Spiders (Araneae) from the islands of Hitra, Frøya and the Froan archipelago in Sør-Trøndelag, Central Norway

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Abstract: The paper reports on spiders captured in various heathland, bog and forest habitats during an expedition to the islands of Hitra and Frøya and the Froan archipelago in coastal parts of Central Norway by the Museum of Natural History and Archaeology. A total of 81 species from 17 families were found, based on material from both pitfall traps and manual collecting. No less than 14 species have never before been found in Trøndelag and two new families are also recorded (Liocranidae and Mimetidae). The species associations of the remote archipelago of Froan show large similarities to the fauna of the larger islands and the mainland and an island effect is not clearly seen. Typical forest species are established on the only forested island of the Froan archipelago, the majority of which were not found in other sites. The spider fauna of the bogs, heaths and forests are largely similar in composition to that reported from coastal islands in western parts of Hordaland.

Key words: Spiders, islands of Hitra, Frøya and Froan, faunistics, island effect

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INTRODUCTION

Central Norway is one of the least studied regions in our country with respect to spiders, in particular the north-western parts. This paper reports on the spiders collected during an expedition undertaken by the Museum of Natural History and Archaeology in spring 2000 to the archipelago of Froan and the islands of Hitra and Frøya. No systematic collection of spiders has been carried out on these islands before, although a few species have previously been reported in some older publications: *Pardosa nigriceps* (Thorell, 1856), *P. pullata* (Clerck, 1757), *P. palustris* (Linnaeus, 1758), *Metellina merianae* (Scopoli, 1763), *Tegenaria domestica* (Clerck, 1757), *Steatoda bipunctata* (Linnaeus, 1758) and *Megalepthyphantes nebulosus* (Sundevall, 1830) from Froan (Collett, 1876, 1877, Tambs-Lyche 1940, Strand 1904a, b) and *Araneus diadematus* (Clerck, 1757) from Frøya (Tambs-Lyche 1942).

METHODS

The main purpose of the expedition was to survey the terrestrial and freshwater invertebrate fauna of these islands and methods were used which maximized the number of species and specimens captured within the time frame and resources available. These methods included manual collecting (sweep-netting and hand picking) and pitfall trapping. The first category of methods was employed in all sites visited whereas pitfall trapping was conducted on selected islands in the Froan archipelago and on Hitra. No standardization of the manual method was attempted. Magne Werkland also manually collected a small sample of spiders on Sørburøya (Froan) in May/June.

The pitfall traps were active from 26. April (Froan) and 28. April (Hitra) and were collected on 29. and 30. June, respectively. A varying number of pitfall traps were used, details are provided in Table 1. The traps consisted of glass jars (approximately 30 ccl) filled roughly 1/3rd with a 50 % solution of triglycerol to which was added a small amount of 4 % formaldehyde and a detergent. A metal roof protected the traps from overflowing.

Nomenclature follows Platnick (2000) except for the linyphiids where Tanasevitch (2000) is followed. Unless otherwise stated all specimens were collected by the author. Only adults have been determined, except where inclusion of juveniles yields some kind of additional information (e.g. families not represented by adults).

STUDY AREA

The locations of Hitra and Frøya and the archipelago of Froan are shown in Figure 1. Data on climate and vegetation on Froan can be found in Nordhagen (1917).

Four of the larger islands of Froan were visited, including Kunna, Nordøya, Sørburøya and Sauøya, as well as a small islet called Skjellholmen (Figure 2). With the exception of Nordøya pitfall traps were employed on all of these islands. No pitfall traps were used on Frøya, only limited hand collecting was carried out there, on Auka, by Meljorsvann and by Hellevika. On Hitra most collecting took place on the extensive bog area of Havmyran, on a site to the north of Skumfossøra. Additional collecting were done in a pine forest by Gryta (pitfall traps and manual collecting) and Sagvasselva (manual collecting). The characteristics of the pitfall trapping sites are shown in Table 1.

Figure 1. Location of study areas, 1 – Archipelago of Froan. 2 – Frøya. 3. Hitra. Black dots represent approximate location of sampling sites.

