

SPIDERS IN THE COLD SEASON 2023-2024 FROM THE NORTH-WESTERN PART OF ROMANIA (TINCA AREA, BIHOR COUNTY)

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Abstract. The paper presents species of spiders identified in the 2023-2024 cold season in the north-western part of Romania (Tinca area, Bihor county). The high temperatures of this period favoured the identification of 13 spider species belonging to 9 families and 13 genera. Also, some phenological data unpublished in the scientific literature were obtained.

Keywords: spiders, cold season, temperatures, Tinca area, Bihor county.

Rezumat. Păianjenii în sezonul rece 2023-2024 din partea nord-vestică a României (zona Tinca, județul Bihor). Lucrarea prezintă specii de păianjeni identificate în sezonul rece 2023-2024 în partea nord-vestică a României (zona Tinca, județul Bihor). Temperaturile ridicate ale acestei perioade au favorizat identificarea a 13 specii aparținând la 9 familii și 32 genuri. De asemenea, au fost obținute unele date fenologice, nepublicate în literatura științifică.

Cuvinte cheie: păianjeni, sezon rece, temperaturi, zona Tinca, județul Bihor.

INTRODUCTION

The Tinca area is located in the south-western part of the the Bihor county, the Crișana province. The average altitude is 115 m, the climate is temperate-continental and the vegetation belongs to the oak layer. The hydrographic system is represented by the Crișul Negru river.



Figure 1. The map with the location of Tinca area (CIOBOIU et al., 2021).

The vast majority of species enter winter diapause, in various sheltered places (leaf litter, soil, houses, etc), but some species may remain active in the cold season. In the case of those that enter winter diapause, a slowdown in metabolism is observed, as well as the presence of substances with an antifreeze role that cause the reduction of freezing temperatures. The presence of some spiders in unprotected places (at -20°C) was identified. Controlling the body temperature requires the adaptation of specific behaviours such as looking for protected microhabitats or even orienting the web in the East-West direction so that the body receives as much sunlight as possible. When they feel winter coming, their body produces an antifreeze called polyhydroxy-alcohol (HINDINGER, 2016). The adaptations specific to this cryophilic way of life include the acceleration of metabolic rates at low temperatures, the cold adaptation of digestive enzymes and the acquisition of thermo-hysteretic cryoprotectants (AITCHINSON, 1987, quoted by SORENKO et al., 2010).

Relatively recent research on the presence of spider species in the cold season in the Tinca area was carried out by different authors (ILIE & MARINESCU, 2021; 2022; 2023).

MATERIALS AND METHODS

The research was carried out between November 15, 2023 - March 1, 2024. Day and night temperatures were measured on a daily basis. Species identification was made using the specific literature (FUHN & NICULESCU-BURLACU, 1971; (***) www.araneae.nmbe.ch; (***) http://research.amnh.org/entomology/spiders/catalog/index.html; (***) wiki.arages.de/index.php).

RESULTS AND DISCUSSIONS

In the 2023-2024 cold season, the following species of spiders were identified in the Tinca area (Table 1):

Table 1. The spider species in the 2023-2024 cold season from Tinca area (original).

Family, species	Number of specimens, date, temperature
Thomisidae Family	
<i>Synema globosum</i> Fabricius, 1775	1 sp, 4. II. 2024, 12°C.
<i>Xysticus cristatus</i> Clerck, 1757	1 sp, 31. XII. 2023, 12°C.
Pisauridae Family	
<i>Pisaura mirabilis</i> Clerck, 1757	1 sp, 5. XII. 2023, (-1°C); 1 sp, 9. XII. 2023, 4°C; 1 sp, 25. XII. 2023, 9°C; 1 sp, 26. I. 2024, 8°C; 1 sp, 5. I. 2024, 11°C; 1 sp, 6. I. 2024, 12°C; 1 sp, 30. I. 2024, 5°C; 2 sp, 8. II. 2024, 13°C; 1 sp, 10. II. 2024, 17°C; 1 sp, 15. II. 2024, 10°C; 1 sp, 20. II. 2024, 10°C; 4 sp, 25. II. 2024, 18°C; 1 sp, 28. II. 2024, 20°C.
Lycosidae Family	
<i>Pardosa palustris</i> Linnaeus, 1758	many specimens: 27, 29-31. XII. 2023, 9-12°C; 5, 20, 25, 26. I. 2024, 1-11°C; 9, 10, 14, 16-18, 25-27. II. 2024, 9-21°C; 2 sp, 6, 27, 30. I. 2024, 5-12°C; 1 sp, 13. II. 2024, 9°C.
<i>Trochosa rucicola</i> De Geer, 1778	1 sp, 30. XII. 2023, 9°C; 1 sp, 28, 29. II. 2024, 17-20°C.
Araneidae Family	
<i>Nuctenea umbratica</i> Clerck, 1757	1 sp, 15. XI. – 20. XII. 2023, (-2)-22°C; 1 sp, I-II. 2024, (-6)-21°C.
<i>Hypsosinga pygmaea</i> Sundevall, 1831	1 sp, 14 II 2024, 10°C
Amaurobiidae Family	
<i>Amaurobius ferox</i> Walckenaer, 1830	1 sp, 2. III. 2024, 9°C; 1 sp, 25. II. 2024, 18°C.
Linyphiidae Family	
<i>Nerine clathrata</i> Sundevall, 1830	many specimens, 25-27. II. 2024, 18-21°C.
Agelenidae Family	
<i>Eratigena agrestis</i> Walckenaer, 1802	1 sp, 22. XII. 2023, 6°C; 1 sp, 6. I. 2024, 12°C.
Theridiidae Family	
<i>Parasteatoda tepidariorum</i> Koch, 1841	1 sp with eggs, 26. XII. 2023, 11°C.
<i>Enoplognatha thoracica</i> Hahn, 1833	1 sp, 24. XII. 2023, 6°C.
Philodromidae Family	
<i>Tibellus oblongus</i> Walckenaer, 1802	1 sp, 3. I. 2024, 9°C

