

The spiders (Aranei) in the litter of *Fraxinetum dryopterioso* forest type in the Slitere Nature Reserve

MĀRIS ŠTERNBERGS

Faculty of biology, University of Latvia, Kronvalda bulv. 4, 1842 Riga, Latvia

INTRODUCTION

Wet forests have remained in good condition in Latvia, covering large areas. However, the fauna of arthropods have been poorly investigated. The fauna of spiders was only explored in the forests (*Fraxinetum dryopterioso*) of the Moriscala Reserve (Šternbergs, 1980, 1981). The investigations of wet forests are of particular importance since such forests are eliminated or heavily modified in Western Europe.

MATERIAL AND METHODS

The Slitere Nature Reserve lies in the Kurzeme Peninsula, Talsi Region (Fig. 1). The forest in question covers large areas in the southern part of the Reserve. The ash (*Fraxinus excelsior* L.), lime (*Tilia cordata* L.) and black alder (*Alnus glutinosa* L.) prevail there. There is underwood hazel (*Corylus avellana* L.) present, as well as anemone (*Anemone nemorosa* L.), carex (*Carex remota* L.), dog's mercury (*Mercurialis perennis* L.) goutweed (*Aegopodium podagraria* L.), large bellflowers (*Campanula latifolia* L.) and ramsons (*Allium ursinum* L.) on the living ground cover.

The material has been gathered by a biocenometer (20 x 20 cm), 25 samples (1 m²) at once. Spiders from an area of 22 m² were collected during the three years (1983–1985). Litter was separated by a lattice.

Soil humidity was recorded, too. Spiders were fixed and spared in alcohol (70%).

Spiders were gathered in 1983 (215 specimens), 1984 (124), and 1985 (236) (Table 1).

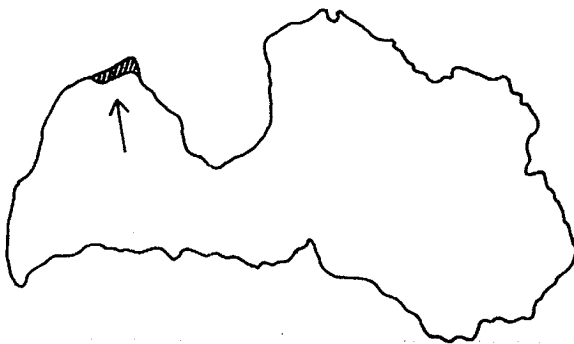


Fig. 1. Position of Slitere Nature Reserve in Latvia.

Table 1. Material collected in 1983, 1984 and 1985.

	1983	1984	1985
Linyphiidae			
<i>Ceratinella brevis</i> (Wider)	2	1	—
<i>Cornicularia cuspidata</i> (Blackwall)	1	—	—
<i>Dicymbium nigrum</i> (Blackwall)	3	5	—
<i>Diplocephalus pinicus</i> (Blackwall)	—	1	—
<i>Gongylidiellum latebricola</i> (O. P.-Cambridge)	4	5	—
<i>Hypomma cornutum</i> (Blackwall)	—	—	1
<i>Maso sundevalli</i> (Westring)	2	—	—
<i>Micrargus herbigradus</i> (Blackwall)	2	1	1
<i>Minyriolus pusillus</i> (Wider)	1	—	10
<i>Tapinocyba pallens</i> (O. P.-Cambridge)	22	2	15
<i>Tapinocyba praecox</i> (O. P.-Cambridge)	1	—	—
<i>Thyreosthenius parasiticus</i> (Westring)	—	3	—
<i>Trachynella nudipalpis</i> (Westring)	1	—	—
<i>Wideria antica</i> (Wider)	2	3	1
<i>Wideria cucullata</i> (C. L. Koch)	—	—	3
<i>Wideria nodosa</i> (O. P.-Cambridge)	2	—	—
<i>Agyneta cauta</i> (O. P.-Cambridge)	—	—	1
<i>Agyneta decora</i> (O. P.-Cambridge)	—	1	—
<i>Bathyphantes nigrinus</i> (Westring)	2	—	—
<i>Centromerus arcanus</i> (O. P.-Cambridge)	8	6	—
<i>Centromerus incilius</i> (L. Koch)	—	—	2
<i>Centromerus sylvaticus</i> (Blackwall)	—	—	1
<i>Lepthyphantes alacris</i> (Blackwall)	1	—	—
<i>Lepthyphantes obscurus</i> (Blackwall)	1	—	—
<i>Lepthyphantes tenuis</i> (Blackwall)	—	—	1
<i>Linyphia peltata</i> Wider	1	—	—
<i>Microneta viaria</i> (Blackwall)	2	—	—
<i>Oreonetides abnormis</i> (Blackwall)	—	—	1
<i>Porrhomma pallidum</i> (Jackson)	—	—	1
Thomisidae			
<i>Oxyptila praticola</i> (C. L. Koch)	1	—	—
<i>Oxyptila trux</i> (Blackwall)	1	—	—
Theridiidae			
<i>Robertus lividus</i> (Blackwall)	—	—	7
<i>Robertus scoticus</i> (Jackson)	1	1	—
Hahniidae			
<i>Antistea elegans</i> (Blackwall)	—	1	—
<i>Hahnia nava</i> (Blackwall)	—	1	—
<i>Hahnia pusilla</i> (C. L. Koch)	6	4	—
Mimetidae			
<i>Ero furcata</i> (Villers)	1	—	—

Table 1. (cont.)

