

NEW RESEARCHES ABOUT THE INVERTEBRATES FROM TINCA AREA (BIHOR COUNTY, ROMANIA) DURING THE COLD SEASON (NOVEMBER 1, 2022 – MARCH 1, 2023)

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Abstract

The paper presents new researches about the invertebrates from Tinca area (Bihor county, Romania) during the cold season in the period November 1, 2022 – March 1, 2023. There were identified 91 species belonging to five groups of invertebrates. There were obtained some ecological data of these species unknown in the scientific literature. The high temperatures recorded in the cold season determined the identification of a large number of species, due to the extension of their activity period in nature. The drought and very high temperatures during the summer determined the appearance of the second annual generation in the species *Dorcadion scopolii* Herbst. in the cold season. Many of the specimens observed during the days died during the nights due to the low temperatures recorded. The presence of the larval stage in the species *Chrysolina fastuosa* Scop. in the cold season is reconfirmed. The presence of some species (example: *Nezara viridula* L., *Pisaura mirabilis* Clerck, *Lumbricus terrestris* L.) is noted throughout the entire analyzed period.

Keywords: cold season, invertebrates, Tinca area

1. INTRODUCTION

The Tinca area is located in the south – western part of Bihor County, belonging to the historical province of Crişana, in the north – western part of Romania. The average altitude is 110 m, the climate is temperate-continental moderate, the drainage is represented by Crişul Negru river. Tinca area includes: Tinca, Gurbediu, Râpa, Girişu Negru and Belfir villages. Recent data about the invertebrates from the Tinca area were published by the authors (Ilie and Marinescu, 2021 a,b). The paper presents the invertebrate fauna identified in the Tinca area in the 2022-2023 cold season, obtaining new data on their presence and ecology in this season.

2. MATERIAL AND METHODS

The invertebrates were collected with hands and the entomological net. Collection period and observations is: November 1, 2022-March 1, 2023. For the identification of the species were used different sources (Panin, 1951,1961; Knechtel and Popovici-Bâznoşanu, 1959; Fuhn and Niculescu-Burlacu, 1971; Lehrer, 1972; Grossu, 1983,1993;Kis,1984, 2001; Fuhn and Gherasim, 1995; Roberts, 1995; Weiss, Petrişor, 1999; Warchalowski, 2003; lepiforum.de; araneae.nmbe.ch; en.m.wikipedia.org).

3. RESULTS AND DISCUSSIONS

The collection and observations were made daily in different terrestrial ecosystems in the Tinca area. I mention that all the specimens observed were active. In the cold season 2022-2023 in the Tinca area there were identified the following species:

Insecta Class, Mantodea Order

1. *Mantis religiosa* (LINNAEUS, 1758) – one male specimen, Tinca, November 1, 2022, $t = 20^{\circ}$ C; November 3, 6, 2022, $t = 13^{\circ}$ C; November 5, 2022, $t = 17^{\circ}$ C; November 14, 2022, $t = 15^{\circ}$ C; two female specimens, Tinca, November 4, 2022, $t = 18^{\circ}$ C; one female specimen, Tinca, November 22, 2022, $t = 12^{\circ}$ C; November 28, 2022, $t = 6^{\circ}$ C; December 5, 2022, $t = 9^{\circ}$ C (this is the latest observation of the species in the Tinca area). Generally, the species is present in the Tinca area until the end of September-first week of October. Common species in Romania, it is found in Europe, Asia, North America and Australia (en.m.wikipedia.org).

Orthoptera Order

2. *Phaneroptera nana* (FIEBER, 1853) – one specimen, Tinca, November 1, 2022, $t = 20^{\circ}$ C; November 8, 10, 2022, $t = 13^{\circ}$ C; November 11, 2022, $t = 12^{\circ}$ C; November 12, 2022, $t = 14^{\circ}$ C; November 22, 2022, $t = 12^{\circ}$ C; November 24, 26, 29, 2022, $t = 6^{\circ}$ C; three specimens, Tinca, November 4, 2022, $t = 18^{\circ}$ C. Common species in Romania and in the Tinca area, it is found in Europe, the Near East and North Africa (en.m.wikipedia.org).
3. *Melanogryllus desertus* (PALLAS, 1771) – one specimen, Tinca, November 4, 2022, $t = 18^{\circ}$ C; February 2, 2023, $t = 5^{\circ}$ C; February 23, 2023, $t = 13^{\circ}$ C. This species occurs in Southern and Eastern Europe (en.m.wikipedia.org), relatively common in Romania and in the Tinca area.