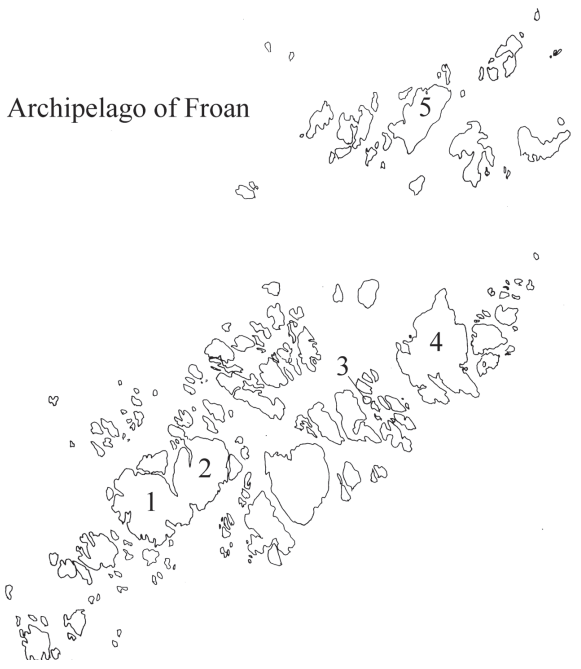

Figure 2. Archipelago of Froan with islands visited. 1 – Sørburøya. 2 – Nordøya. 3 – Skjellholmen. 4 – Sauøya. 5 – Kunna.

RESULTS

The catches from the pitfall traps and manual sampling are shown in Table 2. Altogether 686 specimens were captured in the pitfall traps, belonging to 69 species from 11 families. A total of 12 additional species from 5 families not represented in the pitfall material were collected by manual means (see Table 3). Altogether 42 species have been recorded from Froan, 5 from Frøya and 66 species from Hitra in this study. The total number of species recorded from all islands is currently 83 from 17 families, including the two species mentioned in the introduction, which were not found during the present study.

DISCUSSION

The species reported here are for the most part common and widespread species. However, a comparatively large number of species have never before been recorded from Trøndelag (Aakra unpub. data): *Agroeca brunnea, Agyneta ramosa, Callilepis nocturna, Diplocephalus permixtus, Drassodes cupreus, Ero furcata, Euryopis flavomaculata, Gongylidiellum vivum, Heliophanus cupreus, Maro minutus, M. sublestus, Metopobactrus prominulus, Neon reticulatus, Pseudoeouphrys erratica, Scotina* sp., *Sintula corniger*, and *Zelotes latreillei*. With the exception of *M. sublestus*, *S. corniger* and *Z. latreillei,* these are the northernmost records from Norway. Three species are also representatives of two families not previously reported from Trøndelag, namely Liocranidae (*A. brunnea, Scotina* sp.) and Mimetidae (*E. furcata*). The large number of species new to the region is an indication of the paucity of previous arachnological studies in Trøndelag.

The relatively short duration of the pitfall trapping, the varying number of traps active in each site and the lack of other quantitative methods prevent any detailed analysis of the spider fauna from the habitats studied, but some general comments may be given.

The spider fauna of Froan must be characterised as rich given the remoteness, small size and relatively few available types of habitats of these islands. A wide range of species from various ecological guilds is present, and the spider fauna of the archipelago bears a strong resemblance to that found on the nearby large islands (Hitra and Frøya – this study) and the adjacent mainland (Aakra unpub. data). A certain island effect is probably present though this is presumably most noticeable on the smaller islands (also see Hauge *et al*.1991).

Table 1. Localities and habitat description.

Island	Locality (code)	Approx. position	No. of pitfall traps	Habitat decription
Archipelago of Froan	Kunna 1 (K1)	64° 0248 N 9° 10 10 E	2	*Calluna*-heath dominated by *Empetrum nigrum* and lichens. Rather dry site.
	Kunna 2 (K2)	64° 02 48 N 9° 10 10 E	1	*Sphagnum*-bog. Very wet site.
	Kunna 3 (K3)	64° 02 48 N 9° 10 10 N	1	*Sphagnum*-bog in a canyon. Low-grown bushes were present, otherwise very similar to K2. More shaded from wind exposure than locality one.
	Skjellholmen (SH)	64° 00 12 N 9° 09 24.E	2	A planted forest of *Pinus*, about 60-70 years old (M. Werkland pers. comm.). A lot of dead standing trees were present. The traps were placed inside the forest on ground that was dominated by pine needles and low-grown herbaceous vegetation and grasses.
	Sauøya 1 (SØ1)	64° 00.20 N 9° 10 40 E	2	*Sphagnum*-bog reminiscent of K1 and K3. Traps placed along the edge of the bog in the moss.
	Sauøya 2 (SØ2)	64° 00 20 N 9° 10 40 E	6	A small canyon with planted spruce forest and *Vaccinium*-tussocks and *Sphagnum*-covered areas. Traps placed in both wet and dry habitats.
	Sørburøya 1 (SB1)	63° 58 45 N 9° 04 25 E	2	A small bog dominated by *Sphagnum* and tall grasses. Traps placed in the moss.
	Sørburøya 2 (SB2)	63° 58 45 N 9° 04. 25 E	1	The "border-canyon" between Sørburøya and Nordøya. Trap placed among the grasses on the southern side.
Hitra	Hitra Havmyran 1 (HB1)	63° 30 57 N 8° 34 47 E	3	A bog close to the creek, dominated by grasses and *Spahgnum*. Traps placed in *Sphagnum*.
	Hitra Havmyran 2 (HB 2)	63° 30 57 N 8° 34 47 E	3	Traps placed in *Sphagnum* not far from HB1 close to a pond. Contrary to the preceding site grasses were absent here.
	Hitra Havmyran 3 (HB 3)	63° 30 57 N 8° 34 47 E	3	The same bog as HB1 and HB 3, only the traps were placed in the middle of the bog, far away from any standing water. *Calluna* and herbaceous vegetation was present. Traps placed in *Sphagnum* on the higher tussocks.
The next three sites are part of a transect across a small gorge close to HB3.				
	Hitra Transect 1 (HT 1)	63° 30 57 N 8° 34 47 E	1	A slope dominated by *Calluna*.
	Hitra Transect 2 (HT 2)	63° 30 57 N 8° 34 47 E	1	A small boggy area, the trap was placed on a comparatively dry tussock in the middle of the gorge.
	Hitra Transect 3 (HT 3)	63° 30 57 N 8° 34 47 E	1	A site somewhat similar to HT 1, although at lower elevation and somewhat more sparsely vegetated.
	Hitra Ridgetop (HR)	63° 30 57 N 8° 34 47 E	1	A dry wind-exposed ridge top with only a sparse vegetation cover. Rocks and lichens dominate the ground.
	Hitra Billberry pine forest by Gryta (HPF)	63° 32 25 N 8° 32 44 E	5	The traps were placed among mosses in the *Vaccinium*-dominated tussocks. A fairly open forest with old trees.

