

# **Terrestrial and Freshwater Invertebrates of British Columbia: Priorities for Inventory and Descriptive Research**

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Province of British Columbia  
Ministry of Forests Research Program

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G.G.E. Scudder



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Ministry of Forests Research Program

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## FOREWORD

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British Columbia, Canada's most westerly province, has a bounty of biological diversity. Its mountains, lakes and rivers, rain forests, wetlands and arid grasslands, and long, rugged coast provide habitats for more species of living organisms than are found anywhere else in Canada. However, this very diversity means that there is much to be discovered about these organisms—their distribution, abundance, habitat requirements, and interrelationships with their environments. Increasing our knowledge of this biodiversity will help us with the complex task of sustainably managing our land and waters.

In 1992 the Provincial Government initiated a co-operative biodiversity research program with funding from the Corporate Resource Inventory Initiative; the British Columbia Ministries of Forests (Research Branch), Environment, Lands and Parks (Wildlife and Habitat Protection Branches), and Tourism and Culture (Royal British Columbia Museum); and the Forest Resource Development Agreement (FRDA II). One goal of this research program is to extend information to scientists, resource managers, and the public through biodiversity publications. These publications are intended to increase awareness and understanding of biodiversity, promote the concepts and importance of conserving biodiversity, and communicate provincial government initiatives related to biodiversity. We hope that they will be used as tools for the conservation of British Columbia's rich, living legacy.

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Trudy Chatwin co-ordinated the project on behalf of the Wildlife Branch of the B.C. Ministry of Environment, Lands and Parks with contributions from Andrew Harcombe, Gail Harcombe, Ted Lea, and Don Eastman. Thanks are also extended to Evelyn Hamilton, Heather Strongitharm, Susan Barker, and Alison Nicholson of the B.C. Ministry of Forests Research Branch for their work in co-ordinating, funding, and producing these reports.

I am indebted to all the experts listed in Table 8 for their assistance. Without their help, this report could not have been completed. However, they are not responsible for any errors or omissions.

Finally, this report could not have been completed without the expert assistance of Launi Lucas. I thank her for her help and dedication through the many revisions.

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## 1 INTRODUCTION

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Maintaining and conserving the natural variety of life and the ecological processes that sustain biodiversity are pressing challenges faced by resource managers in British Columbia. Plants, animals, and micro-organisms are critical for the sustenance and productivity of ecosystems. These life-forms have future scientific, agricultural, pharmaceutical, and intrinsic value, yet many components of British Columbia's natural diversity have yet to be identified, let alone understood.

The retention of biodiversity is a major public concern, but information on the invertebrates is lacking, even though these are the most diverse of living organisms. The need to inventory and conserve the terrestrial invertebrates in British Columbia was recognized through the Biodiversity Component of the Corporate Resource Inventory Initiative (CRII). This working paper is a response to CRII's 1992 call for proposals to outline the priorities for inventory and descriptive research on British Columbia terrestrial and freshwater invertebrates.

This report contains the following information:

1. Two tables outlining the priorities for inventory and research of selected groups of terrestrial invertebrates organized by (1) the ecoregion or ecosection (Demarchi 1993), and (2) habitats within biogeoclimatic subzones (Meidinger and Pojar [editors] 1991).

These two tables contain the twenty top-ranked ecoregions and subzone-habitat types within British Columbia, with the lists of invertebrates for the respective units. Taxonomic priorities are established mainly by degree of threat to a particular group at the provincial level. The possibility of identification, availability of taxonomic experts, and other technical experts are also considered.

The ranking given to the listed species is justified in a separate discussion of the degree of threat, state of knowledge, and other such data, including distribution of rare species.

2. An annotated list of 50 taxa known to be very rare or threatened at the provincial and national level, ranked by the Conservation Data Centre evaluation system (Harcombe et al. 1994).
3. A discussion of different types of surveys and survey techniques that could be used in future inventories, and their advantages and disadvantages, especially concerning the location of rare or threatened taxa.
4. Recommendations on future inventory and research needs for the conservation of species (or species groups) and habitats for British Columbia terrestrial and freshwater invertebrates.
5. A list of the major collections of British Columbia terrestrial and freshwater invertebrates.
6. An address and telephone list of experts that were contacted for information on various taxa.
7. A bibliography of literature relevant to the project.

Although by far the greatest part of British Columbia's biodiversity is made up of invertebrates, they are the least known of any major biological group (Cannings 1990a). Except for one out-of-print handbook on the dragonflies (Cannings and Stuart 1977), there are no provincial identification manuals. As a result, work on the invertebrates in the province is very dependent on the availability of specialist taxonomists. No ecoregion, biogeoclimatic subzone, ecosystem, or habitat in British Columbia has been thoroughly surveyed for invertebrates. In fact, many have yet to be studied for the first time.

Cannings (1990a) has estimated that about 15 000 insects occur in the province, but anticipates that the total number of terrestrial arthropod species will be about 40 000–50 000 (Cannings 1992). The soil fauna, in particular, is very poorly known (Behan-Pelletier and Bisset 1992).

In this report, emphasis is placed on the occurrence of what may be rare and endangered species in British Columbia. These have been assessed by examining available catalogues, handbooks, lists, and revisionary publications. The preliminary lists of species were then sent to taxonomic experts on each group for comment, corrections, and additions. For most taxa, museum collections were not consulted.

Further inventory work and examination of collection material will likely cause the lists and conclusions presented here to be modified. However, this report presents a basis and summary of our present knowledge on the invertebrates in the province. Appendix 1 provides a systematically arranged list of the taxa reviewed (parasitic taxa were excluded). Appendix 2 provides lists of the species of potentially rare and endangered status among the ecoprovinces in British Columbia. Appendix 3 gives a numeric summary of the species listed in Appendix 2.

Invertebrates are often ignored in many wildlife and biodiversity studies, although they usually dominate every terrestrial and freshwater habitat. Hopefully, this report will encourage further study.

## 2 RECOMMENDATIONS

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### 2.1 Suggested Inventory Priorities

To more completely assess the status of suggested rare and endangered invertebrates in British Columbia, inventory priorities have been established based on available information and the endangered status of the ecosystems or habitats that these species occupy (Tables 1–3).

Because of the need to sample numerous habitats in each targeted ecoregion or ecosection at reasonable cost in a realistic time frame, initial emphasis should be placed on a few especially rare and endangered taxa in a limited number of habitats using a small range of simple sampling techniques. Analysis indicates that the ecoregions of major interest are:

- Eastern Vancouver Island
- Georgia Puget Basin
- Thompson-Okanagan Plateau
- Okanagan Range
- Okanagan Highlands
- Interior Transition Ranges (particularly the Pavilion Ranges)

It is difficult to decide which of these should be given highest priority. Current urban expansion on southern Vancouver Island is a cause of major concern. The rapid emigration to the Okanagan Valley and the urban expansion of many communities there severely threatens this area. The South Okanagan is identified as an especially endangered area in the “Canada Country Study of Biodiversity” (Mosquin and Whiting 1992).

If funding and personnel are available, an equal thrust to inventory both the Nanaimo Lowland and the Okanagan Basin ecosections is recommended. These are the most threatened and contain the majority of the rare and endangered species in the province. However, any ongoing long-term studies under way elsewhere should be continued. The old-growth forest concerns in the Western Vancouver Island ecoregion suggest that the faunistic studies in the Carmanah Valley should continue. Some rare and endangered species of invertebrates occur in this ecoregion. In addition, sampling in special habitats that may themselves be endangered should be considered. Both springs and caves should be investigated, and further study of freshwater molluscs is needed.

The following are recommended as priorities for inventory.

#### 2.1.1 Butterflies in the Nanaimo Lowland and Okanagan Basin

**Ecosections** Certain butterfly species occurring in the Nanaimo Lowland and Okanagan Basin ecosections are considered rare or endangered and receive a high ranking in Table 3. Further surveys of these insects may not be very expensive, so these species should be given highest priority, provided that experts are available to conduct such studies. It is imperative that any extant populations do not become further endangered by extensive and

unnecessary collecting during the inventory. Thus, only a knowledgeable person, able to identify most species while they are alive in the field should be engaged or contracted for this research. Both C.S. Guppy and J.H. Shepard (see Table 8 for further information) have the ability and could undertake the desired investigations. No special infrastructure is needed. Concurrent studies should be undertaken in these ecosections.

**2.1.2 Moths in the Okanagan Basin Ecosections** A number of moths in the two Okanagan ecosections are rare and potentially endangered. Shepard (pers. comm., 1993) thinks that an additional 100 species of moths are probably confined to the South Okanagan. Troubridge has material from three years of light-trapping at Vaseux Lake, but trapping will not be continued at this site. At present, Troubridge has processed only the moths collected in the first year: the catch from the last two years is still in the freezer. (J. Troubridge, Agric. Can., pers. comm., 1993).

With these past collections available, and with the current trapping near Keremeos, it might be an opportune time to further concentrate on this group and simultaneously run additional light traps in the South Okanagan. A series of light trap stations in undisturbed sagebrush habitats of the Okanagan Basin ecosections should be established and run on a once-a-week basis. With this arrangement, one person with one trap could work five or six stations concurrently. Five hours per day would be required to sort the samples. Common moths could be identified on site, counted, and released. Those requiring further study could be frozen for later preparation and identification. Miscellaneous other insects captured by the light trap should be preserved in 70% alcohol and passed to others for processing. Only an experienced macrolepidopterist should be engaged or contracted to trap, sort, prepare, and identify the specimens. The plan for this should note that one season of collecting will take about four years to process and name. However, processing and identifying the specimens can be done at any time and location, whenever funding is available.

**2.1.3 Other Taxa in the Nanaimo Lowland and Okanagan Basin Ecosections** Other inventory work should be done in the Nanaimo Lowland and Okanagan Basin ecosections, sampling other taxa using different methods. If a full range of sampling techniques cannot be employed because of either logistical, personnel, or financial reasons, a minimum set of studies should be undertaken using pitfall traps, plus manual collection methods (beating, sweeping, and searching), provided an entomologist is available. The invertebrate taxa listed in Table 4 should be collected. Only those that can be identified at this time should be processed.

This survey should occur over a four- to five-year period, and involve habitats selected along horizontal and altitudinal transects in fully surveyed and protected (or potentially protected) locations. Sites should encompass

the relevant biogeoclimatic subzones listed in Table 2. Potential corridor sites should also be included.

Four sites on a single transect in each ecosection should be sampled each year, allowing twenty sites to be covered in five years. Total collecting and sorting time for each site is estimated at 34 hours per month. Thus, one person can handle the field work at four sites in an ecosection. Preparation time for this material from four sites in an ecosection is estimated at 58 hours per month (for a season total of 406 hours). Identification time would be an additional 91 hours per month (for a season total of 637 hours). Thus, about 30 weeks of work would be required after the collection season to process and identify most specimens to the level of family in well-known taxa or to the level of order in the taxonomically difficult groups.

If an entomologist is not available for such sampling, the manual collecting methods should be deleted and replaced by pan-trapping. Both pitfall and pan traps can be run with unskilled help, but sorting, processing, and identifying would have to be done by others. However, any inventory survey would be incomplete if only these two methods were used.

**2.1.4 Invertebrates of Coastal Old-growth Forests** The temperate rain forests of the West Coast have been extensively clearcut, and old-growth forest is now endangered (Franklin 1988; Beebe 1990; Norse 1990; Sierra Club of Western Canada 1993). It is estimated that only 30% of the coastal old-growth forest is left in British Columbia, with just six of the 89 coastal watersheds over 5000 ha left unlogged on Vancouver Island (Beebe 1990). If current logging rates prevail, all old-growth temperate rain forest on Vancouver Island will be liquidated by 2022 (Sierra Club of Western Canada 1993).

These coastal temperate rain forests have a very high invertebrate biodiversity (Asquith et al. 1990; Lattin 1990; Parsons et al. 1991). Although Lattin (1990) observed that few arthropods are found exclusively in the old-growth portion of the H.J. Andrews Forest in Oregon, the studies in the old-growth rain forest on the west coast of Vancouver Island reveal that a number of invertebrates in this ecosystem are apparently rare and endangered (R.A. Ring and N.N. Winchester, Univ. Victoria, pers. comm., 1993; Appendix 2, List A2.5). Therefore, the current invertebrate sampling of the canopy and forest floor in the coastal old-growth forest should be continued and extended to areas beyond the Carmanah Valley. Of special interest are the native and endemic earthworms and endemic Amphipoda, Collembola, and Coleoptera. The invertebrate biodiversity in soil is poorly known (Behan-Pelletier and Bisset 1992), and biodiversity in the canopy of temperate rain forests is as poorly known as it is in the tropics (Erwin 1988).

In the Brooks Peninsula, 31 species and 4 genera that are probably new to science occur (Cannings and Cannings 1994), so additional studies should be undertaken in this area of Vancouver Island.

**2.1.5 Invertebrates of Springs** Springs, especially hot springs, are an endangered habitat, with an often unique invertebrate fauna (Williams and Smith 1990; Williams et al. 1990; Williams and Danks [editors] 1991). They should receive high priority for study in the province. A guide to the hot springs of western Canada has been published (McDonald 1991), but only one on Saltspring Island has been looked at in a preliminary way (Ring 1991).

Clarke (1976) pointed out the endangered status of the freshwater mollusc *Physella wrighti* Te & Clarke in the warm outlet of Alpha Pool at the Liard Hot Springs, and Smith (1991) noted endangered mites from several springs on Vancouver Island and elsewhere. The arthropods of special significance in springs are Trichoptera, Coleoptera, Chironomidae (Diptera), Acariformes, and Ostracoda (Williams and Danks [editors] 1991). These, together with molluscs, should be investigated in springs throughout the province.

**2.1.6 Invertebrates of Caves** Caves throughout the world have a unique invertebrate fauna (e.g., Hamilton-Smith 1967; Howath 1972, 1982; Howath and Mull 1992), and those in Canada and western North America are no exception (Peck 1973, 1988). In British Columbia, an endemic amphipod (*Stygobromus quatsinensis* Holsinger & Shaw) occurs in Thanksgiving Cave and Hourglass Cave on Vancouver Island (Holsinger and Shaw 1987), and other endemic species have been found in caves in Alberta, close to the British Columbia border (Bowman 1975; Holsinger 1980).

Cave habitats are vulnerable to disturbance, and J.R. Holsinger (Old Dominion Univ., Norfolk, Va., pers. comm., 1992) believes that more endemic taxa will be found in subterranean groundwater habitats in the province. Caves and other subterranean habitats should therefore be surveyed with special emphasis placed on the amphipod and isopod crustacea. However, a general and comprehensive inventory should be initiated. Kamp (1970) has shown that caves in the western United States have a special grylloblattid fauna, and these caves also have interesting Myriapoda and Diplura (Scudder, unpubl. info.).

**2.1.7 Freshwater Molluscs** At least 14 species of rare and endangered freshwater molluscs occur in the province, and some of these are also considered endangered in the United States (Taylor 1970; Clarke 1976; Neitzel and Frest 1990). In British Columbia, most of the species of concern occur in the Southern Rocky Mountain Trench, Thompson-Okanagan Plateau, Eastern Vancouver Island, and Lower Mainland ecoregions. Freshwater habitats have been extensively modified in these ecoregions, with many being dredged, degraded, or diverted into sewers (McPhail and Carveth 1992). The freshwater lentic and lotic habitats left in these regions are often polluted by domestic discharge, industrial effluent, urban runoff, and agricultural discharge (Environment Canada 1992). Agricultural pollution in the form of pesticides, fertilizers, and animal waste is of particular concern (Schreier et al. 1991; Liebscher et al. 1992).

Because freshwater habitats throughout the province are threatened by overexploitation, pollution, and hydroelectric development, freshwater molluscs should be surveyed thoroughly, and the distribution of the rare and endangered species determined more precisely. Such studies can probably only be done by an expert in the group. Both Dr. A.H. Clarke and Dr. D.W. Taylor have indicated an interest in undertaking such studies.

**2.1.8 Inventory in Other Ecoregions** Inventories should be undertaken in the other regions in the order given in Table 4. Habitats and sampling methods should be selected as appropriate. Unless multiple teams can be assembled for the survey inventory, it may take many decades to complete.

## **2.2 Selecting Sampling Sites**

Since the precise habitats of most rare and endangered invertebrate species are unknown, it will be necessary to sample from a diverse series of habitats in each ecoregion or ecoregion. Locations should be selected after habitats have been mapped in detail. Sampling sites should be located in identifiable habitat types, preferably the typical habitat types in the area, and these sites should be either protected, or have the potential of being protected. Long-term protected sites will be needed for any conservation initiatives.

## **2.3 Sampling Techniques**

Because the taxa to be surveyed are diverse, with varied habits and life cycles, no single survey method or sampling technique can be used for future inventories of rare and endangered invertebrates. Depending on the taxon involved, usually more than one sampling method should be used.

Table 5 summarizes the sampling techniques that are most easily used and the relevant taxa that can be collected by each method. All methods are described by Martin (1977) and most are briefly reviewed by Cannings (1992) and Winchester and Scudder (1993). Other sampling methods, such as fogging for canopy invertebrates, are available, but are costly to set up and operate. In certain special habitats, such as peat bogs, springs, and caves, special techniques are required.

## **2.4 Sampling Frequency and Replication**

Because the phenology of species is extremely variable, even within a single taxon, sampling must be carried out for an extended period, usually over the entire active season. This will vary depending on latitude and climatic factors, but in the ecoregions and ecoregions of special interest in the south of the province, the active season will extend from April to October.

To obtain reliable data for a survey site using the survey techniques listed, it will usually be necessary to replicate some of the sampling activity. This replication will compound the sorting, preparation, and identification logistics, but will provide greater survey reliability. Microhabitat variation is of great concern in invertebrate sampling. However, if replication and sampling are done correctly, the same samples can be used for other biodiversity initiatives.

## **2.5 Sampling Effort, Time, and Costs**

Any effort to sample and assess rare and endangered invertebrates will be very time consuming and labour intensive. A lot of material will be collected and will need to be handled in a highly organized, systematic, and efficient manner.

Table 6 gives an estimate of the time required to sample one site on a monthly basis using the techniques listed.

Considering only the first eight trapping methods listed, the monthly processing time comes to 344 hours. Using biology undergraduate student assistance at a rate of \$10 per hour, it would cost \$3440 to process one site per month. Over a seven-month season (April to October), the cost would be \$24 000. Identification time would be \$3400 per site per month, or \$23 800 per season, for a grand total of \$47 880 per site. Addition of materials and supplies for traps are liable to bring the total to about \$50 000 per site. However, it is unlikely that most employees with some knowledge of invertebrate or insect identification would be willing to work for \$10 per hour: the few currently working on contracts in the province are charging \$20–30 per hour. Costs for identification to just the order or family level could thus be \$71 400 instead of \$23 800.

If each site was sampled using only the first eight methods listed in Table 6, it would require 344 hours per month just for processing. One person working 160 hours per month would take over two months to process one month of samples: about the same time is needed for identification to the order or family level. Therefore, it would take one person 2.3 years to process and identify to just the family level.

Processing only the moths from a light trap run one night per week for seven months will take about the same time as the first eight methods combined (Table 6), and cost about the same. Only butterfly collection might be inexpensive.

While it may be possible to get unpaid help from expert systematists to check representative identifications, these experts will not handle bulk material and collections, and will not look at poorly prepared specimens. The current demands on their time, with biodiversity initiatives now under way around the world, are just too great. As well, most of these experts also have their own work to do.

Because of these time and cost considerations, any program of sampling should plan at the outset to be largely self-sufficient. It must include detailed planning and funding to process and identify, not just to the family level, but also to morphospecies. Since few keys are available, this work will need to be done where a named reference collection is constantly accessible.

## **2.6 Long-term Care of Samples and Collections**

All survey techniques will result in the collection of samples containing many groups of invertebrates: they will need sorting to select out the taxa of interest. Later, the rare and endangered species of interest will need to be sorted from these taxa. Once these are obtained, voucher specimens should be prepared and set aside for long-term storage and care.

The bulk of the trapping sample will likely be irrelevant to the assessment of rare and endangered species. However, this material is very relevant to provincial and national biodiversity initiatives. All samples should be kept, their integrity maintained, and their total contents recorded in database form. It is no longer acceptable to discard unwanted specimens. It is wasteful of materials, time, and costs, and it is also considered unethical to destroy living beings for no purpose.

The importance of any faunistic samples, both the rare and endangered, and the rest of the sample, should be recognized at the outset. They will be costly to collect, sort, prepare, and identify. The added costs to assure long-term maintenance, conservation, and storage should be recognized and included in any sampling initiative. Furthermore, the location for storage and care should be established before the sampling project starts. Since the study will likely be funded from provincial resources, the material collected will become provincial property.

Because of the long-term importance of voucher material, and because the bulk samples are invaluable for other studies in biodiversity, these should be retained within the province in an institution that can afford the required care and maintenance. Logically, the survey collections should be placed in the Royal British Columbia Museum. However, if the revised direction and mandate of the museum cannot accommodate this, an alternative provincial depository should be sought. A possibility is the planned Centre for Biodiversity Research at the University of British Columbia, but as with the museum, guaranteed long-term funding will be required and should be incorporated in initial planning.

## **2.7 Study of Material in Major Public Collections**

The major public collections listed in Table 7 may contain specimens of the species listed in this report. These should be examined, and any data on distribution should be added to that already available.

Help from the specialists listed in Table 8 will be required for this task. However, many of these experts will also be involved in other biodiversity initiatives, particularly the All Taxa Biodiversity Inventory (Yoon 1993).

TABLE 1 *Top ranked British Columbia ecoregions for conserving rare and endangered invertebrates*

Rank	Ecoprovince (Ecoregion)	Class	Order	Family
1	Georgia Depression (Eastern Vancouver Island and Georgia Basin)  (See Appendix 2, List A2.1 for species of special interest)	Mollusca	All	All
		Arachnida	Araneae	All
			Acariformes	All
		Crustacea	Isopoda	All
		Diplopoda	All	All
		Chilopoda	All	All
		Pauropoda	All	All
		Protura	All	All
		Diplura		Japygidae
		Insecta	Odonata	All
			Plecoptera	All
			Grylloptera	All
			Heteroptera	
			Homoptera	All Auchenorrhyncha
			Megaloptera	All
			Neuroptera	All
			Coleoptera	All
			Diptera	Tabanidae, Asilidae
			Lepidoptera	All butterflies
			Trichoptera	All
			Hymenoptera	All Aculeata
2	Southern Interior (Thompson-Okanagan Plateau; Okanagan Range; Okanogan Highlands; Interior Transition Ranges [Pavilion Ranges ecosection])  (See Appendix 2, List A2.2 for species of special interest)	Mollusca	All	All
		Hirudinoidea	Rhynchobdellae	Piscicolidae
		Arachnida	Solpugida	All
			Scorpionida	Vaejovidae
			Araneae	All
			Acariformes	All
		Diplopoda	Julida	Parajulidae
		Paurapoda	Tetramerocerata	Pauropodidae
		Insecta	Microcoryphia	All
			Ephemeroptera	All
			Odonata	All
			Plecoptera	All
			Dictyoptera	Mantidae
			Grylloptera	All
			Orthoptera	All
			Heteroptera	All
			Homoptera	All Auchenorrhyncha
			Megaloptera	All
			Raphidioptera	All
			Neuroptera	All

TABLE 1 (Continued)

Rank	Ecoprovince (Ecoregion)	Class	Order	Family
			Coleoptera	All
			Mecoptera	Boreidae
			Diptera	Tabanidae
				Mydidae
				Apioceridae
				Asilidae
				Bombyliidae
				Syrphidae
				Anthomyiidae
			Lepidoptera	All Macrolepidoptera
			Trichoptera	All
			Hymenoptera	All Aculeata
3	Southern Interior Mountains (Southern Rocky Mountain Trench; Columbia Mountains and Highlands; Selkirk- Bitterroot Foothills)	As in 2 ( <i>See above</i> )		
	<i>(See Appendix 2, List A2.3 for species of special interest)</i>			
4	Georgia Depression (Lower Mainland)	Mollusca	All	All
		Arachnida	Araneae	All
		Diplopoda	All	All
	<i>(See Appendix 2, List A2.4 for species of special interest)</i>			
		Insecta	Odonata	All
			Plecoptera	All
			Grylloptera	All
			Heteroptera	All
			Homoptera	All Auchenorrhyncha
			Megaloptera	All
			Neuroptera	All
			Coleoptera	All
			Mecoptera	Boreidae
			Diptera	Asilidae, Syrphidae
			Lepidoptera	All butterflies
			Trichoptera	Rhyacophilidae
			Hymenoptera	All Symphyta and All Aculeata

TABLE 1 (Continued)

Rank	Ecoprovince (Ecoregion)	Class	Order	Family
5	Coast and Mountains (Western Vancouver Island; Queen Charlotte Ranges; Queen Charlotte Lowland; Coastal Gap)  (See Appendix 2, List A2.5 for species of special interest)	Annelida	Oligochaeta	Lumbriidae, Megascolecidae
			Amphipoda	All
			Isopoda	All
		Arachnida	Araneae	All
			Acariformes	All
			All	All
		Diplopoda	Arthropleona	All
		Collebola	Plecoptera	Capniidae
			Homoptera	Cercopidae
		Insecta		Cicadellidae
				Membracidae
			Coleoptera	All
			Lepidoptera	Noctuidae
				Geometridae
			Trichoptera	All
6	Boreal Plains (Alberta Plateau)  (See Appendix 2, List A2.6 for species of special interest)	Insecta	Odonata	All
			Heteroptera	Lygaeidae
			Homoptera	Cicadellidae
			Neuroptera	Hemerobiidae
			Lepidoptera	All butterflies
			Trichoptera	All
7	Central Interior (Chilcotin Ranges; Fraser Plateau)  (See Appendix 2, List A2.7 for species of special interest)	Mollusca	All	All
			All	All
		Hirudinoidea	Araneae	All
			Acariformes	All
		Arachnida	Odonta	All
			Plecoptera	All
			Heteroptera	All
			Homoptera	All Auchenorrhyncha
			Diptera	Asilidae
			Lepidoptera	All Macrolepidoptera
			Trichoptera	All
			Hymenoptera	All Aculeata

TABLE 1 (Continued)

Rank	Ecoprovince (Ecoregion)	Class	Order	Family
8	Northern Boreal Mountains (Northern Mountains and Plateaus; Liard Basin; Yukon-Stikine Highlands; Kluane Plateau)  (See Appendix 2, List A2.8 for species of special interest)	Mollusca Insecta	Basommatophora Odonata Plecoptera Notoptera Coleoptera Lepidoptera Trichoptera	Physidae All All All Silphidae All Macrolepidoptera All
9	Coast and Mountains (Nass Ranges)  (See Appendix 2, List A2.9 for species of special interest)	Arachnida Insecta	Araneae Plecoptera Coleoptera  Diptera  Lepidoptera Trichoptera	All All Carabidae Leiodidae Staphylinidae Syrphidae Anthomyiidae Butterflies All
10	Sub-Boreal Interior (Fraser Basin)  (See Appendix 2, List A2.10 for species of special interest)	Mollusca Insecta	Basommatophora Odonata Coleoptera Trichoptera	Acroloxidae All Buprestidae All
11	Coast and Mountains (Pacific and Cascade Ranges) Southern Interior (Interior Transition Ranges [Leeward Pacific Ranges ecosection])  (See Appendix 2, List A2.11 for species of special interest)	Arachnida  Diplopoda Pauropoda Collembola Insecta	Araneae Acariformes All All All Odonata Plecoptera Notoptera Grylloptera Heteroptera Homoptera Coleoptera  Mecoptera	All All All All All All Capniidae Grylloblattidae All All All Auchenorrhyncha Carabidae Micropeplidae Staphylinidae Buprestidae Boreidae

TABLE 1 (Concluded)

Rank	Ecoprovince (Ecoregion)	Class	Order	Family
			Diptera	Syrphidae
			Lepidoptera	All butterflies
			Trichoptera	Limnephilidae
			Hymenoptera	All Aculeates
12	Northern Boreal Mountains (Northern Canadian Rocky Mountains)	Insecta	Notoptera	Grylloblattidae
			Coleoptera	Staphylinidae
	<i>(See Appendix 2, List A2.12 for species of special interest)</i>			
13	Southern Interior Mountains (Western Continental Ranges and Continental Divide)	Arachnida	Acariformes	All
		Insecta	Odonata	All
			Coleoptera	Staphylinidae
			Diptera	All
			Trichoptera	Rhyacophilidae
	<i>(See Appendix 2, List A2.13 for species of special interest)</i>			
14	Taiga Plains (Upper Mackenzie Basin)	Insecta	Odonata	All
	<i>(See Appendix 2, List A2.14 for species of special interest)</i>			

TABLE 2 *Top ranked biogeoclimatic subzones in British Columbia for conserving rare and endangered invertebrates*

Rank	Zone	Subzone	Taxon	Notes
1	Coastal Douglas-fir	CDFmm	See Table 1, Rank 1	See Appendix 2, List A2.1
2	Bunchgrass	BGxh	See Table 1, Rank 2	See Appendix 2, List A2.2
3	Bunchgrass	BGxw	(for zone ranks 2–13)	(for zone ranks 2–13)
4	Ponderosa Pine	PPxh		
5	Ponderosa Pine	PPdh		
6	Interior Douglas-fir	IDFxm		
7	Interior Douglas-fir	IDFxm		
8	Interior Douglas-fir	IDFxm		
9	Interior Douglas-fir	IDFdm		
10	Interior Douglas-fir	IDFdk		
11	Interior Douglas-fir	IDFmw		
12	Interior Douglas-fir	IDFww		
13	Englemann spruce– Subalpine Fir	ESSFxc		
14	Coastal Western Hemlock	CWHwh	See Table 1, Rank 5	See Appendix 2, List A2.5
15	Coastal Western Hemlock	CWHvh	(for zone ranks 14–20)	(for zone ranks 14–20)
16	Coastal Western Hemlock	CWHxm		
17	Coastal Western Hemlock	CWHdm		
18	Coastal Western Hemlock	CWHmm		
19	Coastal Western Hemlock	CWHwm		
20	Coastal Western Hemlock	CWHvm		

TABLE 3 *British Columbia invertebrate taxa known to be very rare or endangered at the provincial and national levels, ranked using the Conservation Data Centre system (1994) and with a justification for the ranking<sup>a</sup>*

Species	Taxon	Ranking <sup>b</sup>		
		Provincial	National	Global
1 <i>Euchloe ausonides</i> (Lucas) ssp. n.	Lepidoptera Pieridae	SX?	NX?	G5TX?
An undescribed subspecies of the Large Marble, with only 13 known specimens in existence. Records show the known world distribution consisted of two populations on Vancouver Island (Langford and Victoria) and one on Gabriola Island. The last specimen was collected in 1908 on Gabriola Island. According to Guppy et al. (1995), this undescribed endemic subspecies is now apparently extinct, although an undiscovered population may exist on one of the Gulf Islands.				
2 <i>Euphydryas chalcedona perdiccas</i> (Edwards)	Lepidoptera Nymphalidae	SX?	NX?	G5T2/T3
This subspecies of the Chalcedon Checkerspot was formerly known from two populations on southern Vancouver Island, one on Mt. Finlayson (north of Victoria) and the other on Mt. Tzuhalem (east of Duncan). The former has been extirpated, and the latter may likewise be no longer present; Guppy et al. (1995) considers the subspecies extirpated in British Columbia.				
3 <i>Physella wrighti</i> Te & Clarke	Mollusca Physidae	S1	N1	G1
This mollusc is a unique endemic, known only from the type material collected from Alpha Stream at Liard Hot Springs. It may be a unique Pleistocene relict. Clarke (1976) noted that the species is known only from a 0.3 × 3 m cool vegetated portion of the outlet of Liard Hot Springs, and stated that if that spring is further “developed” the species will become extinct. Te and Clarke (1985) reported that <i>P. wrighti</i> occurs alone and only on <i>Chara</i> plants at depths of 0.05–0.2 m. The total population occupies the warm outlet of Alpha Pool in an area beginning just below the mouth of a cool tributary (Fern Creek) and extends downstream for 34 m. Te and Clarke (1985) indicated that in 1979, in an effort to locate more populations of <i>P. wrighti</i> , the following areas were visited: Grayling Springs (59°37'N 125°32'W and 59°37'N 125°38'W), Deer River Hot Springs (59°30'15"N 125°57'15"W), and Toad Springs (58°55'30"N 125°05'30"W), all in northern British Columbia; Coal River Hot Springs (60°09'N 127°09'W) in southern Yukon, and other springs and pools in Liard Hot Springs Provincial Park (i.e., Beta Pool, Gamma Spring, Epsilon Spring, Hanging Garden Spring, and Alpha Marsh). No <i>P. wrighti</i> were found.				
4 <i>Stygobromus quatsinensis</i> Holsinger & Shaw	Crustacea Crangonyctidae	S1	N1	G1
This amphipod is endemic to Thanksgiving Cave and Hourglass Cave on Vancouver Island (Holsinger and Shaw 1987). These and other cave habitats are vulnerable to disturbance and this amphipod is definitely endangered. J.R. Holsinger (Old Dominion Univ., Norfolk, Va., pers. comm., 1992) believes that more endemic taxa will be found in subterranean groundwater habitats elsewhere in the province.				

TABLE 3 (Continued)

Species	Taxon	Ranking <sup>b</sup>		
		Provincial	National	Global
5 <i>Acroloxus coloradensis</i> (Henderson)	Mollusca Acroloxidae	S1	N1	G1
<p>This mollusc is also a special case in British Columbia, being recorded only from Purden Lake near Prince George (Clarke 1981). This species is now under active consideration for inclusion in the United States Lists of Endangered and Threatened Species (A.H. Clarke, EcoResearch Inc., Portland, Oreg., pers. comm., 1992). Clarke (pers. comm., 1992) reported that he has recently completed a status survey of this species in the United States and is now writing a report. The U.S. Fish and Wildlife Service is taking action now, however, because an emergency situation exists at one of the two sites in the United States where the species is known to occur. Updated information on the United States action and recent developments can be obtained by writing Mr. Bernardo Garza, U.S. Fish and Wildlife Service, 730 Simms Street, Room 290, Golden, Colorado, 80401. Because aquatic habitats are not adequately considered in either the ecosystems or ecoregions of British Columbia, the limited habitat for <i>A. coloradensis</i> cannot be easily listed.</p>				
6 <i>Prosimulium constrictistylum</i> Peterson	Diptera Simuliidae	S1	N1	G1
<p>It may seem strange to list a blackfly so high in the list of endangered species, but this endemic species to British Columbia is known only from the type locality, which is a very small stream 1 km east of Osoyoos (Peterson 1970). Recent chromosomal studies have confirmed that this is a good species (D.C. Currie, Royal Ont. Mus., pers. comm., 1993), and my recent surveys in the South Okanagan indicate that this small stream is endangered.</p>				
7 <i>Ramellogrammarus vancouverensis</i> Bousfield	Crustacea Anisogammaridae	S1	N1	G1
<p>An amphipod endemic to the province and known only from pools at the mouth of a small stream near mid-beach at Wreck Bay, Vancouver Island (Bousfield 1979; Bousfield and Morino 1992). This species occurs in a surf-exposed often fog-shrouded, stream mouth (Bousfield and Morino 1992), and the habitat is endangered (E.L. Bousfield, Royal B.C. Mus., pers. comm., 1992).</p>				
8 <i>Nearctodesmus boydi</i> Chamberlin	Diplopoda Nearctodesmidae	S1	N1	G1?
<p>This polydesmid millipede is endemic to British Columbia. Described from and so far known only from Cowichan Lake (Chamberlin 1951). Shelley (1990) noted that the large, flat, brown to brownish-red nearctodesmids are abundant in moist coastal environments on Vancouver Island, the mainland, and associated islands as far north as Prince Rupert, ranging inland in the south to Agassiz. In the Queen Charlotte Islands, the family is known only from Burnaby Island, and in the Interior there are isolated allopatric populations. Accurate species identifications must await a comprehensive family-level revision (Shelley 1990).</p>				

TABLE 3 (Continued)

Species	Taxon	Ranking <sup>b</sup>		
		Provincial	National	Global
9 <i>Clivenema fusca</i> Downes	Heteroptera Miridae	S1	N1	G1
This mirid is endemic to the province and known only from the type collected by sweeping on the top of Mt. Douglas (Downes 1924), just north of Victoria.				
10 <i>Ceratocapsus downesi</i> Knight	Heteroptera Miridae	S1	N1	G1
A mirid endemic to British Columbia and recorded only from Royal Oak, Saanich District, and Victoria (Knight 1927; Henry and Froeschner [editors] 1988).				
11 <i>Acertogallia okanagana</i> Hamilton	Homoptera Cicadellidae	S1	N1	G1
A leafhopper endemic to British Columbia and known only from the unique male holotype collected at Osoyoos (K.G.A. Hamilton, Agric. Can., pers. comm., 1993).				
12 <i>Synageles leechi</i> Cutler	Araneae Salticidae	S1	N1	G1
An ant mimic spider endemic to the province and recorded only from Oliver (Cutler 1987; West et al. 1988; Scudder 1992).				
13 <i>Meris suffusaria</i> McDunnough	Lepidoptera Geometridae	S1	N1	G1
A geometrid moth endemic to the province and known only from the unique male holotype collected at Shingle Creek Road, Keremeos (McDunnough 1940; McGuffin 1987).				
14 <i>Arctogeophilus insularis</i> Attems	Chilopoda Chinenophilidae	S1	N1	G1
A geophilid centipede endemic to the province and recorded only from Nanaimo (Attems 1947).				
15 <i>Nearctodesmus carli</i> Chamberlin	Diplopoda Nearctodesmidae	S1	N1	G1?
A millipede endemic to the province and known only from the Scott Islands (Chamberlin 1951; Chamberlin and Hoffman 1958). A systematic revision of the Nearctodesmidae is needed to clarify the status of this species (Shelley 1990).				

TABLE 3 (Continued)

Species	Taxon	Ranking <sup>b</sup>		
		Provincial	National	Global
16 <i>Trimerotropis longicornis</i> Walker	Orthoptera Acridiidae	S1	N1	G1?
A grasshopper endemic to British Columbia and recorded only from Vernon (Walker 1902, 1906; Vickery and Kevan 1985). V.R. Vickery (Lyman Entomol. Mus., McGill Univ., pers. comm., 1992) noted that the species is known only from one locality and, although he recently removed it from synonymy, it may yet prove to be only a freak colour phase of <i>T. campestris</i> McNeil.				
17 <i>Mesomachilis canadensis</i> Sturm	Microcoryphia Machilidae	S1	N1	G1
A bristletail endemic to the province and recorded only from Kamloops (Sturm 1991).				
18 <i>Bollmaniulus spenceri</i> Chamberlin	Diplopoda Parajulidae	S1	N1	G1?
A millipede endemic to the province and recorded only from Kamloops (Chamberlin 1951). Shelley (1990) indicated that the taxonomy of the Parajulidae (to which this taxon belongs) is in disarray, and the western fauna is unidentifiable without in-depth revisionary studies, probably a decade or more in the future.				
19 <i>Epirigone paludosa</i> Millidge	Araneae Erigonidae	S1	N1	G1
A spider endemic to the province and known only from Goldstream Provincial Park (Millidge 1978; West et al. 1988).				
20 <i>Trigonodemus fasciatus</i> Leech	Coleoptera Staphylinidae	S1	N1	G1
A rare beetle endemic to the province and recorded only from Vancouver (Leech 1939).				
21 <i>Gastrodes intermedius</i> Usinger	Heteroptera Lygaeidae	S1	N1	G1
A seed bug endemic to the province and recorded only from Penticton (Usinger 1938).				
22 <i>Pseudocistela pectinata</i> Hopping	Coleoptera Tenebrionidae	S1	N1	G1
A tenebrionid beetle endemic to the province and recorded only from Midday Valley, Merritt (Hopping 1933).				

TABLE 3 (Continued)

Species	Taxon	Ranking <sup>b</sup>		
		Provincial	National	Global
23 <i>Coriomeris insularis</i> Dolling & Yonke	Heteroptera Coreidae	S1	N1	G1
A coreid bug endemic to the Coastal Douglas-fir zone and recorded from Bowser, Comox, Goldstream Provincial Park, Nanaimo, Saanich, Victoria, Denman Island, and Galiano Island (Dolling and Yonke 1976).				
24 <i>Ceutorhynchus opertus</i> Brown	Coleoptera Curculionidae	S1	N1	G1
A weevil endemic to the province and recorded only from Oliver (Brown 1931).				
25 <i>Lyctocoris okanaganus</i> Kelton & Anderson	Heteroptera Anthocoridae	S1	N1	G1
An anthocorid bug endemic to the province and recorded only from Christina Lake and Summerland (Kelton and Anderson 1962; Kelton 1978).				
26 <i>Scotinotylus bicornis</i> (Emerton)	Araneae Erigonidae	S1	N1	G1
A spider endemic to the province and recorded only from Terrace (Emerton 1923; Millidge 1981; West et al. 1984).				
27 <i>Opiona columbiana</i> Chamberlin	Diplopoda Caseyidae	S1	N1	G1
A millipede endemic to the province and recorded only from Vancouver and Victoria (Chamberlin 1951).				
28 <i>Mitoura johnsoni</i> (Skinner)	Lepidoptera Lycaenidae	S1	N1	G4
In Canada, was formerly known to occur in southern Vancouver Island (Shawnigan Lake), Greater Vancouver, and Spuzzum. Extant populations are known only from the Greater Vancouver area (Stanley Park, Lynn Canyon Park, Pacific Spirit Park, and the Univ. B.C. Research Forest at Haney) (Guppy et al. 1995). With recent aerial spraying for the gypsy moth, many of these populations are endangered, if not already extirpated.				