Lepidoptera Order

4. *Colias croceus* (FOURCROY, 1785) – two male specimens, one female specimen, Tinca, November 1, 2022, $t = 20^{\circ}$ C; one male specimen, Tinca, November 9, 2022, $t = 17^{\circ}$ C. Common species in Romania and in the Tinca area, Western – Asian – European species (en.m.wikipedia.org).
5. *Vanessa atalanta* (LINNAEUS, 1758) – two specimens, Tinca, November 1, 2022, $t = 20^{\circ}$ C; November 8, 2022, $t = 13^{\circ}$ C; November 9, 2022, $t = 17^{\circ}$ C; November 10, 2022, $t = 12^{\circ}$ C; November 12, 2022, $t = 14^{\circ}$ C; one specimen, Tinca, November 2, 2022, $t = 11^{\circ}$ C; November 4, 2022, $t = 18^{\circ}$ C; November 5, 2022, $t = 17^{\circ}$ C; November 14, 2022, $t = 15^{\circ}$ C; November 29, 2022, $t = 6^{\circ}$ C; December 3, 2022, $t = 10^{\circ}$ C; three specimens, Tinca, November 3, 2022, $t = 13^{\circ}$ C; November 13, 2022, $t = 14^{\circ}$ C; November 15, 2022, $t = 12^{\circ}$ C. Common species in Romania, it is found in Europe, Americas, Asia and North Africa.
6. *Autographa gamma* (LINNAEUS, 1758) – two specimens, Tinca, November 1, 2022, $t = 20^{\circ}$ C; November 4, 2022, $t = 18^{\circ}$ C; one specimen, Tinca, November 9, 2022, $t = 17^{\circ}$ C. Common species in Romania, relatively frequent in the Tinca area, Palearctic species (en.m.wikipedia.org).
7. *Pieris rapae* (LINNAEUS, 1758) – one adult and one larva, Tinca, November 1, 2022, $t = 20^{\circ}$ C; one larva, Tinca, November 4, 2022, $t = 18^{\circ}$ C; November 17, 2022, $t = 11^{\circ}$ C; November 23, 2022, $t = 12^{\circ}$ C; November 25, 2022, $t = 6^{\circ}$ C; December 6, 2022, $t = 9^{\circ}$ C; December 9, 2022, $t = 11^{\circ}$ C; December 13, 2022, $t = -2^{\circ}$ C; two larvae, Tinca, November 21, 2021, $t = 5^{\circ}$ C; December 7, 2022, $t = 10^{\circ}$ C; one specimen, Tinca, November 14, 2022, $t = 15^{\circ}$ C; three larvae, Tinca, November 29, 2022, December 8, 15, 16, 2022, $t = 6 - 16^{\circ}$ C; three adult specimens, Tinca, February 20, 2023, $t = 7^{\circ}$ C (the first observation in 2023!); one adult

