>Aplodontochirus borealis</i> Fain & Hyland	mountain beaver
<i>Leporacarus sylvilagi</i> Fain, Whitaker, & Lukoschus	brush rabbit
<i>Listrophorus mexicanus</i> Fain	Pacific water shrew, <i>Microtus</i> spp.
<i>Lynxacarus mustelae</i> (Megnin)	long-tailed weasel
<i>Lynxacarus nearcticus</i> Fain & Hyland	mink
<i>Quasilistrophorus microticulus</i> Fain, Whitaker, & Lukoschus	white-footed vole, red tree vole
MACRONYSSIDAE	
<i>Cryptonyssus desultorius</i> Radovsky	big brown bat, California myotis bat
<i>Macronyssus crosbyi</i> (Ewing & Stover)	big brown bat, California myotis bat
<i>Macronyssus macrodactylus</i> Rhadosky & Beck	silver-haired bat
<i>Steatonyssus furmani</i> Tipton & Boese	hoary bat
<i>Steatonyssus occidentalis</i> (Ewing)	big-brown bat
" <i>Macronyssid</i> " n.sp.	big-brown bat, silver-haired bat, Calif myotis bat

Taxonomic category of parasite	Hosts at Andrews Forest
MYOBIIDAE	
<i>Acanthopthirius caudatus eptesicus</i> Fain & Whitaker	big brown bat
<i>Amorphacarus hengererorum</i> Jameson	shrews
<i>Amorphacarus soricis</i> Fain & Whitaker	Pacific water shrew
<i>Eadiea neurotrichus</i> Lukoschus, Klompen, & Whitaker	shrew-mole
<i>Eutalpacarus peltatus</i> Jameson	shrew-mole
<i>Protomyobia brevisetosa</i> Jameson	shrews, California red-backed vole
<i>Pteracarus aculeus</i> Dusbabeck & Lukoschus	big brown bat
<i>Pteracarus</i> sp. nr. <i>minutus daubentoni</i> Dusbabeck	long-legged myotis bat
<i>Radfordia ewingi</i> (Fox)	Pacific jumping mouse
<i>Radfordia hylandi</i> Fain & Lukoschus	creeping vole
MYCOPTIDAE	
<i>Mycoptes japonensis</i> Radford	water vole, California red-backed vole
OTOEDRIDAE	
<i>Notoedres (Bakeracarus) sp.</i>	big brown bat
PYGMEPHORIDAE	
<i>Pygmephorus designatus</i> Mahunka	Trowbridge's shrew, California red-backed vole, spotted skunk
<i>Pygmephorus horridus</i> Mahunka	coast mole, Trowbridge's shrew, vagrant shrew
<i>Pygmephorus johnstoni</i> Smiley & Whitaker	shrew-mole
<i>Pygmephorus scalopi</i> Mahunka	coast mole
<i>Pygmephorus whitakeri</i> Mahunka	coast mole
SPINTURNICIDAE	
<i>Spinturnix americanus</i> (Banks)	big brown bat
<i>Spinturnix bakeri</i> Rudnick	big brown bat

SCIENTIFIC NAMES OF HOST SPECIES

INSECTIVORA

<i>Neurotrichus gibbsi</i> (Baird)	shrew-mole
<i>Scapanus orarius</i> True	coast mole
<i>Sorex bendirei</i> (Merriam)	Pacific water shrew
<i>Sorex trowbridgii</i> Baird	Trowbridge's shrew
<i>Sorex vagrans obscurus</i> (Merriam)	dusky shrew
<i>Sorex vagrans vagrans</i> Baird	vagrant shrew
<i>Sorex vagrans yaquinae</i> (Jackson)	Yaquina shrew

CHIROPTERA

<i>Eptesicus fuscus</i> (Palisot de Beauvois)	big brown bat
<i>Lasionycteris noctivagens</i> (LeConte)	silver-haired bat
<i>Lasiurus cinereus</i> (Palisot de Beauvois)	hoary bat
<i>Myotis californicus</i> (Audubon and Bachman)	California myotis

LAGOMORPHA

<i>Ochotona princeps</i> (Richardson)	pika
<i>Sylvilagus bachmani</i> (Waterhouse)	brush rabbit

RODENTIA

<i>Aplodontia rufa</i> (Rafinesque)	mountain beaver
<i>Arborimus albipes</i> Merriam	white-footed vole
<i>Arborimus longicaudus</i> True	red tree vole
<i>Clethrionomys californicus</i> Merriam	Calif. red-backed vole
<i>Erethizon dorsatum</i> (Linnaeus)	porcupine
<i>Eutamias townsendii</i> (Bachman)	Townsend's chipmunk
<i>Glaucomys sabrinus</i> (Shaw)	northern flying squirrel
<i>Microtus oregoni</i> (Bachman)	creeping vole
<i>Microtus richardsoni</i> (DeKay)	water vole
<i>Neotoma cinerea</i> (Ord)	bushy-tailed woodrat
<i>Peromyscus maniculatus</i> (Wagner)	deer mouse
<i>Spermophilus beechyi</i> (Richardson)	Calif. ground squirrel
<i>Spermophilus lateralis</i> (Say)	Golden-mantled ground squirrel
<i>Tamiasciurus douglasii</i> (Bachman)	chickaree
<i>Thomomys mazama</i> Merriam	Mazama pocket gopher
<i>Zapus trinotatus</i> Rhoads	Pacific jumping mouse

CARNIVORA

<i>Canis latrans</i> Say	coyote
<i>Felis concolor</i> Linnaeus	mountain lion
<i>Lynx rufus</i> (Schreber)	bobcat
<i>Martes americana</i> (Turton)	marten
<i>Mustela erminea</i> Linnaeus	short-tailed weasel
<i>Mustela frenata</i> Lichtenstein	long-tailed weasel
<i>Mustela vison</i> Schreber	mink
<i>Procyon lotor</i> Linnaeus	raccoon
<i>Spilogale putorius</i> (Linnaeus)	spotted skunk
<i>Ursus americanus</i> Pallas	black bear

ARTIODACTYLA

<i>Cervus elaphus canadensis</i> Erxleben	elk
<i>Odocoileus hemionus</i> (Rafinesque)	mule (black-tailed) deer

**APPENDIX C:
LIST OF APOIDEA PRESUMED TO BE ON THE ANDREWS FOREST**

During 1980, A.R. Moldenke (Department of Entomology, Oregon State University) collected and compiled a list of bees (Hymenoptera: Apoidea) from the McKenzie River drainage of the Willamette national Forest, in which the HJ Andrews Forest is located (Reference #29). The Apoidea species included on the list below are those he believes should be present on the Andrews Forest. This is based on habitats and host plants present on the Andrews, and on his field notes, personal collections and literature reviews. These species have not been included in the main list because there are no actual records or voucher specimens verifying their presence on the Andrews Forest. This list represents a robust picture of the bee fauna of the central Cascades, and as such may include rare taxa that may not indeed be found at all times on the Andrews Forest (principally bees of the valley floor/low altitude and those from subalpine fell fields -- regions poorly represented within the Andrews Forest). Within the conifer zone, the vast majority of bee species are ephemeral colonists in open regions following clear-cutting, landslides/avalanches and floods. Most species are encountered as wandering males, and their presence on the Andrews would not necessarily imply stable resident populations. The large unmonographed genera Andrena (some subgenera), Lasioglossum (s. lato), Stelis and Nomada are not treated.

Taxonomic category	Habitat Ad/Im	Funct group	Plant/ animal		References
			host	Ab Co	
ANDRENIDAE (3 genera, 56 species)					
<i>Andrena amphibola</i> (Vierick)	0-vg/0-sl	Fl/A	polylec	C	29
<i>Andrena auricoma</i> Smith	0-vg/0-sl	Fl/A	polylec	U	29
<i>Andrena buckelli</i> Vierick	0-vg/0-sl	Fl/A		U	29
<i>Andrena caerulea</i> Smith	0-vg/0-sl	Fl/A	P-Ranun	A	29
<i>Andrena candida</i> Smith	0-vg/0-sl	Fl/A	P-Salix	A	29
<i>Andrena candidiformis</i> Vierick & Cockerell	0-vg/0-sl	Fl/A	P-Ceano	R	29
<i>Andrena chlorogaster</i> Vierick	0-vg/0-sl	Fl/A	polylec	U	29
<i>Andrena chlorura</i> Cockerell	0-vg/0-sl	Fl/A	polylec	U	29
<i>Andrena cleodora cleodora</i> (Viereck)	0-vg/0-sl	Fl/A	P-Ceano	U	29
<i>Andrena columbiana</i> Viereck	0-vg/0-sl	Fl/A	P-COMP	U	29
<i>Andrena crataegi</i> Robertson	0-vg/0-sl	Fl/A	polylec	A	29
<i>Andrena cristata</i> Viereck	0-vg/0-sl	Fl/A	P-Arcto	R	29
<i>Andrena cupreotincta</i> Cockerell	0-vg/0-sl	Fl/A	polylec	R	29
<i>Andrena cyanophila</i> Cockerell	0-vg/0-sl	Fl/A	P-Poten	R	29
<i>Andrena forbesii</i> Robertson	0-vg/0-sl	Fl/A	polylec	R	29
<i>Andrena frigida</i> Smith	0-vg/0-sl	Fl/A		C	29
<i>Andrena fuscicauda</i> (Viereck)	0-vg/0-sl	Fl/A	polylec	R	29
<i>Andrena hemileuca</i> Viereck	0-vg/0-sl	Fl/A		C	29
<i>Andrena hippotes</i> Robertson	0-vg/0-sl	Fl/A	polylec	A	29
<i>Andrena knuthiana</i> Cockerell	0-vg/0-sl	Fl/A	polylec	U	29
<i>Andrena lupinorum</i> Cockerell	0-vg/0-sl	Fl/A	P-Lupin	R	29
<i>Andrena macoupinensis</i> Robertson	0-vg/0-sl	Fl/A		R	29
<i>Andrena mariae</i> Robertson	0-vg/0-sl	Fl/A	P-Salix	U	29
<i>Andrena medionitens</i> Cockerell	0-vg/0-sl	Fl/A	polylec	U	29
<i>Andrena melanochoa</i> Cockerell	0-vg/0-sl	Fl/A	polylec	R	29
<i>Andrena miranda</i> Smith	0-vg/0-sl	Fl/A	polylec	R	29
<i>Andrena miserabilis</i> Cresson	0-vg/0-sl	Fl/A	P-ROSAC	U	29
<i>Andrena nevadensis</i> Cresson	0-vg/0-sl	Fl/A	P-Salix	R	29
<i>Andrena nigrihirta</i> (Ashmead)	0-vg/0-sl	Fl/A	polylec	R	29

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
ANDRENIDAE (continued)						
<i>Andrena nigrocaerulea</i> Cockerell	0-vg/0-sl	Fl/A	polylec	C		29
<i>Andrena nivalis</i> Smith	0-vg/0-sl	Fl/A	polylec	C		29
<i>Andrena obscuripostica</i> Viereck	0-vg/0-sl	Fl/A	P-Arcto	R		29
<i>Andrena perplexa</i> Smith	0-vg/0-sl	Fl/A	polylec	A		29
<i>Andrena pertristis</i> Cockerell	0-vg/0-sl	Fl/A	polylec	R		29
<i>Andrena prunorum</i> Cockerell	0-vg/0-sl	Fl/A	polylec	A		29
<i>Andrena quintiliformis</i> Viereck	0-vg/0-sl	Fl/A	polylec	U		29
<i>Andrena rufosignata</i> Cockerell	0-vg/0-sl	Fl/A		R		29
<i>Andrena regularis</i> Malloch	0-vg/0-sl	Fl/A	polylec	R		29
<i>Andrena salicifloris</i> Cockerell	0-vg/0-sl	Fl/A	P-Salix	A		29
<i>Andrena scutellinitens</i> Viereck	0-vg/0-sl	Fl/A	P-COMP	C		29
<i>Andrena semipunctata</i> Cockerell	0-vg/0-sl	Fl/A	P-Salix	R		29
<i>Andrena sigmundi</i> Cockerell	0-vg/0-sl	Fl/A	P-Salix	R		29
<i>Andrena striatifrons</i> Cockerell	0-vg/0-sl	Fl/A	P-Salix	U		29
<i>Andrena subaustralis</i> Cockerell	0-vg/0-sl	Fl/A	P-Salix	C		29
<i>Andrena subtilis</i> Smith	0-vg/0-sl	Fl/A	polylec	U		29
<i>Andrena thaspis</i> Graenicher	0-vg/0-sl	Fl/A		U		29
<i>Andrena transnigra</i> Viereck	0-vg/0-sl	Fl/A	polylec	C		29
<i>Andrena trevoris</i> Cockerell	0-vg/0-sl	Fl/A		U		29
<i>Andrena trizonata</i> (Ashmead)	0-vg/0-sl	Fl/A	P-Salix	U		29
<i>Andrena vicina</i> Smith	0-vg/0-sl	Fl/A	polylec	U		29
<i>Andrena vierecki</i> Cockerell	0-vg/0-sl	Fl/A	polylec	U		29
<i>Andrena washingtoni</i> Cockerell	0-vg/0-sl	Fl/A		U		29
<i>Andrena w-scripta</i> Viereck	0-vg/0-sl	Fl/A	polylec	A		29
<i>Nomadopsis edwardsii</i> (Cresson)	0-vg/0-sl	Fl/A	P-Poten	A		29
ANTHOPHORIDAE (10 genera, 39 species)						
<i>Anthophora bomboides stanfordiana</i> Cockerell	0-vg/0-sl	Fl/A	polylec	U		29
<i>Anthophora californica californica</i> Cresson	0-vg/0-sl	Fl/A	polylec	R		29
<i>Anthophora crotchii</i> Cresson	0-vg/0-sl	Fl/A	polylec	R		29
<i>Anthophora edwardsii</i> Cresson	0-vg/0-sl	Fl/A	polylec	U		29
<i>Anthophora furcata pernigra</i> Cresson	0-vg/0-sl	Fl/A	polylec	R		29
<i>Anthophora furcata syringae</i> (Cockerell)	0-vg/0-sl	Fl/A	polylec	C		29
<i>Anthophora furcata terminalis</i> Cresson	0-vg/0-sl	Fl/A	polylec	R		29
<i>Anthophora pacifica pacifica</i> Cresson	0-vg/0-sl	Fl/A	polylec	A		29
<i>Anthophora urbana urbana</i> Cresson	0-vg/0-sl	Fl/A	polylec	A		29
<i>Anthophora ursina simillima</i> Cresson	0-vg/0-sl	Fl/A	polylec	C		29
<i>Ceratina acantha</i> Provancher	0-vg/0-vg	Fl/A	polylec	A		29
<i>Ceratina nanula</i> Cockerell	0-vg/0-vg	Fl/A	polylec	C		29
<i>Diadasia nigrifrons</i> (Cresson)	0-vg/0-sl	Fl/A	P-Sidal	R		29
<i>Epeolus americanus</i> (Cresson)	0-vg/nest	Fl/KP	I-Colle	R		29
<i>Epeolus minimus</i> (Robertson)	0-vg/nest	Fl/KP	I-Colle	R		29
<i>Melecta separata callura</i> (Cockerell)	0-vg/nest	Fl/KP	I-Antho	R		29
<i>Melissodes communis alopex</i> (Cockerell)	0-vg/0-sl	Fl/A	polylec	U		29
<i>Melissodes glenwoodensis</i> Cockerell	0-vg/0-sl	Fl/A	P-COMP	R		29
<i>Melissodes lupina</i> Cresson	0-vg/0-sl	Fl/A	P-COMP	A		29
<i>Melissodes lustra</i> LaBerge	0-vg/0-sl	Fl/A	P-COMP	C		29
<i>Melissodes lutulenta</i> LaBerge	0-vg/0-sl	Fl/A	P-COMP	U		29

