

GENERAL OVERVIEW ON THE OPILIONID FAUNA (ARACHNIDA, OPILIONES) IN ROMANIA

BY

ANDA FELICIA BABALEAN¹

Key words: Opilionids, faunistic inventory, range, ecologic presentation

The paper presents, according to the bibliographical information, a faunistic inventory of the Opilionids species in the territory of Romania. It is estimated, as being part of the Romanian fauna, a number of 56 Opilionid species belonging to 26 genera and 9 families. Since the Opilionids systematics, at a European level, is not completely clarified, the faunistic inventory is temporary. The paper also contains a brief zoogeographical and ecological presentation of the Opilionids species, which were subject to inventory, and an evaluation of the knowledge referring to the zoogeographical areas in Romania, which were more or less studied.

Introduction

Compared to other groups of invertebrates, the Opilionids represent, as number of species, a reduced segment of the Romanian fauna. If we proceed to a comparison with the much related groups of arthropods, the Araneae and the Acariens easily exceed, as number of species, the Opilionids; only the Scorpions are below the Opilionids. Nevertheless, the Opilionids represent a fauna segment insufficiently studied.

Historical background:

In Romania, the Opilionids have been studied both by Romanian biologists and by foreign ones, under different aspects: faunistic, anatomical, systematic and phylogenetic, histological and embryological, biological, ecological, biogeographical, etc. The oldest papers are faunistic and they belong to some foreign zoologists. The first information regarding the order of Arachnids on the Romanian territory was given by V. Sill-1862, G. Seidlitz and L. Koch-1867, O. Herman -1864-1879 in Transylvania; by Becker-1879-1881 in Moldavia; by A. Lendl in the paper "Opiliones Musaei Nationalis Hungarici" in 1894 and by Daday in "Fauna Regni Hungariae" in 1896. After 1900 we can mention M. Jaquet and I. Scriban in brief publications in 1905 and 1906 as well as G. Kolosvary who in a series of papers in the period between 1929 and 1963 contributes with numerous data regarding the Opilionids species and their spread in Transylvania. In numerous publications which appeared between 1910 and 1957, F. Roewer mentions Opilinioids species in the Romanian fauna. Dudich mentions it, too, in his paper "Faunistische Notizen" (1928) and the same thing does Bartos in "Die Weberknechte

¹ University of Craiova

(Opiliones) des Östlichen Carpathicums". The Opilionids in the Romanian fauna are mentioned in the papers of L. Szalay "Contribution a l'étude de la faune des Opilionidea dans le bassin de Carpathes" -1948.

After 1942 the Opilionids, in Romania, started to be studied by the Romanian biologists too. Between 1942 and 1967 Filimon Cârdei published 19 articles about the Opilionids fauna, especially in Moldavia. Starting with 1960 and until 1967, professor Cârdei had in his team Felicia Bulimar, Lidia Raianu, M. Varvara and D. Bahrim. Starting with 1964, the Opilionids in Romania have been studied by Ștefania Avram, Dan Dumitrescu, Ingmar Weiß, M. Ciobanu in 1977 with "Fossil Fauna in the Oligocen in Piatra Neamț" and C. Tesio who applies, within the animal systematics, including the Opilionids, a series of biochemical methods.

Ștefania Avram studied, particularly the Opilionids fauna in the caves, but not only, under various aspects: variability, systematic revisions, description of some new species and subspecies, identification keys, anatomical studies, geographical spread and ecological studies, etc.

Dan Dumitrescu carried out various researches: faunistic, systematic, histological studies, phylogenetic studies, bibliographical and zoogeographical studies.

Complex ecological and faunistic studies of the Opilionids in Transylvania and all over Romania are carried out by Ingmar Weiss between 1973 and 1996. On the basis of some ecological analyses doubled by biometrical data, Weiss claims the existence of three species of Trogulide (*T. tricarinatus*, *T. oltenicus*, *T. closanicus*) as real biospecies (reproductively isolated) and he rejects the hypothesis (under the conditions of some possible panmixii) of a polymorphism within the populations as well as the possibility that the identified forms should be successive phases in the ontogenetic development. On the basis of the quantitative and comparative gatherings, using Barber pitfalls during all the vegetation stages, Weiss also specified the ecological optimal value, the ecological valence (the niche space) and the phenology for the 29 species of Opilionids in the southern part of the Transylvanian Plateau. For the species *Egaenus convexus* and *Zacheus crista* the researcher specified the seasonal translocation phenomenon: the populations of the species *Zacheus crista* appear in the southern part of the Transylvanian Plateau in the spring time, in open habitats with steppe xerothermic vegetation and they migrate in April and May to forested locations. For the species *Egaenus convexus* Weiss specifies that it primarily uses, as food, the detritophagous arthropods in the forest skirt.