Legend: sp-specimen/specimens.

From a phenological point of view, *Hypsosinga pygmaea* Sund can be found in nature from April to November, *Xysticus cristatus* Cl from March to November, *Pardosa palustris* L from March to December and *Eratigena agrestis* Walck from July to November (according to (***) www.araneae.nmbe.ch).

The analysis of the table highlights sometimes major thermal fluctuations from night to day (19 degrees), low, almost absent precipitations, sometimes higher night temperatures than daytime ones. Most daytime temperatures were positive (Table 2).

Table 2. Temperature values recorded in December 2023 in the Tinca area (original).

Day	Day - temperature, weather conditions	Night - temperature
1	4, sunny	-1
2	18, sunny	-1
3	0, cloudy	-2
4	-2, cloudy	-3
5	-1, cloudy	-2
6	4, sunny	-1
7	3, cloudy	-1
8	3, cloudy	-1
9	4, cloudy	-1
10	4, cloudy	2
11	4, cloudy	6
12	8, sunny	6
13	9, sunny	6
14	6, sunny	1
15	3, cloudy	-2
16	3, cloudy	-4
17	4, sunny	-1
18	6, sunny	1

19	8, sunny	-2
20	2, cloudy	-2
21	4, rain, wind	6
22	6, wind	2
23	6, wind, snow	0
24	6, rain, sleet	8
25	9, sunny	11
26	11, sunny	8
27	9, sunny	2
28	11, sunny	3
29	11, sunny	7
30	9, sunny	4
31	12, sunny	7

In January (Table 3), the precipitations were very low; there were several days when night temperatures were higher than day temperatures. Most daytime temperatures were positive.

Table 3. Temperature values recorded in January 2024 in the Tinca area (original).

Day	Day - temperature, weather conditions	Night - temperature
1	7, cloudy	3
2	8, cloudy, partly sunny	6
3	9, cloudy, partly sunny	8
4	11, sunny	4
5	11, sunny	8
6	12, sunny	6
7	11, sunny	1
8	1, flaky	-2
9	0, cloudy	-6
10	1, cloudy	-4
11	-6, cloudy	-3
12	-6, flaky	-4
13	-3, cloudy	-2
14	2, cloudy	-1
15	2, sleet, rain	-3
16	3, cloudy	-2
17	7, rain	8
18	13, rain	8
19	4, sleet, snow	-5
20	1, sunny	-6
21	2, sunny	-6
22	3, sunny	4
23	1, cloudy	2
24	2, rain	4
25	8, sunny	2
26	8, sunny	4
27	6, cloudy, rain	3
28	4, cloudy, sunny	-2
29	6, sunny	-4
30	5, sunny	-3
31	7, sunny	-3

In February, all daytime temperatures were positive and relatively high (especially towards the end of the month) for this time of the year (Table 4).

Table 4. Temperature values recorded in February 2024 in the Tinca area (original).

Day	Day - temperature, weather conditions	Night - temperature
1	4, cloudy	3
2	6, cloudy	3
3	8, cloudy	5
4	12, cloudy, sunny	8
5	12, cloudy	7
6	14, sunny	8
7	12, sunny	7
8	13, sunny	9
9	13, cloudy	11
10	17, cloudy, sunny	12
11	19, sunny	12
12	12, cloudy	7
13	9, cloudy, rain	3
14	10, sunny	-2

15	10, sunny	-2
16	13, sunny	-3
17	14, sunny	5
18	12, cloudy, sunny	1
19	11, cloudy, sunny	6
20	10, cloudy, sunny	5
21	9, cloudy	-1
22	13, sunny	9
23	13, cloudy	12
24	14, rain	10
25	18, sunny	8
26	19, sunny	10
27	21, sunny	8
28	20, sunny	9
29	17, cloudy	9

CONCLUSIONS

During the 2023-2024 cold season, 13 spider species belonging to 9 families and 13 genera were identified in the Tinca area. Some phenological data for four species, unpublished in the scientific literature, were obtained. From a meteorological point of view, there were low precipitations, as well as numerous days with positive daytime temperatures, sometimes high, and sometimes the nighttime temperatures were higher than the daytime ones.

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