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
ANTHOPHORIDAE (continued)						
<i>Melissodes metenua</i> Cockerell	0-vg/0-sl	Fl/A	P-COMP	A		29
<i>Melissodes microsticta</i> Cockerell	0-vg/0-sl	Fl/A	P-COMP	A		29
<i>Melissodes pallidisignata</i> Cockerell	0-vg/0-sl	Fl/A	P-COMP	A		29
<i>Melissodes rivalis</i> Cresson	0-vg/0-sl	Fl/A	P-Cirsi	U		29
<i>Melissodes robustior</i> Cockerell	0-vg/0-sl	Fl/A	P-COMP	A		29
<i>Melissodes stearnsi</i> Cockerell	0-vg/0-sl	Fl/A	polylec	R		29
<i>Synhalonia acerba</i> (Cresson)	0-vg/0-sl	Fl/A	P-Arcto	C		29
<i>Synhalonia actiosa</i> (Cresson)	0-vg/0-sl	Fl/A	polylec	A		29
<i>Synhalonia cordleyi</i> Viereck	0-vg/0-sl	Fl/A	polylec	A		29
<i>Synhalonia delphinii</i> Timberlake	0-vg/0-sl	Fl/A	polylec	R		29
<i>Synhalonia edwardsii</i> (Cresson)	0-vg/0-sl	Fl/A	polylec	A		29
<i>Synhalonia frater lata</i> (Provancher)	0-vg/0-sl	Fl/A	polylec	C		29
<i>Synhalonia hurdi</i> Timberlake	0-vg/0-sl	Fl/A	polylec	R		29
<i>Synhalonia stretchii</i> (Cresson)	0-vg/0-sl	Fl/A	polylec	U		29
<i>Triepeolus</i> spp.	0-vg/nest	Fl/KP	I-EUCER	A		29
APIDAE (3 genera, 14 species)						
<i>Bombus californicus californicus</i> Smith	0-vg/0-sl	Fl/A	polylec	A		29
<i>Bombus edwardsii</i> Cresson	0-vg/0-sl	Fl/A	polylec	U		29
<i>Bombus flavifrons dimidiatus</i> Ashmead	0-vg/0-sl	Fl/A	polylec	C		29
<i>Bombus sylvicola</i> (Kirby)	0-vg/0-sl	Fl/A	polylec	U		29
<i>Bombus vandykei</i> (Frison)	0-vg/0-sl	Fl/A	polylec	R		29
<i>Psithyrus suckleyi</i> (Greene)	0-vg/nest	Fl/Pa	I-Bombu	U		29
COLLETIDAE (2 genera, 19 species)						
<i>Colletes compactus hesperius</i> Swenk	0-vg/0-sl	Fl/A	P-COMP	R		29
<i>Colletes consors pascoensis</i> Cockerell	0-vg/0-sl	Fl/A	P-Phace	U		29
<i>Colletes fulgidus fulgidus</i> Swenk	0-vg/0-sl	Fl/A	P-COMP	A		29
<i>Colletes gypsicolens</i> Cockerell	0-vg/0-sl	Fl/A	P-COMP	R		29
<i>Colletes hyalinus hyalinus</i> Provancher	0-vg/0-sl	Fl/A	polylec	R		29
<i>Colletes inaequalis</i> Say	0-vg/0-sl	Fl/A	polylec	R		29
<i>Colletes nigrifrons</i> Titus	0-vg/0-sl	Fl/A	P-Poten	R		29
<i>Colletes paniscus sculleni</i> Timberlake	0-vg/0-sl	Fl/A	P-Merte	U		29
<i>Colletes simulans nevadensis</i> Swenk	0-vg/0-sl	Fl/A	P-COMP	R		29
<i>Colletes slevini</i> Cockerell	0-vg/0-sl	Fl/A	polylec	U		29
<i>Hylaeus affinis</i> (Smith)	0-vg/0-vg	Fl/A	polylec	R		29
<i>Hylaeus basalis</i> (Smith)	0-vg/0-vg	Fl/A	polylec	U		29
<i>Hylaeus coloradensis</i> (Cockerell)	0-vg/0-vg	Fl/A	polylec	U		29
<i>Hylaeus episcopalis episcopalis</i> (Cockerell)	0-vg/0-vg	Fl/A	polylec	A		29
<i>Hylaeus modestus citrinifrons</i> (Cockerell)	0-vg/0-vg	Fl/A	polylec	C		29
<i>Hylaeus nevadensis</i> (Cockerell)	0-vg/0-vg	Fl/A	polylec	A		29
<i>Hylaeus rudbeckiae</i> (Cockerell & Casad)	0-vg/0-vg	Fl/A	polylec	A		29
<i>Hylaeus timberlakei</i> Snelling	0-vg/0-vg	Fl/A	polylec	R		29
<i>Hylaeus verticalis</i> (Cresson)	0-vg/0-vg	Fl/A	polylec	A		29

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
HALICTIDAE (7 genera, 23 species)						
<i>Agapostemon femoratus</i> Crawford	0-vg/0-sl	Fl/A	polylec	U		29
<i>Agapostemon texanus texanus</i> Cresson	0-vg/0-sl	Fl/A	polylec	U		29
<i>Agapostemon virescens</i> (Fabricius)	0-vg/0-sl	Fl/A	polylec	R		29
<i>Dufourea afasciata</i> Bohart	0-vg/0-sl	Fl/A	P- <i>Trifo</i>	R		29
<i>Dufourea calochorti sculleni</i> (Cockerell)	0-vg/0-sl	Fl/A	P- <i>Caloc</i>	R		29
<i>Dufourea campanulae</i> (Cockerell)	0-vg/0-sl	Fl/A	P- <i>Campa</i>	R		29
<i>Dufourea dilatipes</i> Bohart	0-vg/0-sl	Fl/A	P- <i>Campa</i>	R		29
<i>Dufourea fimbriata sierrae</i> (Michener)	0-vg/0-sl	Fl/A	P- <i>Poten</i>	R		29
<i>Dufourea holocyanea</i> (Cockerell)	0-vg/0-sl	Fl/A	P- <i>Symph</i>	R		29
<i>Dufourea trochantera</i> Bohart	0-vg/0-sl	Fl/A	P- <i>Phace</i>	R		29
<i>Halictus confusus arapahonum</i> Cockerell	0-vg/0-sl	Fl/A	polylec	A		29
<i>Halictus farinosus</i> Smith	0-vg/0-sl	Fl/A	polylec	A		29
<i>Halictus rubicundus</i> (Christ)	0-vg/0-sl	Fl/A	polylec	A		29
<i>Halictus tripartitus</i> Cockerell	0-vg/0-sl	Fl/A	polylec	A		29
<i>Halictus virgatellus</i> Cockerell	0-vg/0-sl	Fl/A	polylec	R		29
MEGACHILIDAE (15 genera, 121 species)						
<i>Anthidiellum notatum robertsoni</i> (Cockerell)	0-vg/0-vg	Fl/A	polylec	U		29
<i>Anthidium tenuiflorae</i> Cockerell	0-vg/0-sl	Fl/A	polylec	U		29
<i>Anthidium utahense</i> Swenk	0-vg/0-sl	Fl/A	P- <i>Phace</i>	U		29
<i>Anthocopa abjecta abjecta</i> (Cresson)	0-vg/	Fl/A	P- <i>Penst</i>	R		29
<i>Anthocopa copelandica copelandica</i> (Cockerell)	0-vg/	Fl/A	P- <i>Phace</i>	U		29
<i>Anthocopa elongata</i> (Michener)	0-vg/	Fl/A	P- <i>Penst</i>	R		29
<i>Anthocopa triodonta shastensis</i> (Cockerell)	0-vg/	Fl/A	P- <i>Penst</i>	R		29
<i>Ashmeadiella aridula astragali</i> Michener	0-vg/	Fl/A	polylec	U		29
<i>Ashmeadiella buconis denticulata</i> (Cresson)	0-vg/	Fl/A	P-COMP	C		29
<i>Ashmeadiella cactorum cactorum</i> (Cockerell)	0-vg/	Fl/A	polylec	R		29
<i>Ashmeadiella californica californica</i> (Ashmead)	0-vg/	Fl/A	polylec	C		29
<i>Ashmeadiella cubiceps cubiceps</i> (Cresson)	0-vg/	Fl/A	P-COMP	R		29
<i>Chelostoma phaceliae</i> Michener	0-vg/0-vg	Fl/A	P- <i>Phace</i>	R		29
<i>Chelostoma minutum minutum</i> Crawford	0-vg/0-vg	Fl/A	P- <i>Phace</i>	R		29
<i>Chelostomoides angelarum</i> (Titus)	0-vg/0-rk	Fl/A	polylec	U		29
<i>Coelioxys alternata</i> Say	0-vg/nest	Fl/KP	I- <i>Megac</i>	R		29
<i>Coelioxys apacheorum</i> Cockerell	0-vg/nest	Fl/KP	I- <i>Megac</i>	R		29
<i>Coelioxys banksi</i> Crawford	0-vg/nest	Fl/KP	I- <i>Megac</i>	R		29
<i>Coelioxys edita</i> Cresson	0-vg/nest	Fl/KP	I- <i>Megac</i>	R		29
<i>Coelioxys erysimi</i> Cockerell	0-vg/nest	Fl/KP	I- <i>Megac</i>	R		29
<i>Coelioxys funeraria</i> Smith	0-vg/nest	Fl/KP	I- <i>Megac</i>	R		29
<i>Coelioxys grindeliae</i> Cockerell	0-vg/nest	Fl/KP	I- <i>Megac</i>	R		29
<i>Coelioxys mesae</i> Cockerell	0-vg/nest	Fl/KP	I- <i>Megac</i>	R		29
<i>Coelioxys moesta</i> Cresson	0-vg/nest	Fl/KP	I- <i>Megac</i>	R		29
<i>Coelioxys novomexicana</i> Cockerell	0-vg/nest	Fl/KP	I- <i>Megac</i>	R		29

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
MEGACHILIDAE (continued)						
<i>Coelioxys octodentata</i> Say	0-vg/nest	Fl/KP	I-Megac	R		29
<i>Coelioxys porterae</i> Cockerell	0-vg/nest	Fl/KP	I-Megac	R		29
<i>Coelioxys rufitarsis</i> Smith	0-vg/nest	Fl/KP	I-Megac	A		29
<i>Coelioxys serricauda</i> Baker	0-vg/nest	Fl/KP	I-Megac	R		29
<i>Coelioxys sodalis</i> Cresson	0-vg/nest	Fl/KP	I-Megac	R		29
<i>Dianthidium singulare</i> (Cresson)	0-vg/O-vg	Fl/A	P-COMP	R		29
<i>Heriades carinata</i> Cresson	0-vg/O-vg	Fl/A	polylec	U		29
<i>Heriades cressoni</i> Michener	0-vg/O-vg	Fl/A	P-COMP	R		29
<i>Heriades variolosa variolosa</i> (Cresson)	0-vg/O-vg	Fl/A	polylec	R		29
<i>Heteranthidium timberlakei</i> Schwarz	0-vg/O-sl	Fl/A	polylec	R		29
<i>Hoplitis albifrons argentifrons</i> Cresson	0-vg/O-vg	Fl/A	polylec	C		29
<i>Hoplitis fulgida fulgida</i> (Cresson)	0-vg/O-vg	Fl/A	polylec	C		29
<i>Hoplitis grinnelli septentrionalis</i> Michener	0-vg/O-vg	Fl/A	polylec	R		29
<i>Hoplitis hypocrita</i> (Cockerell)	0-vg/O-vg	Fl/A	polylec	R		29
<i>Hoplitis louisae</i> (Cockerell)	0-vg/O-vg	Fl/A	polylec	R		29
<i>Hoplitis producta subgracilis</i> Michener	0-vg/O-vg	Fl/A	polylec	R		29
<i>Hoplitis sambuci</i> Titus	0-vg/O-vg	Fl/A	polylec	R		29
<i>Megachile brevis brevis</i> Say	0-vg/	Fl/A	polylec	U		29
<i>Megachile brevis onobrychidis</i> Cockerell	0-vg/	Fl/A	polylec	C		29
<i>Megachile centuncularis</i> (Linnaeus)	0-vg/	Fl/A	polylec	R		29
<i>Megachile cleomis</i> Cockerell	0-vg/	Fl/A	polylec	R		29
<i>Megachile coquilletti</i> Cockerell	0-vg/	Fl/A	polylec	U		29
<i>Megachile fidelis</i> Cresson	0-vg/	Fl/A	P-COMP	U		29
<i>Megachile frigida frigida</i> Smith	0-vg/	Fl/A	polylec	U		29
<i>Megachile gemula cressonii</i> Dal.Torre	0-vg/	Fl/A	polylec	R		29
<i>Megachile inermis</i> Provancher	0-vg/	Fl/A	polylec	R		29
<i>Megachile latimanus</i> Say	0-vg/	Fl/A	P-COMP	A		29
<i>Megachile melanophaea calogaster</i> Cockerell	0-vg/	Fl/A	P-LEGUM	C		29
<i>Megachile montivaga</i> Cresson	0-vg/	Fl/A	polylec	U		29
<i>Megachile parallela</i> Smith	0-vg/	Fl/A	P-COMP	U		29
<i>Megachile perihirta</i> Cockerell	0-vg/	Fl/A	P-COMP	A		29
<i>Megachile pseudonigra</i> Mitchell	0-vg/	Fl/A		R		29
<i>Megachile pugnata</i> Say	0-vg/	Fl/A	P-COMP	U		29
<i>Megachile relativa</i> Cresson	0-vg/	Fl/A	polylec	C		29
<i>Megachile subnigra angelica</i> Mitchell	0-vg/	Fl/A	P-COMP	R		29
<i>Megachile subnigra subnigra</i> Cresson	0-vg/	Fl/A	P-COMP	U		29
<i>Megachile texana</i> Cresson	0-vg/	Fl/A	polylec	U		29
<i>Megachile wheeleri</i> Mitchell	0-vg/	Fl/A	P-COMP	C		29
<i>Osmia albolateralis albolateralis</i> Cockerell	0-vg/	Fl/A		U		29
<i>Osmia albolateralis visenda</i> Sandhouse	0-vg/	Fl/A		R		29
<i>Osmia atrocyanea atrocyanea</i> Cockerell	0-vg/	Fl/A		U		29
<i>Osmia brevis brevis</i> Cresson	0-vg/	Fl/A	polylec	R		29
<i>Osmia bruneri</i> Cockerell	0-vg/	Fl/A		R		29
<i>Osmia bucephala</i> Cresson	0-vg/	Fl/A		R		29
<i>Osmia californica</i> Cresson	0-vg/	Fl/A	P-Cirsi	U		29
<i>Osmia calla</i> Cockerell	0-vg/	Fl/A		R		29

