

# Spider Fauna (Araneae) of the Low Arctic Belcher Islands, Hudson Bay

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**ABSTRACT.** Thirty-three species of spiders were found on the low arctic Belcher Islands (on Flaherty Island), N.W.T., Canada, in southeastern Hudson Bay (about 56°N, 79°W). Eight families were represented; 23 species belonged to Linyphiidae (s. lat.) and 4 to Lycosidae. The most abundant and frequently caught species, in the pitfall trap material, were the lycosids *Pardosa labradorensis* (Thorell), *Alopecosa hirtipes* (Kulczynski) and *Arctosa insignita* (Thorell). Other frequently trapped, eurytopic species included the linyphid *Conigerella borealis* (Jackson) and the gnaphosid *Gnaphosa orites* Chamberlin. A great number of species were found under stones. *Diplocephalus sphagnicolus* Eskov, known earlier from Siberia, is reported for the first time from the Nearctic region, and *Typhochrestus pygmaeus* (Soerensen), known from Greenland, is reported for the first time from North America. More than half of the found spider species are Holarctic.

**Key words:** spiders, Araneae, zoogeography, habitats, taxonomy, Belcher Islands, Hudson Bay, Canada, low arctic, tundra

**RÉSUMÉ.** On a trouvé 33 espèces d'araignées dans les îles Belcher du Bas-Arctique (sur l'île Flaherty), dans les Territoires du Nord-Ouest au Canada, dans le sud-est de la baie d'Hudson (à environ 56° de latitude N. et 79° de longitude O.). Huit familles étaient représentées; 23 espèces appartenaient à la famille des linyphiidés et 4 à celle des lycosidés. Les espèces les plus abondantes et celles dont on a capturé le plus de spécimens dans les pièges à fosse étaient les lycoses *Pardosa labradorensis* (Thorell), *Alopecosa hirtipes* (Kulczynski) et *Arctosa insignita* (Thorell). D'autres espèces euryèces capturées comprenaient la linyphie *Conigerella borealis* (Jackson) et la gnaphose *Gnaphosa orites* Chamberlin. On a trouvé un grand nombre d'espèces sous des pierres. On rapporte avoir trouvé pour la première fois dans la région néarctique un spécimen de *Diplocephalus sphagnicolus* Eskov, déjà répertorié en Sibérie, et aussi pour la première fois en Amérique du Nord, un spécimen de *Typhochrestus pygmaeus* (Soerensen), déjà répertorié au Groenland. Plus de la moitié des espèces d'araignées que l'on a trouvées sont holarctiques.

**Mots clés:** araignées, aranéides, zoogéographie, habitats, taxonomie, îles Belcher, baie d'Hudson, Canada, Bas-Arctique, toundra

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## INTRODUCTION

The high arctic spider fauna in Greenland and certain Canadian arctic islands has been studied rather thoroughly (e.g., Leech, 1966; Holm, 1967; Leech and Ryan, 1972; Danks, 1980), but little attention has been paid to spiders living on islands in the Canadian low Arctic (see Danks, 1981). Two notable exceptions are the papers by Jackson (1933) and Davis (1936) on Akpatok Island.

In the present paper, the spiders found on Flaherty Island, the Belcher Islands, southeastern Hudson Bay, are reported, their habitat preferences are briefly discussed, and the fauna is compared with that of certain other northern sites.

## METHODS

The Belcher Islands (Northwest Territories) are situated in southeastern Hudson Bay, almost 100 km off the coast of the Quebec-Labrador peninsula (Fig. 1). "The islands, which are composed of folded and deformed Precambrian sediments, are a maze of twisting inlets and bays" (Nettleship and Smith, 1975:239). The land area of the Belchers is about 2900 km<sup>2</sup>. Spiders were collected on Flaherty Island, the large central island of the Belcher Islands. All the study sites lie close to the shore, maximal distance 2-3 km, and at low altitude, less than 40 m.

There are no trees or higher bushes (only very low willow (*Salix* spp.) and *Shepherdia* shrubs) on the Belcher Islands. Thus the study sites are exposed and windy. The approximate mean daily temperature for the year is -5°C and the daily mean in July about +10°C (Environment Canada, 1984).

