

THE DRAGONFLY (INSECTA: ODONATA) COLLECTION OF IAȘI MUSEUM OF NATURAL HISTORY (ROMANIA)

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Abstract. The dragonfly specimens deposited in the Iași Museum of Natural History were inventoried and analyzed, resulting a total of 3162 adult specimens from 45 species. The majority of these specimens were collected by Constantin Visarion Mândru in 51 localities of Romania. The material includes important new distribution records of three Natura 2000 species (*Coenagrion ornatum*, *Cordulegaster heros* and *Gomphus flavipes*). *Coenagrion scitulum*, *Somatochlora meridionalis* and *Sympetrum danae* are species rarely reported from Romania.

Résumé. Les exemplaires de libellules déposés dans le Muséum d'Histoire Naturelle de Iași ont été inventoriés et analysés, résultant un nombre total de 3162 spécimens adultes de 45 espèces. La plupart de ces exemplaires ont été collectés de 51 zones de la Roumanie par Constantin Visarion Mândru. *Coenagrion ornatum*, *Cordulegaster heros* et *Gomphus flavipes* sont des espèces importantes Natura 2000, offrant de nouvelles données pour leur distribution. *Coenagrion scitulum*, *Somatochlora meridionalis* et *Sympetrum danae* sont des espèces rarement mentionnées en Roumanie.

Key words: Odonata, dragonflies, catalogue, collection, Iași Museum of Natural History.

INTRODUCTION

The present paper is the second of a series that deals with dragonfly collections from Romanian museums. The first in this series gave an overview of the dragonfly collection of the Iron Gate Museum from Drobeta Turnu-Severin town (Manci, 2007).

The present paper gives information on material of dragonflies deposited in the Iași Museum of Natural History, most of which are from Moldova and the Danube Delta. The dragonflies of Moldova, north-east part of Romania (the counties: Iași, Vaslui, Galați, Botoșani, Neamț, Bacău, Vrancea and Suceava) and especially the surroundings of Iași have been relatively well studied and the records are included in numerous publications (Bulimar, 1969, 1971; Bulimar & Boișteanu, 1968; Cîrdei, 1956; Cîrdei & Bulimar, 1961, 1965; Manci, 2005). The dragonfly fauna of the Danube Delta was also relatively well studied (Bulimar, 1973, 1984 a, b, 1993, 1994, 1996; Isvoreanu & Boghian, 1980; Griebler, 1994; Köhlmann, 1965).

Of the 69 Odonata species that occur in Romania, 45 species were found in the collection of the Iași Museum of Natural History. This represents 65% from the total of dragonfly fauna known in Romania.

MATERIAL AND METHODS

This paper presents a list of specimens of dragonflies present in Iași Natural History Museum. Most of them were collected between 1954 and 1990 by Constantin Visarion Mândru. Many specimens were collected by other museum employees, between 1991 and 1993, but most of these specimens lack information on the collector. The collection was studied by Dr. Felicia Bulimar but the results were never published. The specimens are mounted on entomological pins and are in a very good state of preservation.

All identifications were checked by the author and information on location, date and collector were inserted in a database. All the data found in this paper are available in a digital database (Manci, 2009-2011). For localities and/or toponyms, the Romanian names were used. The list of localities together with their coordinates can be found in the list below. For two of the toponyms found in the collection, we were not able to find any correlation on the maps (“Betreag” and “TO”). The taxonomy used in this paper is the same with the one used in the latest monographic work for Europe (Dijkstra, 2006). Maps shown in this paper were created with the free software Quantum GIS.

List of collecting localities and/or toponyms with geographical coordinates:

- Agigea - village in Constanța county (44°05'37"N / 28°36'40"E)
- Babadag - small town in Tulcea county (44°53'41"N / 28°43'10"E)
- Băile Felix - spa station near Oradea town, administrative center of Bihor county (46°59'21"N / 21°58'49"E)
- Bârnova - village in Iași county (47°04'31"N / 27°37'22"E)
- Bicaz - small town in Neamț county (46°54'41"N / 26°05'39"E)
- Breazu - village near Iași town (47°12'44"N / 27°31'01"E)
- Caraorman - village in the Danube Delta (45°04'37"N / 29°23'31"E)
- Călărași - village in Botoșani county (47°36'23"N / 27°15'26"E)
- Ciucurova - village in Tulcea county (44°54'55"N / 28°28'44"E)
- Cozia - village in Iași county (47°00'08"N / 27°53'42"E)
- Delta Dunării - the Danube Delta without details, in Tulcea county (45°13'25"N / 29°17'16"E)
- Epureni - village in Vaslui county (46°14'42"N / 27°54'41"E)
- Gârbești - village in Iași county (46°58'43"N / 27°17'38"E)
- Gorban - village in Iași county (46°52'41"N / 28°04'54"E)
- Iași - the administrative center of Iași county (47°09'26"N / 27°34'31"E)
- Iași - Ciric - in the neighborhood of Iași town (47°10'58"N / 27°36'15"E)
- Iași - Grădina Botanică - botanical garden in Iași town, the administrative center of Iași county (47°11'09"N / 27°32'59"E)
- Iași - Nicolina - neighborhood of Iași town (47°07'32"N / 27°34'02"E)

- Iași - Pd. Ciric - forest in the north-east part of Iași town (47°10'20"N / 27°36'56"E)
- Iași - Socola - neighborhood of Iași town (47°07'54"N / 27°35'44"E)
- Iași - Valea Vămășoaiei - small stream in the south of Iași town (47°08'16"N / 27°37'51"E)
- Lacul Roșu - a natural dam lake, in Hașmaș-Bicaz Gorges National Park, in Harghita county (46°47'29"N / 25°47'15"E)
- Leorda - village in Botoșani county (47°49'03"N / 26°27'43"E)
- Mamaia - town (sea resort) in Constanța county (44°15'12"N / 28°37'04"E)
- Mânăstirea Neamț - monastery in Neamț county (47°15'48"N / 26°12'29"E)
- Mârzești - small farm north of Rediu Village (47°14'01"N / 27°30'18"E)
- Năvodari - town in Constanța county (44°19'28"N / 28°36'45"E)
- Niculițel - village in Tulcea county (45°10'56"N / 28°28'45"E)
- Odobești - village in Bacău county (46°40'32"N / 27°08'52"E)
- Osoi - village in Iași county (47°05'33"N / 27°11'30"E)
- Pașcani - town in Iași county (47°15'02"N / 26°43'20"E)
- Păun - village in Iași county (47°05'48"N / 27°39'46"E)
- Pd. Babadag - forest south of Babadag town (44°52'21"N / 28°41'00"E)
- Pd. Bârnova - forest in Iași county (47°02'42"N / 27°36'31"E)
- Pd. Bârnova - Pr. Nastea - small stream in the south of Bârnova forest, near Dobrovăț Village in Iași county (46°59'25"N / 27°39'25"E)
- Pd. Breazu - forest near Breazu Village in Iași county (47°12'45"N / 27°31'51"E)
- Pd. Epureni - forest in Vaslui county (46°15'24"N / 27°51'52"E)
- Pd. Repedea - forest near Repedea reserve (47°04'56"N / 27°38'56"E)
- Podu Iloaiei - small town in Iași county (47°12'45"N / 27°16'06"E)
- Potoci - village in Neamț county (46°59'03"N / 26°06'37"E)
- Prisăcani - village in Iași county (47°04'24"N / 27°53'4"E)
- Repedea - small reserve close to Bârnova Village (47°05'12"N / 27°38'44"E)
- Sarinasuf - village south of the Danube Delta (45°00'22"N / 29°03'24"E)
- Sângeorz-Băi - town and spa in Bistrița-Năsăud county (47°22'02"N / 24°40'42"E)
- Tulcea - the administrative center of Tulcea county (45°10'48"N / 28°47'58"E)
- Țibana - village in Iași county (46°59'06"N / 27°20'07"E)
- Urluia - village in Constanța county (44°06'13"N / 27°54'53"E)
- Valea lui David - reserve near Iași town (47°11'49"N / 27°28'04"E)
- Vlădiceni - village in Iași town (47°07'52"N / 27°39'36"E)