Taxonomic category	Habitat Ad/Im	Funct group Ad/Im	Plant/ animal host	Ab	Co	References
MEGACHILIDAE (continued)						
<i>Osmia cobaltina</i> Cresson	0-vg/	Fl/A		R		29
<i>Osmia coloradensis</i> Cresson	0-vg/	Fl/A	P-COMP	A		29
<i>Osmia cyanella</i> Cockerell	0-vg/	Fl/A		U		29
<i>Osmia cyaneonitens</i> Cockerell	0-vg/	Fl/A		R		29
<i>Osmia cyanopoda</i> Cockerell	0-vg/	Fl/A		R		29
<i>Osmia densa densa</i> Cresson	0-vg/	Fl/A		U		29
<i>Osmia dolerosa</i> Sandhouse	0-vg/	Fl/A		U		29
<i>Osmia exigua</i> Cresson	0-vg/	Fl/A		R		29
<i>Osmia gabrielis</i> Cockerell	0-vg/	Fl/A		U		29
<i>Osmia grindeliae</i> Cockerell	0-vg/	Fl/A		R		29
<i>Osmia hendersoni</i> Cockerell	0-vg/	Fl/A		U		29
<i>Osmia hesperos</i> Sandhouse	0-vg/	Fl/A		R		29
<i>Osmia hurdi</i> White	0-vg/	Fl/A	P-LEGUM	R		29
<i>Osmia indepressa</i> Sandhouse	0-vg/	Fl/A		R		29
<i>Osmia inermis</i> (Zetterstedt)	0-vg/	Fl/A	P-ERICA	R		29
<i>Osmia integra</i> Cresson	0-vg/	Fl/A	P-LEGUM	U		29
<i>Osmia inurbana</i> Cresson	0-vg/	Fl/A		U		29
<i>Osmia juxta juxta</i> Cresson	0-vg/	Fl/A		U		29
<i>Osmia juxta subpurpurea</i> Cockerell	0-vg/	Fl/A		U		29
<i>Osmia kenoyeri</i> Cockerell	0-vg/	Fl/A	P-LEGUM	R		29
<i>Osmia kincaidii</i> Cockerell	0-vg/	Fl/A		R		29
<i>Osmia lacus</i> Sandhouse	0-vg/	Fl/A		R		29
<i>Osmia lignaria propinqua</i> Cresson	0-vg/	Fl/A	polylec	A		29
<i>Osmia longula</i> Cresson	0-vg/	Fl/A	P-LEGUM	R		29
<i>Osmia malina</i> Cockerell	0-vg/	Fl/A		R		29
<i>Osmia marginipennis</i> Cresson	0-vg/	Fl/A	P-COMP	U		29
<i>Osmia melanopleura</i> Cockerell	0-vg/	Fl/A		U		29
<i>Osmia montana montana</i> Cresson	0-vg/	Fl/A	P-COMP	U		29
<i>Osmia montana quadriceps</i> Cresson	0-vg/	Fl/A	P-COMP	C		29
<i>Osmia nanula</i> Cockerell	0-vg/	Fl/A		R		29
<i>Osmia nemoris</i> Sandhouse	0-vg/	Fl/A	P-LEGUM	U		29
<i>Osmia nigrifrons</i> Cresson	0-vg/	Fl/A	P-LEGUM	U		29
<i>Osmia obliqua</i> White	0-vg/	Fl/A	P-LEGUM	U		29
<i>Osmia odontogaster</i> Cockerell	0-vg/	Fl/A	P-LEGUM	U		29
<i>Osmia paradisica</i> Sandhouse	0-vg/	Fl/A		R		29
<i>Osmia penstemonis</i> Cockerell	0-vg/	Fl/A	P-Penst	C		29
<i>Osmia physariae</i> Cockerell	0-vg/	Fl/A	P-LEGUM	U		29
<i>Osmia pikei</i> Cockerell	0-vg/	Fl/A		U		29
<i>Osmia proxima</i> Cresson	0-vg/	Fl/A		U		29
<i>Osmia pulsatillae</i> Cockerell	0-vg/	Fl/A		U		29
<i>Osmia pusilla</i> Cresson	0-vg/	Fl/A		U		29
<i>Osmia ribifloris biedermanni</i> Michener	0-vg/	Fl/A	polylec	U		29
<i>Osmia seclusa</i> Sandhouse	0-vg/	Fl/A		U		29
<i>Osmia sedula</i> Sandhouse	0-vg/	Fl/A	P-LEGUM	U		29
<i>Osmia simillima</i> Smith	0-vg/	Fl/A		U		29
<i>Osmia sladeni</i> Sandhouse	0-vg/	Fl/A	P-LEGUM	U		29
<i>Osmia subaustralis</i> Cockerell	0-vg/	Fl/A	P-COMP	U		29
<i>Osmia tersula</i> Cockerell	0-vg/	Fl/A		U		29
<i>Osmia texana</i> Cresson	0-vg/	Fl/A	P-COMP	U		29
<i>Osmia trevoris</i> Cockerell	0-vg/	Fl/A		U		29
<i>Osmia tristella tristella</i> Cockerell	0-vg/	Fl/A		U		29
<i>Osmia unca</i> Michener	0-vg/	Fl/A	P-LEGUM	U		29
<i>Osmia zephyros</i> Sandhouse	0-vg/	Fl/A		U		29

INDEX TO GENERA AND HIGHER TAXA

<i>Abagrotis</i>	73	<i>Agabinus</i>	49	<i>Amblyopone</i>	99
<i>Abdiungus</i>	56	<i>Agallia</i>	35	<i>Amblyscirtes</i>	72
<i>Acalypta</i>	33	<i>Agalliopsis</i>	35	<i>Amblysellus</i>	35
<i>Acantholomidea</i>	33	<i>Agapetus</i>	63	<i>Amecocerus</i>	55
<i>Acanthophtirius</i>	145	<i>Agapostemon</i>	150	<i>Ameletus</i>	20
<i>Acanthophysa</i>	27	<i>Agasphaerops</i>	47	<i>Ametastegia</i>	108
<i>Acanthoscelides</i>	40	<i>Agathidium</i>	53, 54	<i>Ametor</i>	53
ACANTHOSOMATIDAE	26	<i>Agathon</i>	83	<i>Ametroproctus</i>	128
ACARI	123-131, 143-145	AGELENIDAE	116	<i>Amiocentrus</i>	63
ACARIDAE	127, 143	<i>Agelenopsis</i>	116	<i>Amiota</i>	87
ACARIDIDA	127	<i>Ageniella</i>	106	<i>Ammophila</i>	107
ACARIFORMES	123-131	<i>Aglaostigma</i>	108	<i>Amnestus</i>	27
<i>Acaronychus</i>	127	<i>Agonoderus</i>	42	<i>Amoebaleria</i>	88
<i>Acaropsellina</i>	143	<i>Agonum</i>	42	<i>Amorphacarus</i>	145
<i>Acartauchenius</i>	118	<i>Agraylea</i>	63	<i>Ampedus</i>	49
ACARTOPHTHALMIDAE	82	<i>Agrius</i>	40	<i>Amphicroum</i>	59
<i>Acartophthalmus</i>	82	<i>Agriotella</i>	49	<i>Amphigerontia</i>	25
<i>Aceratagallia</i>	35	<i>Agriotes</i>	49	<i>Amphipoea</i>	74
<i>Acerra</i>	73	<i>Agrochola</i>	73	AMPHIPSOCIDAE	24
<i>Achaeearanea</i>	121	<i>Agroeca</i>	117	<i>Amphipyra</i>	74
ACHILIDAE	34	AGROMYZIDAE	82	<i>Amphizoa</i>	40
<i>Achipteria</i>	130	<i>Agroperina</i>	73	AMPHIZOIDAE	40
<i>Achrysocharis</i>	99	<i>Agrothereutes</i>	100	<i>Amphorophora</i>	34
<i>Achytonix</i>	73	<i>Agrotis</i>	73, 74	<i>Amplaria</i>	111
<i>Acilus</i>	49	<i>Agrypnia</i>	65	<i>Anacharis</i>	99
<i>Acneus</i>	57	<i>Agneta</i>	118	<i>Anachipteria</i>	130
<i>Acotyledon</i>	143	AGYRTIDAE	59	<i>Anagapetus</i>	63
ACRIDIDAE	21	<i>Alabidocarpus</i>	143	<i>Anagoga</i>	67
<i>Acrocera</i>	82	<i>Alaptus</i>	103	<i>Anagrus</i>	103
ACROCERIDAE	82	<i>Alaus</i>	49	<i>Anapausis</i>	91
<i>Acrodactyla</i>	100	<i>Alconeura</i>	35	<i>Anaphes</i>	103
<i>Acrolyta</i>	100	ALEOCHARINAE	59	ANAPIDAE	117
<i>Acronicta</i>	73	<i>Aletia</i>	74	<i>Anaplectoides</i>	74
<i>Acropimpla</i>	100	<i>Alexeter</i>	100	<i>Anaspis</i>	54
<i>Acrotrichus</i>	57	ALEYRODIDAE	34	<i>Anastrangalia</i>	43
ACTINEDIDA	123-126	<i>Aligia</i>	35	<i>Anatis</i>	46
<i>Actium</i>	56	<i>Allantus</i>	108	<i>Anavitrinella</i>	67
<i>Aculepeira</i>	117	ALLECULIDAE	40	<i>Anchicera</i>	47
<i>Acyrtosiphon</i>	34	<i>Alliopsis</i>	82	<i>Anchycteis</i>	48
<i>Adalia</i>	46	<i>Allocosa</i>	120	<i>Ancistrocerus</i>	99
<i>Adelges</i>	34	<i>Allocosmoecus</i>	64	<i>Ancistromma</i>	107
ADELGIDAE	34	<i>Allodia</i>	89	<i>Andrena</i>	96, 147, 148
<i>Adelognathus</i>	100	<i>Alloperla</i>	22	ANDRENIDAE	96, 147-148
<i>Adelpha</i>	77	<i>Alloplasta</i>	100	<i>Androlaelaps</i>	143, 144
<i>Adelphagrotis</i>	73	<i>Allorhinocoris</i>	30	<i>Androloma</i>	74
<i>Adelphocoris</i>	30	<i>Alopecosa</i>	120	<i>Andropolia</i>	74
<i>Adraneothrips</i>	26	<i>Alotanypus</i>	84	<i>Anepia</i>	74
<i>Aedes</i>	87	<i>Alphalaelaps</i>	143	<i>Aneugmenus</i>	108
AEGERIIDAE	79	<i>Altica</i>	44	<i>Anevrina</i>	90
<i>Aegialia</i>	58	ALYDIDAE	26	<i>Anhimella</i>	74
<i>Aenigmatias</i>	90	<i>Alydus</i>	26	<i>Anisodactylus</i>	42
AEOLOTHRIPIIDAE	25	<i>Alypia</i>	74	ANISOPODIDAE	82
<i>Aeolothrips</i>	25	<i>Amara</i>	42	<i>Anisostena</i>	45
<i>Aeshna</i>	20	AMAUROBIIDAE	116	<i>Anisotoma</i>	54
AESHNIDAE	20	<i>Amblyaspis</i>	106	ANOBIIDAE	40

<i>Anomogyna</i>	74	<i>Apodrepanuletrix</i>	67	<i>Attenella</i>	19
<i>Anoncus</i>	100	APOIDEA	147-152	AULACIDAE	96
<i>Anoplius</i>	106	<i>Apollophanes</i>	120	<i>Aulacigaster</i>	83
ANOPLURA	25, 142-143	<i>Aporinellus</i>	106	AULACIGASTRIDAE	83
<i>Anotylus</i>	59	<i>Aporus</i>	106	<i>Auleutes</i>	47
<i>Anthaxia</i>	41	<i>Apristus</i>	42	<i>Aulonothroscus</i>	62
<i>Antheraea</i>	79	<i>Aptinothrips</i>	26	<i>Auplopus</i>	106
ANTHICIDAE	40	ARACHNIDA	112-131	<i>Austrolimnophila</i>	94
<i>Anthicus</i>	40	ARADIDAE	27	<i>Autogneta</i>	130
<i>Anthidiellum</i>	150	<i>Aradus</i>	27	<i>Autographa</i>	74
<i>Anthidium</i>	103, 150	<i>Araeopidius</i>	48	AXYMYIIDAE	83
<i>Anthobium</i>	59	ARANEAE	116-122	<i>Axymyia</i>	83
<i>Anthocharis</i>	78	ARANEIDAE	117	BAETIDAE	19
<i>Anthocomus</i>	55	<i>Araneus</i>	117	<i>Baetis</i>	19
<i>Anthocopa</i>	150	<i>Araniella</i>	117	<i>Balclutha</i>	35
ANTHOCORIDAE	26-27	ARCHAEOGNATHA	19	<i>Ballana</i>	35
<i>Anthocoris</i>	26	ARCHEONOTHROIDEA	127	<i>Banasa</i>	32
ANTHOMYIIDAE	82	<i>Archips</i>	82	<i>Banchus</i>	100
<i>Anthonomus</i>	47	ARCTIIDAE	66	<i>Barce</i>	32
<i>Anthophora</i>	96, 148	<i>Arctopelopia</i>	84	<i>Barycnemis</i>	100
ANTHOPHORIDAE	96, 148-149	<i>Arctopsyche</i>	62	<i>Basalys</i>	98
<i>Anthrax</i>	83	ARCTOPSYCHIDAE	62-63	<i>Bathyphantes</i>	119
<i>Anthrenus</i>	48	<i>Arctopsyche</i>	36	<i>Bathythrix</i>	101
<i>Anticlea</i>	67	<i>Arctosa</i>	120	<i>Batrisodes</i>	56
<i>Antocha</i>	94	<i>Arcuphantes</i>	119	<i>Bdella</i>	123
ANTRODIAETIDAE	117	<i>Arge</i>	96	BDELLIDAE	123
<i>Antrodiaetus</i>	117	<i>Argia</i>	20	<i>Bdellozonium</i>	111
<i>Anyphaena</i>	117	ARGIDAE	96	<i>Beckerina</i>	90
ANYPHAENIDAE	117	<i>Argyrodes</i>	121	<i>Behrensia</i>	74
<i>Aoplus</i>	100	<i>Argyrotaenia</i>	82	<i>Belba</i>	128
<i>Apamea</i>	74	<i>Arhyssus</i>	33	BELBOIDEA	128
<i>Apanteles</i>	97	<i>Aridius</i>	53	<i>Belyta</i>	98
<i>Apatania</i>	64	<i>Arotrepes</i>	100	<i>Bembidion</i>	42
<i>Apateticus</i>	32	<i>Arphia</i>	21	BERYTIDAE	27
<i>Aphaenogaster</i>	99	<i>Arrhopalites</i>	110	BETHYLIDAE	97
<i>Aphalara</i>	36	<i>Arytaina</i>	36	<i>Biblio</i>	83
<i>Aphanogmus</i>	97	<i>Asclera</i>	56	BIBIONIDAE	83
<i>Aphelacrus</i>	128	<i>Ascogaster</i>	97	<i>Bicellaria</i>	87
APHELINIDAE	96	<i>Aseptis</i>	74	<i>Biston</i>	67
<i>Aphelinoidea</i>	108	<i>Ashmeadiella</i>	150	<i>Bittacomorpha</i>	91
<i>Aphelinus</i>	96	ASILIDAE	82-83	<i>Blabomma</i>	116
<i>Aphelopus</i>	98	<i>Asilus</i>	82, 83	<i>Blaptichus</i>	101
APHIDIDAE	34	<i>Aspilota</i>	97	BLASTOBASIDAE	66
APHIDIIDAE	96	<i>Astata</i>	107	BLATTARIA	22
<i>Aphileta</i>	118	<i>Astenus</i>	59	BLATTELLIDAE	22
<i>Aphis</i>	34	<i>Asthenolabus</i>	100	<i>Blepharicera</i>	83
<i>Aphodius</i>	58	<i>Asticta</i>	74	BLEPHARICERIDAE	83
<i>Aphrodes</i>	35	ASTIGMATA	127	<i>Blepharidopterus</i>	30
<i>Aphrophora</i>	34	<i>Athous</i>	49	<i>Bleptina</i>	74
APIDAE	96, 149	<i>Atimia</i>	44	<i>Blera</i>	92
<i>Apion</i>	47	<i>Atolytus</i>	93	<i>Blissus</i>	30
<i>Apis</i>	96	<i>Atomeria</i>	47	<i>Boernerina</i>	34
<i>Aplodontochirus</i>	144	<i>Atopochthonius</i>	127	<i>Bolboceras</i>	58
<i>Aplodontopus</i>	143	ATOPOCHTHONOIDEA	127	<i>Bolbomyia</i>	91
<i>Aplomerus</i>	100	<i>Atractodes</i>	100	<i>Boletina</i>	89
<i>Apocephalus</i>	90	<i>Atractotomus</i>	30	<i>Bolitobius</i>	60
<i>Apocheiridium</i>	112	<i>Atrechus</i>	60	<i>Bolitophila</i>	89
<i>Apochthonius</i>	113	<i>Atrichopogon</i>	84	<i>Bollmaniulus</i>	111
		<i>Attagenus</i>	48		