The first, brief collecting took place in the central part of Flaherty Island (56°10'N, 79°20'W), on 30 June 1981. The site was moss-lichen tundra, characterized by the vascular plants

*Salix calcicola*, *Rhododendron lapponicum*, *Saxifraga oppositifolia*, *Loiseleuria procumbens* and *Carex* species. Barren spots, caused by frost, were also common. Spiders were collected by hand on and in the moss-lichen layer and under stones.

The main collecting area was around the Sanikiluaq village, northern Flaherty Island (56°32'N, 79°14'W). Sampling methods included hand picking, especially under stones, sieving of moss and litter, and pitfall trapping.

The pitfall trapping periods were 1 July - 16 August 1985 and 11 June - 13 August 1990. Five traps were placed at each

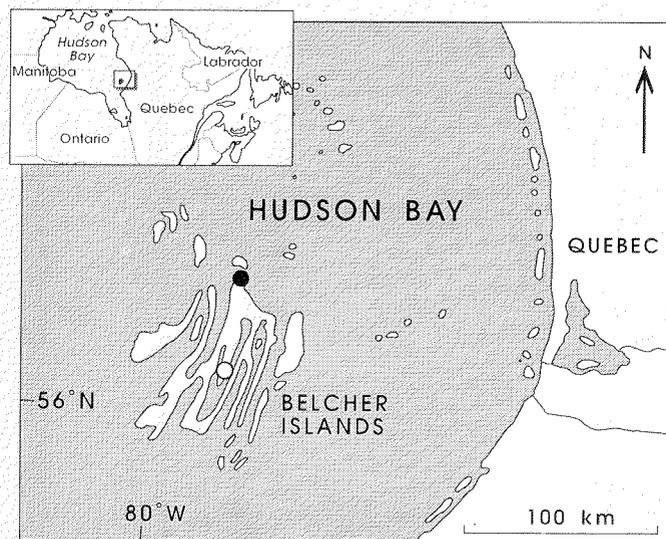


FIG. 1. Location of the Belcher Islands and the study areas on Flaherty Island. The main study site was at Sanikiluaq (filled circle) and the additional site (open circle) was in the central part of Flaherty Island.

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study site, 2-3 m from each other in a line. Pitfall traps were plastic cups (diameter 6.5 cm, height 7 cm), with ethylene glycol as a preservation liquid. They were provided with covers (12 × 12 cm) against rainfall and litter, and there was 2-3 cm space between the cover and the ground. The pitfall trapping sites (8 on dry, 3 on mesic and 4 on moist tundra) are described in Table 1.

The spider material from the years 1981, 1985 and 1990 included 89, 363 and 613 identifiable specimens respectively. The material is deposited in the Zoological Museum, University of Turku, Finland.

## RESULTS

Thirty-three species of spiders were found on the Belcher Islands, of which 23 belonged to the family Linyphiidae (s. lat.): 6 to the Linyphiinae and 17 to the Erigoninae. Four species of Lycosidae and one each of Gnaphosidae, Clubionidae, Dictynidae, Theridiidae, Thomisidae and Philodromidae were collected (Table 2).

The material collected by hand picking on moss-lichen tundra and shore in central Flaherty Island on 30 June 1981 included 16 species (Table 3). Two species clearly dominated: *Erigone arctica* (37 ind.) occurred mainly under stones, and *Pardosa labradorensis* (16 ind.) was running on the ground. Of this material, *Bathyphantes eumenis* was not found later at Sanikiluaq.

Spiders caught by pitfall traps at Sanikiluaq in 1985 and 1990 are shown in Table 4. Altogether 23 species were caught by pitfall traps, of which *Pardosa labradorensis*, *Alopecosa hirtipes*, *Arctosa insignita*, *Conigerella borealis* and *Gnaphosa orites* occurred in at least 8 of the total 15 trap sites. Also the following species were found at all types of trapping sites (dry, mesic and moist sites): *Meioneta levinseni*, *Thanatus rubicellus*, *Erigone whymperi*, *E. aletis* and *Hilaira leviceps*.