- specimen, Tinca, February 21, 2023, $t = 16^{\circ}$ C. Common species in Romania, frequent species in the Tinca area, it is found in Europe, North Africa, North America, Australia and New Zealand (en.m.wikipedia.org).
8. *Ephestia woodiella* (RICHARDS & THOMSON, 1932) – one specimen, Tinca, November 1-2, 2022, $t = 11-20^{\circ}$ C. Rare species in Romania, European species (en.m.wikipedia.org).
 9. *Mythimna albipuncta* (DENIS & SCHIFFERMULLER, 1775) – one specimen, Tinca, November 3, 4, 2022, $t = 13-20^{\circ}$ C. Common species in Romania, relatively common species in the Tinca area, it is found in Europe, North Africa, Asia and North America (en.m.wikipedia.org).
 10. *Pyrallis farinalis* (LINNAEUS, 1758) – one specimen, Tinca, November 5, 2022, $t = 17^{\circ}$ C. According to lepiforum.de., the flight period is June - October. Common species in Romania and in the Tinca area, Cosmopolitan species (en.m.wikipedia.org).
 11. *Macroglossum stellatarum* (LINNAEUS, 1758) – one specimen, Tinca, November 5, 2022, $t = 17^{\circ}$ C; November 15, 2022, $t = 12^{\circ}$ C. Common species in Romania and in the Tinca area, it is found in Europe and South Asia (en.m.wikipedia.org).
 12. *Lasiommata megera* (LINNAEUS, 1758) – one male specimen, Tinca, November 5, 2022, $t = 17^{\circ}$ C; November 13, 2022, $t = 14^{\circ}$ C; November 14, 2022, $t = 15^{\circ}$ C; November 22-24, 2022, $t = 12^{\circ}$ C. Western Palearctic species (en.m.wikipedia.org), common in Romania, frequent in the Tinca area.
 13. *Acrionicta rumicis* (LINNAEUS, 1758) – one larva, Tinca, November 6, 2022, $t = 13^{\circ}$ C; November 12, 2022, $t = 14^{\circ}$ C. Common species in Romania and in the Tinca area, Palearctic species (en.m.wikipedia.org).
 14. *Lacanobia oleracea* (LINNAEUS, 1758) – one larva, Tinca, November 6, 2022, $t = 13^{\circ}$ C. Common species in Romania and in the Tinca area, it is found in Europe, Asia, North America (en.m.wikipedia.org).
 15. *Noctua pronuba* (LINNAEUS, 1758) – three larvae, Tinca, November 10, 2022, $t = 12^{\circ}$ C; one larva, Tinca, December 10, 31, 2022, $t = 12^{\circ}$ C; January 18, 2023, $t = 10^{\circ}$ C; January 22, 2023, $t = 13^{\circ}$ C; two larvae, Tinca, December 27, 2022, $t = 10^{\circ}$ C; January 21, 2023, $t = 5^{\circ}$ C. Palearctic species (en.m.wikipedia.org), common in Romania and in the Tinca area.
 16. *Hypena rostralis* (LINNAEUS, 1758) – one specimen, Tinca, February 25, 2023, $t = 9^{\circ}$ C. Common species in Romania and in the Tinca area, Palearctic species (en.m.wikipedia.org).
 17. *Agrotis segetum* (DENIS & SCHIFFERMULLER, 1775) – one female specimen, Tinca, November 13, 2022, $t = 14^{\circ}$ C. Common species in Romania, relatively common species in the Tinca area, it is found in Eurasia and Africa (en.m.wikipedia.org).
 18. *Phragmatobia fuliginosa* (LINNAEUS, 1758) – one larva, Tinca, January 1, 2023, $t = 15^{\circ}$ C. Common species in Romania and in the Tinca area, Palearctic species (en.m.wikipedia.org).
 19. *Emmelina monodactyla* (LINNAEUS, 1758) – one specimen, Tinca, January 2, 2023, $t = 15^{\circ}$ C. Common species in Romania, sometimes frequent in the Tinca area, it is found in Europe, Asia, North Africa and North America (en.m.wikipedia.org).
 20. *Vanessa cardui* (LINNAEUS, 1758) – one specimen, Tinca, November 14, 2022, $t = 15^{\circ}$ C. Cosmopolitan species (en.m.wikipedia.org), common in Romania and in the Tinca area.
 21. *Agonopterix arenella* (DENIS & SCHIFFERMULLER, 1775) – one specimen, Tinca, February 9, 2023, $t = 1^{\circ}$ C. Common species in Romania, relatively common species in the Tinca area, European species (en.m.wikipedia.org).

22. *Operophtera brumata* (LINNAEUS, 1758) – one male specimen, Tinca, December 4, 5, 7, 9, 2022, t = 9 -11⁰ C. Common species in Romania and in the Tinca area, it is found in Europe and Near East (en.m.wikipedia.org).
23. *Agriphila tristella* (DENIS & SCHIFFERMULLER, 1775) – three larvae, Tinca, November 28, 2022, t = 7⁰ C. Common species in Romania, frequent in the Tinca area, Eurasian species (en.m.wikipedia.org).
24. *Eurois occulta* (LINNAEUS, 1758) – one larva, Tinca, November 16, 2022, t = 11⁰ C. Holarctic species(en.m.wikipedia.org), relatively common in Romania and in the Tinca area.
25. *Allophyes oxyacanthae* (LINNAEUS, 1758) – one specimen, Tinca, November 3, 2022, t = 13⁰ C. European species(en.m.wikipedia.org), common in Romania, relatively common in the Tinca area.
26. *Phigalia pilosaria* (DENIS & SCHIFFERMULLER, 1775) – one male specimen, Tinca, January 7, 2023, t = 11⁰ C; February 19, 2023, t = 10⁰ C. Common species in the deciduous forests from Romania and the Tinca area, it is found in Europe to Anatolia and Caucasus (en.m.wikipedia.org).
27. *Theria rupricapraria* (DENIS & SCHIFFERMULLER, 1775) – one male specimen, Tinca, January 29, 2023. Common species in Romania, relatively common species in the Tinca area, it is found in Europe and South Caucasus(en.m.wikipedia.org).