<i>Boloria</i>	77	<i>Callioplus</i>	116	CERAPHRONIDAE	97
<i>Bolothrips</i>	26	<i>Calliphora</i>	83	<i>Ceraticelus</i>	119
<i>Bombus</i>	96, 149	CALLIPHORIDAE	83	<i>Ceratina</i>	96, 148
BOMBYLIIDAE	83	<i>Callobius</i>	116	<i>Ceratinella</i>	119
<i>Bombyliopsis</i>	93	<i>Callophrys</i>	72	<i>Ceratynops</i>	119
<i>Bombylius</i>	83	<i>Calopus</i>	56	<i>Ceratobaeus</i>	106
<i>Bomolocha</i>	74	<i>Calosoma</i>	42	<i>Ceratocapsus</i>	30
<i>Boonacris</i>	21	<i>Calosota</i>	99	<i>Ceratocombus</i>	27
BOOPIDAE	142	<i>Calvia</i>	46	<i>Ceratodalia</i>	67
<i>Borboropsis</i>	88	<i>Calymmaria</i>	116	<i>Ceratolasma</i>	113
<i>Boreocanthon</i>	58	<i>Camincheyletus</i>	143	CERATOPHYLLIDAE	95
<i>Boreochlus</i>	84	<i>Camisia</i>	128	CERATOPOGONIDAE	84
<i>Boreoheptagyia</i>	84	<i>Campaea</i>	67	<i>Ceratoppia</i>	129
<i>Boreostolis</i>	27	CAMPODEIDAE	110	<i>Ceratozetes</i>	127
<i>Borophaga</i>	90	<i>Campodorus</i>	101	CERATOZETOIDEA	127-128
<i>Bovicola</i>	142	<i>Campoletis</i>	101	<i>Cerceris</i>	107
BRACHYCENTRIDAE	63	<i>Camponotus</i>	99, 100	CERCOPIIDAE	34
<i>Brachycentrus</i>	63	<i>Campoplex</i>	101	<i>Cercyon</i>	53
<i>Brachychthonius</i>	127	CANTHARIDAE	41	<i>Cercyonis</i>	79
BRACHYCHTHONOIDEA	127	<i>Capitophorus</i>	34	<i>Cerobasis</i>	25
<i>Brachyleptura</i>	44	<i>Capnia</i>	22	<i>Ceropales</i>	106
<i>Brachymeria</i>	97	CAPNIIDAE	22	<i>Ceruchus</i>	54
<i>Brachymyrmex</i>	99	CARABIDAE	42-43	<i>Chaetocladus</i>	84
<i>Brachyopa</i>	92	<i>Carabodes</i>	127	<i>Chaetopleurophora</i>	90
<i>Brachypanorpa</i>	62	CARABODOIDEA	127	CHALCIDIDAE	97
<i>Bracon</i>	97	<i>Carabus</i>	42	CHAMAEMYIIDAE	84
BRACONIDAE	97	<i>Cardiophorus</i>	49	<i>Charitopes</i>	101
<i>Bradycellus</i>	42	<i>Cardocladus</i>	84	<i>Chasmocephalon</i>	117
<i>Bradysia</i>	91	<i>Caripeta</i>	67	<i>Cheiloneurus</i>	98
<i>Brillia</i>	84	<i>Carphoborus</i>	58	<i>Cheiracanthium</i>	117
<i>Brochymena</i>	32	<i>Carpocoris</i>	32	CHEIRIDIDAE	112
<i>Bromius</i>	45	<i>Carterocephalus</i>	72	<i>Cheletogenes</i>	126
BRUCHIDAE	40	<i>Caseya</i>	110	<i>Chelifer</i>	113
<i>Brundinella</i>	84	CASEYIDAE	110	CHELIFERIDAE	113
BUPRESTIDAE	40-41	<i>Casitaria</i>	101	<i>Chelonus</i>	97
<i>Buprestis</i>	41	<i>Castastenos</i>	101	<i>Chelostoma</i>	103, 150
BYRRHIDAE	41	<i>Castianeira</i>	117	<i>Chelostomoides</i>	150
<i>Byrrhus</i>	41	<i>Catallagia</i>	95	<i>Chelostomopsis</i>	103
		<i>Catocala</i>	73	<i>Chernokrilus</i>	23
CAECILIIDAE	24	<i>Catopocerus</i>	54	CHEYLETIDAE	126, 143
<i>Caecilius</i>	24	<i>Catops</i>	54	<i>Chilocorus</i>	46
CAECULIDAE	123	<i>Catoptrichus</i>	54	CHILOPODA	112
<i>Caeculus</i>	123	<i>Caudatella</i>	19	<i>Chionaspis</i>	36
<i>Caenobelba</i>	128	<i>Cavariella</i>	34	<i>Chionea</i>	94
<i>Caenochara</i>	40	CECIDIOMYIIDAE	84	<i>Chionodes</i>	67
<i>Caenocryptus</i>	101	<i>Cedusa</i>	36	CHIRODISCIDAE	143
<i>Caenocyrta</i>	54	<i>Celastrina</i>	73	CHIRONOMIDAE	84-86
<i>Caenurgina</i>	74	<i>Cenocorixa</i>	27	<i>Chirothrips</i>	26
<i>Caladonus</i>	35	<i>Centromerus</i>	119	<i>Chlamydatus</i>	30
CALAMOCERATIDAE	63	CEPHALOIDAE	43	<i>Chlorochroa</i>	32
<i>Calathus</i>	42	<i>Cephaloon</i>	43	CHLOROPERLIDAE	22-23
<i>Caligonella</i>	126	<i>Cephennium</i>	59	CHLOROPIDAE	86
CALIGONELLIDAE	126	CEPHEOIDEA	127	<i>Chlorosea</i>	67
<i>Calineuria</i>	23	<i>Ceraclea</i>	64	<i>Chlosyne</i>	77
<i>Calitys</i>	62	CERAMBYCIDAE	43-44	<i>Chonaphe</i>	111
<i>Callicorixa</i>	27	<i>Ceranemota</i>	79	CHORDEUMATIDA	110
<i>Callidium</i>	44	<i>Ceraninus</i>	99	<i>Chorebus</i>	97
<i>Callierges</i>	74	<i>Ceranthia</i>	93	<i>Chorinaeus</i>	101
<i>Callilepis</i>	118	<i>Ceraphron</i>	97	<i>Choristoneura</i>	82

<i>Chorthippus</i>	21	<i>Coenonympha</i>	79	<i>Crambus</i>	78
CHORTOGLYPHIDAE	143	<i>Coleocentrus</i>	101	<i>Craspedolepta</i>	36
CHRYSIDIDAE	97	<i>Coleomyia</i>	83	<i>Crassomicrodus</i>	97
<i>Chrysis</i>	97	<i>Coleophora</i>	67	<i>Cratichneumon</i>	101
<i>Chrysobothris</i>	41	COLEOPHORIDAE	67	<i>Cremmops</i>	97
<i>Chrysocharis</i>	99	COLEOPTERA	40-62	<i>Crenitis</i>	53
<i>Chrysolina</i>	45	<i>Coleotechnites</i>	67	<i>Creophilus</i>	60
<i>Chrysomela</i>	45	<i>Colias</i>	78	<i>Cricotopus</i>	84
CHRYSOMELIDAE	44-45	<i>Colladonus</i>	35	<i>Crophius</i>	30
<i>Chrysonotomyia</i>	99	COLLEMBOLA	109-110	<i>Crossocerus</i>	107
<i>Chrysopa</i>	37	<i>Colletes</i>	149	CROTONIOIDEA	128
<i>Chrysoperla</i>	37	COLLETIDAE	98, 149	CRUSTACEA	112
<i>Chrysophana</i>	41	<i>Colon</i>	54	<i>Crymodes</i>	74
CHRYSOPIDAE	37	<i>Colopterus</i>	55	<i>Cryphoeca</i>	116
<i>Chrysops</i>	93	<i>Coloradia</i>	79	<i>Cryptocephalus</i>	45
<i>Chrysotoxum</i>	92	<i>Colpomeria</i>	101	<i>Cryptochia</i>	64
<i>Chrysura</i>	97	COLYDIIDAE	46	CRYPTOGNATHIDAE	126
CHTHONIIDAE	113	<i>Colydium</i>	46	<i>Cryptognathus</i>	126
CICADELLIDAE	35	<i>Conchapelopia</i>	84	<i>Cryptolestes</i>	47
CICADIDAE	36	<i>Conicera</i>	90	<i>Cryptomyzus</i>	34
<i>Cicindela</i>	45	CONIOPTERYGIDAE	37	<i>Cryptonyssus</i>	144
CICINDELIDAE	45	<i>Coniopteryx</i>	37	CRYPTOPHAGIDAE	47
<i>Cicurina</i>	116	<i>Conocephalus</i>	22	<i>Cryptophagus</i>	46
CIIDAE	45	<i>Conophorus</i>	83	<i>Cryptorhyncus</i>	47
<i>Cimberis</i>	47	CONOPIIDAE	86	CRYPTOSTIGMATA	127
CIMBICIDAE	98	<i>Conostigmus</i>	103	<i>Cryptotendipes</i>	84
CIMICIDAE	27	CONOTYLIDAE	111	<i>Cryptus</i>	101
<i>Cinara</i>	34	<i>Contarinia</i>	84	CTENACAROIDEA	128
<i>Cinetus</i>	98	<i>Conwentzia</i>	37	<i>Ctenacarus</i>	128
<i>Cinygma</i>	19	<i>Cophura</i>	83	<i>Ctenicera</i>	49
<i>Cinygmula</i>	19, 20	<i>Copidosoma</i>	98	<i>Ctenichneumon</i>	101
<i>Circotettix</i>	21	<i>Copromyza</i>	92	CTENIZIDAE	118
<i>Cirrospilus</i>	99	<i>Coprophilus</i>	60	<i>Ctenochira</i>	101
<i>Cis</i>	45	<i>Cordulegaster</i>	20	<i>Cubocephalus</i>	101
<i>Cissusa</i>	74	CORDULEGASTRIDAE	20	CUCUJIDAE	47
CIXIIDAE	36	<i>Cordyla</i>	89	<i>Cucujus</i>	47
<i>Cixius</i>	36	<i>Cordylomia</i>	84	<i>Cuerna</i>	35
<i>Cladura</i>	94	COREIDAE	27	CULICIDAE	87
CLAMBIDAE	45	<i>Coreorgonal</i>	119	<i>Culicoides</i>	84
<i>Clambus</i>	45	<i>Coriarachne</i>	122	<i>Cultroribula</i>	129
<i>Clastoptera</i>	34	<i>Corimelaena</i>	33	CUNAXIDAE	126
<i>Clemensia</i>	66	<i>Corinna</i>	117	<i>Cunaxoides</i>	126
CLERIDAE	45-46	<i>Corinthiscus</i>	45	<i>Cupila</i>	56
<i>Clinidium</i>	58	CORIXIDAE	27	CURCULIONIDAE	47-48
<i>Clinocera</i>	87	<i>Corticaria</i>	53	<i>Cuterebra</i>	87
<i>Clostera</i>	77	CORYDALIDAE	37	CUTEREBRIDAE	87
<i>Clostoecca</i>	64	CORYLOPHIDAE	47	<i>Cybaeina</i>	116
<i>Clubiona</i>	117	<i>Corynoneura</i>	84	<i>Cybaeota</i>	116
CLUBIONIDAE	117	<i>Coryphista</i>	67	<i>Cybaeus</i>	116
<i>Clytus</i>	44	<i>Coryphium</i>	60	<i>Cychnus</i>	42
<i>Cnemogonus</i>	47	<i>Corypsylla</i>	95	<i>Cyclolabus</i>	101
<i>Coccinella</i>	46	<i>Corythuca</i>	33	<i>Cycloneda</i>	46
COCCINELLIDAE	46	<i>Cosmochthonius</i>	129	<i>Cyclophora</i>	67
<i>Coccygomimus</i>	101	<i>Cosmopepla</i>	32	<i>Cyclosa</i>	117
COCHYLIDAE	67	COSMOPTERYGIDAE	67	CYDNIDAE	27
<i>Coelioxys</i>	103, 150, 151	<i>Cosmosalia</i>	44	<i>Cylindrocopturus</i>	47
<i>Coelocnemis</i>	61	COSSIDAE	67	<i>Cylindromyia</i>	93
<i>Coeloides</i>	97	<i>Cossonus</i>	47	<i>Cymatodera</i>	45
COENAGRIONIDAE	20	<i>Crabro</i>	107	CYBAEREMAEOIDEA	128

<i>Cymbiodyta</i>	53	<i>Diamesa</i>	84	<i>Doroneuria</i>	23
<i>Cymindis</i>	42	<i>Diammus</i>	95	<i>Doryctes</i>	97
<i>Cyphoderris</i>	21	<i>Dianous</i>	60	<i>Dorytomus</i>	47
<i>Cyphon</i>	52	<i>Dianthidium</i>	151	<i>Draeculacephala</i>	35
<i>Cyrtopogon</i>	82	<i>Diaparsis</i>	101	<i>Drassodes</i>	118
<i>Cyta</i>	123	<i>Diaphnocoris</i>	31	<i>Drepana</i>	67
<i>Cytilus</i>	41	DIAPRIIDAE	98	DREPANIDAE	67
<i>Dacne</i>	52	<i>Diarsia</i>	74	<i>Drepanulatrix</i>	67, 68
<i>Dactylolabis</i>	94	DIASPIDIDAE	36	<i>Dromaeolus</i>	52
<i>Dalopius</i>	49	<i>Dibolia</i>	45	<i>Drosophila</i>	87
DAMAEOIDEA	128	<i>Dicentrus</i>	44	DROSOPHILIDAE	87
<i>Dargida</i>	74	<i>Dicerca</i>	41	<i>Drunella</i>	19
<i>Darmistus</i>	26	<i>Dichaetocoris</i>	31	DRYINIDAE	98
DASCILLIDAE	48	<i>Dichelonyx</i>	58	<i>Dryocetes</i>	58
<i>Dasineura</i>	84	<i>Dichrooscytus</i>	31	DRYOMYZIDAE	87
<i>Dasychira</i>	73	<i>Dicosmoecus</i>	64	<i>Dryotype</i>	74
<i>Dasyfidonia</i>	67	<i>Dicronoptycha</i>	94	<i>Dryudella</i>	107
<i>Dasyphyga</i>	78	<i>Dicranota</i>	94	<i>Dufourea</i>	150
<i>Dasyrhadus</i>	55	<i>Dictyna</i>	118	<i>Dusona</i>	101
<i>Dasysyrphus</i>	92	DICTYNIDAE	118	<i>Dynatosoma</i>	89
<i>Dasytes</i>	55	DICTYOPHARIDAE	36	<i>Dyslobus</i>	47
<i>Dearthrus</i>	48	<i>Dictyopterus</i>	54	<i>Dysstroma</i>	68
<i>Decantha</i>	78	<i>Dicyphus</i>	31	DYTISCIDAE	49
<i>Decodes</i>	82	<i>Dicyrtoma</i>	110	<i>Dziedzickia</i>	89
<i>Delomerista</i>	101	<i>Didineis</i>	107	<i>Eadiea</i>	145
<i>Delotelis</i>	95	<i>Diglyphus</i>	99	<i>Eanus</i>	49
DELPHACIDAE	36	<i>Dikraneura</i>	35	<i>Earinus</i>	97
<i>Deltocephalus</i>	35	<i>Dikrella</i>	35	<i>Earobia</i>	101
<i>Demopheles</i>	101	<i>Dilophus</i>	83	<i>Ebo</i>	120
<i>Dendroctonus</i>	58	DIOPTIDAE	67	<i>Ecclisocosmoecus</i>	64
<i>Dendroides</i>	57	<i>Dioptopsis</i>	83	<i>Ecclisomyia</i>	64
<i>Dendrolasma</i>	113	<i>Dioryctria</i>	78	<i>Echinonyssus</i>	144
<i>Dendrophagus</i>	47	<i>Dipheter</i>	19	<i>Echthrus</i>	101
<i>Dendrosoter</i>	97	<i>Diphylus</i>	101	<i>Ecliptoptera</i>	68
<i>Dentizetes</i>	127	DIPLOPODA	110-112	<i>Ectemnius</i>	107
<i>Deporaus</i>	47	<i>Diplous</i>	42	ECTOPSOCIDAE	24
<i>Deraeocoris</i>	30	DIPLURA	110	<i>Ectopsocus</i>	24
DERBIDAE	36	DIPLURIDAE	118	<i>Ectropis</i>	68
<i>Derephysia</i>	33	<i>Dipoena</i>	121	<i>Egira</i>	74
<i>Dermacarus</i>	143	<i>Dipogon</i>	106	<i>Elachiptera</i>	86
DERMANYSSIDAE	143	DIPRIONIDAE	98	<i>Elaphropus</i>	42
<i>Dermanyssus</i>	143	DIPSOCORIDAE	27	<i>Elasmosoma</i>	97
DERMAPTERA	22	DIPTERA	82-95	<i>Elasmostethus</i>	26
<i>Dermestes</i>	48	<i>Dirhagus</i>	52	<i>Elasmucha</i>	26
DERMESTIDAE	48	<i>Disaphis</i>	34	ELATERIDAE	49, 52
DERODONTIDAE	48	<i>Ditricophora</i>	88	ELIPSOCIDAE	24
<i>Derodontus</i>	48	<i>Ditylus</i>	56	<i>Elliptera</i>	94
<i>Desmocerus</i>	44	<i>Dixa</i>	87	<i>Ellychnia</i>	53
<i>Desmometopa</i>	88	DIXIDAE	87	ELMIDAE	52
<i>Despaxia</i>	23	<i>Doddsia</i>	24	<i>Elodes</i>	52, 53
<i>Deuterophlebia</i>	87	<i>Dolerus</i>	108	<i>Elonium</i>	60
DEUTEROPHLEBIIDAE	87	<i>Dolichocis</i>	45	<i>Elpiste</i>	68
<i>Diachus</i>	45	<i>Dolichomitrus</i>	101	EMBOLEMIDAE	98
<i>Diadasia</i>	148	DOLICHOPODIDAE	87	<i>Embolemus</i>	98
<i>Diadegma</i>	101	<i>Dolichovespula</i>	109	<i>Emmesa</i>	54
<i>Diadocidia</i>	89	<i>Dolicocephala</i>	87	<i>Empelus</i>	45
<i>Diaglyptidea</i>	101	<i>Dolophilodes</i>	65	<i>Empicoris</i>	33
<i>Dialictus</i>	100	<i>Dolurgus</i>	58	EMPIDIDAE	87-88