*Alopecosa hirtipes*, *Pardosa albomaculata*, *Walckenaeria holmi* and also *Gnaphosa orites* and *Conigerella borealis* preferred dry sites; *Arctosa insignita*, *Erigone* species, *Hilaira garrina* and *Satilatlas gertschi* preferred moister sites. The most abundant species of the trap material, *Pardosa labradorensis*, seemed to be eurytopic on the Belcher Islands. *Diplocephalus sphagnicolus*, known earlier only from Siberia, was found on moss at the dry rock site.

The faunal similarity, measured using Soerensen's quotient of similarity (e.g., Magurran, 1988) × 100, was 78.6 between mesic and moist sites, 71.0 between dry and mesic sites and 64.5 between dry and moist sites.

Using hand picking, *Collinsia holmgreni*, *Oreonetides vaginatus*, *Lepthyphantes complicatus*, *Hilaira leviceps* and *H. brunnea* were collected in high numbers under stones on hill slopes. *Thymoites oleatum* and *Lepthyphantes washingtoni* were found mainly in extensive stone beds. *Alopecosa hirtipes* (nest tubes common), *Gnaphosa orites*, *Clubiona norvegica*, *Arctosa insignita*, *Dictyna major*, *Islandiana princeps*, *Meioneta levinseni*, *M. nigripes*, *Latithorax obtusus*, *Conigerella borealis*, *Hilaira garrina*, *Pardosa labradorensis*, *P. albomaculata* and *Xysticus labradorensis* also occurred under stones. In addition, *Erigone* species were common under stones, especially on sea and lake shores. Of the *Erigone* species, *E. arctica* dominated on sea shores, and *E. whymperi* seemed to be eurytopic on the Belcher Islands. Some species found abundantly under stones, e.g., *Lepthyphantes complicatus*, *L. wash-*

*ingtoni*, *Oreonetides vaginatus*, *Latithorax obtusus* and *Thymoites oleatum*, were absent from the trap material.

By sieving the thick *Racomitrium* moss layer, *Conigerella borealis*, *Latithorax obtusus* and *Walckenaeria* species were commonly found. Other species found by sieving moss and litter