Table 2. Species list, Hitra, Frøya and the Froan archipelago. Numbers refer to males/females, respectively. MC = manually collected species, for other locality codes see table 1. Bold = species new to Trøndelag.

	K1	K2	K3	SH	SØ1	SØ2	SB1	SB2	HB1	HB2	HB3	HT1	HT2	HT3	HR	HPF	MC
AGELENIDAE																	
Tegenaria domestica (Clerck, 1757)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0/1+1 juv
ARANEIDAE																	
Araneus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Juveniles
Larinioides cornutus (Clerck, 1757)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1subad./5
L. patagiatus (Clerck 1757)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0/5+1 subad.
CLUBIONIDAE																	
Clubiona trivialis L. Koch, 1843	0/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0/1
GNAPHOSIDAE																	
***Callilepis nocturna* (Linnaeus, 1758)**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1/0**	**-**	**-**	**-**	**1 subad. m**
***Drassodes cupreus* (Blackwall, 1834)**	**5/0**	**-**	**-**	**-**	**-**	**0/1**	**1/0**	**-**	**9/3**	**2/2**	**0/1**	**-**	**-**	**-**	**1/2**	**-**	**-**
Gnaphosa leporina (L. Koch, 1866)	-	-	-	-	-	-	-	-	-	-	1/0	-	-	-	-	-	-
Haplodrassus signifer (C. L. Koch, 1839)	-	0/1	-	-	1/0	1/2	2/0	-	0/1	-	1/0	-	-	-	-	-	-
Micaria pulicaria (Sundevall, 1822)	-	-	-	-	-	-	-	-	-	-	-	-	1/0	-	-	-	-
***Zelotes latreillei* (Simon, 1878)**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1/0**	**2/0**	**-**	**1/1**	**-**	**-**	**-**	**-**
Zelotes subterraneus (C. L. Koch, 1833)	-	-	-	-	-	6/3	-	-	-	-	-	-	-	-	-	1/0	-
HAHNIIDAE																	
Antistea elegans (Blackwall, 1841)	-	-	-	-	-	-	-	-	-	0/1	-	-	-	-	-	-	-
Cryphoeca silvicola (C. L. Koch, 1836)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1/2	-	-
LINYPHIIDAE																	
Agyneta cauta (O. P.-Cambridge, 1902)	-	-	-	1/0	-	22/3	1/1	-	-	-	-	-	2/0	13/2	-	3/3	-
A. conigera (O. P.-Cambridge, 1863)	1/0	-	-	-	-	-	-	-	-	2/1	-	-	-	-	-	-	-
A. decora (O. P.-Cambridge, 1870)	-	-	-	-	-	-	-	-	-	3/0	-	-	-	-	-	-	-
***A. ramosa* Jackson, 1912.**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2/0**	**-**	**-**	**-**
Araeoncus crassiceps (Westring, 1861)	-	2/0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asthenargus paganus (Simon, 1884)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1/0	-
Bathyphantes gracilis (Blackwall, 1841)	-	-	-	-	0/1	4/0	5/9	-	10/7	0/3	-	-	-	-	-	-	0/1
B. setiger F.O. P-Cambridge, 1894	-	-	-	-	-	-	-	-	-	0/1	-	-	-	-	-	-	-
Bolyphantes alticeps (Sundevall, 1833)	-	-	-	-	-	-	-	-	-	0/1	-	-	-	-	-	-	-
Centromerita concinna (Thorell, 1875)	-	-	-	-	-	0/1	-	-	-	0/1	-	-	-	-	-	-	-
Centromerus arcanus (O.P.-Cambridge, 1873)	-	1/0	-	3/0	-	-	-	-	-	1/0	5/0	-	-	-	2/0	9/3	0/1
C. sylvaticus (Blackwall, 1841)	-	-	0/1	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ceratinella brevis (Wider, 1834)	-	-	-	-	-	-	-	-	-	1/0	-	-	-	-	-	-	-