<i>Empis</i>	87	<i>Eriozona</i>	92	<i>Eurois</i>	74
<i>Empoasca</i>	35	<i>Eris</i>	121	<i>Eurychilopterella</i>	31
<i>Empria</i>	108	<i>Eristalis</i>	92	<i>Eurygaster</i>	33
<i>Enallagma</i>	20	<i>Ernobius</i>	40	<i>Euryhapsis</i>	85
<i>Encarsia</i>	96	<i>Eronyxa</i>	62	<i>Euryopis</i>	122
ENCYRTIDAE	98	EROTYLIDAE	52	<i>Euryproctus</i>	101
<i>Endasys</i>	101	<i>Erromenus</i>	101	<i>Eurytoma</i>	99
ENDEOSTIGMATIDES	126	<i>Erynnis</i>	72	EURYTOMIDAE	99
ENDERLEINELLIDAE	142	<i>Erythroneura</i>	35	<i>Euscelidius</i>	35
<i>Enderleinellus</i>	142	<i>Essigella</i>	34	<i>Euschistus</i>	32
ENDOMYCHIDAE	52	<i>Ethelurgus</i>	101	<i>Eusphalerum</i>	60
<i>Endomychus</i>	52	ETHMIINAE	78	<i>Eustala</i>	117
<i>Enicmus</i>	53	<i>Euboarhexius</i>	57	<i>Eusterinx</i>	101
ENICOCEPHALIDAE	27	<i>Eubrachylaelaps</i>	144	<i>Eustroma</i>	68
<i>Eniochthonius</i>	129	<i>Eucapnopsis</i>	22	<i>Eutalpacarus</i>	145
<i>Enizemum</i>	101	<i>Euceraphis</i>	34	<i>Eutheia</i>	59
<i>Ennomos</i>	68	<i>Euceros</i>	101	<i>Euthyatira</i>	82
<i>Enoclerus</i>	46	EUCHARITIDAE	98	<i>Eutrichophilus</i>	142
<i>Enoplognatha</i>	121	<i>Eucheyletia</i>	143	<i>Euura</i>	108
<i>Entombrya</i>	109	EUCINETIDAE	52	<i>Euxoa</i>	74, 75
ENTOMOBRYIDAE	109	<i>Eucinetus</i>	52	<i>Evagetes</i>	106
<i>Entsira</i>	97	<i>Euclaena</i>	68	<i>Evarcha</i>	121
<i>Nypia</i>	68	EUCNEMIDAE	52	<i>Everes</i>	73
<i>Nyctus</i>	101	<i>Eucoila</i>	98	<i>Evergestis</i>	79
<i>Eobrachychthonius</i>	127	EUCOILIDAE	98-99	<i>Evodinus</i>	44
<i>Eohypochthonius</i>	129	<i>Eucoilidea</i>	98	<i>Evylaeus</i>	100
<i>Eosphoropteryx</i>	74	<i>Euderomphale</i>	99	<i>Excaverus</i>	101
<i>Epalpus</i>	93	<i>Euderus</i>	99	<i>Exechia</i>	89
<i>Epargyreus</i>	72	<i>Eudrepanulatrix</i>	68	<i>Exechocephus</i>	127
<i>Epeolus</i>	148	EUGLENIDAE	52	<i>Exenterus</i>	101
<i>Epeorus</i>	20	<i>Eukiefferiella</i>	85	<i>Exitianus</i>	35
<i>Eperigone</i>	119	<i>Eulithis</i>	68	<i>Exochus</i>	101
<i>Ephemerella</i>	19	<i>Eulohmannia</i>	128	<i>Exon</i>	106
EPHEMERELLIDAE	19	EULOHMANNIOIDEA	128	<i>Exyston</i>	101
EPHEMEROPTERA	19-20	<i>Eulonchus</i>	82	<i>Felicola</i>	142
<i>Ephestiodes</i>	79	EULPHIDAE	99	<i>Feltia</i>	75
EPHYDRIDAE	88	<i>Eumenes</i>	99	<i>Fenderia</i>	60
<i>Epicauta</i>	55	EUMENIDAE	99	<i>Feralia</i>	75
<i>Epidamaeus</i>	128	<i>Eumichthus</i>	44	<i>Fiebrigella</i>	86
<i>Epilohmannia</i>	128	<i>Eunemobius</i>	21	FIGITIDAE	99
EPILOHMANNIOIDEA	128	<i>Euodynerus</i>	99	<i>Fishia</i>	75
<i>Epimartyria</i>	73	<i>Euophrys</i>	121	<i>Forcipomyia</i>	84
<i>Epinotia</i>	82	<i>Eupelmella</i>	99	<i>Forda</i>	34
<i>Epiphanis</i>	52	EUPELMIDAE	99	<i>Forficula</i>	22
<i>Epiptera</i>	34	<i>Eupelops</i>	130	FORFICULIDAE	22
<i>Epirrhoe</i>	68	<i>Euphalerus</i>	36	<i>Formica</i>	100
<i>Epirrita</i>	68	<i>Euphilotes</i>	73	FORMICIDAE	99-100
<i>Epitedia</i>	95	EUPHTHRACAROIDEA	129	<i>Foxella</i>	95
<i>Eporibatula</i>	130	<i>Euphthiracarus</i>	129	<i>Frankliniella</i>	26
<i>Epuraea</i>	55	<i>Euphydryas</i>	77	<i>Frisonia</i>	23
<i>Erannis</i>	68	<i>Euphyes</i>	72	<i>Frontinella</i>	119
EREMAEOIDEA	128	<i>Euphyia</i>	68	<i>Furcoribula</i>	129
<i>Eremaeus</i>	128	<i>Eupithecia</i>	68	<i>Furcula</i>	77
<i>Eremocoris</i>	30	<i>Euplectrus</i>	99	<i>Gabriola</i>	68
<i>Eremomyia</i>	82	<i>Euplecturga</i>	57	<i>Gabrius</i>	60
<i>Ergates</i>	44	<i>Euplectus</i>	57	<i>Galeruca</i>	45
<i>Eridolius</i>	101	<i>Euplexia</i>	74	<i>Galgula</i>	75
<i>Erigone</i>	119	<i>Eupterotegaeus</i>	127		
<i>Erioptera</i>	94	<i>Eurelymis</i>	55		

<i>Galgupha</i>	33	<i>Habrodais</i>	73	<i>Heteranthidium</i>	151
<i>Galumna</i>	129	<i>Habronattus</i>	121	<i>Heterhelus</i>	55
GALUMNOIDEA	129	<i>Habrosyne</i>	82	HETEROCERCIDAE	53
GAMASIDA	123	<i>Hadrobregmus</i>	40	<i>Heterodoxus</i>	142
GASTERUPTIIDAE	100	<i>Hadronema</i>	31	<i>Heteroplectron</i>	63
<i>Gasteruption</i>	100	<i>Haemogamasus</i>	144	HETEROPTERA	26-33
<i>Gastrancistrus</i>	106	HAHNIIDAE	118	<i>Heterospilus</i>	97
<i>Gastrodes</i>	30	<i>Haida</i>	60	<i>Heterothops</i>	60
<i>Gehypochthonius</i>	130	<i>Halesochila</i>	64	<i>Heterotrissocladus</i>	85
GELASTOCORIDAE	27	HALICTIDAE	100,150	<i>Hexura</i>	120
<i>Gelastocoris</i>	27	<i>Halictus</i>	100,150	<i>Hilara</i>	87
GELECHIIDAE	67	<i>Hallomenus</i>	54	<i>Himalopsyche</i>	65
<i>Gelis</i>	101	<i>Hapalaraea</i>	60	<i>Himerta</i>	102
<i>Geocoris</i>	30	<i>Hapleginella</i>	86	HIPPOBOSCIDAE	88
<i>Geodercodes</i>	47	<i>Haplothrips</i>	26	<i>Hippodamia</i>	46
GEOMETRIDAE	67-72	<i>Harmostes</i>	33	HISTERIDAE	53
<i>Geomydoecus</i>	25	<i>Harpalus</i>	43	HODOTERMITIDAE	22
<i>Geomyza</i>	90	<i>Harpaphe</i>	111	<i>Holcocera</i>	66
GEOPHILOMORPHA	112	<i>Hecalus</i>	35	<i>Holcostethus</i>	32
GERRIDAE	27	<i>Hedychridium</i>	97	<i>Hololena</i>	116
<i>Gerris</i>	27	<i>Helconidia</i>	97	<i>Holostrophus</i>	54
<i>Ginsiana</i>	98	<i>Helcostizus</i>	101	<i>Homaemus</i>	33
<i>Glaucopsyche</i>	73	<i>Heleniella</i>	85	<i>Homaetarsus</i>	60
<i>Glossosoma</i>	63	<i>Heleodromia</i>	87	<i>Homoglaea</i>	75
GLOSSOSOMATIDAE	63	HELEOMYZIDAE	88	<i>Homoneura</i>	88
<i>Gluphisia</i>	77	<i>Helicoconis</i>	37	<i>Homophylax</i>	64
GLYCYPHAGIDAE	127,143	<i>Helictes</i>	101	<i>Homoplectra</i>	63
<i>Glycyphagus</i>	143	<i>Heliothis</i>	75	HOMOPTERA	34-36
<i>Gnaphosa</i>	118	HELODIDAE	52-53	<i>Homorthodes</i>	75
GNAPHOSIDAE	118	<i>Helophora</i>	119	<i>Homotydeus</i>	126
<i>Gnathantes</i>	119	<i>Helops</i>	61,62	<i>Hoplismenus</i>	102
<i>Gnathoncus</i>	53	<i>Hemaris</i>	79	<i>Hoplitis</i>	103,151
<i>Gnathotrichus</i>	58	HEMEROBIIDAE	37,40	<i>Hoplopleura</i>	25,142
<i>Gnophomyia</i>	94	<i>Hemerobius</i>	37	HOPLOPLEURIDAE	25,142
<i>Goera</i>	63	<i>Hemerodromia</i>	87	<i>Hoppingiana</i>	55
<i>Goeracea</i>	63	<i>Hemeroplans</i>	75	<i>Hordnia</i>	35
GOERIDAE	63	<i>Hemicoelus</i>	40	<i>Hungarobelba</i>	128
<i>Gohieria</i>	143	<i>Hemirepidius</i>	49	<i>Hyalophora</i>	79
GOMPHIDAE	21	<i>Hemihyalea</i>	66	<i>Hybodera</i>	44
<i>Gonatocerus</i>	103	<i>Hemileuca</i>	79	<i>Hybomitra</i>	93
<i>Gonia</i>	93	<i>Hemipenthes</i>	83	<i>Hydatophylax</i>	64
<i>Gonomyia</i>	94	HEMIPTERA	26-36	<i>Hydnobius</i>	54
<i>Gorytes</i>	107	<i>Henoticoides</i>	46	<i>Hydrellia</i>	88
<i>Grammia</i>	66	<i>Henricus</i>	67	<i>Hydria</i>	68
<i>Grammoptera</i>	44	HEPIALIDAE	72	<i>Hydriomena</i>	68
<i>Grammotaulius</i>	64	<i>Hepialus</i>	72	<i>Hydrobaenus</i>	85
<i>Graphopsocus</i>	25	HEPTAGENIIDAE	19-20	HYDROPHILIDAE	53
GRYLLACRIDIDAE	21	<i>Heriades</i>	151	<i>Hydropsyche</i>	63
GRYLLIDAE	21	<i>Hermanniella</i>	129	HYDROPSYCHIDAE	63
<i>Gryllus</i>	21	HERMANNIELLOIDEA	129	<i>Hydroptila</i>	63
<i>Gumaga</i>	66	<i>Herpetogramma</i>	79	HYDROPTILIDAE	63
<i>Gustavia</i>	129	<i>Herpyllus</i>	118	<i>Hylaeus</i>	98,149
GUSTAVIOIDEA	129	<i>Hesperia</i>	72	<i>Hylastes</i>	58
<i>Gymnaetron</i>	47	HESPERIDAE	72	<i>Hyles</i>	79
GYMNODAMAEOIDEA	130	<i>Hesperolinus</i>	60	<i>Hylis</i>	52
<i>Gymnophora</i>	90	<i>Hesperonemastoma</i>	113	<i>Hylotychus</i>	57
<i>Gymnosoma</i>	93	<i>Hesperoperla</i>	23	<i>Hylurgops</i>	58,59
<i>Gyron</i>	106	<i>Hesperophylax</i>	64	HYMENOPTERA	96-109,
		<i>Hesperumia</i>	68		147-152

<i>Hymenorus</i>	40	<i>Jugatala</i>	127	LEPTINIDAE	54
<i>Hypebaeus</i>	55	JULIDA	111	<i>Leptinus</i>	54
<i>Hyperaspis</i>	46	<i>Juniperia</i>	34	<i>Leptocera</i>	92
<i>Hyphantrophaga</i>	93			LEPTOCERIDAE	64
<i>Hyplamblys</i>	102	<i>Kathroperla</i>	22	LEPTODIRIDAE	53
HYPOCHILIDAE	118	<i>Keroplatus</i>	89	<i>Leptoglossus</i>	27
<i>Hypochilus</i>	118	<i>Kleidocerys</i>	30	<i>Leptometopa</i>	88
HYPOCHTHONIOIDEA	129	<i>Kogotus</i>	24	<i>Leptoneta</i>	118
<i>Hypochthonius</i>	129	<i>Krenosmittia</i>	85	LEPTONETIDAE	118
<i>Hypogastrura</i>	109			<i>Leptopeza</i>	87
HYPOGASTRURIDAE	109	<i>Labopidea</i>	31	LEPTOPHLEBIIDAE	20
<i>Hypolithus</i>	49	<i>Lacanobia</i>	75	LEPTOPSYLLIDAE	95-96
<i>Hyposoter</i>	102	<i>Laccobius</i>	53	<i>Leptothorax</i>	100
<i>Hypozetes</i>	127	<i>Lachesilla</i>	24	<i>Leptothrips</i>	26
<i>Hyppa</i>	75	LACHESILLIDAE	24	<i>Leptura</i>	44
<i>Hyptiotes</i>	122	<i>Lacinipolia</i>	75	<i>Lepturopsis</i>	44
<i>Hystriochopsylla</i>	95	<i>Lacon</i>	49	<i>Lestodiplosis</i>	84
HYSTRICHOPSYLLIDAE	95	LAELAPIDAE	143-144	<i>Lestremia</i>	91
		<i>Laelaps</i>	144	<i>Leucania</i>	75
<i>Icaricia</i>	73	<i>Laemophloeus</i>	47	<i>Leucopsis</i>	84
<i>Ichneumon</i>	102	<i>Laevicephalus</i>	35	LEUCTRIDAE	23
ICHNEUMONIDAE	100-103	<i>Lagynodes</i>	103	<i>Leuronychus</i>	113
<i>Icius</i>	121	<i>Lamachus</i>	102	<i>Leuroxenillus</i>	129
<i>Idia</i>	75	<i>Lambdina</i>	69	LIACAROIDEA	129
<i>Idiocerus</i>	35	<i>Lamennasia</i>	98	<i>Liacarus</i>	129
<i>Incisalia</i>	73	LAMPYRIDAE	53	LIBELLULIDAE	21
<i>Inocellia</i>	37	<i>Lanternarius</i>	53	<i>Liburniella</i>	36
INOCELLIIDAE	37	<i>Lapethus</i>	46	<i>Lichminus</i>	54
<i>Inostemma</i>	106	<i>Laphria</i>	83	<i>Ligidium</i>	112
INSECTA	19-109	<i>Lappus</i>	40	LIGIIDAE	112
<i>Ipelates</i>	59	<i>Lara</i>	52	<i>Ligyrocoris</i>	30
<i>Iphthimus</i>	62	<i>Largidea</i>	31	<i>Limenitis</i>	77
<i>Ips</i>	59	<i>Laricobius</i>	48	LIMNEPHILIDAE	64-65
<i>Irbisia</i>	31	<i>Larsia</i>	85	<i>Limnephilus</i>	64
<i>Iridopsis</i>	68	<i>Lasconotus</i>	46	<i>Limnia</i>	92
<i>Ironodes</i>	20	LASIOCAMPIDAE	72	LIMNICHIDAE	54
<i>Ischalia</i>	57	<i>Lasioglossum</i>	100	<i>Limnophila</i>	94
<i>Ischnura</i>	20	<i>Lasiops</i>	89	<i>Limnophyes</i>	85
<i>Ischnus</i>	102	<i>Lasius</i>	100	<i>Limnopus</i>	27
<i>Ischyropalpus</i>	40	<i>Latalus</i>	35	<i>Limonia</i>	94
ISCHYROPSALIDIDAE	113	LATHRIDIIDAE	53	<i>Limonius</i>	52
<i>Isolomalus</i>	53	<i>Lathrolestes</i>	102	<i>Limothrips</i>	26
<i>Isoperla</i>	24	<i>Lathromeris</i>	108	LINOGNATHIDAE	143
ISOPODA	112	LAUXANIIDAE	88	<i>Linognathus</i>	143
ISOPTERA	22	<i>Lebia</i>	43	<i>Linohesperus</i>	60
<i>Isorhipis</i>	52	<i>Lechriops</i>	47	<i>Linyphantes</i>	119
<i>Isotoma</i>	109	<i>Leiobunum</i>	113	LINYPHIIDAE	118-120
ISOTOMIDAE	109	<i>Leiodes</i>	54	<i>Liochthonius</i>	127
<i>Itame</i>	69	LEIODIDAE	53-54	LIODOIDEA	129
<i>Itoplectis</i>	102	<i>Lenarchus</i>	64	<i>Lioon</i>	41
<i>Ixodes</i>	123	<i>Lepidocyrtus</i>	109	<i>Liorhyssus</i>	33
IXODIDA	123	LEPIDOPTERA	66-82	<i>Lipoptena</i>	88
IXODIDAE	123	<i>Lepidostoma</i>	64	LIPOSCELIDAE	24
		LEPIDOSTOMATIDAE	64	<i>Liposcelis</i>	24
<i>Jacotella</i>	130	LEPISMATIDAE	19	<i>Lipsothrix</i>	94
<i>Jalysus</i>	27	<i>Leporacarus</i>	144	<i>Liriomyza</i>	82
<i>Japananus</i>	35	<i>Leptacis</i>	106	<i>Lissonota</i>	102
<i>Joshuella</i>	130	<i>Leptalia</i>	44	<i>Listemus</i>	41
<i>Judolia</i>	44	<i>Leptyphantes</i>	119	LISTROPHORIDAE	144