Coleoptera Order

28. *Dorcus parallelipedus* (LINNAEUS, 1758) – one specimen, Tinca, November 2, 2022, t = 11⁰ C; January 7, 2023, t = 11⁰ C. Common species in the deciduous forests in Romania and the Tinca area, European species (en.m.wikipedia.org).
29. *Carabus coriaceus* (LINNAEUS, 1758) – one specimen, Tinca, November 3, 2022, t = 13⁰ C. Common species in Romania, sometimes frequent in the Tinca area, European species (en.m.wikipedia.org).
30. *Galeruca tanacetii* (LINNAEUS, 1758) – one female specimen, Tinca, November 5, 2022, t = 17⁰ C. Palearctic species(en.m.wikipedia.org), very common in Romania, frequent in the Tinca area.
31. *Oxyopus olens* (MULLER, 1764) – one specimen, Tinca, November 6, 2022, t = 13⁰ C. Common species in Romania and the Tinca area, it is found in Europe, North Africa, Americas, Australia and Asia (en.m.wikipedia.org).
32. *Dorcadion scopolii* (HERBST, 1784) - one specimen, Tinca, November 14, 2022, t = 15⁰ C. In this case it is the second annual generation, not mentioned in the scientific literature. Different sources mentions the period of the adults in nature in March – June (cerambyx.uochb.cz/dorcadion_scopolii.php;sr.wikipedia.org/wiki/Dorcadion_scopolii; Panin and Săvulescu, 1961). Common species in Romania and the Tinca area, it is found in Central and Southern Europe (en.m.wikipedia.org).
33. *Chrysolina fastuosa* (SCOPOLI, 1763) - one larva of the second age, Tinca, November 15, 16, 2022, t = 11 – 12⁰ C. The presence in the cold season of the larval stage in this species (Ilie et al., 2018) is reconfirmed. Common species in Romania, sometimes frequent in the Tinca area, it is found in Europe, Caucasus and Northern Turkey(en.m.wikipedia.org).
34. *Lucanus cervus* (LINNAEUS, 1758) – one male specimen in activity, the Râpa forest, November 20, 2022, t = 5⁰ C. European species (en.m.wikipedia.org) , very common in the deciduous forests from Romania and the Tinca area.

35. *Blaps mortisaga* (LINNAEUS, 1758) – one specimen, Râpa, November 20, 2022, t = 5⁰C. European species (en.m.wikipedia.org), common in Romania and the Tinca area.
36. *Anthelephila pedestris* (ROSSI, 1790) – one specimen, Tinca, January 1, 2023, t = 15⁰ C. Relatively common species in Romania and the Tinca area, European species (en.m.wikipedia.org).
37. Larva of Cantharidae and larva of Carabidae – one specimen, Tinca, November 28, 2022; one larva of Cantharidae, December 25, 2022, t = 7⁰ C; January 14, 2023, t = 6⁰ C. These larvae are very common in Romania and the Tinca area.
38. *Exochomus quadripustulatus* (LINNAEUS, 1758) - one specimen, Tinca, December 3, 9, 2022, t = 10 -11⁰ C; January 22, 2023, t = 13⁰ C; February 22, 2023, t = 16⁰ C. Palearctic species (en.m.wikipedia.org), common in Romania, sometimes frequent in the Tinca area.
39. *Harmonia axyridis* (PALLAS, 1773) – one specimen, Tinca, December 18, 2022, t = -3 – 2⁰ C; January 19, 2023, t = 11⁰ C.; February 21, 2023, t = 16⁰ C. Common species in Romania, frequent in the Tinca area, it is found in Europe, Asia and North America(en.m.wikipedia.org).
40. *Amara ovata* (FABRICIUS, 1792) – one specimen, Tinca, December 7, 2022, t = 10⁰ C. Common species in Romania, frequent in the Tinca area, it is found in Europe (en.m.wikipedia.org).
41. *Adalia bipunctata* (LINNAEUS, 1758) – one specimen, Tinca, December 27, 2022, t = 10⁰ C; February 28, 2023, t = 5⁰ C. Common species in Romania, sometimes frequent in the Tinca area, it is found in Europe and North America(en.m.wikipedia.org).
42. *Hypera zoilus* (SCOPOLI, 1763) – one specimen, Tinca, January 1, 2023, t = 15⁰ C; January 5-7, 2023, t = 9⁰ C. Common species in Romania, relatively common species in the Tinca area, it is found in Europe and North America (en.m.wikipedia.org).
43. *Sitona hispidulus* (FABRICIUS, 1777) – one specimen, Tinca, January 1, 2023, t = 15⁰ C. Common species in Romania and the Tinca area, it is found in Europe, Asia (en.m.wikipedia.org).
44. *Sitona suturalis* (STEPHENS, 1831) – one specimen, Tinca, January 22, 2023, t = 13⁰ C. Palearctic species, relatively common in Romania and the Tinca area.
45. *Dorytomus longimanus* (FORSTER, 1771) – one specimen, Tinca, January 22, 2023, t = 13⁰ C. Common species in Romania and the Tinca area, Eurasian species (en.m.wikipedia.org).
46. *Protaetia cuprea* (FABRICIUS, 1775) – one specimen, Râpa, February 3, 2023, t = 4⁰ C. Common species in Romania and sometimes frequent in the Tinca area, Palearctic species(en.m.wikipedia.org).
47. *Coccinella septempunctata* (LINNAEUS, 1758) – one specimen, Tinca, February 21, 2023, t = 16⁰ C. Common species in Romania, relatively frequent in the Tinca area, it is found all over the world (en.m.wikipedia.org).
48. *Meloe proscarabaeus* (LINNAEUS, 1758) – one female specimen, Tinca, February 22, 2023, t = 14⁰ C. Relatively common species in Romania and in the Tinca area, European species (en.m.wikipedia.org).