Abbreviations used in this catalogue:

County names: Bc – Bacău; Bh – Bihor; Bn – Bistrița-Năsăud; Bt – Botoșani; Ct – Constanța; Hr – Harghita; Is – Iași; Nt – Neamț; Tl – Tulcea; Vs – Vaslui.

RESULTS

The collection comprises 3162 specimens from 45 species which were collected in 53 locations of Romania. The majority of the specimens were collected in Moldova historical province (Iași, Neamț, Bacău, Vaslui and Botoșani counties), but also from Dobrogea (Constanța and Tulcea counties), Transylvania (Harghita and Bistrița-Năsăud counties) and Crișana (Bihor county). Figure 1 and figure 2 show the distribution of these records in Romania and in Iași County. Figure 1 is showing all the records of distribution from collection, these records are mainly from the region Moldova (Iași, Botoșani, Neamț, Bacău and Vaslui counties), Dobrogea (Tulcea and Constanța counties) and only 7 specimens were collected outside of these regions: 1 specimen from Crișana (Bihor county) and 6 specimens (4 species) from Transylvania (Harghita and Bistrița-Năsăud counties). In figure 2, only the distribution data for the records from Iași County (1810 specimens) are shown, the records from this county being best represented in this collection.

Order Odonata

Suborder Zygoptera

Family Calopterygidae

Calopteryx Leach, 1815

Calopteryx splendens (Harris, 1782) (6 specimens: 4 ♂♂, 2 ♀♀)

Material: 1 ♀, Bârnova (Is), 17.VII.1985; 1 ♀ (specimen that looks like *balcanica* subspecies, wing of the female being extremely dark in colour), Bârnova (Is), 17.VII.1985; 4 ♂♂, Caraorman (Tl), 9.VI.1985.

Calopteryx virgo (Linnaeus, 1758) (194 specimens: 147 ♂♂, 47 ♀♀)

Material: Pd. Bârnova (Is) 20.VI.1974 (9 ♀♀), 20.VI.1974 (31 ♂♂, 12 ♀♀), 17.VII.1985 (6 ♂♂); Pd. Bârnova, Pr. Nastea (Is) 12.VII.1985 (21 ♂♂), 19.VII.1985 (10 ♂♂, 13 ♀♀), 9.VII.1990 (53 ♂♂, 11 ♀♀); Caraorman (Tl) 9.VI.1985 (1 ♂).

Family Lestidae

Lestes Leach, 1815

Lestes sponsa (Hansemann, 1823) (54 specimens: 21 ♂♂, 33 ♀♀)

Material: Iași, Socola (Is) 17.VII.1974 (4 ♂♂, 5 ♀♀); Iași, Cîrc (Is) 24.VI.1970 (2 ♂♂, 3 ♀♀), 25.VI.1970 (2 ♀♀), 10.VII.1970 (3 ♀♀), 17.VII.1970 (4 ♂♂, 3 ♀♀), 24.VII.1970 (2 ♀♀); Iași, Repedeia (Is) 19.VII.1973 (1 ♀); Gorban (Is) 25.VI.1981 (2 ♀♀); Potoci (Nt) 7.VII.1977 (10 ♂♂, 11 ♀♀); Tulcea (Tl) 4.VI.1958 (1 ♂, 1 ♀).

Lestes dryas Kirby, 1890 (8 specimens: 6 ♂♂, 2 ♀♀)

Material: Iași, Cîrc (Is) 24.VI.1970 (1 ♂), 17.VII.1970 (1 ♀); Iași, Grădina Botanică (Is) 1.VII.1990 (4 ♂♂); Păun (Is) 24.VI.1981 (1 ♂); Agigea (Ct) 10.VIII.1964 (1 ♀).

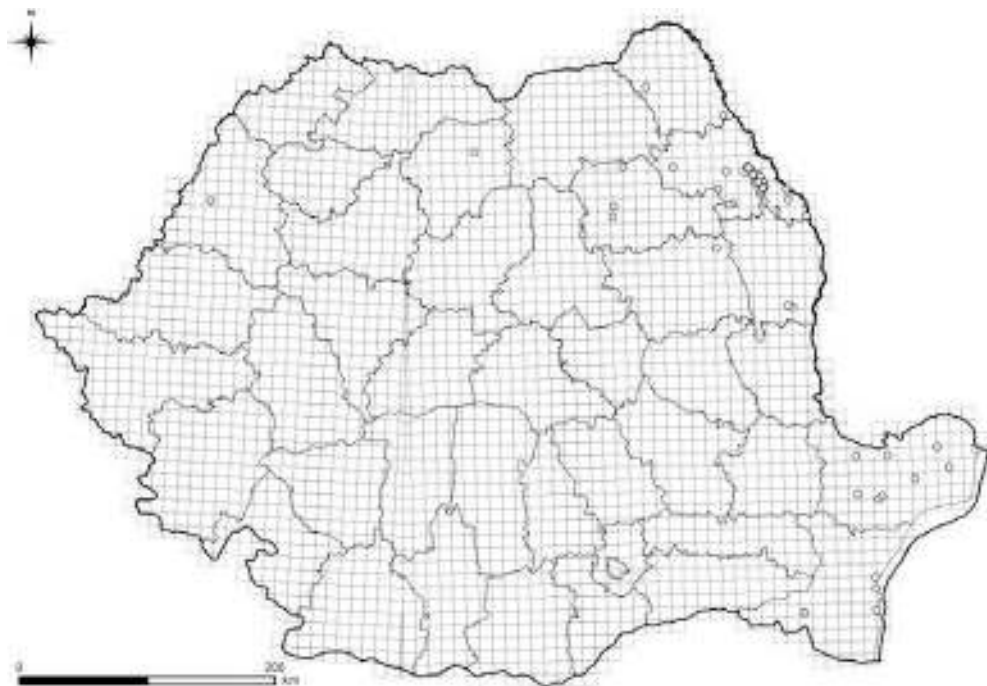


Fig. 1 - Distribution of all dragonfly records that are present in the collection of Iași Natural History Museum (county border and UTM grid of 10x10 km are shown, collecting points marked with dots).