<i>Listrophorus</i>	144	MALLOPHAGA	25,142	<i>Mesoleius</i>	102
<i>Lithacodia</i>	75	<i>Mallos</i>	118	<i>Mesoleuca</i>	69
LITHOBIOMORPHA	112	<i>Malthodes</i>	41	<i>Mesostenus</i>	102
<i>Lithocaris</i>	60	<i>Manica</i>	100	MESOSTIGMATA	123
<i>Lithophane</i>	75	<i>Maruina</i>	91	<i>Messatoporus</i>	102
<i>Litocala</i>	75	<i>Mastrus</i>	102	<i>Meta</i>	117
<i>Litomiris</i>	31	<i>Mathrilaenum</i>	60	<i>Metabletus</i>	43
<i>Lobophora</i>	69	<i>Mayetia</i>	57	<i>Metachela</i>	87
<i>Lobosoma</i>	47	MECICOBOTHRIDAE	120	<i>Metalepsis</i>	75
<i>Lobrathium</i>	60	<i>Mecinus</i>	47	<i>Metanonychus</i>	116
<i>Loderus</i>	108	MECOPTERA	62	<i>Metaphidippus</i>	121
<i>Loensia</i>	25	<i>Medetera</i>	87	<i>Metaphycus</i>	98
<i>Lonchaea</i>	88	<i>Medon</i>	60	<i>Metapolophium</i>	34
LONCHAEIDAE	88	<i>Megabothris</i>	95	<i>Metasyrphus</i>	92
<i>Lonchoptera</i>	88	<i>Megachile</i>	151	<i>Metatriophytydeus</i>	126
LONCHOPTERIDAE	88	MEGACHILIDAE	103,	<i>Metellina</i>	117
<i>Longitarsus</i>	45		150-152	<i>Meteorus</i>	97
<i>Lophioderus</i>	59	<i>Megaloceroea</i>	31	<i>Metepeira</i>	117
<i>Lophocampa</i>	66	<i>Megalonotus</i>	30	<i>Metisotoma</i>	109
<i>Lopidea</i>	31	MEGALOPTERA	37	<i>Metoa</i>	102
<i>Lordithon</i>	60	<i>Megalotomus</i>	26	<i>Metopius</i>	102
<i>Lotophila</i>	92	<i>Megapenthes</i>	52	<i>Metriocnemus</i>	85
LUCANIDAE	54	<i>Megarafonus</i>	57	<i>Metrioppia</i>	129
<i>Lucifotychus</i>	57	<i>Megarcys</i>	24	<i>Metrius</i>	43
<i>Lycaeides</i>	73	<i>Megarhroglossus</i>	95	<i>Mezira</i>	27
<i>Lycaena</i>	73	<i>Megarthrus</i>	60	<i>Micaria</i>	118
LYCAENIDAE	72-73	<i>Megaselia</i>	90	<i>Micracantha</i>	33
LYCIDAE	54	<i>Megasemum</i>	44	<i>Micrasema</i>	63
<i>Lycosa</i>	120	MEGASPILIDAE	103	<i>Micrathous</i>	52
LYCOSIDAE	120	<i>Megasternum</i>	53	<i>Micrempis</i>	87
LYGAEIDAE	30	<i>Megastigmus</i>	108	<i>Microcreagris</i>	113
<i>Lygaeospilus</i>	30	<i>Megastylus</i>	102	<i>Microgaster</i>	97
<i>Lygaeus</i>	30	<i>Megataphrus</i>	46	<i>Microhexura</i>	118
<i>Lygocoris</i>	31	<i>Megeremaeus</i>	128	<i>Microlabidopus</i>	143
<i>Lygus</i>	31	<i>Meioneta</i>	119	<i>Microlestes</i>	43
LYMANTRIDAE	73	<i>Melanhra</i>	75	<i>Microlinyphia</i>	119
<i>Lynxacarus</i>	144	MELANDRYIDAE	54-55	<i>Micromus</i>	40
<i>Lysibia</i>	102	<i>Melangyna</i>	92	<i>Microneta</i>	119
<i>Lytta</i>	55	<i>Melanocoris</i>	26	MICROPEPLIDAE	55
MACHILIDAE	19	<i>Melanolophia</i>	69	<i>Micropeplus</i>	55
<i>Macreurops</i>	58	<i>Melanophila</i>	41	<i>Microphorus</i>	87
<i>Macrocera</i>	89	<i>Melanophthalma</i>	53	<i>Microphthirus</i>	142
MACRONYSSIDAE	144	<i>Melanoplus</i>	21	<i>Microplitis</i>	97
<i>Macronyssus</i>	144	<i>Melanorhopala</i>	33	<i>Micropsectra</i>	85
<i>Macropelopia</i>	85	<i>Melanostoma</i>	92	MICROPTERYGIDAE	73
<i>Macrophya</i>	108	<i>Melanozetes</i>	127	<i>Microtritia</i>	129
<i>Macropogon</i>	48	<i>Melasis</i>	52	<i>Microvelia</i>	33
<i>Macropsis</i>	35	<i>Melecta</i>	148	<i>Microweisea</i>	46
<i>Macrosteles</i>	35	<i>Meligethes</i>	56	MICRYPHANTIDAE	118
<i>Macrotylus</i>	31	<i>Melipotis</i>	75	MILICHIIDAE	88
<i>Maerkelotritia</i>	129	<i>Meliscaeva</i>	92	<i>Mimesa</i>	107
<i>Magdalis</i>	47	<i>Melissodes</i>	96,148,149	MIMETIDAE	120
<i>Malaconothrus</i>	128	<i>Melittobia</i>	99	<i>Mimetus</i>	120
<i>Malacosoma</i>	72	MELOIDAE	55	<i>Mindarus</i>	34
MALACOSTRACA	112	MELYRIDAE	55	<i>Minettia</i>	88
<i>Malaraeus</i>	95	MEMBRACIDAE	36	<i>Minilimosina</i>	92
<i>Malenka</i>	23	<i>Mesamia</i>	35	MIRIDAE	30-32
<i>Malezonotus</i>	30	<i>Mesocapnia</i>	22	<i>Miselia</i>	76
		<i>Mesochorus</i>	102	<i>Misumena</i>	122

<i>Misumenops</i>	122	<i>Neduba</i>	22	<i>Nuculaspis</i>	36
<i>Mitoura</i>	73	NEELIDAE	110	<i>Nycteola</i>	76
<i>Mniotype</i>	76	<i>Neelus</i>	110	NYMPHALIDAE	77-78
<i>Molorchus</i>	44	<i>Negastrius</i>	52	<i>Nymphalis</i>	77
<i>Monardia</i>	84	<i>Neides</i>	27	<i>Nysius</i>	30
<i>Monoblastus</i>	102	<i>Nemadus</i>	54	<i>Nysson</i>	107
<i>Monochamus</i>	44	NEMASTOMATIDAE	113	<i>Ochlodes</i>	72
<i>Monophadnoides</i>	108	<i>Nematocampa</i>	69	<i>Ochrogramma</i>	110
<i>Monophadnus</i>	108	<i>Nematus</i>	108	<i>Ochrotrichia</i>	63
<i>Monopsyllus</i>	95	<i>Nemeritis</i>	102	<i>Octogomphus</i>	21
<i>Monoxia</i>	45	<i>Nemocestes</i>	47	<i>Octotemnus</i>	45
<i>Mordella</i>	55	<i>Nemoria</i>	69	<i>Odinia</i>	89
MORDELLIDAE	55	<i>Nemosoma</i>	62	ODINIIDAE	89
<i>Mordellistena</i>	55	NEMOURIDAE	23	ODONATA	20-21
<i>Morychus</i>	41	<i>Nealcis</i>	69	ODONTOCERIDAE	65
<i>Moselia</i>	23	<i>Nealosterna</i>	44	<i>Odontocolon</i>	102
<i>Mulsantina</i>	46	<i>Neoantistea</i>	118	<i>Odontodamaeus</i>	130
<i>Mundochthonius</i>	113	NEOBISIIDAE	113	<i>Odontosphindus</i>	59
MUSCIDAE	89	<i>Neobisnius</i>	60	<i>Oecanthus</i>	21
<i>Mycetina</i>	52	<i>Neoborella</i>	31	<i>Oecetis</i>	64
<i>Mycetobia</i>	82	<i>Neocyrtusa</i>	54	<i>Oeciacus</i>	27
<i>Mycetochara</i>	40	<i>Neodiprion</i>	98	OECOBIIDAE	120
MYCETOPHAGIDAE	55	<i>Neohaematopinus</i>	25,143	<i>Oecobius</i>	120
<i>Mycetophagus</i>	55	<i>Neon</i>	121	OECOPHORIDAE	78
<i>Mycetophila</i>	89	<i>Neophasia</i>	78	OEDEMERIDAE	56
MYCETOPHILIDAE	89	<i>Neophylax</i>	64	<i>Oeneis</i>	79
<i>Mycetoporus</i>	60	<i>Neophyllomyza</i>	88	<i>Ogcodes</i>	82
<i>Mycobates</i>	127	<i>Neoscona</i>	117	<i>Okanagana</i>	36
<i>Mycomya</i>	89	<i>Neotephritis</i>	94	<i>Olesicampe</i>	102
<i>Mycoptes</i>	145	<i>Neoterpes</i>	69	<i>Oligia</i>	76
MYCOPTIDAE	145	<i>Neothremma</i>	66	<i>Oliggcentria</i>	77
<i>Myelopsis</i>	79	<i>Neotrichia</i>	63	<i>Oligophlebodes</i>	64
MYMARIDAE	103	<i>Neotrichodectes</i>	142	<i>Omalium</i>	60
MYOBIIDAE	145	<i>Nephus</i>	46	<i>Omalorphanus</i>	60
MYRMELEONTIDAE	40	<i>Nepiera</i>	102	<i>Omalus</i>	97
<i>Myrmica</i>	100	<i>Nepytia</i>	69	<i>Omophon</i>	43
<i>Mystacides</i>	64	<i>Neriene</i>	119	<i>Omosita</i>	56
<i>Myzia</i>	46	NESTICIDAE	120	<i>Omphale</i>	99
		<i>Nesticus</i>	120	<i>Omus</i>	45
NABIDAE	32	<i>Neuratelia</i>	89	<i>Oncocnemis</i>	76
<i>Nabis</i>	32	<i>Neurocolpus</i>	31	<i>Oncophanes</i>	97
<i>Nadata</i>	77	NEUROPTERA	37	<i>Oncopsis</i>	35
<i>Namamyia</i>	65	<i>Nicocles</i>	83	<i>Onocosmoecus</i>	65
<i>Namunaria</i>	46	<i>Nicrophorus</i>	59	<i>Ontholestes</i>	60
<i>Nanhermannia</i>	130	NITIDULIDAE	55-56	<i>Ontsira</i>	97
NANHERMANNIOIDEA	130	NOCTUIDAE	73-77	ONYCHIURIDAE	110
<i>Nanorchestes</i>	126	<i>Nomada</i>	96	<i>Onychiurus</i>	110
NANORCHESTIDAE	126	<i>Nomadopsis</i>	148	<i>Ooctonus</i>	103
<i>Neacoryphus</i>	30	<i>Notanisomorpha</i>	99	<i>Ooencyrtus</i>	98
<i>Neanthophylax</i>	44	NOTHROIDEA	128	<i>Opalimosina</i>	92
<i>Neanura</i>	109	<i>Nothrus</i>	128	<i>Operophthera</i>	69
<i>Nearctaphis</i>	34	<i>Notiophilus</i>	43	<i>Ophion</i>	102
<i>Nearcticorpus</i>	92	NOTODONTIDAE	77	OPILIONES	113-116
NEARCTODESMIDAE	111	<i>Notoedres</i>	145	<i>Opisodasys</i>	95
<i>Nearctodesmus</i>	111	<i>Notonecta</i>	32	<i>Opus</i>	97
<i>Nearctopsylla</i>	95	NOTONECTIDAE	32	OPOMYZIDAE	90
<i>Nebria</i>	43	<i>Novalena</i>	116	<i>Oppia</i>	130
<i>Necrophilus</i>	59	<i>Nowickia</i>	93	<i>Oppiella</i>	130
<i>Nectopsyche</i>	64	<i>Nuctenea</i>	117		