Diptera Order

49. *Calliphora vomitoria* (LINNAEUS, 1758) – many specimens and one pair in copula, Tinca, November 23, 2022, t = 12⁰ C; December 7, 10, 16, 23 -25, 31, 2022, January 1-15, 19, 22, 23, 2023, t = 7 -16⁰ C; one specimen, Tinca, January 27-28; February 1, 2023, t = 3-5⁰ C; February 4, 2023, t = 1⁰ C. Common species in Romania, frequent in the Tinca area. it is found all over the world (en.m.wikipedia.org).

50. *Musca domestica* (LINNAEUS, 1758) – one specimen, Tinca, December 18, 2022, t = -3 – 2⁰ C. Very common species in Romania, frequent in the Tinca area, it is found in all over the world(en.m.wikipedia.org).
51. *Eupeodes corollae* (FABRICIUS, 1794) – four specimens, Tinca, January 1, 2023, t = 15⁰ C. Common species in Romania, relatively common species in the Tinca area, it is found in Europe, Asia, North Africa (en.m.wikipedia.org).
52. *Episyrphus balteatus* (DE GEER, 1776) – three specimens, Tinca, January 1, 2023, t = 15⁰ C. Common species in Romania and the Tinca area, Palearctic species (en.m.wikipedia.org).
53. *Eristalis tenax* (LINNAEUS, 1758) – three specimens, Tinca, January 2, 2023, t = 15⁰ C; one specimen, Tinca, January 15, 2023, t = 8⁰ C; five specimens, Tinca, January 23, 2023, t = 15⁰ C. Frequent species in Romania and the Tinca area, it is found all over the world(en.m.wikipedia.org).

Hemiptera Order

54. *Nezara viridula* (LINNAEUS, 1758) – one specimen, Tinca, November 1-2, 2022, t = 11-20⁰ C; December 7, 2022, t = 10⁰ C; December 8, 2022, January 20, 2023, t = 6⁰ C; December 12, 2022, t = 0⁰ C; December 13, 2022, t = -2⁰ C; December 22, 2022, t = 3⁰ C; December 25, 26, 2022, t = 7 -10⁰ C; January 4, 2023, t = 9⁰ C; January 19, 2023, t = 12⁰ C; January 22, 23, 2023, t = 13⁰ C; February 10, 2023, t = 1⁰ C; February 16, 2023, t = 8⁰ C; many specimens, Tinca, November 3-15, 2022, t = 13- 15⁰ C; December 20, 2022, t = 4⁰ C; three specimens, Tinca, November 21, 2022, t = 5⁰ C; December 9, 2022, t = 11⁰ C; two specimens, Tinca, December 4, 2022, t = 9⁰ C. Common species in Romania, sometimes frequent in the Tinca area, it is found around the world(en.m.wikipedia.org).
55. *Leptoglossus occidentalis* (HEDERMANN, 1910) – one specimen, Tinca, November 11, 2022, t = 13⁰ C. Relative common species in Romania and the Tinca area, it is found in Europe and North America (en.m.wikipedia.org).
56. *Lygaeus equestris* (LINNAEUS, 1758) – one specimen, Tinca, November 12-13, 2022, t = 14-15⁰ C; November 22, 23, 2022, t = 12⁰ C; two specimens, Tinca, November 28, 2022, t = 7⁰ C; December 5, 2022, t = 9⁰ C; December 7, 9, 25, 2022, t = 7 -11⁰ C; January 7, 2023, t = 11⁰ C; five specimens, Tinca. February 22, 2023, t = 14⁰ C. European species (en.m.wikipedia.org), common in Romania and in the Tinca area.
57. *Halyomorpha halys* (STAL, 1855) – one specimen, Tinca, November 23, 2022, t = 12⁰ C; November 29, 2022, December 8, 2022, t = 6⁰ C; December 5, 7, 2022, t = 9⁰ C; January 7, 2023, t = 11⁰ C; January 25, 2023, t = 4⁰ C. Common species in Romania, relatively common species in the Tinca area, it is found in Europe, Asia and Americas(en.m.wikipedia.org).
58. *Gonocerus juniperi* (HERRICH – SCHAFFER, 1839) – one specimen, Tinca, December 7, 9, 2022, t = 10 -11⁰ C. Species mentioned for the first time in the Tinca area. Species found in Europe, Asia and North Africa(en.m.wikipedia.org).
59. *Pyrhocoris apterus* (LINNAEUS, 1758) – one specimen, Tinca, December 9, 19, 2022, t = 11⁰ C; January 1, 2023, t = 15⁰ C; February 9, t = 1⁰ C. Common species in Romania, frequent in the Tinca area, Palearctic species(en.m.wikipedia.org).
60. *Rhyparochromus vulgaris* (SCHILLING, 1829) – one specimen, Tinca, December 31, 2022, t = 12⁰ C. Relatively common species in Romania, it is found in Europe, Africa, Asia, North America(en.m.wikipedia.org).