Lestes barbarus (Fabricius, 1798) (82 specimens: 43 ♂♂, 39 ♀♀)

Material: Iași, Grădina Botanică (Is) 30.VI.1981 (1 ♀), 1.VII.1990 (2 ♂♂); Iași, Socola (Is) 17.VII.1974 (1 ♀), 16.VIII.1985 (2 ♂♂); Pașcani (Is) 1.VIII.1958 (1 ♀), 10.VIII.1970 (11 ♂♂, 3 ♀♀); Vlădiceni (Is) 14.VI.1966 (4 ♂♂, 10 ♀♀); Pd. Babadag (TI) 21.VIII.1978 (1 ♂); Tulcea (TI) 4.VI.1958 (1 ♂, 1 ♀); Năvodari (Ct) 9.IX.1987 (2 ♂♂, 3 ♀♀); Agigea (Ct) 10.VIII.1964 (17 ♂♂, 19 ♀♀).

Lestes virens (Charpentier, 1825) (13 specimens: 10 ♂♂, 3 ♀♀)

Material: Iași, Socola (Is) 17.VII.1974 (2 ♂♂), 25.VIII.1974 (1 ♀), 26.VIII.1974 (5 ♂♂, 1 ♀); Iași, Grădina Botanică (Is) 1.VII.1990 (1 ♂); Gârbești (Is) 10.VIII.1970 (2 ♂♂); Agigea (Ct) 10.VIII.1964 (1 ♀).

Lestes viridis (Vander Linden, 1825) (9 specimens: 9 ♀♀)

Material: Tulcea (TI) 29.VII.1987 (7 ♀♀), 2.VIII.1987 (1 ♀, abdomen was broken and the specimen was identified after the color of pterostigma); Caraorman (TI) 19.X.1981 (1 ♀).

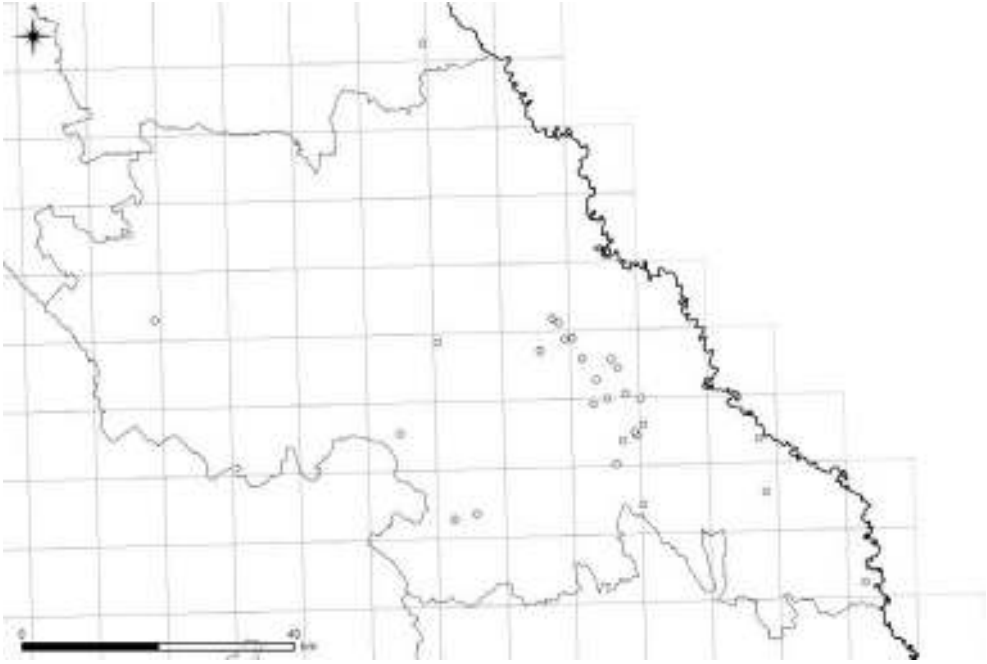


Fig. 2 - Distribution for the dragonfly records from Iași County (1810 specimens) present in the collection of Iași Natural History Museum (county border and UTM grid of 10x10 km are shown, collecting points marked with dots).

Sympetma Burmeister, 1839

Sympetma fusca (Vander Linden, 1820) (41 specimens: 20 ♂♂, 21 ♀♀)

Material: Iași, Grădina Botanică (Is) 1.VII.1990 (1 ♀); Iași, Socola (Is) 25.VIII.1974 (1 ♂), 26.VIII.1974 (1 ♀); Bârnova (Is) 7.IX.1958 (2 ♂♂), 2.IX.1973 (1 ♂, 2 ♀♀), 15.IX.1973 (3 ♂♂, 1 ♀); Potoci (Nt) 20.VII.1993 (1 ♂); Tulcea (Tl) 15.VIII.1974 (11 ♂♂, 16 ♀♀); Pd. Babadag (Tl) 21.VIII.1978 (1 ♂).

Family Coenagrionidae

Ischnura Charpentier, 1840

Ischnura elegans (Vander Linden, 1820) (104 specimens: 57 ♂♂, 47 ♀♀)

Material: Păun (Is) 24.VI.1981 (1 ♀); Podu Iloaiei (Is) 6.VIII.1991 (6 ♂♂, 4 ♀♀); Iași, Grădina Botanică (Is) 15.VII.1981 (2 ♂♂, 1 ♀), 2.VII.1986 (1 ♂), 1.VII.1990 (3 ♀♀); Iași, Socola (Is) 26.VIII.1974 (1 ♂, 1 ♀), 27.VIII.1974 (4 ♂♂, 4 ♀♀), 29.VIII.1974 (1 ♀), 24.IX.1974 (2 ♂♂, 1 ♀), 30.VI.1975 (3 ♂♂, 1 ♀); Vlădiceni (Is) 17.V.1964 (1 ♀); Iași, Cîrc (Is) 24.VI.1970 (1 ♀), 10.VII.1970 (1 ♀), 24.VII.1970 (1 ♀), 15.VI.1971 (1 ♀), 18.VII.1972 (1 ♂, 1 ♀); Iași, Pd. Cîrc (Is) 14.VII.1980 (3 ♂♂); Iași, Repedeia (Is) 19.VII.1973 (3 ♂♂); Bârnova (Is) 15.IX.1973 (1 ♀); Leorda (Bt) 9.IX.1958 (1 ♀); Lacul Roșu (Hr) 18.VII.1972 (1 ♂, 1 ♀); Agiea (Ct) 7.VIII.1973 (16 ♂♂, 6 ♀♀), 10.VIII.1973 (4 ♂♂, 2 ♀♀), 13.IX.1973 (1 ♂, 1 ♀), 9.VII.1974 (6 ♂♂, 1 ♀), 11.VII.1974 (5 ♀♀); Mamaia (Ct) 11.VIII.1974 (2 ♀♀); Tulcea (Tl) 4.VI.1958 (3 ♂♂, 3 ♀♀).