TABLE 3 (Continued)

Species	Taxon	Ranking <sup>b</sup>		
		Provincial	National	Global
29 <i>Mitoura barryi acuminata</i> Johnson	Lepidoptera Lycaenidae	S1S2	N1N2	G4T4
This subspecies of Barry's Hairstreak exists in only two populations in Canada, one at Yellow Point near Ladysmith, and the other around the sea edge of the Saanich Peninsula; there is a very old historical record from Esquimalt (Guppy et al. 1995). The species is endangered in Canada.				
30 <i>Speyeria zerene bremneri</i> (Edwards)	Lepidoptera Nymphalidae	S1	N1	G5T4
This subspecies of the Zerene Fritillary was reported from southern Vancouver Island and the Lower Fraser Valley, but there are no extant populations known, so the butterfly is considered endangered in the province by Guppy et al. (1995).				
31 <i>Euphydryas editha taylori</i> (Edwards)	Lepidoptera Nymphalidae	S1	N1	G5 T2/T3
This subspecies of Edith's Checkerspot is now known from only two extant populations: one between Mill Bay and Shawnigan Lake and the other along the shore in Helliwell Provincial Park on Hornby Island. Many populations were known historically from the Saanich Peninsula, but all appear to have been extirpated (Guppy et al. 1995). Since the population between Mill Bay and Shawnigan Lake is in a powerline right-of-way, it could be extirpated through use of pesticides, herbicides, or land clearing. The Hornby Island population could be endangered through predation by introduced opossums on overwintering larvae, or by human disturbance.				
32 <i>Apodema mormo mormo</i> (Felder & Felder)	Lepidoptera Riodinidae	S1	N1	G5T5
The Mormon Metalmark was formerly known to occur in two localities in the South Okanagan, but now only one extant population exists in the province near Keremeos, and this is endangered (Guppy et al. 1995).				
33 <i>Icaricia icariodes blackmorei</i> (Barnes & McDunnough)	Lepidoptera Lycaenidae	S1	N1	G5T1
This subspecies of the Icaroides Blue in British Columbia is now known from one extant population near Nanaimo and so is endangered (Guppy et al. 1995).				

TABLE 3 (Continued)

Species	Taxon	Ranking <sup>b</sup>		
		Provincial	National	Global
34 <i>Gaeides xanthoides dione</i> (Scudder)	Lepidoptera Lycaenidae	S1	N1	G5T5
This subspecies of the Large Copper in British Columbia is known from only one population at Elizabeth Lake at Cranbrook, and thus is considered endangered (Guppy et al. 1995).				
35 <i>Plebejus saepiolus insulanus</i> Blackmore	Lepidoptera Lycaenidae	S1	N1	G5T1
This subspecies of the Greenish Blue is restricted to Vancouver Island, but no extant populations are known, so the subspecies may be endangered (Guppy et al. 1995).				
36 <i>Autographa speciosa</i> Ottol	Lepidoptera Noctuidae	S1	N1	G2
A rare noctuid moth with one extant population known from Quamichan Lake on Vancouver Island, and with only two locations in the United States (J.D. Lafontaine, Agric. Can., pers. comm., 1992).				
37 <i>Delochilocoris gracilis</i> Scudder MS name	Heteroptera Lygaeidae	S1	N1	G2
A lygaeid bug recorded in Canada only from Tatlayoko Lake and Tatla Lake. Elsewhere known from a single locality in Idaho and one locality in Oregon.				
38 <i>Tuniulus hewitti</i> Chamberlin	Diplopoda Julidae	S1	N1	G2
A julid millipede, in Canada known only from Agassiz (Chamberlin 1919).				
39 <i>Ischnura damula</i> Calvert	Odonata Coenagridae	S1	N3	G5
A damselfly in British Columbia recorded only from Liard Hot Springs (Scudder et al. 1977).				
40 <i>Malezonotus arcuatus</i> Ashlock	Heteroptera Lygaeidae	S1	N1	G2
A seed bug in Canada recorded only from Kaslo Creek (Ashlock 1958).				

TABLE 3 (Continued)

Species	Taxon	Ranking <sup>b</sup>		
		Provincial	National	Global
41 <i>Scolopostethus tropicus</i> (Distant)	Heteroptera Lygaeidae	S1	N1	G4
A seed bug in Canada recorded only from Goldstream Provincial Park (Scudder 1985).				
42 <i>Litaneutria minor</i> (Scudder)	Dictyoptera Mantidae	S1	N1	G4
A ground-dwelling mantid confined to Oliver and Osoyoos in Canada, and collected only five times in the last ten years (R.A. Cannings 1987).				
43 <i>Okanagana ornata</i> Van Duzee	Homoptera Cicadidae	S1	N1	G4
A cicada in Canada recorded only from Anderson and Seton lakes.				
44 <i>Nearctolinus aurantiacus</i> (Schoett)	Microcoryphia Meinertellidae	S1	N1	G3
A rare bristletail, in Canada recorded only from Kamloops (Sturm and Bach de Roca 1992).				
45 <i>Omanonabis lovetti</i> (Harris)	Heteroptera Nabidae	S1	N1	G4
A nabid in Canada recorded only from Galiano Island and Saanich (Scudder 1985).				
46 <i>Camirus porosus</i> (Germar)	Heteroptera Scutelleridae	S1	N1	G4
A scutellerid bug in Canada recorded before 1904 from Vancouver and Victoria, and since 1904 collected only on Galiano Island and at Goldstream Provincial Park.				
47 <i>Ioscytus politus</i> (Uhler)	Heteroptera Saldidae	S1	N1	G4
A saldid in Canada recorded only from Richter Pass, Osoyoos (Scudder 1985).				

TABLE 3 (Concluded)

Species	Taxon	Ranking <sup>b</sup>		
		Provincial	National	Global
48 <i>Hoplistoscelis heidemanni</i> (Reuter)	Heteroptera Nabidae	S1	N1	G4
A nabid in Canada recorded only from Anarchist Mountain and Haynes Ecological Reserve (Osoyoos) (Scudder 1992).				
49 <i>Omus audouini</i> Reiche	Coleoptera Carabidae	S1	N1	G4
A rare cicindelid recorded only from Victoria and in old fields at Boundary Bay.				
50 <i>Physella hordacea</i> (Lea)	Mollusca Physidae	S1	N1	G1?
A rare mollusc in Canada recorded only from Long Lake, Wellington, near Nanaimo.				

<sup>a</sup> In assembling this list, priority was placed on endemic species that are known or thought to be rare and endangered, and that have limited means of dispersal or are in habitats already considered endangered.

<sup>b</sup> Taxa are ranked globally (G), nationally (N), and provincially (S) from 1 (rarest or most threatened) to 5 (commonest or least threatened); X indicates that the species or subspecies is extirpated in the region or extinct; T indicates a global rank for a subspecies. ? indicates that status is estimated.

<sup>c</sup> This may be the same as *P. gyrina* (Say) (D.W. Taylor, pers. comm., 1992).

TABLE 4 Occurrence of rare and endangered taxa in ecoregions of British Columbia

Class	Order	Ecoregion ranking <sup>a</sup>													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Mollusca (freshwater)		x	x	x	x			x	x		x				
Annelida (terrestrial)						x									
Annelida (aquatic)			x					x							
Tardigrada						x									
Arachnida	Solpugida		x												
	Scorpionida		x												
	Araneae	x	x	x	x	x		x		x		x			
	Acariformes (soil/water)	x	x	x		x		x					x	x	
Crustacea	Amphipoda					x									
	Isopoda	x				x									
Diplopoda		x	x		x	x						x			
Chilopoda		x													
Paupoda		x	x									x			
Protura		x													
Collembola						x						x			
Diplura		x													
Insecta	Microcoryphia		x												
	Ephemeroptera		x												
	Odonata	x	x	x	x		x	x	x		x	x		x	x
	Plecoptera	x	x	x	x	x		x	x	x		x			
	Notoptera								x			x	x		
	Dictyoptera		x												
	Grylloptera	x	x		x							x			
	Orthoptera		x												
	Heteroptera	x	x	x	x		x	x				x			
	Homoptera (Auchenorrhyncha)	x	x	x	x	x	x	x				x			
	Megaloptera	x	x	x	x										
	Raphidioptera		x												
	Neuroptera	x	x	x	x		x								
	Coleoptera (Carabidae, etc.)	x	x	x	x	x			x	x	x	x	x	x	
	Mecoptera		x	x	x							x			
	Diptera (some)	x	x	x	x	x	x	x	x	x		x		x	
	Lepidoptera (Macrolepidoptera)	x	x	x	x	x	x	x	x	x		x			
	Trichoptera	x	x	x	x	x	x	x	x	x	x	x		x	
	Hymenoptera (Aculeates)	x	x	x	x			x				x			

<sup>a</sup> Number refers to ranking of ecoregions for conserving rare and endangered invertebrates. These are: (1) Eastern Vancouver Island and Georgia Puget Basin; (2) Thompson-Okanagan Plateau, Okanagan Range, Okanagan Highlands, and Interior Transition Ranges (Pavilion Ranges eco-section); (3) Southern Rocky Mountain Trench, Columbia Mountains and Highlands, Selkirk-Bitterroot Foothills; (4) Lower Mainland; (5) Western Vancouver Island, Queen Charlotte Ranges, Queen Charlotte Lowland, Coastal Gap; (6) Alberta Plateau; (7) Chilcotin Ranges, Fraser Plateau; (8) Northern Mountains and Plateaus, Liard Basin, Yukon-Stikine Highlands, Kluane Plateau; (9) Nass Ranges; (10) Fraser Basin; (11) Pacific and Cascade Ranges, Interior Transition Ranges (Leeward Pacific Ranges eco-section); (12) Northern Canadian Rocky Mountains; (13) Western Continental Ranges, Continental Divide; and (14) Upper Mackenzie Basin.

TABLE 5 *Taxa captured by various sampling techniques*

Class	Order	Sampling technique										
		Pan/Pitfall	Window/Malaise	Berlese	Beating	Sweeping	Searching	Sifting	Netting and chasing	Dipnet (sweeping)	Dipnet (shuffling)	Light trap
Mollusca (freshwater)						x			x	x		
Annelida (terrestrial)			x									
Annelida (freshwater)									x	x		
Crustacea	Amphipoda						x			x	x	
	Isopoda						x	x		x	x	
Arachnida	Solpugida	x										
	Scorpionida	x					x					
	Araneae	x		x	x	x	x			x		
	Acariformes			x						x	x	
Diplopoda and Chilopoda		x		x			x	x				
Paupopoda, Protura, and Diplura		x										
Collembola		x		x								
Insecta	Microcoryphia	x		x			x					
	Odonata								x	x	x	
	Ephemeroptera				x	x	x		x	x	x	x
	Plecoptera	x			x	x	x		x	x	x	
	Notoptera						x					
	Dictyoptera	x					x					
	Grylloptera	x			x	x	x		x			x
	Orthoptera	x	x		x	x	x		x			x
	Heteroptera	x	x	x	x	x	x	x	x	x		x
	Homoptera	x	x		x	x	x		x			x
	(Auchenorrhyncha)											
	Megaloptera		x		x	x	x		x	x	x	x
	Raphidioptera		x		x	x	x		x			x
	Neuroptera		x		x	x	x		x			x
	Coleoptera	x	x	x	x	x	x	x	x	x		x
	(Carabidae)											
	Mecoptera						x					
	Diptera (some)	x	x		x	x	x		x			
	Lepidoptera								x			x
	(Macrolepidoptera)											
	Trichoptera				x	x	x			x	x	x
	Hymenoptera	x	x	x	x	x	x		x			
	(Aculeates)											

TABLE 6 *Estimate of time required to process samples from one site taken on a typical monthly basis*

Sampling method	Time required (hrs)					
	Processing					Total
	Trap emptying or sampling	Sorting	Preparation	(Subtotal)	Identification to family <sup>a</sup>	
Pitfall (6 emptied monthly)	1	6	12	(19)	18	37
Pan (6 with 2 × 1 day samples each month)	1	40	80	(121)	120	241
Window (5 emptied monthly)	1	35	70	(106)	105	211
Berlese/core (1 sample per month)	1	8	16	(25)	24	49
Beating (1 hour)	1	6	12	(19)	19	38
Sweeping (1 hour)	1	6	12	(19)	19	38
Searching-walking (1 hour)	1	5	10	(16)	16	32
Searching-crawling (1 hour)	1	6	12	(19)	19	38
Chasing (butterflies) (5 hrs/month)	5	1 <sup>b</sup>	2 <sup>b</sup>	(8)	2 <sup>b</sup>	10
Light trap (moths) (1 night per week)	4	20 <sup>c</sup>	200 <sup>c</sup>	(224)	100 <sup>c</sup>	324

<sup>a</sup> Identification to major families of taxa (except Acari), but see below.

<sup>b</sup> Butterflies will be collected by an expert, and only voucher specimens will be processed, including identification to species and subspecies by the expert collector.

<sup>c</sup> Moths will be sorted by an expert and only specimens of special interest will be processed.

TABLE 7 *Major public collections of British Columbia terrestrial and freshwater invertebrates*

Province, State or Country	Address
Alberta	Provincial Museum of Alberta, 12845–102nd Avenue, Edmonton, AB T5N 0M6
	Department of Entomology, University of Alberta, Edmonton, AB T6G 2E3
	Agriculture Canada Research Station, Lethbridge, AB T1J 4B1
British Columbia	Agriculture Canada Research Station, Summerland, BC V0H 1Z0
	Agriculture Canada Research Station, 6660 N.W. Marine Drive, Vancouver, BC V6T 1X2
	Department of Zoology, University of British Columbia, Vancouver, BC V6T 1Z4
	Pacific Forestry Centre, 506 W. Burnside Road, Victoria, BC V8Z 1M5
	Royal British Columbia Museum, 675 Belleville Street, Victoria, BC V8V 1X4
Manitoba	Department of Biology, University of Victoria, Victoria, BC V8W 2Y2
	Agriculture Canada Research Station, 195 Dafoe Road, Winnipeg, MB R3T 2M9
Newfoundland	Canadian Wildlife Service, 501 University Crescent, Winnipeg, MB R3T 2N6
	Department of Biology, Memorial University, St. John's, NF A1B 3X9
Ontario	Department of Environmental Biology, University of Guelph, Guelph, ON N1G 2W1

TABLE 7 (Continued)

Province, State or Country	Address
	Biological Resources Division, CLBRR, Agriculture Canada, Ottawa, ON K1A 0C6
	Canadian Museum of Nature, P.O. Box 3443, Station D, Ottawa, ON K1P 6P4
	Royal Ontario Museum, 100 Queen's Park, Toronto, ON M5S 2C6
Quebec	Lyman Entomological Museum and Research Laboratory, Macdonald Campus, McGill University, Ste. Anne de Bellevue, PQ H9X 1C0
	Redpath Museum, McGill University, 859 Sherbrooke Street W., Montreal, PQ H3A 2K6
California	Natural History Museum, Los Angeles Co., Los Angeles, CA 90007
	California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118
District of Columbia	National Museum of Natural History, Smithsonian Institution, Washington, DC 20560
Idaho	Department of Entomology, University of Idaho, Moscow, ID 83843
Illinois	Natural History Survey, Urbana, IL 61801
New York	American Museum of Natural History, Central Park West at 79th Street, New York, NY 10023
	Department of Entomology, Cornell University, Ithaca, NY 14853
Oregon	Department of Entomology, Oregon State University, Corvallis, OR 97331
Pennsylvania	Carnegie Museum of Natural History, 4400 Forbes Avenue, Pittsburgh, PA 15213

TABLE 7 (Concluded)

Province, State or Country	Address
Wisconsin	Milwaukee Public Museum, 800 W. Wells Street, Milwaukee, WI 53233
England	The Natural History Museum, Cromwell Road, South Kensington, London SW75BD England
Finland	Zoological Museum, P. Rautatiekatu 13, 00100 Helsinki, Finland
Sweden	Zoological Institute, The University, 22302 Lund, Sweden

TABLE 8 *List of experts consulted*

Taxon	Expert
Phylum PORIFERA (sponges)	Dr. H.M. Reiswig Redpath Museum McGill University 859 Sherbrooke Street West Montreal, PQ H3A 2K6 Tel: (514) 398-4089 Fax: (514) 398-3185
Phylum PLATYHELMINTHES Class TURBELLARIA (flatworms)	Dr. I.R. Ball Centre for Marine Sciences Department of Zoology University of West Indies Kingston 7, Jamaica West Indies Tel: (809) 927-1202 Fax: (809) 927-1640
Phylum ROTIFERA	Dr. R. Chengalath Canadian Museum of Nature P.O. Box 3443, Station D Ottawa, ON K1P 6P4 Tel: (613) 954-4958 Fax: (613) 954-6439
Phylum MOLLUSCA (freshwater forms)	Dr. A.H. Clarke Ecoresearch Inc. 325 East Bayview Portland, TX 78374
Phylum ANNELIDA Class OLIGOCHAETA (terrestrial earthworms)	Dr. D.W. Taylor P.O. Box 5532 Eugene, OR 97405
	Dr. J.W. Reynolds Resource Technology Division Sir Sandford Fleming College P.O. Box 8000 Lindsay, ON K9V 5E6 Tel: (705) 324-9144 Fax: (705) 878-9312
	Dr. D. McKey-Fender 835 Ashworth Avenue McMinnville, OR 97128

TABLE 8 (Continued)

Taxon	Expert
(aquatic freshwater earthworms)	Dr. R.O. Brinkhurst Aquatic Resources Center P.O. Box 680818 Franklin, TN 37068-0818
Class HIRUDINOIDEA (leeches)	Dr. R.W. Davies Department of Biology University of Calgary Calgary, AB T2N 1N4 Tel: (403) 220-5260 Fax: (403) 289-9311
Phylum ARTHROPODA Subphylum CHELICERATA Class ARACHNIDA Order SOLPUGIDA (sun spiders)	Dr. R. Holmberg Department of Biology Athabasca University Box 10,000 Athabasca, AB T0G 2R0 Tel: (403) 675-6226 Fax: (403) 675-6186
	Mr. D.J. Buckle 620 Albert Avenue Saskatoon, SK S7N 1G7
Order SCORPIONIDA	Dr. S.C. Williams Department of Biology San Francisco State University San Francisco, CA 94132 Tel: (415) 338-1695
Order PSEUDOSCORPIONIDA (pseudoscorpions)	Dr. W.B. Muchmore Department of Biology University of Rochester Rochester, NY 14627
Order ARANEAE (spiders)	Mr. J.H. Redner Biological Resources Division CLBRR Agriculture Canada Ottawa, ON K1A 0C6 Tel: (613) 996-1665 Fax: (613) 995-7283

TABLE 8 (Continued)

Taxon	Expert
Order ARANEAE (Continued)	Dr. R.G. Bennett Ministry of Forests Silviculture Branch 3rd Floor, 31 Bastion Square Victoria, BC V8W 3E7 Tel: (604) 387-3931 Fax: (604) 387-1467
Order OPILIONES (harvestmen)	Dr. R. Holmberg Department of Biology Athabasca University Box 10,000 Athabasca, AB T0G 2R0 Tel: (403) 675-6226 Fax: (403) 675-6186
Order ACARIFORMES (mites)	Dr. V. Behan-Pelletier Dr. E.E. Lindquist Dr. I.M. Smith all: Biological Resources Division CLBRR Agriculture Canada Ottawa, ON K1A 0C6 Tel: (613) 996-1665 Fax: (613) 995-7283
	Dr. V.G. Marshall Pacific Forestry Centre 506 West Burnside Road Victoria, BC V8Z 1M5 Tel: (604) 363-0600 Fax: (604) 363-0775
Subphylum CRUSTACEA Class BRANCHIOPODA Order CLADOCERA	Dr. R. Chengalath Canadian Museum of Nature P.O. Box 3443, Station D Ottawa, ON K1P 6P4 Tel: (613) 954-4958 Fax: (613) 954-6439

TABLE 8 (Continued)

Taxon	Expert
Class OSTRACODA (seed shrimps)	Gordon Green Royal British Columbia Museum 675 Belleville Street Victoria, BC v8v 1x4 Tel: (604) 387-6513 Fax: (604) 387-5360
Class MALACOSTRACA Order AMPHIPODA	Dr. E.L. Bousfield 611 - 548 Dallas Road Victoria, BC v8v 1B5 Tel: (604) 380-3787 or Royal British Columbia Museum 675 Belleville Street Victoria, BC v8v 1x4 Tel: (604) 387-6513 Fax: (604) 387-5360
Order ISOPODA	Ms. Fahmida Rafi Canadian Museum of Nature P.O. Box 3443, Station D Ottawa, ON K1P 6P4 Tel: (613) 954-4957 Fax: (613) 954-6439
(subterranean forms)	Dr. J.R. Holsinger Department of Biological Sciences Old Dominion University Norfolk, VA 23529-0266 Tel: (804) 683-3595
Order DECAPODA	Dr. H.H. Hobbs, Jr. Department of Invertebrate Zoology Smithsonian Institution Washington, DC 20560
Subphylum MYRIAPODA Class DIPLOPODA	Dr. R.M. Shelley North Carolina State Museum of Natural Sciences Bicentennial Plaza P.O. Box 27647 Raleigh, NC 27611 Tel: (919) 733-7450 Fax: (919) 733-1573

TABLE 8 (Continued)

Taxon	Expert
Class PAUROPODA	Dr. U. Scheller Lundsberg S-68800 Storfors Sweden
Subphylum HEXAPODA Class PROTURA	Dr. J. Rusek Entomologický ústav CSAV Vinická 7 128 00 Praha 2 Czechoslovakia
Class COLLEMBOLA (springtails)	D.P.F. Bellinger Department of Biology California State University 18111 Nordhoff Street-BIOL Northridge, CA 91330 Tel: (818) 885-3356 Fax: (818) 885-2034
	Dr. A. Fjellberg Department of Zoology Tromsø University N-9000 Tromsø Norway
Class INSECTA Subclass ARCHAEOGNATHA Order MICROCORYPHIA	Dr. H. Sturm Universität Hildesheim Marienburger Platz 22 D-3200 Hildesheim Germany Tel: 49-5121-883-0
Order EPHEMEROPTERA	Dr. P. Harper Department des Sciences biologiques Université de Montréal C.P. 6128, Suce. A. Montréal, PQ H3C 3J7 Tel: (514) 343-6790

TABLE 8 (Continued)

Taxon	Expert
Order ODONATA	<p>Mr. S.G. Cannings Conservation Data Centre 780 Blanshard Street Victoria, BC v8v 1x4 Tel: (604) 387-6250</p> <p>Mr. R.A. Cannings Royal British Columbia Museum 675 Belleville Street Victoria, BC v8v 1x4 Tel: (604) 356-8242</p>
Order PLECOPTERA	<p>Dr. W.E. Ricker 3052 Hammond Bay Road Nanaimo, BC v9t 1E2</p>
Order DICTYOPTERA Order NOTOPTERA Order DERMAPTERA Order GRYLLOPTERA Order ORTHOPTERA	<p>Dr. V.R. Vickery Lyman Entomological Museum Macdonald Campus McGill University 2111 Lakeshore Road Ste. Anne de Bellevue Quebec, PQ H9X 1C0 Tel: (514) 398-7915</p>
Order PSOCOPTERA	<p>Dr. E.L. Mockford Department of Biological Sciences Illinois State University Normal, IL 61761 Tel: (309) 438-2666</p>
Order HETEROPTERA	<p>Dr. G.G.E. Scudder Department of Zoology University of British Columbia Vancouver, BC v6t 1Z4 Tel: (604) 822-3682 Fax: (604) 822-2416</p>

TABLE 8 (Continued)

Taxon	Expert
<p>Order HETEROPTERA (Continued)</p>	<p>Dr. M.D. Schwartz Biological Resources Division CLBRR Agriculture Canada Ottawa, ON K1A 0C6 Tel: (613) 996-1665 Fax: (613) 995-7283</p> <p>Dr. J.D. Lattin Department of Entomology Oregon State University Corvallis, OR 97331 Tel: (503) 737-5505</p> <p>Dr. R.T. Schuh Department of Entomology American Museum of Natural History Central Park West at 79th Street New York, NY 10023 Tel: (212) 769-5610 Fax: (212) 769-5233</p> <p>Dr. T.J. Henry Systematic Entomology Laboratory ARS-USDA c/o National Museum of Natural History Smithsonian Institution Washington, DC 20560 Tel: (202) 382-1780</p>
<p>Order HOMOPTERA (Auchenorrhyncha)</p>	<p>Dr. K.G.A. Hamilton Biological Resources Division CLBRR Agriculture Canada Ottawa, ON K1A 0C6 Tel: (613) 996-1665 Fax: (613) 995-7283</p>
<p>(Fulgoroidae)</p>	<p>Dr. S.W. Wilson Biology Department Central Missouri State University Warrensburg, MO 64093 Tel: (816) 543-4933</p>

TABLE 8 (Continued)

Taxon	Expert
(Sternorrhyncha)	Dr. R. Foottit Biological Resources Division CLBRR Agriculture Canada Ottawa, ON K1A 0C6 Tel: (613) 996-1665 Fax: (613) 995-7283
Order THYSANOPTERA	Dr. R. Foottit Biological Resources Division CLBRR Agriculture Canada Ottawa, ON K1A 0C6 Tel: (613) 996-1665 Fax: (613) 995-7283
	Dr. B.S. Heming Department of Entomology University of Alberta Edmonton, AB T6G 2E3 Tel: (403) 492-4173 Fax: (403) 492-1767
Order RAPHIDIOPTERA	Dr. U. Aspöck Zoologische Sammlung Naturhistorisches Museum Burgring 7 Vienna 1, Austria Tel: (0222) 93-45-41
Order NEUROPTERA Family Coniopterygidae	Dr. M. Meinander Zoological Museum University of Helsinki P.-Rautatiekatu 13 SF-00100 Helsinki 10 Finland
Family Chrysopidae	Dr. C.A. Tauber Department of Entomology Cornell University Ithaca, NY 14853-0999 Tel: (607) 255-4450 Fax: (607) 255-0939

TABLE 8 (Continued)

Taxon	Expert
Family Chrysopidae (Continued)	Dr. J.A. Garland 1011 Carling Avenue Ottawa, ON K1Y 4E7 Tel: (613) 995-7900 (home) Tel: (613) 998-9320 (office) Fax: (613) 995-6833
Family Hemerobiidae	Dr. J. Klimaszewski Department of Coleoptera Transvaal Museum P.O. Box 413 Pretoria, South Africa
Order COLEOPTERA Family Carabidae	Dr. G.E. Ball Department of Entomology University of Alberta Edmonton, AB T6G 2E3 Tel: (403) 492-4652 Fax: (403) 492-1767
	Dr. D. Kavanaugh California Academy of Sciences Golden Gate Park San Francisco, CA 94118 Tel: (415) 750-7239 Fax: (415) 750-4346
Family Dytiscidae	Dr. D.J. Larson Department of Biology Memorial University St. John's NF A1B 3X9 Tel: (709) 737-4573 Fax: (709) 737-3018
Family Scarabaeidae	Dr. H.F. Howden Department of Biology Carleton University Ottawa, ON K1S 5B6 Tel: (613) 788-3873 Fax: (613) 788-4497

TABLE 8 (Continued)

Taxon	Expert
Family Curculionidae	<p>Dr. A. Howden  Department of Biology  Carleton University  Ottawa, ON K1S 5B6  Tel: (613) 788-3873  Fax: (613) 788-4497</p> <p>Dr. R.S. Anderson  Canadian Museum of Nature  P.O. Box 3443, Station D  Ottawa, ON K1P 6P4  Tel: (613) 954-2649  Fax: (613) 954-6439</p>
Family Silphidae	<p>Dr. R.S. Anderson  Canadian Museum of Nature  P.O. Box 3443, Station D  Ottawa, ON K1P 6P4  Tel: (613) 954-2649  Fax: (613) 954-6439</p> <p>Dr. S.B. Peck  Department of Biology  Carleton University  Ottawa, ON K1S 5B6  Tel: (613) 788-2600  Fax: (613) 788-4497</p>
Family Leoidae	<p>Dr. S.B. Peck  Department of Biology  Carleton University  Ottawa, ON K1S 5B6  Tel: (613) 788-2600  Fax: (613) 788-4497</p>
Family Staphylinidae	<p>Dr. J.M. Campbell  Dr. A. Smetana  Biological Resources Division  CLBRR  Agriculture Canada  Ottawa, ON K1A 0C6  Tel: (613) 996-1665  Fax: (613) 995-7283</p>

TABLE 8 (Continued)

Taxon	Expert
Family Buprestidae Family Scolytidae	Dr. D. Bright Biological Resources Division CLBRR Agriculture Canada Ottawa, ON K1A 0C6 Tel: (613) 996-1665 Fax: (613) 995-7283
Order MECOPTERA	Dr. G.W. Byers Department of Entomology University of Kansas Lawrence, KS 66045-2106 Tel: (913) 864-4538 or 864-3065 Fax: (913) 864-5321
Order DIPTERA Family Tipulidae	Dr. G.W. Byers Department of Entomology University of Kansas Lawrence, KS 66045-2106 Tel: (913) 864-4538 or 864-3065 Fax: (913) 864-5321
Family Culicidae Family Tachinidae Family Simuliidae	Dr. D.M. Wood Biological Resources Division CLBRR Agriculture Canada Ottawa, ON K1A 0C6 Tel: (613) 996-1665 Fax: (613) 995-7283
Family Simuliidae	Dr. D.C. Currie Department of Entomology Royal Ontario Museum 100 Queen's Park Toronto, ON M5S 2C6 Tel: (416) 586-5532 Fax: (416) 586-5863

TABLE 8 (Continued)

Taxon	Expert
Family Tachinidae Family Syrphidae Family Chironomidae	Dr. J. O'Hara Dr. J.R. Vockeroth Dr. D.R. Oliver all: Biological Resources Division CLBRR Agriculture Canada Ottawa, ON K1A 0C6 Tel: (613) 996-1665 Fax: (613) 995-7283
Family Anthomyiidae	Dr. G.C.D. Griffiths Department of Entomology University of Alberta Edmonton, AB T6G 2E3 Tel: (403) 492-4652 Fax: (403) 492-1767
Family Asilidae	Mr. R.A. Cannings Royal British Columbia Museum 675 Belleville Street Victoria, BC V8V 1X4 Tel: (604) 356-8242
Order LEPIDOPTERA	Mr. C.S. Guppy Ministry of Environment, Lands and Parks 322 Johnston Avenue Quesnel, BC V2J 3M5 Tel: (604) 992-4490  Mr. J.H. Shepard RR 2, Sproule Creek Road Nelson, BC V1L 5P5  Dr. J.D. Lafontaine Biological Resources Division CLBRR Agriculture Canada Ottawa, ON K1A 0C6 Tel: (613) 996-1665 Fax: (613) 995-7283

TABLE 8 (Concluded)

Taxon	Expert
Order TRICHOPTERA	Dr. A.P. Nimmo Department of Entomology University of Alberta Edmonton, AB T6G 2E3 Tel: (403) 492-4652 Fax: (403) 492-1767
Order HYMENOPTERA	Dr. H. Goulet Dr. L. Masner Dr. M. Sharkey all: Biological Resources Division CLBRR Agriculture Canada Ottawa, ON K1A 0C6 Tel: (613) 996-1665 Fax: (613) 995-7283
Family Aculeates	Dr. A.T. Finnermore Provincial Museum of Alberta 12845 - 102nd Avenue Edmonton, AB T5N 0M6 Tel: (403) 453-9176 Fax: (403) 454-6629

**APPENDIX 1** Systematic arrangement of invertebrate taxa considered for inventory and descriptive research (classification based on Parker [1982] and Scudder et al. [1979])

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Kingdom ANIMALIA

Subkingdom PHAGOCYTELLOZOA

Phylum PORIFERA<sup>1</sup>

Subkingdom EUMETAZOA

Phylum CNIDARIA

Class HYDROZOA<sup>1</sup>

Phylum PLATYHELMINTHES

Class TURBELLARIA<sup>2</sup>

Phylum NEMERTEA<sup>3</sup>

Phylum GASTROTRICHA<sup>3</sup>

Phylum ROTIFERA<sup>1</sup>

Phylum NEMATA<sup>3</sup>

Phylum NEMATOMORPHA<sup>3</sup>

Phylum MOLLUSCA<sup>4</sup>

Phylum ANNELIDA

Class HIRUDINOIDEA

Class OLIGOCHAETA<sup>5</sup>

Phylum TARDIGRADA

Phylum BRYOZOA<sup>1</sup>

Phylum ARTHROPODA

Subphylum CHELICERATA

Class ARACHNIDA

Order SOLPUGIDA

Order SCORPIONIDA

Order PSEUDOSCORPIONIDA<sup>1</sup>

Order ARANEAE

Order OPILIONES<sup>1</sup>

Order ACARIFORMES

Subphylum CRUSTACEA

Class MALACOSTRACA

Order AMPHIPODA

Order ISOPODA

Subphylum MYRIAPODA

Class DIPLOPODA

Class CHILOPODA<sup>6</sup>

Class PAUROPODA

Class SYMPHYLA<sup>1</sup>

Subphylum HEXAPODA

Class PROTURA

Class COLLEMBOLA

Class DIPLURA

Class INSECTA

*Appendix 1 Continued*

Subclass ARCHAEOGNATHA  
Order MICROCORYPHIA  
Suborder ZYGENTOMA  
Order THYSANURA<sup>1</sup>  
Subclass PTILOTA  
Infraclass PALAEOPTERA  
Order EPHEMEROPTERA  
Order ODONATA  
Infraclass NEOPTERA  
Order PLECOPTERA  
Order DICTUOPTERA  
Order NOTOPTERA  
Order DERMAPTERA<sup>1</sup>  
Order GRYLLOPTERA  
Order ORTHOPTERA  
Order PSOCOPTERA<sup>1</sup>  
Order HETEROPTERA  
Order HOMOPTERA  
Order THYSANOPTERA<sup>1</sup>  
Order MEGALOPTERA  
Order RAPHIIDIOPTERA  
Order NEUROPTERA  
Order COLEOPTERA  
Order MECOPTERA  
Order DIPTERA  
Order LEPIDOPTERA  
Order TRICHOPTERA  
Order HYMENOPTERA<sup>7</sup>

Phylum BRYOZOA

- <sup>1</sup> This taxon does not contain any rare or endangered species in British Columbia, as far as known.
- <sup>2</sup> No rare or endangered species are obvious in the literature, but reply has not yet been received from Dr. I.R. Ball.
- <sup>3</sup> No rare or endangered species are obvious in the published literature, and no expert is available for consultation.
- <sup>4</sup> Aquatic molluscs have been checked by Dr. A.H. Clarke. There is no expert on terrestrial molluscs in Canada and no recent literature. Terrestrial molluscs have thus been excluded.
- <sup>5</sup> Terrestrial oligochaetes have been checked by Dr. J.W. Reynolds and freshwater species by Dr. R.O. Brinkhurst.
- <sup>6</sup> Since there is no expert on Chilopoda of North America, the centipede list is no doubt incomplete.
- <sup>7</sup> Knowledge of groups other than Aculeate Hymenoptera is too poor to assess rare or endangered status (Drs. H. Goulet, L. Masner, and M. Sharkey, Agric. Can., Ottawa, pers. comm., 1992).

## APPENDIX 2 Potentially rare and endangered invertebrates listed according to ecoprovinces

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### KEY

Throughout these lists:

\*\* = endemic to British Columbia

\* = in Canada, found only in British Columbia

CMN = Canadian Museum of Nature, Ottawa, Ont.

CNC = Canadian National Collection, Agriculture Canada, Ottawa, Ont.

Specimen data are cited exactly as recorded on the specimen in the collection or as published. When distance is not recorded in metres, the metric equivalent is added in square brackets. For example, a locality record for *Physella lordi* (Baird) in the Canadian Museum of Nature (CMN) is presented as: "Allison Cr., between Laird and McCaffrey Lks., 11 mi [18 km] N Princeton, 49°36'N 120°36'W, 5.viii.1972 (B.T. Kidd)." The date the specimen was collected is recorded as "5.viii.1972," which is equivalent to the fifth day of the eighth month of 1972.

LIST A2.1 *Species of special interest in the Georgia Depression (Eastern Vancouver Island and Georgia Puget Basin)/Coastal Douglas-fir zone*

Phylum MOLLUSCA

Class GASTROPODA

Order BASOMMATOPHORA

Family Physidae

\* *Physella hordacea* (Lea) [Grain physa]

In British Columbia, known only from a single locality, Long Lake, Wellington, Nanaimo. Burch (1989) listed the distribution as British Columbia, Washington, and Oregon.

\* *Physella lordi* (Baird) [Twisted physa]

There are five locality records for this species in the CMN: Allison Cr., between Laird and McCaffrey Lks., 11 mi [17.7 km] N Princeton, 49°36'N 120°36'W, 5.viii.1972 (B.T. Kidd); Williams L., w. end of village, 52°07'N 122°07'W, 15.viii.1972 (A.H. Clarke and B.T. Kidd); Great Central L., 5 mi [8 km] N Sproat L., on Hwy 4 and 11 mi [17.7 km] NW of Port Alberni, 49°18'N 124°59'W, 2.viii.1972 (B.T. Kidd); Vaseux L., 4 mi [6.4 km] S Ok. Falls, 3.viii.1973 (AHC and DGSW); Clark Slough, arm of Fraser R.

Additional records of *P. lordi* provided by D.W. Taylor (pers. comm. via P. Lambert, 1994) are as follows:

L. Osoyoos (J.K. Lord) (British North American Boundary Commission, 1859–1861). (Lord 1866; Carpenter 1864); Okanagan L., Okanagan L. Park, 15.viii.1990 (D.W. Taylor); Kootenay L., near Nelson (from Dr. Rose, 12.v.1933 to C.F. Newcombe); New Westminster District, Egmont, Ruby L. (Griffin) (ex. R.E. Coats collection, Calif. Acad. Sci. uncatalogued); New Westminster District, Sechelt Peninsula, Ruby L., SE side at regional park, 12.viii.1992 (D.W. Taylor); New Westminster District, Sechelt Peninsula, Ruby L., Send, 13.viii.1992 (D.W. Taylor).

Burch (1989) gave the distribution as British Columbia south to Montana, Nevada, and California.

Class BIVALVIA

Order VENEROIDA

Family Sphaeriidae

*Pisidium insigne* Gabb [Tiny peaclam]

Material in the CMN is from only three localities: Long Lake, Wellington, 24.ix.1908 (C.H. Young); Jones Cr., 1 mi [1.6 km] W Laidlaw, 49°18'N 121°38'W, 4.viii.1972 (A.H. Clarke and B.T. Kidd); stream nr. Bridesville, vii.1961 (W.M. Draycot).

In Canada, known only from Prince Edward Island, southern Ontario, and southern British Columbia, but in the United States the species occurs in the northern states and south in the Rocky Mountains to Arizona and New Mexico (Clarke 1981).

LIST A2.1 (Continued)

Phylum ARTHROPODA

Subphylum CHELICERATA

Class ARACHNIDA

Order ARANEAE

Family Agelenidae

*Agelenopsis actuosa* (Gertsch & Ivie)

In British Columbia, recorded only from Vancouver Island (Goldstream Prov. Park, Saanich, Sidney) (West et al. 1984).

\* *Blabomma grandis* Chamberlin & Ivie

In Canada, recorded only from the Victoria area (West et al. 1984).

\* *Calymmaria emertoni* (Simon)

In Canada, recorded only from Vancouver Island (Goldstream Prov. Park, Kyuquot, Victoria) (West et al. 1984).

\* *C. nana* (Simon)

In Canada, recorded only from Cowichan R. (Cabin Pool) and Victoria (20 mi [32.2 km] N) (West et al. 1988).

\* *C. suprema* Chamberlin & Ivie

In Canada, recorded only from Goldstream Prov. Park (West et al. 1988).

*Cicurina simplex* Simon

In British Columbia, recorded only from Vancouver Island (Cameron Lake, Departure Bay, Sidney) (West et al. 1984).

*C. tersa* Simon

In British Columbia, recorded only from Vancouver Island (Campbell R., Departure Bay, Sidney) (West et al. 1984).

\* *Cybaeina minuta* (Banks)

In Canada, recorded only from Vancouver Island (Kyuquot, Tofino, Victoria) (West et al. 1984).

*Cybaeota concolor* Chamberlin & Ivie

In British Columbia, recorded only from Saanich (West et al. 1988) and Victoria as *C. nana* (West et al. 1984).

*C. shastae* Chamberlin & Ivie

In British Columbia, recorded only from Vancouver Island (West et al. 1988) and Kyuquot, Sidney (as *C. vancouverana*) (West et al. 1984).

LIST A2.1 (Continued)

*Cybaeus signifer* Simon

In British Columbia, recorded only from Vancouver Island (Cowichan, Kyuquot, Langford, Victoria) (West et al. 1984).

- \* *Ethobuella tuonops* Chamberlin & Ivie

In Canada, recorded only from Sidney (West et al. 1988).

- \* *Novalena intermedia* (Chamberlin & Ivie)

In Canada, recorded only from S. Pender Island and Goldstream Prov. Park (West et al. 1988).

Family Amaurobiidae

- \* *Zanomys aquilonia* (Emerton)

In Canada, recorded only from Gabriola Island and Mudge Island (West et al. 1984).

Family Antrodiaetidae

- \* *Antrodiaetus pacificus* (Simon)

In Canada, recorded only from Vancouver Island (West et al. 1984).

Family Anyphaenidae

*Anyphaena aperta* (Banks)

In British Columbia, recorded only from Vancouver Island (Errington, Kyuquot, Qualicum, Victoria) (West et al. 1984).

Family Clubionidae

- \* *Castianeira walsinghami* (O. Pickard-Cambridge)

In Canada, rare and recorded only from Minnie L., Prospect L., Riske Cr., Salmon Arm, and Victoria (West et al. 1984). Elsewhere reported south to Oregon (Dondale and Redner 1982).

- \* *Scotinella sculleni* (Gertsch)

In Canada, recorded only from Saltspring Island and Vancouver Island (Dondale and Redner 1982; West et al. 1984). Elsewhere reported from coastal Washington and Oregon (Dondale and Redner 1982).

- \* *Trachelas californicus* Banks

In Canada, recorded only from Parksville (West et al. 1988). Elsewhere reported from Washington south to Baja California (Dondale and Redner 1982).