Faunistic inventory

On the basis of the information provided by the arachnological literature, we have drawn up a faunistic inventory of the valid species so far. The faunistic inventory cannot be complete because of at least three motives:

1. Systematic revisions which can lead to synonymy for some species ;
2. New gatherings can bring faunistic novelties by the description of new species for the Romanian fauna and also for science.

General overview on the Opilionid fauna (Arachnida, Opiliones) in Romania

3. The checking of the gatherings could demonstrate that some species cited for the Romanian fauna were erroneously identified. Given this situation, they should be erased from the list.

The list contains the following species, systematically framed according to

Martens – 1978:

Suborder. Laniatores

Suprafamily Travunioidea

Family. Erebomastriidae

1. *Holoscotolemon jaqueti* (Corti, 1905)

Suborder Palpatores

Suprafamily Troguloidea

Family Nemastomatidae

2. *Nemastoma lugubre* (Muller, 1776)
3. *Nemastoma bidentatum sparsum* Gruber & Martens, 1968
4. *Nemastoma transsylvanicum*, Gruber & Martens, 1968
5. *Paranemastoma kochi* (Nowicki, 1870)
6. *Paranemastoma silli* (Herman, 1871)
7. *Paranemastoma ancae* Avram, 1973
8. *Carinostoma elegans* (Soerensen, 1894)
9. *Mitostoma chrysomelas* (Hermann, 1804)

Family Dicranolasmatidae

10. *Dicranolasma scabrum* (Herbst, 1799)

Family Trogulidae

11. *Trogulus tricarinatus* (Linnaeus, 1767)
12. *Trogulus nepaeformis* (Scopoli, 1763)
13. *Trogulus tingiformis* C.L.Koch, 1848
14. *Trogulus oltenicus* Avram, 1971
15. *Trogulus closanicus* Avram, 1971
16. *Trogulus banaticus* Avram, 1971
17. *Trogulus galasensis* Avram, 1971
18. *Trogulus roeweri* Avram, 1971

Suprafamily Ischyropsalidoidea

Family Ischyropsalididae

19. *Ischyropsalis manicata* L.Koch, 1865

Suprafamily Phalangiodea

Family Phalangiidae

20. *Phalangium opilio* Linnaeus, 1761
21. *Opilio parietinus* (De Geer, 1778)
22. *Opilio saxatilis* C.L.Koch, 1839
23. *Opilio dinaricus* Silhavy, 1938
24. *Opilio ruzickai* Silhavy, 1938
25. *Platybunus bucephalus* (C.L.Koch, 1835)
26. *Platybunus pinetorum* (C.L.Koch, 1839)

27. *Platybunus pallidus* Silhavy, 1938
28. *Platybunus juvarae* Avram, 1968
29. *Platybunus decui* Avram, 1968
30. *Platybunus jeporum* Avram, 1968
31. *Rilaena triangularis* (Herbst, 1799)
32. *Lophopilio palpinalis* (Herbst, 1799)
33. *Zacheus crista* (Brulle, 1832)
34. *Egaenus convexus* (C.L.Koch, 1835)
35. *Oligolophus tridens* (C.L.Koch, 1836)
36. *Lacinius horridus* (Panzer, 1794)
37. *Lacinius dentiger* (C.L.Koch, 1848)
38. *Lacinius ephiatus* (C.L.Koch, 1835)
39. *Odiellus lendli* (Soerensen, 1894)
40. *Mitopus morio* (Fabricius, 1799)

Family Sclerosomatidae

41. *Astrobunus laevipes* (Canestrini, 1872)