TABLE 1. Pitfall trapping sites at Sanikiluaq, in Flaherty Island, 1985 and 1990

Trapping sites, year sampled	Characteristic plant species, ranked according to abundance
<b>Dry sites</b>	
1. Tundra slope with large rocks (1985)	<i>Dryas integrifolia</i> , <i>Epilobium latifolium</i> , <i>Polygonum viviparum</i> , <i>Silene acaulis</i> , <i>Salix reticulata</i> , <i>Carex</i> spp., <i>Cetraria nivalis</i> , <i>Cladonia</i> spp.
2. Tundra heath (1985)	<i>Empetrum nigrum</i> , <i>Arctostaphylos rubra</i> , <i>Dryas integrifolia</i> , <i>Rhododendron lapponicum</i> , <i>Silene acaulis</i> , <i>Cetraria nivalis</i>
3. Gentle slope with creeping willows (1985)	<i>Salix calcicola</i> , <i>S. arctophila</i> , <i>S. reticulata</i> , <i>Carex</i> spp., <i>Vaccinium vitis-idaea</i> , <i>Polygonum viviparum</i> , <i>Silene acaulis</i>
4. Thick moss-carpet on rock (1985)	<i>Racomitrium lanuginosum</i> , <i>Rhododendron lapponicum</i> , <i>Dryas integrifolia</i>
5. Rock with sparse vegetation (1990)	<i>Racomitrium lanuginosum</i> , <i>Dryas integrifolia</i> , <i>Saxifraga aizoides</i> , <i>Silene acaulis</i> , <i>Rhododendron lapponicum</i> , <i>Cassiope tetragona</i> , <i>Carex</i> spp., <i>Cetraria nivalis</i>
6. Slope with creeping <i>Shepherdia</i> (1990)	<i>Shepherdia canadensis</i> , <i>Dryas integrifolia</i> , <i>Rhododendron lapponicum</i> , <i>Salix reticulata</i> , <i>Carex bigelowii</i> , <i>Cetraria nivalis</i>
7. Tundra heath with frost boils (1990)	<i>Racomitrium lanuginosum</i> , <i>Cetraria nivalis</i> , <i>Saxifraga oppositifolia</i> , <i>Empetrum nigrum</i> , <i>Cassiope tetragona</i> , <i>Dryas integrifolia</i>
8. Frost boils without vegetation (1990)	<i>Dryas integrifolia</i> , <i>Salix</i> spp. and <i>Cetraria nivalis</i> growing around; frost activity destroyed (lifted up) some of the traps
<b>Mesic sites</b>	
9. Snow patch hole (1985)	<i>Salix reticulata</i> , <i>S. herbacea</i> , <i>Vaccinium uliginosum</i> , <i>Pedicularis lapponicum</i> , <i>Bartsia alpina</i> , <i>Juncus</i> sp.; some of the traps were destroyed by people
10. Sedge meadow (1985)	<i>Carex</i> spp., <i>Juncus</i> spp., <i>Salix arctophila</i> , <i>S. reticulata</i> , <i>Vaccinium uliginosum</i>
11. Lichen slope (1990)	<i>Cetraria nivalis</i> , <i>Dryas integrifolia</i> , <i>Vaccinium uliginosum</i> , <i>Salix reticulata</i> , <i>Polygonum viviparum</i> , <i>Pyrola grandiflora</i> , <i>Carex</i> spp., <i>Stereocaulon</i> sp.
<b>Moist sites</b>	
12. Swampy meadow (1985)	<i>Eriophorum angustifolium</i> , <i>Trichophorum</i> sp., <i>Salix arctophila</i> , <i>Pinguicula vulgaris</i> , <i>Carex</i> spp.
13. Sea shore meadow with stones (1985)	<i>Salix reticulata</i> , <i>S. calcicola</i> , <i>S. arctophila</i> , <i>Carex</i> spp., <i>Juncus</i> spp., <i>Dryas integrifolia</i>
14. Swampy lake shore meadow (1990)	<i>Eriophorum</i> spp., <i>Carex</i> spp., <i>Bartsia alpina</i> , <i>Polygonum viviparum</i> on meadow; <i>Empetrum nigrum</i> , <i>Salix calcicola</i> , <i>S. reticulata</i> , <i>Cladonia</i> sp., <i>Cetraria</i> sp. on hummocks
15. Stony lake shore meadow (1990)	<i>Carex</i> spp., <i>Eriophorum angustifolium</i> , <i>Cassiope tetragona</i> , <i>Rhododendron lapponicum</i> , <i>Epilobium latifolium</i> , <i>Cetraria nivalis</i> , <i>Racomitrium lanuginosum</i>

included *Horcotes quadricristatus* and juveniles of *Dictyna* and of Lycosidae.

## DISCUSSION

## Taxonomy

The identity of the following spiders collected is not clear. *Thanatus rubicellus* Mello-Leitao and *T. arcticus* Thorell seem to be impossible to distinguish with certainty, and Dondale and Redner (1978) regarded interbreeding as possible. One of the distinguishing features has been their range — *T. rubicellus* in temperate and *T. arcticus* in arctic areas (Dondale *et al.*, 1964; Dondale and Redner, 1978). The present study area is situated just at the southern border of the arctic zone. The species is here classified as *T. rubicellus*, based mainly on the colour pattern and the form of the spermathecae, although the spinulation of the palp is more like *T. arcticus* (cf. Dondale *et al.*, 1964; Holm, 1967; Dondale and Redner, 1978). This pair of species needs more thorough investigation.

Wozny and Czajka (1985) considered *Bathyphantes eumenis* (L. Koch) a senior synonym of *B. eumenoides* Holm. The females found on the Belcher Islands fit well with the descrip-

TABLE 2. Spiders found on the Belcher Islands (1981-90)

