

## OBSERVATIONS ABOUT THE FAUNA OF INVERTEBRATES FROM TINCA AREA (BIHOR COUNTY, ROMANIA) DURING THE COLD SEASON 2017-2018

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### Abstract

*In this work are presented data about the fauna of invertebrates from Tinca area (Bihor County) during the cold season 2017-2018. There were identified 47 species belonging to seven classes. The winter 2017-2018 could be considered the warmest from the history of Tinca village with diurnal temperatures between 0 – 17°C. In this way, there identified premature activities, even copula in some species. There are identified 47 species belonging to seven classes. The most represented class is Insecta - 41 species. There were identified two species in copula - Lumbricus terrestris L. and Culex pipiens L. The Sympecma fusca VdL. species is mentioned for the first time in Tinca area and in the Bihor county. We noticed some phenological anomalies at four species.*

*Keywords: cold season, fauna of invertebrates, Tinca area.*

### 1. INTRODUCTION

Tinca area is located in the south-western part of Bihor County, in the North-Western part of Romania. The climate is temperate-continental, the average altitude is 110 m. The vegetation belongs to the oak stage (Berindei and Pop, 1972). Data about the fauna of invertebrates from Tinca area during the cold seasons were published by Ilie (2013, 2014 a, b,c, 2015, 2016).

Being considered the warmest winter from the history of Tinca village, with diurnal temperatures between 0 – 17°C, only five sprinkles of snow, the present work follows the influence of the temperature on the presence of different invertebrates during the cold season 2017-2018. The researches were achieved from the end of autumn up to winter (October 20, 2017 – March 1, 2018).

### 2. MATERIALS AND METHODS

The invertebrates were collected with hands and the entomological net. For the identification of the invertebrates were used different sources (Cîrdei and Bulimar, 1965; Pîrvu et al., 1985; Rakosy, 1996, 2013; Szekely, 2010, 2011; Warchalowski, 2003, Kis, 1984; Rădulescu and Voican, 1986). The observations were achieved daily, measuring nocturnal and diurnal temperatures.

### 3. RESULTS AND DISCUSSIONS

During October 20, 2017 – March 1, 2018, in Tinca area, there were identified the following species (Table 1):

*Table 1 The presence of the invertebrates in Tinca area, during the cold season 2017-2018*