	1983	1984	1985
Tetragnathidae			
<i>Pachygnatha listeri</i> Sundevall	—	1	—
Philodromidae			
<i>Tibellus oblongus</i> (Walckenaer)	—	—	1
Clubionidae			
<i>Clubiona trivialis</i> (C. L. Koch)	—	—	7
Lycosidae			
<i>Trochosa terricola</i> (Thorell)	—	—	2
Salticidae			
<i>Neon valentulus</i> (Falconer)	—	—	2

Table 2. Prevalence and frequency of occurrence of species (%). Prevalence—the proportion of the number of adults of the species to the total number of adults (all species); frequency of occurrence—the proportion of the number of the samples containing the specimens of the species in question to the number of all samples.

Species	Prevalence	Frequency of occurrence
<i>Tapinocyba pallens</i>	24	45
<i>Centromerus arcanus</i>	8.7	22
<i>Minyriolus pusillus</i>	6.8	18
<i>Hahnia pusilla</i>	6.2	22
<i>Gongylidiellum latebricola</i>	5.6	27
<i>Dicymbium nigrum</i>	5.0	18
<i>Robertus lividus</i>	4.3	18
<i>Clubiona trivialis</i>	4.3	5
<i>Wideria antica</i>	3.7	22

RESULTS

42 species of spiders were found in the samples gathered, 38 of them being typical for the carpet of deciduous forests. The species *Tibellus oblongus* is typical for the meadow's grass, while *Pachygnatha listeri* for the grass of wet habitats. The species *Ero furcata* can be found on trees and shrubs and *Linyphia peltata* in the litter.

During the three years only 26 specimens per 1 m² were found in average. This is the least population density ever found in the litter of forest: in the forest type *Fraxinetum dryopterioso* in the Moriscala Reserve were 46 spiders per 1 m² (Šternbergs, 1981), and in the forest type *Tilietum aegopodioso*—81 spiders per 1 m² (Šternbergs, 1979). It may be assumed that the low population density was caused by the high soil humidity

Table 3. Soil humidity (%) (1983–1985).

	1983	1984	1985
April	84.9	81.3	—
May	80.3	79.0	60.3
June	76.2	79.5	57.7
July	79.6	83.4	55.7
August	66.8	79.4	67.7
September	79.4	84.4	82.3
October	81.4	83.1	75.4
December	83.2	—	—

(Table 3). It was also confirmed to some extent by the experience that the highest density of spiders populations was connected with the lowest soil humidity in 1985. The results obtained so far show that the crucial point determining population density is the conditions of wintering.

In the samples gathered during the three years 11 families of spiders were found in total. The richest in species was the family Linyphiidae—29 species. Quantitative analysis of the prevalence structure of arthropods by H. Engelmann (Engelmann, 1978) shows that the species *Tapinocyba pallens* is one of the prevailing species with a low index of prevalence—24 %. The species *Centromerus arcanus* (8.7%), *Minyriolus pusillus* (6.8%),

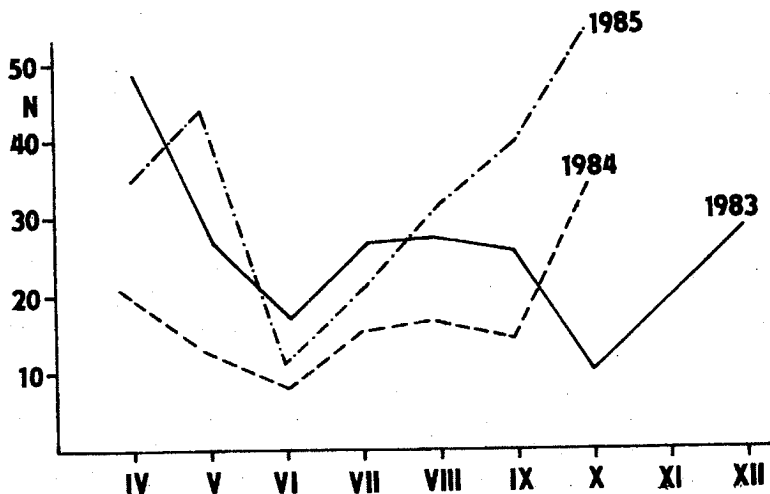


Fig. 2. Seasonal dynamics of spiders in 1983–1985. N—number of spiders per m².

Hahnia pusilla (6.2%), *Gongylidiellum latebricola* (5.6%), *Dicymbium nigrum* (5.0%), *Robertus lividus* (4.3%), and *Clubiona trivialis* (4.3%) may be regarded as subdominant ones. The occurrence is very low, because of the low population density (Table 2). The higher occurrence was recorded for the species *Tapinocyba pallens*—45%.

The seasonal dynamics of the number of spiders (Fig. 2) is very similar to the same indicator for other deciduous forests; 28% of the spiders in the samples gathered were adults.

Wideria nodosa (O. P.-Cambridge), *Trachynella nudipalpis* (Westring), *Oreonetides abnormis* (Blackwall) and *Ero furcata* (Villers) should be noted as rare species in Latvian forests.

REFERENCES

- ENGELMANN H.-D. 1978: Zur Dominanzklassifizierung von Bodenarthropoden. *Pedobiologia* **18**: 378–380.
- ŠTERNBERGS M. 1980: Rezervāta "Moriscala" melnalkšņu gāršas zemsedzes zirnekļi (Aranei). Slīteres rezervāta I zinātniski-praktiskās konferences referātu tēzes. Slītere: pp. 23–24.
- ŠTERNBERGS M. 1981: Moriscalas rezervāta melnalkšņu gāršas zemsedzes zirnekli. Mežsaimniecība un mežrūpniecība, pp. 40–42.
- ŠTERNBERGS M. T. 1979: Structure and dynamics of spider fauna in Tiliatum aegopodiosio forest type in Moriscala Nature Reserve. *Trudy Zool. Inst.* **85**: 54–59 (in Russian).