Dictynidae
<i>Dictyna major</i> Menge, 1869
Gnaphosidae
<i>Gnaphosa orites</i> Chamberlin, 1922
Clubionidae
<i>Clubiona norvegica</i> Strand, 1900
Philodromidae
<i>Thanatus rubicellus</i> Mello-Leitao, 1929*
Thomisidae
<i>Xysticus labradorensis</i> Keyserling, 1887
Lycosidae
<i>Alopecosa hirtipes</i> (Kulczynski, 1907)
<i>Arctosa insignita</i> (Thorell, 1872)
<i>Pardosa albomaculata</i> Emerton, 1885
<i>P. labradorensis</i> (Thorell, 1875)
Theridiidae
<i>Thymoites oleatum</i> (L. Koch, 1879)
Linyphiidae: Linyphiinae
<i>Bathyphantes eumenis</i> (L. Koch, 1879)*
<i>Lepthyphantes complicatus</i> (Emerton, 1882)
<i>L. washingtoni</i> Zorsch, 1937
<i>Meioneta levinseni</i> (Soerensen, 1898)*
<i>M. nigripes</i> (Simon, 1884)
<i>Oreonetides vaginatus</i> (Thorell, 1872)
Linyphiidae: Erigoninae
<i>Collinsia holmgreni</i> (Thorell, 1871)
<i>Conigerella borealis</i> (Jackson, 1930)
<i>Diplocephalus sphagnicolus</i> Eskov, 1988
<i>Erigone aletis</i> Crosby & Bishop, 1928
<i>E. arctica</i> (White, 1852)
<i>E. whymperi</i> O. Pickard-Cambridge, 1877
<i>Hilaira brunnea</i> (Emerton, 1882)
<i>H. garrina</i> Chamberlin, 1948 <sup>8</sup>
<i>H. leviceps</i> (L. Koch, 1879)*
<i>Horcotes quadricristatus</i> (Emerton, 1882)
<i>Islandiana princeps</i> Braendegaard, 1932
<i>Latithorax obtusus</i> (Emerton, 1915)
<i>Rhaebothorax paetulus</i> (O. Pickard-Cambridge, 1875)
<i>Satilatlas gertschi</i> Millidge, 1981*
<i>Typhochrestus pygmaeus</i> (Soerensen, 1898)
<i>Walckenaeria clavicornis</i> (Emerton, 1882)*
<i>W. holmi</i> Millidge, 1983

\*For identity of the species marked with an asterisk (\*), see taxonomic discussion.

TABLE 3. Spiders collected by hand picking in central Flaherty Island, 30 June 1981

Species	Individuals
<i>Erigone arctica</i>	37
<i>Pardosa labradorensis</i>	16
<i>Clubiona norvegica</i>	5
<i>Islandiana princeps</i>	5
<i>Meioneta levinseni</i>	4
<i>Arctosa insignita</i>	3
<i>Oreonetides vaginatus</i>	3
<i>Erigone whymperi</i>	3
<i>Hilaira garrina</i>	3
<i>H. leviceps</i>	3
<i>Bathyphantes eumenis</i>	2
<i>Dictyna major</i>	1
<i>Gnaphosa orites</i>	1
<i>Thanatus rubicellus</i>	1
<i>Alopecosa hirtipes</i>	1
<i>Walckenaeria holmi</i>	1
Total	16 species
	89

tion of *B. eumenoides* by Holm (1967) but are listed here under *B. eumenis*. Females of the *B. eumenoides*-type (the male is unknown), with dorsal abdominal pattern, have been frequently collected by the author in northern Quebec.

The species of the *Meioneta rurestris* group is here regarded as *M. levinseni* (Soerensen). The North American species of *Meioneta* need revision, and the identity of the present *M. levinseni* is open to discussion; see opinions of Holm (1967), Wunderlich (1973) and Thaler (1975). The species has been frequently collected by the author in northern Quebec.

The genus *Hilaira* includes several species often confused (Holm, 1960; Eskov, 1981b). The present material comprises three species of the *H. frigida* group: *H. brunnea* (Emerton), *H. garrina* Chamberlin and *H. leviceps* (L. Koch). Some authors have considered *H. brunnea* as a synonym of *H. leviceps* (cf. Danks, 1981). Both *H. brunnea* and *H. garrina* have been treated as subspecific taxa within *H. frigida* (Thorell) and *H. tatica* Kulczynski respectively by several authors (see, e.g., Holm, 1960; Eskov, 1981a,b). *H. leviceps* seems to be the most eurytopic of the present *Hilaira* species on the Belchers.