Cont. next page

Table 2. Cont.

	K1	K2	K3	SH	SØ1	SØ2	SB1	SB2	HB1	HB2	HB3	HT1	HT2	HT3	HR	HPF	MC
Ceratinella brevipes (Westring, 1851)	1/0	-	-	-	-	1/0	-	-	-	1/0	-	-	-	2/0	-	1/0	-
Cnephalocotes obscurus (Blackwall, 1834)	-	-	-	-	-	-	-	-	-	-	-	-	1/0	-	-	-	-
Dicymbium nigrum (Blackwall 1834)		-	-	-	2/0	-	-	-	-	-	-	-	-	-	-	-	- -
***Diplocephalus permixtus* (O.P.-Cambridge, 1871)**	**-**	**1/0**	**2/3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1/0**
Erigonella hiemalis (Blackwall, 1841)	-	-	-	-	-	-	1/1	-	-	-	-	-	-	-	-	-	1/6
Gonatium rubellum (Blackwall, 1841)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0/3	0/1
Gonatium rubens (Blackwall, 1833)	-	-	-	0/1	-	0/4	-	-	-	0/1	0/4	-	0/1	0/4	0/2	-	-
Gongylidiellum vivum (O. P.-Cambridge, 1871)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0/1
Hypselistes jacksoni (O.P.-Cambridge, 1902)	-	-	-	-	-	-	-	-	-	2/0	-	-	-	-	-	-	-
Lepthyphantes ericaeus (Blackwall, 1853)	-	-	-	0/1	-	0/1	1/3	1/0	-	-	3/6	0/1	-	0/1	1/2	1/1	0/1
Macrargus carpenteri (O.P. -Cambridge 1894)	-	-	-	-	-	-	-	-	-	-	-	0/1	-	-	0/1	-	-
***Maro minutus* O.P.-Cambridge, 1906**	**-**	**-**	**-**	**1/0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
***Maro sublestus* Falconer, 1915**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2/0**	**-**	**-**	**1/0**	**-**	**-**	**-**	**-**	**-**
***Metopobactrus prominulus* (O. P.-Cambridge, 1872)**	**-**	**-**	**1/0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Micrargus herbigradus (Blackwall, 1854)	-	-	-	-	-	-	-	-	-	1/0	-	-	-	-	-	0/1	-
Minyriolus pusillus (Wider, 1834)	-	1/0	-	2/1	-	-	-	-	-	-	3/0	-	-	1/0	-	0/1	2/3
Neriene clathrata (Sundevall, 1830)	-	-	-	-	-	-	-	1/0	-	-	-	-	-	-	-	-	-
Oedothorax gibbosus (Blackwall, 1841)	-	-	-	-	-	-	-	-	0/2	0/4	-	-	-	-	-	-	-
O. g. forma tuberosus (Blackwall, 1841)	-	-	-	-	-	-	-	-	-	1/0	-	-	-	-	-	-	-
Oryphantes angulatus (O.P.-Cambridge, 1881)	-	-	-	-	-	-	-	-	5/12	-	-	-	-	-	-	-	-
Parapelecopsis nemoralis (Blackwall, 1841)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0/1
Pocadicnemis pumila (Blackwall, 1841)	-	-	-	-	-	-	-	-	2/1	4/1	-	-	-	-	-	-	-
Oreonetides vaginatus (Thorell, 1872)	-	-	-	2/0	-	-	-	-	-	-	-	-	-	-	-	-	-
***Sintula corniger* (Blackwall, 1856)**	**1/0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Tallusia experta (O. P.-Cambridge, 1871)	-	1/0	0/3	-	-	-	-	-	0/1	-	-	-	-	-	-	-	-
Tapinocyba pallens (O.P.-Cambridge, 1872)	-	-	-	9/0	1/0	3/0	-	-	-	-	-	-	-	-	-	6/0	-
Tenuiphantes alacris (Blackwall, 1853)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1/5	-
Tenuiphantes mengei (Kulczynski, 1887)	-	-	-	-	-	2/13	-	1/1	1/1	0/2	10/2	-	1/0	-	-	-	0/1
T. zimmermanni (Bertkau, 1890)	-	-	-	6/4	-	-	-	-	-	-	-	-	-	-	-	-	-
Walckenaeria antica (Wider, 1834)	-	-	-	-	-	1/0	-	-	-	1/0	-	-	-	-	-	-	0/1
W. cucullata (C. L. Koch, 1836)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2/0	-
W. cuspidata (Blackwall, 1833)	2/0	1/1	2/0	5/2	-	1/0	-	-	0/1	0/1	1/1	0/1	-	5/0	1/1	-	-
LIOCRANIDAE																	
***Agroeca brunnea* (Blackwall, 1833)**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0/3**	**-**
***Scotina* sp.**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2 juv.**