Family Dictynidae

*Dictyna olympiana* Chamberlin

In British Columbia, recorded only from Wellington (West et al. 1984).

LIST A2.1 (Continued)

*Tricholathys rothi* Chamberlin & Gertsch

In British Columbia, recorded only from Comox (West et al. 1984).

Family Erigonidae

\* *Eperigone holda* Chamberlin & Ivie

In Canada, rare and recorded only from the Victoria area (West et al. 1988).

Elsewhere known only from Wyoming (J.H. Redner, Agric. Can., pers. comm., 1993).

\*\* *E. paludosa* Millidge

Endemic to British Columbia, and known only from the type locality, Goldstream Prov. Park (Millidge 1978; West et al. 1988).

\* *E. taibo* Chamberlin & Ivie

In Canada, recorded only from Vancouver Island (West et al. 1988). Elsewhere known from Arizona, Colorado, and Utah (J.H. Redner, Agric. Can., pers. comm., 1993).

*Lophomma columbia* Chamberlin

In British Columbia, recorded only from Cameron L. and Saanich Inlet (West et al. 1988).

*Scironis sima* Chamberlin

In British Columbia, recorded only from Vancouver Island (Barkley Sound, Cowichan L., Goldstream Prov. Park, Mesachie L., Sidney) (West et al. 1984).

\* *Scotinotylus eutypus* (Chamberlin)

In Canada, recorded only from Parksville, Sidney (West et al. 1984), and Manning Prov. Park (J.H. Redner, Agric. Can., pers. comm., 1993). Elsewhere reported from Washington and Oregon (J.H. Redner, pers. comm., 1993).

\* *Spirembolus abnormis* Millidge

In Canada, this rare species is recorded only from Wellington (West et al. 1988). It is known from only two other localities, one in Oregon and one in California (J.H. Redner, Agric. Can., pers. comm., 1993).

\* *S. demonologicus* (Crosby)

In Canada, recorded only from Saanich (West et al. 1984).

\* *S. mundus* Chamberlin & Ivie

In Canada, recorded only from two localities on Vancouver Island (West et al. 1988).

LIST A2.1 (Continued)

*Tapinocyba minuta* (Emerton)

In British Columbia, recorded only from Goldstream Prov. Park (West et al. 1984).

*Walckenaeria auranticeps* (Emerton)

In British Columbia, recorded only from Vancouver Island (West et al. 1984).

\* *W. columbia* Millidge

In Canada, recorded only from Manning Prov. Park (West et al. 1988), Goldstream Prov. Park (J.H. Redner, Agric. Can., pers. comm., 1993) and Sidney as *W. septentrionalis* (West et al. 1984).

Family Gnaphosidae

\* *Micaria utahna* Gertsch

In Canada, recorded only from Osoyoos (Haynes Lease) (Scudder 1992) and Victoria (Platnick and Dondale 1992). Elsewhere reported from Montana and Washington, south to California and Utah (Platnick and Dondale 1992).

\* *Sergiolus columbianus* (Emerton)

In Canada, recorded only from Vancouver Island (Comox, Departure Bay, Goldstream Prov. Park, Langford, Wellington) (West et al. 1984). Elsewhere reported from Montana and South Dakota, south to California and Arizona (Platnick and Dondale 1992).

Family Linyphiidae

\* *Bathypantes malkini* Ivie

In Canada, recorded only from Wellington (West et al. 1984). Elsewhere reported south to northern California (J.H. Redner, Agric. Can., pers. comm., 1993).

\* *B. orica* Ivie

In Canada, recorded only from Wellington (West et al. 1984). Elsewhere reported south to California (J.H. Redner, Agric. Can., pers. comm., 1993).

\* *Linyphantes pualla* Chamberlin & Ivie

In Canada, recorded only from Sidney (West et al. 1984) and Burnaby (J.H. Redner, Agric. Can., pers. comm., 1993).

\* *L. victoria* Chamberlin & Ivie

In Canada, recorded only from Victoria (West et al. 1984) and Burnaby (J.H. Redner, Agric. Can., pers. comm., 1993).

LIST A2.1 (Continued)

*Meioneta emertoni* Roewer

In British Columbia, recorded only from Departure Bay and Victoria (West et al. 1988).

\* *Wubana atypica* Chamberlin & Ivie

In Canada, recorded only from Cameron L. (West et al. 1984), Comox, Edgewood, Goldstream Prov. Park, and Langley (J.H. Redner, Agric. Can., pers. comm., 1993).

Family Philodromidae

*Ebo pepinensis* Gertsch

In British Columbia, recorded only from Wellington (West et al. 1984). Elsewhere reported from Alberta, Saskatchewan, the Great Lakes and Sable Island, and south to California and Texas (Dondale and Redner 1978).

\* *Philodromus josemitensis* Gertsch

In Canada, recorded only from southern Vancouver Island (Comox, Cowichan L., Victoria) (West et al. 1984). Elsewhere reported south to California (Dondale and Redner 1978).

Family Theridiidae

\* *Theridion agrifoliae* Levi

In Canada, recorded only from Vancouver Island (Cape Cook, Tofino, Wellington) (West et al. 1984).

\* *T. melanurum* Hahn

In Canada, recorded only from Vancouver Island (Kyuquot, Victoria, Wellington) (West et al. 1984).

Family Thomisidae

\* *Xysticus gosiutus* Gertsch

In Canada, recorded only from southern Vancouver Island (Departure Bay, Langford, Wellington) (West et al. 1984). Elsewhere reported to occur southward to California, and inland to Utah (Dondale and Redner 1978).

Order ACARIFORMES

Suborder PROSTIGMATA

Family Hydryphantidae

\* *Cowichania interstitialis* Smith

In Canada, recorded only from a spring beside South Shore Road, 2.3 km north of Cowichan L. (Smith 1983a). Elsewhere reported from Oregon.

LIST A2.1 (Continued)

\* *Tartarothyas* sp. n.

A new species, in Canada recorded only from two localities on Vancouver Island: a small stream beside Hwy 18, 2.3 km E of Cowichan L. turnoff; small stream beside Harris Creek Main, east of Lizard L. (Smith 1991). Also known from Oregon and California.

Family Anisitsiellidae

\* *Bandakiopsis fonticola* Smith

In Canada, recorded from near Clinton (spring at Loon Creek Fish Hatchery), and near Cowichan L. (spring beside North Shore Road, 1.7 km N of Cowichan L.) (Smith 1979, 1989a). Also reported from Oregon.

\* *Cookacarus columbiensis* Barr

In Canada, recorded from near Clinton (spring at Loon Creek Fish Hatchery), and from springs near Cowichan L. (Barr 1977; Smith 1991). Also reported from California and Oregon.

Family Aturidae

\* *Lethaxona oregonensis* Cook

In Canada, recorded only from Vancouver Island (Harris Creek near Harris Creek Main Camp) (I.M. Smith, Agric. Can., pers. comm., 1993). Also reported from Oregon.

Family Momoniidae

\* *Cyclomomonia andrewsi* Smith

In Canada, recorded only from Vancouver Island (small stream beside Hwy 4, 16.6 km E of Pacific Rim Road in small stream beside Harris Creek Main and near Cowichan L.), Bella Coola Valley (small stream 6 km E of Hagensborg), and Walker Creek beside Hwy 3 near Bonanza Pass (Smith 1989b). Also reported from Nevada and Oregon.

Family Athienemanniidae

\* *Chelomideopsis brunsoni* (Cook)

In Canada, recorded from near Clinton (spring at Loon Creek Fish Hatchery) and on Vancouver Island (spring beside North Shore Road, 1.7 km N of Cowichan L.) (Smith 1992). Reported also from Montana and Oregon.

Suborder ORIBATEI

Family Eremaeidae

\* *Eremaeus stiktos* (Higgins)

In Canada, only recorded from undisturbed forest in southern British Columbia (Garibaldi Prov. Park, Tweedsmuir Prov. Park, Little Qualicum Falls Prov. Park, and Cowichan L. Experimental Station) (Behan-Pelletier 1993b). Elsewhere reported from undisturbed forest in California, Idaho, Oregon, and Utah.

LIST A2.1 (Continued)

Subphylum CRUSTACEA

Class MALACOSTRACA

Order ISOPODA

Suborder ONISCOIDEA

Family Ligiidae

\* *Ligidium gracile* (Dana)

In Canada, recorded only from the Queen Charlotte Islands, Massett (Van Name 1936) and Vancouver Island (Brown Bay, near Campbell R., Victoria) (F. Rafi, Can. Mus., Nat., pers. comm., 1993). Elsewhere reported from California and Alaska (Van Name 1936; Garthwaite and Lawson 1992). It is a species of sea coast habitats, and occurs under cover in moist situations.

Family Oniscidae

\* *Alloniscus perconvexus* Dana

In Canada, recorded from Ferrer Point Beach, Vancouver Island, and Chatham Island near Victoria (F. Rafi, Can. Mus. Nat., pers. comm., 1993). Elsewhere, this species burrows into the sand under detritus at approximately the high tide line; occurs from southern California to Washington (Garthwaite and Lawson 1992).

Family Scyphaiidae

\* *Detonella papillicornis* (Richardson)

In Canada, recorded from Hammond Bay, near Nanaimo (Van Name 1936) and Long Beach, Vancouver Island (F. Rafi, Can. Mus. Nat., pers. comm., 1993). Elsewhere this littoral species is reported from Seldovia, Cook Inlet, Alaska (Van Name 1936), and California (Garthwaite and Lawson 1992).

Suborder ASELLOTA

Family Asellidae

\* *Caecidotea occidentalis* (Williams)

In Canada, recorded from Prince Rupert, Nanaimo, and Double Bay, Clayoquot Island (F. Rafi, Can. Mus. Nat., pers. comm., 1993). Elsewhere reported from Oregon and Washington (Williams 1970).

Subphylum MYRIAPODA

Class DIPLOPODA

Order CHORDEUMATIDA

Family Caseyidae

\*\* *Opiona columbiana* Chamberlin

Endemic to British Columbia, known only from Vancouver and Victoria (Chamberlin 1951).

LIST A2.1 (Continued)

Order POLYDESMIDA

Family Nearctodesmidae

- \*\* *Nearctodesmus boydi* Chamberlin

Endemic to British Columbia. Described from Cowichan L. (Chamberlin 1951).

Class CHILOPODA

Order GEOPHILIDA

Family Chinenophilidae

- \*\* *Arctogeophilus insularis* Attems

Endemic to British Columbia. Recorded only from Nanaimo (Attems 1947).

Class PAUROPODA

Order TETRAMEROCERATA

Family Brachypauropidae

- \* *Aletopauropus lentus* MacSwain & Lanham

In Canada, recorded from a Douglas-fir forest near Shawnigan L., and from a subalpine mountain hemlock forest on Mt. Hemlock, Garibaldi Park (Scheller 1984). Elsewhere reported from California.

Family Pauropidae

- \* *Allopauropus broelemanni* Remy

In North America, recorded only from a Douglas-fir forest near Shawnigan L. (Scheller 1984). This is a rare western palaearctic species, previously recorded from Morocco, Spain, Andorra, France, Great Britain, and Finland (Scheller 1984).

- \*\* *A. marshalli* Scheller

An endemic species, known only from a Douglas-fir forest near Shawnigan L. (Scheller 1984).

- \*\* *Pauropus mixtus* Scheller

An endemic species, known only from a Douglas-fir forest near Shawnigan L. (Scheller 1984).

- \* *Stylopauropus californicus* Remy

In Canada, recorded only from a Douglas-fir forest near Shawnigan L. (Scheller 1984). Elsewhere reported from California, West Virginia, and NE Siberia (Scheller 1984, 1985, 1986; Behan-Pelletier 1993a).

- \* *S. gladiator* Remy

In Canada, recorded only from a Douglas-fir forest near Shawnigan L. (Scheller 1984). Elsewhere reported from northern California (Scheller 1984).

LIST A2.1 (Continued)

Subphylum HEXAPODA

Class PROTURA

Family Acerentomidae

\*\* *Nippoentomon bifidum* Rusek

An endemic species, known only from a Douglas-fir forest near Shawnigan L. (Rusek 1974).

\*\* *N. kevani* Rusek

An endemic species, known only from a Douglas-fir forest near Shawnigan L. (Rusek 1974).

\*\* *Vesiculentomon marshalli* Rusek

An endemic species, known only from a Douglas-fir forest near Shawnigan L. (Rusek 1974).

Class COLLEMBOLA

Family Neanuridae

\*\* *Pseudachorutes columbicus* Rusek

Endemic to British Columbia. Recorded from John Dean Park, Saanich (Rusek 1991).

Family Onychiuridae

\*\* *Multivesicula columbica* Rusek

Endemic to British Columbia. Recorded from Mt. Jeffrey at 400 m (2.5 km SW Bamberton), Vancouver Island (Rusek 1982).

\*\* *Tullbergia obtusochaeta* (Rusek)

Endemic to British Columbia. Described from Saanich Peninsula, Vancouver Island (Rusek 1976).

Class DIPLURA

Family Japygidae

\* *Evalljapyx sonoranus* Silvestri

Reported from Victoria (Spencer 1952). Elsewhere recorded from at least Arizona.

Class INSECTA

Order ODONATA

Family Aeshnidae

*Aeshna tuberculifera* Walker

A sparsely distributed species in British Columbia, recorded only in the Nanaimo and Campbell R. districts and Bowser on Vancouver Island, Haney, Cypress Bowl, and Wells Gray Park. The species occurs in boggy-margined ponds and lakes. It occurs from Wisconsin to Nova Scotia, south to Pennsylvania and Indiana, as well as British Columbia and Washington.

LIST A2.1 (Continued)

Family Libellulidae

\* *Erythemis collocata* (Hagen)

In Canada, restricted to southern Vancouver Island (Florence L., Goldstream Prov. Park, Langford, Nanaimo Distr., Newcastle I., Thetis L. group [Pike L. and Long L.], Victoria, Wellington Lakes), the Fraser Valley (Agassiz, Chilliwack, Vancouver), and Southern Okanagan (Osoyoos). Elsewhere recorded in the United States west of the Great Plains, and northwestern Mexico.

*Pachydiplax longipennis* (Burmeister)

In British Columbia, recorded from southern Vancouver Island north to Nanaimo, and from Ambrose L. on the Sechelt Peninsula. It occurs in the extreme southern parts of Ontario and Manitoba, and ranges south through most of the United States to Mexico, and occurs in Bermuda and the Bahamas.

\* *Libellula subornata* (Hagen)

In Canada, apparently collected only from Nanaimo (Cannings 1983). The species is recorded from Chihuahua and Sonora in northern Mexico, and from Arizona, Colorado, Kansas, Nebraska, Nevada, New Mexico, Oklahoma, Oregon, Texas, and Utah.

Order PLECOPTERA

Family Capniidae

\* *Capnia pileata* Jewett

In Canada, known only from southern Vancouver Island (Cowichan L., Nanaimo, Wellington) (Ricker and Scudder 1976). Elsewhere reported from California and Oregon.

Family Chloroperlidae

\* *Haploperla chilnualna* (Ricker)

In Canada, this rare species is known only from Chemainus R., Langford, and French Cr. (Qualicum Beach) (Ricker and Scudder 1976). Elsewhere reported from California, Oregon, and Washington.

Family Perlodidae

*Setvena tibialis* (Banks)

In British Columbia, known only from Kelsey Bay (Ricker and Scudder 1976). Elsewhere reported from Oregon and Washington.

Order GRYLLOPTERA

Family Tettigoniidae

\* *Neduba steindachneri* (Hermann)

In Canada, confined to oak-arbutus habitats on the south and east coasts of Vancouver Island, and in the Fraser Valley only as far inland as Boston Bar (Vickery and Kevan 1985). Elsewhere reported from Washington.

LIST A2.1 (Continued)

Order HETEROPTERA

Family Alydidae

- \* *Tollius setosus* Van Duzee

In Canada, recorded only from southeastern part of Vancouver Island, being collected from Goldstream Prov. Park, Ladysmith, Saanich, and Victoria only. Reported elsewhere only from Arizona, California, Montana, New York, and Utah (Henry and Froeschner [editors] 1988).

Family Aradidae

- \* *Mezira pacifica* Usinger

In Canada, recorded only from southeastern part of Vancouver Island, being reported from Duncan and Goldstream Prov. Park (Parshley 1921; Downes 1927). Reported elsewhere from Arizona, California, Idaho, Oregon, Washington, and Wyoming (Henry and Froeschner [editors] 1988).

Family Coreidae

- \*\* *Coriomeris insularis* Dolling & Yonke

This species is endemic to the Nanaimo Lowland and Strait of Georgia eco-sections in British Columbia, being recorded from Bowser, Comox, Goldstream Prov. Park, Nanaimo, Saanich, Victoria, Denman Island, and Galiano Island (Dolling and Yonke 1976).

Family Corixidae

- \* *Cenocorixa andersoni* Hungerford

In Canada, known only from Vancouver Island (Spectacle L.) and the Lower Fraser Valley (Abbotsford, Delta, Vancouver, White Rock) (Jansson 1972; Scudder 1987). Recorded elsewhere from Oregon and Washington.

- \* *Trichocorixa verticalis californica* Sailer

In Canada, recorded only from Albert Head Lagoon, Parksville (French Creek), and Thetis Island (Scudder 1977). Elsewhere reported from California.

Family Lygaeidae

- \* *Cordillonotus stellatus* Scudder

In Canada, known only from Summerland and Victoria (Scudder 1984). Also reported from California, Oregon, and Washington (Scudder 1984).

- \* *Scolopostethus tropicus* (Distant)

In Canada, known only from Goldstream Prov. Park (Scudder 1985). Otherwise recorded from California, Idaho, Oregon, and Guatemala (Henry and Froeschner [editors] 1988).

LIST A2.1 (Continued)

Family Miridae

Subfamily Deraeocorinae

Tribe Clivinematini

\*\* *Clivinema fusca* Downes

A species endemic to British Columbia and known only from unique female holotype from Saanich Distr. (Downes 1924).

Tribe Deraeocorini

\* *Deraeocoris incertus* Knight

In Canada, known only from the Nanaimo Lowland and Strait of Georgia eco-sections, with records from Galiano Island (Spanish Hills), Malahat, Saanich, and Victoria (on Douglas-fir) (Razafimahatratra 1980). Elsewhere known from Arizona, California, Colorado, and Oregon.

Subfamily Mirinae

Tribe Herdoniini

\* *Paradacerla formicina* (Parshley)

In Canada, confined to the Nanaimo Lowland and Strait of Georgia eco-sections, with records from Cowichan, Goldstream Prov. Park, Gordon Head, Saanich, Shawnigan, and Victoria. Elsewhere reported from California, Idaho, and Oregon (Henry and Froeschner [editors] 1988).

Tribe Mirini

\* *Irbisia knighti* Schwartz & Lattin

In Canada, confined to southeastern Vancouver Island, being reported from Jesse Island (Nanaimo), Royal Oak, and Victoria (Schwartz 1984; Schwartz and Lattin 1984). Elsewhere known from California, Oregon, and Washington (Henry and Froeschner [editors] 1988).

\* *Phytocoris occidentalis* Stonedahl

In Canada, known only from southeastern Vancouver Island (Goldstream Prov. Park, Malahat) (Stonedahl 1984, 1988). Elsewhere recorded only from California and Oregon on *Pinus attenuata* Lemmon, *P. contorta* Douglas, *P. ponderosa* Douglas, *P. radiata* D. Don., and *P. sabiniana* Douglas (Stonedahl 1988).

Subfamily Orthotylinae

Tribe Ceratocapsini

\*\* *Ceratocapsus downesi* Knight

Endemic to British Columbia and known only from Royal Oak, Saanich Distr., and Victoria (Knight 1927; Henry and Froeschner [editors] 1988).

LIST A2.1 (Continued)

Family Nabidae

- \* *Omanonabis lovetti* (Harris)  
In Canada, known only from Galiano Island (Spanish Hills in marshy habitat) and Saanich (Scudder 1985). Otherwise known only from marsh or salt marsh habitats in California, Oregon, and Washington (Asquith and Lattin 1991).

Family Rhopalidae

- \* *Harmostes dorsalis* Burmeister  
A rare species, in Canada known only from Goldstream Prov. Park, Langford, Royal Oak, and Victoria. Otherwise recorded from Arizona, California, Oregon, Texas, Mexico to Argentina, and Peru (Henry and Froeschner [editors] 1988).

Family Scutelleridae

- \* *Camirus porosus* (Germar)  
In Canada, recorded only from Galiano Island, Goldstream Prov. Park, Vancouver, and Victoria, the latter two before 1904. Elsewhere reported from California, Colorado, Florida, North Carolina, Texas, Virginia, and Mexico to Colombia (Henry and Froeschner [editors] 1988).

Family Tingidae

- \* *Acalypta saundersi* (Downes)  
In Canada, known only from Goldstream Prov. Park (Downes 1935). Elsewhere recorded from California, Oregon, and Washington (Henry and Froeschner [editors] 1988).

Order HOMOPTERA

Family Cercopidae

- \* *Aphrophora ampliata* Hamilton  
This is a rare species recorded only from Victoria and the coast of Washington state (Hamilton 1982).

Family Cicadellidae

- \* *Acertogallia longula* (Van Duzee)  
In Canada, recorded only from Vancouver Island. Elsewhere reported from California, Oregon, and Utah.

*Idiocerus omani* Freytag

In British Columbia, recorded only from Goldstream Prov. Park and Saanich. Elsewhere reported from Alberta, Montana, Oregon, and Washington.

- \*\* *I. vanduzeei* Hamilton  
Endemic to British Columbia. Recorded from Chilliwack, Cowichan, Duncan, Garibaldi, and Victoria on *Populus* (Hamilton 1980).

LIST A2.1 (Continued)

- \* *Chlorotettix similis* De Long  
In Canada, recorded only from Goldstream Prov. Park, Langford, and Victoria.  
Elsewhere reported from Idaho.
- \* *Ballana titusi* (Ball)  
In Canada, recorded only from Goldstream Prov. Park. Elsewhere reported from California, Idaho, Wyoming, and possibly Arizona.
- \* *Calanana rubralineata* (Beamer)  
In Canada, recorded only from Victoria on sedges. Elsewhere reported only from California.
- \*\* *Elymana pacifica* Hamilton  
Endemic to British Columbia. Recorded from Fanny Bay, Oyster R., Saanich Distr., and Tsawwassen (Chiulkowski and Hamilton 1985), as well as Denny Island, the Don Peninsula, Robson Bight, and Swindle Island.
- \*\* *Limotettix obesura* Hamilton  
Endemic to British Columbia. Recorded only from Ladysmith (type locality) and Victoria (Hamilton 1995).

Family Membracidae

- \* *Ceresa franciscanus* (Stål)  
In Canada, recorded only from Goldstream Prov. Park. Elsewhere reported from California, Washington, and possibly Colorado.
- \* *Platycotis maritimus* Van Duzee  
In Canada, recorded only from Bella Coola, Englishman R. Falls Park, Goldstream Prov. Park, Langford, Parksville, Steelhead, Vancouver, Victoria, and Wellington. Elsewhere reported from California.
- \* *P. quadrivittata* (Say)  
In Canada, recorded only from Garry oak at Galiano Island, Genoa Bay, Goldstream Prov. Park, Jesse Island (Nanaimo), Langford, Saanich, Victoria, and Wellington. Elsewhere reported from California.

Order MEGALOPTERA

Family Corydalidae

*Chauliodes pectinicornis* L.

In British Columbia, recorded from Cloverdale and Cowichan (Spencer 1942).

LIST A2.1 (Continued)

- \* *Protochauliodes spenceri* Munroe  
In Canada, confined to Vancouver Island. Recorded from Departure Bay, Duncan, Goldstream Prov. Park, and Langford (Munroe 1953). Elsewhere reported south to California.

Order NEUROPTERA

Family Mantispidae

*Climaciella brunnea* (Say)

In British Columbia, recorded from Goldstream Prov. Park, Kamloops, Kelowna, Lillooet, Oliver, Osoyoos, Oyama, Peachland, Penticton (Marron L.), Summerland, Vaseux L., Vernon, and Victoria. Elsewhere reported in southern Manitoba, southern Ontario, and southern Quebec, as well as across the United States to Central America.

Family Chrysopidae

- \* *Nineta gravida* (Banks)

In Canada, recorded from Departure Bay and Victoria (Garland 1982). Also recorded from Washington.

- \* *Nothochrysa californica* Banks

In Canada, recorded from Bowser, Nanaimo, Sidney, South Pender Island, Vancouver, and Victoria (Garland 1982).

Order COLEOPTERA

Family Carabidae

- \* *Omus audouini* Reiche

A rare species in Canada recorded only from Vancouver Island (Victoria) and the adjacent mainland (Boundary Bay). Elsewhere reported from Oregon and Washington.

- \* *Promecognathus crassus* LeConte

In Canada, recorded only from southern Vancouver Island (Comox, Royal Oak, Mt. Arrowsmith, Wellington, Cowichan, Duncan, Langford, Victoria) and the lower mainland (Agassiz, New Westminster, Vancouver) (Lindroth 1961). Elsewhere reported along the Pacific Coast south to California.

Family Amphizoidae

- \* *Amphizoa striata* Van Dyke

In Canada, recorded only from Duncan (Koksilah Creek) and Little Qualicum Falls Prov. Park (Little Qualicum R.) (Kavanaugh 1986). Elsewhere reported from Oregon and Washington.

LIST A2.1 (Continued)

Family Dytiscidae

- \* *Agabinus sculpturellus* Zimmermann  
In Canada, recorded only from Fraser Canyon (Alexandra Lodge), Goldstream Prov. Park, and MacMillan Prov. Park.

Family Micropeplidae

- \* *Kalissus nitidus* LeConte  
A rare species, in Canada recorded only from Goldstream Prov. Park and Vancouver (Stanley Park). Elsewhere only known from one specimen from Seattle.

Family Staphylinidae

- \* *Tanyrhinus singularis* Mannerheim  
A rare species, in Canada recorded only from Goldstream Prov. Park, Queen Charlotte Islands, and Steelhead, on mushrooms. Elsewhere reported south along the coast to Oregon.
- \* *Trigonurus crotchii* LeConte  
A rare species, in Canada recorded only from Vancouver Island (MacMillan Prov. Park and Port Alberni).
- \* *T. dilaticollis* Van Dyke  
A rare species, in Canada recorded only from Pender Harbour, Queen Charlotte Islands, Steelhead, and Vancouver.
- \* *T. sharpi* Blackwelder  
A rare species, in Canada recorded only from Vancouver Island and Vancouver (under bark).
- \* *Nanobius serricollis* (LeConte)  
In Canada, recorded only from Brunswick (north of Knight Inlet), Saanich, and Victoria. The species is common from Oregon to California.
- \* *Stenus koebelei* Puthz  
In Canada, only recorded from Sooke R., Mt. Arrowsmith, and Cowichan L. Elsewhere reported from Alberta, Oregon, and Washington.
- \* *S. vespertinus* Casey  
In Canada, recorded only from Vancouver Island (Mesachie L., Metchosin). Elsewhere reported from California, Oregon, and Washington.
- \* *S. tahoensis* Casey  
In Canada, recorded only from Mesachie L. and Midway (4 mi [6.4 km] W).

LIST A2.1 (Continued)

- \* *Medon capitalis* Hatch  
In Canada, recorded only from Royal Oak. Elsewhere reported south to Oregon.

- \* *M. truncatus* (Hatch)  
In Canada, recorded only from Duncan. Elsewhere reported from Idaho, Oregon, and Washington.

Family Buprestidae

- \* *Dicerca sexualis* Crotch  
In Canada, recorded only from Quamichan L. Elsewhere reported from California, Idaho, Oregon, and Washington.

- \* *Descarpentriesina fraseri* (Chamberlin)  
In Canada, recorded only from southern Vancouver Island. Elsewhere reported south to California.

- \* *Chrysobothris sylvania* Fall  
In Canada, recorded only from Sidney on Douglas-fir (Bright 1987). Elsewhere reported south to California.

Family Tenebrionidae

- \* *Hymenorus megops* Hatch  
In Canada, recorded only from Pender Harbour. Elsewhere reported south to Oregon.

Family Oedemeridae

- \* *Asclera discolor* LeConte  
A rare species, in Canada recorded only from Sidney.

Family Pyrochroidae

- \* *Dendroides picipes* Horn  
A rare species, in Canada recorded only from Victoria. Elsewhere reported south to California.

Family Curculionidae

- \* *Smicronyx cinereus* (Motschulsky)  
In Canada, recorded only from Gordon Head, Victoria.
- \* *Curculio aurivestris* Chittenden  
In Canada, recorded only from Victoria on Garry oak (*Quercus garryana* Douglas).

LIST A2.1 (Continued)

- \* *C. uniformis* (LeConte)  
In Canada, recorded only from Victoria on Garry oak (*Quercus garryana*).

Family Scolytidae

- \* *Hylocurus hirtellus* (LeConte)  
In Canada, recorded only from Victoria (Bright and Skidmore 1991). Elsewhere reported south to Baja California on *Alnus*, *Salix*, and other broadleaf trees and shrubs.

Order DIPTERA

Suborder NEMATOCERA

Family Simuliidae

- \* *Parasimulium furcatum* Malloch  
In Canada, known only from Goldstream Prov. Park and Muchalat L. (12.5 km NW of Gold R.) (Borkent 1992). Otherwise known only from northern California.
- \*\* *Prosimum* n. sp. near *fulvum* (Coquillett)  
A new species known only from Englishman R. Falls, Vancouver Island, where it occurs in a temporary seepage with a new species of *Simulium* (n. sp. 1) (D.C. Currie, Royal Ont. Mus., pers. comm., 1993).
- \* *Simulium* n. sp. 1 near *pugetense* (Dyar & Shannon)  
A new species known in Canada only from seepages at Goldstream Prov. Park and Englishman R. Falls, plus a single locality in Oregon (D.C. Currie, Royal Ont. Mus., pers. comm., 1993).
- \* *Simulium* n. sp. 2 near *virgatum* Coquillett  
This new species occurs in Canada only on southern Vancouver Island in both large and small streams, and also in northern Oregon (D.C. Currie, Royal Ont. Mus., pers. comm., 1993).

Family Chironomidae

- \*\* *Skutzia inopinata* Reiss  
Endemic to British Columbia. Described from Skutz Falls, Cowichan L. (Reiss 1985), and only recorded from this locality.

Suborder BRACHYCERA

Family Tabanidae

- \* *Chrysops coloradensis* Bigot  
In Canada, restricted to Vancouver Island and the Gulf Islands (Teskey 1990). The species range extends to Colorado and northern Baja California.

LIST A2.1 (Continued)

- \* *C. surdus* Osten Sacken  
In Canada, records are from Cameron L. (Vancouver Island) and Swindle Island (Teskey 1990). The species prefers mountainous terrain and occurs in Washington, Oregon, California, and western Nevada.
- \* *Hybomitra aasa* Philip  
In Canada, recorded only from the South Okanagan (Osoyoos, Vaseux L.) and Galiano Island (Teskey 1990). In the United States, the species occurs south to California.
- \* *Tabanus laticeps* Hine  
In Canada, restricted to Vancouver Island and the Gulf Islands (Teskey 1990). The species is found in coastal marshes inundated by tides. It ranges through the west coast states to Baja California.

Family Asilidae

*Dicolonus simplex* Loew

In British Columbia, recorded only from southern Vancouver Island. Elsewhere reported from California.

*Eucyrtopogon spiniger* Curran

In British Columbia, recorded from Copper Mt., Pass Creek, and Victoria. Elsewhere reported from Alberta and Northwest Territories.

*Laphria ventralis* Williston

In British Columbia, recorded only from southern Vancouver Island (Camas Hill, Langford, Ten Mile Pt., Victoria, Wellington) and Galiano Island. There are doubtful records for Jesmond and Sugar L. Elsewhere reported from California and Washington.

- \* *Lasiopogon willametti* Cole & Wilcox  
In Canada, recorded only from Deas Island, Ladner, and Miracle Beach (R.A. Cannings, Royal B.C. Mus., pers. comm., 1993). Elsewhere reported from Oregon and Washington.
- \* *Nicocles rufus* Williston  
In Canada, recorded only from Saanich and Victoria. Elsewhere reported from California, Oregon, and Washington.
- \* *Scleropogon bradleyi* (Bromley)  
In Canada, recorded only from southern Vancouver Island (Goldstream Prov. Park, Langford, Lost L., Metchosin, Ten Mile Pt., Victoria) and Gulf Islands (Bodega Ridge, Galiano I.). Elsewhere reported from California.

LIST A2.1 (Continued)

Family Anthomyiidae

\*\* *Delia oppidans* (Huckett)

Endemic to British Columbia. Recorded from Kaslo, Robson, and Victoria Distr. (Griffiths 1991).

Order LEPIDOPTERA

Family Hesperiidae

\* *Erynnis propertius* (Scudder & Burgess) [Propertius Dusky Wing]

In Canada, recorded from southern Vancouver Island and the Gulf Islands, as well as Hope and Pemberton. Classified as vulnerable by Guppy et al. (1995). The species is restricted to the Pacific Coast, extending from southern British Columbia to northern Baja California (Howe 1975; Scott 1986) and is very abundant throughout western Oregon (Dornfeld 1980).

*Euphyes vestris metacomet* (Harris) [Dun Skipper]

In British Columbia, this subspecies is known from only a few populations on southern Vancouver Island and the Fraser Canyon, and so is considered vulnerable by Guppy et al. (1995). The subspecies ranges through most of the United States (except California and Baja California) and southern Canada (Howe 1975). The larvae food plants are sedges (*Cyperus*) and grasses (*Tridens*) (Dornfeld 1980).

Family Pieridae

\*\* *Euchloe ausonides* (Lucas) ssp. n. [Large Marble]

According to Guppy et al. (1995), this undescribed subspecies, endemic to southern Vancouver Island, apparently is now extinct, although an undiscovered population may exist on one of the Gulf Islands. Only 13 specimens are known to exist in museums around the world; the last specimen collected was in 1908 on Gabriola Island. Records show the known world distribution consisted of two populations on Vancouver Island (Langford and Victoria) and one on Gabriola Island. Other subspecies of *E. ausonides* are widespread in western North America, from Alaska south to California east of the coastal mountain ranges.

\* *Mitoura barryi acuminata* Johnson [Barry's Hairstreak]

In Canada, there are two known populations on Vancouver Island, one at Yellow Point near Ladysmith, and the other around the sea edge of the Saanich Peninsula; there also is a very old historical record from Esquimalt (Guppy et al. 1995). This species is endangered in Canada.

\* *Incisalia mossii mossii* (Edwards) [Moss' Elfin]

In Canada, this butterfly occurs only on the rocky knolls and cliffs of southern Vancouver Island and some of the Gulf Islands, and is considered vulnerable by

LIST A2.1 (Continued)

Guppy et al. (1995). The subspecies occurs along the coast to Oregon and at lower and middle elevations of the Northwest (Dornfeld 1980). The host plant in Canada is *Sedum spathulifolium* Hook. (C.S. Guppy, B.C. Min. Environ., Lands and Parks, pers. comm., 1993).

- \* *Plebejus saepiolus insulanus* Blackmore [Greenish Blue]  
In Canada, this subspecies is restricted to southern Vancouver Island. The butterfly is considered endangered in British Columbia, as no extant populations are known (Guppy et al. 1995). The subspecies occurs from northwest California north to southwest British Columbia, east to Montana, west Colorado, Nevada, and northern Utah (Scott 1986). The host plants are various Leguminosae, especially clover (*Trifolium*) (Scott 1986).
- \*\* *Icaricia icariodes blackmorei* (Barnes & McDunnough) [Icarioides Blue]  
In Canada, known from only one extant population on Green Mt. near Nanaimo and hence endangered (Guppy et al. 1995; C.S. Guppy, B.C. Min. Environ., Lands and Parks, pers. comm., 1993). The subspecies was described from Goldstream Prov. Park, and Howe (1975) reports it also to occur in the western lowlands of mainland British Columbia, but it would seem to be a Vancouver Island endemic. The host plant is probably *Lupinus* spp. and *Trifolium* spp. (Llewellyn-Jones 1951), although C.S. Guppy (pers. comm., 1993) considers *Lupinus* to be the only food plant used.

Family Nymphalidae

- \* *Speyeria zerene bremneri* (Edwards) [Zerene Fritillary]  
This subspecies in British Columbia is reported from southern Vancouver Island and the Lower Fraser Valley (Llewellyn-Jones 1951), but there are now no extant populations known, so the butterfly must be considered endangered in the province (Guppy et al. 1995). The subspecies occurs from the coast ranges of extreme northwestern California to Haines in Alaska, with larval host plants being violets (Scott 1986).
- \* *Euphydryas chalcedona perdiccas* (Edwards) [Chalcedon Checkerspot]  
This subspecies in Canada was formerly known from two populations on southern Vancouver Island, one on Mt. Finlayson (north of Victoria) and the other on Mt. Tzuhalem (east of Duncan). The former has been extirpated, and the latter may likewise be no longer present, so the subspecies in Canada is now considered extirpated (Guppy et al. 1995). At present, the subspecies is limited to the Puget Sound area of western Washington, where the larval food plant is suspected to be *Penstemon* spp. (Howe 1975).

LIST A2.1 (Continued)

- \* *E. editha taylori* (Edwards) [Taylor's Checkerspot]  
In Canada, this subspecies is known only from two extant populations, one in a powerline right-of-way between Mill Bay and Shawnigan Lake, and the other along the shore in Helliwell Prov. Park on Hornby Island (Guppy et al. 1995). Guppy et al. (1995) reported that many populations were known historically from the Saanich Peninsula, but all appear to have been extirpated, so they consider the subspecies to be endangered in British Columbia. Elsewhere the range of the subspecies extends south along the coast to Oregon, and in a slightly modified form along the east side of the Cascade Mountains of Washington and the mountain ranges in eastern Oregon (Howe 1975).

Family Satyridae

- \* *Coenonympha tullia insulana* McDunnough [Ringlet]  
In Canada, this subspecies is restricted to southern Vancouver Island and is considered vulnerable by Guppy et al. (1995), because the species is bivoltine and larvae require green grass for food. The subspecies also occurs along the northern coast of western Washington (Howe 1975).

Family Noctuidae

- \* *Apamea atriculava* (Barnes & McDunnough)  
In Canada, recorded only from southern Vancouver Island (Departure Bay, Duncan, Quamichan L., Victoria, Wellington). Otherwise known only from two localities in Oregon (J.D. Lafontaine, Agric. Can., pers. comm., 1992).
- \* *A. cuculliformis* (Grote)  
A widespread western United States species, known in Canada only from one specimen collected 3 mi [4.8 km] S of Sidney (J.D. Lafontaine, Agric. Can., pers. comm., 1992).
- \* *A. maxima* (Dyar)  
A coastal marsh species, in Canada collected only at three locations (3 mi [4.8 km] S of Sidney, Tlell, and Cape Cook) (J.D. Lafontaine, Agric. Can., pers. comm., 1992). Known from four locations in Oregon and many in California.
- \* *Autographa speciosa* Ottol  
A rare species, in Canada with one extant population known from Quamichan on Vancouver Island, and with only two locations in the United States (J.D. Lafontaine, Agric. Can., pers. comm., 1992).
- \* *Trichoclea edwardsi* Smith  
In Canada, this species is recorded only from a coastal marsh and dune area 3 mi [4.8 km] S of Sidney (KOA Campground). In the United States, north of California, known only from one locality near Seattle (J.D. Lafontaine, Agric. Can., pers. comm., 1992).

LIST A2.1 (Continued)

Family Geometridae

- \* *Chlorosea banksaria* Sperry  
In Canada, recorded positively only from southern Vancouver Island (Duncan, Goldstream Prov. Park, Shawnigan, Victoria, Wellington) (McGuffin 1988), although Llewellyn-Jones (1951) also reports the species from Fairview and Kaslo. The species occurs south to California, the larvae having been reported on *Ceanothus thyriflorus* Esch., *Alnus rubra* Bong., *Prunus emarginata* (Dougl.) D. Dietr., and *Ribes* sp.
- \* *Eupithecia gilvipennata* Cassino & Swett  
In Canada, recorded only from Wellington (Bolte 1990). The species occurs south to Santa Rosa, California, the food plant of the larvae being unknown.

Order TRICHOPTERA

Family Hydropsychidae

*Hydropsyche californica* Banks

In British Columbia, recorded only from Cowichan L. (Ross and Spencer 1952; Nimmo and Scudder 1979). This species occurs east to Minnesota and south to California and Colorado.

Family Hydroptilidae

- \* *Palaeagapetus nearcticus* Banks  
In Canada, recorded only from Mt. Benson (Nimmo and Scudder 1979) as *P. guppyi* Schmid. Reported south to California.

Family Lepidostomatidae

- \* *Lepidostoma hoodi* Ross  
In Canada, restricted to southeast Vancouver Island (Departure Bay, Wellington) (Nimmo and Scudder 1979). Elsewhere reported from Oregon and Washington.
- \* *L. jewetti* Ross  
In Canada, restricted to southern Vancouver Island (Englishmen R., Malahat, Millstone R., Nanaimo, Wellington) (Nimmo and Scudder 1979). Elsewhere reported from California, Oregon, and Washington.
- \* *L. quericina* Ross  
In Canada, restricted to southern Vancouver Island (Cameron L., Wellington) (Nimmo and Scudder 1979). Elsewhere reported from Idaho, Montana, Oregon, and Washington.

LIST A2.1 (Continued)

Family Leptoceridae

*Ceraclea maculuta* (Banks)

In British Columbia, recorded only from Langford (Nimmo and Scudder 1979).

The range of this species extends to central and eastern North America.

Family Limnephilidae

\* *Allocosmoecus partitus* Banks

In Canada, recorded only from Goldstream Prov. Park campground, Victoria (Nimmo and Scudder 1979). Elsewhere reported from Idaho, Oregon, and Washington.