Ischnura pumilio (Charpentier, 1825) (40 specimens: 17 ♂♂, 23 ♀♀)

Material: Iași, Ciric (Is) 17.VII.1970 (1 ♀), 15.VI.1971 (1 ♂, 2 ♀♀); Iași, Nicolina (Is) 27.VI.1975 (3 ♂♂, 10 ♀♀); Iași, Grădina Botanică (Is) 15.VII.1981 (3 ♂♂, 1 ♀); Iași, Repedeș (Is) 19.VII.1973 (1 ♂); Iași, Socola (Is) 17.VII.1974 (1 ♂, 1 ♀), 25.VIII.1974 (6 ♂♂, 8 ♀♀), 26.VIII.1974 (1 ♀); Pașcani (Is) 7.VII.1958 (1 ♂).

Enallagma Charpentier, 1840

Enallagma cyathigerum (Charpentier, 1840) (18 specimens: 12 ♂♂, 6 ♀♀)

Material: Iași, Repedeș (Is) 19.VII.1973 (1 ♂); Iași, Socola (Is) 29.VI.1974 (1 ♂), 17.VII.1974 (4 ♂♂, 1 ♀), 25.VIII.1974 (1 ♀), 26.VIII.1974 (1 ♂), 1.VII.1977 (1 ♂), 16.VIII.1985 (2 ♂♂); Vlădiceni (Is) 17.V.1964 (1 ♀); Bedreag (??) 3.VI.1958 (1 ♀); Păun (Is) 24.VI.1981 (1 ♂, 1 ♀); Bârnova (Is) 7.IX.1958 (1 ♀); Agigea (Ct) 10.VIII.1964 (1 ♂).

Coenagrion Kirby, 1890

Coenagrion pulchellum (Vander Linden, 1825) (30 specimens: 26 ♂♂, 4 ♀)

Material: Iași, Grădina Botanică (Is) 15.VII.1981 (1 ♂), 1.VII.1990 (14 ♂♂, 2 ♀); Iași, Ciric (Is) 18.VII.1972 (2 ♂♂); Iași, Socola (Is) 4.VI.1974 (2 ♂♂), 29.VI.1974 (1 ♂, 1 ♀), 29.VI.1974 (2 ♂♂); Breazu (Is) 1.VI.1974 (1 ♀); Agigea (Ct) 7.VIII.1973 (3 ♂♂, 1 ♀).

Coenagrion puella (Linnaeus, 1758) (141 specimens: 116 ♂♂, 25 ♀♀)

Material: Ciric (Is) 14.VII.1980 (8 ♂♂, 1 ♀); Iași, Grădina Botanică (Is) 15.VII.1981 (7 ♂♂), 1.VII.1990 (16 ♂♂, 3 ♀♀); Iași, Socola (Is) 4.VI.1974 (4 ♂♂, 7 ♀♀), 29.VI.1974 (9 ♂♂), 17.VII.1974 (1 ♂), 24.IX.1974 (1 ♂), 30.VI.1975 (8 ♂♂), 1.VII.1977 (3 ♂♂); Vlădiceni (Is) 10.VI.1970 (36 ♂♂); Breazu (Is) 15.V.1971 (1 ♂, 1 ♀); Bârnova (Is) 7.IX.1958 (1 ♀); Păun (Is) 24.VI.1981 (3 ♂♂, 1 ♀); Potoci (Nt) 20.VII.1993 (10 ♂♂, 3 ♀♀); Lacul Roșu (Hr) 18.VII.1972 (1 ♂).

Coenagrion ornatum (Selys, 1850) (29 specimens: 21 ♂♂, 8 ♀♀)

Material: Iași, Socola (Is) 20.VI.1974 (1 ♂), 24.IX.1974 (1 ♂); Iași, Pd. Ciric (Is) 14.VII.1980 (1 ♂); Pd. Bârnova (Is) 29.V.1985 (18 ♂♂, 8 ♀♀).

Coenagrion scitulum (Rambur, 1842) (5 specimens: 3 ♂♂, 2 ♀♀)

Material: Iași, Socola (Is) 17.VII.1974 (3 ♂♂, 2 ♀♀).

Coenagrion hastulatum (Charpentier, 1825) (2 specimens: 1 ♂, 1 ♀)

Material: Lacul Roșu (Hr) 18.VII.1972 (1 ♂, 1 ♀).

Erythromma Charpentier, 1840

Erythromma viridulum (Charpentier, 1840) (5 specimens: 4 ♂♂, 1 ♀)

Material: Agigea (Ct) 10.VII.1974 (3 ♂♂, 1 ♀), 11.VII.1974 (1 ♂).

Family Platycnemididae

Platycnemis Burmeister, 1839

Platycnemis pennipes (Pallas, 1771) (12 specimens: 5 ♂♂, 7 ♀♀)

Material: Iași, Socola (Is) 24.IX.1974 (1 ♂, 1 ♀); Iași, Pd. Cîrcic (Is) 25.VI.1970 (1 ♀); Iași, Grădina Botanică (Is) 2.VII.1986 (3 ♂♂, 2 ♀♀); Pd. Bârnova (Is) 29.V.1985 (1 ♂, 2 ♀♀); Vlădiceni (Is) 10.VI.1970 (1 ♀).

Suborder Anisoptera

Family Aeshnidae

Aeshna Fabricius, 1775

Aeshna mixta Latreille, 1805 (259 specimens: 126 ♂♂, 133 ♀♀)