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Table 2. Cont.

	K1	K2	K3	SH	SØ1	SØ2	SB1	SB2	HB1	HB2	HB3	HT1	HT2	HT3	HR	HPF	MC
LYCOSIDAE																	
Alopecosa pulverulenta (Clerck, 1757)	3/0	1/0	-	-	1/0	16/1	-	-	-	10/0	3/3	1/1	4/2	3/0	-	-	-
A. taeniata (C. L. Koch, 1835)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0/1	2/0	-
Trochosa spinipalpis (F. O.P.- Cambridge, 1895)	-	-	-	-	-	-	-	-	3/1	6/5	0/1	-	-	-	-	-	
T. terricola Thorell, 1856	5/2	2/0	-	-	1/1	8/0	6/0	1/0	-	-	-	1/0	-	-	-	8/0	0/2
Pardosa nigriceps (Thorell, 1856)	2/3	3/0	0/1	2/0	2/2	4/3	1/0	-	2/1	1/0	2/1	1/0	4/0	1/0	11/2	-	-
P. pullata (Clerck, 1757)	-	-	-	-	4/6	12/2	7/6	1/0	3/0	9/5	15/5	2/5	-	1/0	1/0	-	-
Pirata piraticus (Clerck, 1757)	-	3/7	-	-	1/3	-	-	-	-	2/0	-	-	-	-	-	-	-
MIMETIDAE																	
***Ero furcata* (Villers, 1789)**	-	-	-	-	-	-	-	-	-	-	-	-	-	**1 juv.**	-	-	-
PISAURIDAE																	
Dolomedes fimbriatus (Clerck, 1757)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 juv./1 juv.
SALTICIDAE																	
***Heliophanus cupreus* (Walckenaer, 1802)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1/2**
***Neon reticulatus* (Blackwall, 1853)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0/1**	-
***Pseudeurophrys erratica* (Walckenaer, 1826)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0/2**
SEGESTRIIDAE																	
Segestria senoculata (Linnaeus, 1758).	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Juv+adults
TETRAGNATHIDAE																	
Metellina mengei (Blackwall, 1869)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1/7
Pachygnatha degeeri Sundevall, 1830	-	-	-	-	0/1	0/1	2/1	-	-	-	-	-	-	-	-	-	
Tetragnatha extensa (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Juveniles
THERIDIIDAE																	
***Euryopis flavomaculata* (C. L. Koch, 1836)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2/0**
Robertus arundineti (O.P. -Cambridge, 1871)	-	-	-	-	-	-	-	-	-	-	-	1/0	-	-	-	-	-
R. lividus (Blackwall, 1836)	-	-	-	-	-	-	-	-	1/0	-	-	-	-	-	-	-	-
R. scoticus Jackson, 1914	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2/0	-	-
Steatoda bipunctata (Linnaeus, 1758)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1/2
THOMISIDAE																	
Ozyptila trux (Blackwall, 1846)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0/2	-
Xysticus cristatus (Clerck, 1757)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0/1
Xysticus sp.	-	-	-	-	-	1 juv.	-	-									
ZORIDAE																	
Zora spinimana (Sundevall, 1833)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3/1	-

Table 3. Manually collected species: Numbers refer to males/females, respectively. Bold = species new to Trøndelag.