Family Leiobunidae

42. *Gyas titanus* Simon, 1879
43. *Dicranopalpus gasteinensis* Doleschall, 1852
44. *Leiobunum tisciae* Avram, 1968
45. *Nelima semproni* Szalay, 1951
46. ? *Oligolophus hanseni* (Kraepelin, 1896)
47. ? *Paroligolophus agrestis* (Meade, 1855)
48. ? *Leiobunum rotundum* (Latreille, 1798)
49. ? *Leiobunum rupestre* (Herbst, 1799)
50. ? *Leiobunum limbatum* L.Koch, 1861
51. ?] *Leiobunum blackwali* Meade, 1861
52. ? *Leiobunum nigripalpe* Simon, 1879
53. ? *Amilenus aurantiacum* (Simon, 1881)
54. ? *Ischyropsalis hellwigi* (Panzer, 1794)
55. ? *Ischyropsalis carli* Lessert, 1905
56. ? *Paranemastoma bicuspidatum* (C.:L.Koch, 1835)

This list may involve the following observations:

1. the species *Paranemastoma bicuspidatum* was first reported in the Romanian fauna by Weiss – 1996; there is the suspicion that it would represent melanic individuals of *P. silli*.
2. the species 46 – 55 were most probably erroneously identified. Their including on the list can be done only after the gathering checking (museal collections).
3. the species of the genera *Trogulus* and *Leiobunum* require systematic revisions.

Zoogeographical analysis

The Opilionids fauna in Romania contains elements which vary a lot from the origin and the geographical spread points of view, on the one hand, because of Romania's geographical position on the European continent, which imposes complex features to the climate conditions, and on the other hand, because of the relief diversity.

Table 1 Shows the number of species and their percentage value for the various types of geographical range

Type of geographical distribution	Number of species	Percent
Holarctic	1	2.2
Palaearctic	1	2.2
Atlantic	3	6.6
SubAtlantic	2	4.4
European (vast spreading area)	4	8.8
European mountainous	8	17.7
S-E European	8	17.7
Ponto – Mediterranean	2	4.4
Asian – SubMediterranean	1	2.2
Endemics in Carpathians – among which	15	33.3
Endemics in the Romanian Carpathians	10	22.2

The great number of endemic species is to be taken into consideration.

Ecological analysis

The role of Opilionids within the ecosystems is insufficiently known so far. Most of the species are predators, therefore secondary consumers. Some data (published or not) as well as some personal observations suggest that at least some species are primary consumers (vegetarian diet), detritivore or opportunist, including corpse consumers.

From the ecological requirements point of view, the Opilionids are hygrophilous, lucifugous arthropods, which frequently populate the caves. According to their preferential life environment, the Opilionids classify into the following biological types:

- troglobiont – no species
- troglophile – 4 species
- endogeous – 22 species
- epigeous – 7 species
- euribiont – 1 species
- unknown or uncertain preferential life environment – 11 species

Geographical areas less or not-studied

Taking into consideration the faunistic reports, for the following areas none or just few bibliographical indications are to be found so far:

- Banat and Transylvania
Transilvaniei Plain, Cluj and Dej Hills, Someș Plain, Crișurilor Plain, Zarand Mountain, Arad Plain, C. Vinga Plain.
- Moldavia
Central Moldavian Plateau, Bârlad Plateau, Tutova Hills, Covurlui Plain, Jijia Plain, Suceava Plateau.
- Oltenia and Muntenia
Blahnița Plain, Romanați Plain, Găvanu-Burdea Plain, Mostiștea Plain, Bărăgan Plain, Olteț Plateau, Argeș Plateau, Cotmeana Plateau.

