

Table 7.1. A typical biodiversity profile across invertebrate taxa for a high Arctic region: the diversity of the terrestrial and freshwater invertebrates of Svalbard, listing the number of families, genera and species for each known group. Data are based on revised versions of Coulson (2000, 2007) and Coulson & Refseth (2004). The list includes occasional presumed vagrants and introductions. The table retains the animal classification used in the original work: more recent updates of the classification for some groups, such as the rotifers, are given in Tab. 7.3.

Phylum	Class	Order	Families	Genera	Species
Sarcomastigophora (flagellates)	Heliozoa		3	3	3
	Zoomastigophorea		1	1	2
Rhizopoda (amoebae)	Filosea	Gromiida	5	11	53
	Lobosea	Amoebida Arcellinida	1 13	1 23	1 145
Ciliophora (ciliates)	Kinetofragminophorea	Colpodida		4	4
		Cyrtophorida		2	2
		Nassulida		3	3
		Pleurostomatida		2	2
		Prostomatida		7	7
		Suctorida		1	1
		Synhymeniida		1	1
		Hymenostomatida		4	6
		Peritrichida		5	7
		Scuticociliatida		3	3
Apicomplexa (sporozoans)	Oligohymenophorea	Heterotrichida		3	3
		Hypotrichida		6	9
		Oligotrichida		4	5
		Coccidea		3	3
		Bdelloidea		8	38
		Collothecaceae		1	1
Rotifera (rotifers)	Monogononta	Flosculariacea		2	3
		Ploumida		12	122
		Chaetonotida		1	1
Gastrotricha (gastrotrichs)	Adenophorea	Enoplia		3	5
		Dorylaimida		4	24
Nematoda (eelworms)	Penetrantia	Enopliida		4	10
		Secermentia		2	5
		Ascaridida		4	18
		Rhabditida		1	3
		Spirurida		1	6
		Strongylida		5	13
		Tylenchida		2	5
		Araeolaimida		3	3
		Chromadorida		1	3
		Monohisterida		1	6
Acanthocephala (spiny-headed worms)	Torquentia	Polymorphida		1	1
		Polymorphida		1	19
		Chromadorida		3	3
Platyhelminthes (tapeworms & flukes)	Cestoda	Monohisterida		3	6
		Polymorphida		1	1
		Cyclophyllidea		5	10
		Proteocephalidea		1	1
Annelida (whiteworms)	Trematoda	Pseudophyllidea		2	4
		Opisthorchiida		1	1
		Plagiorchiida		1	3
		Strigeata		1	3
Annelida (whiteworms)	Oligochaeta	Haplotaxida (all Enchytraeidae)		1	42
		Haplotaxida (all Enchytraeidae)		9	42

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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) Ephemeroptera Hemiptera (all aphids) Thysanoptera Mallophaga Coleoptera Diptera:Chironomidae Diptera:other Hymenoptera:Symphyta Hymenoptera:Parasitica Lepidoptera Siphonaptera Trichoptera		3	14	38
				1	1	1
				2	4	4
				1	1	1
				2	12	36
				12	18	21
				1	25	92
				19	39	69
				1	4	10
				4	20	21
				6	12	12
				1	2	2
				1	1	1
Crustacea (water fleas, ostracods and shrimps)	Branchiopoda	Cladocera	4	7	9	
		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	Podocopida	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).