AGELENIDAE		
Tegenaria domestica (Clerck, 1757)	0/1+1 juv.	Froan, Nordøya (May/June 2000, leg.M. Werkland)
ARANEIDAE		
Araneus sp.	Juveniles	Nordøya and Sørburøya, Froan (25. - 26. April)
Larinioides cornutus (Clerck, 1757)	1subad./5	Havmyran, Hitra (28. April)
L. patagiatus (Clerck 1757)	0/5+1 subad.	Havmyran, Hitra (28. April)
CLUBIONIDAE		
Clubiona trivialis L. Koch, 1843	0/1	Sagvasselva, Hitra (28. April)
GNAPHOSIDAE		
Callilepis nocturna (Linnaeus, 1758)	1 subad. male	Havmyran, Hitra (28. April)
LINYPHIIDAE		
Bathyphantes gracilis (Blackwall, 1841	0/1	Auka, Frøya (27. April)
Centromerus arcanus (O.P.-Cambridge, 1873)	0/1	Skjellholmen, Froan (26. April)
Diplocephalus permixtus (O.P.-Cambridge, 1871)	1/0	Gryta, Hitra (28. April)
Erigonella hiemalis (Blackwall, 1841)	1/6	Nordøya, Froan (25. April)
G*onatium rubellum* (Blackwall, 1841)	0/1	Gryta, Hitra (28. April)
Gongylidiellum vivum (O. P.-Cambridge, 1871)	0/1	Nordøya, Froan (25. April)
Lepthyphantes ericaeus (Blackwall, 1853)	0/1	Skjellholmen, Froan (26. April)
Minyriolus pusillus (Wider, 1834)	2/1	Nordøya, Froan (25. April)
	0/1	Skjellholmen, Froan (26. April)
	0/1	Gryta, Hitra (28. April)
Parapelecopsis nemoralis (Blackwall, 1841)	0/1	Sauøya, Froan (26. April)
Tenuiphantes mengei (Kulczynski, 1887)	0/1	Havmyran, Hitra (28. April)
Walckenaeria antica (Wider, 1834)	0/1	Nordøya, Froan (25. April)
LIOCRANIDAE		
Scotina sp.	2 juv.	Skjellholmen, Froan (26. April)
LYCOSIDAE		
Trochosa terricola Thorell, 1856	0/2	Sauøya, Froan (26. April)
PISAURIDAE		
Dolomedes fimbriatus (Clerck, 1757)	1 juv./1 juv.	Havmyran, Hitra (28. April)
SALTICIDAE		
Heliophanus cupreus (Walckenaer, 1802)	1/2	Nordøya, Froan (29. June)
Pseudeurophrys erratica (Walckenaer, 1826)	0/2	Hellevika, Frøya (27. April, 29)
SEGESTRIIDAE		
Segestria senoculata (Linnaeus, 1758).	Juv+adults	Kunna, Froan (26. April), Sauøya, Froan (26. April), Nordøya (May/June) and Auka, Frøya (27. April)
TETRAGNATHIDAE		
Metellina mengei (Blackwall, 1869)	0/4	Meljorsvann, Frøya (28. April),
	0/3	Havmyran. Hitra (28. April)
	1/0	Sagvasselva, Hitra (28. April)
Tetragnatha extensa (Linnaeus, 1758)	Juveniles	Kunna, Froan (26. April)
THERIDIIDAE		
Steatoda bipunctata (Linnaeus, 1758)	1/2	Nordøya, Frøya (26. April and May/June)
THOMISIDAE		
Xysticus cristatus (Clerck, 1757)	0/1	Havmyran , Hitra(28. April)

The 83 species now known to occur in Froan, Frøya and Hitra (for geographical location see Table 1) compares favourably to the 91 species reported from coastal islands of Hordaland (60° 33 30 N, 4° 48 E) by Hauge et al. (1991), especially since the latter study was based on a material consisting of more than 15 000 individuals and a much longer collection period. (more than 12 months). However, there are in all likelihood more species present on the West Norwegian islands than the 91 species reported by Hauge et al. (1991), many having been overlooked due to bias caused by using only one sampling method. The same problem applies to the current study, in addition to the short trapping period. Despite the difference in sampling effort between these studies it is interesting to compare the island spider fauna of Øygarden in Western Norway as described in Hauge et al. (1991) with those in the coastal region of Central Norway as reported in this paper. In this context only the pitfall material will be discussed, as this was the method used in the Øygarden study. The material from Hitra is not directly comparable as it bears a stronger resemblance to the mainland fauna than to the coastal fauna as reported from Froan and Øygarden. Furthermore, it should be borne in mind that the Froan archipelago is more isolated than the islands considered by Hauge *et al*. (1991).

There are very few forested parts of the Froan archipelago and relatively few species were found here. Still noteworthy however, is the establishment of characteristic forest species in the tiny and remote pine forest at Skjellholmen, e.g. *Tapinocyba pallens*, *Minyriolus pusillus*, *Dicymbium nigrum*, and *Oreonetides vaginatus*. *T. pallens* and *M. pusillus* were also found in grass tussocks and moss in non-forested sites on some of the other islands and are clearly not dependent upon forests (also see Hauge et al. 1991). Still, the fact that this small and weatherbeaten patch of forest is more than 30 km away from the nearest forest and yet harbours the forest species is testimony to the dispersal power of spiders. *Tenuiphantes zimmermanni* also seem to be restricted to this forest on Froan, this is a character species in Øygarden, being very common (Hauge et al. 1991). Its close relative, *T. alacris* (Blackwall), so common in forests in southern and central Norway (e.g. Tømmerås et al. 2000), does not appear to have established itself on Skjellholmen, only being found in the forest site on Hitra. The forest at Gryta on Hitra harbours a large number of such typical forest species. *Asthenargus paganus, Cryphoeca silvicola, Gonatium rubellum, Walckenaeria cucullata, Agroeca brunnea* and *Zora spinimana* were only found in the Hitra forest in this study.