Bibliography

1. Avram, Șt., 1964 - Stud. Cerc. Biol., Ser. Zool., 16, 4: 295-306.
2. Avram, Șt., 1964 b - Stud. Cerc. Biol., Ser. Zool., 16, 6: 481-487.
3. Avram, Șt., 1965 - Lucr. Inst. Speol. «Emil Racoviță», 4: 181-186.
4. Avram, Șt., 1968 - Lucr. Inst. Speol. «Emil Racoviță», 8: 163-185.
5. Avram, Șt., 1968 a - Annls Spéléol., 23, 3: 641-665.
6. Avram, Șt., 1969 - Acta zool. Cracov., 14, 6: 139-150.
7. Avram, Șt., 1970 - Livre du centenaire Émile G. Racovitza 1868-1968: 393-399.
8. Avram, Șt., 1970 a - Trav. Inst. Spéol. «Emile Racovitza», 9: 171-181.
9. Avram, Șt., 1971 - Trav. Inst. Spéol. «Émile Racovitza», 10: 245-272.
10. Avram, Șt., 1972 - Trav. Inst. Spéol. «Emile Racovitza», 11: 249-255.
11. Avram, Șt., 1973 - Livre du cinquantenaire de l'Institut de Spéologie «Emile Racovitza»: 269-303.
12. Avram, Șt., 1973a - Trav. Inst. Speol. «Emile Racovitza», 12: 12-61
13. Avram, Șt., 1973b - Trav. Inst. Spéol. «Emile Racovitza», 12: 135-138.
14. Avram, Șt., 1975 - Trav. Inst. Spéol. «Emile Racovitza», 14: 89-97.
15. Avram, Șt.; Dumitrescu, D., 1969 - Lucr. Inst. Speol. «Emile Racovitza». 8: 99-145.
16. Babalean, A., 1997 - Analele Universității din Craiova, Seria: Biologie, Horticultură, TPPA, Vol. II (XXXVIII): 58-60.
17. Babalean, A., 1997 - Analele Universității din Craiova, Seria: Biologie, Horticultură, TPPA, Vol. II (XXXVIII): 61-64.
18. Babalean, A., 1998 - Analele Universității din Craiova, Seria: Biologie, Horticultură, TPPA, Vol. III (XXXIX): 40-43.
19. Babalean, A., 1999 - Analele Universității din Craiova, Seria: Biologie, Horticultură, TPPA, Vol. 4 (XL): 64-66.
20. Babalean, A., 1999 - Analele Universității din Craiova, Seria: Biologie, Horticultură, TPPA, Vol. 4 (XL): 70-74.
21. Babalean, A., 2000 - Analele Universității din Craiova, Seria: Biologie, Horticultură, TPPA, Vol. V (XLI): 23-29.
22. Babalean, A., 2000 - Analele Universității din Craiova, Seria: Biologie,