Material: Iași (Is) 17.VIII.1974 (1 ♀); Iași, Socola (Is) 16.VIII.1985 (2 ♂♂), 29.VIII.1985 (1 ♂, 2 ♀♀); Iași, Repedea (Is) 26.VIII.1980 (2 ♀♀), 2.VIII.1981 (21 ♂♂, 20 ♀♀), 2.VIII.1989 (1 ♂, 3 ♀♀); Iași, Pd. Repedea (Is) 11.VIII.1980 (3 ♂♂, 4 ♀♀), 26.VIII.1980 (1 ♂), 7.IX.1980 (1 ♂, 1 ♀), 2.VIII.1981 (4 ♂♂, 5 ♀♀); Pașcani (Is) 10.VIII.1958 (1 ♀); Bârnova (Is) 7.IX.1958 (1 ♂), 11.VIII.1966 (2 ♂♂), 18.VII.1974 (2 ♀♀), 15.IX.1974 (3 ♂♂); Pd. Bârnova (Is) 31.VIII.1975 (5 ♂♂, 4 ♀♀), 17.VII.1985 (1 ♂); Gârbești (Is) 10.VIII.1970 (1 ♂), 15.VIII.1970 (1 ♂, 1 ♀), 5.VIII.1974 (3 ♂♂, 3 ♀♀); Mânăstirea-Neamț (Nt) 27.VIII.1985 (1 ♂), 19.VIII.1986 (2 ♂♂, 4 ♀♀); Bicaz (Nt) 7.IX.1974 (5 ♂♂, 4 ♀♀); Odobești (Bc) 29.VII.1954 (4 ♂♂, 7 ♀♀); Babadag (Tl) 16.VIII.1974 (18 ♂♂, 18 ♀♀); Pd. Babadag (Tl) 18.VIII.1977 (6 ♂♂, 7 ♀♀); Niculițel (Tl) 23.VIII.1975 (18 ♂♂, 24 ♀♀); Ciucurova (Tl) 16.VIII.1973 (18 ♂♂, 19 ♀♀); Delta Dunării (Tl) 15.VI.1968 (3 ♂♂); Urluia (Ct) 8.VII.1973 (1 ♀).

Aeshna affinis Vander Linden, 1820 (312 specimens: 156 ♂♂, 156 ♀♀)

Material: Iași, Repedea (Is) 2.VIII.1989 (1 ♀); Iași, Socola (Is) 10.VIII.1985 (5 ♂♂), 16.VIII.1985 (1 ♂), 29.VIII.1985 (11 ♂♂, 3 ♀♀); Caraorman (Tl) 8.VI.1985 (2 ♂♂, 7 ♀♀), 9.VI.1985 (43 ♂♂, 39 ♀♀), 10.VI.1985 (30 ♂♂, 28 ♀♀), 11.VI.1985 (15 ♂♂, 12 ♀♀), 12.VI.1985 (34 ♂♂, 36 ♀♀); Tulcea (Tl) 8.VI.1985 (3 ♂♂, 12 ♀♀), 10.VI.1985 (10 ♂♂, 14 ♀♀), 13.VI.1985 (1 ♂, 3 ♀♀); Sarinasuf (Tl) 11.VI.1981 (1 ♂, 1 ♀).

Aeshna isoceles (Müller, 1767) (87 specimens: 46 ♂♂, 41 ♀♀)

Material: Iași, Grădina Botanică (Is) 30.VI.1981 (1 ♂); Breazu (Is) 27.VI.1975 (1 ♂); Mârzești (Is) 13.V.1973 (2 ♂♂, 3 ♀♀); Tulcea (Tl) 12.VI.1981 (19 ♂♂, 23 ♀♀); Sarinasuf (Tl) 9.VI.1981 (2 ♂♂), 10.VI.1981 (15 ♂♂, 1 ♀), 16.VI.1981 (13 ♀); Caraorman (Tl) 8.VI.1985 (3 ♂♂), 9.VI.1985 (3 ♂♂, 1 ♀).

Aeshna cyanea (Müller, 1764) (5 specimens: 5 ♂♂)

Material: Bârnova (Is) 15.IX.1974 (3 ♂♂), 19.VII.1985 (1 ♂); Băile Felix (Bh) 12.IX.1976 (1 ♂).

Anax Leach, 1815

Anax imperator Leach, 1815 (18 specimens: 15 ♂♂, 3 ♀♀)

Material: Iași, Grădina Botanică (Is) 27.VI.1981 (1 ♀), 30.VI.1981 (2 ♂♂), 25.VII.1981 (1 ♂, 1 ♀); Iași, Socola (Is) 24.VI.1979 (4 ♂♂, 1 ♀), 16.VIII.1985 (4 ♂♂); Osoi (Is) 27.VI.1981 (4 ♂♂).

Anax parthenope (Selys, 1839) (7 specimens: 6 ♂♂, 1 ♀)

Material: Iași, Grădina Botanică (Is) 30.VI.1981 (1 ♂), 25.VI.1982 (1 ♂, 1 ♀); Osoi (Is) 27.VI.1981 (3 ♂♂); Delta Dunării (TI) 17.VIII.1968 (1 ♂).

Brachytron Evans, 1845

Brachytron pratense (Müller, 1764) (6 specimens: 4 ♂♂, 2 ♀♀)

Material: Mârzești (Is) 13.V.1973 (2 ♂♂), 3.VI.1974 (1 ♂, 1 ♀); Pd. Epureni (VS) 20.V.1973 (1 ♂, 1 ♀).

Family Gomphidae

Gomphus Leach, 1815

Gomphus flavipes (Charpentier, 1825) (2 specimens: 1 ♂, 1 ♀)

Material: Tulcea (TI) 5.VI.1958 (1 ♂); Babadag (TI) 16.VIII.1974 (1 ♀).

Family Cordulegastridae

Cordulegaster Leach, 1815

Cordulegaster heros Theischinger, 1979 (7 specimens: 6 ♂♂, 1 ♀)

Material: Pd. Bârnova (Is) 19.VI.1974 (1 ♂), 20.VI.1974 (1 ♂), 17.VI.1985 (1 ♂), 1.VII.1985 (1 ♀); Pd. Bârnova, Pr. Nastea (Is) 10.VII.1990 (3 ♂♂).

Family Corduliidae

Somatochlora Selys, 1871

Somatochlora meridionalis Nielsen, 1935 (4 specimens: 4 ♂♂)

Material: Gârbești (Is) 10.VIII.1970 (1 ♂), 17.VII.1974 (1 ♂); Pd. Bârnova (Is) 17.VII.1985 (1 ♂); Pd. Bârnova, Pr. Nastea (Is) 9.VII.1990 (1 ♂).

Family Libellulidae

Libellula Linnaeus, 1758

Libellula quadrimaculata Linnaeus, 1758 (16 specimens: 1 ♂, 15 ♀♀)

Material: Iași, Cîrc (Is) 24.VI.1970 (2 ♀♀), 25.VI.1970 (1 ♀); Caraorman (TI) 10.VI.1985 (1 ♂), 11.VI.1985 (1 ♀), 12.VI.1985 (1 ♀); Tulcea (TI) 11.VI.1981 (9 ♀♀), 8.VI.1985 (1 ♀).

Libellula depressa Linnaeus, 1758 (38 specimens: 29 ♂♂, 9 ♀♀)

Material: Iași, Grădina Botanică (Is) 30.VI.1981 (7 ♂♂, 1 ♀), 30.VI.1990 (4 ♂♂, 1 ♀); Osoi (Is) 27.V.1975 (1 ♀), 27.VI.1981 (7 ♂♂, 1 ♀); Mârzești (Is) 3.VI.1974 (1 ♂, 1 ♀); Breazu (Is) 15.V.1971 (2 ♀♀), 1.VI.1974 (2 ♂♂, 1 ♀), 27.V.1975 (1 ♀); Pd. Breazu (Is) 1.VI.1974 (1 ♂); Pd. Bârnova (Is) 19.VII.1985 (1 ♂); Cozia (Is) 25.VI.1981 (6 ♂♂).