61. *Coreus marginatus* (LINNAEUS, 1758) – one specimen, Tinca, December 2, 2023, t = 15⁰ C. Common species in Romania and the Tinca area, it is found in Europe, Asia and North Africa(en.m.wikipedia.org).

62. *Deraeocoris punctulatus* (FALLEN, 1807) – one specimen, Tinca, January 22, 2023, t = 13⁰ C. Relatively common species in Romania and the Tinca area, it is found in Europe, Asia and North America (en.m.wikipedia.org).

Hymenoptera Order

63. *Polistes dominula* (CHRIST, 1791) – one specimen, Tinca, November 17, 2022, January 19, 2023, t = 11⁰C; November 24, 28,2022, t = 6⁰ - 7⁰ C; January 23, 2023, t = 15⁰ C; February 7,9, 2023, t = 1⁰ C. Very common species in Romania, frequent in the Tinca area,it is found all over the world(en.m.wikipedia.org).

64. *Formica rufa* (LINNAEUS, 1761) – one specimen, Tinca, December 5, 2022, t = 9⁰ C. Common species in Romania and in the Tinca area,European species (en.m.wikipedia.org).

65. *Lasius niger* (LINNAEUS, 1758) - one specimen, Tinca, January 14, 2023, t = 6⁰ C; January 19, 2023, t =12⁰ C; January 22, 2023, t = 13⁰ C.Common species in Romania,frequent in the Tinca area, it is found in Europe, Asia, Americas, Australia(en.m.wikipedia.org).

66. *Anthophora plumipes* (PALLAS, 1772) – one specimen, Tinca, January 26, 2023, t = 5⁰ C; February 3,2023, t =4⁰ C. According to en.wikipedia.org/wiki/Anthophora_plumipes, this species can be encountered from March to June. In this case, probably this is the earliest mention of this species in Romania! Common species in Romania, it is found in Europe, Asia, North Africa and North America (en.m.wikipedia.org).

Dermaptera Order

67. *Forficula auricularia* (LINNAEUS, 1758) – one specimen, Tinca, November 20, 2022, t = 5⁰ C; December 10, 2022, t =12⁰ C. Common species in Romania, frequent in the Tinca area, it is found in Europe, West Asia, North Africa and North America(en.m.wikipedia.org).

Neuroptera Order

68. *Chrysoperla pallida* (HENRY ET AL., 2002) – one specimen, Tinca, December 25, 2002, t=7⁰C.Relatively common species in Romania and Tinca area, European species (en.m.wikipedia.org).

Plecoptera Order

69. *Leuctra prima* (KEMPNY, 1899) – one specimen, Tinca, February 22, 2023, t = 13⁰ C. European species (en.m.wikipedia.org), relatively common in Romania, mentioned for the first time in the Tinca area.

Gastropoda Class, Stylomatophora Order

70. *Deroceras reticulatum* (MULLER, 1774) – six specimens, Tinca, November 1, 2022, t = 20⁰ C; November 11, 2022, t = 13⁰ C; November 23, 2022, t = 12⁰ C; January 11, 2023, t = 10⁰ C; one specimen, Tinca, November 3, 2022;January 23, 2023, February 22, 2023,t =14⁰ C; November 4, 2022, t = 18⁰ C; November 15, 2022, t = 14⁰ C; December 31, 2022, t = 12⁰ C; January 1, 2023, t = 15⁰ C; January 5, 2023, t = 9⁰ C; January 25,28, 2023; February 3,2023, t = 4⁰ C; February 20, 2023, t = 7⁰ C; February 27, 2023, t = 3⁰ C; four specimens, Tinca, November 7, 2022; December 7,24, 2022, t = 10 -12⁰ C, rain; November 12, 2022, t = 14⁰ C; November 17, 2022, t = 9⁰ C; December 8, 2022; January 14, 2023, t = 6⁰ C; December 15, 2022, t = 7⁰ C; December 23, 2022, t = 8⁰ C; 35 specimens, Tinca, November 8, 2022, t = 14⁰ C, rain; two specimens, Tinca, November 9, 2022, t = 16⁰ C; November 10, 2022, t = 13⁰ C; December 6, 2022; January 4, 2023, t = 9⁰ C; December 11, 2022, t = 20⁰ C ; December 12,