\* *Lenarchus gravidus* Hagen

In Canada, recorded only from Wellington (Nimmo and Scudder 1979). Elsewhere reported from California and Oregon.

\* *Limnephilus concolor* Banks

In Canada, recorded only from Wellington (Nimmo and Scudder 1979). Elsewhere reported from Washington.

*L. labus* Ross

In British Columbia, recorded only from Langford (Nimmo and Scudder 1979). Elsewhere reported from Alberta, Colorado, Idaho, and Saskatchewan.

\* *L. lunonus* Ross

In Canada, recorded only from southern Vancouver Island (French Creek, Wellington) (Nimmo and Scudder 1979). Elsewhere reported from California, Oregon, and Washington.

\* *L. morrisoni* Banks

In Canada, recorded only from Wellington (Nimmo and Scudder 1979). Elsewhere reported from California, Nevada, Oregon, and Washington.

Family Polycentropodidae

*Polycentropus halidus* Milne

In British Columbia, recorded only from Langford (Nimmo and Scudder 1979).

Also reported from the Alaska Panhandle.

Family Rhyacophilidae

\* *Rhyacophila insularis* Schmid

In Canada, recorded only from southern Vancouver Island (Koksilah R., Nanaimo, Qualicum Falls) (Nimmo and Scudder 1979). Elsewhere reported from California and Oregon.

Appendix 2 Continued

LIST A2.1 (Concluded)

- \* *R. malkini* Ross  
In Canada, recorded only from southern Vancouver Island (Millstone R., Nanaimo, Qualicum R., Wellington) (Nimmo and Scudder 1979). Elsewhere reported from Oregon.

Order HYMENOPTERA

Suborder APOCRITA

Division ACULEATA

Family Dryinidae

- \*\* *Anteon hirtifrons* Whittaker  
Endemic to British Columbia. Described from Hollyburn (Whittaker 1930), and also recorded from Galiano Island (Olmi 1984).

Family Andrenidae

- \*\* *Andrena singularis* Viereck  
Endemic to British Columbia. Described from Goldstream Prov. Park and Invermere (Viereck 1924).

Family Apidae

- \*\* *Anthophora furcata neofurcata* (Sladen)  
A subspecies endemic to British Columbia. Described from Agassiz, Shawnigan L., and Victoria (Sladen 1919).

LIST A2.2 Species of special interest in the Southern Interior (Thompson-Okanagan Plateau, Okanagan Range, Okanagan Highlands, and Interior Transition Ranges [Pavilion Ranges ecosection])

Phylum MOLLUSCA

Class GASTROPODA

Order BASOMMATOPHORA

Family Lymnaeidae

*Fossaria truncatula* (Müller) [Attenuate fossaria]

British Columbia specimens in the CMN are from three localities only in the province: Duck L., 11 mi [17.7 km] N Creston, on Hwy 3A, 49°13'N 116°36'W, 9.viii.1972 (B.T. Kidd); stream near Bridesville, vii.1961 (W.M. Draycot); shallow stream nr. Osoyoos L., vi.1961 (W.M. Draycot).

Clarke (1981) reported this species also from Christina L. Burch (1989) listed the distribution as Europe, northern Asia, and portions of Alaska and the Yukon Territory.

Family Physidae

\* *Physella columbiana* (Hemphill) [Rotund physa]

In British Columbia known only from a single locality: Christina L., E side of lake, Englishman Bay, 49°06'N 118°18'W, 8.viii.1972 (A.H. Clarke and B.T. Kidd).

Burch (1989) listed the distribution as Wyoming and Montana west to Washington.

\* *Physella lordi* (Baird) [Twisted physa]

There are five locality records for this species in the CMN: Allison Cr., between Laird and McCaffrey Lks., 11 mi [17.7 km] N Princeton, 49°36'N 120°36'W, 5.viii.1972 (B.T. Kidd); Williams L., w. end of village, 52°07'N 122°07'W, 15.viii.1972 (A.H. Clarke and B.T. Kidd); Great Central L., 5 mi [8 km] N Sproat L., on Hwy 4 and 11 mi [17.7 km] NW of Port Alberni, 49°18'N 124°59'W, 2.viii.1972 (B.T. Kidd); Vaseux L., 4 mi [6.4 km] S Ok. Falls, 3.viii.1973 (AHC and DGSW); Clark Slough, arm of Fraser R.

Additional records of *P. lordi* provided by D.W. Taylor (pers. comm. via P. Lambert, 1994) are as follows:

L. Osoyoos (J.K. Lord) (British North American Boundary Commission, 1859–1861). (Lord 1866; Carpenter 1864); Okanagan L., Okanagan L. Park, 15.viii.1990 (D.W. Taylor); Kootenay L., near Nelson (from Dr. Rose, 12.v.1933 to C.F. Newcombe); New Westminster District, Egmont, Ruby L. (Griffin) (ex. R.E. Coats collection, Calif. Acad. Sci. uncatalogued); New Westminster District, Sechelt Peninsula, Ruby L., SE side at regional park, 12.viii.1992 (D.W. Taylor); New Westminster District, Sechelt Peninsula, Ruby L., Send, 13.viii.1992 (D.W. Taylor).

Burch (1989) gave the distribution as British Columbia south to Montana, Nevada, and California.

LIST A2.2 (Continued)

- \* *Physella propinqua nuttali* (Lea) [Rocky Mt. physa]  
The Canadian Museum of Nature has material standing under *P. nuttalli* from Sumas Prairie and Small L., 7 mi [11.3 km] E Greenwood. Other material standing under *P. propinqua* is from Sturgeon L., 13.ix.1879; Similkameen R., 1905 (Macoun); nr. Granby L., Grand Forks, 28.viii.1960 (W.M. Draycot).  
Burch (1989) listed *P. propinqua nuttalli* distribution from British Columbia south to Montana, Wyoming, and California. *Physella propinqua propinqua* is not listed from British Columbia.
- \* *P. viriginea* (Gould) [Sunset physa]  
Material in the CMN is from Caribou Rd.; Swan L., 2 mi [3.2 km] N Vernon, 50°18'5"N 119°16'W, 12.viii.1972 (A.H. Clarke and B.T. Kidd); Slough at Indian Reserve, 4 mi [6.4 km] S Creston, 49°25'N 116°31'W, 9.viii.1972 (A.H. Clarke and B.T. Kidd); Laird Hot Springs, 19.viii.1973.  
Burch (1989) listed the distribution as British Columbia south to California.

Class BIVALVIA

Order UNIONACEA

Family Unionidae

- \* *Gonidea angulata* (Lea) [Western ridge mussel]  
Material in the CMN is from only three localities: Okanagan R. at Penticton; Vaseux L., 6.viii.1972 (A.H. Clarke); Okanagan Falls campsite, 19.viii.1960 (R.J. Drake).  
Additional records of *G. angulata* provided by D.W. Taylor (pers. comm. via P. Lambert, 1994) are as follows: Okanagan R., at exit from Okanagan L. at Penticton, viii.1906 (G.E. Winkler) [Cited in Whiteaves 1906]; Okanagan R., Okanagan Falls campsite (now park), 12.viii.1963 (D.W. Taylor); Osoyoos L., N side of Haynes Point Park, 16.viii.1990 (D.W. Taylor).  
According to Clarke (1981) the species occurs in the Columbia R. system (Okanagan R. and Kootenay R.) in British Columbia and south in the Pacific drainage to southern California.

Order VENEROIDA

Family Sphaeriidae

- Pisidium insigne* Gabb [Tiny peaclam]  
Material in the CMN is from only three localities: Long L., Wellington, 24.ix.1908 (C.H. Young); Jones Cr., 1 mi [1.6 km] W Laidlaw, 49°18'N 121°38'W, 4.viii.1972 (A.H. Clarke and B.T. Kidd); stream nr. Bridesville, vii.1961 (W.M. Draycot).  
In Canada, known only from Prince Edward Island, southern Ontario, and southern British Columbia, but in the United States the species occurs in the northern states and south in the Rocky Mountains to Arizona and New Mexico (Clarke 1981).

Appendix 2 Continued

LIST A2.2 (Continued)

Phylum ANNELIDA

Class HIRUDINOIDEA

Order RHYNCHOBDELLAE

Family Piscicolidae

*Piscicola punctata* (Verrill)

In British Columbia, recorded only from Kalamalka L. and Okanagan L. (Clemens et al. 1939). Elsewhere reported from Alberta, Connecticut, Georgia, Illinois, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Missouri, Montana, New Jersey, New York, North Carolina, Nova Scotia, Ontario, Pennsylvania, Quebec, Rhode Island, Saskatchewan, South Dakota, Tennessee, Virginia, and Wisconsin (Davies 1991).

Phylum ARTHROPODA

Subphylum CHELICERATA

Class ARACHNIDA

Order SOLPUGIDA

Family Eremobatidae

Subfamily Eremobatinae

\* *Eremobates gladiolus* Muma<sup>1</sup>

Restricted to the South Okanagan (Scudder 1992). Elsewhere reported from Oregon, Utah, and Washington (Muma 1970).

\* *E. scaber* (Kraepelin)<sup>1</sup>

In Canada, restricted to the South Okanagan (Holmberg and Buckle 1970). Elsewhere reported from Washington (Muma 1970).

\*\* *Eremobates* sp. n. 1

Recorded only from Osoyoos (Holmberg and Buckle 1970).

\*\* *Eremobates* sp. n. 2

Recorded only from Osoyoos (Holmberg and Buckle 1970).

Subfamily Therobatinae

\* *Hemerotrecha denticulata* Muma

In Canada, recorded only from Penticton (Holmberg and Buckle 1970). Elsewhere reported from Colorado, Nevada, and Utah (Muma 1970).

\*\* *Hemerotrecha* sp. n.

Recorded only from Oliver (Holmberg and Buckle 1970).

<sup>1</sup> These records may refer to the same species, but the correct identification is not clear (R.G. Holmberg, Athabasca Univ., pers. comm., 1993).

LIST A2.2 (Continued)

Order SCORPIONIDA

Family Vaejovidae

*Paruroctonus boreus* (Girard) [Northern Scorpion]

Restricted to the South Okanagan (Scudder 1992), with records from Keremeos, Oliver, Richter Pass, Vaseux L. (Gertsch and Soleglad 1966), Osoyoos (Haynes Ecol. Reserve) (Charles 1981) and Skaha L. (bench on east side) (Scudder, unpubl. info.). A specimen from Summerland is in the Royal British Columbia Museum collection. Elsewhere reported from Alberta, Arizona, California, Colorado, Idaho, Montana, Nevada, North Dakota, Oregon, Utah, Washington, and Wyoming (Gertsch and Soleglad 1966). The species prefers arid hillsides where the soil is dry and cracked or very rocky (Tourlotte 1974).

Order ARANEAE

Family Agelenidae

*Agelenopsis oklahoma* (Gertsch)

In British Columbia, recorded only from Oliver (West et al. 1984; Scudder 1992).

\* *Calymmaria monicae* (Chamberlin & Ivie)

In Canada, recorded only from Lillooet (West et al. 1984).

\* *Cicurina intermedia* Chamberlin & Ivie

In Canada, recorded only from the Okanagan (Summerland, Vaseux L., Vernon) (West et al. 1984; Scudder 1992).

*Cicurina* sp. near *intermedia* Chamberlin & Ivie

In British Columbia, recorded only from Osoyoos (West et al. 1988).

Family Antrodiaetidae

\* *Antrodiaetus hageni* (Chamberlin)

In Canada, recorded only from the Okanagan (Apex Mt., Summerland, Vaseux L., Vernon) (West et al. 1984).

*Araneus corticorius* (Emerton)

In British Columbia, recorded only from Vernon (West et al. 1984).

*Hypsosinga groenlandica* Simon

In British Columbia, recorded only from Apex Mt. (West et al. 1984).

\* *Metellina mimetoides* Chamberlin & Ivie

In Canada, recorded only from Vernon (West et al. 1984).

LIST A2.2 (Continued)

Family Clubionidae

*Agroeca pratensis* Emerton

In British Columbia, recorded only from Summerland (West et al. 1984). Elsewhere reported east to Nova Scotia, and southward to Georgia and Utah (Dondale and Redner 1982).

*Castianeira alteranda* Gertsch

In British Columbia, recorded only from Mt. Kobau (Blades and Maier 1992). Elsewhere reported from Alberta and Saskatchewan, southward to Colorado (Dondale and Redner 1982).

\* *Castianeira walsinghami* (O. Pickard-Cambridge)

In Canada, rare and recorded only from Minnie L., Prospect L., Riske Cr., Salmon Arm, and Victoria (West et al. 1984). Elsewhere reported south to Oregon (Dondale and Redner 1982).

\* *C. mimula* Chamberlin

In Canada, recorded only from Summerland and Vancouver (West et al. 1984). Elsewhere reported south to California and east to Utah (Dondale and Redner 1982).

Family Dictynidae

*Dictyna borealis cavernosa* Jones

In British Columbia, recorded only from Mt. Kobau (Blades and Maier 1992).

*D. coloradensis* (Chamberlin)

In British Columbia, recorded only from Oliver (West et al. 1984; Scudder 1992).

*D. reticulata* Gertsch & Ivie

In British Columbia, recorded only from Osoyoos (Blades and Maier 1992).

*D. terrestris* Emerton

In British Columbia, recorded only from Osoyoos (Haynes Lease) (Scudder 1992).

*Mallos niveus* O. Pickard-Cambridge

In British Columbia, recorded only from Summerland (West et al. 1984).

Family Erigonidae

*Eperigone dentosa* O. Pickard-Cambridge

In British Columbia, recorded only from Mt. Kobau (Blades and Maier 1992).

LIST A2.2 (Continued)

*Glyphesis idahona* (Chamberlin)

In British Columbia, recorded only from Oliver (10 mi [16 km] N on White L. Road) (West et al. 1988; Scudder 1992).

*Sougamibus bostoniensis* (Emerton)

In British Columbia, recorded only from Penticton (West et al. 1984).

\* *Walckenaeria monoceras* (Chamberlin & Ivie)

In Canada, recorded only from Vernon (40 mi [64.4 km] E) (West et al. 1988).

Family Gnaphosidae

\* *Drassyllus dromeus* Chamberlin

In Canada, recorded only from Keremeos, Oliver, Summerland (West et al. 1984), and Osoyoos (Scudder 1992). Elsewhere the species occurs in the United States east to Massachusetts, south to Arizona, Texas, and Georgia (Platnick and Dondale 1992).

\* *D. saphes* Chamberlin

In Canada, recorded only from Osoyoos (West et al. 1988; Scudder 1992). Elsewhere reported from Montana, Oregon south to Baja California (Norte), and Mexico (Platnick and Dondale 1992).

\* *Gnaphosa californica* Banks

In Canada, recorded only from Green Mt. (Keremeos), Keremeos, Osoyoos, and Summerland (West et al. 1984). Elsewhere reported in Washington and south to California and New Mexico (Platnick and Dondale 1992).

\* *Herphyllus propinquus* (Keyserling)

In Canada, recorded only from Osoyoos (West et al. 1984; Scudder 1992). Elsewhere reported from Montana and Washington, south to central Mexico (Platnick and Dondale 1992).

*Micaria coloradensis* Banks

In British Columbia, recorded only from Apex Mt. (West et al. 1988). Elsewhere reported from Alaska to Saskatchewan, south to California, Colorado, and South Dakota (Platnick and Dondale 1992).

*M. foxi* Gertsch

In British Columbia, recorded only from Summerland (West et al. 1988). Elsewhere reported from Alberta and Washington, south to California and New Mexico (Platnick and Dondale 1992).

LIST A2.2 (Continued)

- \* *M. idana* Platnick & Shadab  
In Canada, recorded only from Apex Mt. and Manning Prov. Park (West et al. 1988). Elsewhere reported to occur south to California (Platnick and Dondale 1992).
  
- M. laticeps* Emerton  
In British Columbia, recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Otherwise reported from Alberta, Saskatchewan to southern Ontario, south to Arkansas, Connecticut, and Utah (Platnick and Dondale 1992).
  
- \* *M. utahna* Gertsch  
In Canada, recorded only from Osoyoos (Haynes Lease) (Scudder 1992) and Victoria (Platnick and Dondale 1992). Elsewhere reported from Montana and Washington, south to California and Utah (Platnick and Dondale 1992).
  
- \* *Nodocion eclecticus* Chamberlin  
In Canada, recorded only from Summerland (West et al. 1984) and Osoyoos (Scudder 1992). Elsewhere reported to occur south to Arizona, New Mexico, Texas, Baja California, and Mexico (Platnick and Dondale 1992).
  
- N. voluntarius* (Chamberlin)  
In British Columbia, recorded only from Summerland (West et al. 1984). Elsewhere reported from Alberta, Montana, and Washington south to Mexico (Platnick and Dondale 1992).
  
- Family Linyphiidae
  - Hyposinga groenlandica* Simon  
In British Columbia, recorded only from south slope of Apex Mt. (Scudder 1992).
  
  - Sougambus bostoniensis* (Emerton)  
In British Columbia, recorded only from Penticton (Scudder 1992).
  
  - \* *Pardosa coloradensis* Banks  
In Canada, recorded only from the Okanagan Valley (Kelowna, Orofino Mt., Osoyoos, Summerland, Vernon) (West et al. 1984). Elsewhere reported from Washington south to California, Arizona, and New Mexico (Dondale and Redner 1990).
  
  - \* *Pardosa rainieriana* Lowrie & Dondale  
In Canada, recorded only from Lillooet (West et al. 1988), Mt. McLean at 600 m (Dondale and Redner 1990). Elsewhere reported from interior Washington and Oregon (Dondale and Redner 1990).

LIST A2.2 (Continued)

Family Philodromidae

\* *Ebo parabolis* Schick

In Canada, recorded only from Osoyoos (West et al. 1988; Scudder 1992). Elsewhere reported from Washington south to California, Arizona, and Colorado (Dondale and Redner 1978).

\* *Philodromus californicus* Keyserling

In Canada, recorded only from the South Okanagan (Osoyoos, Summerland, and Vaseux L.) (West et al. 1984; Scudder 1992). Elsewhere reported to occur south to California, and northern Mexico, and eastward to Colorado and New Mexico (Dondale and Redner 1978).

\* *Tibellus chamberlini* Gertsch

In Canada, recorded only from Oliver, Summerland (West et al. 1984), and Osoyoos (Haynes Lease) (Scudder 1992). Elsewhere reported to occur southward to California and Arizona (Dondale and Redner 1978).

Family Pholcidae

\* *Psilochorus* sp. near *hesperus* Gertsch & Ivie

In Canada, recorded only from Osoyoos (West et al. 1988; Scudder 1992).

Family Salticidae

\* *Habronattus hirsutus* (Peckham & Peckham)

In Canada, this rare species has been recorded from the South Okanagan (Green Mt., Summerland, Vernon) (West et al. 1984) and southern Vancouver Island (J.H. Redner, Agric. Can., pers. comm., 1993).

*H. sansoni* (Emerton)

In British Columbia, this rare species has been recorded from Lillooet and Osoyoos (West et al. 1984). Elsewhere recorded in Canada from one locality in Alberta.

\* *Metaphidippus helene* (Banks)

In Canada, recorded only from Monte Creek (West et al. 1984).

*M. protervus* (Walckendaer)

In British Columbia, recorded only from Summerland (West et al. 1984) and Osoyoos (Haynes Lease) (Scudder 1992).

*M. vitis* (Cockerell)

In British Columbia, recorded only from the South Okanagan (Osoyoos, Summerland) (West et al. 1984; Scudder 1992). Also known in Canada from Alberta.

Appendix 2 Continued

LIST A2.2 (Continued)

*Pellenes montanus* (Emerton)

In British Columbia, recorded only from Apex Mt. (West et al. 1984; Scudder 1992).

*P. shoshonensis* Lowrie & Gertsch

In British Columbia, recorded only from Osoyoos (Haynes Lease) (Scudder 1992).

*Phidippus purpuratus* Keyserling

In British Columbia, recorded only from Osoyoos (West et al. 1984; Scudder 1992).

\* *Sitticus absolutus* Gertsch & Mulaik

In Canada, recorded only from the South Okanagan (Summerland) (West et al. 1984), Osoyoos (Scudder 1992), and Vancouver Island (J.H. Redner, Agric. Can., pers. comm., 1993).

\*\* *Synageles leechi* Cutler

Endemic to British Columbia. The species is an ant mimic and recorded only from Oliver (Cutler 1987; West et al. 1988; Scudder 1992).

*Talavera minuta* (Banks)

In British Columbia, recorded only from Apex Mt. (West et al. 1984; Scudder 1992).

Family Theridiidae

*Enoplognatha intrepida* (Soerensen)

In British Columbia, recorded only from Apex Mt. (West et al. 1984; Scudder 1992).

Family Thomisidae

\* *Misumenops serrensis* Schick

In Canada, recorded only from Errington, Hope, and Osoyoos (West et al. 1984). Reported to occur south to California (Dondale and Redner 1978).

*Thanatus altimontis* Gertsch

In British Columbia, recorded only from Osoyoos (Blades and Maier 1992). Elsewhere reported from Saskatchewan, Washington to Nebraska, southward to California and Oklahoma (Dondale and Redner 1978).

Order ACARIFORMES

Suborder PROSTIGMATA

Family Tydeidae

\*\* *Meyerella marshalli* Andre

Endemic to British Columbia. Recorded from soil near Kamloops (Andre 1980).

LIST A2.2 (Continued)

Family Hydryphantidae

\*\* *Tadjikothyas* sp. n.

A new species, endemic to British Columbia, and known only from a spring above the ski area on Mt. Baldy, near Bridesville (Smith 1991).

Family Unionicolidae

\*\* *Koenikea* sp. n.

A new species, endemic to British Columbia. Known only from a pond in old oxbow of Okanagan R. just north of Osoyoos L. (I.M. Smith, Agric. Can., pers. comm., 1993). This is the only record of this genus north of California.

Suborder ORIBATEI

Family Eremaeidae

\*\* *Eremaeus salish* Behan-Pelletier

Endemic to British Columbia. Recorded only from "Stone City," Cathedral Prov. Park at 2500 m (Behan-Pelletier 1993b).

\*\* *Eueremaeus michaeli* Behan-Pelletier

Endemic to British Columbia. So far known only from Manning Prov. Park at 2063 m, Madeline L. near Penticton, and Cathedral Prov. Park at 2210 m (Behan-Pelletier 1993b).

Family Cymbaeremaeidae

\*\* *Scapulereemaeus kobauensis* Behan-Pelletier

Endemic to British Columbia as far as known. Recorded from Mt. Kobau (Behan-Pelletier 1989; Scudder 1992).

Subphylum MYRIAPODA

Class DIPLOPODA

Order JULIDA

Family Parajulidae

\*\* *Bollmaniulus spenceri* Chamberlin

Endemic to British Columbia. Described from Kamloops (Chamberlin 1951).

Class PAUROPODA

Order TETRAMEROCERATA

Family Pauropodidae

\*\* *Stylopauropus canadensis* Scheller

An endemic species, known only from Kamloops (Scheller 1984).

LIST A2.2 (Continued)

Subphylum HEXAPODA

Class INSECTA

Order MICROCORYPHIA

Family Machilidae

\*\* *Mesomachilis canadensis* Sturm

Endemic to British Columbia. So far known only from the type material collected at Kamloops (Sturm 1991).

Family Meinertellidae

\* *Nearctolinus aurantiacus* (Schoett)

In Canada, known only from Kamloops (Sturm and Bach de Roca 1992). Otherwise reported from ten localities in California, two in Nevada, and one each in Utah and Arizona.

Order EPHEMEROPTERA

Family Baetidae

*Baetes parallelus* Banks

In British Columbia, recorded only from Oliver (Scudder 1976, 1992).

Family Heptageniidae

*Heptagenia elegantula* (Eaton)

In British Columbia, recorded only from Oliver and Osoyoos (Scudder 1976, 1992).

Family Leptophlebiidae

*Leptophlebia gravastella* (Eaton)

In British Columbia, recorded only from Osoyoos (Scudder 1976, 1992).

Family Siphonuridae

*Ameletus sparsatus* McDunnough

In British Columbia, recorded only from Oliver (Scudder 1976, 1992).

Order ODONATA

Family Coenagruidae

*Argia vivida* Hagen

Known from Field, Fairmont, Penticton, White L., Meager Cr. Hot Springs, and from Glacier. The species ranges from southern British Columbia and the Rocky Mts. of Alberta to Texas, California, and Mexico. It is a very local insect found around pools near springs (especially hot springs in northern latitudes) or spring-fed streams inhabited by larvae.

LIST A2.2 (Continued)

Family Macromiidae

\* *Macromia magnifica* MacLachlan

In Canada recorded only from the Okanagan Valley (Peachland, Penticton, Osoyoos, Summerland, Vernon) and Christina L. Larvae develop among stones, tree roots, or silt in stream pools or the bays of lakes. The species ranges from southern British Columbia to California and Arizona.

\*\* *Macromia rickeri* Walker

Endemic to British Columbia and known only from Cultus L., Hope, Salmon Arm, and Shuswap L. (Scudder et al. 1977). The taxon may be only a dark form of *M. magnifica*.

Family Libelulidae

\* *Erythemis collocata* (Hagen)

In Canada, restricted to southern Vancouver Island (Florence L., Goldstream Prov. Park, Langford, Nanaimo Distr., Newcastle I., Thetis L. group [Pike L. and Long L.], Victoria, Wellington Lakes), the Fraser Valley (Agassiz, Chilliwack, Vancouver), and Southern Okanagan (Osoyoos). Elsewhere recorded in the United States west of the Great Plains, and northwestern Mexico.

Family Corduliidae

*Somatochlora cingulata* (Selys)

In British Columbia recorded only from Arthur L., 1200 m near Falkland, and from Bowron L. Provincial Park (Cannings 1990b). This is a boreal species that occurs east to Hudson Bay, Labrador and Newfoundland, south to New Hampshire, Michigan, the north shore of L. Superior, and the northern prairies.

Order PLECOPTERA

Family Capniidae

*Bolshecapnia milami* (Nebeker & Gauvin)

In British Columbia, known only from the Similkameen R. (S.G. Cannings 1989). Elsewhere reported from Alberta, Idaho, and Montana.

*Capnia petila* Jewett

In British Columbia, known from Botanie L. (Lytton), Similkameen R. (Cambio Cr. ski area), and Skeena R. (5 km W Kitwanga) (S.G. Cannings 1989). This relatively rare species is reported also from Yukon, Alberta, Idaho, Montana, Oregon, and Wyoming.

*C. sextuberculata* Jewett

In British Columbia, known only from Botanie L. (Lytton) (S.G. Cannings 1989). Elsewhere reported from Alberta, Montana, and Oregon.

LIST A2.2 (Continued)

Family Chloroperlidae

Subfamily Chloroperlinae

*Alloperla medveda* Ricker

In British Columbia, known only from Kamloops (Ricker and Scudder 1976).  
Elsewhere reported from Alberta, Idaho, Montana, Wyoming, and Yukon.

Family Perlodidae

Subfamily Perlodinae

Tribe Diploperlinae

\* *Cultus tostonus* (Ricker)

In Canada, known only from Oliver (Ricker and Scudder 1976). Elsewhere reported from California, Idaho, Montana, Oregon, Washington, and Wyoming.

\* *Osobenus yakimae* (Hoppe)

In Canada, known only from Little Fort, on the North Thompson R. (Ricker and Scudder 1976). Elsewhere reported from California, Oregon, and Washington.

Tribe Perlodini

*Isogenoides elongatus* (Hagen)

In British Columbia, known only from Oliver and Rock Creek (Ricker and Scudder 1976). Known from Alberta and throughout the western United States.

Order DICTYOPTERA

Suborder MANTODEA

Family Mantidae

\* *Litaneutria minor* (Scudder)

This species is confined to Oliver and Osoyoos in the South Okanagan, and has been collected only five times in the last ten years (R.A. Cannings 1987). The species occurs from British Columbia to North Dakota, and south to Mexico.

Order GRYLLOPTERA

Family Rhaphidophoridae

\* *Ceuthophilus vicinus* Hubbell

In Canada, known only from Oliver and Osoyoos in the South Okanagan. Elsewhere reported from Idaho and Washington.

Family Tettigoniidae

\* *Anabrus cerciata* Caudell

In Canada, known only from Vernon. The species occurs from British Columbia to Oregon.

LIST A2.2 (Continued)

Family Oecanthidae

- \* *Oecanthus californicus* Saussure

In Canada, known only from Okanagan L. The range of the species extends from British Columbia to Wyoming, south to California and Mississippi.

*O. nigricornis* F. Walker

In British Columbia, known only from Okanagan L. and Oliver. The range of the species is from British Columbia to Maine, south to West Virginia.

Order ORTHOPTERA

Family Acrididae

Subfamily Melanoplinae

*Phoetaliotes nebrascensis* (Thomas)

In British Columbia, known only from Okanagan Falls and Oliver. The species range extends from British Columbia to Massachusetts, south to Arizona and Texas.

Subfamily Locustinae

- \* *Dissosteira spurcata* Saussure

In Canada, recorded only from Oliver. The species occurs south to California and Utah.

- \*\* *Trimerotropis longicornis* E.M. Walker

Endemic to British Columbia. Described from and recorded only from Vernon (Walker 1902, 1906; Vickery and Kevan 1985).

Subfamily Gomphocerinae

- \* *Orphulella pelidna desereta* Scudder

In Canada, this subspecies is known only from the South Okanagan (Conkle Mt., Fairview, Oliver, Osoyoos, and Summerland [Powell Beach]). It occurs south to northern California and New Mexico.

*Anlocara elliotti* (Thomas)

In British Columbia, this species is confined to the Okanagan (Fairview, Oliver, Penticton, Vernon, Westbank). The range extends to Manitoba, south to Texas.

- \* *Psoloessa delicatula buckelli* Rehn

In Canada, this subspecies is confined to the Okanagan (Fairview, Kelowna, Keremeos, Midway, Naramata, Okanagan Falls, Oliver, Osoyoos, Penticton, Rock Creek, and Summerland) (Rehn 1937, 1942; Vickery and Kevan 1985). The subspecies also occurs in Washington state.

LIST A2.2 (Continued)

Order HETEROPTERA

Family Anthocoridae

\*\* *Lyctocoris okanaganus* Kelton & Anderson

This species is endemic to British Columbia (Kelton 1978). Described originally from Summerland (Kelton and Anderson 1962). The only other locality for which specimens are available is Christina L., under bark on *Pinus ponderosa*, 12.vii.1970 (L.A. Kelton) [CNC].

\*\* *Lyctocoris rostratus* Kelton & Anderson

This species is endemic to British Columbia (Kelton 1978). Described originally from Trinity Valley and Salmon Arm (Kelton and Anderson 1962) and collected on *Pinus monticola* Douglas. Additional material in the CNC is from Christina L., under bark, *Pinus ponderosa*, 12.vii.1970 (L.A. Kelton); Lytton, under bark, *Pinus ponderosa*, 20.viii.1970 (L.A. Kelton); Nicola L. on *Pinus ponderosa*, 26.vii.1970 (L.A. Kelton); Penticton, under bark, *Pinus ponderosa*, 10.viii.1970 (L.A. Kelton).

Family Berytidae

\* *Acanthophysa echinata* Uhler

In Canada, recorded only from Wasa (Scudder 1991) and Osoyoos (Haynes Ecol. Reserve). Reported elsewhere from Arizona, California, Idaho, New Mexico, Oregon, Utah, and Washington (Henry and Froeschner [editors] 1988).

Family Cimicidae

\* *Hesperocimex coloradensis* List

In Canada, recorded only from Summerland, B.C. in nest of flicker (Scudder 1961). Reported elsewhere from California, Colorado, Nebraska, Oregon, and Mexico (Henry and Froeschner [editors] 1988).

Family Cydnidae

\* *Dallasiellus discrepans* (Uhler)

In Canada, confined to the Okanagan, with specimens examined from Naramata, Oliver, Osoyoos, Summerland, Vaseux L., and Vernon. In the United States, reported from Arizona, California, Colorado, Idaho, New Mexico, Oklahoma, Oregon, Texas, Utah, and Washington (Henry and Froeschner [editors] 1988).

Family Hydrometridae

*Hydrometra martini* Kirkaldy

In British Columbia, recorded only from Lytton (Scudder 1977). Elsewhere reported across Canada and the United States.

LIST A2.2 (Continued)

Family Lygaeidae

Subfamily Heterogastrinae

\* *Heterogaster behrensii* (Uhler)

In Canada, so far recorded only from 4 km N of Oliver on *Urtica dioica* L. (Cannings 1981; Scudder 1985). Elsewhere reported from California, Idaho, Oregon, Utah, and Mexico (Henry and Froeschner [editors] 1988).

Subfamily Rhyparochrominae

Tribe Antilocorini

\* *Botocudo modestus* (Barber)

In Canada, so far known only from two specimens collected at Osoyoos. Elsewhere reported from California, Idaho, Missouri, Oregon, Texas, and Utah (Henry and Froeschner [editors] 1988).

Tribe Drymini

\* *Eremocoris canadensis* Walley

A species described from Keremeos (Walley 1929) and so far reported only from British Columbia and Idaho (Henry and Froeschner [editors] 1988).

\* *Eremocoris melanotus* Walley

A species described from Lillooet (Walley 1929) and so far reported only from British Columbia and Idaho (Henry and Froeschner [editors] 1988).

\*\* *Gastrodes intermedius* Usinger

A species endemic to British Columbia, and known only from the type material, two males: Penticton, Dog L., 23 Sept. 1927 (R. Hopping) (Usinger 1938).

Tribe Gonianotini

\* *Malezonotus grossus* Van Duzee

In Canada, known only from Summerland (Scudder 1985). Otherwise known from California and Oregon (Henry and Froeschner [editors] 1988).

\* *Sisamnes claviger* (Uhler)

In Canada, known only from the South Okanagan (Keremeos Creek, Oliver, Osoyoos, Vaseux L.) (Scudder 1985, 1992). Occurs rather widely in the United States (Henry and Froeschner [editors] 1988).

Tribe Ozophorini

\* *Ozophora occidentalis* Slater

In Canada, confined to the South Okanagan and known only from Penticton and McKinney Rd., 1 mi [1.6 km] E Oliver, malt trap (Slater 1988). Otherwise recorded from California and Oregon (Slater 1988).

LIST A2.2 (Continued)

Tribe Rhyparochromini

- \* *Cordillonotus stellatus* Scudder  
In Canada, known only from Summerland and Victoria (Scudder 1984). Also reported from California, Oregon, and Washington (Scudder 1984).

Tribe Udeocorini

- \* *Neosuris castanea* (Barber)  
In Canada, known only from Osoyoos, where six specimens have been collected over the past six years (Scudder 1993). The species is otherwise reported from Arizona, Colorado, and Idaho.

Family Miridae

Subfamily Deraeocorinae

- \* *Deraeocoris bakeri* Knight  
In Canada, recorded only from Chopaka, Osoyoos, and Penticton on *Artemisia tridentata* Nutt., *Chrysothamnus nauseosus* (Pall.) Britt., and *Purshia tridentata* (Pursh) DC. Elsewhere reported from Arizona, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, and Washington (Razafimahatratra 1980).
- \* *D. fulgidus* (Van Duzee)  
In Canada, recorded only from Kaleden, Oliver, and Osoyoos on *Purshia tridentata*. Elsewhere reported from California, Colorado, Nevada, Oregon, Utah, Washington, and Wyoming (Razafimahatratra 1980; Henry and Froeschner [editors] 1988).

Subfamily Mirinae

Tribe Mirini

- \*\* *Dichroscytus flagellatus* Kelton  
A species endemic to British Columbia, described from Hope, Princeton, Radium Hot Springs, and Spences Bridge (Kelton 1972). Now known also from Hedley, Merritt, Okanagan Falls, and Summerland, usually on *Juniperus*.
- \*\* *D. rufusculus* Kelton  
A species endemic to British Columbia, and known only from Manning Prov. Park (Gibson Pass), Hedley, Kaslo, and Lockhart Beach Prov. Park (Kelton 1972).
- \* *Irbisia pacifica* (Uhler)  
In Canada, confined to the Okanagan and Boundary regions, being recorded from Christina L. (5 mi [8 km] E), Grand Forks, Hedley (and 17 mi [27.4 km] W), Okanagan Falls, Oliver (and Meyer Flat), Osoyoos, Penticton, Summerland, Vaseux L., and Vernon (Schwartz 1984). Elsewhere recorded from California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming, and Mexico (Henry and Froeschner [editors] 1988).

LIST A2.2 (Continued)

- \* *I. shulli* Knight  
In Canada, confined to the Okanagan, being recorded from Anarchist Mt., Kelowna, Oliver, Osoyoos, Rock Creek, Penticton, Summerland, Vaseux L., and White L. (Schwartz 1984). Elsewhere recorded from Colorado, Idaho, Montana, Oregon, Utah, Washington, and Wyoming (Henry and Froeschner [editors] 1988).

Tribe Stenodemini

*Trigonotylus antennatus* Kelton

In British Columbia, known only from Osoyoos (Kelton 1970, 1971). Elsewhere recorded from California, Colorado, Manitoba, Oregon, Saskatchewan, and Utah (Henry and Froeschner [editors] 1988).

*T. brooksi* Kelton

In British Columbia, known only from Osoyoos (Kelton 1970, 1971). Elsewhere recorded only from Saskatchewan (Henry and Froeschner [editors] 1988).

- \* *T. longipes* Slater & Wagner  
In Canada, known only from Oliver and Osoyoos (Kelton 1971). Elsewhere recorded from California, Colorado, Kansas, New Mexico, Nebraska, Nevada, Oregon, Texas, Utah, Washington, and Mexico (Henry and Froeschner [editors] 1988).

Subfamily Orthotylinae

Tribe Ceratocapsini

- \* *Ceratocapsus cunealis* Henry  
In Canada, known only from the South Okanagan (Oliver, Osoyoos, Summerland, Vaseux L.) (Henry 1985), and Cawston usually on *Artemisia tridentata*. Elsewhere recorded from Idaho and collected on greasewood and clematis (Henry 1985).

Tribe Orthotylini

*Hadronema uhleri* Van Duzee

In British Columbia, collected only from Oliver and Summerland on *Ceanothus* and *Purshia tridentata*. Elsewhere reported from Alberta, Arizona, California, Colorado, Idaho, Nevada, Utah, and Washington (Henry and Froeschner [editors] 1988). Also known from Oregon.

*Lopidea picta* Knight

In British Columbia, collected only from Oliver and Twin Lakes on *Artemisia tridentata*. Also reported from Alberta, Arizona, California, Colorado, Idaho, New Mexico, Nevada, Oklahoma, Oregon, Utah, Wyoming, and Washington (Asquith 1991).

LIST A2.2 (Continued)

- \* *Parthenicus cercocarp* Knight  
In Canada, recorded only from Cawston, Okanagan Falls, Oliver, Osoyoos, and Vaseux L., usually on *Purshia tridentata*. Elsewhere reported from Arizona (Henry and Froeschner [editors] 1988).
- \* *Slaterocoris pilosus* Kelton  
In Canada, known only from Oliver and Osoyoos (Kelton 1968). Otherwise known from California, Idaho, and Washington (Henry and Froeschner [editors] 1988), and usually collected on *Artemisia tridentata*.
- \* *S. robustus* (Uhler)  
In Canada, so far only collected at Cawston (4 mi [6.4 km] E) and Osoyoos. Otherwise reported from California, Colorado, Idaho, Kansas, Montana, New Mexico, Nevada, Texas, Utah, and Wyoming (Henry and Froeschner [editors] 1988).

Subfamily Phylinae

Tribe Hallodapini

- \* *Orectoderus arcuatus* Knight  
In Canada, restricted to the South Okanagan, with specimens from Cawston, Kilpoola L., Oliver, Osoyoos, and Penticton. Otherwise known only from Washington (Henry and Froeschner [editors] 1988).
- \* *Teleorhinus brindleyi* Knight  
In Canada, restricted to the South Okanagan, with specimens from Oliver and Summerland. Otherwise known from Idaho and Wyoming (Henry and Froeschner [editors] 1988).

Tribe Philini

- \* *Chlamydatus brevicornis* Knight  
In Canada, so far reported only from Osoyoos (Kelton 1965). Otherwise known from Colorado, Idaho, Utah, and Wyoming (Henry and Froeschner [editors] 1988). The host plant is *Artemisia tridentata*.
- \* *C. schuhi* Knight  
In Canada, so far reported only from Oliver on *Leptodactylon pungens* (Torr.) Nutt. (Kelton 1965). Otherwise only known from Oregon (Henry and Froeschner [editors] 1988).
- \* *Plagiognathus ribesi* Kelton  
In Canada, recorded from Rock Creek and Summerland on *Ribes* (Kelton 1982), and from Oliver, Osoyoos, and Vaseux L. on *Purshia tridentata*. Otherwise only known from Colorado on *Ribes cereum* Dougl. (Kelton 1982).

LIST A2.2 (Continued)

- \* *Pronotocrepis clavicornis* Knight  
In Canada, recorded only from Christina L. (on *Pinus contorta*), Hedley (on *Ribes cereum*), Osoyoos (Anarchist Mt.), and Rock Creek (on *Ribes*) (Scudder 1961). Otherwise only known from Colorado.

Tribe Pilophorini

- \* *Pilophorus stonedahli* Schuh & Schwartz  
In Canada, known only from Oliver and Vaseux L. on *Pinus ponderosa* (Schuh and Schwartz 1988). Otherwise known from California and Washington (Schuh and Schwartz 1988).

Family Nabidae

- \* *Hoplistoscelis heidemanni* (Reuter)  
In Canada, known only from Anarchist Mt. and Osoyoos (Haynes Ecol. Reserve) (Scudder 1992). Elsewhere reported from California and Idaho (Henry and Froeschner [editors] 1988).