Libellula fulva Müller, 1764 (27 specimens: 8 ♂♂, 19 ♀♀)

Material: Mârzești (Is) 3.VI.1973 (1 ♂, 3 ♀♀); Pd. Mârzești (Is) 20.V.1973 (1 ♀); Epureni (Vs) 20.V.1973 (7 ♂♂, 15 ♀♀).

Orthetrum Newman, 1833

Orthetrum cancellatum (Linnaeus, 1758) (11 specimens: 2 ♂♂, 9 ♀♀)

Material: Iași (Is) 1.VII.1973 (1 ♂); Iași, Grădina Botanică (Is) 15.VII.1981 (4 ♀♀); Iași, Socola (Is) 20.VII.1976 (1 ♂, 1 ♀); Delta Dunării (Tl) 15.VI.1968 (2 ♀♀), 16.VI.1968 (1 ♀), 17.VI.1968 (1 ♀).

Orthetrum albistylum (Selys, 1848) (66 specimens: 30 ♂♂, 36 ♀♀)

Material: Iași (Is) 1.VII.1973 (2 ♂♂, 2 ♀♀); Iași, Grădina Botanică (Is) 15.VII.1981 (7 ♂♂, 11 ♀♀); Iași, Socola (Is) 18.VII.1974 (1 ♂), 20.VII.1976 (2 ♂♂, 4 ♀♀); Osoi (Is) 27.VI.1981 (1 ♀); Podu Iloaiei (Is) 6.VIII.1991 (1 ♂); Cozia (Is) 25.VI.1981 (8 ♂♂, 5 ♀♀); Prisăceni (Is) 30.VIII.1980 (2 ♂♂, 4 ♀♀), 18.VII.1982 (4 ♂♂); Pd. Babadag (Tl) 18.VIII.1977 (3 ♂♂, 4 ♀♀); Delta Dunării (Tl) 15.VI.1968 (2 ♀♀), 16.VI.1968 (1 ♀), 17.VI.1968 (2 ♀♀).

Orthetrum coerulescens (Fabricius, 1798) (1 specimen: 1 ♂)

Material: Valea lui David (Is) 17.VII.1975 (1 ♂).

Orthetrum brunneum (Fonscolombe, 1837) (23 specimens: 12 ♂♂, 11 ♀♀)

Material: Iași (Is) 28.VII.1973 (1 ♂); Iași, Grădina Botanică (Is) 15.VII.1981 (1 ♂, 1 ♀); Iași, Socola (Is) 25.VIII.1974 (1 ♀), 20.VII.1976 (1 ♀); Osoi (Is) 27.VI.1981 (3 ♂♂); Valea lui David (Is) 17.VII.1974 (1 ♂, 2 ♀♀), 17.VII.1975 (1 ♀), 8.VII.1980 (1 ♀), 19.VII.1987 (1 ♀); Gârbești (Is) 10.VIII.1970 (1 ♀); Breazu (Is) 30.VI.1959 (1 ♂); Bedreag (??) 3.V.1958 (2 ♀♀), 30.V.1958 (3 ♂♂, 1 ♀); Agiea (Ct) 19.VIII.1976 (1 ♂).

Sympetrum Newman, 1833

Sympetrum danae (Sulzer, 1776) (32 specimens: 26 ♂♂, 6 ♀♀)

Material: Iași, Socola (Is) 17.VIII.1974 (2 ♂♂), 25.VIII.1974 (1 ♂, 2 ♀♀), 26.VIII.1974 (15 ♂♂, 1 ♀), 27.VIII.1974 (6 ♂♂), 29.VIII.1974 (1 ♂, 2 ♀♀), 12.IX.1974 (1 ♂); Gârbești (Is) 10.VIII.1970 (1 ♀).

Sympetrum pedemontanum (Müller in Allioni, 1766) (21 specimens: 18 ♂♂, 3 ♀♀)

Material: Iași, Socola (Is) 17.VIII.1974 (2 ♂♂), 25.VIII.1974 (7 ♂♂, 2 ♀♀), 26.VIII.1974 (1 ♀), 29.VIII.1974 (8 ♂♂), 12.IX.1974 (1 ♂).

Sympetrum sanguineum (Müller, 1764) (419 specimens: 193 ♂♂, 226 ♀♀)

Material: Iași (Is) 1.VII.1973 (1 ♀); Iași, Grădina Botanică (Is) 11.VII.1980 (1 ♀), 4.VII.1988 (2 ♀♀); Iași, Ciric (Is) 10.VI.1970 (5 ♂♂), 10.VII.1970 (4 ♂♂), 17.VII.1970 (1 ♂), 10.IX.1970 (1 ♀); Iași, Socola (Is) 17.VII.1974 (1 ♀), 25.VIII.1974 (14 ♂♂, 1 ♀), 26.VIII.1974 (7 ♂♂, 1 ♀), 27.VIII.1974 (5 ♂♂, 3 ♀♀), 29.VIII.1974 (20 ♂♂, 1 ♀), 31.VIII.1974 (9 ♂♂, 2 ♀♀), 12.IX.1974 (3 ♂♂, 5 ♀♀), 30.VIII.1975 (1 ♂), 1.VII.1977 (1 ♂), 9.VIII.1977 (2 ♂♂), 27.VIII.1978 (2 ♂♂), 24.VI.1979 (4 ♂♂, 1 ♀), 16.VIII.1985 (5 ♂♂, 2 ♀♀), 29.VIII.1985 (13 ♂♂, 9 ♀♀); Iași, Pd. Repedea (Is) 16.VII.1980 (2 ♂♂, 3 ♀♀); Gorban (Is) 25.VI.1981 (5 ♂♂, 8 ♀♀), 29.VI.1981 (11 ♂♂, 6 ♀♀), 30.VI.1981 (8 ♂♂, 3 ♀♀); Prisăceni (Is) 30.VIII.1980 (1 ♂); Pașcani (Is) 7.VIII.1958 (1 ♂, 3 ♀♀); Breazu (Is) 25.VIII.1964 (2 ♂♂); Pd. Bârnova (Is) 2.IX.1986 (2 ♂♂); Țibana (Is) 15.VIII.1971 (4 ♂♂, 27 ♀♀); Gârbești (Is) 10.VIII.1970 (21 ♂♂, 53 ♀♀); Tulcea (Tl) 12.VIII.1984 (2 ♂♂, 1 ♀), 28.VII.1987 (12 ♂♂, 39 ♀♀), 29.VII.1987 (4 ♂♂, 11 ♀♀), 2.VIII.1987 (12 ♂♂, 33 ♀♀); Babadag (Tl) 6.VIII.1974 (4 ♂♂); Pd. Babadag (Tl) 21.VIII.1978 (1 ♂), 1.VIII.1987 (1 ♀); Caraorman (Tl) 9.VI.1985 (5 ♂♂, 7 ♀♀).