The bogs on Froan are characterised by hygrophilous species like *Araeoncus crassiceps*, *Bathyphantes gracilis*, Diplocephalus permixtus, *Metopobactrus prominulus*, *Tallusia experta*, and *Pirata piraticus*. Hygrophilous species are also characteristic of the bog at Hitra, including *Antistea elegans*, *Bathyphantes setiger, Gnaphosa leporina, Hypselistes jacksoni* and *Trochosa spinipalpis*. The latter species was only found on the bogs; the sibling species *T. terricola* appears to take over on dryer ground and in forests. Especially interesting is the fact that *Oryphantes angulatus* was only taken in the grassy part of the bog. *Bathyphantes gracilis* was also most abundant here and it is possible that these species require taller vegetation for web construction. A comparatively large number of gnaphosids were also found in the bog sites, probably living in the higher and drier tussocks (see Koponen 1968). There were few pure bog sites investigated by Hauge et al. (1991), but some characteristic wetland species are common to Øygarden and Froan, including *Metopobactrus prominulus* and *Pirata piraticus*.

The spider fauna of the heatland and drier sites seem to have a lot in common with the fauna reported from Øygarden by Hauge et al. (1991) and Hauge (2000). The open habitats in Øygarden were dominated by *Lepthyphantes ericaeus*, *Tenuiphantes mengei, Centromerita concinna* and *Pardosa pullata*. These same species were found on Froan, although not on Kunna, the remotest and most weather-beaten of the islands investigated. *Pardosa nigriceps*, a character species of the coastal heathland on Øygarden, was also widespread and present on all localities on Froan, including Kunna. The gnaphosids *Haplodrassus signifer* and *Drassodes cupreus* are also characteristic of these habitats. Of the lycosids, *Pardosa nigriceps* and *P. pullata* are clearly the dominant species in the open coastal sites, at least in terms of activity abundance. Both species appear to have a mainly coastal distribution in Norway (see Tambs-Lyche 1940: maps I and II). *Alopecosa pulverulenta* is also very common. Representatives of all the major genera of cursorial lycosids occurring in Trøndelag are present on the Froan archipelago, though the more specialised species (such as *Trochosa spinipalpis*) apparently are lacking.

The material from Froan and Hitra point to a high degree of faunal similarity between the open heatland sites in both Øygarden and coastal Sør-Trøndelag. Although the present data are not conclusive, the species associations of bogs and forests can also be expected to be highly similar. As such, there seem to exist no factors that cause a substantial faunal disparity between the two areas, possibly apart from a somewhat higher level of habitat diversity when Hitra is also considered. Climatic factors are thus not different enough to discernibly influence the spider faunas. An interesting question for future research is how the spider fauna of such coastal sites changes as one move further north along the coast. This could give important clues to what climatic factors affect which species.

Short notes on some species

Drassodes cupreus (Blackwall, 1834)
The five males taken on the heath on Kunna showed enormous variation in cheliceral length. The significance of this variation is not known.

Hypselistes jacksoni (O. P.-Cambridge, 1902)
This species, previously known from coastal sites in Hordaland

and Vågå in Oppland (see Aakra 2000), is probably one of the few character species of bogs in the region.

Parapelecopsis nemoralis (Blackwall, 1841)
This species is apparently rather rare as there are only two official records from Norway; Snillfjord in Trøndelag and Hjelmeland in inner Ryfylke, Rogaland (Hauge 1989). There is also an unpublished record from Kvam, inner Hordaland (Pommeresche 1999).

Sintula corniger (Blackwall, 1856)
Another seemingly rare hygrophilous species previously known from western parts of south Norway and Narvik (see Aakra 2000). While widespread in Norway it has never been found in larger numbers in southern Norway (but see Hauge 1977).

Trochosa spinipalpis (F. O. P-Cambridge, 1895)
The distribution of this species in Norway is uncertain, as it has probably been confused with *T. terricola*, especially in older publications. The specimens reported here were all taken on a bog not very far from open water, and it has also been collected from stony banks along the river Stjørdalselva (Aakra unpub. data). Open water appears necessary for this species, or at least high levels of moisture.

