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Phylum	Class	Order	Families	Genera	Species	
Tardigrada (tardigrades)	Eutardigrada	Apochela	1	1	1	
		Parachela	3	16	74	
Bryozoa (moss animalcules)	Phylactolaemata	Arthrotardigrada	1	4	16	
		Parachela	1	1	1	
Chelicerata (mites & spiders)	Arachnida	Acari:Acariformes	38	76	133	
		Acari:Parasitiformes	10	14	27	
		Araneae	4	14	21	
Hexapoda (springtails & insects)	Collembola	Arthropleona	7	27	65	
		Neelipleona	1	1	1	
		Symphyleona	2	3	6	
	Insecta		Phthiraptera (Anoplura+Mallophaga)	3	14	38
			Ephemeroptera	1	1	1
			Hemiptera (all aphids)	2	4	4
			Thysanoptera	1	1	1
			Mallophaga	2	12	36
			Coleoptera	12	18	21
			Diptera:Chironomidae	1	25	92
			Diptera:other	19	39	69
			Hymenoptera:Symphyta	1	4	10
			Hymenoptera:Parasitica	4	20	21
			Lepidoptera	6	12	12
			Siphonaptera	1	2	2
			Trichoptera	1	1	1
			Crustacea (water fleas, ostracods and shrimps)	Branchiopoda	Cladocera	4
Ctenopoda	1	1			1	
Notostraca	1	1			1	
Copepoda	Calanoida	2		2	2	
	Cyclopoida	1		3	4	
	Harpacticoida	3		3	3	
	Siphonostomatoida	1		1	2	
Malacostraca	Amphipoda	1		1	2	
	Mysidacea	1		1	1	
Ostracoda		4		8	10	
Total			556	1308		

Among the dominant low Arctic families, most are still represented in the high Arctic. However, number of species is greatly reduced, with only lice, chironomid midges, house flies and ichneumon parasitoid wasps still meeting the 20 species criterion. The black flies, whose larvae live in flowing water, are lost from the fauna and ground beetle numbers are reduced from 85 to one species. The most successful insect families (i.e. those with low Arctic) are the bird lice (Phlipopteridae), which are parasites of warm-blooded vertebrates, and the chironomid midges that breed in aquatic habitats and wet soils.

The relative abundance of ichneumonid parasitoid wasps is perhaps surprising at first, given their dependence on the availability of particular invertebrate prey species, the susceptibility of their life cycles to disruption through the direct effect of lethal cold temperatures and the potential breakdown of temporal synchrony with their host species (Hance *et al.* 2007). However, it is the other abundant species groups, notably dipteran flies, spiders (Araneae), aphids and sawflies that provide the majority of hosts for these parasitoids. Parasitism also probably takes place on other species *within* the family Ichneumonidae (parasitoid wasps) (Danks 1981, Rooinen *et al.* 2002, Hodkinson & Coulson 2004).

Table 7.2. Number of genera and species of insect within each family across the Nearctic region illustrating further the taxonomic biodiversity within a selected class of Arctic invertebrate. Data are from Danks (1981) and should be viewed with the caveats noted in the text. Note also that the boundary between the high and low Arctic in the Canadian Archipelago differs slightly from that used in other sections of the Assessment.

Order	Arctic Families	Arctic Genera	High Arctic Species	Low Arctic Species	
Ephemeroptera	Metropodidae	1	0	1	
	Baetidae	1	0	7	
	Heptageniidae	1	0	1	
	Leptophlebiidae	1	0	1	
	Ephemerellidae	1	0	1	
	Aeshnidae	1	0	4	
Odonata	Coenagrionidae	1	0	1	
	Corduliidae	1	0	1	
Plecoptera	Pteronarcidae	1	0	1	
	Chloroperlidae	3	0	3	
	Perlodidae	5	0	5	
	Perlidae	2	0	2	
	Capniidae	1	0	6	
	Nemouridae	3	0	5	
	Acridae	3	0	4	
	Philopteridae	21	23	37	
Phthiraptera	Trichodectidae	1	0	1	
	Menoponidae	7	5	10	
	Ricinidae	1	2	2	
	Echinophthiriidae	2	2	2	
	Linognathidae	1	0	1	
	Pediculidae	1	0	1	
	Hoplopleuridae	2	1	2	
	Polyplacidae	1	0	2	
	Hemiptera	Lygaeidae	1	0	1
		Miridae	4	0	8
Anthocoridae		1	0	1	
Saldidae		4	1	9	
Corixidae		2	0	3	
Cicadellidae		7	0	9	
Delphacidae		1	0	1	
Psyllidae		2	0	9	
Aphididae		17	3	20	
Coccidae		1	0	1	
Orthezidae		1	0	1	
Pseudococcidae		3	1	2	

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7.2.1.3. Biodiversity of Arctic invertebrates, the best collective estimates

Tab. 7.3 lists the numbers of species for each of the main groups of invertebrates recorded from the low and high Arctic regions of the Nearctic and Palearctic regions, together with the number of known endemics. This table is based on our collective knowledge derived from literature and museum collections. Greenland data, where possible, are disaggregated from the Nearctic region, as the zoogeographical origins of the Greenland invertebrate fauna remain uncertain. This list is our best current estimate of invertebrate biodiversity within the

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Order	Arctic Families	Arctic Genera	High Arctic Species	Low Arctic Species
Thysanoptera	not stated	3	1	2
	Chrysopidae	1	0	1
	Hemerobiidae	1	0	2
Coleoptera	Carabidae	16	1	85
	Haliplidae	1	1	2
	Dytiscidae	7	2	24
	Hydrophilidae	2	0	6
	Silphidae	3	0	3
	Staphylinidae	17	4	23
	Byrrhidae	3	0	5
	Buprestidae	1	0	1
	Elateridae	2	0	7
	Cantharidae	2	0	2
	Dermestidae	1	0	1
	Cucujidae	1	0	1
	Coccinellidae	5	0	6
	Lathridiidae	2	1	2
Cerambycidae	5	0	5	
Chrysomelidae	6	0	13	
Curculionidae	9	1	14	
Diptera	Trichoceridae	1	2	5
	Tipulidae	13	9	52
	Dixidae	1	0	1
	Chaoboridae	2	0	2
	Culicidae	2	3	17
	Simuliidae	6	0	28
	Ceratopogonidae	4	3	4
	Chironomidae	62	93	159
	Bibionidae	1	0	1
	Scatopsidae	2	0	3
	Mycetophilidae	9	9	17
	Sciaridae	4	5	3
	Cecidomyiidae	2	2	2
	Rhagionidae	2	0	2
	Tabanidae	1	0	4
	Empididae	4	7	20
	Dolichopodidae	7	2	31

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Arctic, although there may be omissions, taxonomic uncertainties and other inadequacies. Data for many groups are absent, unreliable or unavailable in a form that can easily be mapped onto the table format. Some groups present particular problems. The eelworms, for example, are one of the most numerically abundant groups of Arctic invertebrate and are undoubtedly species diverse within the Arctic regions, but most studies record biodiversity at the generic rather than the species level. For example, generic diversity associated with hair grass tussocks *Deschampsia sukatschewii* ssp. *borealis* across sites on Bol'shevik Island, Severnaya Zemlya and the Putorna Plateau, Taimyr, ranged from 18 to 28