Millidge (1981) described *Satilatlas gertschi* from central Alberta, Canada. The collected material is similar but not identical with Millidge's (1981) figures; there are differences in the radical part of the embolic division and in the embolic coil. The species has been found by the author at many localities in northern Quebec.

*Walckenaeria karpinskii* (O.P.-Cambridge), *W. clavicornis* (Emerton) and *W. holmi* Millidge have often been confused (cf. Holm, 1967; Millidge, 1983). It is possible that Millidge's (1983) opinion of the group will not be the final one, but it has been followed here. Both *W. holmi* and *W. clavicornis* seem to occur on the Belchers; males and females of both species were found. *W. holmi* and *W. clavicornis* were even caught together by a five-trap series in tundra heath.

## Biogeography

Jackson (1933) reported 19 spider species from Akpatok Island, Ungava Bay (about 60°20'N). About 70% of these species are in common with the present material; however, there are some taxonomic difficulties in making comparisons (see Holm, 1967; Kronstedt, 1981; Danks, 1981). Based on

TABLE 4. Pitfall trap material (individual numbers) from Sanikiluaq, 1985 and 1990

	Dry sites								Mesic sites			Moist sites				Total	Frequency
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
<i>Pardosa labradorensis</i>	5	20	2	3	14	8	29	7	—	12	27	10	4	50	72	263	14
<i>Alopecosa hirtipes</i>	16	13	3	13	8	54	17	1	—	—	16	—	—	—	3	144	10
<i>Arctosa insignita</i>	1	—	2	—	—	1	—	—	7	—	9	3	1	28	1	53	9
<i>Meioneta levinseii</i>	—	—	1	—	4	8	—	3	—	—	7	—	—	15	—	38	6
<i>Thanatus rubicellus</i>	4	—	—	—	—	2	—	—	—	—	7	—	—	9	—	22	4
<i>Gnaphosa orites</i>	6	1	—	2	1	3	3	—	—	—	2	—	—	—	3	21	8
<i>Erigone whymeri</i>	—	—	—	1	—	—	1	—	1	3	3	2	10	—	—	21	7
<i>Conigerella borealis</i>	—	1	1	1	4	4	1	—	—	—	2	—	—	1	2	17	9
<i>Satilatlas gertschi</i>	—	—	—	—	—	—	—	—	2	—	7	3	—	2	2	16	5
<i>Erigone alettris</i>	—	—	—	—	3	—	—	—	—	—	5	—	5	—	3	16	4
<i>Hilaira leviceps</i>	—	—	—	—	1	4	3	—	—	—	4	—	—	—	1	13	5
<i>Pardosa albomaculata</i>	—	—	—	1	—	5	4	1	—	—	—	—	—	—	—	11	4
<i>Hilaira garrina</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	1	8	9	2
<i>Walckenaeria holmi</i>	—	1	—	—	2	1	—	2	—	—	—	—	—	—	—	6	4
<i>Collinsia holmgreni</i>	—	—	—	—	—	—	—	—	5	—	—	—	—	—	—	5	1
<i>Erigone arctica</i>	—	—	—	—	—	—	—	—	—	—	—	—	5	—	—	5	1
<i>Typhochrestus pygmaeus</i>	—	—	—	—	—	1	—	—	—	—	3	—	—	—	—	4	2
<i>Walckenaeria clavicornis</i>	—	2	—	—	—	—	1	—	—	—	—	—	—	—	—	3	2
<i>Diplocephalus sphagnicolus</i>	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2	1
<i>Hilaira brunnea</i>	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2	1
<i>Clubiona norvegica</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1
<i>Islandiana princeps</i>	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	1
<i>Rhaebothorax paetulus</i>	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1	1
Number of species	23	5	6	5	7	10	11	8	5	5	2	12	4	5	7	10	674
Number of species at dry/mesic/moist sites									17			14				14	

the same material of Jackson, Davis (1936) presented spider communities of some main habitats on Akpatok Island. The resemblance to the Belcher Islands material is remarkable. Although more arctic species occurred on Akpatok Island than on the Belchers, it is not possible to agree with Davis's (1936) general conclusion that the fauna of Akpatok Island is of high arctic type.