Family Notonectidae

- \* *Notonecta spinosa* Hungerford  
In Canada, known only from the Okanagan (Kaleden, Kelowna, Oliver, Vaseux L., Vernon, Westbank [Scudder 1977]). Otherwise reported from Montana, Nevada, Oregon, Utah, and Wyoming (Henry and Froeschner [editors] 1988).
- \* *N. unifasciata andersoni* Hungerford  
In Canada, known only from the Okanagan (Green L., Kelowna, Mahoney L., Okanagan Falls, White L., Oliver, Osoyoos, Peachland, Penticton, Summerland, Vernon, Westbank [Scudder 1977]). Otherwise recorded from Arizona, Nevada, Oregon, and Utah (Henry and Froeschner [editors] 1988).

Family Pentatomidae

- \* *Dendrocoris pini* Montandon  
In Canada, known only from the South Okanagan (Okanagan Falls, Okanagan Landing, Oliver, Vaseux L.) on *Pinus ponderosa* (Scudder 1985). Otherwise recorded from Arizona, California, Colorado, New Mexico, Oregon, Texas, and Utah (Henry and Froeschner [editors] 1988).

Family Rhopalidae

- \* *Arhyssus barberi* Harris  
In Canada, known only from the Okanagan (Vernon) (Chopra 1968). Elsewhere recorded from California, Idaho, Oregon, Utah, and Washington (Henry and Froeschner [editors] 1988).

LIST A2.2 (Continued)

- \* *A. distinctus* Chopra  
In Canada, known only from the Okanagan (Vernon) (Chopra 1968). Elsewhere recorded from California and Oregon (Henry and Froeschner [editors] 1988).

- \* *A. validus* (Uhler)  
In Canada, known only from the Okanagan (Vernon) (Chopra 1968). Elsewhere recorded from Arizona, California, Colorado, Idaho, Oregon, Utah, Washington, and Mexico (Henry and Froeschner [editors] 1988).

Family Saldidae

- \* *Ioscytus politus* (Uhler)  
In Canada, known only from Osoyoos (Richter Pass) (Scudder 1985). Elsewhere recorded from Arizona, California, Colorado, New Mexico, Nevada, Oregon, and Utah (Henry and Froeschner [editors] 1988).

Family Scutelleridae

- \* *Homaemus parvulus* (Germar)  
In Canada, only recorded from Osoyoos (Scudder 1992). Elsewhere reported across the United States from east to west.

Family Tingidae

- \* *Gargaphia opacula* Uhler  
In Canada, known only from the South Okanagan (Oliver, Skaha L., Vaseux L.) (Scudder 1961). Elsewhere recorded from California, Kansas, New Mexico, Utah, Washington, and Mexico (Henry and Froeschner [editors] 1988).

Order HOMOPTERA

Family Cicadellidae

Subfamily Agallinae

- \* *Acertogallia compressa* Hamilton  
In Canada, recorded only from Hedley. The range of the species extends south to Arizona (K.G.A. Hamilton, Agric. Can., pers. comm., 1993).
- \*\* *A. okanagana* Hamilton  
An endemic species recorded only from the unique male holotype collected at Osoyoos (K.G.A. Hamilton, Agric. Can., pers. comm., 1993).
- \* *A. zacki* Hamilton  
In Canada, recorded only from Osoyoos. The species also occurs in Washington (K.G.A. Hamilton, Agric. Can., pers. comm., 1993).

LIST A2.2 (Continued)

Subfamily Macropsinae

\*\* *Oncopsis cinctifrons kootenensis* Hamilton

A subspecies endemic to British Columbia (Hamilton 1983). Recorded from Ainsworth, Brouse, Christina L., Creston, Kaslo, Kootenay Bay, Lafferty, Lockhart Beach Prov. Park, Longbeach, Mt. Revelstoke, Shoreacres (north of Castlegar), and Taghum on *Betula papyrifera*.

*O. incidens* Hamilton

In British Columbia, recorded only from Osoyoos and Summerland. Elsewhere the species is reported from Washington, with questionable records from Manitoba and Saskatchewan. It occurs on *Betula occidentalis*.

\*\* *O. prairiana ferrosa* Hamilton

A subspecies endemic to British Columbia (Hamilton 1983). Recorded from Brouse, Christina L., Creston, and Sirdar on *Betula papyrifera*.

Subfamily Idiocerinae

\*\* *Idiocerus glacialis* Hamilton

Endemic to British Columbia (Hamilton 1985) and recorded only from Taft and Glacier (at 3500 ft [1067 m]). It occurs on *Alnus* and *Salix*.

\*\* *I. indistinctus* Hamilton

Endemic to British Columbia, described from and known only from 6 mi [9.7 km] N of Quilchena (Hamilton 1985).

\* *I. tahotus* Ball & Baker

In Canada, recorded only from the Okanagan (Hedley, Midway, Naramata, Olalla, Osoyoos, Penticton, Yellow L.) on *Ribes cereum*. Elsewhere reported from California, Oregon, and Washington.

Subfamily Cicadellinae

Tribe Balthysomatophorini

\* *Errhomus calvus* Oman

In Canada, recorded only from the Okanagan (Bridesville, Keremeos, Oliver, Osoyoos, Summerland). Elsewhere reported only from Washington. The female is flightless.

Subfamily Deltocephalinae

Tribe Scaphytopini

\* *Scaphytopius diabolus* (Van Duzee)

In Canada, recorded only from the South Okanagan (Okanagan Falls, Oliver, and Osoyoos) on *Purshia tridentata*. Elsewhere reported from Arizona, California, Colorado, Oregon, Washington, and Utah.

LIST A2.2 (Continued)

Tribe Deltocephalini

- \* *Ballana callipera* De Long  
In Canada, recorded only from Osoyoos. Elsewhere reported from California, Idaho, Montana, Nevada, Utah, and Washington.
- \* *B. hebea* De Long  
In Canada, recorded only from Hedley. Elsewhere reported from Colorado, Nevada, Utah, and Washington.
- \* *B. ortha* De Long  
In Canada, recorded only from Osoyoos. Elsewhere reported from California, Colorado, Idaho, Nevada, New Mexico, North Dakota, and Utah.
- \* *B. remissa* De Long  
In Canada, recorded only from Oliver and Osoyoos. Elsewhere reported from Oregon and Washington.
- \* *Athysanella* sp. n. 1  
In Canada, recorded only from Douglas L., Oliver, Osoyoos, and Penticton. Elsewhere known to occur in Idaho (K.G.A. Hamilton, Agric. Can., pers. comm., 1993).
- \*\* *Athysanella* sp. n. 2  
An undescribed species endemic to British Columbia and so far only collected south of Hedley (K.G.A. Hamilton, Agric. Can., pers. comm., 1993).
- \* *Latalus mundus* Beamer & Tuthill  
In Canada, recorded only from Merritt and Osoyoos. Elsewhere reported from California, Montana, and Wyoming.
- Hebecephalus crassus* (De Long)  
In British Columbia, recorded only from Mt. Baldy and Summerland. Elsewhere reported from Idaho, Wyoming, and the Yukon.
- \*\* *Hebecephalus* sp. n.  
Endemic to British Columbia. Known only from Douglas L. (K.G.A. Hamilton, Agric. Can., pers. comm., 1993).
- \*\* *Unoka* sp. n. near *gillettei* Metcalf  
Endemic to British Columbia. Known only from Oliver and Osoyoos (K.G.A. Hamilton, Agric. Can., pers. comm., 1993).

LIST A2.2 (Continued)

Family Cicadidae

- \* *Okanagana ornata* Van Duzee  
In Canada, recorded only from Anderson L. and Seton L. Elsewhere reported from California and Oregon.

Family Cixiidae

- \*\* *Oeclidius* sp. n.  
An endemic species, known only from Seton L. and Spences Bridge (K.G.A. Hamilton, Agric. Can., pers. comm., 1993).
- \* *Oilarus coconinus* Ball  
In Canada, recorded only from Seton L. Elsewhere reported from Arizona, Colorado, Nevada, Texas, and Utah (Mead and Kramer 1982).
- \* *O. zyxus* Caldwell  
In Canada, recorded only from Kelowna, Vernon, and Okanagan Mission. Elsewhere reported from Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Texas, Utah, and Mexico (Mead and Kramer 1982).

Family Delphacidae

- \* *Prokelisia salina* (Ball)  
In Canada, recorded only from Osoyoos (Heady and Wilson 1990). Elsewhere reported from Arizona, California, Colorado, Florida, Georgia, Idaho, Kansas, Nevada, New Mexico, Oregon, Texas, Utah, Washington, and Wyoming (Wilson 1982).

Order MEGALOPTERA

Family Sialidae

*Sialis velata* Ross

In British Columbia, recorded only from Osoyoos and Salmon Arm. Elsewhere reported from across Canada and the United States (Ross 1937).

Order RAPHIDIOPTERA

Family Raphidiidae

- \* *Agulla crotchii* Banks  
In Canada, recorded only from Summerland. Elsewhere reported from California, Idaho, Nevada, Oregon, and Washington (U. Aspöck, Naturhistorisches Mus., Vienna, pers. comm., 1993).

Family Inocellidae

- \* *Negha inflata* (Hagen)  
In Canada, recorded from Osoyoos (Blades and Maier 1992). Reported from Arizona, California, Idaho, Montana, Nevada, Oregon, Utah, and Washington (U. Aspöck, Naturhistorisches Mus., Vienna, pers. comm., 1993).

LIST A2.2 (Continued)

Order NEUROPTERA

Family Mantispidae

*Climaciella brunnea* (Say)

In British Columbia, recorded from Goldstream Prov. Park, Kamloops, Kelowna, Lillooet, Oliver, Osoyoos, Oyama, Peachland, Penticton (Marron L.), Summerland, Vaseux L., Vernon, and Victoria. Elsewhere reported in southern Manitoba, southern Ontario, and southern Quebec, as well as across the United States to Central America.

\* *Mantispa pulchella* (Banks)

In Canada, recorded from Oliver (Gallagher L., UBC Geology Camp), Summerland (Trout Cr. Park), Vaseux L., and Vernon. Elsewhere reported from Arizona, California, Utah east to Texas, Illinois, Georgia, and North Carolina, as well as Panama.

Family Chrysopidae

\* *Eremochrysa punctinervis* (McLachlan)

In Canada, recorded only from Lillooet (Seton L.), Oliver, and Penticton (Garland 1982).

\* *Mallada perfectus* (Banks)

In Canada, recorded only from Penticton and Summerland (Garland 1982). Otherwise reported from Arizona, California, Colorado, New Mexico, Oregon, Utah, Washington, Wyoming, and Baja California (Adams and Garland 1982).

\* *Meleoma schwarzi* (Banks)

In Canada, recorded only from Penticton (Garland 1979). Otherwise reported from Arizona, California, Colorado, Nevada, New Mexico, Oregon, and Utah (Garland 1979).

Family Hemerobiidae

*Micromus subanticus* (Walker)

In British Columbia, recorded only from Penticton (Klimaszewski and Kevan 1988). Elsewhere reported from Manitoba, Ontario, Quebec, and throughout the United States.

\* *Sympherobius californicus* Banks

In Canada, recorded only from Oliver (Klimaszewski and Kevan 1992). Elsewhere reported from northwestern Mexico, western California, and Washington.

LIST A2.2 (Continued)

- \* *S. killingtoni* Carpenter  
In Canada, recorded only from Osoyoos, Penticton, and Vernon (Klimaszewski and Kevan 1992). Elsewhere reported from western and south-central United States and northern Mexico.

*Wesmaelius pretiosa* (Banks)  
In British Columbia, recorded from Oliver and Penticton (Klimaszewski and Kevan 1987). Elsewhere reported from Quebec, and in the United States from Oregon east to Nebraska and south to Arizona.

Order COLEOPTERA

Family Carabidae

- \* *Cicindela parowana wallisi* Calder  
In Canada, recorded only from the Okanagan Falls, Oliver, and Penticton, but recently the Penticton population, reported by Wallis (1961), has been extirpated (Scudder 1992). The species prefers alkaline soils (Wallis 1961).
- \* *Bembidion bowditchi* LeConte  
In Canada, this very rare species has only been collected at Kamloops and Trinity Valley (Lindroth 1963). Otherwise reported only from the type locality in Wyoming (Lindroth 1963).
- \* *B. disjunctum* Lindroth  
In Canada, this rare species has only been recorded from Eholt, northwest of Grand Forks, beside a flooded creek (Lindroth 1963). Elsewhere reported only from California, Sierra Nevada (Sonora Pass, 8000 ft [2438 m] among gravel along a small cold brook) (Lindroth 1963).
- \* *B. mormon* Hayward  
In Canada, restricted to the Okanagan Valley (Buce L., Osoyoos, White L.) (Lindroth 1963). The species occurs at the margins of alkaline lakes and roads. Elsewhere reported east to Wyoming and south to California.

Family Dytiscidae

- \* *Agabinus glabrellus* (Motschulsky)  
In Canada, recorded only near Ashcroft Manor, Ashcroft.

Family Leiodidae

- \*\* *Hydnobius contortus* Hatch  
Endemic to British Columbia. Recorded from Creighton Valley, Creston, Eagle R., Kettle R., and Salmon Arm (Hatch 1957).

LIST A2.2 (Continued)

- \*\* *Leiodes dilatata* Hatch  
Endemic to British Columbia. Recorded from Barkerville and Lorna (Hatch 1957).
- \*\* *Colon discretum* Hatch  
Endemic to British Columbia. Recorded from Lorna on *Picea engelmannii* (Hatch 1933).

Family Micropeplidae

- \*\* *Micropeplus smetanai* Campbell  
Endemic to British Columbia. Recorded from Hope (12 mi [19.3 km] E), Midway (4 mi [6.4 km] W), Burnt Flats (2 mi [3.2 km] E), Creston (8 mi [12.9 km] W), and Salmo (2 mi [3.2 km] S) (Campbell 1973a). One specimen was collected from inside a deserted beaver lodge, while all others were from flood debris (Campbell 1973a).

Family Staphylinidae

- \* *Xylodromus depressus* (Gravenhorst)  
A rare species, in Canada recorded only from Summerland, under bark.
- \*\* *Tachyporus stacesmithi* Campbell  
Endemic to British Columbia. Recorded only from Creston and Kamloops (Campbell 1979).
- \* *Bolitopunctus muricatus* (Hatch)  
In Canada, recorded only from Princeton. Elsewhere reported south to California.
- \* *Stenus tahoensis* Casey  
In Canada, recorded only from Mesachie L. and Midway (4 mi [6.4 km] W).

Family Histeridae

- \* *Teretrius montanus* Horn  
In Canada, recorded only from Creston and Summerland. Elsewhere reported south to Oregon.

Family Scarabaeidae

- \* *Euphoria rufobrunnea* Casey  
In Canada, restricted to the South Okanagan (Scudder 1992).

Family Buprestidae

- \* *Melanophila californica* Van Dyke  
In Canada, recorded only from Oliver on Douglas-fir (Bright 1987). Elsewhere reported from California, Idaho, Oregon, and Washington.

LIST A2.2 (Continued)

- \* *Chrysobothris columbiana* Barr  
In Canada, recorded only from Midday Valley, Merritt (Bright 1987). Elsewhere reported from eastern Washington.

- \* *C. pseudotsugae* Van Dyke  
In Canada, recorded only from Frye Creek and Merritt (Bright 1987). Elsewhere reported south to California.

Family Tenebrionidae

*Eleodes extricatus extricatus* (Say)

In British Columbia, only recorded from Osoyoos.

*E. nigrinus nigrinus* LeConte

In British Columbia, only recorded from Osoyoos (Scudder 1992).

- \*\* *Pseudocistela pectinata* Hopping  
Endemic to British Columbia. Recorded only from Midday Valley, Merritt (Hopping 1933).

Family Apionidae

- \* *Apion proclive* LeConte

In Canada, recorded only from Oliver (7 mi [11.3 km] N).

Family Curculionidae

- \* *Cleonidius longinasus* R.S. Anderson

In Canada, recorded only from Larkin, Osoyoos, 6-mile Cr., and Vernon.

- \*\* *Magdalis lecontei decepta* Sleeper

A subspecies endemic to British Columbia. Recorded from Kelowna, Kootenay Landing, and Sanca (Sleeper 1957a).

- \* *Tychius semisquamosus* LeConte

In Canada, recorded only from Oliver.

- \*\* *Ceutorhynchus opertus* W.J. Brown

Endemic to British Columbia. Recorded only from Oliver (Brown 1931).

Order MECOPTERA

Family Boreidae

- \* *Boreus nix* Carpenter

In Canada, recorded only from Ashnola R. Valley (Flat Iron Mt.). Elsewhere reported from Alaska and Montana (Penny 1977).

LIST A2.2 (Continued)

Order DIPTERA

Suborder NEMATOCERA

Family Tipulidae

- \* *Tipula imbellis* Alexander

In Canada, recorded only from Osoyoos (Spencer 1948; Scudder 1992). The species is also reported from Washington.

Family Simuliidae

- \*\* *Prosimulium constrictistylum* Peterson

Endemic to British Columbia. Known only from 1 mi [1.6 km] E of Osoyoos (Peterson 1970).

- \*\* *P. woodorum* Peterson

Endemic to British Columbia. Described from Kinnaird (12.8 mi [20.6 km] and 18.2 mi [29.3 km] W), and Cascade (0.9 mi [1.4 km] W) (Peterson 1970).

Suborder BRACHYCERA

Family Tabanidae

- \* *Hybomitra aasa* Philip

In Canada, recorded only from the South Okanagan (Osoyoos, Vaseux L.) and Galiano Island (Teskey 1990). In the United States, the species occurs south to California.

- \* *Tabanus punctifer* Osten Sacken

In Canada, this species is restricted to the Okanagan Valley (Teskey 1990). It occurs in wetland habitats, especially in saturated soil on the margins of running or standing water. The species is present over much of the western United States to the western border of the Dakotas, south to Texas, and northern Mexico.

Family Mydidae

- \* *Nemomydas pantherinus* (Gerstaecker)

In Canada, known only from Osoyoos in recent records, with one specimen from Vernon in 1909 (Scudder 1992). Elsewhere reported to occur south to Idaho, California, and Colorado.

Family Apioceridae

- \* *Apiocera barri* Cazier

In Canada, restricted to the South Okanagan (Scudder 1992).

Family Asilidae

- \* *Comantella pacifica* Curran

In Canada, recorded from Penticton and Vernon. Elsewhere reported from Washington.

LIST A2.2 (Continued)

- \* *Cryptopogon ablautoides* Melander  
In Canada, only recorded from Oliver (Scudder 1992). Elsewhere reported from Washington.

- \* *Dicolonus nigricentrus* Adisoemarto & Wood  
A rather rare grassland species in Canada recorded from the Chilcotin, Okanagan, and Similkameen valleys, with records from Keremeos, Osoyoos, and Penticton (R.A. Cannings 1989). Elsewhere reported from Washington and northern Idaho.

*Efferia albibarbis* (Macquart)

In British Columbia, restricted to the South Okanagan and the sandy benchlands around Oliver and Osoyoos, but with one record from Penticton (R.A. Cannings 1989; Scudder 1992). Elsewhere reported across the continent and south to Guatemala. In Canada also known from the beach dunes along L. Erie in southern Ontario (R.A. Cannings 1989).

- \*\* *E. okanagan* Cannings MS name  
Endemic to British Columbia. Recorded only from Kalamalka L., Kamloops, and Vaseux L. (R.A. Cannings, Royal B.C. Mus., pers. comm., 1993).

*Lestomyia sabulona* (Osten Sacken)

In British Columbia, recorded only in the grasslands of the southern Okanagan (R.A. Cannings 1989; Scudder 1992). Elsewhere reported from the grasslands of Alberta and south to California and Wyoming.

- \* *Machimus vesus* (Hine)  
In Canada, only recorded from Oliver (Scudder 1992). Elsewhere reported from California.

- \* *Megaphorus willistoni* (Cole)  
In Canada, recorded only from Chopaka (Scudder 1992). Elsewhere reported from California and Arizona.

- \* *Myelaphus lobicornis* (Osten Sacken)  
In Canada, recorded only from Dutch Creek and Penticton (R.A. Cannings 1989). Elsewhere reported south to California, Nevada, and Utah.

*Ospriocerus aecus* (Wiedemann)

In British Columbia, recorded only from Keremeos, Oliver, and Walhachin (?). The species is widespread in North America.

LIST A2.2 (Continued)

Family Bombyliidae

- \* *Lepidanthrax inauratus* (Coquillett)  
In Canada, recorded only from the southern Okanagan (Oliver, Osoyoos, Vaseux L.) (Scudder 1992). Elsewhere reported from Arizona, California, Nevada, Oregon, and Washington.

Family Syrphidae

- \* *Aemosyrphus polygrammus* (Loew)  
In Canada, restricted to the South Okanagan (Scudder 1992). Elsewhere reported south to Montana, California, Colorado, and Mexico.
- \* *Copestylum fasciatum* Macquart  
In Canada, restricted to the South Okanagan (Scudder 1992).

Family Anthomyiidae

- \* *Agromyza oliverensis* Spencer  
Restricted to the South Okanagan (Scudder 1992).
- \*\* *Delia euremena* Griffiths  
Endemic to British Columbia. Recorded only from Eureka Mt. in the Monashee Range (Griffiths 1991).
- \* *D. setifirma* (Huckett)  
In Canada, recorded from Apex Mt. Elsewhere widespread in the mountains of the western United States (Griffiths 1992).

*Melanagromyza miranda* Spencer

In British Columbia, restricted to the South Okanagan (Scudder 1992).

*Pegomya setibasis* Huckett

A rare species endemic to Canada and recorded only from Mt. Kobau (Blades and Maier 1992), Whitehorse in the Yukon, and Val Marie in Saskatchewan (Griffiths 1983). The larvae probably feed on *Orobanche fasciculata* Nutt. (G.C.D. Griffiths, Univ. Alta., pers. comm., 1993).

- \* *Phorbia impula* (Huckett)  
A rare species described from Nicola L. (Huckett 1948), and now known to occur in California (G.C.D. Griffiths, Univ. Alta., pers. comm., 1993).

LIST A2.2 (Continued)

Order LEPIDOPTERA

Family HesperIIDae

*Hesperia nevada* (Scudder) [Nevada Skipper]

In British Columbia, restricted to the Similkameen and Okanagan valleys, and considered vulnerable by Guppy et al. (1995). The species ranges through the boreal regions of, and the boreal slopes bordering, the Great Basin from interior British Columbia, eastern Washington, Oregon, and California eastward through the higher parts of Nevada and Utah, and into the Rocky Mountains from Alberta to Colorado, south to New Mexico and Arizona (Howe 1975). The preferred food plant in California is *Stipa occidentalis* Thurb. (Howe 1975).

*Polites sonora sonora* (Scudder) [Sonora Skipper]

In British Columbia, confined to the southern Okanagan Valley and Similkameen, and considered threatened by Guppy et al. (1995). This subspecies ranges through the western portion of the Great Basin from British Columbia to southern Nevada, in the Sierra Nevada, and from southern California to Baja California (Howe 1975).

Family LycaenIDae

*Epidemia nivalis browni* (dos Passos) [Nivalis Copper]

In British Columbia, restricted to the Okanagan Valley (Osoyoos, Summerland, Westbank) (Scudder 1992) and thus vulnerable (Guppy et al. 1995). The larval food plant is *Polygonum douglasii* Greene (Howe 1975; Dornfeld 1980; Scott 1986). The subspecies occurs from Montana, Idaho, and Washington, south to Colorado, Utah, and Nevada (Howe 1975).

\* *Satyrium behrii columbia* (McDunnough) [Behr's Hairstreak]

In Canada, restricted to the south Okanagan Valley (Scudder 1992) and considered threatened by Guppy et al. (1995). This is a Pacific Northwest subspecies, with larval food plant being *Purshia tridentata* (Howe 1975).

\* *S. fuliginosum semiluna* (Klots) [Sooty Gossammer Wing]

In Canada, restricted to Anarchist Mt. and the Similkameen Valley, and considered threatened by Guppy et al. (1995). The subspecies ranges from northwest Colorado to Alberta (Howe 1975), but the Alberta record is an old one from the extreme southwest part of the province (Guppy et al. 1995).

*S. californicum* (Edwards) [California Hairstreak]

In British Columbia, restricted to the south Okanagan Valley and Merritt, and considered threatened by Guppy et al. (1995). The species ranges south to California (Howe 1975), with larva feeding on ceanothus, oak, and mountain mahogany (Dornfeld 1980).

LIST A2.2 (Continued)

*Callophrys affinis washingtonia* (Clench) [Immaculate Green Hairstreak]  
In British Columbia, confined to the Okanagan Valley, north to Vernon (Scudder 1992), and considered vulnerable by Guppy et al. (1995). The subspecies occurs in Washington (Howe 1975) and Oregon (Dornfeld 1980). The larval food plant is *Eriogonum* (Dornfeld 1980).

Family Riodinidae

- \* *Apodemia mormo mormo* (Felder & Felder) [Mormon Metalmark]  
There are only two historical records of this butterfly in Canada from the South Okanagan, and now only one extant population near Keremeos. This is obviously an endangered species (Scudder 1992; Guppy et al. 1995). This nominate subspecies occurs throughout the Great Basin from southwestern Colorado and southern Wyoming to the eastern edges of California (Howe 1975). The larval food plant is *Eriogonum* (Howe 1975).

Family Nymphalidae

*Limenitis archippus archippus* (Cramer) [Viceroy]  
Recorded in the southern interior between 1913 and 1920, with the last collected at Lillooet in 1930. Guppy et al. (1995) considers the species extirpated in British Columbia, and since the larval food plant is commonly cultivated apple, perhaps the decline and extirpation may have been brought about by use of pesticides on apple orchards. The species occurs in eastern Washington and northeastern parts of Oregon, where larvae are night feeders on willows and poplars (Dornfeld 1980). The general distribution of the species is from southern Canada and New England, south to Georgia and Mississippi, west to eastern Colorado and Montana (Howe 1975).

Family Saturniidae

*Hemileuca nuttalli* (Strecker)  
In British Columbia, restricted to the South Okanagan (Osoyoos) (Llewellyn-Jones 1951; Scudder 1992). The food plant is *Spiraea* spp.

Family Arctiidae

- \* *Bruceia pulverina* Neum.  
In Canada, recorded only from Lillooet (Seton L.), Keremeos (Shingle Cr. Rd.), and Okanagan Falls (5 km SE) (J.H. Shepard, pers. comm., 1993).

Family Noctuidae

- \* *Admetoris similaris* Barnes  
A Great Basin species, restricted to the South Okanagan in Canada, recorded from Oliver and Vaseux L. (Scudder 1992).

LIST A2.2 (Continued)

- \* *A. centralis* (Smith)  
A Sierra Nevada-Cascade species collected only near Keremeos (Shingle Cr. Rd.) (J.D. Lafontaine, Agric. Can., pers. comm., 1992).
- \* *Copablepharon absidum* (Harvey)  
A Great Basin species, in Canada restricted to the South Okanagan, and recorded only from Osoyoos (Scudder 1992).
- \* *Euxoa macleani* McDunnough  
A subalpine species, known from only three localities (12 specimens) in British Columbia, namely Mt. McLean, near Lillooet (1 specimen type), Pinewoods in Manning Prov. Park (1 specimen) and at 7100 ft [2164 m], Blowdown Pass near Duffey L. (10 specimens). Otherwise recorded only from State Peak, Okanogan Co., Wash. (6 specimens) (J.D. Lafontaine, Agric. Can., pers. comm., 1992).
- Heliothis paradoxus* Ert  
In British Columbia, restricted to the South Okanagan (Osoyoos) (Llewellyn-Jones 1951; Scudder 1992).
- \*\* *Lasiestra macleani* (McDunnough)  
Endemic to British Columbia, known only from Mt. McLean (Llewellyn-Jones 1951).

Family Geometridae

- \* *Anacamptodes clivinaria profanata* (Barnes & McDunnough)  
In Canada, recorded only from Hedley, Oliver, and Osoyoos (McGuffin 1977). Occurs from British Columbia to California and Colorado, with larvae reported from *Philadelphus lewisii* Pursh., *Cercocarpus ledifolius* Nutt., *Purshia tridentata*, and *Rosa* sp.
- \*\* *Meris suffusaria* McDunnough  
Endemic to British Columbia. Known only from the unique male holotype collected at Shingle Cr. Road, Keremeos (McDunnough 1940; McGuffin 1987).
- \* *Prochoerodes amplicineraria* (Pearsall)  
In Canada, recorded only from Oliver and Osoyoos (McGuffin 1987). Occurs from British Columbia to Utah, with larvae on *Salix*.

Family Nepticulidae

- \*\* *Stigmella stigmaciella* Wilkinson & Scoble  
Endemic to British Columbia, and known only from type material from Vernon on *Crataegus* (leaf miner) (Wilkinson and Scoble 1979).

LIST A2.2 (Continued)

Order TRICHOPTERA

Family Glossosomatidae

- \* *Agapetus taho* Ross

In Canada, recorded only from 10.8 km E of Christina L. (Nimmo and Scudder 1984). Elsewhere reported from California.

Family Hydropsychidae

- \* *Hydropsyche jewetti* Denning

In Canada, recorded only from 1-mile Cr., north of Princeton (Nimmo and Scudder 1984). Elsewhere reported from Montana.

Family Limnephilidae

- \* *Limnephilus acula* Ross & Merkley

In Canada, recorded only from Nicola (Nimmo and Scudder 1979). Elsewhere reported from Washington.

Family Phryganeidae

*Agrypnia colorata* (Hagen)

In British Columbia, recorded only from Kamloops (Nimmo and Scudder 1979). Elsewhere reported from Manitoba, Michigan, Quebec, and Saskatchewan.

Order HYMENOPTERA

Suborder SYMPHYTA

Superfamily ANAXYELOIDEA

Family Anaxyelidae

- \* *Syntexis libocedrii* Rohwer

In Canada, known only from two specimens from the Salmon Arm area. Eggs are laid in freshly burned incense-cedar, juniper, and cedar. Elsewhere known from California and Oregon (Goulet 1992).

Suborder APOCRITA

Division ACULEATA

Superfamily BETHYLOIDEA

Family Bethylidae

Subfamily Bethylinae

*Parasierola breviceps* (Krombein)

In British Columbia, known only from Mt. Kobau (Blades and Maier 1992). Elsewhere reported from Arizona, California, Colorado, Nebraska, Nevada, New Mexico, Texas, Utah, Mexico (Evans 1978), and Alberta (A.T. Finnamore, Prov. Mus. Alta., pers. comm., 1993).

LIST A2.2 (Continued)

Family Chrysididae

Subfamily Cleptinae

*Cleptes speciosus* Aaron

In British Columbia, known only from Mt. Kobau (Blades and Maier 1992). Elsewhere reported from Montana (Krombein et al. 1979) and Alberta (A.T. Finnamore, Prov. Mus. Alta., pers. comm., 1993).

Subfamily Elampinae

\* *Holopyga hora* Aaron

In Canada, only known from Osoyoos (Haynes Lease) (Scudder 1992). Bohart and Kimsey (1982) gave the distribution as west of the 100th meridian, as far north as Oregon and South Dakota, and south to Pueblo and Sinaloa, Mexico.

Subfamily Chrysidinae

*Chrysis montana* Aaron

Recorded from Mt. Kobau, Osoyoos as possibly new to British Columbia (Blades and Maier 1992). Generally distributed, occurring in the Upper Sonoran and Alleghanian life zones across the United States west of the Mississippi R. (Bohart and Kimsey 1982), and reported from Alberta (A.T. Finnamore, Prov. Mus. Alta., pers. comm., 1993).

*C. rivalis* Bohart

The only British Columbia record is from Vaseux L. (Scudder 1992). The species occurs in the Upper Sonoran and Transition life zones in western United States from Colorado, Wyoming, and Montana west to California, Oregon, and Washington (Bohart and Kimsey 1982). It is now known to occur in southern Alberta (Writing-on-Stone) (A.T. Finnamore, Prov. Mus. Alta., pers. comm., 1993).

Superfamily VESPOIDEA

Family Tiphidae

\* *Paratiphia ephippiata* Allen

In Canada, known only from Mt. Kobau (Blades and Maier 1992). Elsewhere reported from Kansas and Wyoming to Texas and Arizona, south to Mexico (Krombein et al. 1979).

Family Sierolomorphidae

*Sierolomorpha nigrescens* Evans

In British Columbia, reported from Mt. Kobau (Blades and Maier 1992). Elsewhere known from Yukon, Alberta, and Saskatchewan, south to California, Arizona, and Colorado (Krombein et al. 1979).

LIST A2.2 (Continued)

Family Mutillidae

- \* *Myrmosa bradleyi* Roberts  
In Canada, known only from Mt. Kobau (Blades and Maier 1992). Elsewhere reported from California and Washington (Krombein et al. 1979).
- \* *Odontophotopsis erebus* (Melander)  
In Canada, only recorded from Osoyoos (Blades and Maier 1992). Elsewhere reported from Arizona, Kansas, New Mexico, Oklahoma, Texas, Utah, and Mexico (Krombein et al. 1979).
- \* *Pseudomethoca athamus* (Fox)  
In Canada, only recorded from Mt. Kobau (Blades and Maier 1992). Elsewhere reported from California and Oregon (Krombein et al. 1979).
- \* *P. bequaerti* Mickel  
In Canada, recorded only from Mt. Kobau (Blades and Maier 1992). Elsewhere reported from Arizona, Colorado, Montana, New Mexico, and Texas (Krombein et al. 1979).
- P. propinqua* (Cresson)  
In British Columbia, recorded only from Penticton and Osoyoos (Haynes Ecol. Reserve and Mt. Kobau) (Blades and Maier 1992; Scudder 1992). Elsewhere reported from Minnesota south to Texas, and west to Alberta and Arizona (Krombein et al. 1979).
- \* *Dasymutilla chiron* (Blake)  
In Canada, recorded from Osoyoos (Haynes Ecol. Reserve) (Blades and Maier 1992), Kaleden, Oliver, Summerland, Vernon, and White L. Otherwise reported from Texas (Krombein et al. 1979).
- \*\* *D. columbiana* Mickel  
Endemic to British Columbia. Described from Nicola (Mickel 1928).
- D. monticola* (Cresson)  
In British Columbia, recorded only from the South Okanagan (Oliver, Osoyoos, Penticton) (Scudder 1992). Otherwise reported from Minnesota south to Kansas, and west to British Columbia and Arizona (Krombein et al. 1979) and Alberta (A.T. Finnamore, Prov. Mus. Alta., pers. comm., 1993).
- Ephuta grisea* Bradley  
In British Columbia, recorded from Mt. Kobau (Blades and Maier 1992) and Penticton. Elsewhere reported from Alberta, Colorado, Montana, Utah, and North Dakota (Krombein et al. 1979).

LIST A2.2 (Continued)

Family Sapygidae

\* *Eusapyga* sp.

Recorded from Mt. Kobau as new to Canada (Blades and Maier 1992), but also reported from Haynes Lease, Osoyoos (Scudder 1992). The genus is reported from California, Nevada, Colorado, Wyoming, Montana, Texas, and North Carolina (Krombein et al. 1979).

Family Eumenidae

*Euodynerus auranus albivestris* (Bohart)

Only British Columbia record from Haynes Lease (Scudder 1992). Elsewhere reported from Alberta, Washington, Idaho, Oregon, North Dakota, South Dakota, Wyoming, and Colorado (Krombein et al. 1979).

\* *E. cockerelli* (Cresson)

In Canada, only recorded from Osoyoos (Haynes Lease) (Scudder 1992). Reported from Pacific coast states and Idaho (Krombein et al. 1979).

\* *Pterocheilus morrisoni* Cresson

In Canada, recorded only from Osoyoos. Elsewhere reported from Arizona, California, Nevada, Oregon, and Utah (Krombein et al. 1979).

Family Pompilidae

\* *Ageniella grisea* Townes

In Canada, reported only from Osoyoos (Haynes Lease) (Scudder 1992). Elsewhere recorded from Idaho (Krombein et al. 1979).

\* *A. accepta* (Cresson)

In British Columbia, only recorded from Osoyoos (Haynes Lease) (Scudder 1992). Reported as transcontinental in Lower Austral life zone (Krombein et al. 1979).

\* *Allaporus pulchellus* (Banks)

In Canada, recorded from Osoyoos (Haynes Lease) (Scudder 1992) and Penticton. Reported as transcontinental in the United States, Pennsylvania to Oregon (Krombein et al. 1979).

\* *Agenioideus birkmanni* (Banks)

In Canada, recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Reported as transcontinental in Lower Austral life zone, but entering the Upper Austral life zone in the west; known from Georgia, Kansas, Wyoming, and Oregon southward (Krombein et al. 1979).

LIST A2.2 (Continued)

- \* *Anoplius depressipes* Banks  
In Canada, recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Elsewhere reported from Texas, Alabama, and Georgia to Wisconsin and Maine, where it preys on *Dolomedes* along watercourses (Krombein et al. 1979).
- \* *Aporinellus yucatanensis* (Cameron)  
In Canada, known only from Osoyoos (Haynes Lease) and Penticton. Elsewhere reported from New Jersey, Montana, and Oregon south to Costa Rica (Krombein et al. 1979).

Superfamily APOIDEA

Series APOIDEA: SPHECIFORMES

Family Sphecidae

- \* *Ammophila aberti* Haldeman  
In British Columbia, restricted to the South Okanagan (Summerland) (Scudder 1992). Elsewhere reported from the western provinces and states east to Iowa (Krombein et al. 1979).
- \* *A. extremitata* Cresson  
In Canada, recorded only from Osoyoos (Mt. Kobau) (Blades and Maier 1992). Reported to occur in the western United States (Bohart and Menke 1976).

*Podalonia sonorensis* (Cameron)

In British Columbia, recorded only from Osoyoos (Mt. Kobau) (Blades and Maier 1992). Elsewhere reported from Alberta, United States west of 100th meridian, and Mexico (Krombein et al. 1979).

Family Pemphredonidae

*Diodontus leguminiferus* Cockerell

In British Columbia, recorded only from Osoyoos (Mt. Kobau) (Blades and Maier 1992). Elsewhere reported from Alberta, Arizona, California, Colorado, Idaho, Iowa, Missouri, Montana, New York, and Utah (Eighme 1989).

- \* *Ammoplanellus apache* (Pate)  
In Canada, recorded only from Osoyoos (Mt. Kobau) (Blades and Maier 1992). Elsewhere reported from New Mexico, Arizona, and California (Krombein et al. 1979).
- \* *A. lenape* (Pate)  
In Canada, recorded only from Osoyoos (Mt. Kobau) (Blades and Maier 1992). Elsewhere reported from California, Montana, and Pennsylvania (Krombein et al. 1979).

LIST A2.2 (Continued)

Family Crabronidae

- \* *Ectemnius dilectus* (Cresson)  
In British Columbia, recorded only from Osoyoos (Mt. Kobau) (Blades and Maier 1992). Elsewhere reported to occur in the Transition and Upper Austral life zones, in most of the United States except west of Sierra Nevada (Krombein et al. 1979).

Family Larridae

- \* *Miscophus evansi* (Krombein)  
In Canada, recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Otherwise reported from Washington and Wyoming (Bohart and Menke 1976).

*Tachysphex apicalis* Fox

In British Columbia, recorded only from Osoyoos (Haynes Lease) (Scudder 1992) and Summerland (Pulawski 1988). Transcontinental in the United States, south to New Mexico, British Columbia, and Alberta (Pulawski 1988).

*T. similis* Rohwer

In British Columbia, only known from Osoyoos (Haynes Lease). Elsewhere reported from New Brunswick, Saskatchewan, Alberta, Utah, New Mexico, and Mexico (Krombein et al. 1979).

Family Nyssonidae

- \* *Didineis nodosa* Fox  
In Canada, recorded only from Osoyoos (Mt. Kobau) (Blades and Maier 1992). Elsewhere reported from Colorado, Utah, Idaho, Washington, Oregon, California, and Mexico (Krombein et al. 1979).
- \* *Microbembex californica* R. Bohart  
In Canada, restricted to the South Okanagan (Kaleden, Oliver, Osoyoos [Haynes Lease], Penticton) (Scudder 1992). Elsewhere reported from the United States, and northern Mexico west of divide (Bohart and Menke 1976).
- \* *Stictiella tuberculata* (Fox)  
In Canada, recorded only from Osoyoos. Elsewhere reported from Idaho, Nevada, and Washington (Krombein et al. 1979).
- \* *Synnevrus* sp.  
In Canada, only known from Keremeos.

LIST A2.2 (Continued)

Family Philanthidae

- \* *Eucerceris vittatifrons* Cresson

In Canada, recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Elsewhere reported from Washington, California, Nevada, Utah, Colorado, Arizona, New Mexico, Oregon, and Idaho (Krombein et al. 1979).

Series APOIDEA: APIFORMES

Family Andrenidae

- \*\* *Andrena buckelli* Viereck

Endemic to British Columbia. Described from Kaleden, Lillooet, Lytton, North Bend, Okanagan Falls, Penticton, Salmon Arm, and Thompson R. (Viereck 1924).

- \*\* *A. fulvicrista* Viereck

Endemic to British Columbia. Described from Agassiz, Chilcotin, and Penticton (Viereck 1924).

- \*\* *A. lillooetensis* Viereck

Endemic to British Columbia. Described from Lillooet (Viereck 1924).

- \*\* *A. magnifica* Viereck

Endemic to British Columbia. Described from Rock Creek (Viereck 1924).

- \* *A. trizonata* (Ashmead)

In Canada, known only from Fairview (Oliver) (Scudder 1992). Elsewhere reported from Colorado (Krombein et al. 1979).

Family Halictidae

- \* *Dialictus albohirtus* (Crawford)

In Canada, known only from Penticton (Scudder 1992). Elsewhere recorded from Nevada (Krombein et al. 1979).

Family Megachilidae

- \* *Anthidium palliventris* Cresson

In Canada, known only from Penticton (Scudder 1992). Elsewhere reported from California, Oregon, and Utah (Krombein et al. 1979).

*Stelis montana* Cresson

In British Columbia, known only from Oliver (Scudder 1992). Elsewhere reported from Alberta, Arizona, Colorado, Oregon, Utah, and Wyoming (Krombein et al. 1979).