Class, species	Period, number of specimens	Temperatures (°C)
Crustacea Class		
<i>Porcelio scaber</i> Latreille	5 specimens 16 XII 2017-3II 2018	1 – 7°C
Oligochaeta Class		
<i>Lumbricus terrestris</i> Linnaeus, 1758	17 specimens 10XII 2017-23 II2018	4– 17°C
Arachnida Class		
<i>Opilio parietinus</i> De Geer, 1778	5 specimens 17XII 2017-17 I 2018	4– 13°C
Gastopoda Class		
<i>Limax cinereo niger</i> Wolf, 1803	6 specimens 29XII 2017-17 I 2018	3 – 7°C
Diplopoda Class		
<i>Cromatojulus unilineatus</i> Koch, 1823	44 specimens 21X 2017–21II 2018	0 – 13°C
Chilopoda Class		
<i>Lithobius forficatus</i> Linnaeus, 1758	1 specimen 3 II 2018	7°C
Insecta Class		
<i>Mantis religiosa</i> Linnaeus, 1758	6 specimens 20XI 2017	12-21°C
<i>Sympecma fusca</i> Van der Linden, 1823	2 specimens, 20X 2017	17°C
<i>Vespa germanica</i> Linnaeus, 1758	6 specimens, 14 XI – 28 XII 2017	5– 13°C
<i>Tetramorium caespitum</i> Linnaeus, 1758	2 specimens, 15XII 2017-12I 2018	10°C
<i>Aphrophora alni</i> Fallen, 1805	1 specimen, 3 II 2017	7°C
<i>Lygaeus equestris</i> Linnaeus, 1758	3 specimens, 3II -17 II 2018	7- 8°C
<i>Pentatoma rufipes</i> Linnaeus, 1758	5 specimens, 20XI 2017- 4 II 2018	6 – 12 °C
<i>Pyrrhocorus apterus</i> Linnaeus, 1758	15 specimens 22XI 2017-3 II 2018	6 – 13 °C
<i>Palomena praxina</i> Linnaeus, 1758	9 specimens, 14 XI 2017- 7 I 2018	3 – 17 °C
<i>Lucilia sericata</i> Meigen, 1826	8 specimens, 7 I – 17 II 2018/	8 – 13 °C
<i>Culex pipiens</i> Linnaeus, 1826	32 specimens, 20 XI 2017-3 II 2018	3 – 13 °C
<i>Calliphora erythrocephala</i> Macquart, 1834	53 specimens, 30XI2017-24II 2018	(-5) -17°C
<i>Muscina stabulans</i> Fallen, 1817	2 specimens, 7 I 2018	13 °C
<i>Musca domestica</i> Linnaeus, 1758	6 specimens, 30 Xi 2017-6 I 2018	7 – 17 °C
<i>Lasiommata megera</i> Linnaeus, 1758	2 specimens, 21 – 22 X 2017	16 – 17 °C
<i>Polypogon tentaculata</i> Linnaeus, 1758	1 specimen male, 15 II 2018	5 <sup>0</sup> C
<i>Lasiocampa trifolii</i> Denis & Schiffermuller, 1775	1 larva specimen, 4 II 2018	7 <sup>0</sup> C
<i>Vanessa atalanta</i> Linnaeus, 1758	11 specimens, 20 X – 25 I 2018	8 – 17 °C
<i>Hyles euphorbiae</i> Linnaeus, 1758	1 specimen, 24 I 2018	4°C
<i>Aglaia urticae</i> Linnaeus, 1758	1 specimen, 24 I 2018	13 °C
<i>Inachis io</i> Linnaeus, 1758	1 specimen, 8 I 2018	13 °C
<i>Papilio machaon</i> Linnaeus, 1758	1 specimen, 8 I 2018	13 °C
<i>Ipheclides podalirius</i> Linnaeus, 1758	1 specimen, 7 I 2018	13 °C
<i>Pieris rapae</i> Linnaeus, 1758	1 specimen, 4 I 2018	7 °C

<i>Pararge aegeria tircis</i> Godart, 1821	1 specimen, 6 XI 2017	15 °C
<i>Pieris brassicae</i> Linnaeus, 1758	3 specimens, 25 X – 7 XI 2017	15 – 17 °C
<i>Longitarsus minimus</i> Kutchera, 1863	1 specimen, 10 XII 2017	2 <sup>0</sup> C
<i>Harmonia axiridis</i> Pallas, 1773	1 specimen, 28 XII 2017	13 °C
<i>Longitarsus minusculus</i> Foudras, 1860	2 specimens, 28 XII 2017	13 °C
<i>Galeruca rufa</i> Germar, 1824	1 specimen, 18 XII 2017	7 °C
<i>Galeurca pomonae</i> Scopoli, 1763	1 specimen, 6 XI 2017	15 °C
<i>Rhynchites bacchus</i> Linnaeus, 1758	1 specimen, 24 X 2017	12 °C
<i>Anthrenus scrophulariae</i> Linnaeus, 1758	1 specimen, 21 II 2018	7.5 °C
<i>Chrysolina fastuosa</i> Scopoli, 1763	6 adult specimens, 1 XI 2017 – 12 I 2018; 50 larva specimens	0-17 <sup>0</sup> C
<i>Otiorrhynchus fuscipes</i> Olivier, 1790	1 specimen, 17 I 2018	5 <sup>0</sup> C
<i>Altica oleracea</i> Linnaeus, 1758	86 specimens, 20X 2017-24 II 2018	4 – 21 <sup>0</sup> C
<i>Podagrica malvae</i> Illiger, 1807	20 specimens, 11 I -29 I 2018	4 – 10 <sup>0</sup> C
<i>Coccinella 7-punctata</i> Linnaeus, 1758	6 specimens 12 XII 2017-19 I 2018	6 – 17 <sup>0</sup> C
<i>Psyllobora 22-punctata</i> Linnaeus, 1758	1 specimen, 17 XI -21 XII 2017	0 – 13 <sup>0</sup> C
<i>Chrysolina limbata</i> Linnaeus, 1758	1 larva specimen, 17XI–21XII 2017	8 <sup>0</sup> C
<i>Lasius niger</i> Linnaeus, 1758	2 specimens, 25 XI – 26 XII 2017	8 – 17 <sup>0</sup> C

