

A Collection of Spiders From North-East Greenland

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INTRODUCTION AND STUDY AREA

During the arctic summer of 1970 members of the Dundee University Scoresbyland Expedition collected spiders and insects from a wide variety of localities in north-east Greenland (Cotton, 1978). In particular an area of coastal dunes was chosen for a more intensive study involving pitfall trap collections and microclimate recording. The study area was at Noret, an inlet on the southern shores of King Oscars Fjord, near Mestersvig (72°15'N. 23°55'W.). Sand at the head of Noret, to the south and north of the dune system, has blown and accumulated against a series of rock outcrops. The younger dunes consist of 'hummocks' or 'coffins' similar to those described by Hartz and Kruuse (1911). When Noret was first visited on 7 July there was still snow in drifts in shaded positions. The snow had apparently melted over the main area about three weeks earlier. It is likely that the study area covered the main period of spider activity during the short arctic summer.

Collections were made from 7 July until 18 August. Samples were taken by a grid of 80 pitfall traps, white plastic cartons, each containing phenyl mercury acetate. Traps were in five parallel lines running N from Noret towards Nyhavn. The distance between lines was 10 m and traps in each line were 5 m apart. Each trap line thus represented approximately 100 m through various stages of dune succession. Trap results are reported according to vegetation types rather than topographic position. Within the grid five vegetation types were recognised. Plants were identified using Böcher, Holman and Jackobsen (1968).

- Type 1. Wet sand flats, south-facing (Noret) with granular lichen (*Stereocaulon alpinum*), arctic willow (*Salix arctica*), saxifrage (*Saxifraga oppositifolia*) and moss campion (*Silene acaulis*).
- Type 2. Dune hummocks, lying in N-S direction; dryer and colonised by arctic willow and avens (*Dryas octopetala*). Additional stabilisation of the dunes is provided by the shrub-like black bearberry (*Arctous alpina*) and there is in addition a variety of lichens, mosses and flowering plants.
- Type 3. Dune slopes, unstable, with bare rock outcrops and richest in variety of plant species ('casuals'), although no species dominate.
- Type 4. Rock plateau, with open sandy areas between bare rock crags. Sand stabilisation by lichens together with some avens and bearberry. In addition a grey sedge (*Carex nardina*) and a grass species (*Poa pratensis*) are important in binding sand.

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- Type 5. Dry sand flats, north facing (Nyhavn), resemble the first type in topography and vegetation but are much drier since they are away from the influence of Noret.
- Type 6. Once away from the effects of moving sand the area develops into a flat landscape resembling typical arctic tundra richly vegetated with arctic willow and other species but established upon a soil of almost pure sand. An area of this dune tundra, to the west of the main study area, was sampled with an additional 20 traps.

RESULTS

Eleven spider species were collected from the Mestersvig district (Table 1) of which eight were trapped on the dune sands of Noret (Table 2). *Pardosa glacialis* Thor. was encountered most often in the general collection and was

TABLE 1. Species of spiders collected by the Dundee University Scores by land Expedition

- Pardosa groenlandica* (Thor) — tundra.
P. glacialis (Thor) — tundra; dunes.
Dictyna borealis OPC — tundra; dunes.
Hilaira curvitaris Soern. — tundra; old nests.
Cornicularia clavicornis Emerton — tundra.
Collinsia holmgreni (Thor) — tundra; dunes.
Collinsia thulensis Jacks. — dunes.
Xysticus labradoreasis Keys. — dunes.
Erigone sibirica orientalis Braend. — dunes.
E. psychrophila Thor. — dunes.
E. tirolensis L. K. — dunes.

also common on the dunes. However, species trapped commonly on the dunes, notably *Erigone sibirica orientalis* Braen., *Collinsia holmgreni* Thor., *C. thulensis* Jacks. and *Dictyna borealis* OPC were seldom found elsewhere. Although traps were emptied each week during July and August few spiders were found towards the end of the study period. All species occurred in larger numbers in the first week and were either seldom trapped again or were taken in gradually decreasing numbers. Only *E. s. orientalis* continued in reasonable numbers until mid-August when both sexes were seen to occur. Very few immature spiders of any species were found on the sand dunes. The sex ratio varied according to the species (Table 2). Of the species trapped in large enough numbers to warrant calculation, three had a preponderance of males and three of females.