LIST A2.2 (Continued)

- \*\* *S. ricardonis* (Cockerell)  
Endemic to British Columbia. Described from Vernon (Cockerell 1912).
  
- \* *Heriades cressoni* Michener  
In British Columbia, recorded only from Osoyoos (Haynes Lease) (Scudder 1992). Elsewhere reported from Nebraska to New Mexico, west to British Columbia and California (Krombein et al. 1979).
  
- \* *Hoplitis sambuci* Titus  
In Canada, recorded only from Keremeos and Oliver (Scudder 1992). Otherwise reported from British Columbia to California, Nevada, and Utah (Krombein et al. 1979).
  
- \* *Anthocopa copelandica* Cockerell  
In Canada, known only from Penticton (Scudder 1992). Elsewhere reported from California, Colorado, Idaho, Montana, Oregon, Utah, Washington, and Wyoming (Krombein et al. 1979).
  
- \* *Osmia nemoralis* Sandhouse  
In Canada, known only from Fairview (Oliver) and Vaseux L. (Scudder 1992). Elsewhere reported from Idaho and Montana, south to California and Utah (Krombein et al. 1979).
  
- \* *O. pikei* Cockerell  
In Canada, known only from Penticton (Scudder 1992). Elsewhere reported from California, Colorado, Nevada, Oregon, Washington, and Wyoming (Krombein et al. 1979).
  
- O. texana* Cresson  
In British Columbia, known only from Oliver (Scudder 1992). Elsewhere reported from New York, Michigan, Ohio, Nebraska, Texas, Alberta, and North Dakota south to New Mexico (Krombein et al. 1979).
  
- \* *O. unca* Michener  
In Canada, known only from Osoyoos (Scudder 1992). Elsewhere reported from Colorado, Idaho, Montana, Oregon, Utah, and Washington (Krombein et al. 1979).
  
- \* *Megachile gentilis* Cresson  
In Canada, known only from Okanagan Falls (Scudder 1992). Elsewhere reported from Texas to California, Nevada, Oregon, Idaho, and Hawaii (introduced) (Krombein et al. 1979).

LIST A2.2 (Concluded)

- \* *M. subnigra subnigra* Cresson  
In Canada, known only from Penticton (Scudder 1992). Elsewhere reported from California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming (Krombein et al. 1979).
  - \* *Chalicodoma (Chelostomoides) angelarum* (Cockerell)  
In Canada, known only from Osoyoos (Haynes Lease) and Penticton (Scudder 1992). Elsewhere reported from Arizona, California, Nevada, Oregon, and Washington (Krombein et al. 1979).
- Family Apidae
- \*\* *Nomada vernonensis* Cockerell  
Endemic to British Columbia. Described from Vernon (Cockerell 1916).
- Bombus griseocollis* (DeGeer)  
In British Columbia, known only from the Okanagan (Blades and Maier 1992). Occurs generally throughout the United States and southern Canada.
- \* *B. vosnesenskii* Radoszkowski  
In Canada, known only from Osoyoos (Scudder 1992). Reported from British Columbia south to California, Nevada, and Mexico (Krombein et al. 1979).

LIST A2.3 Species of special interest in the Southern Interior Mountains (Southern Rocky Mountain Trench, Columbia Mountains and Highlands, and Selkirk-Bitterroot Foothills)

Phylum MOLLUSCA

Class GASTROPODA

Order MESOGASTROPODA

Family Valvatidae

- \* *Fluminicola virens* (Lea) [Olympia pebble snail]  
Listed as *Lithoglyphus virens* from Kootenay and Wigwam rivers in Clarke (1981). Burch (1989) listed distribution as Willamette, lower Columbia, upper Deschutes and Umpaque rivers, Oregon; Olympia and San Juan Co., Wash.; Vancouver Island.

Order BASOMMATOPHORA

Family Lymnaeidae

- \* *Fisherola nuttalli* (Haldeman) [shortface lanx]  
Listed as *Lanx nuttali* in Clarke (1981) with record from British Columbia at Trail. Burch (1989) listed *F. nuttalli kooteninsis* (Baird) from Spokane R. (E Wash.) and Kootenay R.; for more recent records of the species in the north-western United States, see Neitzel and Frest (1990).

*Fossaria truncatula* (Müller) [Attenuate fossaria]

British Columbia specimens in the CMN are from three localities only in B.C.: Duck L., 11 mi [17.7 km] N Creston, on Hwy 3A, 49°13'N 116°36'W, 9.viii.1972 (B.T. Kidd); stream near Bridesville, vii.1961 (W.M. Draycot); shallow stream nr. Osoyoos L., vi.1961 (W.M. Draycot).

Clarke (1981) reported this species also from Christina L. Burch (1989) listed the distribution as Europe, northern Asia, and portions of Alaska and the Yukon Territory.

Family Physidae

- \* *Physella lordi* (Baird) [Twisted physa]  
There are five locality records for this species in the CMN: Allison Cr., between Laird and McCaffrey Lks., 11 mi [17.7 km] N Princeton, 49°36'N 120°36'W, 5.viii.1972 (B.T. Kidd); Williams L., w. end of village, 52°07'N 122°07'W, 15.viii.1972 (A.H. Clarke and B.T. Kidd); Great Central L., 5 mi [8 km] N Sproat L., on Hwy 4 and 11 mi [17.7 km] NW of Port Alberni, 49°18'N 124°59'W, 2.viii.1972 (B.T. Kidd); Vaseux L., 4 mi [6.4 km] S Ok. Falls, 3.viii.1973 (AHC and DGSW); Clark Slough, arm of Fraser R.

Additional records of *P. lordi* provided by D.W. Taylor (pers. comm. via P. Lambert, 1994) are as follows:

L. Osoyoos (J.K. Lord) (British North American Boundary Commission, 1859-1861). (Lord 1866; Carpenter 1864); Okanagan L., Okanagan L. Park, 15.viii.1990 (D.W. Taylor); Kootenay L., near Nelson (from Dr. Rose, 12.v.1933 to

LIST A2.3 (Continued)

C.F. Newcombe); New Westminster District, Egmont, Ruby L. (Griffin) (ex. R.E. Coats collection, Calif. Acad. Sci. uncatalogued); New Westminster District, Sechelt Peninsula, Ruby L., SE side at regional park, 12.viii.1992 (D.W. Taylor); New Westminster District, Sechelt Peninsula, Ruby L., Send, 13.viii.1992 (D.W. Taylor).

Burch (1989) gave the distribution as British Columbia south to Montana, Nevada, and California.

- \* *P. virginea* (Gould) [Sunset phylla]  
Material in the CMN is from Caribou Rd.; Swan L., 2 mi [3.2 km] N Vernon, 50°18'5"N 119°16'W, 12.viii.1972 (A.H. Clarke and B.T. Kidd); Slough at Indian Reserve, 4 mi [6.4 km] S Creston, 49°25'N 116°31'W, 9.viii.1972 (A.H. Clarke and B.T. Kidd); Laird Hot Springs, 19.viii.1973.

Burch (1989) listed the distribution as British Columbia south to California.

Phylum ARTHROPODA

Subphylum CHELICERATA

Class ARACHNIDA

Order ARANEAE

Family Dipluridae

- \* *Microhexera idahoana* Chamberlin & Ivie  
In Canada, recorded only from Creston at 6850 ft [2088 m] (R. West, pers. comm., 1993).

Family Gnaphosidae

*Micaria longipes* Emerton

In British Columbia, recorded only from Koocanusa L. (West et al. 1988). Elsewhere reported to occur east to New Brunswick, south to Arizona and Mexico (Platnick and Dondale 1992).

Family Linyphiidae

- \* *Pimoa haden* Chamberlin & Ivie  
In Canada, recorded only from Kimberley, near Kuskanook (West et al. 1988).

Order ACARIFORMES

Suborder PROSTIGMATA

Family Momoniidae

- \* *Cyclomomonia andrewsi* Smith  
In Canada, recorded only from Vancouver Island (small stream beside Hwy 4, 16.6 km E of Pacific Rim Road in small stream beside Harris Creek Main and near Cowichan L.), Bella Coola Valley (small stream 6 km E of Hagensborg), and Walker Creek beside Hwy 3 near Bonanza Pass (Smith 1989b). Also reported from Nevada and Oregon.

LIST A2.3 (Continued)

Subphylum HEXAPODA

Class INSECTA

Order ODONATA

Family Coenagridae

*Argia vivida* Hagen

Known only from Field, Fairmont, Penticton, White L., Meager Cr. Hot Springs, and from Glacier. The species ranges from southern British Columbia and the Rocky Mts. of Alberta to Texas, California, and Mexico. It is a very local insect found around pools near springs (especially hot springs in northern latitudes) or spring-fed streams inhabited by larvae.

Family Aeshnidae

*Aeshna tuberculifera* Walker

A sparsely distributed species in British Columbia, recorded only in the Nanaimo and Campbell R. districts and Bowser on Vancouver Island, Haney, Cypress Bowl, and Wells Gray Park. The species occurs in boggy-margined ponds and lakes. It occurs from Wisconsin to Nova Scotia, south to Pennsylvania and Indiana, as well as British Columbia and Washington.

Family Macromiidae

\*\* *Macromia rickeri* Walker

Endemic to British Columbia and known only from Cultus L., Hope, Salmon Arm, and Shuswap L. (Scudder et al. 1977). The taxon may be only a dark form of *M. magnifica*.

Family Corduliidae

*Somatochlora cingulata* (Selys)

In British Columbia, recorded only from Arthur L., 1200 m near Falkland, and from Bowron L. Provincial Park (Cannings 1990b). This is a boreal species that occurs east to Hudson Bay, Labrador and Newfoundland, south to New Hampshire, Michigan, the north shore of L. Superior, and the northern prairies.

*S. whitehousei* Walker

A sparse species in British Columbia, recorded from Green R. (trib. of Tusulko R.), Heckman Pass, Revelstoke Mt. (2000 m), and Jesmond. The species occurs in bog pools from British Columbia and the Yukon east to Hudson Bay and Labrador.

Order PLECOPTERA

Family Capniidae

\*\* *Bolshecapnia gregsoni* (Ricker)

Endemic to British Columbia. Recorded from Kokli L. (on Mt. Arrowsmith), Forbidden Plateau, Helen L. (Garibaldi Park), and Gwillim Cr. (Valhalla Mts.) (Ricker 1965; Ricker and Scudder 1976).

LIST A2.3 (Continued)

*B. spenceri* (Ricker)

In British Columbia, known only from Headquarters Cr. near Sorcerer Glacier in the Selkirk Mts. and Lyell Cr. near Golden (Ricker and Scudder 1976). Elsewhere reported from Alberta and Montana.

Family Leuctridae

Subfamily Megaleuctrinae

*Megaleuctra spectabilis* Neave

A rare species, in British Columbia known only from Campbell Cr., a Fry Creek tributary in the Purcell Range (Ricker and Scudder 1976).

Order HETEROPTERA

Family Berytidae

\* *Acanthophysa echinata* Uhler

In Canada, recorded only from Wasa (Scudder 1991) and Osoyoos (Haynes Ecol. Reserve). Reported elsewhere from Arizona, California, Idaho, New Mexico, Oregon, Utah, and Washington (Henry and Froeschner [editors] 1988).

Family Lygaeidae

Subfamily Rhyparochrominae

Tribe Gonianotini

\* *Malezonotus arcuatus* Ashlock

A rare lygaeid, in Canada known only from Kaslo (Ashlock 1958). Otherwise known only from Washington (Mt. Rainier and Paradise Valley) (Ashlock 1958).

Family Miridae

\*\* *Deraeocoris fraserensis* Razafimahatratra & Lattin

An endemic species from British Columbia described from Wells (Wendell Park) and Quesnel (Razafimahatratra and Lattin 1982).

\*\* *Dichroscytus flagellatus*

A species endemic to British Columbia, described from Hope, Princeton, Radium Hot Springs, and Spences Bridge (Kelton 1972). Now known also from Hedley, Merritt, Okanagan Falls, and Summerland, usually on *Juniperus*.

\*\* *D. rufusculus* Kelton

A species endemic to British Columbia, and known only from Manning Prov. Park (Gibson Pass), Hedley, Kaslo, and Lockhart Beach (Kelton 1972).

LIST A2.3 (Continued)

Order HOMOPTERA

Family Cicadellidae

Subfamily Agallinae

\* *Acertogallia arida* Oman

In Canada, recorded only from Radium Hot Springs. The range of the species extends south to Montana and Colorado.

Subfamily Macropsinae

\*\* *Oncopsis cinctifrons kootenensis* Hamilton

A subspecies endemic to British Columbia (Hamilton 1983). Recorded from Ainsworth, Brouse, Christina L., Creston, Kaslo, Kootenay Bay, Lafferty, Lockhart Beach Prov. Park, Longbeach, Mt. Revelstoke, Shoreacres, and Taghum on *Betula papyrifera*.

\*\* *Oncopsis prairiana ferrosa* Hamilton

A subspecies endemic to British Columbia (Hamilton 1983). Recorded from Brouse, Christina L., Creston, and Sirdar on *Betula papyrifera*.

Subfamily Idocerinae

\*\* *Idiocerus glacialis* Hamilton

Endemic to British Columbia (Hamilton 1985), and recorded only from Taft and Glacier (at 1076 m). It occurs on *Alnus* and *Salix*.

Subfamily Cicadellinae

*Limotettix divaricatus* (Saunders & De Long)

In British Columbia, recorded only from Yahk on *Carex*. Elsewhere occurs in eastern North America, Saskatchewan, and Idaho.

\*\* *L. xanthus* Hamilton

Endemic to British Columbia. Recorded only from the type locality, 16 km S of Revelstoke (Hamilton 1995).

\*\* *Psammotettix beirnei* Greene

Endemic to British Columbia. Recorded only from Mt. Revelstoke (1900–2150 m) and Mt. Harry (Greene 1971).

\* *Thatuna gillettei* Oman

In Canada, recorded only from Erie, Fife, Cascade (22.5 km E), and Rossland. Elsewhere reported from Idaho, Montana, and Texas.

LIST A2.3 (Continued)

Order MEGALOPTERA

Family Sialidae

*Sialis hamata* Ross

In British Columbia, recorded only from Creston (Ross 1937). Elsewhere reported from Alberta, Montana, Oregon, Utah, Washington, and Wyoming (Ross 1937).

Order NEUROPTERA

Family Coniopterygidae

\*\* *Helicoconis similis* Meinander

Endemic to British Columbia. Recorded only from the top of Moyie Mt. at 2110 m (Meinander 1972).

Order COLEOPTERA

Family Carabidae

\* *Scaphinotus merkelii* Horn

In Canada, this species has been reported in the Creston area, Wynndel (north of Creston) and Goat Mt. L. (Lindroth 1961). Elsewhere it is only reported from northern Idaho (Lindroth 1961).

\* *Cychrus rickseckeri* LeConte

In Canada, this scarce species has been reported only in the Creston district at Sanca and Wynndel (in rather dense mixed forest along Duck Creek). Elsewhere reported to be restricted to the western foothills of the Rocky Mountains, along the boundary between Montana, northern Idaho, and in northeastern Washington (Lindroth 1961).

\*\* *Bembidion kalumae* Lindroth

Endemic to British Columbia. Recorded from Kalum L. (N Terrace), Price Creek (Skeena R. opposite Kitwanga), and Stanley (E of Quesnel) (Lindroth 1963). Lindroth (1963) noted that the distribution is imperfectly known, and G.E. Ball (Univ. Alta., pers. comm., 1993) stated that it is likely the species is more widespread.

Family Leiodidae

\*\* *Hydnobius contortus* Hatch

Endemic to British Columbia. Recorded from Creighton Valley, Creston, Eagle R., Kettle R., and Salmon Arm (Hatch 1957).

\*\* *H. stacesmithi* Hatch

Endemic to British Columbia. Recorded from Canyon, Copper Mt., and Creston (Hatch 1957).

LIST A2.3 (Continued)

- \*\* *Anogdus mirabilis* Hatch  
Endemic to British Columbia. Recorded from Creston (Hatch 1957).
- \*\* *Leiodes dilatata* Hatch  
Endemic to British Columbia. Recorded from Barkerville and Lorna (Hatch 1957).
- \*\* *L. tenuis* Hatch  
Endemic to British Columbia. Recorded from Creston (Hatch 1957).
- \*\* *Colon femorale* Hatch  
Endemic to British Columbia. Recorded from Creston (Hatch 1957).
- \*\* *C. tibiale* Hatch  
Endemic to British Columbia. Recorded from Creston (Hatch 1957).
- \*\* *C. complicatum* Hatch  
Endemic to British Columbia. Recorded from Creston (Hatch 1957).

Family Micropeplidae

- \* *Micropeplus robustus* Campbell  
A rare species in Canada, recorded only from Creston (12.8 km W) and Hope (12 mi [19.3 km] E) (Campbell 1973a). Elsewhere it is reported from only one locality in California and one in Oregon (Campbell 1968). British Columbia specimens were collected from flood debris on rivers.
- \*\* *M. smetanai* Campbell  
Endemic to British Columbia. Recorded from Hope (19.3 km E), Midway (6.4 km W), Burnt Flats (3.2 km E), Creston (12.8 km W), and Salmo (3.2 km S) (Campbell 1973a). One specimen was collected from inside a deserted beaver lodge, while all others were from flood debris (Campbell 1973a).

Family Staphylinidae

- \* *Coryphium brunneum* (Hatch)  
A rare species, in Canada recorded only from Creston. Elsewhere only reported from a single locality in Idaho. Specimens were collected in late November and December on snow (J.M. Campbell, Agric. Can., pers. comm., 1993).
- \* *Asemobius caelatus* Horn  
An extremely rare species, in Canada recorded only from Creston (12.8 km W) and Salmo (3.2 km S). Elsewhere reported from only a single locality in northern California and Baring (Washington).

LIST A2.3 (Continued)

- \*\* *Tachinus stacesmithi* Campbell  
Endemic to British Columbia. Recorded only from Creston (Campbell 1973b).
- \*\* *Tachyporus stacesmithi* Campbell  
Endemic to British Columbia. Recorded only from Creston and Kamloops (Campbell 1979).
- \* *Neobolitobius varians* (Hatch)  
In Canada, recorded only from Creston and Vancouver (UBC Campus). Elsewhere reported south to Oregon.
- \* *Stenus mundulus* Casey  
In Canada, only recorded from Creston (32 km W). Elsewhere reported from Oregon and Washington.
- \* *Sunius rugithorax* Hatch  
In Canada, this rare species, which occurs with ants, is recorded only from Creston and Wynndel (north of Creston). Elsewhere it is reported from Washington.
- \* *Medon ctenophorum* Hatch  
In Canada, recorded only from Creston. Elsewhere reported from southeastern Washington.
- Family Histeridae
- \* *Teretrius montanus* Horn  
In Canada, recorded only from Creston and Summerland. Elsewhere reported south to Oregon.
- Family Buprestidae
- \* *Anthaxia prasina* Horn  
In Canada, recorded only from Copper Mt. (Bright 1987). Elsewhere reported from California and Oregon.
- \* *Agrilus arbuti* Fisher  
In Canada, recorded only from Creston on *Amelanchier alnifolia* Nutt. (Bright 1987). Elsewhere reported south to California.
- Family Tenebrionidae
- \* *Hymenorus caurinus* Fall  
In Canada, recorded only from Creston. Elsewhere reported south to Oregon.

LIST A2.3 (Continued)

Family Pyrochroidae

- \* *Dendroides marginatus* Van Dyke  
In Canada, recorded only from Nelson and Atbara. Elsewhere reported south to California.

Family Salpingidae

- \* *Rhinosimus lecontei* Blair  
In Canada, recorded only from Creston.

Family Curculionidae

- \*\* *Sitona lupinus* Sleeper  
Endemic to British Columbia. Recorded from Creston on *Lupinus sericeus* Pursh. (Sleeper 1955).
- \*\* *Magdalis lecontei decepta* Sleeper  
A subspecies endemic to British Columbia. Recorded from Kelowna, Kootenay Landing, and Sanca (Sleeper 1955).
- \*\* *Anthonomus deceptus* Sleeper  
Endemic to British Columbia. Recorded only from Copper Mt.
- \* *Ceutorhynchus cupreus* Hatch  
In Canada, recorded only from Creston.
- \*\* *C. squamosules* Sleeper  
Endemic to British Columbia. Recorded only from Creston (Sleeper 1957b).
- \*\* *Baris stacesmithi* Sleeper  
Endemic to British Columbia. Recorded from Creston on *Artemisia gnaphalodes* Nutt. (Sleeper 1955).
- \*\* *Hexarthrum thujae* Brown  
Endemic to British Columbia. Recorded from Big Bend Highway (54 km N Revelstoke) and from log piles at Revelstoke (Brown 1966).

Order MECOPTERA

Family Boreidae

- Boreus pilosus* Carpenter  
In British Columbia, recorded only from Kaslo. Elsewhere reported from Alberta and Montana (Penny 1977).

LIST A2.3 (Continued)

Order DIPTERA

Suborder NEMATOCERA

Family Tipulidae

\*\* *Limonia suffusca* (Garrett)

At present listed as endemic to British Columbia. Known only from types collected at Cranbrook (Garrett 1922; Spencer 1948).

Family Culicidae

*Aedes hendersoni* Cockerell

In British Columbia, recorded positively only from Sirdar (Zavortink 1972; Belton and Belton 1981). The species may also occur at Vernon (Wood et al. 1979). The distribution of the species is from southern British Columbia and south-central Texas east to southern Quebec, and Georgia. Larvae inhabit water-filled rot-cavities in deciduous trees.

Family Simuliidae

\*\* *Prosimulium woodorum* Peterson

Endemic to British Columbia. Described from Kinnaird (20.4 km and 28 km W), and Cascade (1.4 km W) (Peterson 1970).

Family Chironomidae

\*\* *Odontomesa lutospora* (Garrett)

Endemic to British Columbia. Described from Cranbrook (Garrett 1925), and only recorded from this locality.

Suborder BRACHYCERA

Family Asilidae

*Eucyrtopogon spiniger* Curran

In British Columbia, recorded from Copper Mt., Pass Creek, and Victoria. Elsewhere reported from Alberta and the Northwest Territories.

\* *Myelaphus lobicornis* (Osten Sacken)

In Canada, recorded only from Canal Flats and Penticton. Elsewhere reported from California, Idaho, and Nevada.

Family Syrphidae

\*\* *Platycheirus setipes* Vockeroth

Endemic to British Columbia. Described from and only known from one male from Manning Prov. Park (Dry Ridge summit), and one male from Robson (Vockeroth 1990, 1992).

LIST A2.3 (Continued)

Family Anthomyiidae

*Alliopsis arnaudi* Griffiths

Described from the Purcell Mountains, and only known elsewhere from the Ogilvie Mountains in the Yukon (Griffiths 1987).

\*\* *Delia oppidans* (Huckett)

Endemic to British Columbia. Recorded from Kaslo, Robson, and Victoria Distr. (Griffiths 1991).

\* *Eutrichota conscripta* (Huckett)

In Canada, recorded only from Copper Mountain on birch sap. Elsewhere reported from California, Colorado, and Idaho (Griffiths 1984b).

\* *E. impolita* (Huckett)

In Canada, recorded only from Copper Mountain on birch sap. Elsewhere reported in mountains of California, New Mexico, Oregon, and Utah (Griffiths 1984b).

\* *Pegomya fumipennis* Huckett

In Canada, recorded only from Cranbrook. Elsewhere reported only from Loon L., Washington (Griffiths 1984a).

Order LEPIDOPTERA

Family Lycaenidae

*Gaeides xanthoides dione* (Scudder) [Large Copper]

In British Columbia, known only from one population at Elizabeth L. at Cranbrook, and thus considered endangered (Guppy et al. 1995). The larval food plant is *Rumex hymenosepalus* Torrey outside British Columbia, and the subspecies occurs in the midwestern prairies and the Great Plains from Alberta, Saskatchewan, and Manitoba southward to northwestern Illinois, Iowa, Missouri, and Oklahoma (Howe 1975).

*Everes comyntas comyntas* (Godart) [Eastern Tailed Blue]

In British Columbia, known from a single population at Proctor L. in the East Kootenays, and thus considered vulnerable (Guppy et al. 1995). This nominate subspecies is widely distributed east of the 100th meridian, and extends from Quebec (Montreal) south to Florida, with isolated populations in coastal Oregon and California (Howe 1975). The host plant is legumes, particularly clover (*Trifolium*) (Dornfeld 1980).

LIST A2.3 (Continued)

Family Nymphalidae

*Euphydryas gillettii* (Barnes) [Gillette's Checkerspot]

In British Columbia, only known from three populations in the eastern Kootenays and thus considered vulnerable (Guppy et al. 1995). The species occurs in Wyoming, Montana, Idaho, and several localities in Alberta (Howe 1975). Scott (1986) listed a wide range of larval food plants from the Caprifoliaceae, Scrophulariaceae, and Valerianaceae.

Family Satyridae

*Coenonympha tullia benjamini* McDunnough [Ringlet]

This subspecies in British Columbia occurs in restricted areas of both the Flat-head region of the Kootenays and the Peace R. lowlands, and is considered vulnerable by Guppy et al. (1995). The subspecies is otherwise reported from Alberta, Manitoba, Saskatchewan, northern Montana, and the Dakotas (Howe 1975).

Order TRICHOPTERA

Family Hydropsychidae

*Hydropsyche riola* Denning

In British Columbia, recorded only from Canim L. (Nimmo and Scudder 1979). The range of this species extends from Alaska to New Hampshire.

Family Leptoceridae

\* *Ceraclea cophia* (Ross)

In Canada, recorded only from Kaslo (Nimmo and Scudder 1979). Elsewhere reported from Wyoming.

*Triaenodes nox* Ross

In British Columbia, recorded only from Creston (Nimmo and Scudder 1984). Elsewhere reported from Ontario and New Hampshire.

Family Limnephilidae

*Allomyia cascadis* (Ross)

In British Columbia, recorded only from Mt. Revelstoke Natl. Park at 1784 m (Nimmo and Scudder 1979). Elsewhere reported from Alberta, Montana, Oregon and Washington.

*Homophylax acutus* Denning

In British Columbia, recorded only from Mt. Revelstoke Natl. Park at 1877 m (Nimmo and Scudder 1984). Elsewhere reported from Alberta and Idaho.

*Limnephilus sublunatus* Provancher

In British Columbia, recorded only from Kimberley (Nimmo and Scudder 1979). Elsewhere reported from Alberta to Colorado, Maine, and Quebec.

LIST A2.3 (Continued)

- \* *Oligophlebodes mostbento* Schmid  
In Canada, recorded only from Wauchope Cr., 42.6 km W of Fauquier (Nimmo and Scudder 1984). Elsewhere reported from Oregon.

*Psychoglypha prita* Milne  
In British Columbia, recorded only from Loop Brook, Glacier Natl. Park (Nimmo and Scudder 1984). Elsewhere reported from Alberta, Idaho, and Oregon.

*P. rossi* Schmid  
In British Columbia, recorded only from Perry Siding (Schmid 1952; Nimmo and Scudder 1979).

Family Phryganeidae

*Agrypnia obsoleta* (Hagen)  
In British Columbia, recorded only from Glacier Natl. Park (Nimmo and Scudder 1984). This is a holarctic species.

Family Rhyacophilidae

*Rhyacophila belona* Ross  
In British Columbia, recorded only from Robson (Nimmo and Scudder 1979). Elsewhere reported from Alberta, Idaho, and Montana.

- \* *R. betteni* Ling  
In Canada, recorded only from 32 km N of Golden (Nimmo and Scudder 1979). Elsewhere reported from California and Oregon.

*R. ebria* Denning  
In British Columbia, recorded only from Mt. Revelstoke Natl. Park (Nimmo and Scudder 1979). Elsewhere reported from Montana.

*R. glaciera* Denning  
In British Columbia, recorded only from Mt. Revelstoke Natl. Park (Nimmo and Scudder 1984). Elsewhere reported from Alberta and Montana.

*R. milnei* Ross  
In British Columbia, recorded only from Loop Brook, Glacier Natl. Park (Nimmo and Scudder 1984). Also reported from Alberta.

- \*\* *R. unimaculata* Denning  
Endemic to British Columbia. Recorded from Fernie and Robson (Denning 1941; Nimmo and Scudder 1979).

Appendix 2 Continued

LIST A2.3 (Concluded)

Order HYMENOPTERA

Family Tenthredinidae

\*\* *Susana fuscala* Wong & Milliron

Endemic to British Columbia. Described from Dutch Cr. and Invermere. Host is *Juniperus scopulorum* Sarg. (Wong and Milliron 1972).

Family Andrenidae

\*\* *Andrena revelstokensis* Viereck

Endemic to British Columbia. Described from Mt. Revelstoke at 2461 m (Viereck 1924).

\*\* *A. singularis* Viereck

Endemic to British Columbia. Described from Goldstream Prov. Park and Invermere (Viereck 1924).

LIST A2.4 Species of special interest in the Georgia Depression (Lower Mainland)

Phylum MOLLUSCA

Class GASTROPODA

Order BASOMMATOPHORA

Family Physidae

\* *Physella lordi* (Baird) [Twisted physa]

There are five locality records for this species in the CMN: Allison Cr., between Laird and McCaffrey Lks., 11 mi [17.7 km] N Princeton, 49°36'N 120°36'W, 5.viii.1972 (B.T. Kidd); Williams L., w. end of village, 52°07'N 122°07'W, 15.viii.1972 (A.H. Clarke and B.T. Kidd); Great Central L., 5 mi [8 km] N Sproat L., on Hwy 4 and 11 mi [17.7 km] NW of Port Alberni, 49°18'N 124°59'W, 2.viii.1972 (B.T. Kidd); Vaseux L., 4 mi [6.4 km] S Ok. Falls, 3.viii.1973 (AHC and DGSW); Clark Slough, arm of Fraser R.

Additional records of *P. lordi* provided by D.W. Taylor (pers. comm. via P. Lambert, 1994) are as follows:

L. Osoyoos (J.K. Lord) (British North American Boundary Commission, 1859–1861). (Lord 1866; Carpenter 1864); Okanagan L., Okanagan L. Park, 15.viii.1990 (D.W. Taylor); Kootenay L., near Nelson (from Dr. Rose, 12.v.1933 to C.F. Newcombe); New Westminster District, Egmont, Ruby L. (Griffin) (ex. R.E. Coats collection, Calif. Acad. Sci. uncatalogued); New Westminster District, Sechelt Peninsula, Ruby L., SE side at regional park, 12.viii.1992 (D.W. Taylor); New Westminster District, Sechelt Peninsula, Ruby L., Send, 13.viii.1992 (D.W. Taylor).

Burch (1989) gave distribution as British Columbia south to Montana, Nevada, and California.

\* *Physella propinqua nuttalli* (Lea) [Rocky Mt. physa]

The Canadian Museum of Nature has material standing under *P. nuttalli* from Sumas Prairie and Small L., 7 mi [11.3 km] E Greenwood. Other material standing under *P. propinqua* is from Sturgeon L., 13.ix.1879; Similkameen R., 1905 (Macoun); nr. Granby L., Grand Forks, 28.viii.1960 (W.M. Draycot).

Burch (1989) listed *P. propinqua nuttalli* distribution from British Columbia south to Montana, Wyoming, and California. *Physella propinqua propinqua* is not listed from British Columbia.

Class BIVALVIA

Order VENEROIDA

Family Sphaeriidae

\* *Sphaerium patella* (Gould) [Rocky Mt. fingernail clam]

Material in the CMN is from Burnaby and Abbotsford L. only. The species occurs from southern British Columbia to Idaho and northern California in the Pacific drainage (Clarke 1981).

LIST A2.4 (Continued)

*Pisidium insigne* Gabb [Tiny peaclam]

Material in the CMN is from only three localities: Long L., Wellington, 24.ix.1908 (C.H. Young); Jones Cr., 1 mi [1.6 km] W Laidlaw, 49°18'N 121°38'W, 4.viii.1972 (A.H. Clarke and B.T. Kidd); stream nr. Bridesville, vii.1961 (W.M. Draycot).

In Canada, known only from Prince Edward Island, southern Ontario, and southern British Columbia, but in the United States the species occurs in the northern states and south in the Rocky Mountains to Arizona and New Mexico (Clarke 1981).

Phylum ARTHROPODA

Subphylum CHELICERATA

Class ARACHNIDA

Order ARANEAE

Family Clubionidae

\* *Castianeira mimula* Chamberlin

In Canada, recorded only from Summerland and Vancouver (West et al. 1984). Elsewhere reported south to California and east to Utah (Dondale and Redner 1982).

Family Gnaphosidae

\* *Gnaphosa snohomish* Platnick & Shadab

In Canada, recorded only from Haney (West et al. 1988). Elsewhere only reported from Washington (Platnick and Dondale 1992).

Family Linyphiidae

\* *Linyphantes nehalem* Chamberlin & Ivie

In Canada, recorded only from Burnaby and Sumas (West et al. 1988).

\* *L. pualla* Chamberlin & Ivie

In Canada, recorded only from Sidney (West et al. 1984) and Burnaby (J.H. Redner, Agric. Can., pers. comm., 1993).

\* *L. victoria* Chamberlin & Ivie

In Canada, recorded only from Victoria (West et al. 1984) and Burnaby (J.H. Redner, Agric. Can., pers. comm., 1993).

\* *Wubana atypica* Chamberlin & Ivie

In Canada, recorded only from Cameron L. (West et al. 1984), Comox, Edgewood, Goldstream Prov. Park, and Langley (J.H. Redner, Agric. Can., pers. comm., 1993).

LIST A2.4 (Continued)

Family Thomisidae

- \* *Misumenops serrensis* Schick  
In Canada, recorded only from Errington, Hope, and Osoyoos (West et al. 1984). Reported to occur south to California (Dondale and Redner 1978).

Subphylum MYRIAPODA

Class DIPLOPODA

Order POLYZONIIDA

Family Hirudisomatidae

- \* *Hypozoneum anurum* Cook  
In Canada, recorded from Burnaby, Burquitlam, Hope (2 km SE), Manning Prov. Park (west gate), and Steelhead (Shelley 1990).

Order JULIDA

Family Parajulidae

- \* *Tuniulus hewitti* (Chamberlin)  
In Canada, known only from the type locality at Agassiz (Chamberlin 1919). Elsewhere reported from Washington (Chamberlin and Hoffman 1958).

Family Caseyidae

- \*\* *Opiona columbiana* Chamberlin  
Endemic to British Columbia, known only from Vancouver and Victoria (Chamberlin 1951).
- \* *Vasingtonia irritans* Chamberlin  
In Canada, known only from North Surrey (Shelley 1990). Elsewhere occurs south to west-central Oregon (R.M. Shelley, N.C. State Mus. Nat. Sci., pers. comm., 1993).

Subphylum HEXAPODA

Class INSECTA

Order ODONATA

Family Aeshnidae

*Aeshna tuberculifera* Walker

A sparsely distributed species in British Columbia, recorded only in the Nanaimo and Campbell R. districts and Bowser on Vancouver Island, Haney, Cypress Bowl, and Wells Gray Park. The species occurs in boggy-margined ponds and lakes. It occurs from Wisconsin to Nova Scotia, south to Pennsylvania and Indiana, as well as British Columbia and Washington.

Family Petaluridae

- \* *Tanypteryx hageni* (Selys)  
This is perhaps the rarest dragonfly in British Columbia, having been captured at only five localities in Canada, all in British Columbia. It is a very local species,

LIST A2.4 (Continued)

preferring spring-fed mountain bogs. It is recorded from the Cascade Mountains near Cultus L. and Yale, from the Coast Mountains at Diamond Head in Garibaldi Park, and Black Mountain in Cypress Park, and from Alexander R. on Knight Inlet at 50°52'N (Cannings 1978). The range of the species extends from southwestern British Columbia south in the mountains to California and Nevada.

Family Gomphidae

\* *Octogomphus specularis* (Hagen)

In Canada, known only from the mountain slopes of the lower Fraser Valley. The species occurs in warm coastal mountain streams (i.e., those that drain lakes where the larvae live in the loose detritus that collects in creek pools). It occurs from British Columbia south along the Pacific Coast to Baja California.

Family Macromiidae

\*\* *Macromia rickeri* Walker

Endemic to British Columbia, and known only from Cultus L., Hope, Salmon Arm, and Shuswap L. (Scudder et al. 1977). The taxon may be only a dark form of *M. magnifica*.

Family Libellulidae

\* *Erythemis collocata* (Hagen)

In Canada, restricted to southern Vancouver Island (Florence L., Goldstream Prov. Park, Langford, Nanaimo Distr., Newcastle I., Thetis L. group [Pike L. and Long L.], Victoria, Wellington Lakes), the Fraser Valley (Agassiz, Chilliwack, Vancouver), and Southern Okanagan (Osoyoos). Elsewhere recorded in the United States west of the Great Plains, and northwestern Mexico.

*Pachydiplax longipennis* (Burmeister)

In British Columbia, recorded from southern Vancouver Island north to Nanaimo, and from Ambrose L. on the Sechelt Peninsula. It occurs in the extreme southern parts of Ontario and Manitoba, and ranges south through most of the United States to Mexico, and occurs in Bermuda and the Bahamas.

Order PLECOPTERA

Family Capniidae

*Capnia cheama* Ricker

In British Columbia, known only from Fraser R. near Agassiz, Bulkley R. (Smithers), Sedan Cr. (10 km W Kitwanga) and Skeena R. (5 km W Kitwanga) (Ricker and Scudder 1976; S.G. Cannings 1989). This rare species of large stream and river habitats is also known from Alberta and Montana.

LIST A2.4 (Continued)

- \* *C. elongata* Claasen  
In Canada, known only from the lower Fraser Valley: Agassiz (Fraser R.), Cultus L. (Frost Cr.), Chilliwack R., Hope (Wahleach Cr.), Mission (Fraser R.), Ruskin (Stave R. at Fraser R.), Vedder Crossing (Chilliwack R.), and Vedder R. canal at highway bridge (Ricker and Scudder 1976), and Mamquam R. (S.G. Cannings 1989). Elsewhere reported from California, Oregon, and Washington.

- \*\* *Isocapnia fraseri* Ricker  
Endemic to British Columbia. Known only from the Fraser R. at Agassiz (Ricker 1959) and Atlin (Ricker and Scudder 1976).

*I. vedderensis* (Ricker)

A rare species, in British Columbia recorded only from the Chilliwack R. at Vedder Crossing and the Fraser R. near Agassiz (Ricker and Scudder 1976). Otherwise reported from Alberta, Montana, New Mexico, and Utah.

Family Nemouridae

Subfamily Nemourinae

- \* *Soyedina interrupta* (Claasen)  
In Canada, known only from Agassiz and Cultus L. district (Ricker and Scudder 1976). Elsewhere reported from Oregon and Washington.

Family Peltoperlidae

Subfamily Peltoperlinae

- \* *Yoroperla mariana* (Ricker)  
In Canada, known only from Little Liumchin Cr. at Cultus L. (Ricker and Scudder 1976). Elsewhere reported from California, Oregon, and Washington.

Family Perlodidae

Subfamily Isoperlinae

- \* *Cascadoperla trictura* (Hoppe)  
In Canada, known only from the Chilliwack R. and Sweltzer Cr. (Cultus L.) (Ricker and Scudder 1976). Elsewhere reported from California, Idaho, Montana, Oregon, and Washington.

Order GRYLLOPTERA

Family Tettigoniidae

- \* *Neduba steindachneri* (Hermann)  
In Canada, confined to oak-arbutus habitats on the south and east coasts of Vancouver Island, and in the Fraser Valley only as far inland as Boston Bar (Vickery and Kevan 1985). Elsewhere reported from Washington.

LIST A2.4 (Continued)

Order HETEROPTERA

Family Corixidae

- \* *Cenocorixa andersoni* Hungerford  
In Canada, known only from Vancouver Island (Spectacle L.) and the Lower Fraser Valley (Abbotsford, Delta, Vancouver, White Rock) (Jansson 1972; Scudder 1987). Recorded elsewhere from Oregon and Washington.
- \* *C. blaisdelli* (Hungerford)  
In Canada, known only from Vancouver and Delta (Jansson 1972; Scudder 1987). Recorded elsewhere from California and Washington.

Family Lygaeidae

Subfamily Orsillinae

- \* *Nysius paludicolus* Barber  
In Canada, so far recorded only at Tsawwassen Beach (Scudder 1986). Elsewhere known only from salt marshes in Washington, feeding on *Salicornia*.

Family Miridae

Subfamily Bryocorinae

Tribe Dicyphini

- \* *Tupiocoris californicus* (Stål)  
In Canada, so far collected only at Tsawwassen Beach, 23.vii.1961, 7.vii.1962 (G.G.E. Scudder). So far only recorded from California, Colorado, and Mexico (Henry and Froeschner [editors] 1988).

Family Nabidae

*Nabicola propinqua* (Reuter)

In British Columbia, known only from one female taken at Tsawwassen Beach, 21.vii.1962 (G.G.E. Scudder). Reported from Alberta, Oregon, and many other states (Henry and Froeschner [editors] 1988).

Family Scutelleridae

- \* *Camirus porosus* (Germar)  
In Canada, recorded only from Galiano Island, Goldstream Prov. Park, Vancouver, and Victoria, the latter two before 1904. Elsewhere reported from California, Colorado, Florida, North Carolina, Texas, Virginia, and Mexico to Colombia (Henry and Froeschner [editors] 1988).

Order HOMOPTERA

Family Cicadellidae

- \*\* *Elymana pacifica* Hamilton  
Endemic to British Columbia. Recorded from Fanny Bay, Oyster R., Saanich Distr., and Tsawwassen (Chiykowski and Hamilton 1985), as well as Denny Island, the Don Peninsula, Robson Bight, and Swindle Island.

LIST A2.4 (Continued)

- \*\* *Idiocerus vanduzeei* Hamilton  
Endemic to British Columbia. Recorded from Chilliwack, Cowichan, Duncan, Garibaldi, and Victoria on *Populus* (Hamilton 1980).