There were identified 47 species belonging to seven classes. The most represented class is Insecta – 41 species (87.23%).

Inside the Insecta class, concerning the number of species collected by orders, the situation is the following:

- The *Coleoptera* order with a total of 14 species (34.14%), followed by the *Lepidoptera* order with 12 species (29.26%) the *Diptera* order with 5 species (12.19%), the *Heteroptera* order with 4 species (9.75%), the *Hymenoptera* order with 3 species (7.31%), the *Homoptera* order with one species (2.43%), the *Odonata* order with one species (2.43%), the *Montodea* order with one species (2.43%).

The high temperatures registered during the cold season 2017-2018 in the Tinca area determined the existence of copula in some species:

- *Lumbricus terrestris* L.: two pairs in copula January 8, 2018, t=7<sup>0</sup>C; one pair in copula, February 3, 2018, t=7<sup>0</sup>C.
- *Culex pipiens* L.: two pairs in copula, January 5, 2018, t=8<sup>0</sup>C, one pair in copula, January 7, 2018, t = 13<sup>0</sup>C.

The *Sympecma fusca* V.d.L. species is mentioned for the first time in Tinca area and in the Bihor county (Ilie, 2012).

Because the high temperatures registered during the winter 2017-2018 we noticed some insects overwintering in different safe places (example – lower) and not in the ground (*Pyrrhocorus apterus* L., *Altica oleracea* L., *Psyllobora 22 - punctata* L., *Podagrica malvae* Ill).

We noticed some phonological anomalies as well observed in some species:

- *Lygaeus equestris* L. – one specimen, Tinca, February 3, 2018, t=7<sup>0</sup>C and two specimens, Tinca, February 17, 2018, t=8<sup>0</sup>C. The period of flight for this species begins in May (Kis, 1984)
- *Polypogon tentacularia* L. – one male specimen, Tinca, February 15, 2018, t=5<sup>0</sup>C. According to Rakosy (1996), the period of flight for this species begins in May.

- *Hyles euphorbiae* L. – one specimen, January 24, 2018,  $t=4^{\circ}\text{C}$ . During November – the end of April, this species is in pupa stage and the period of flight is during May – September, according to Szekely (2010).
- *Chrysolina fastuosa* Scop. – six adult specimens, 50 larva specimens, Tinca, November 1, 2017 – January 12, 2018.

The period of flight is April – September. In the last years (2016, 2017) were observed even adults in copula, at the end of September – the beginning of October, because the high temperatures registered in this period (till  $19^{\circ}\text{C}$ ). The positive and relatively high temperatures during the cold season 2017-2018 determined the appearance of a new generation of a new generation of larvae (50 specimens), having different age.

It proves to be true the observations of Ilie from the last years (2013-2015) regarding the existence of some species of butterflies during the winter, because of the high temperatures: *Iphiclides podalirius* L., *Papilio machaon* L., *Inachis io* L., *Aglais urticae* L. (by 1 specimen, January 7-8,  $t=13^{\circ}\text{C}$ ). The species *Veronica didyna* Ten. (*Scrophulariaceae* family) becomes a new host plant for *Altica oleracea* L. (*Coleoptera*, *Chrysomelidae*). The attack was relatively moderate, the plant being also safe place for this coleopteran.

#### 4. CONCLUSIONS

During the cold season 2017-2018, in Tinca area there were observed 47 species of invertebrates. There were identified premature activities, even copula in some species, because the high temperature registered.

We identified a new species of dragon-fly from Tinca area a new host plant from *Altica oleracea* L.

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