A small collection from Pangnirtung Fiord, Baffin Island (66°21'N), reported by Hillyard (1979), included eight species, of which three are in common with the Belcher material, i.e., *Alopecosa hirtipes*, *Meioneta nigripes* and *Erigone arctica*.

The spider fauna found farther north in the Canadian high arctic archipelago differs markedly from the Belcher Island one. This material from Devon Island (75°45'N) and Bathurst Island (75°43'N) included no species in common with the Belcher material (Leech and Ryan, 1972 and pers. comm. 1975; Danks, 1980). The above studies included only eight and four species respectively. Leech (1966) found as many as 13 species at Hazen Camp, Ellesmere Island (81°49'N); the only species in common with the present material is *Walckenaeria clavicornis*.

The majority of the present species (19/33) has been reported from Greenland, the northeastern part of the Nearctic region. The Davis Strait and the Labrador Sea, separating Greenland and North America, seem to be a distribution barrier for many species. The following species are not hitherto known from Greenland: *Pardosa labradorensis*, *Alopecosa hirtipes*, *Gnaphosa orites*, *Clubiona norvegica*, *Thanatus rubicellus* (see taxonomical discussion), *Xysticus labradorensis*, *Lepthyphantes washingtoni*, *Diplocephalus sphagnicolus*, *Erigone alettris*, *Horcotes quadricristatus*, *Satilatlas gertschi* and all the present *Hilaira* species (for the status of *H. brunnea*, see

taxonomical discussion) (Holm, 1967; Hillyard, 1979; Koponen, 1981).

Of the 33 species found, only *Diplocephalus sphagnicolus* has not been reported previously from the Nearctic region. The species has a wide range in Siberia, including northern coastal areas of the Okhotsk Sea; the habitats in Siberia include bogs, boggy forests and tundra heaths (Eskov, 1988). *Typhochrestus pygmaeus* has not been recorded from North America, but it is known from Greenland (Holm, 1967), and in the Canadian National Collections (Agriculture Canada, Ottawa) there are specimens from the James Bay area, Quebec. Both *Hilaira garrina* and *H. leviceps* have been known up to now from the westernmost parts of North America only, e.g., from Alaska (Holm, 1960; Eskov, 1981b).

Morisset *et al.* (1983) compared the flora of the Belcher Islands with other subarctic and arctic sites along the northern Quebec-Labrador peninsula. The ratio of arctic species to boreal species of vascular plants was 5.37 at Coats Island in northern Hudson Bay, 4.68 at Akpatok Island in Ungava Bay, 1.57 at Belcher Islands and 0.83 at the Manitousuk Islands on the Quebec coast opposite to the Belchers (Morisset *et al.*, 1983). The spider fauna of the Belchers seems to be similarly intermediate between that of arctic and subarctic areas. The only species with a range extending to the high arctic area are *Meioneta nigripes*, *Collinsia holmgreni*, *Erigone whymeri*, *Typhochrestus pygmaeus* and *Walckenaeria clavicornis* (Holm, 1967; Danks, 1981).

The proportion of Holarctic species is high, 58%, compared to that of Nearctic ones, 42% (the unclear status of certain species must be borne in mind; see taxonomic discussion). For comparison, 47% of the species found on bogs of the subarctic and arctic zone of Quebec were Holarctic (Koponen, in press).

Two families clearly dominated with respect to the numbers of species and individuals: Linyphiidae (s. lat.), 70% of species, and Lycosidae, 12%. In the high Arctic, the proportion of Linyphiidae, especially of the subfamily Erigoninae, is usually even higher. The percentage of Erigoninae of all species was 75% on Bathurst Island (Danks, 1980), 78% on Devon Island (Leech and Ryan, 1972 and pers. comm. 1975) and 62% at Hazen Camp, Ellesmere Island (Leech, 1966). The proportion of Erigoninae at the Belchers was 52%.

An interesting phenomenon was the great number of species found under stones. This seems to be typical of arctic areas, where most species of spiders can be collected simply by hand picking under stones (cf. Koponen, 1980, 1981).

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