Family Membracidae

- \* *Platycotis maritimus* Van Duzee  
In Canada, recorded only from Bella Coola, Englishman R. Falls Park, Goldstream Prov. Park, Langford, Parksville, Steelhead, Vancouver, Victoria, and Wellington. Elsewhere reported from California.

Order MEGALOPTERA

Family Corydalidae

- Chauliodes pectinicornis* L.  
In British Columbia, recorded from Cloverdale and Cowichan (Spencer 1942).

Order NEUROPTERA

Family Chrysopidae

- \* *Nothochrysa californica* Banks  
In Canada, recorded from Bowser, Nanaimo, Sidney, South Pender Island, Vancouver, and Victoria (Garland 1982).

Order COLEOPTERA

Family Carabidae

- \* *Omus audouini* Reiche  
A rare species in Canada recorded only from Vancouver Island (Victoria) and the adjacent mainland (old fields in Boundary Bay). Elsewhere reported from Oregon and Washington.
- \* *Metrius contractus contractus* Eschscholtz  
In Canada, recorded only from Vancouver (Lindroth 1961). Elsewhere reported from California and Oregon.
- \* *Promecognathus crassus* LeConte  
In Canada, recorded only from southern Vancouver Island (Comox, Royal Oak, Mt. Arrowsmith, Wellington, Cowichan, Duncan, Langford, Victoria), and the lower mainland (Agassiz, New Westminster, Vancouver) (Lindroth 1961). Elsewhere reported along the Pacific coast south to California.

Family Micropeplidae

- \* *Kalissus nitidus* LeConte  
A rare species, in Canada recorded only from Goldstream Prov. Park and Vancouver (Stanley Park). Elsewhere only known from one specimen from Seattle.

LIST A2.4 (Continued)

- \* *Micropeplus brunneus* Maklin  
A species recorded in Canada from the Queen Charlotte Islands, Steelhead, and Vancouver (Campbell 1968), but all records are old and the species has not been collected in the past forty years (J.M. Campbell, Agric. Can., pers. comm., 1993). Elsewhere the species is reported from coastal areas of Alaska south to Oregon. It has been collected from newly cut spruce logs and under wood chips, as well as from *Pseudotsuga*.

Family Staphylinidae

- \* *Tanyrhinus singularis* Mannerheim  
A rare species, in Canada recorded only from Goldstream Prov. Park, Queen Charlotte Islands, Steelhead, and Upper Carmanah Valley. Elsewhere reported south along the coast to Oregon.
- \*\* *Trigonodemus fasciatus* Leech  
Endemic to British Columbia. Recorded only from Vancouver (Leech 1939) and Upper Carmanah Valley (Campbell and Winchester 1993).
- \* *Orochares tumidus* (Hatch)  
A rare species, in Canada recorded only from Vancouver (Point Grey). Elsewhere reported only from Livingston and McMinnville in Oregon.
- \* *Trigonodemus dilaticollis* Van Dyke  
A rare species in Canada recorded only from Pender Harbour, Queen Charlotte Islands, Steelhead, and Vancouver.
- \* *T. sharpi* Blackwelder  
A rare species in Canada recorded only from Vancouver Island and Vancouver (under bark).
- \* *Neobolitobius varians* (Hatch)  
In Canada, recorded only from Creston and Vancouver (UBC campus). Elsewhere reported south to Oregon.

Family Histeridae

- \* *Neopachylopus sulcifrons* (Mannerheim)  
This rare, ocean beach dwelling species is recorded in Canada only from Boundary Bay. Elsewhere reported south to California.

Family Cephaloidae

- \* *Cephaloon bicolor* Horn  
A rare coastal species, in Canada recorded only from Queen Charlotte Islands, Vancouver Island, Metlakatla, Vancouver (UBC campus) and Cultus L.

LIST A2.4 (Continued)

Family Oedemeridae

- \* *Copidita quadrimaculata* LeConte  
A rare species, in Canada recorded only from Agassiz.

Family Pythidae

- \* *Sphalma quadricollis* Horn  
A rare species, in Canada recorded only from Agassiz.

Family Curculionidae

- \*\* *Macrorhoptus sidalceae* Sleeper  
Endemic to British Columbia. Recorded from Vancouver, bred from seeds of *Sidalcea hendersoni* Wats. (Sleeper 1957a).

Order MECOPTERA

Family Boreidae

- \* *Boreus elegans* Carpenter  
In Canada, recorded only from Vancouver (Penny 1977), Squamish (16 km NE, 19.3 km N), Burke Mt. (Coquitlam), nr. Black Mt. (nr. Horseshoe Bay), and Hollyburn Mt.

Order DIPTERA

Suborder NEMATOCERA

Family Tipulidae

- \*\* *Phalacrocer a vanancouverensis* Alexander  
Endemic to British Columbia. Recorded from Vancouver (Alexander 1927a; Spencer 1948), and only known from one other locality in British Columbia (G.W. Byers, Univ. Kans., pers. comm., 1993).

Family Culicidae

*Culiseta minnesotae* Barr

In British Columbia, known only from Port Coquitlam (Costello 1977; Belton and Belton 1981). Larvae occur in semi-permanent or permanent sedge-cattail marshes. The species occurs from British Columbia and Oregon east to Quebec and Maryland.

Family Chironomidae

- \*\* *Chironomus vancoveri* Michailova & Fischer  
Endemic to British Columbia. Described from Deer L. (Vancouver) (Michailova and Fischer 1986), and only recorded to date from this locality.
- \*\* *Doithrix hamiltoni* Saether & Sublette  
Endemic to British Columbia. Described from Marion L. (Saether and Sublette 1983), and only recorded to date from this locality.

LIST A2.4 (Continued)

- \*\* *Heterotanytarsus perennis* Saether  
Endemic to British Columbia. Described from Marion L. (Saether 1975), and only recorded to date from this locality.
- \*\* *Parachaetocladius hirtipectus* Saether  
Endemic to British Columbia. Described from Allouette R., 0.4 km S of Marion L. (Saether 1969), and only recorded from this locality.

Suborder BRACHYCERA

Family Asilidae

- \* *Cyrtopogon anomalus* Cole  
In Canada, recorded only from Agassiz. Elsewhere reported from Idaho, Oregon, and Washington.
- \* *Lasiopogon pacificus* Cole & Wilcox  
In Canada, recorded only from the Fraser Valley. Elsewhere reported from Oregon and Washington.
- \* *L. willametti* Cole & Wilcox  
In Canada, recorded only from Deas Island, Ladner, and Miracle Beach (R.A. Cannings, Royal B.C. Mus., pers. comm., 1993). Elsewhere reported from Oregon and Washington.

Family Syrphidae

- \*\* *Melangyna vespertina* Vockeroth  
Endemic to British Columbia. Described from and only known from Surrey (Vockeroth 1980, 1992).

Family Tachinidae

- \* *Periscepsia polita* Brooks  
In Canada, recorded only from Agassiz and Cultus L. Elsewhere reported from Washington (Bellingham, Puyallup, and Illahee) and Oregon (D.M. Wood, Agric. Can., pers. comm., 1993).

Order LEPIDOPTERA

Family Lycaenidae

- \* *Mitoura johnsoni* (Skinner) [Johnson's Hairstreak]  
In Canada, the historical range included southern Vancouver Island (Shawnigan L.), Greater Vancouver, and Spuzzum in the vicinity of Hope. Extant populations are known only from the Greater Vancouver area (Stanley Park, Lynn Canyon Park, Pacific Spirit Park, and the UBC Research Forest at Haney) (Guppy et al. 1995). The species is clearly endangered in British Columbia. Howe (1975)

LIST A2.4 (Continued)

noted that this species is extremely rare, and occurs locally from extreme southern British Columbia to central California in the Cascades and Sierras. In Oregon, the species occurs in the coastal mountains and in forests along the western slope of the Cascades, with a single record from near Baker in northeastern Oregon (Dornfeld 1980). The larvae feed on *Arceuthobium campylopodium* Engelm., a dwarf mistletoe parasitic on *Tsuga heterophylla* (Raf.) Sarg. (Howe 1975).

Family Nymphalidae

- \* *Speyeria zerene bremneri* (Edwards) [Zerene Fritillary]

This subspecies in British Columbia is reported from southern Vancouver Island and the Lower Fraser Valley (Llewellyn-Jones 1951), but there are now no extant populations known, so the butterfly must be considered endangered in British Columbia (Guppy et al. 1995). The subspecies occurs from the coast ranges of extreme northwestern California to Haines in Alaska, with larval host plants being violets (Scott 1986).

Family Geometridae

- \*\* *Eupithecia harrisonata* MacKay

Endemic to British Columbia. Described originally from Harrison L. (MacKay 1951) and now recorded from southwestern British Columbia, including Vancouver Island (Bolte 1990). Usually found on *Tsuga* sp., and occasionally on *Larix* sp. and *Pseudotsuga menziesii* (Mirb.) Franco.

Order TRICHOPTERA

Family Hydroptilidae

*Ithytrichia clavata* Morton

In British Columbia, so far recorded only from Cultus L. and Sardis (Nimmo and Scudder 1979). This is a holarctic species.

*Orthotrichia cristata* Morton

In British Columbia, recorded only from Chilliwack (Nimmo and Scudder 1979). The range of this species extends east to Florida and New Hampshire.

- \* *Oxyethira aeola* Ross

In Canada, recorded only from Vancouver (Nimmo and Scudder 1979). Also reported from New Hampshire.

Family Rhyacophilidae

*Rhyacophila chilsia* Denning

In British Columbia, recorded only from Cultus L. (Nimmo and Scudder 1979). Also reported from Alberta and Washington.

LIST A2.4 (Continued)

- \* *R. jenniferae* Peck  
In Canada, recorded only from Cultus L. (A.P. Nimmo, Univ. Alta., pers. comm., 1993). Elsewhere reported from California, Oregon, and Washington.
- \*\* *R. perplana* Ross & Spencer  
Endemic to British Columbia, described from and known only from Cultus L. (Ross and Spencer 1952).
- \* *R. visor* Milne  
In Canada, recorded only from Cultus L. (Nimmo and Scudder 1979). Elsewhere reported from Oregon and Washington.

Order HYMENOPTERA

Suborder SYMPHYTA

Family Tenthredinidae

Subfamily Nematinae

- \*\* *Pristiphora hucksena* Wong & Ross  
Endemic to British Columbia. Described from Vancouver (Wong and Ross 1960).
- \*\* *Phyllocolpa mariana* (Ross)  
Endemic to British Columbia. Described from Vancouver on *Populus balsamifera* L. (Ross 1929).

Suborder APOCRITA

Division ACULEATA

Series APOIDEA: APIFORMES

Family Andrenidae

- \*\* *Andrena advarians* Viereck  
Endemic to British Columbia. Described from Vancouver (Viereck 1904).
- \*\* *A. excellens* Viereck  
Endemic to British Columbia. Described from Vancouver (Viereck 1924).
- \*\* *A. fulvicrista* Viereck  
Endemic to British Columbia. Described from Agassiz, Chilcotin, and Penticton (Viereck 1924).
- \*\* *A. lummiorum* Viereck  
Endemic to British Columbia. Described from Vancouver (Viereck 1916).

Appendix 2 Continued

LIST A2.4 (Concluded)

Family Megachilidae

- \*\* *Stelis maculata* (Provancher)

Endemic to British Columbia. Described from Vancouver (Provancher 1888).

Family Apidae

- \*\* *Anthophora furcata neofurcata* (Sladen)

A subspecies endemic to British Columbia. Described from Agassiz, Shawnigan L., and Victoria (Sladen 1919).

- \*\* *Epeolus tristicolor* Viereck

Endemic to British Columbia. Described from Vancouver (Viereck 1905).

LIST A2.5 Species of special interest in the Coast and Mountains (Western Vancouver Island, Queen Charlotte Ranges, Queen Charlotte Lowland, and Coastal Gap)

Phylum ANNELIDA

Class OLIGOCHAETA

Order HAPLOTAXIDA

Suborder LUMBRICINA

Family Lumbricidae

\*\* *Bimastos lawrenceae* Fender

An endemic species, known only from Vancouver Island (Douglas Peak, Museum Junction area) (McKey-Fender et al. 1994).

Family Megascolecidae

\* *Arctiostrotus perrieri* (Benham)

Described originally from Massett in the Queen Charlotte Islands, this species is known from Moresby Camp, Vancouver Island and adjacent islets of Kyoquot Sound (McKey-Fender and Fender 1982; McKey-Fender et al. 1994). It also occurs to the south along the coast and in the Puget Trough of Washington, and in Oregon west of the Cascade Range summit south to Coos Bay (McKey-Fender et al. 1994).

\* *A. vancouverensis* McKey-Fender

Described from western Vancouver Island (MacMillan Bloedel Lands experimental plot no. 8145, MacMillan Bloedel Lands Klanawa Main, Sarita Flood Plain, Klanawa R. east of Bamfield, Darling, Darling Main Line, Klanawa Road, and near Frederic L.) (McKey-Fender et al. 1994). Also known from Carnation Creek and the Olympic Peninsula of Washington State (McKey-Fender et al. 1994).

\* *Toutellus oregonensis* (Smith)

So far recorded only from western Vancouver Island (Cameron Division of MacMillan Bloedel Lands, E of China [Cr.], W of Douglas Peak) (McKey-Fender et al. 1994). The species is widespread in Oregon and Washington.

Phylum TARDIGRADA

Class EUTARDIGRADA

Order MACROBIOTIDA

Family Hypsibiidae

\*\* *Isohypsibius woodsae* Kathman

Known from Mt. Arrowsmith (Kathman 1990b).

\*\* *Platicrista cheleusis* Kathman

Known from Mt. Arrowsmith, Flower Ridge, Green Mt. (near Nanaimo), Mt. Landalt, and Mt. Washington (Kathman 1990a).

LIST A2.5 (Continued)

Family Macrobiotidae

- \*\* *Pseudodiphascon arrowsmithi* Kathman & Nelson  
Known from Mt. Arrowsmith and Green Mt. (near Nanaimo) (Kathman and Nelson 1989).

Phylum ARTHROPODA

Subphylum CRUSTACEA

Class MALACOSTRACA

Order AMPHIPODA

Family Anisogammaridae

- \*\* *Ramellogammarus vancouverensis* Bousfield  
Endemic to British Columbia, and known only from pools at the mouth of a small stream, near mid-beach at Wreck Bay, Vancouver Island (Bousfield 1979; Bousfield and Morino 1992).

Family Crangonyctidae

- \*\* *Stygobromus quatsinensis* Holsinger & Shaw  
This rare, unpigmented amphipod is endemic to British Columbia, and occurs only in Thanksgiving Cave and Hourglass Cave on Vancouver Island (Holsinger and Shaw 1987). Type material is in the Canadian Museum of Nature and the Smithsonian Institution.

Family Pontogeniidae

- \*\* *Paramoera carlottensis* Bousfield  
Recorded from freshwater spray pools on west coast of Graham Island, Queen Charlotte Islands. This is an endemic species recorded from the rocky shore south of Stiu Pt., Cartwright Sound, and spray pools at stream mouth, south side of Gudal Bay (Bousfield 1958).

Order ISOPODA

Suborder ONISCOIDEA

Family Ligiidae

- \* *Ligidium gracile* (Dana)  
In Canada, recorded only from the Queen Charlotte Islands, Massett (Van Name 1936) and Vancouver Island (Brown Bay, near Campbell R., Victoria) (F. Rafi, Can. Mus. Nat., pers. comm., 1993). Elsewhere reported from California and Alaska (Garthwaite and Lawson 1992; Van Name 1936). It is a species of sea coast habitats, and occurs under cover in moist situations.

Family Oniscidae

- \* *Littrophiloscia richardsonae* (Holmes & Gay)  
In Canada, recorded from Roller Bay, Bull Harbour, Vancouver Island, Skidegate, Moresby Island and Gudal Bay in the Queen Charlotte Islands

LIST A2.5 (Continued)

(F. Rafi, Can. Mus. Nat., pers. comm., 1993). This is a littoral species found in marshes, along bays and estuaries, and on outer coasts from Baja California, Mexico to Washington (Garthwaite and Lawson 1992).

- \* *Alloniscus perconvexus* Dana  
In Canada, recorded from Ferrer Point Beach, Vancouver Island, and Chatham Island near Victoria (F. Rafi, Can. Mus. Nat., pers. comm., 1993). Elsewhere, this species burrows into the sand under detritus at approximately the high tide line; occurs from southern California to Washington (Garthwaite and Lawson 1992).

Family Scyphaiidae

- \* *Detonella papillicornis* (Richardson)  
In Canada, recorded from Hammond Bay (Van Name 1936) and Long Beach, Vancouver Island (F. Rafi, Can. Mus. Nat., pers. comm., 1993). Elsewhere this littoral species is reported from Seldovia, Cook Inlet, Alaska (Van Name 1936), and California (Garthwaite and Lawson 1992).
- \* *Armadilloniscus coronacapitalis* Menzies  
In Canada, recorded from Roller Bay, Bull Harbour, Vancouver Island (F. Rafi, Can. Mus. Nat., pers. comm., 1993). Elsewhere this littoral species is recorded from California (Garthwaite and Lawson 1992).

Suborder ASELLOTA

Family Asellidae

- \* *Caecidotea occidentalis* (Williams)  
In Canada, recorded from Prince Rupert, Nanaimo, and Double Bay, Clayoquot Island (F. Rafi, Can. Mus. Nat., pers. comm., 1993). Elsewhere reported from Oregon and Washington (Williams 1970).

Subphylum CHELICERATA

Class ARACHNIDA

Order ARANEAE

Family Agelenidae

- \* *Calymmaria emertoni* (Simon)  
In Canada, recorded only from Vancouver Island (Goldstream Prov. Park, Kyuquot, Victoria) (West et al. 1984).
- \* *Cybaeina minuta* (Banks)  
In Canada, recorded only from Vancouver Island (Kyuquot, Tofino, Victoria) (West et al. 1984).

LIST A2.5 (Continued)

*Cybaeota shastae* Chamberlin & Ivie

In British Columbia, recorded only from Vancouver Island (West et al. 1988), and Kyuquot, Sidney (as *C. vancouverana*) (West et al. 1984).

*Cybaeus signifer* Simon

In British Columbia, recorded only from Vancouver Island (Cowichan, Kyuquot, Langford, Victoria) (West et al. 1984).

Family Anyphaenidae

*Anyphaena aperta* (Banks)

In British Columbia, recorded only from Vancouver Island (Errington, Kyuquot, Qualicum, Victoria) (West et al. 1984).

Family Erigonidae

\* *Spirembolus vasingtonus* Chamberlin

In Canada, recorded only from Kyuquot (West et al. 1984). Elsewhere only reported from Washington, with only females known (J.H. Redner, Agric. Can., pers. comm., 1993).

Family Mecicobothridae

\* *Hexura picea* Simon

In Canada, recorded only from the Upper Carmanah and Walbran Valley (R. West, pers. comm., 1993). Elsewhere reported from Oregon and Washington.

Family Salticidae

\* *Habronattus oregonensis* (Peckham & Peckham)

In Canada, recorded only from Kyuquot (West et al. 1984).

Family Theridiidae

\* *Theridion agrifoliae* Levi

In Canada, recorded only from Vancouver Island (Cape Cook, Tofino, Wellington) (West et al. 1984).

\* *T. melanurum* Hahn

In Canada, recorded only from Vancouver Island (Kyuquot, Victoria, Wellington) (West et al. 1984).

Order ACARIFORMES

Suborder PROSTIGMATA

Family Momoniidae

\* *Cyclomonomia andrewsi* Smith

In Canada, recorded only from Vancouver Island (small stream beside Hwy 4, 16.6 km E of Pacific Rim Road in small stream beside Harris Creek Main and

LIST A2.5 (Continued)

near Cowichan L.), Bella Coola Valley (small stream 6 km E of Hagensborg), and Walker Creek beside Hwy 3 near Bonanza Pass (Smith 1989b). Also reported from Nevada and Oregon.

Family Neoacaridae

- \* *Neoacarus occidentalis* Cook  
In Canada, recorded only from Vancouver Island (Lost Shoe Creek beside Hwy 4, 1.5 km E of Pacific Rim Road) (I.M. Smith, Agric. Can., pers. comm., 1993). Elsewhere reported throughout the western United States, from Arizona, California, and New Mexico, north to Idaho, Montana, and Washington.

Family Acalyptonotidae

- \* *Acalyptonotus pacificus* Smith  
In Canada, recorded only from Vancouver Island (spring-fed pools in subalpine meadow on Heather Mountain, near Nitinat) (Smith 1983b). Also reported from Oregon.

Suborder ORIBATIDA

Family Mycobatidae

- \* *Mycobates occidentalis* Behan-Pelletier  
In Canada, known only from Headland, Brooks Peninsula on Vancouver Island, but also occurs in Alaska (Behan-Pelletier 1994).

Subphylum MYRIAPODA

Class DIPLOPODA

Order POLYDESMIDA

Family Nearctodesmidae

- \*\* *Nearctodesmus carli* Chamberlin  
Endemic to British Columbia. Described from the Scott Islands (Chamberlin 1951; Chamberlin and Hoffman 1958).

Family Xystodesmidae

- \* *Tubaphe levii* Causey  
Originally reported from British Columbia as *Metaxycheir pacifica* Shelley and thought to be endemic; this is now recognized as *Tubaphe levii* Causey that occur in rain forests of the Olympic Peninsula in Washington (R.M. Shelley, N.C. State Mus. Nat. Sci., pers. comm., 1993). In British Columbia, it is confined to the coastal forests on Vancouver Island, being known from Bamfield (Brady's Beach), Pacific Rim Natl. Park (Pachena Bay, Carmanah Creek Valley), Shawnigan (82.2 km W), Port Renfrew, China Beach Prov. Park (Shelley 1990). In addition, there is material in the Royal British Columbia Museum from Upper Carmanah Creek (Walbran Trail, 1.5 km N of Anderson L.).

LIST A2.5 (Continued)

Order JULIDA

Family Rhiscosomididae

- \* *Rhiscosomides* nr. *meineri* Silvestri

In Canada, known only from Point-No-Point, Vancouver Island (Shelley 1990).

*Rhiscosomides meineri* is known from Oregon (Chamberlin and Hoffman 1958).

Subphylum HEXAPODA

Class COLLEMBOLA

Order ARTHROPLEONA

Suborder PODUROMORPHA

Family Hypogastruridae

- \*\* *Hypogastrura arborea* Fjellberg

Endemic to British Columbia. Known only from the Carmanah Valley, Vancouver Island, where it was collected in ground litter in mature forest of Sitka spruce (*Picea sitchensis* [Bong.] Carr.), as well as from thick moss on branches in the canopy of tall trees (Fjellberg 1992).

Family Onychiuridae

- \*\* *Onychiurus eisi* Rusek

Endemic to British Columbia. Described from China Beach Prov. Park, Vancouver Island (Rusek 1976).

- \*\* *Sensiphorura marshalli* Rusek

Endemic to British Columbia. Described from China Beach Prov. Park, Vancouver Island (Rusek 1976).

- \*\* *Tullbergia vancouverica* (Rusek)

Endemic to British Columbia. Described from China Beach Prov. Park, Vancouver Island (Rusek 1976).

Suborder ENTOMOBRYOMORPHA

Family Isotomidae

- \*\* *Tetracanthella pacifica* Rusek & Marshall

Endemic to British Columbia. Recorded from Garibaldi (Paul Ridge) and from China Beach Prov. Park on Vancouver Island (Rusek and Marshall 1977).

Class INSECTA

Order PLECOPTERA

Suborder EUHOLOGNATHA

Family Capniidae

Subfamily Capniinae

- \*\* *Bolshecapnia gregsoni* (Ricker)

Endemic to British Columbia. Recorded from Kokli L. (on Mt. Arrowsmith),

LIST A2.5 (Continued)

Forbidden Plateau, Helen L. (Garibaldi Park), and Gwillim Cr. (Valhalla Mts.)  
(Ricker 1965; Ricker and Scudder 1976).

Order HOMOPTERA

Family Cercopidae

- \*\* *Aphrophora regina* Hamilton  
Endemic to the Queen Charlotte Islands (Hamilton 1982).

Family Cicadellidae

- \* *Hyliaius oregonensis* (Baker)  
In Canada, recorded only from the Brooks Peninsula and Port Alice. Elsewhere reported only from Oregon.
- \* *Deltocephalus* sp. n.  
An undescribed species, in Canada known only from the Brooks Peninsula, but material is also available from Idaho, Utah, and Wyoming (K.G.A. Hamilton, Agric. Can., pers. comm., 1993).
- \*\* *Elymana pacifica* Hamilton  
Endemic to British Columbia. Recorded from Fanny Bay, Oyster R., Saanich Distr., and Tsawwassen (Chiykowski and Hamilton 1985), as well as Denny Island, the Don Peninsula, Robson Bight, and Swindle Island.

Family Membracidae

- \* *Platycotis maritimus* Van Duzee  
In Canada, recorded only from Bella Coola, Englishman R. Falls Park, Goldstream Prov. Park, Langford, Parksville, Steelhead, Vancouver, Victoria, and Wellington. Elsewhere reported from California.

Order COLEOPTERA

Family Carabidae

- \* *Scaphinotus johnsoni* Van Dyke  
In Canada, this rare species has been reported only on Mt. Arrowsmith, at 615 m on the heavily forested north slope (Lindroth 1961). Elsewhere reported only from the Olympic Peninsula, Washington (Lindroth 1961).
- \*\* *Nebria charlottae* Lindroth  
Endemic to the Queen Charlotte Islands. Recorded only from northern and western Graham Island (Kavanaugh 1992). The species is restricted to a cobble upper sea beach habitat, is brachypterous and incapable of flying.

LIST A2.5 (Continued)

- \*\* *N. haida* Kavanaugh  
Endemic to British Columbia. Recorded only from the Queen Charlotte Islands (Graham Island and Moresby Island) and the adjacent mainland (Mount McNeil, 35 km N of Prince Rupert) (Kavanaugh 1992). *Nebria haida* is a brachypterous species, incapable of flight, and restricted to alpine areas with sparse vegetation.
- \*\* *N. louiseae* Kavanaugh  
Endemic to the Queen Charlotte Islands. Recorded from Burnaby, Hotspring Island, Lyell Island, Louise Island, Moresby Island, Ramsay Island, Reef Island, Talunkwan Island, Tanu Island, and West Skedans Island (Kavanaugh 1992). The species is restricted to a cobble upper sea beach habitat, is brachypterous and incapable of flying.

Family Micropeplidae

- \* *Micropeplus brunneus* Maklin  
A species recorded in Canada from the Queen Charlotte Islands, Steelhead, and Vancouver (Campbell 1968), but all records are old and the species has not been collected in the past 40 years (J.M. Campbell, Agric. Can., pers. comm., 1993). Elsewhere the species is reported from coastal areas of Alaska south to Oregon. It has been collected from newly cut spruce logs and under wood chips, as well as from *Pseudotsuga*.

Family Staphylinidae

- \* *Pseudohaida rothi* Hatch  
In Canada, recorded only from the Upper Carmanah Valley (Campbell and Winchester 1993). Elsewhere reported from Oregon (Campbell 1978).
- \* *Tanyrhinus singularis* Mannerheim  
A rare species, in Canada recorded only from Goldstream Prov. Park, Queen Charlotte Islands, and Steelhead, on mushrooms. Elsewhere reported south along the coast to Oregon.
- \*\* *Trigonodemus fasciatus* Leech  
Endemic to British Columbia. Recorded only from Vancouver (Leech 1939) and the Upper Carmanah Valley (Campbell and Winchester 1993).
- \* *Trigonurus dilaticollis* Van Dyke  
A rare species in Canada recorded only from Pender Harbour, Queen Charlotte Islands, Steelhead, and Vancouver.

LIST A2.5 (Continued)

- \* *Bledius monstratus* Casey  
In Canada, recorded only from Massett, Queen Charlotte Islands. Elsewhere reported south to central California on sea beaches.
- \* *Nanobius serricollis* (LeConte)  
In Canada, recorded only from Brunswick (north of Knight Inlet), Saanich, and Victoria. The species is common from Oregon to California.
- \* *Stenus ellipticus* Casey  
In Canada, recorded only from Inverness District Municipality in 1910. Elsewhere reported south to California.
- \* *S. koebelei* Puthz  
In Canada, only recorded from Mt. Arrowsmith and Cowichan L. Elsewhere reported from Oregon and Washington.
- \* *Euaesthetus pacificus* Fall  
In Canada, recorded only from the Queen Charlotte Islands (NW Queen Charlotte City). Elsewhere reported from the type locality Scow Bay, Alaska.

Family Byrrhidae

- \* *Exomella pleuralis* (Casey)  
In Canada, recorded only from the Queen Charlotte Islands. Elsewhere reported from Alaska and Oregon.

Family Tenebrionidae

- \* *Usechimorpha barberi* Blaisdell  
In Canada, this tiny, wingless beetle is recorded only from Captain Cook Lagoon, Brooks Peninsula (Cannings and Cannings 1994). It occurs in leaf litter and elsewhere is reported from California and Oregon.

Family Cephaloidae

- \* *Cephaloon bicolor* Horn  
A rare coastal species, in Canada recorded only from Queen Charlotte Islands, Vancouver Island, Metlakatla, Vancouver (UBC campus), and Cultus L.

Family Salpingidae

- \* *Aegialites californicus* Motschulsky  
In Canada, recorded only from Metlakatla, Queen Charlotte Islands.

LIST A2.5 (Concluded)

Order DIPTERA

Family Tipulidae

- \*\* *Limnophila columbiana* Alexander

At present, listed as endemic to British Columbia. Known only from the type material from Prince Rupert (Alexander 1927b).

Family Simuliidae

- \* *Parasimulium furcatum* Malloch

In Canada, known only from Goldstream Prov. Park and Muchalat L. (12.5 km NW of Gold R.) (Borkent 1992). Otherwise known only from northern California.

Family Tabanidae

- \* *Chrysops surdus* Osten Sacken

In Canada, records are from Cameron L. (Vancouver I.) and Swindle Island (Teskey 1990). The species prefers mountainous terrain and occurs in Washington, Oregon, California, and western Nevada.

Order LEPIDOPTERA

Family Noctuidae

- \* *Apamea maxima* (Dyar)

A coastal marsh species in Canada collected only at three locations (4.8 km S of Sidney, and Tlell and Cape Cook) (J.D. Lafontaine, Agric. Can., pers. comm., 1992). Known from four locations in Oregon and many in California.

Family Geometridae

- \*\* *Xanthorhoe clarkeata* Ferguson

Endemic to British Columbia. This day-flying moth is recorded only from the Queen Charlotte Islands (Ferguson 1987).

Order TRICHOPTERA

Family Polycentropodidae

*Polycentropus smithae* Denning

In British Columbia, recorded only from Forbidden Plateau (Nimmo and Scudder 1979). This species is transcontinental.

LIST A2.6 Species of special interest in the Boreal Plains (Alberta Plateau)

Phylum ARTHROPODA

Subphylum HEXAPODA

Order ODONATA

Family Coenagridae

*Coenagrion angulatum* Walker

In British Columbia, known only from Dawson Creek (Scudder et al. 1977).

This is a species of the prairie ponds and open marshes in the boreal forest in the north, and occurs from northeastern British Columbia, northeast to the Northwest Territories, south to extreme western Ontario, Minnesota, Iowa, and Alberta.

Order HETEROPTERA

Family Lygaeidae

*Melanopleurus perplexus* Scudder

An endemic species to Canada, described from Alberta, Manitoba, and Saskatchewan (Scudder 1981), and in British Columbia known only from 32 km W of Charlie L., Hwy 29, Peace R. (Scudder 1986).

Order HOMOPTERA

Family Cicadellidae

\*\* *Rosenus decurvus* Hamilton & Ross

Endemic to British Columbia. Recorded only from Taylor (Hamilton and Ross 1975).

Order NEUROPTERA

Family Hemerobiidae

*Boriomyia fidelis* (Banks)

In British Columbia, recorded only from Rolla (Carpenter 1940). Elsewhere reported from Ontario to New Hampshire, south to South Carolina and Mississippi: the provincial record is disjunct (Klimaszewski and Kevan 1992).

*Micromus posticus* (Walker)

In British Columbia, recorded only from Pink Mt. (Klimaszewski and Kevan 1988). Elsewhere reported from the Yukon, Ontario, Quebec, and the eastern United States.

Order DIPTERA

Suborder NEMATOCERA

Family Tipulidae

\*\* *Limnophila lobifera* Alexander

At present, listed as endemic to British Columbia. Known only from the type material from milepost 128, Alaska Highway (Alexander 1955).

LIST A2.6 (Continued)

Order LEPIDOPTERA

Family HesperIIDae

*Hesperia comma assiniboia* (Lyman) [Common Branded Skipper]

In British Columbia, this subspecies is confined to the Peace R. lowlands, and is regarded as vulnerable by Guppy et al. (1995). It is a northern prairie inhabitant occurring from Alberta to Manitoba and south into North Dakota (Howe 1975).

Family Papilionidae

*Papilio machaon pikei* Sperling [Old World Swallowtail]

In British Columbia, this subspecies is confined to the Peace R. lowlands, and so is considered threatened in British Columbia, and vulnerable nationally and globally (Guppy et al. 1995). The subspecies occurs also in Alberta.

Family Lycaenidae

*Satyrrium fletcheri* (Michener & dos Passos) [Striped Hairstreak]

In British Columbia, this species occurs only in the Peace R. lowlands, and is considered threatened (Guppy et al. 1995). The subspecies ranges east to southern Manitoba (Howe 1975).

Family Nymphalidae

*Speyeria cybele pseudocarpenteri* (Chermock & Chermock) [Great Spangled Fritillary]

In British Columbia, confined to the Peace R. canyon and considered threatened by Guppy et al. (1995). This subspecies occurs in Alberta, Saskatchewan, and Manitoba and is abundant in Riding Mountain (Manitoba) and Cypress Hills (Alberta) (Howe 1975).

*S. aphrodite manitoba* (Chermock & Chermock) [Aphrodite Fritillary]

In British Columbia, confined to the Peace R. canyon and considered threatened by Guppy et al. (1995). This is a subspecies of the northern Great Plains, with the larval host plant being violets (Violaceae) (Scott 1986).

*Phyciodes batesii* (Reakirt) [Tawny Crescent]

In British Columbia, restricted to the Peace R. canyon, and considered threatened by Guppy et al. (1995). The range of the species is in the Canadian and northern Upper Austral life zone east to Ontario, Quebec, and New England, the larvae feeding on *Aster* spp. (Howe 1975).

Family Satyridae

*Coenonympha tullia benjamini* McDunnough [Ringlet]

This subspecies in British Columbia occurs in restricted areas of both the Flat-head region of the Kootenays and the Peace R. lowlands, and is considered vulnerable by Guppy et al. (1995). The subspecies is otherwise reported from Alberta, Manitoba, Saskatchewan, northern Montana, and the Dakotas (Howe 1975).

LIST A2.6 (Concluded)

*Cercyonis pegala ino* Hall [Common Wood Nymph]

In British Columbia, this subspecies is confined to the Peace R. lowlands and is considered vulnerable by Guppy et al. (1995). The food plant is grasses and the subspecies occurs in Alberta, Manitoba, North Dakota, and Montana (Howe 1975).

*Erebia epipsodea freemani* Ehrlich [Common Alpine]

In British Columbia, this subspecies is confined to the Peace R. lowlands and is considered vulnerable by Guppy et al. (1995). The food plant is grasses and the subspecies occurs throughout the Canadian Prairie Parkland (Alberta, Saskatchewan, and Manitoba) (Howe 1975).

*Oeneis uhleri varuna* (Edwards) [Uhler's Arctic]

In British Columbia, this subspecies is restricted to the Peace R. canyon and considered threatened by Guppy et al. (1995). Larvae feed on grasses and the subspecies ranges into Alberta, Saskatchewan, Manitoba, North Dakota, South Dakota, and western Nebraska (Howe 1975).

*O. alberta alberta* Elwes [Alberta Arctic]

In British Columbia, this nominate subspecies is restricted to the Peace R. canyon and is considered threatened by Guppy et al. (1995). Larvae feed on grass and the butterfly ranges into Alberta, Saskatchewan, Manitoba, and in scattered localities in the mid-western United States (Scott 1986).

Family Saturniidae

*Hyalophora gloveri* (Strecker)

In British Columbia, recorded from Charlie L. near Fort St. John (Cannings and Guppy 1989). There is also one specimen from Williams L. in the Royal British Columbia Museum. The larvae have been collected elsewhere on silverberry (*Eleagnus argentea* Pursh.) and *Salix*.

Order TRICHOPTERA

Family Leptoceridae

*Oecetis ochracea* (Curtis)

In British Columbia, recorded only from Charlie L., near Fort St. John (Nimmo and Scudder 1979). This is a circumpolar species.

Family Limnephilidae

*Limnephilus canadensis* Banks

In British Columbia, recorded only from a pond near Charlie L., near Fort St. John (Nimmo and Scudder 1979). Elsewhere reported from Alberta, Maine, Minnesota, Oregon, and Saskatchewan.

LIST A2.7 Species of special interest in the Central Interior (Chilcotin Ranges and Fraser Plateau)

Phylum MOLLUSCA

Class GASTROPODA

Order BASOMMATOPHORA

Family Physidae

\* *Physella lordi* (Baird) [Twisted physa]

There are five locality records for this species in the CMN: Allison Cr., between Laird and McCaffrey Lks., 11 mi [17.7 km] N Princeton, 49°36'N 120°36'W, 5.viii.1972 (B.T. Kidd); Williams L., w. end of village, 52°07'N 122°07'W, 15.viii.1972 (A.H. Clarke and B.T. Kidd); Great Central L., 5 mi [8 km] N Sproat L., on Hwy 4 and 11 mi [17.7 km] NW of Port Alberni, 49°18'N 124°59'W, 2.viii.1972 (B.T. Kidd); Vaseux L., 4 mi [6.4 km] S Ok. Falls, 3.viii.1973 (AHC and DGSW); Clark Slough, arm of Fraser R.

Additional records of *P. lordi* provided by D.W. Taylor (pers. comm. via P. Lambert, 1994) are as follows:

L. Osoyoos (J.K. Lord) (British North American Boundary Commission, 1859–1861). (Lord 1866; Carpenter 1864); Okanagan L., Okanagan L. Park, 15.viii.1990 (D.W. Taylor); Kootenay L., near Nelson (from Dr. Rose, 12.v.1933 to C.F. Newcombe); New Westminster District, Egmont, Ruby L. (Griffin) (ex. R.E. Coats collection, Calif. Acad. Sci. uncatalogued); New Westminster District, Sechelt Peninsula, Ruby L., SE side at regional park, 12.viii.1992 (D.W. Taylor); New Westminster District, Sechelt Peninsula, Ruby L., Send, 13.viii.1992 (D.W. Taylor).

Burch (1989) gave distribution as British Columbia south to Montana, Nevada, and California.

\* *P. virginea* (Gould) [Sunset physa]

Material in the CMN is from Caribou Rd.; Swan L., 2 mi [3.2 km] N Vernon, 50°18'5"N 119°16'W, 12.viii.1972 (A.H. Clarke and B.T. Kidd); Slough at Indian Reserve, 4 mi [6.4 km] S Creston, 49°25'N 116°31'W, 9.viii.1972 (A.H. Clarke and B.T. Kidd); Laird Hot Springs, 19.viii.1973.

Burch (1989) listed the distribution as British Columbia south to California.

Phylum ANNELIDA

Class HIRUDINOIDEA

Order RHYNCHOBDELLAE

Family Glossiphoniidae

*Marvinmeyeria lucida* (Moore)

In British Columbia, recorded only from small freshwater bodies in the Springhouse area of the Cariboo, and Becher's Prairie in the Chilcotin (Scudder and Mann 1969). Elsewhere reported from Alaska, Manitoba, Michigan, Ontario, Quebec, and Saskatchewan (Davies 1991).

LIST A2.7 (Continued)

Order ARHYNCHOBDELLAE

Family Erpobdellidae

- \* *Dina anoculata* Moore

The only Canadian record is a single specimen taken from a small lake (GR<sub>3</sub>) along the Gang Ranch Rd. (Scudder and Mann 1969), west of 70 Mile House. Elsewhere reported from California and Oregon (Davies 1991).

Phylum ARTHROPODA

Subphylum CHELICERATA

Class ARACHNIDA

Order ARANEAE

Family Clubionidae

- \* *Castianeira walsinghamsi* (O. Pickard-Cambridge)

In Canada, rare and recorded only from Minnie L., Prospect L., Riske Cr., Salmon Arm, and Victoria (West et al. 1984). Elsewhere reported south to Oregon (Dondale and Redner 1982).

Order ACARIFORMES

Suborder PROSTIGMATA

Family Anisitsiellidae

- \* *Bandakiopsis fonticola* Smith

In Canada, recorded from near Clinton (spring at Loon Creek Fish Hatchery), and near Cowichan L. (spring beside North Shore Road, 1.7 km N of Cowichan L.) (Smith 1979; 1989a). Also reported from Oregon.

- \* *Cookacarus columbiensis* Barr

In Canada, recorded from near Clinton (spring at Loon Creek Fish Hatchery), and from springs near Cowichan L. (Barr 1977; Smith 1991). Also reported from California and Oregon.

Family Athienemanniidae

- \* *Chelomideopsis brunsoni* (Cook)

In Canada, recorded from near Clinton (spring at Loon Creek Fish Hatchery) and on Vancouver Island (spring beside North Shore Road, 1.7 km N of Cowichan L.) (Smith 1992). Reported also from Montana and Oregon.

Suborder ORIBATIDA

Family Eremaeidae

- \* *Eueremaeus stiktos* (Higgins)

In Canada, only recorded from undisturbed forest in southern British Columbia (Garibaldi Prov. Park, Tweedsmuir Prov. Park, Little Qualicum Falls Prov. Park, and Cowichan L. Experimental Station) (Behan-Pelletier 1993b). Elsewhere reported from undisturbed forest in California, Idaho, Oregon, and Utah.