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NORSK SAMMENDRAG

Edderkopper (Araneae) fra Hitra, Frøya og øygruppen Froan i Sør-Trøndelag, Norge

Edderkopper ble samlet inn på fire øyer i øygruppen Froan i Sør-Trøndelag samt diverse lokaliteter på Hitra, ved hjelp av fallfeller. Manuell innsamling ble også foretatt på disse lokalitetene og på den nærliggende øya Frøya. Fallfellene var operative i ca. 2 måneder.. I alt ble 686 voksne individer bestemt tilhørende 69 arter fra 11 familier. I tillegg ble 12 andre arter fra 5 familier fanget manuelt. Totalt har nå 42 arter blitt registrert fra Froan, 5 fra Frøya og 66 fra Hitra. Totalt er artsantallet fra alle øyene 83 fra 17 familier, dette inkluderer to arter funnet under tidligere studier av andre. Til tross for at innsamlingsperioden var kort er totalantallet av arter sammenlignbart med et tilsvarende studium av edderkoppfaunaen på øyer i Øygarden, ytre Hordaland, som strakte seg over lengre tid og hvor antall individer var meget større. Sammenligning med dette studiet indikerer at artssammensetningen mellom Øygarden og øygruppen Froan er veldig lik, det samme ser ut til å gjelde for myrer, selv om datagrunnlaget er noe mindre for den type habitater. Det er med andre ord ingen klimatiske eller andre faktorer som ser ut til å forårsake større forskjeller i edderkoppfaunaene i heilandskapet i disse to regionene.

REFERENCES

Aakra, K. 2000. New records of spiders (Araneae) from Norway with notes on epigynal characters of *Philodromus fuscomarginatus* (De Geer) (Philodromidae) and *Araneus sturmi* (Hahn) (Araneidae). - Norw. J. Entomol. 47, 77 - 88.

Collett, R. 1876. Oversigt over Norges Araneida I. - Forh. Vidensk. Selsk. Krist. 1875: 225 - 259.

Collett, R. 1877. Oversigt over Norges Araneida II. - Forh. Vidensk. Selsk. Krist. 1876: 1 - 27.

Hauge, E. 1977. The spider fauna of two forest habitats in northern Norway. - Astarte 10: 93 - 101.

Hauge, E. 1989. An annotated check-list of Norwegian spiders (Araneae). - Insecta Norvegiae 4: 1-40.

Hauge, E. 2000. Spiders (Araneae) from square samples and pitfall traps in coastal heathland, western Norway. Habitat preference, phenology and distribution. - Fauna norv. 20: 31 – 42.

Hauge, E., Bruvoll, A. & Solhøy, T. 1991. Spiders (Araneae) from islands of Øygarden, West Norway. Species associations, with ecological and zoogeographical remarks. - Fauna norv. Ser. B 38: 11 - 26.

Koponen, S. 1968. Über die Evertebrate-Fauna (Mollusca, Chilopoda, Phalaingida, Araneae and Coleoptera) von Hochmooren in Sudwest Häme. - Lounais-Hämeen Luonto 29: 12 - 22.

Nordhagen, R. 1917. Planteveksten på Froøene og nærliggende øer. Bidrag til kundskapen om naturforholdene i Norges skjærgaard. - K. norske Vidensk. Selsk. Skr. 1916-7: 1 – 151.

Platnick, N. I. 2000. The World Spider Catalog. The American Museum of Natural History. - http://research.amnh.org/entomology/spiders/catalog81-87/index.html

Pommeresche, R. 1999. Diversitet, samfunnstrukturer og habitatspreferanser hos epigeiske edderkopper i ulike vegetasjonstyper innen Geitaknottane naturreservat, indre Hordaland. - Cand. scient. thesis. University of Bergen, spring 1999. 70 pp.

Strand, E. 1904a. Die Dictyniden, Dysderiden, Drassiden, Clubioniden, und Ageleniden der Collett'schen Spinnensamlung. - Forh. VidenskSelsk Krist. 1904: 1 - 16.

Strand, E. 1904b. Theridiidae, Argiopidae und Mimetidae aus der Collet'schen Spinnesamlung. - K. norske Vidensk. Selsk. Skr. 1903 107: 1 – 9.

Tambs-Lyche, H. 1940. Die Norwegischen Spinnen der Gattung *Pardosa* Koch. - Avh. norske VidensAkad. Oslo 1939: 1 – 59.

Tambs-Lyche, H. 1942. Notes on Norwegian spiders. - Norsk. ent. Tidskr. 6: 107 - 114.

Tanasevitch, A. V. 2000. Linyphiid spiders of the world. - http://www.andtan.newmail.ru/ list/linyphiidae.htm

Tømmerås, B. Å., Wilmann, B., Ødegaard, F., Gjerhaug, J. O., Breistein, J., Abildsnes, J., Prestø, T., Aakra, K. & Krogstad, S. 2000. Effekter av fragmentering på biodiversitet i granskog. - NINA Fagrapport 40, 1 – 89.