Sympetrum depressiusculum (Selys, 1841) (23 specimens: 19 ♂♂, 4 ♀♀)

Material: Iași, Socola (Is) 17.VII.1974 (1 ♂), 25.VIII.1974 (2 ♂♂, 2 ♀♀), 26.VIII.1974 (1 ♂), 27.VIII.1974 (3 ♂♂), 16.VIII.1985 (5 ♂♂, 1 ♀), 27.VIII.1985 (4 ♂♂), 29.VIII.1985 (2 ♂♂); Iași, Grădina Botanică (Is) 11.VII.1980 (1 ♂); Tulcea (Tl) 28.VII.1987 (1 ♀).

Sympetrum flaveolum (Linnaeus, 1758) (70 specimens: 34 ♂♂, 36 ♀♀)

Material: Iași, Repedea (Is) 19.VII.1973 (1 ♂); Iași, Ciric (Is) 17.VII.1970 (1 ♀); Iași, Socola (Is) 17.VIII.1974 (2 ♂♂, 1 ♀), 25.VIII.1974 (2 ♂♂, 1 ♀), 26.VIII.1974 (1 ♂, 5 ♀♀), 29.VIII.1974 (3 ♂♂, 2 ♀♀), 12.IX.1974 (2 ♂♂, 2 ♀♀), 30.VIII.1975 (5 ♂♂, 4 ♀♀), 16.VIII.1985 (2 ♀♀), 27.VIII.1985 (7 ♂♂, 1 ♀); Păun (Is) 24.VI.1981 (2 ♂♂, 2 ♀♀); Țibana (Is) 15.VIII.1971 (2 ♀♀); Gârbești (Is) 10.VIII.1970 (2 ♂♂, 6 ♀♀); Prisăceni (Is) 30.VIII.1980 (2 ♀♀); Bicaz (Nt) 7.IX.1974 (1 ♂); Potoci (Nt) 7.VII.1977 (1 ♂, 1 ♀), 8.VIII.1980 (3 ♂♂, 3 ♀♀); Leorda (Bt) 9.IX.1958 (1 ♀); Babadag (Tl) 6.VIII.1974 (2 ♂♂).

Sympetrum fonscolombii (Selys, 1840) (4 specimens: 2 ♂♂, 2 ♀♀)

Material: Iași, Socola (Is) 16.VIII.1985 (1 ♂); Agigea (Ct) 10.VIII.1964 (1 ♂); TO ??? 7.X.1990 (2 ♀♀).

Sympetrum striolatum (Charpentier, 1840) (175 specimens: 46 ♂♂, 129 ♀♀)

Material: Iași, Grădina Botanică (Is) 4.VII.1988 (2 ♂♂, 1 ♀); Iași, Repedea (Is) 2.VIII.1981 (1 ♂); Iași, Pd. Repedea (Is) 7.IX.1980 (8 ♂♂, 23 ♀♀); Iași, Ciric (Is) 24.VI.1970 (2 ♂♂), 10.IX.1970 (3 ♂♂, 9 ♀♀); Iași, V. Vămășoaiei (1 ♀); Iași, Socola (Is) 9.IX.1958 (1 ♂), 17.VII.1974 (3 ♀♀), 12.IX.1974 (1 ♂), 24.IX.1974 (2 ♀♀), 30.VIII.1975 (1 ♀), 1.VII.1977 (2 ♂♂), 24.VI.1979 (1 ♂); Prisăceni (Is) 30.VIII.1980 (1 ♂, 1 ♀); Țibana (Is) 15.VIII.1971 (5 ♂♂, 6 ♀♀); Gârbești (Is) 10.VIII.1980 (4 ♂♂); Pașcani (Is) 7.VIII.1958 (2 ♂♂); Breazu (Is) 30.VI.1959 (1 ♂, 1 ♀), 21.IX.1973 (3 ♂♂, 31 ♀♀); Pd. Bârnova (Is) 21.IX.1973 (2 ♀♀); Păun (Is) 9.IX.1973 (1 ♂, 3 ♀♀); Valea lui David (Is) 17.VII.1975 (1 ♀); Călărași (Bt) 12.IX.1973 (5 ♀♀); Tulcea (Tl) 12.VIII.1984 (2 ♂♂, 25 ♀♀), 2.VII.1987 (1 ♂); Babadag (Tl) 6.VIII.1974 (4 ♂♂, 7 ♀♀), 16.VIII.1974 (1 ♂, 7 ♀♀).

Sympetrum vulgatum (Linnaeus, 1758) (408 specimens: 191 ♂♂, 217 ♀♀)

Material: Iași, Pd. Repedea (Is) 16.VII.1980 (1 ♀), 7.IX.1980 (2 ♂♂, 2 ♀♀), 26.VIII.1987 (2 ♀♀); Iași, Grădina Botanică (Is) 11.VIII.1980 (1 ♂, 1 ♀); Iași, Socola (Is) 17.VII.1974 (2 ♂♂), 25.VIII.1974 (11 ♂♂, 6 ♀♀), 26.VIII.1974 (14 ♂♂, 11 ♀♀), 27.VIII.1974 (5 ♂♂, 4 ♀♀), 29.VIII.1974 (23 ♂♂, 5 ♀♀), 31.VIII.1974 (7 ♂♂, 8 ♀♀), 12.IX.1974 (1 ♀), 21.IX.1974 (8 ♂♂, 6 ♀♀), 24.IX.1974 (13 ♂♂, 12 ♀♀), 30.VIII.1975 (9 ♂♂, 2 ♀♀), 1.VII.1977 (3 ♂♂, 2 ♀♀), 9.VIII.1977 (2 ♂♂), 16.VIII.1985 (4 ♂♂, 4 ♀♀), 27.VIII.1985 (2 ♂♂, 7 ♀♀), 29.VIII.1985 (16 ♂♂, 9 ♀♀), 2.IX.1985 (14 ♂♂, 10 ♀♀); Iași, Ciric (Is) 24.VI.1970 (6 ♂♂, 16 ♀♀), 25.VI.1970 (10 ♂♂, 28 ♀♀), 10.IX.1970 (1 ♂, 3 ♀♀); Pd. Bârnova (Is) 2.IX.1986 (1 ♀); Bârnova (Is) 2.IX.1973 (2 ♂♂, 1 ♀); Țibana (Is) 15.VIII.1971 (4 ♂♂, 23 ♀♀); Păun (Is) 9.IX.1973 (3 ♀♀); Gârbești (Is) 10.VIII.1970 (8 ♂♂, 15 ♀♀); Sângeorz-Băi (Bn) 23.VII.1958 (1 ♂); Călărași (Bt) 12.IX.1973 (4 ♀♀); Tulcea (Tl) 12.VIII.1984 (1 ♀), 29.VII.1987 (1 ♂), 25.VIII.1987 (1 ♀); Caraorman (Tl) 9.VI.1985 (2 ♂♂); Delta Dunării (Tl) 18.VII.1972 (1 ♂); Ciucurova (Tl) 16.VIII.1973 (1 ♂, 3 ♀♀); Babadag (Tl) 17.VIII.1973 (1 ♂, 2 ♀♀), 6.VIII.1974 (12 ♂♂, 10 ♀♀), 16.VIII.1974 (5 ♂♂, 12 ♀♀); Pd. Babadag (Tl) 21.VIII.1978 (1 ♀).