General overview on the Opilionid fauna (Arachnida, Opiliones) in Romania

- Horticultură, TPPA, Vol. V (XLI): 18-22.
23. Babalean, A., 2001 - Analele Universității din Craiova, Seria: Biologie, Horticultură, TPPA, Vol. VI (XLII): 39-41.
24. Babalean, A., 2001 - Analele Universității din Craiova, Seria: Biologie, Horticultură, TPPA, Vol. VI (XLII): 42-43.
25. Babalean, A., 2002 - Rev. Roum. Biol. Anim., Tome 47, N^o 1-2, pg. 3-8 Bucurest.
26. Babalean, A., 2002 - Studii și Comunicări- Științele Naturii, vol 18, pg. 122-126, Ed Sitech, Craiova
27. Babalean, A., 2002 - Studii și Comunicări- Științele Naturii, vol 18, pg. 127-130, Ed Sitech, Craiova
28. Babalean, A., 2003 - Analele Universității din Craiova, Seria: Biologie, Horticultură, TPPA, Vol. VIII (XLIV): 60-63
29. Babalean, A., Ilie, I., 2003 - Analele Universității din Craiova, Seria: Biologie, Horticultură, TPPA, Vol. VIII (XLIV): 64-69
30. Babalean, A., Manolache V., Năstăsescu M., 2003 - Rev. Roum. Biol. Anim., Tome 48, N^o 1-2, pg. 115-119 Bucurest.
31. Babalean, A., Ilie, I., 2003 - Arch. Biol. Sci., Belgrade, 55 (3-4), pg. 101-106
32. Babalean, A., 2004 - Analele Universității din Craiova, Seria: Biologie, Horticultură, TPPA, Vol. IX (XLV): 63-66
33. Babalean, A., 2004 - Acta Zoologica Universitatis Comeniae 46 (2), 1-9
34. Babalean, A., 2004 - Ovidius University Annals of Natural Sciences, Biology-Ecology Series, in press
35. Babalean, A., 2004 - Ovidius University Annals of Natural Sciences, Biology-Ecology Series, in press
36. Cârdeiu, F., 1942 - Buletinul Muzeului Regional al Basarabiei din Chișinău, 10: 75.
37. Cârdeiu, F., 1943 - Revista științifică "V. Adamachi", Vol. XXIX, 1:70.
38. Cârdeiu, F., 1943 - Revista științifică "V. Adamachi", Vol. XXIX, 1:71.
39. Cârdeiu, F., 1943 - Revista științifică "V. Adamachi", Vol. XXIX, 2:177.
40. Cârdeiu, F., 1944 - Revista științifică "V. Adamachi", Vol. XXX, 4:241.
41. Cârdeiu, F., 1945 - Revista științifică "V. Adamachi", Vol. XXXI, 4:269.
42. Cârdeiu, F., 1946 - Revista științifică "V. Adamachi", Vol. XXXII, 1: 54.
43. Cârdeiu, F., 1947 - Revista științifică "V. Adamachi", Vol. XXXIII, 2-3:157-158.
44. Dumitrescu, D., 1968 - Trav. Mus. Hist. nat. «Grigore Antipa», 8, 2. Le centenaire Grigore Antipa, 867-1967: 1021-1027.
45. Dumitrescu, D., 1970 - Comun. Zool., soc. Ști. biol., Rep. Social. Rom.,: 315-326.
46. Dumitrescu, D., 1970b - Trav. Mus. Hist. nat. «Grigore Antipa», 10: 79-90.
47. Dumitrescu, D., 1972 - Trav. Mus. Hist. Nat. "Grigore Antipa", 12: 69-83
48. Dumitrescu, D., 1973 - Comun. Ref., Muz. Ști. Nat. Ploiești: 101-109.
49. Dumitrescu, D., 1979 - Travaux du Muséum d'Histoire naturelle Grigore

- Antipa, Vol. XX: 43-84.
50. Gruber, J., Martens, J., 1968 - *Senckenbergiana biol.* 49 (2):137-172.
 51. Kolosváry, G., 1929 - *Die Weberknechte Ungarns*, Budapest, 1-112
 52. Kolosváry, G., 1941 - *Zool. Anz.*, 136, 9-10: 190-191
 53. Kolosváry, G., 1943 - *Muz. Fuz.*, 1, 1-2: 16-20
 54. Kolosváry, G., 1962 - *Acad. Rep. Pop. Rom.*, 13, 6: 551-558
 55. Martens, J., 1978 - *Spinnentiere, Arachnida, Weberknechte, Opiliones*. VEB Gustav Fischer Verlag Jena
 56. Roewer, C.Fr., 1923 - *Die Weberknechte der Erde*, Jena, 1-1116
 57. Szalay, L., 1968 - *Fauna Hungariae*, 18: 69-122.
 58. Starega, W., 1976 - *Annales Zoologici Warszawa*, 33: 287-433
 59. Šilhavy, V., 1956 - *Muzeul Brukenthal, Studii și Comunicări, Șt. nat.*, 19: 263-271.
 60. Weiss, I., 1978 - *Muzeul Brukenthal, Studii și Comunicări, Șt. nat.*, 22: 213-228.
 61. Weiss, I., 1978 - *Muzeul Brukenthal, Studii și Comunicări, Șt. nat.*, 22: 229-232.
 62. Weiss, I., 1980 - *Muzeul Brukenthal, Studii și Comunicări, Șt. nat.*, 24: 369-412.
 63. Weiss, I., 1983 - *Muzeul Brukenthal, Studii și Comunicări, Șt.nat.* 25: 277-285.
 64. Weiss, I., 1975 - *Muzeul Brukenthal, Studii și Comunicări, Șt. nat.*, 26 : 243-277.
 65. Weiss, I., 1985 - *Aranele și opilionidele din Sudul Podișului Transilvaniei-rezumatul tezei de doctorat, Universitatea din Cluj-Napoca*
 66. Weiss, I., 1996 - *Die Weberknechte Siebenbürgens (Arachnida: Opiliones)*. *Stapfia*, 45:259-280.