LIST A2.7 (Continued)

Subphylum HEXAPODA

Class INSECTA

Order ODONATA

Family Coenagridae

*Coenagrion interrogatum* (Hagen)

In British Columbia, known only from the Blue R. area north of Cassiar (Scudder et al. 1977), Sheraton, Heckman Pass, and near Crooked R. Prov. Park north of Prince George. This species is adapted to life in cold northern swamps and bogs and occurs from the Northwest Territories east to Newfoundland, south to Maine, Michigan, Wisconsin, and in northern British Columbia.

*Enallagma civile* (Hagen)

This species has only been recorded from Bridge L. in British Columbia (Scudder et al. 1977). The species occurs from British Columbia east in southern Canada to Nova Scotia, south to Florida, Texas, and Arizona.

Family Corduliidae

*Somatochlora whitehousei* Walker

A sparse species in British Columbia, recorded from Green R. (trib. of Tusulko R.), Heckman Pass, Revelstoke Mt. (2000 m), and Jesmond. The species occurs in bog pools from British Columbia and the Yukon, east to Hudson Bay and Labrador.

Family Libellulidae

*Leucorrhinia patricia* (Walker)

In British Columbia, known from Blue Lakes and Heckman Pass. The species occurs across northern Canada, from the Yukon to northern Quebec.

Order PLECOPTERA

Family Capniidae

*Capnia cheama* Ricker

In British Columbia, known only from Fraser R. near Agassiz, Bulkley R. (Smithers), Sedan Cr. (10 km W Kitwanga), and Skeena R. (5 km W Kitwanga) (Ricker and Scudder 1976; S.G. Cannings 1989). This rare species of large stream and river habitats is also known from Alberta and Montana.

Family Perlodidae

*Isoptera transmarina* (Newman)

In British Columbia, known only from Takla L. (Ricker and Scudder 1976). Elsewhere the species is widely distributed.

LIST A2.7 (Continued)

Order HETEROPTERA

Family Lygaeidae

- \* *Delochilocoris gracilis* Scudder MS name  
In British Columbia, recorded only from Tatlayoko L. and Tatla L. Elsewhere known only from a single locality in Idaho and one locality in Oregon.

Order HOMOPTERA

Family Delphacidae

- \*\* *Laccocera lineata* Scudder  
Endemic to British Columbia. Recorded from the Cariboo, Chilcotin, Cummings L., Riske Cr., and Soda Cr. (Scudder 1963).

Order DIPTERA

Family Asilidae

- \* *Dicolonus nigricentrus* Adisoemarto & Wood  
A rather rare grassland species in Canada recorded from the Chilcotin, Okanagan, and Similkameen valleys, with records from Keremeos, Osoyoos, and Penticton (R.A. Cannings 1989). Elsewhere reported from Washington and northern Idaho.

Family Tachinidae

- \*\* *Baeomyia juniperi* O'Hara  
Endemic to British Columbia. Recorded only from the type locality Williams L. (south end of lake) (O'Hara 1984).

Order LEPIDOPTERA

Family Saturniidae

*Hyalophora gloveri* (Strecker)

In British Columbia, recorded from Charlie L. near Fort St. John (Cannings and Guppy 1989). There is also one specimen from Williams L. in the Royal British Columbia Museum. The larvae have been collected elsewhere on silverberry (*Eleagnus argentea* Pursh.) and *Salix*.

Order TRICHOPTERA

Family Hydroptilidae

- \* *Hydroptila consimilis* Morton  
In British Columbia, recorded only from Soda Cr. (Nimmo and Scudder 1979). The range of this species extends to Arizona, Manitoba, and New Hampshire.

Family Leptoceridae

*Ceraclea nigronevosa* (Retzius)

In British Columbia, recognized only from Francois L. village on the Stellako R. (Nimmo and Scudder 1979). This is a holarctic species.

LIST A2.7 (Concluded)

- \* *Ochrotrichia stylata* Ross  
In Canada, recorded only from around Cache Cr. (Nimmo and Scudder 1984).  
Elsewhere reported from South Dakota to Utah.
- \* *Oxyethira michiganensis* Mosely  
In Canada, recorded only from Soda Cr. (Nimmo and Scudder 1979, 1983). Else-  
where reported from Michigan, New Hampshire, and New York.

Family Limnephilidae

*Limnephilus alvatus* Denning

In British Columbia, recorded only from Westwick L. in the Cariboo (Nimmo  
and Scudder 1984). Also reported from Alberta.

- \*\* *L. chilcotinensis* Nimmo  
Endemic to British Columbia. Recorded from Alexis L. (Nimmo 1991).

Order HYMENOPTERA

Family Andrenidae

- \*\* *Andrena bella* Viereck  
Endemic to British Columbia. Described from Chilcotin (Viereck 1924).
- \*\* *A. fulvicrista* Viereck  
Endemic to British Columbia. Described from Agassiz, Chilcotin, and Penticton  
(Viereck 1924).
- \*\* *A. variata* Linsley  
Endemic to British Columbia. Described from Chilcotin as *A. varia*  
(Viereck 1924).

Appendix 2 Continued

LIST A2.8 Species of special interest in the Northern Boreal Mountains (Northern Mountains and Plateaus, Liard Basin, Yukon-Stikine Highlands, and Kluane Plateau)

Phylum MOLLUSCA

Class GASTROPODA

Order BASOMMATOPHORA

Family Physidae

\* *Physella virginea* (Gould) [Sunset physa]

Material in the CMN is from Caribou Rd.; Swan L., 2 mi [3.2 km] N Vernon, 50°18'5"N 119°16'W, 12.viii.1972 (A.H. Clarke and B.T. Kidd); Slough at Indian Reserve, 4 mi [6.4 km] S Creston, 49°25'N 116°31'W, 9.viii.1972 (A.H. Clarke and B.T. Kidd); Laird Hot Springs, 19.viii.1973.

Burch (1989) listed the distribution as British Columbia south to California.

\*\* *P. wrighti* Te & Clarke [Hotwater physa]

Alpha stream, Laird Hot Springs, 59°22'N 126°03'W, 20.viii.1979 (A.H. Clarke) (Te and Clarke 1985). This is the type locality. The species is endemic to British Columbia and known only from the type locality. This may be the same as *P. gyrina* (Say) (D.W. Taylor, pers. comm. via P. Lambert, 1994).

Phylum ARTHROPODA

Subphylum HEXAPODA

Class INSECTA

Order ODONATA

Family Coenagruidae

*Coenagrion interrogatum* (Hagen)

In British Columbia, known only from the Blue R. area north of Cassiar, Sheraton, Heckman Pass, and near Crooked R. Prov. Park, north of Prince George. This species is adapted to life in cold northern swamps and bogs and occurs from the Northwest Territories east to Newfoundland, south to Maine, Michigan, Wisconsin, and in northern British Columbia.

*Ischnura damula* Calvert

In British Columbia, known only from the Liard R. Hot Springs (Scudder et al. 1977). This population is disjunct from its nearest neighbours in southern Saskatchewan. The species extends east to Manitoba, and south to New Mexico and Arizona.

Family Corduliidae

*Somatochlora septentrionalis* (Hagen)

Only reported from Atlin and Tutshi R. Valley in British Columbia, where it occurs in small bog pools 7–15 m in length with level, wet edges. The species ranges from the Northwest Territories east to Hudson Bay and Labrador, south to Newfoundland and James Bay.

LIST A2.8 (Continued)

Family Libellulidae

*Leucorrhinia patricia* (Walker)

In British Columbia, known from Blue Lakes and Heckman Pass. The species occurs across northern Canada, from the Yukon to northern Quebec.

Order PLECOPTERA

Family Capniidae

\*\* *Bolshecapnia rogozera* (Ricker)

Endemic to British Columbia. Known only from Moosehorn L. at 58°10'N 132°07'W (Ricker 1965).

*Capnia nearctica* Banks

In British Columbia, known only from Atlin (Ricker and Scudder 1976). Otherwise reported from Alaska, Manitoba, Northwest Territories, and Ontario.

\*\* *Isocapnia fraseri* Ricker

Endemic to British Columbia. Known only from the Fraser R. at Agassiz (Ricker 1959) and Atlin (Ricker and Scudder 1976).

Family Perlodidae

*Arcynopteryx compacta* (McLachlan)

In British Columbia, known only from Atlin (Ricker and Scudder 1976). Widely distributed and abundant in the north.

Order NOTOPTERA

Family Grylloblattidae

\*\* *Grylloblatta campodeiformis nahanni* Kamp

Known only from Cassiar, Cassiar Mt. Range, Mt. McDame (1647 m), and Limestone Peak (1830 m) (Kamp 1979).

Order COLEOPTERA

Family Silphidae

\* *Thanatophilus coloradensis* (Wickham)

In Canada, recorded only from one locality on the northern British Columbia border (Teslin L.). Elsewhere reported from Alaska, and at high elevations above tree line in Colorado, New Mexico, Utah, Montana, and Wyoming (Anderson and Peck 1985).

LIST A2.8 (Continued)

Order DIPTERA

Family Culicidae

*Aedes nigripes* (Zetterstedt)

This arctic species has only been recorded from Moosehorn L. at 1500 m in British Columbia. Larvae usually live in tundra pools. The species is circum-polar north of tree line from northern Scandinavia across arctic Siberia and Alaska to Greenland and Newfoundland.

Family Anthomyiidae

\* *Pegomya ventralis* Stein

A palaearctic species recorded in North America only from Atlin (Griffiths 1984a).

Order LEPIDOPTERA

Family HesperIIDae

*Polites draco* (Edwards) [Draco Skipper]

In British Columbia, recorded only near Atlin, and considered vulnerable by Guppy et al. (1995). This is a Rocky Mountain species, ranging from Alberta and Saskatchewan south through Montana, Wyoming, Colorado, and New Mexico, west to Idaho, Arizona, and Utah (Howe 1975).

Family Nymphalidae

*Euphydryas anicia helvia* (Scudder ) [Anicia Checkerspot]

In British Columbia, recorded from Atlin and considered vulnerable by Guppy et al. (1995).

Family Noctuidae

\*\* *Euchalcia borealis* Lafontaine & Poole

Endemic to British Columbia. Known only from the unique holotype collected at Moosehorn L., 58°10'N 132°07'W (Lafontaine and Poole 1991).

Order TRICHOPTERA

Family Limnephilidae

*Apatania shoshone* Banks

In British Columbia, recorded only from Atlin (Nimmo and Scudder 1979). Elsewhere reported from Alberta, Colorado, and Wyoming.

*Asynarchus mutatus* (Hagen)

In British Columbia, recorded only from Atlin (Nimmo and Scudder 1979). Elsewhere reported from Alberta, Labrador, Northwest Territories to Ontario.

Appendix 2 Continued

LIST A2.8 (Concluded)

- \* *Lenarchus brevipennis* Banks  
In Canada, recorded only from Ketchum L. (Nimmo and Scudder 1979). Elsewhere reported from Colorado, Oregon, and Wyoming.

*Limnephilus pallens* (Banks)  
In British Columbia, recorded only from Atlin (Nimmo and Scudder 1984). Elsewhere reported from Alaska, Yukon, Northwest Territories, and middle of L. Michigan.

- \* *L. santanus* Ross  
In Canada, recorded only from Iskut (Nimmo and Scudder 1984). Elsewhere reported from Oregon.

LIST A2.9 Species of special interest in the Coast and Mountains (Nass Ranges)

Phylum ARTHROPODA

Subphylum CHELICERATA

Class ARACHNIDA

Order ARANEAE

Family Erigonidae

\*\* *Scotinotylus bicornis* (Emerton)

Endemic to British Columbia. Recorded only from the type locality, Terrace (West et al. 1984).

Subphylum HEXAPODA

Class INSECTA

Order PLECOPTERA

Family Capniidae

*Capnia cheama* Ricker

In British Columbia, known only from Fraser R. near Agassiz, Bulkley R. (Smithers), Sedan Cr. (10 km W Kitwanga) and Skeena R. (5 km W Kitwanga) (Ricker and Scudder 1976; S.G. Cannings 1989). This rare species of large stream and river habitats is also known from Alberta and Montana.

*C. petila* Jewett

In British Columbia, known from Botanie L. (Lytton), Similkameen R. (Cambio Cr. ski area), and Skeena R. (5 km W Kitwanga) (S.G. Cannings 1989). This relatively rare species is reported also from Yukon, Alberta, Idaho, Montana, Oregon, and Wyoming.

Order COLEOPTERA

Family Carabidae

\*\* *Bembidion kalumae* Lindroth

Endemic to British Columbia. Recorded from Kalum L. (N Terrace), Price Creek (Skeena R. opposite Kitwanga), and Stanley (E of Quesnel) (Lindroth 1963). Lindroth (1963) noted that the distribution is imperfectly known, and G.E. Ball (Univ. Alta., pers. comm., 1993) stated that it is likely the species is more widespread.

Family Leiodidae

\*\* *Agathidium columbianum* Fall

Endemic to British Columbia. Recorded from Terrace (Fall 1934).

Family Staphylinidae

\* *Orus punctatus* Casey

In Canada, recorded only from Terrace. Elsewhere reported south to California and Colorado.

LIST A2.9 (Continued)

Order DIPTERA

Family Syrphidae

\*\* *Platycheirus hispidipes* Vockeroth

Endemic to British Columbia. Described from and only known from one male from Terrace (32 mi [51.5 km] SW) and one male from Michel (Main Wilson Creek) (Vockeroth 1990, 1992).

Family Anthomyiidae

\*\* *Delia heraclei* Griffiths

Endemic to British Columbia. Known only from Remo (7 mi [11.3 km] SW Terrace) (Griffiths 1993).

*D. pacifica* Griffiths

A species endemic to Canada and known only from the Terrace District and Grassy L. in southern Alberta (Griffiths 1993).

*Pegomya crassiforceps* Griffiths

A species endemic to Canada, and recorded only from Lakelse L. and Nova Scotia (Griffiths 1983).

Order LEPIDOPTERA

Family HesperIIDae

*Erynnis afranius* (Lintner) [Afranius Dusky Wing]

In British Columbia, known from only one population near New Aiyansh, so the species may be vulnerable (Guppy et al. 1995). This is a mountain species known to range from Montana and western North Dakota south to New Mexico, Arizona, southwestern California, and Mexico (Howe 1975). The host plant is *Lupinus*.

Order TRICHOPTERA

Family Leptoceridae

*Ceraclea latahensis* (Smith)

In British Columbia, recorded only from Seeley L., W of Hazelton (Nimmo and Scudder 1984). The range of this species extends to central western North America.

Family Limnephilidae

*Asynarchus lapponicus* Zetterstedt

In British Columbia, recorded only from Terrace (Nimmo and Scudder 1979). Elsewhere reported from Alberta, Nova Scotia, Labrador, Greenland, Scandinavia, and Siberia.

Appendix 2 Continued

LIST A2.9 (Concluded)

Family Polycentropodidae

*Polycentropus weedi* Blickle & Morse

In British Columbia, recorded only from Terrace (Nimmo and Scudder 1984).

This species is transcontinental.

Family Rhyacophilidae

*Rhyacophila rickeri* Ross

In British Columbia, recorded only from 50 mi [80.5 km] N of Hazelton

(Nimmo and Spencer 1978). Elsewhere reported from Alaska and Alberta.

LIST A2.10 Species of special interest in the Sub-Boreal Interior (Fraser Basin)

Phylum MOLLUSCA

Class GASTROPODA

Order BASOMMATOPHORA

Family Acroloxidae

*Acroloxus coloradensis* (Henderson) [Rocky Mt. Capshell]

Listed as rare by Clarke (1981) with record from Purden L., near Prince George. Burch (1989) listed the distribution as larger lakes in the Rocky Mts. in Colorado, Montana, and Alberta; and a few ponds and lake localities in northern Quebec and eastern Ontario.

Phylum ARTHROPODA

Subphylum HEXAPODA

Class INSECTA

Order ODONATA

Family Coenagruidae

*Coenagrion interrogatum* (Hagen)

In British Columbia, known only from the Blue R. area north of Cassiar (Scudder et al. 1977), Sheraton, Heckman Pass, and near Crooked R. Prov. Park, north of Prince George. This species is adapted to life in cold northern swamps and bogs and occurs from the Northwest Territories east to Newfoundland, south to Maine, Michigan, Wisconsin, and in northern British Columbia.

Family Gomphidae

*Ophiogomphus colubrinus* Selys

In British Columbia, so far recorded only from Cluculz Creek near Prince George (Scudder et al. 1977) and the Petitot R. It ranges from the Northwest Territories east to Newfoundland, and south to Maine and Michigan.

Order COLEOPTERA

Family Buprestidae

\* *Chrysobothris pseudotsugae* Van Dyke

In Canada, recorded only from Frye Creek and Merritt (Bright 1987). Elsewhere reported south to California.

Order TRICHOPTERA

Family Leptoceridae

*Ceraclea arielles* (Denning)

In British Columbia, recorded only from 75.9 km W of Prince George (Nimmo and Scudder 1984). The range of this species extends to north-central North America.

LIST A2.11 Species of special interest in the Coast and Mountains (Pacific Ranges and Cascade Ranges), and Southern Interior (Interior Transition Ranges [Leeward Pacific Ranges ecosection])

Phylum ARTHROPODA

Subphylum CHELICERATA

Class ARACHNIDA

Order ARANEAE

Family Erigonidae

- \* *Scotinotylus bicavatus* Millidge  
In Canada, recorded only from Manning Prov. Park (West et al. 1984). Elsewhere known only from Washington (J.H. Redner, Agric. Can., pers. comm., 1993).
- \* *S. eutypus* (Chamberlin)  
In Canada, recorded only from Parksville, Sidney (West et al. 1984), and Manning Prov. Park (J.H. Redner, Agric. Can., pers. comm., 1993). Elsewhere reported from Washington and Oregon (J.H. Redner, pers. comm.).
- \* *Tachygyna exilis* Millidge  
In Canada, recorded only from Manning Prov. Park (17.6 km W of Allison Pass) and Princeton (31.7 km W) (West et al. 1988). Elsewhere only reported from Washington (J.H. Redner, Agric. Can., pers. comm., 1993).
- \* *T. proba* Millidge  
In Canada, this rare species is known only from 17.6 km W of Allison Pass in Manning Prov. Park (West et al. 1988). Elsewhere reported only from one locality in Washington (J.H. Redner, Agric. Can., pers. comm., 1993).
- \* *Walckenaeria columbia* Millidge  
In Canada, recorded only from Manning Prov. Park (West et al. 1988), Goldstream Prov. Park ((J.H. Redner, Agric. Can., pers. comm., 1993), and Sidney as *W. septentrionalis* (West et al. 1984).

Family Gnaphosidae

- \* *Micaria idana* Platnick & Shadab  
In Canada, recorded only from Apex Mt. and Manning Prov. Park (West et al. 1988). Elsewhere reported to occur south to California (Platnick and Dondale 1992).
- \* *Orodassus orites* Chamberlin & Gertsch  
In Canada, recorded only from Manning Prov. Park (West et al. 1984). Elsewhere reported only from western Washington (Platnick and Dondale 1992).

LIST A2.11 (Continued)

Family Thomisidae

- \* *Misumenops serrensis* Schick  
In Canada, recorded only from Errington, Hope, and Osoyoos (West et al. 1984). Reported to occur south to California (Dondale and Redner 1978).

Subclass ACARI

Order ACARIFORMES

Suborder ORIBATIDA

Family Eremaeidae

- \*\* *Eueremaeus michaeli* Behan-Pelletier  
Endemic to British Columbia. So far known only from Manning Prov. Park at 2063 m, Madeline L. near Penticton, and Cathedral Prov. Park at 2210 m (Behan-Pelletier 1993b).
- \* *E. stiktos* (Higgins)  
In Canada, recorded only from undisturbed forest in southern British Columbia (Garibaldi Prov. Park, Tweedsmuir Prov. Park, Little Qualicum Falls Prov. Park, and Cowichan L. Experimental Station) (Behan-Pelletier 1993b). Elsewhere reported from undisturbed forest in California, Idaho, Oregon, and Utah.

Family Mycobatidae

- \*\* *Mycobates brevilamellatus* Behan-Pelletier  
An endemic species known only from Blackwall Mt., Manning Prov. Park (Behan-Pelletier 1994).

Phylum MYRIAPODA

Class PAUROPODA

Order TETRAMEROCERATA

Family Brachypauropodidae

- \* *Aletopauropus lentus* MacSwain & Lanham  
In Canada, recorded from a Douglas-fir forest near Shawnigan L., and from a subalpine mountain hemlock forest on Mt. Hemlock, Garibaldi Park (Scheller 1984). Elsewhere reported only from California (Scheller 1984).

Class DIPLOPODA

Order POLYZONIIDA

Family Hirudisomatidae

- \* *Hypozoneum anurum* Cook  
In Canada, recorded from Burnaby, Burquitlam, Hope (2 km SE), Manning Prov. Park (west gate), and Steelhead (Shelley 1990).

LIST A2.11 (Continued)

Subphylum HEXAPODA  
Class COLLEMBOLANA

Order ARTHROPLEONA

Family Isotomidae

- \* *Agrenia agilis* Fjellberg  
In Canada, recorded only from the type locality, Black Tusk Meadows, Garibaldi Prov. Park (Fjellberg 1986). Elsewhere reported from Hurricane Ridge, Olympic Natl. Park, Washington (Fjellberg 1986).
- \*\* *A. atroviridis* Fjellberg  
Endemic to British Columbia. Recorded only from the lower lobes of Helm Glacier flanking the Cinder Cone, Garibaldi Prov. Park (Fjellberg 1986).
- \*\* *Tetracanthella pacifica* Rusek & Marshall  
Endemic to British Columbia. Recorded from Garibaldi (Paul Ridge) and China Beach Prov. Park on Vancouver Island (Rusek and Marshall 1977).

Class INSECTA

Order ODONATA

Family Coenagridae

*Argia vivida* Hagen

Known only from Field, Fairmont, Penticton, White L., Meager Cr. Hot Springs, and from Glacier. The species ranges from southern British Columbia and the Rocky Mts. of Alberta to Texas, California, and Mexico. It is a very local insect found around pools near springs (especially hot springs in northern latitudes) or spring-fed streams inhabited by larvae.

Family Aeshnidae

*Aeshna tuberculifera* Walker

A sparsely distributed species in British Columbia, recorded only in the Nanaimo and Campbell R. districts and Bowser on Vancouver Island, Haney, Cypress Bowl, and Wells Gray Park. The species occurs in boggy-margined ponds and lakes. It occurs from Wisconsin to Nova Scotia, south to Pennsylvania and Indiana, as well as British Columbia and Washington.

Family Petaluridae

\* *Tanypteryx hageni* (Selys)

This is perhaps the rarest dragonfly in British Columbia, having been captured at only five localities in Canada, all in British Columbia. It is a very local species, preferring spring-fed mountain bogs. It is recorded from the Cascade Mountains near Cultus L. and Yale, from the Coast Mountains at Diamond Head in Garibaldi Park, and Black Mountain in Cypress Park, and from Alexander R. on Knight Inlet at 50°52'N (Cannings 1978). The range of the species extends from southwestern British Columbia south in the mountains to California and Nevada.

LIST A2.11 (Continued)

Family Macromiidae

\*\* *Macromia rickeri* Walker

Endemic to British Columbia and known only from Cultus L., Hope, Salmon Arm, and Shuswap L. (Scudder et al. 1977). The taxon may be only a dark form of *M. magnifica*.

Order PLECOPTERA

Family Capniidae

\*\* *Bolshecapnia gregsoni* (Ricker)

Endemic to British Columbia. Recorded from Kokli L. (on Mt. Arrowsmith), Forbidden Plateau, Helen L. (Garibaldi Park), and Gwillim Cr. (Valhalla Mts.) (Ricker 1965; Ricker and Scudder 1976).

*B. milami* (Nebeker & Gaufin)

In British Columbia, known only from the Similkameen R. (S.G. Cannings 1989). Elsewhere reported from Alberta, Idaho, and Montana.

*B. sasquatchi* (Ricker)

In British Columbia, known only from the lower Fraser R. at Hope, the Similkameen (Cambie Cr. ski area) and Skagit R. (Ricker and Scudder 1976; S.G. Cannings 1989). Elsewhere reported from Alberta and Montana.

\* *Capnia elongata* Claasen

In Canada, known only from the lower Fraser Valley: Agassiz (Fraser R.), Cultus L. (Frost Cr.), Chilliwack R., Hope (Wahleach Cr.), Mission (Fraser R.), Ruskin (Stave R. at Fraser R.), Vedder Crossing (Chilliwack R.) and Vedder R. canal at highway bridge (Ricker and Scudder 1976), and Mamquam R. (S.G. Cannings 1989). Elsewhere reported from California, Oregon, and Washington.

*C. petila* Jewett

In British Columbia, known from Botanie L. (Lytton), Similkameen R. (Cambie Cr. ski area), and Skeena R. (5 km W Kitwanga) (S.G. Cannings 1989). This relatively rare species is reported also from Yukon, Alberta, Idaho, Montana, Oregon, and Wyoming.

Order NOTOPTERA

Family Grylloblattidae

\*\* *Grylloblatta scudderi* Kamp

Known from the type locality Garibaldi Prov. Park, Whistler Mt., 1951 m (Kamp 1979).

LIST A2.11 (Continued)

Order GRYLLOPTERA

Family Tettigoniidae

- \* *Neduba steindachneri* (Hermann)

In Canada, confined to oak-arbutus habitats on the south and east coasts of Vancouver Island, and in the Fraser Valley only as far inland as Boston Bar (Vickery and Kevan 1985). Elsewhere reported from Washington.

Order HETEROPTERA

Family Lygaeidae

Subfamily Lygaeinae

- \*\* *Lygaeospilus brevipilus* Scudder

A species endemic to British Columbia, described and so far known positively only from the type locality in Manning Prov. Park (Scudder 1981). Other specimens from Nicola, B.C. and Oregon may be this species (Scudder 1981).

Family Miridae

Subfamily Mirinae

- \*\* *Dichroscytus flagellatus*

A species endemic to British Columbia, described from Hope, Princeton, Radium Hot Springs, and Spences Bridge (Kelton 1972). Now known also from Hedley, Merritt, Okanagan Falls, and Summerland, usually on *Juniperus*.

- \*\* *D. rufusculus* Kelton

A species endemic to British Columbia, and known only from Manning Prov. Park (Gibson Pass), Hedley, Kaslo, and Lockhart Beach Prov. Park (Kelton 1972).

Order HOMOPTERA

Family Cicadellidae

- \*\* *Idiocerus vanduzei* Hamilton

Endemic to British Columbia. Recorded from Chilliwack, Cowichan, Duncan, Garibaldi, and Victoria on *Populus* (Hamilton 1980).

Order COLEOPTERA

Family Dytiscidae

- \* *Agabinus sculpturellus* Zimmermann

In Canada, recorded only from Fraser Canyon (Alexandra Lodge), Goldstream Prov. Park, and MacMillan Prov. Park.

LIST A2.11 (Continued)

Family Micropeplidae

\* *Micropeplus robustus* Campbell

A rare species in Canada only recorded from Creston (8 mi [12.8 km] W) and Hope (12 mi [19.3 km] E) (Campbell 1968). Elsewhere reported from only one locality in California and one in Oregon (Campbell 1973a). Provincial specimens were collected from flood debris on rivers.

\*\* *M. smetanai* Campbell

Endemic to British Columbia. Recorded from Hope (19.3 km E), Midway (6.4 km W), Burnt Flats (3.2 km E), Creston (12.8 km W), and Salmo (3.2 km S) (Campbell 1973a). One specimen was collected from inside a deserted beaver lodge, while all others were from flood debris (Campbell 1973a).

Family Staphylinidae

\* *Pseudopsis montoraria* Herman

In Canada, recorded only from Mt. Garibaldi. Elsewhere reported south to Arizona and California.

\* *Tachinus raineri* Hatch

In Canada, recorded only from Manning Prov. Park at 1692–2076 m (Campbell 1973b). Elsewhere reported south along the Cascades to Oregon.

\* *Stenus geminorum* Puthz

In Canada, only recorded from Manning Prov. Park. Elsewhere reported from Oregon and Washington.

Family Buprestidae

\* *Anambodera gemina* (Horn)

In Canada, recorded only from Alta L. and Mons (Bright 1987). Elsewhere reported from California, Oregon, and Washington.

\* *Chrysobothris beeri* Barr

In Canada, recorded only from Blackwall, Manning Prov. Park (Bright 1987). Elsewhere reported south to Oregon.

Family Cephaloidae

\* *Cephaloon pacificum* Van Dyke

A rare species, in Canada recorded only from Squamish.

Family Curculionidae

\* *Paraptochus sellatus* (Boheman)

In Canada, recorded only from North Bend.

LIST A2.11 (Continued)

Order MECOPTERA

Family Boreidae

\* *Boreus elegans* Carpenter

In Canada, recorded only from Vancouver, Squamish, Burke Mt., and nr. Black Mt. and Hollyburn Mt. Elsewhere reported from only two localities in Washington state (Penny 1977).

Order DIPTERA

Suborder NEMATOCERA

Family Tipulidae

\* *Chionea macnabeana* Alexander

In Canada, known only from Manning Prov. Park (Fat Dog Creek) (S.G. Cannings 1987). A rare wingless species also recorded from Oregon and Washington (Byers 1983). Fewer than ten specimens are known (G.W. Byers, Univ. Kans., pers. comm., 1993).

Family Deuterophlebiidae

*Deuterophlebia personata* Courtney

In British Columbia, known only from around Hope (Eureka Cr. 3.5 km S of Hope, Silverhope Cr. 15 km S of Hope, and Sowerby Ck.) (Courtney 1990). Since the species is also recorded from a single locality in the Yukon, Courtney (1990) suggested the lack of records may be because of inaccessible coastal range distribution and lack of collecting.

Family Syrphidae

\*\* *Platycheirus setipes* Vockeroth

Endemic to British Columbia. Described from and only known from one male from Manning Prov. Park (Dry Ridge summit), and one male from Robson (Vockeroth 1990, 1992).

Family Anthomyiidae

\*\* *Delia submetallica* Griffiths

Endemic to British Columbia. Recorded only from Diamond Head Trail near Squamish at 975–1220 m (Griffiths 1992).

\* *Eutrichota occidentalis* Griffiths

In Canada, recorded only from Manning Prov. Park. This alpine species is elsewhere reported in the western United States (Griffiths 1984b).

LIST A2.11 (Continued)

Order LEPIDOPTERA

Family HesperIIDae

- \* *Erynnis propertius* (Scudder & Burgess) [Propertius Dusky Wing]  
In Canada, recorded from southern Vancouver Island and the Gulf Islands, as well as Hope and Pemberton. Classified as vulnerable by Guppy et al. (1995). The species is restricted to the Pacific Coast, extending from southern British Columbia to northern Baja California (Howe 1975; Scott 1986) and is very abundant throughout western Oregon (Dornfeld 1980).

*Euphyes vestris metacomet* (Harris) [Dun Skipper]

In British Columbia, this subspecies is known from only a few populations on southern Vancouver Island and the Fraser Canyon, and so is considered vulnerable by Guppy et al. (1995). The subspecies ranges through most of the United States (except California and Baja California) and southern Canada (Howe 1975). The larvae food plants are sedges (*Carex*) and grasses (*Tridens*) (Dornfeld 1980).

Family Papilionidae

- \* *Papilio indra indra* Reakirt [Indra Swallowtail]  
In Canada, known only from one population in Manning Prov. Park and considered vulnerable by Guppy et al. (1995). The nominate subspecies occurs in California (Sierra Nevada and the northern part of the state), Oregon, and Washington, eastward through Utah, Idaho, and Wyoming to north-central Colorado and western South Dakota (Howe 1975). Larvae feed on umbelliferous plants, especially *Lomatium* (Dornfeld 1980).

Family Lycaenidae

- \* *Mitoura johnsoni* (Skinner) [Johnson's Hairstreak]  
In Canada, the historical range included southern Vancouver Island (Shawnigan L.), Greater Vancouver, and Spuzzum in the vicinity of Hope. Extant populations are known only from the Greater Vancouver area (Stanley Park, Lynn Canyon Park, Pacific Spirit Park, and the UBC Research Forest at Haney) (Guppy et al. 1995). The species is clearly endangered in British Columbia. Howe (1975) noted that this species is extremely rare, and occurs locally from extreme southern British Columbia to central California in the Cascades and Sierras. In Oregon, the species occurs in the coastal mountains and in forests along the western slope of the Cascades, with a single record from near Baker in north-eastern Oregon (Dornfeld 1980). The larvae feed on *Arceuthobium campylopodum* Engelm., a dwarf mistletoe parasitic on *Tsuga heterophylla* (Raf.) Sarg. (Howe 1975).

LIST A2.11 (Continued)

Family Noctuidae

\* *Euxoa macleani* McDunnough

A subalpine species, known from only three localities (12 specimens) in British Columbia, namely Mt. McLean, near Lillooet (1 specimen type), Pinewoods in Manning Prov. Park (1 specimen), and at 2184 m, Blowdown Pass near Duffey L. (10 specimens). Otherwise recorded only from State Peak, Okanogan Co., Wash. (6 specimens) (J.D. Lafontaine, Agric. Can., pers. comm., 1992).

Order TRICHOPTERA

Family Brachycentridae

\* *Eobrachycentrus gelidae* Wiggins

In Canada, recorded only from 1.6 km W of the Allison Pass Summit (Nimmo and Scudder 1979). Elsewhere reported from Oregon and Washington.

Family Hydropsychidae

\* *Hydropsyche amblis* Ross

In Canada, recorded only from Alta L. (Ross and Spencer 1952; Nimmo and Scudder 1979). Elsewhere reported from Oregon and Washington.

Family Limnephilidae

\* *Allomyia cidoipes* (Schmid)

In Canada, recorded only from 15 km E of Hope (Nimmo and Scudder 1984). Elsewhere reported from Oregon and Washington.

\* *Homophylax flavipennis* Banks

In Canada, recorded only from the Nicolum R. (Nimmo and Scudder 1979). Elsewhere reported from Colorado.

*Lenarchus crassus* (Banks)

In British Columbia, recorded only from D'Arcy (Nimmo and Scudder 1979). Elsewhere reported from Alberta, Massachusetts, and Quebec.

\* *Limnephilus sylviae* Denning

In Canada, recorded only from Mt. Seymour (Nimmo and Scudder 1979). Elsewhere reported from Oregon.

\*\* *Psychoglypha* sp. n.

Endemic to British Columbia. Known only from Garibaldi Prov. Park (A.P. Nimmo, Univ. Alta., pers. comm., 1993).

LIST A2.11 (Concluded)

- \* *Rossiana montana* Denning  
In Canada, recorded only from Allison Pass in Manning Prov. Park (Nimmo and Scudder 1979). Elsewhere reported from Montana and Washington.

Family Polycentropodidae

*Polycentropus denningi* Smith

In British Columbia, recorded only from Diamond Head Trail at 923 m, Squamish (Nimmo and Scudder 1984).

Family Rhyacophilidae

*Rhyacophila vemna* Milne

In British Columbia, recorded only from Coldspring Camp, Manning Prov. Park (Nimmo and Scudder 1979). Elsewhere reported from Alberta, Idaho, Oregon, and Washington.

Order HYMENOPTERA

Suborder APOCRITA

Division ACULEATA

Family Dryinidae

- \*\* *Anteon hirtifrons* Whittaker  
Endemic to British Columbia. Described from Hollyburn (Whittaker 1930), and also recorded from Galiano Island (Olmi 1984).

Family Andrenida

- \*\* *Andrena buckelli* Viereck

Endemic to British Columbia. Described from Kaleden, Lillooet, Lytton, North Bend, Okanagan Falls, Penticton, Salmon Arm, and Thompson R. (Viereck 1924).

Appendix 2 Continued

LIST A2.12 Species of special interest in the Northern Boreal Mountains (Northern Canadian Rocky Mountains)

Phylum ARTHROPODA

Subphylum HEXAPODA

Class INSECTA

Order NOTOPTERA

Family Grylloblattidae

\*\* *Grylloblatta campodeiformis athapaska* Kamp

Known only from the type locality Stone Mt. Prov. Park, Summit L., Mt. St. Paul, 1502 m (Kamp 1979).

Order COLEOPTERA

Family Staphylinidae

*Tachinus instabilis* Maklin

In British Columbia, recorded only from Summit L. (mile 392 Alaska Highway).  
Elsewhere reported from Alaska and the Yukon.

Appendix 2 Continued

LIST A2.13 Species of special interest in the Southern Interior Mountains (Western Continental Ranges and Continental Divide)

Phylum ARTHROPODA

Subphylum CHELICERATA

Class ARACHNIDA

Subclass ACARI

Order ACARIFORMES

Suborder ORIBATIDA

Family Mycobatidae

*Mycobates incurvatus* Hammer

In British Columbia, recorded only from near Takakkaw Falls in Yoho National Park, but elsewhere known from Alaska, Colorado, Newfoundland, Northwest Territories, Quebec, and Yukon (Behan-Pelletier, 1994).

Subphylum HEXAPODA

Class INSECTA

Order ODONATA

Family Coenagruidae

*Argia vivida* Hagen

Known only from Field, Fairmount in the Rocky Mts., Glacier in the Selkirk Range, Meager Creek Hot Springs in the Coast Range, and from two cool springs in the South Okanagan. The species ranges from southern British Columbia and the Rocky Mts. of Alberta to Texas, California, and Mexico. It is a very local insect found around pools near springs or spring-fed streams inhabited by larvae.

Order COLEOPTERA

Family Staphylinidae

\*\* *Tachinus smetanai* Campbell

Endemic to British Columbia. Recorded only from McLeod Meadows in Kootenay Natl. Park (Campbell 1973b).

\*\* *Nordenskiöldia columbiana* Puthz

Endemic to British Columbia. Recorded only from Yoho Natl. Park (Puthz 1974).

Family Histeridae

\* *Plegaderus setulosus* Ross

In Canada, recorded only from Hosmer with ants. This rare species is elsewhere reported south to Oregon.

LIST A2.13 (Continued)

Order DIPTERA

Suborder NEMATOCERA

Family Tipulidae

\*\* *Phyllolabis bryantiana* Alexander

At present, listed as endemic to British Columbia. Known only from the type material from Hector (Alexander 1931; Spencer 1948).

Family Chironomidae

\*\* *Pseudosmittia setavena* Saether

Endemic to British Columbia. Described from Takkakaw Falls Road near Field (Saether 1969), and only recorded from this locality.

Suborder BRACHYCERA

Family Syrphida

\*\* *Platycheirus hispidipes* Vockeroth

Endemic to British Columbia. Described from and only known from one male from Terrace (32 mi [51.5 km] SW) and one male from Michel (Main Wilson Cr.) (Vockeroth 1990, 1992).

Order TRICHOPTERA

Family Brachycentridae

\* *Amiocentrus aspilus* (Ross)

In Canada, recorded only from 9.6 km W of Fernie (Nimmo and Scudder 1979). Elsewhere reported from California, Colorado, Montana, Nevada, Utah, and Wyoming.

Family Limnephilidae

*Limnephilus valhalla* Nimmo

In British Columbia, recorded only from Wapta L. (Nimmo and Scudder 1979). Elsewhere reported from Jasper, Alberta.

Family Phryganeidae

*Agrypnia macdunnoughi* (Milne)

In British Columbia, recorded only from Kootenay Pond in Kootenay Natl. Park (Nimmo and Scudder 1984). Elsewhere reported from Alberta.

Family Rhyacophilidae

\*\* *Rhyacophila unimaculata* Denning

Endemic to British Columbia. Recorded from Fernie and Robson (Nimmo and Scudder 1979).

Appendix 2 Concluded

LIST A2.14 *Species of special interest in the Taiga Plains (Upper Mackenzie Basin)*

Phylum ARTHROPODA

Subphylum HEXAPODA

Class INSECTA

Order ODONATA

Family Gomphida

*Ophiogomphus columbrinus* Selys

In British Columbia so far recorded only from Cluculz Cr. near Prince George (Scudder et al. 1977), and Petitot R. It ranges from the Northwest Territories east to Newfoundland, and south to Maine and Michigan.

**APPENDIX 3** Number of endemic and other rare and endangered species in ecoregions in British Columbia

Rank	Ecoprovince (Ecoregion)	Endemic	Occurs only in province	Rare in province	Total
1	Georgia Depression (Eastern Vancouver Island) (Georgia Puget Basin)	26	139	31	196
2	Southern Interior (Thompson-Okanagan Plateau) (Okanagan Range) (Okanogan Highlands) (Interior Transition Ranges [Pavilion Ranges ecosection])	51	193	89	333
3	Southern Interior Mountains (Southern Rocky Mountain Trench) (Columbia Mountains and Highlands) (Selkirk-Bitterroot Foothills)	38	34	30	102
4	Georgia Depression (Lower Mainland)	27	46	14	87
5	Coast and Mountains (Western Vancouver Island) (Queen Charlotte Ranges) (Queen Charlotte Lowland) (Coastal Gap)	22	42	4	68
6	Boreal Plains (Alberta Plateau)	2	0	18	20
7	Central Interior (Chilcotin Ranges) (Fraser Plateau)	6	13	10	29
8	Northern Boreal Mountains (Northern Mountains and Plateaus) (Liard Basin) (Yukon-Stikine Highlands) (Kluane Plateau)	5	5	12	22
9	Coast and Mountains (Nass Ranges)	5	1	9	15

Appendix 3 Continued

Rank	Ecoprovince (Ecoregion)	Endemic	Occurs only in province	Rare in province	Total
10	Sub-Boreal Interior (Fraser Basin)	0	1	4	5
11	Coast and Mountains (Pacific and Cascade Ranges) Southern Interior (Interior Transition Ranges [Leeward Pacific Ranges ecosection])	17	37	10	64
12	Northern Boreal Mountains (Northern Canadian Rocky Mountains)	1	0	1	2
13	Southern Interior Mountains (Western Continental Ranges) (Continental Divide)	6	2	4	12
14	Taiga Plains (Upper Mackenzie Basin)	0	0	1	1

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