OPPIOIDEA	130	<i>Pachynematus</i>	108	<i>Pedicia</i>	94
<i>Opsimus</i>	44	<i>Pachyprostasis</i>	108	PEDILIDAE	56
<i>Orchesia</i>	55	<i>Pachyta</i>	44	<i>Pedilus</i>	56
<i>Orectoderus</i>	31	<i>Pactopus</i>	62	<i>Pediobius</i>	99
<i>Orellia</i>	94	<i>Pagasa</i>	32	<i>Pedomoecus</i>	65
<i>Oreonetides</i>	119	<i>Pagastia</i>	85,86	<i>Pegomya</i>	82
<i>Oreothalia</i>	87	<i>Palaeagapetus</i>	63	<i>Pelecomalium</i>	60
<i>Orfelia</i>	89	<i>Palloptera</i>	90	<i>Pelecopsis</i>	119
<i>Orgyia</i>	73	PALLOPTERIDAE	90	<i>Pellenes</i>	121
<i>Oribatella</i>	130	<i>Palpomyia</i>	84	PELOPOIDEA	130
ORIBATELLOIDEA	130	PAMPHILIDAE	103	<i>Peloptulus</i>	130
ORIBATIDA	127-131	PANORPODIDAE	62	<i>Peltastica</i>	48
<i>Oribatula</i>	130	<i>Panscopus</i>	48	<i>Peltenuiala</i>	129
ORIBATULOIDEA	130	<i>Panthea</i>	76	PELTOPERLIDAE	23
<i>Oribella</i>	130	<i>Panurginus</i>	96	<i>Pemphredon</i>	107
<i>Oribotritia</i>	129	<i>Papestra</i>	76	PENTATOMIDAE	32
ORIPODOIDEA	130	<i>Papilio</i>	78	<i>Penthalodes</i>	126
<i>Orius</i>	26	PAPILIONIDAE	78	PENTHALODIDAE	126
ORMYRIDAE	103	<i>Paracantha</i>	94	<i>Pergalumna</i>	129
<i>Ormyrus</i>	103	<i>Paracapnia</i>	22	<i>Peridroma</i>	76
<i>Orobanus</i>	60	<i>Paracharactus</i>	108	<i>Perigonica</i>	76
<i>Orodrassus</i>	118	<i>Parachelifer</i>	113	PERILAMPIDAE	103
<i>Orohermes</i>	37	<i>Paracricotopus</i>	86	<i>Perilampus</i>	103
<i>Oropodes</i>	57	<i>Paradacerla</i>	31	<i>Perillus</i>	32
<i>Oropus</i>	57	<i>Paradelphomyia</i>	94	<i>Periphyllis</i>	34
<i>Orphilus</i>	48	PARAJULIDAE	111	PERIPSOCIDAE	25
<i>Orsodacne</i>	45	<i>Parakiefferiella</i>	86	<i>Peripsocus</i>	25
ORTHEZIIDAE	36	<i>Paraleptophlebia</i>	20	PERISCOLIDIDAE	90
<i>Orthocentrus</i>	102	<i>Paraleuctra</i>	23	<i>Periscelis</i>	90
<i>Orthocladus</i>	85	<i>Parametriocnemus</i>	86	<i>Perizoma</i>	69
<i>Ortholeptura</i>	44	<i>Paranonychus</i>	116	PERLIDAE	23
<i>Ortholomus</i>	30	<i>Paraorthocladus</i>	86	<i>Perlinodes</i>	24
<i>Orthonama</i>	69	<i>Paraperla</i>	22	PERLODIDAE	23-24
<i>Orthopelma</i>	97	<i>Paraphenocladus</i>	86	<i>Perlohmannia</i>	130
<i>Orthoperus</i>	47	<i>Paraproba</i>	31	PERLOHMANNIOIDEA	130
<i>Orthops</i>	31	<i>Parapsyche</i>	63	<i>Perlomyia</i>	23
ORTHOPTERA	21-22	<i>Parasimulium</i>	92	<i>Pero</i>	69
<i>Orthosia</i>	76	PARASITIDAE	123	<i>Peromyscopsylla</i>	95,96
<i>Orthotylus</i>	31	PARASITIFORMES	123	PETALURIDAE	21
<i>Orus</i>	60	<i>Paratanytarsus</i>	86	<i>Phaedon</i>	45
ORUSSIDAE	103	<i>Paratendipes</i>	86	<i>Phaenopsectra</i>	86
<i>Orussus</i>	103	<i>Paratettix</i>	21	<i>Phaeogenes</i>	102
<i>Orycteroxenus</i>	143	<i>Paratrachocladus</i>	86	PHALACRIDAE	56
<i>Osbornellus</i>	35	PARATYDEIDAE	126	<i>Phalacrus</i>	56
<i>Osmia</i>	103,151,152	<i>Parcoblatta</i>	22	PHALANGIIDAE	113
<i>Ostoma</i>	62	<i>Pardosa</i>	120	<i>Phauloppia</i>	130
<i>Ostracerca</i>	23	<i>Parhypochthonius</i>	130	<i>Phausis</i>	53
<i>Otiorhyncus</i>	47,48	PARHYPOCHTHONOIDEA	130	<i>Phellopsis</i>	62
OTOEDRIDAE	145	<i>Parnassius</i>	78	PHENGODIDAE	56
<i>Oxacis</i>	56	<i>Parobisium</i>	113	<i>Pheosia</i>	77
<i>Oxybelus</i>	107	<i>Parthenicus</i>	31	<i>Pherbellia</i>	92
<i>Oxylaemus</i>	46	<i>Parthina</i>	65	<i>Phidippus</i>	121
<i>Oxyopes</i>	120	<i>Parydra</i>	88	<i>Phigalia</i>	69
OXYOPIDAE	120	<i>Passaloecus</i>	107	<i>Philaenus</i>	34
<i>Oxytelus</i>	60	<i>Patelloa</i>	93	<i>Philetus</i>	87
<i>Oxythrips</i>	26	<i>Patriyssus</i>	144	<i>Philocasca</i>	65
<i>Ozophora</i>	30	<i>Pauesia</i>	96	PHILODROMIDAE	120-121
<i>Ozyptila</i>	122	<i>Peckhamia</i>	121	<i>Philodromus</i>	120,121
<i>Pachybrachis</i>	45	<i>Pediacus</i>	47	<i>Philonthus</i>	60

PHILOPOTAMIDAE	65	PIOPHILIDAE	90	POLYDESMIDA	111
<i>Philorus</i>	83	PIPUNCULIDAE	90	POLYDESMIDAE	111
<i>Philygria</i>	88	<i>Pirata</i>	120	<i>Polyergus</i>	100
<i>Phlaeopterus</i>	60, 61	<i>Pisonopsis</i>	107	<i>Polygonia</i>	78
PHLAEOTHRIPIDAE	26	<i>Pissodes</i>	48	<i>Polymerus</i>	32
<i>Phloeonomus</i>	61	<i>Pithanus</i>	31	<i>Polynema</i>	103
<i>Phloeosinus</i>	59	<i>Pityobius</i>	52	<i>Polypedilum</i>	86
<i>Phlogophora</i>	76	<i>Pityohyphantes</i>	119	<i>Polyphylla</i>	58
<i>Phobetres</i>	102	<i>Pityokteines</i>	59	POLYPLACIDAE	25, 143
<i>Phobocampe</i>	102	<i>Pityophagus</i>	56	<i>Polyplax</i>	143
<i>Phobolosia</i>	76	<i>Plagiognathus</i>	32	<i>Polysphincta</i>	102
<i>Phobus</i>	79	<i>Plagodis</i>	69	POLYXENIDA	111
PHOLCIDAE	121	PLATEREMEOIDEA	130	POLYXENIDAE	111
<i>Pholcus</i>	121	<i>Plateumaris</i>	45	<i>Polyxenus</i>	111
<i>Phomalus</i>	52	<i>Platyceroides</i>	54	POLYZONIDA	111
<i>Phora</i>	90	<i>Platycerus</i>	54	POLYZONIIDAE	111
PHORIDAE	90	<i>Platycheirus</i>	93	POMPILIDAE	106
<i>Phronia</i>	89	<i>Platycholeus</i>	54	<i>Pompilus</i>	106
<i>Phrudus</i>	102	<i>Platycriptus</i>	121	<i>Prepops</i>	32
<i>Phrurolithus</i>	117	<i>Platydemia</i>	62	<i>Priocnemis</i>	106
<i>Phrurotimpus</i>	117	<i>Platygaster</i>	106	<i>Priognathus</i>	58
<i>Phryganidia</i>	67	PLATYGASTERIDAE	106	<i>Prionomitus</i>	98
<i>Phryganophilus</i>	55	<i>Platylabus</i>	102	<i>Pristaulacus</i>	96
<i>Phrypeus</i>	43	<i>Platyliodes</i>	129	<i>Pristiphora</i>	108
PHTHIRACAROIDEA	130	<i>Platylygus</i>	32	<i>Pristoceuthophilus</i>	21
<i>30thiracarus</i>	129	<i>Platynothrus</i>	128	<i>Pristola</i>	108
PHTHIRAPTERA	25,	<i>Platypalpus</i>	87	<i>Probles</i>	102
	142-143	<i>Platypedia</i>	36	<i>Probole</i>	69
<i>Phthiria</i>	83	<i>Platyperigea</i>	76	<i>Prochoerodes</i>	69
<i>Phthora</i>	62	PLATYPEZIDAE	90	PROCTOTRUPIDAE	106
<i>Phyciodes</i>	78	PLATYPODIDAE	56	<i>Proisotoma</i>	109
<i>Phycitodes</i>	79	<i>Platypolia</i>	76	<i>Promecognathus</i>	43
<i>Phygadeuon</i>	102	<i>Platypus</i>	56	<i>Propelops</i>	127
<i>Phyllobaenus</i>	46	<i>Platystethus</i>	61	<i>Properiga</i>	76
PHYLLOCHTHONOIDEA	127	<i>Platyura</i>	89	PROPHALANGOPSIDAE	21
<i>Phyllocolpa</i>	108	<i>Plebejus</i>	73	<i>Proserpinus</i>	79
<i>Phylloidesma</i>	72	PLECOPTERA	22-24	<i>Prosimulium</i>	92
<i>Phyllomyza</i>	88	<i>Plectiscidea</i>	102	PROSTIGMATA	123
<i>Phyllotreta</i>	45	<i>Plemyria</i>	69	<i>Prostoia</i>	23
<i>Phyllotrox</i>	48	<i>Pleromella</i>	76	PROSTOMIDAE	56
<i>Phymaphora</i>	52	<i>Pleromelloida</i>	76	<i>Prostomis</i>	56
<i>Phymatocera</i>	108	<i>Plinthisus</i>	30	<i>Proteinus</i>	61
<i>Phymatodes</i>	44	<i>Plinthodes</i>	48	<i>Prothalpia</i>	55
PHYRGANEIDAE	65	<i>Plumiperla</i>	22	<i>Protitame</i>	69
<i>Physatocheila</i>	33	<i>Plutella</i>	78	<i>Protolophus</i>	116
<i>Physocephala</i>	86	PLUTELLIDAE	78	<i>Protomicroplitis</i>	97
<i>Phytocoris</i>	31	<i>Pnigalio</i>	99	<i>Protomyobia</i>	145
PHYTOSEIIDAE	123	<i>Pocadicnemis</i>	119	<i>Protoptila</i>	63
<i>Pidonia</i>	44	<i>Pocadius</i>	56	<i>Protorthodes</i>	76
PIERIDAE	78	<i>Podabrus</i>	41	PROTURA	110
<i>Pieris</i>	78	<i>Podalonia</i>	107	<i>Prummacris</i>	21
<i>Pilaria</i>	94	<i>Podisma</i>	21	<i>Psallus</i>	32
<i>Pilmas</i>	93	<i>Podisus</i>	32	<i>Psammotettix</i>	35
<i>Pilophorus</i>	31	<i>Polia</i>	76	<i>Psectrotanypus</i>	86
<i>Pima</i>	79	<i>Polistes</i>	109	PSELAPHIDAE	56-57
<i>Pimonia</i>	119	<i>Polyaulon</i>	102	<i>Pselaptrichus</i>	57
<i>Pimpla</i>	102	<i>Polyblastus</i>	102	<i>Psenulus</i>	107
<i>Pinalitus</i>	31	POLYCENTROPODIDAE	65	PSEPHENIDAE	57
<i>Piophila</i>	90	<i>Polycentropus</i>	65	<i>Pseudaphycus</i>	98

<i>Pseudochalcura</i>	98	<i>Pygocryptus</i>	102	<i>Rymosia</i>	89
<i>Pseudocistela</i>	40	<i>Pyla</i>	79	<i>Sabacon</i>	113
<i>Pseudocoila</i>	99	PYRALIDAE	78-79	<i>Sabulodes</i>	69
<i>Pseudodiamesa</i>	86	<i>Pyrausta</i>	79	SALDIDAE	33
<i>Pseudoglaea</i>	76	<i>Pyrgus</i>	72	<i>Saldula</i>	33
<i>Pseudohylesinus</i>	59	PYROCHROIDAE	57	<i>Salebicus</i>	47
<i>Pseudoluperus</i>	45	<i>Pyrrhalta</i>	45	<i>Salignus</i>	32
<i>Pseudopanscopus</i>	48	<i>Pyrrharctia</i>	66	SALPINGIDAE	58
<i>Pseudopsis</i>	61	<i>Pytho</i>	58	SALTICIDAE	121
<i>Pseudorthodes</i>	76	<i>Quadroppia</i>	130	<i>Saprinus</i>	53
<i>Pseudorthosia</i>	76	<i>Quasilistrophorus</i>	144	<i>Sapyga</i>	106
PSEUDOSCORPIONES		<i>Quedius</i>	61	SAPYGIDAE	106
	112-113	<i>Radfordia</i>	145	SARCOPHAGIDAE	91
<i>Pseudostenophylax</i>	65	<i>Raphidia</i>	37	<i>Sargus</i>	92
<i>Pseudothyatira</i>	82	RAPHIDIIDAE	37	<i>Sassacas</i>	121
<i>Pseudotyrannochthonius</i>	113	RAPHIDIOPTERA	37	SATURNIIDAE	79
PSILIDAE	90	REDUVIIDAE	32-33	SATYRIDAE	79
<i>Psilometriocnemus</i>	86	<i>Reichenbachia</i>	57	<i>Satyrium</i>	73
<i>Psilopa</i>	88	<i>Renardia</i>	61	<i>Saucrobotys</i>	79
<i>Psiloscelis</i>	53	<i>Reuterella</i>	24	<i>Scaeva</i>	93
<i>Psilus</i>	98	<i>Rhadinopsylla</i>	95	<i>Scambus</i>	102
<i>Psithyrus</i>	96, 149	RHAGIDIIDAE	126	<i>Scapheremaeus</i>	128
PSOCIDAE	25	<i>Rhagio</i>	91	<i>Scaphidema</i>	62
PSOCOPTERA	24-25	RHAGIONIDAE	91	SCAPHIDIIDAE	58
<i>Psychoda</i>	91	<i>Rhagium</i>	44	<i>Scaphinotus</i>	43
PSYCHODIDAE	91	<i>Rhagoletis</i>	94	<i>Scaphisoma</i>	58
<i>Psychoglypha</i>	65	<i>Rhamphomyia</i>	87	<i>Scaphotopius</i>	35
<i>Psychomyia</i>	65	<i>Rheocricotopus</i>	86	<i>Scaptomyza</i>	87
PSYCHOMYIIDAE	65	<i>Rheotanytarsus</i>	86	SCARABAEIDAE	58
<i>Psydrus</i>	43	<i>Rheumaptera</i>	69	<i>Scatella</i>	88
<i>Psylla</i>	36	<i>Rhimproctopna</i>	102	<i>Scathophaga</i>	91
<i>Psyllaephagus</i>	98	<i>Rhinosimus</i>	58	SCATHOPHAGIDAE	91
PSYLLIDAE	36	<i>Rhinosuctobelba</i>	130	SCATOPSIDAE	91
<i>Psylliodes</i>	45	<i>Rhithrogena</i>	20	<i>Scelio</i>	106
<i>Psyllobora</i>	46	<i>Rhizagrotis</i>	76	SCELIONIDAE	106-107
<i>Pteracarus</i>	145	RHIZOPHAGIDAE	58	<i>Sceliphron</i>	107
<i>Pterocallis</i>	34	<i>Rhizophagus</i>	58	<i>Scelolyperus</i>	45
<i>Pterochthonius</i>	127	<i>Rhogogaster</i>	108	SCENOPINIDAE	91
<i>Pterocormus</i>	102	RHOPALIDAE	33	<i>Sceptonia</i>	89
PTEROMALIDAE	106	<i>Rhopalosiphum</i>	34	<i>Scheloribates</i>	130
PTERONARCIDAE	24	<i>Rhopalum</i>	107	<i>Schizocosa</i>	120
<i>Pteronarcys</i>	24	<i>Rhopus</i>	98	<i>Schizogenius</i>	43
PTEROPHORIDAE	78	<i>Rhorus</i>	102	<i>Schizothetus</i>	123
<i>Pterostichus</i>	43	<i>Rhyacia</i>	76	<i>Schizura</i>	77
<i>Pterotus</i>	53	<i>Rhyacophila</i>	65, 66	<i>Schoenomyza</i>	89
<i>Pteryngium</i>	47	RHYACOPHILIDAE	65-66	SCIARIDAE	91
PTILIIDAE	57	<i>Rhynchaenus</i>	48	SCIOMYZIDAE	92
<i>Ptilinus</i>	40	<i>Rhynchagrotis</i>	76	<i>Sciophila</i>	89
PTINIDAE	57	<i>Rhynchites</i>	48	<i>Sciopithes</i>	48
<i>Ptinus</i>	57	<i>Rhynchobelba</i>	130	<i>Scironis</i>	119
PTYCHOPTERIDAE	91	<i>Rhyncolus</i>	48	<i>Scirtothrips</i>	26
<i>Ptycta</i>	25	<i>Rhynocoris</i>	33	<i>Scleroracus</i>	35
<i>Puliciphora</i>	90	RHYSODIDAE	58	<i>Scoliopteryx</i>	76
<i>Pullimosina</i>	92	<i>Rhyssa</i>	102	SCOLOPENDROMORPHA	112
<i>Puto</i>	36	<i>Rickera</i>	24	<i>Scolops</i>	36
PUTOIDAE	36	<i>Rogas</i>	97	<i>Scolopstethus</i>	30
PYGMEPHORIDAE	145	<i>Rushia</i>	55	SCOLYTIDAE	58-59
<i>Pygmephorus</i>	145			<i>Scolytus</i>	59