- 2022, t = 10⁰ C; December 17, 2022, t = 4⁰ C; December 25, 2022, t = 7⁰ C; January 12, 2023, t = 10⁰ C; seven specimens, Tinca, November 11, 2022, t = 13⁰ C; nine specimens, Tinca, November 18, 2022, t = 11⁰ C; three specimens, November 21, 2022, t = 5⁰ C; December 16, 2022, t = 16⁰ C. Common species in Romania, frequent in the Tinca area, European species (en.m.wikipedia.org).
71. *Deroceras laeve* (MULLER, 1774) - one specimen, Tinca, January 2, 2023, t = 15⁰ C. Common species in Romania and in the Tinca area, Palearctic species (en.m.wikipedia.org).
72. *Caucasotachea vindobonensis* (PFEFFER, 1828) – one specimen, Tinca, November 6, 11, 2022, t = 12 - 13⁰ C; one juvenile specimen, Tinca, November 13, 2022, t = 14⁰ C. Common species in Romania, frequent in the Tinca area, Pontic, Pannonian and Balkanian species (en.m.wikipedia.org).
73. *Limax maximus* (LINNAEUS, 1758) – one specimen, Tinca, November 7, 2022, t = 12⁰ C, rain; November 8, 2022, t = 13⁰ C; December 25, 2022, t = 7⁰ C. Common species in Romania, frequent in the Tinca area, it is found in Europe and North Africa (en.m.wikipedia.org).
74. *Cepaea hortensis* (MULLER, 1774) – one specimen, Tinca, November 8, 2022, t = 14⁰ C. Common species in Romania, relatively common species in the Tinca area, European species (en.m.wikipedia.org).

Arachnida Class, Araneae Order

75. *Dysdera erythrina* (WALCKENAER, 1802) – one specimen, Tinca. November 2, 2022, t = 11⁰ C. Common species in Romania, relatively common species in the Tinca area, European species (en.m.wikipedia.org).
76. *Xysticus acerbus* (THORELL, 1872) – one female specimen, Tinca, November 4, 2022, t = 18⁰ C. Common species in Romania, relatively common species in the Tinca area, it is found in Europe to Central Asia (en.m.wikipedia.org). From a phenological point of view, the species can be found in nature until September (according to araneae.nmbe.ch).
77. *Xysticus cristatus* (CLERCK, 1757) – one specimen, Tinca, December 4, 2022, t = 9⁰ C; January 2, 2023, t = 15⁰ C. Common species in Romania, sometimes frequent in the Tinca area, Eurasian species (araneae.nmbe.ch).
78. *Cheiracanthium oncognathum* (THORELL, 1871) – one specimen, Tinca, November 16, 17, 2022, t = 9 - 11⁰ C. Common species in Romania, it is found in Europe (araneae.nmbe.ch).
79. *Opilio parietinus* (DE GEER, 1778) – one specimen, Tinca, November 23, 2022, t = 12⁰ C; November 28, 2022, t = 7⁰ C; November 29, 2022, t = 6⁰ C. Common species in Romania, sometimes frequent in the Tinca area, it is found in Europe and North America (araneae.nmbe.ch).
80. *Amaurobius ferox* (WALCKENAER, 1830) – one specimen, Tinca, November 28, 2022, t = 7⁰ C. Frequent species in Romania and the Tinca area, it is found in Europe, North America, Turkey (araneae.nmbe.ch).
81. *Alopecosa pulverulenta* (CLERCK, 1757) – one specimen, Tinca, November 26, 2022, t = 6⁰ C; January 2, 2023, t = 15⁰ C. Common species in Romania and the Tinca area, Eurasian species (araneae.nmbe.ch).
82. *Hogna radiata* (LATREILLE, 1817) – one juvenile specimen in a house, Tinca, December 19, 2022, t = 1⁰ C (outside, in nature); December 25, 2022, t = 7⁰ C. Common species in Romania, frequent in the Tinca area, it is found in Europe, Central Asia and North Africa (araneae.nmbe.ch).