Sympetrum meridionale (Selys, 1841) (218 specimens: 91 ♂♂, 127 ♀♀)

Material: Iași, Socola (Is) 12.IX.1974 (1 ♀), 1.VII.1977 (1 ♂, 1 ♀), 9.VIII.1977 (3 ♂♂), 25.VIII.1979 (3 ♂♂, 1 ♀), 16.VIII.1985 (1 ♀), 27.VIII.1985 (1 ♂), 29.VIII.1985 (1 ♂, 2 ♀♀); Iași, Pd. Repedea (Is) 16.VII.1980 (1 ♂, 2 ♀♀); Țibana (Is) 15.VIII.1971 (3 ♀♀); Prisăceni (Is) 30.VIII.1980 (1 ♂); Tulcea (Tl) 21.VIII.1977 (11 ♂♂, 2 ♀♀), 12.VIII.1984 (9 ♂♂, 16 ♀♀), 2.VII.1987 (1 ♂, 1 ♀), 28.VII.1987 (6 ♂♂, 14 ♀♀), 29.VII.1987 (3 ♂♂, 1 ♀), 2.VIII.1987 (2 ♂♂, 3 ♀♀); Ciucurova (Tl) 16.VIII.1973 (1 ♀); Delta Dunării (Tl) 18.VII.1972 (17 ♂♂, 14 ♀♀); Pd. Babadag (Tl) 21.VIII.1978 (5 ♀♀), 1.VIII.1987 (13 ♂♂, 23 ♀♀), Babadag (Tl) 6.VIII.1974 (3 ♂♂, 5 ♀♀), 16.VIII.1974 (2 ♂♂, 12 ♀♀); Urluia (Ct) 8.VII.1973 (1 ♀); Năvodari (Ct) 8.IX.1987 (2 ♂♂, 3 ♀♀), 10.IX.1987 (9 ♂♂, 21 ♀♀), 27.VIII.1989 (2 ♂♂, 3 ♀♀).

Crocothemis Brauer, 1868

Crocothemis erythraea (Brullé, 1832) (110 specimens: 49 ♂♂, 61 ♀♀)

Material: Iași, Socola (Is) 17.VII.1974 (1 ♂); Delta Dunării (TI) 15.VI.1968 (12 ♂♂, 21 ♀♀), 16.VI.1968 (25 ♂♂, 17 ♀♀), 17.VI.1968 (10 ♂♂, 23 ♀♀), 18.VI.1968 (1 ♂).

DISCUSSIONS

The best represented family is Libellulidae, with 1662 specimens - meaning 53% from the collection. Two species of this family, *Sympetrum sanguineum* (419 specimens) and *Sympetrum vulgatum* (408 specimens), represent more than 25% from the total number of the collection specimens. At the opposite, Gomphidae family is represented only by 2 specimens from 1 species, this being only 0.06% from the total.

Important species

The presence of *Lestes viridis* (Vander Linden, 1825) in Dobrogea and in the Danube Delta is interesting. Further field work is needed to see if *Lestes parvidens* Artobolevskii, 1929 occurs in the area and if these two species interbreed in this region. The distribution of these two species in Romania is not clear and material from a larger part of the country is needed to study their occurrence (Olias, 2005).

The presence of *Coenagrion ornatum* (Selys, 1850) near Iași is important, because this is a protected species under Natura 2000 directive. Another protected Natura 2000 species is *Gomphus flavipes* (Charpentier, 1825), from Dobrogea.

Coenagrion scitulum (Rambur, 1842), a rare species in Romania, is found for the first time in the northern part of Moldova. Previously it was found only in the southern part of Moldova, near Galați (Patriche & Mancu, 2008).

One of the biggest surprises revealed when studying this collection was the finding of several specimens of *Cordulegaster heros* Theischinger, 1979. Seven specimens were collected between 1974 and 1990, about 20 km south of Iași. With these new data, the distribution of this species in Romania is extended with about 400 km to the north-east. Previously, it was known only from Banat and the south-west of Transylvania (Beutler, 1988; Kipping, 1998; Boudot, 2001; Mancu, unpublished data). This is also the easternmost known locality for this species.

Somatochlora meridionalis Nielsen, 1935 – This record strongly expands the known range of this species in Romania (Mancu, unpublished data). This is the first finding of the species in Moldova.

ACKNOWLEDGEMENTS

First of all, I want to thank Dr. Davideanu Grigore, the manager of the museum, for putting at my disposal the collection and a place to work. I also thank Dr. Irinel Popescu, Elena Târziu and Gabriela Însurățelu who helped a lot in the inventorying process and to Vincent Kalkman and Milen Marinov who reviewed this paper. The author's wish to thank for the financial support provided from programs co-financed by THE SECTORAL OPERATIONAL PROGRAMME HUMAN RESOURCES DEVELOPMENT, Contract POSDRU 6/1.5/S/3 - "Doctoral studies: through science towards society".

COLECȚIA DE LIBELULE (INSECTA: ODONATA) DIN MUZEUL DE ISTORIE
NATURALĂ DIN IAȘI (ROMÂNIA)

REZUMAT

Colecția de libelule depozitată în Muzeul de Istorie Naturală din Iași a fost inventariată și studiată. Rezultatul inventarului este de 3162 specimene de libelule adulte aparținând la 45 de specii, aceasta fiind cea mai mare colecție din țară. Acest material a fost colectat cu precădere de către Constantin Visarion Mândru (între 1954 și 1990) din 51 de puncte de pe teritoriul României. Colectarea fiind făcută în special în Moldova și Dobrogea, doar puține exemplare (7 specimene) au fost colectate din Transilvania și Crișana. Speciile *Coenagrion ornatum*, *Cordulegaster heros* și *Gomphus flavipes* sunt specii importante din perspectiva Natura 2000 iar prin această lucrare sunt cunoscute noi date de distribuție. Pentru specia *Cordulegaster heros* arealul cunoscut se extinde cu peste 400 de km spre nord-vest. Speciile *Coenagrion scitulum*, *Somatochlora meridionalis* și *Sympetrum danae* sunt menționate rar din România.

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Received: January 20, 2011
Accepted: December 8, 2011

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