The traps were set and collections analysed according to dune topography and type of vegetation (Table 3). Spiders were more common in habitat T6, an area of dry dune tundra adjacent to the more exposed dune habitats. *C. holmgreni* occurred only in this habitat, and *C. thulensis*, *Erigone psychrophila*

TABLE 2. Species of spider collected from pitfall traps on the Noret dunes.

		DATE OF COLLECTION						SEX RATIO (% males)
		15.VII	23.VII	28.VII	4.VIII	11.VIII	18.VIII	
<i>P. glacialis</i>	♂	11	5	-	-	-	-	73%
	♀	2	1	1	1	-	1	
	im	1	-	-	-	-	2	
<i>D. borealis</i>	♂	11	6	2	-	2	-	68%
	♀	7	-	1	-	1	1	
	im	1	1	4	-	-	1	
<i>E. s. orientalis</i>	♂	43	38	32	9	7	2	34%
	♀	143	61	22	9	10	5	
	im	4	1	-	-	-	-	
<i>C. thulensis</i>	♂	29	9	4	1	3	-	65%
	♀	12	9	3	-	1	-	
	im	-	-	-	-	-	-	
<i>X. labradorensis</i>	♂	-	-	1	-	-	-	-
	♀	-	1	1	-	1	-	
	im	-	-	-	-	-	-	
<i>E. tirolensis</i>	♂	-	-	1	-	-	-	-
	♀	-	-	-	-	-	-	
	im	-	-	-	-	-	-	
<i>E. psychrophila</i>	♂	6	1	-	-	-	-	30%
	♀	10	4	-	-	2	-	
	im	-	-	-	-	-	-	
<i>C. holmgreni</i>	♂	12	2	-	-	-	-	10%
	♀	83	35	-	6	3	2	
	im	-	-	-	-	-	-	

Thor. and *E. s. orientalis* were trapped there in higher numbers, although they were found in the more mobile dunes. Only two species, *P. glacialis* and *D. borealis*, seldom occurred in the dune tundra. The former species was found principally in the dune hummocks and on the mobile sand slopes, while the latter appeared equally throughout the area. Only *E. s. orientalis* occurred commonly on the wet sand flats adjacent to Noret (T1).

TABLE 3. Distribution of spiders in relation to vegetation types* in the Noret sand dunes.

		Vegetation types					
		T1	T2	T3	T4	T5	T6
<i>P. glacialis</i>	♂	0	8	5	1	1	1
	♀	0	4	2	0	0	0
<i>D. borealis</i>	♂	1	7	3	3	3	4
	♀	0	2	2	5	1	0
<i>E.s. orientalis</i>	♂	12	6	1	0	8	104
	♀	13	7	0	0	14	216
<i>C. thulensis</i>	♂	1	1	1	0	3	40
	♀	2	0	3	1	1	18
<i>E. psychrophila</i>	♂	0	0	0	0	0	7
	♀	1	1	0	0	2	12
<i>C. holmgreni</i>	♂	0	0	0	0	0	14
	♀	0	0	0	0	0	129

*See text for details of vegetation

DISCUSSION

The major surveys of Greenland spiders are those of Braendegard (1946) and Holm (1967). The present study follows the terminology of Braendegard. Sixty four species are listed for Greenland by Holm, 38 sp. from E. Greenland and 57 from W. Greenland. Of the eleven species recorded in 1970, eight were listed from the same region of latitude (70°-72°N) by Braendegard. The other three include two species mentioned by Holm as occurring in that region of latitude. The collection is therefore typical of that geographic region and includes holarctic, nearctic and palaeartic elements. *Collinsia holmgreni*, *Conicularia clavicornis* and *Erigone tirolensis* also occur in Scotland, and in a wide range of other countries (Holm, 1967).

Of the species most associated with the sand dunes, *E. s. orientalis* was not listed by Holm and only briefly mentioned by Braendegard, who records it from 70°-76°N. in E. Greenland. The same is true for *Collinsia thulensis*. *Collinsia holmgreni* in E. Greenland is associated with only humid areas (Braendegard, 1946) and in N. Europe is typical of snow beds. On the dunes it was only found in region T6. The other dune species, *P. glacialis*, is characteristically found in heaths and bogs and *D. borealis* is common in arid areas in E. and N. Greenland, in *Dryas*, *Cassiope* and *Carex* vegetation (Holm, 1967). Both spiders occurred through the dune profile but were most abundant in the dense hummocks. *Erigone psychrophila* was not found by Holm and only occasionally found under stones by Braendegard. It has a pronounced arctic distribution.

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