83. *Pisaura mirabilis* (CLERCK, 1757) – one specimen, Tinca, December 29, 2022, t = 9⁰ C.; December 31, 2022, t = 12⁰ C; January 23, 2023, t = 15⁰ C; February 4, 2023, t = 1⁰ C; February 12, 2023, t = 5⁰ C; February 16, 2023, t = 8⁰ C; February 21, 2023, t = 14⁰ C; two specimens, Tinca, January 22, 2023, t = 13⁰ C; February 21, 2023, t = 16⁰ C. Common species in Romania, frequent in the Tinca area, Palearctic species (araneae.nmbe.ch).
84. *Gibbaranea bituberculata* (WALCKENAER, 1802) – one specimen, Tinca, December 31, 2022, t = 12⁰ C. According to araneae.nmbe.ch, the species can be found in nature until July ! Palearctic species (araneae.nmbe.ch), relatively common in Romania. Species mentioned for the first time in the Tinca area.
85. *Ozyptila atomaria* (PANZER, 1801) – one specimen, Tinca, January 1, 2023, t = 15⁰ C. Common species in Romania, it is found in Europe and Asia (araneae.nmbe.ch). Species mentioned for the first time in the Tinca area.
86. *Trochosa ruricola* (DE GEER, 1778) – one specimen, Tinca, January 1, 2023, t = 15⁰ C. Common species in Romania, frequent in the Tinca area, it is found in Europe, Asia, North and Central America (araneae.nmbe.ch).
87. *Pardosa agricola* (THORELL, 1856) – one specimen, Tinca, January 1, 2023, t = 15⁰ C. Common species in Romania and in the Tinca area, Eurasian species (en.m.wikipedia.org).
88. *Pardosa amentata* (CLERCK, 1757) – one specimen, Tinca, January 22, 2023, t = 13⁰ C; many specimens, Tinca, February 15-17, 2023, t = 8-9⁰ C. Common species in Romania and in the Tinca area, it is found in Europe (araneae.nmbe.ch).
89. *Araneus circe* (AUDOUIN, 1825) – one specimen, Tinca, January 23, 2023, t = 15⁰ C. Common species in Romania and in the Tinca area, it is found in southern Europe, Egypt, Iran, Turkey, Caucasus (araneae.nmbe.ch).

Clitellata Class, Haplotaxida Order

90. *Lumbricus terrestris* (LINNAEUS, 1758) – many specimens, Tinca, November 7,8,16,17,23,24,2022, December 6, 7,10, 11, 16,24, 25, 2022, February 25-28, 2023, t = 2-16⁰ C, rain; one pair in copula, Tinca, November 18, 2022, t = 11⁰ C; January 1 – 2, 2023, t = 15⁰ C; February 25, 2023, t = 9⁰ C; two pairs in copula, Tinca, December 30, 31, 2022, t = 9 – 12⁰ C; four specimens, Tinca, January 10,12,13,22, 2023, t = 7-13⁰ C, rain; five specimens, Tinca, January 19, 2023, t = 11⁰ C, rain; one pair in copula, Tinca, January 24, 2023, t = 7⁰ C. Very common species in Romania, frequent species in the Tinca area, it is found all over the world (en.m.wikipedia.org).

Malacostraca Class, Isopoda Order

91. *Porcellio scaber* (LATREILLE, 1804) – one specimen, Tinca, December 4, 2022, t = 9⁰ C; December 25, 2022; January 24, 2023, t = 7⁰ C; January 2, 2023, t = 15⁰ C; January 13, 2023, t = 8⁰ C; January 23, 2023, t = 13⁰ C; February 15, 2023, t = 8⁰ C; February 25, 2023, t = 9⁰ C; two specimens, Tinca, December 11, 2022, t = 2⁰ C; January 12, 2023, t = 10⁰ C. Common species in Romania and the Tinca area, Cosmopolitan species (en.m.wikipedia.org).

4. CONCLUSIONS

During the cold season 2022 – 2023 in Tinca area there were identified 91 species of invertebrates belonging to five classes. The high temperatures and the absence of snow (only one snow day and one week of frost) in the cold season during the analyzed period in the Tinca area favored the observation of both numerous specimens of these species, even specimens in copula. *Gonocerus juniperi* Herr. – Schff., *Ozyptila atomaria* Panz., *Gibbaranea bituberculata* Walck. are mentioned for

the first time in the Tinca area. The existence of a second annual generation was observed in the species *Dorcadion scopolii* Herbst, and the presence in the cold season of the larval stage in the species *Chrysolina fastuosa* Scop. is reconfirmed. The difference between the day and night (sometimes 10-15⁰ C) and high temperatures led to the death by freezing of many species. Example: *Lumbricus terrestris* L., *Deroceras reticulatum* Mull., *Amara ovata* Fabr., *Nezara viridula* L.

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