<i>Scoparia</i>	79	<i>Sminthurinus</i>	110	<i>Stenolophus</i>	43
<i>Scopula</i>	69	<i>Solenopsis</i>	100	<i>Stenoporpia</i>	72
SCORPIONES	113	<i>Solierella</i>	107	STENOPSOIDAE	25
<i>Scotinotylus</i>	119	<i>Soliperla</i>	23	<i>Stenostrophia</i>	44
<i>Scotophaeus</i>	118	<i>Sonoma</i>	57	<i>Stenotus</i>	32
<i>Scudderia</i>	22	<i>Soyedina</i>	23	<i>Stenus</i>	61
SCUTACARIDAE	123	<i>Spaelotis</i>	76	<i>Stephostethus</i>	53
SCUTELLERIDAE	33	<i>Spalangiopecta</i>	106	<i>Steremnius</i>	48
SCYDMAENIDAE	59	<i>Spargaloma</i>	76	<i>Stethorhanis</i>	52
<i>Scydmaenus</i>	59	<i>Spargania</i>	72	<i>Stethorus</i>	46
<i>Scymnus</i>	46	<i>Sparganthis</i>	82	<i>Stibeutes</i>	102
<i>Scythropus</i>	48	<i>Spathius</i>	97	<i>Stictocephala</i>	36
<i>Scytonotus</i>	111	<i>Spelobia</i>	92	<i>Stictoleptura</i>	44
<i>Selenia</i>	69	<i>Speyeria</i>	78	<i>Stictopleurus</i>	33
<i>Sellnickochthonius</i>	127	<i>Sphaeridium</i>	53	<i>Stictostix</i>	53
<i>Semanotus</i>	44	<i>Sphaerites</i>	59	<i>Stigmus</i>	107
<i>Semidalis</i>	37	SPHAERITIDAE	59	<i>Stilbus</i>	56
<i>Semiothisa</i>	69	<i>Sphaerocera</i>	92	<i>Stilocladius</i>	86
SEPSIDAE	92	SPHAEROCERIDAE	92	<i>Stomatothrips</i>	26
<i>Sepsis</i>	92	<i>Sphaerochthonius</i>	129	<i>Stonyxenillus</i>	129
<i>Sergiolus</i>	118	<i>Sphaerophoria</i>	93	<i>Stramenaspis</i>	36
<i>Serica</i>	58	<i>Sphaerotarsus</i>	126	STRATIOMYIDAE	92
<i>Sericomyia</i>	93	<i>Sphaerozetes</i>	127	STREPSIPTERA	62
<i>Sericosema</i>	69	SPHECIDAE	107	<i>Stretchia</i>	76, 77
SERICOSTOMATIDAE	66	<i>Sphecodes</i>	100	STRIARIIDAE	111
<i>Sericothrips</i>	26	<i>Sphegina</i>	93	<i>Strongylogaster</i>	108
<i>Sericus</i>	52	SPHINDIDAE	59	<i>Strymon</i>	73
<i>Serratella</i>	19	SPHINGIDAE	79	<i>Stygnocoris</i>	30
<i>Serromyia</i>	84	<i>Sphinx</i>	79	STYLOPIDAE	62
<i>Serropalpus</i>	55	<i>Sphodrocephus</i>	127	<i>Subhaida</i>	61
SESIIDAE	79	<i>Sphragisticus</i>	30	<i>Suctobelba</i>	131
<i>Setagrotis</i>	76	<i>Spilochalcis</i>	97	<i>Suctobelbella</i>	131
<i>Setvena</i>	24	<i>Spilogona</i>	89	<i>Suillia</i>	88
SIALIDAE	37	<i>Spilomena</i>	107	<i>Sunira</i>	77
<i>Sialis</i>	37	<i>Spilosoma</i>	66	<i>Sussaba</i>	102
<i>Sicya</i>	69	<i>Spinibdella</i>	123	<i>Suwallia</i>	22, 23
<i>Sideridis</i>	76	<i>Spiniphora</i>	90	<i>Sweltsa</i>	23
SIGNIPHORIDAE	107	SPINTURNICIDAE	145	SYARINIDAE	113
<i>Silis</i>	41	<i>Spinturnix</i>	145	<i>Syarinus</i>	113
SILPHIDAE	59	<i>Spirembolus</i>	119	<i>Sylvicola</i>	82
<i>Silvanus</i>	47	SPIROBOLIDA	112	<i>Symmigma</i>	119
<i>Silvius</i>	93	SPIROBOLIDAE	112	<i>Symmorphus</i>	99
SIMULIIDAE	92	<i>Stachiella</i>	142	<i>Sympetrum</i>	21
<i>Simulium</i>	92	<i>Stactobiella</i>	63	<i>Symphoromyia</i>	91
<i>Sinarachna</i>	102	<i>Stammoctenis</i>	72	<i>Sympiesis</i>	99
<i>Sinea</i>	33	<i>Stammodes</i>	72	<i>Synagles</i>	121
<i>Sinella</i>	109	STAPHYLINIDAE	59-61	<i>Synaxis</i>	72
<i>Sinophorus</i>	102	<i>Staphylinus</i>	61	<i>Synchlora</i>	72
SIPHONURIDAE	20	<i>Steatoda</i>	122	<i>Synchthonius</i>	127
SIPHONAPTERA	95-96	<i>Steatonyssus</i>	144	<i>Synedoche</i>	34
SIRICIDAE	107	<i>Stegobium</i>	40	<i>Synedoida</i>	77
<i>Siro</i>	116	<i>Steiroyxys</i>	22	<i>Syneta</i>	45
SIRONIDAE	116	<i>Stelis</i>	103	<i>Syngrapha</i>	77
<i>Sitona</i>	48	<i>Stempellinella</i>	86	<i>Synhalonia</i>	96, 149
<i>Sixeonotus</i>	32	<i>Stenamma</i>	100	<i>Synodites</i>	102
<i>Skwala</i>	24	<i>Stenocoelidia</i>	35	<i>Synopeas</i>	106
SMARIDIDAE	126	<i>Stenocorus</i>	44	<i>Synorthocladus</i>	86
<i>Smerinthus</i>	79	<i>Stenodema</i>	32	<i>Synstrophus</i>	55
SMINTHURIDAE	110	<i>Stenodynerus</i>	99	<i>Syntemma</i>	89

SYRPHIDAE	92-93	<i>Thanasimus</i>	46	<i>Trichodezia</i>	72
<i>Syrphoctonus</i>	102	<i>Thanatus</i>	121	TRICHOGRAMMATIDAE	
<i>Syrphophagus</i>	98	<i>Thaumalea</i>	94		108-109
<i>Syrphus</i>	93	THAUMALEIDAE	94	<i>Tricholipeurus</i>	142
<i>Systelloderes</i>	27	<i>Thaumatomyia</i>	86	<i>Trichomyia</i>	91
		<i>Thecophora</i>	86	<i>Trichonta</i>	89
TABANIDAE	93	<i>Thereva</i>	94	<i>Trichopria</i>	98
<i>Tabanus</i>	93	THEREVIDAE	94	TRICHOPTERA	62-66
TACHINIDAE	93	THERIDIIDAE	121-122	<i>Trichrysis</i>	97
<i>Tachinus</i>	61	<i>Theridion</i>	122	<i>Triclistus</i>	103
<i>Tachygyna</i>	119	<i>Therion</i>	103	<i>Tricorynus</i>	40
<i>Tachypeza</i>	87	<i>Thes</i>	53	<i>Triepeolus</i>	149
<i>Tachyporus</i>	61	<i>Thevenemyia</i>	83	<i>Trigonodemus</i>	61
<i>Tachys</i>	43	<i>Thienemanniella</i>	86	<i>Trigonurus</i>	61
<i>Tachysphex</i>	107	<i>Thienemannimyia</i>	86	<i>Trimalacothrus</i>	128
<i>Taenionema</i>	24	THOMISIDAE	122	<i>Trimerotropis</i>	21
TAENIOPTERYGIDAE	24	THRIPIDAE	26	<i>Trimorus</i>	107
<i>Taeniothrips</i>	26	THROSCIDAE	62	<i>Trioza</i>	36
<i>Taiyutyla</i>	111	<i>Thyanta</i>	32	<i>Triphleba</i>	90
<i>Tanypteryx</i>	21	THYATIRIDAE	79,82	<i>Triphosa</i>	72
<i>Tanytarsus</i>	86	<i>Thylochromus</i>	30	<i>Triplax</i>	52
<i>Tanytydeus</i>	126	THYREOCORIDAE	33	<i>Trisignis</i>	57
<i>Tapinoma</i>	100	THYRISOMOIDEA	130-131	<i>Trissolcus</i>	107
<i>Taracus</i>	113	THYSANOPTERA	25-26	<i>Trixagus</i>	62
<i>Tarnaria</i>	89	THYSANURA	19	TRIXOSCELIDIDAE	95
<i>Tectocephus</i>	127	<i>Thysanus</i>	107	<i>Trixoscelis</i>	95
<i>Tegenaria</i>	116	<i>Tibellus</i>	121	<i>Trochosa</i>	120
<i>Telamona</i>	36	<i>Timarcha</i>	45	TROGIIDAE	25
<i>Teleas</i>	106	TINGIDAE	33	<i>Troglomethes</i>	41
TELEMIDAE	122	<i>Tinodes</i>	65	<i>Trogoderma</i>	48
<i>Telenomus</i>	107	<i>Tipula</i>	94	TROGOSITIDAE	62
<i>Teleonemia</i>	33	TIPULIDAE	94	<i>Trophodeinus</i>	90
<i>Teleorhinus</i>	32	<i>Tmarus</i>	122	<i>Tropidischia</i>	21
<i>Teliapsocus</i>	24	<i>Tollius</i>	26	<i>Trupanea</i>	94
<i>Telomerina</i>	92	<i>Tolyte</i>	72	<i>Trychosis</i>	103
<i>Temelucha</i>	103	<i>Tomocerus</i>	109	<i>Trypargilium</i>	107
<i>Temnochila</i>	62	<i>Tomoxia</i>	55	<i>Trypeta</i>	94
TENEBRIONIDAE	61-62	<i>Tortistilus</i>	36	<i>Trypodendron</i>	59
TENTHREDINIDAE	108	TORTRICIDAE	82	<i>Trypoxylon</i>	107
<i>Tenthredo</i>	108	TORYMIDAE	108	<i>Tupiocoris</i>	32
<i>Tenuiala</i>	129	<i>Torymus</i>	108	<i>Tvetenia</i>	86
TEPHRITIDAE	94	<i>Toxomerus</i>	93	<i>Tychius</i>	48
<i>Tephrochlamys</i>	88	<i>Trachelas</i>	117	TYDEIDAE	126
TERPNACARIDAE	126	<i>Trachypachus</i>	43	<i>Tylobius</i>	112
<i>Tersilochus</i>	103	<i>Trachysida</i>	44	<i>Typhlocyba</i>	35
<i>Tetracanthella</i>	109	<i>Tragosoma</i>	44	<i>Typhlodromus</i>	123
<i>Tetragnatha</i>	121	<i>Trapezonotus</i>	30	<i>Tyria</i>	66
TETRAGNATHIDAE	121	<i>Trechus</i>	43		
<i>Tetragoneura</i>	89	<i>Trhypochthonius</i>	128	<i>Udea</i>	79
TETRANYCHIDAE	126	<i>Triaenodes</i>	64	UENOIDAE	66
<i>Tetraphleps</i>	26,27	TRIAENONYCHIDAE	116	ULOBORIDAE	122
<i>Tetrastichus</i>	99	<i>Triarthron</i>	54	<i>Ulochaetes</i>	44
TETRIGIDAE	21	<i>Trichiosoma</i>	98	<i>Uloma</i>	62
<i>Tetrix</i>	21	<i>Trichocellus</i>	43	<i>Ulomorpha</i>	94
<i>Tetropium</i>	44	<i>Trichocera</i>	94	<i>Urocerus</i>	107
TETTIGONIIDAE	22	TRICHOCERIDAE	94	<i>Uroctonus</i>	113
<i>Texanus</i>	35	<i>Trichodectes</i>	142	<i>Uroleucon</i>	34
<i>Thallopaga</i>	72	TRICHODECTIDAE	25,142	UROPODIDAE	123
<i>Thalycra</i>	56	<i>Trichodes</i>	46	<i>Usechimorpha</i>	62

<i>Usechus</i>	62	<i>Xenorytes</i>	143	<i>Zachvatkinella</i>	127
<i>Usingerella</i>	32	<i>Xenylla</i>	109	<i>Zacotus</i>	43
<i>Usofila</i>	121	<i>Xeris</i>	107	<i>Zagrammosoma</i>	99
<i>Uzelia</i>	109	<i>Xeromelecta</i>	96	<i>Zale</i>	77
		<i>Xerophloea</i>	35	<i>Zalobius</i>	61
<i>Vanduzeeina</i>	33	<i>Xestia</i>	77	<i>Zapada</i>	23
<i>Vanessa</i>	78	<i>Xestobium</i>	40	<i>Zaraea</i>	98
<i>Vashingtonia</i>	110	<i>Xestocephalus</i>	35	<i>Zarhipis</i>	56
VEJOVIDAE	113	XESTODESMIDAE	111	<i>Zatypota</i>	103
VELIIDAE	33	<i>Xestoleptura</i>	44	<i>Zavrelimyia</i>	86
<i>Veloppia</i>	131	<i>Xestolinus</i>	61	<i>Zeiraphera</i>	82
<i>Venusia</i>	72	<i>Xiphogramma</i>	109	<i>Zelotes</i>	118
VESPIDAE	109	<i>Xorides</i>	103	<i>Zelus</i>	33
<i>Vespula</i>	109	<i>Xyalaspis</i>	99	<i>Zenophleps</i>	72
<i>Villa</i>	83	<i>Xyleborinus</i>	59	<i>Zercon</i>	123
<i>Visoka</i>	23	<i>Xyleborus</i>	59	ZERCONIDAE	123
<i>Vitula</i>	79	<i>Xylena</i>	77	<i>Zibethacarus</i>	143
		<i>Xyletinus</i>	40	<i>Zilus</i>	46
<i>Walckenaeria</i>	119,120	<i>Xyletomerus</i>	40	<i>Zircona</i>	32
<i>Walshia</i>	67	<i>Xylita</i>	55	<i>Zodion</i>	86
<i>Weidemannia</i>	88	<i>Xylocoris</i>	27	<i>Zootermopsis</i>	22
<i>Wesmaelius</i>	40	<i>Xylodromus</i>	61	ZOPHERIDAE	62
<i>Wormaldia</i>	65	XYLOPHAGIDAE	95	<i>Zora</i>	122
<i>Wroughtonia</i>	97	<i>Xylophagus</i>	95	ZORIDAE	122
<i>Wubana</i>	120	<i>Xyonysius</i>	30	<i>Zosteropoda</i>	77
		<i>Xysticus</i>	122	<i>Zotheca</i>	77
<i>Xanthochroa</i>	56			<i>Zygiella</i>	117
<i>Xanthorhoë</i>	72	<i>Yoraperla</i>	23	<i>Zygoribatula</i>	130
<i>Xenillus</i>	129			<i>Zygota</i>	98
<i>Xenomycetes</i>	52	<i>Zabrachia</i>	92	<i>Zygottus</i>	120

Parson, Gary L.; Cassis, Gerasimos; Moldenke, Andrew R.; Lattin, John D.; Anderson, Norman H.; Miller, Jeffrey C.; Hammond, Paul; Schowalter, Timothy D. 1991. Invertebrates of the H.J. Andrews Experimental Forest, western Cascade Range, Oregon. V: An annotated list of insects and other arthropods. Gen. Tech. Rep. PNW-GTR-290. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 168 p.

An annotated list of species of insects and other arthropods that have been collected and studies on the H.J. Andrews Experimental forest, western Cascade Range, Oregon. The list includes 459 families, 2,096 genera, and 3,402 species. All species have been authoritatively identified by more than 100 specialists. Information is included on habitat type, functional group, plant or animal host, relative abundances, collection information, and literature references where available. There is a brief discussion of the Andrews Forest as habitat for arthropods with photographs of representative habitats within the Forest. Illustrations of selected arthropods are included as is a bibliography.

Keywords: Invertebrates, insects, H.J. Andrews Experimental forest, arthropods, annotated list, forest ecosystem, old-growth forests.

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