

The Diversity of Aquatic Coleopterans (Insecta, Coleoptera) in some Aquatorians from the East Region of Romania

Ion COJOCARU

Abstract

Paper presents data regarding taxonomic and ecosystemic diversity of the aquatic coleopterans from Moldova and Dobrogea regions (Romania). The sampling of the aquatic coleopterans was run 1996-2004 in seven types of aquatic basins from plateau, mountain and Delta of Danube. Were collected 67 species aquatic coleopterans belonging of 14 families; 23 new species were mentioned from Delta of Danube.

Keywords: coleopterans, biodiversity, Romania

Introduction

Paper presents data regarding diversity and distribution of the aquatic coleopterans populating different types of aquatic ecosystems of Moldova and Dobrogea regions.

The most important studies referring to aquatic coleopterans from east region of Romania were realised by V. IENIȘTEA (1968, 1972, 1974, 1988). Others researches on the aquatic coleopterans were carried out by: C. MOTAȘ & W. KNECHTEL (1920-1921), O. MARCU (1928-1931), St. NEGRU (1968), I. COJOCARU, 2000-2004).

Material and methods

The sampling of aquatic coleopterans was run 1996-2004 in different stations from the plateau and mountain of Moldova (6 counties: Botoșani, Suceava, Iași, Bacău, Vaslui and Neamț), and from Delta of Danube.

The species of aquatic coleopterans recorded have been collected from seven types of aquatic basins in the region of north-east of Romania (Table 2):

I. Stagnant waters in the plain zones (Lake Mihăiasa, Ibăneasa, pools Havârna, Ghireni (County Botoșani));

II. Stagnant waters in the hilly zones (Lake of accumulation Cîric, Dorobanti, the pond Valea lui David (county Iași), the pond Prodana (county Vaslui), the pond Plopilor (County Botoșani), the pond Pescarilor (County Botoșani), the pond Chiriloaia (County Botoșani), Lake of accumulation Iezer-Dorohoi (County Botoșani), the fish pond Havârna (County Botoșani), the Marsh Ghireni (County Botoșani));

III. Running waters in the hilly zones (the river Jijia (upstream of locality Dorohoi), canal-Siret

(Pașcani) (County Iași), river Bașeu, affluent Bașeu (locality Manoleasa) County Botoșani), the River Bârlad, the River Vaslui (County Vaslui);

IV. Stagnant waters in the pre-mountainous zones (Lake of accumulation Bâta Doamnei (County Neamț), Lake of accumulation Reconstrucția (County Neamț));

V. Running waters in the pre-mountainous zones (the rivulet Văleni, the rivulet Doamna, the rivulet Durău (County Neamț), Bistrița (upstream of town Bacău)

VI. Oligotrophic swamps (peat bogs) (the peat bog from Poiana Șampeii and from Neagra Șarului (County Suceava);

VII. Delta of Danube (the marsh Murighiol, Sulina, lake Sărături).

Results and Discussions

The species of aquatic coleopterans identified have analysed in accordance with taxonomic criterion (taxonomic diversity) and ecologic criterion (ecosystemic diversity).

A. Taxonomic diversity

In the aquatorians from the east region of Romania were found 14 families & 67 species of aquatic coleopterans (imagos and larvae) were collected (Table 1).

Table 1

Taxonomic diversity of aquatic coleopterans

No.	Family	Species
1.	Haliplidae	<i>Haliplus (Liaphus) variegatus</i> Sturm. <i>Haliplus obliquus</i> (Fabricius) <i>Haliplus</i> sp. <i>Peltodytes caesus</i> Duft.
2.	Noteridae	<i>Noterus crassicornis</i> Mull. <i>N. clavicornis</i> Deg.
3.	Dytiscidae	Subfamily Hydroporinae <i>Hydroglyphus (= Guignotus) pusillus</i> (F.) <i>Hydroporus (Suphrodytes) dorsalis</i> (F.) <i>Hydroporus planus</i> F. <i>Hydrovatus cuspidatus</i> (Kunz.) <i>Hygrotus inaequalis</i> (F.) <i>Graptodytes bilineatus</i> (Strm.) <i>Hygrotus versicolor</i> (Schall.) <i>Hyphydrus ovatus</i> Ill. <i>Porhydrus oblinquesignatus</i> Bielz. <i>Scarodytes halensis</i> (F.) Subfamily Laccophilinae <i>Laccophilus hyalinus</i> (De Geer) <i>Laccophilus minutus</i> (L.) <i>Laccophilus variegatus</i> (Germ.) Subfamily Colymbetinae <i>Colymbetes fuscus</i> (L.) <i>C. striatus</i> (L.) <i>Copelatus haemorrhoidalis</i> (F.) <i>Agabus solieri</i> Aubé <i>Ilybius ater</i> (De Geer) <i>Ilybius fuliginosus</i> (F.) <i>Platambus maculatus</i> (L.) <i>Rhantus pulverosus</i> (Steph.) Subfamily Dytiscinae <i>Acilius sulcatus</i> (L.) <i>Cybister lateralimarginalis</i> (Deg.) <i>Graphoderus cinereus</i> (L.) <i>Dytiscus marginalis</i> L. <i>Hydaticus transversalis</i> (Pont.)
4.	Gyrinidae	<i>Gyrinus substriatus</i> Steph.
5.	Hydraenidae	<i>Hydraena palustris</i> Er. <i>Ochthebius minimus</i> (F.) <i>Ochthebius</i> sp.
6.	Hydrochidae	<i>Hydrochus elongates</i> Schall. <i>Hydrochus nitidicollis</i> Muls.
7.	Spercheidae	<i>Spercheus emarginatus</i> (Schall.)
8.	Hydrophilidae	Subfamily Sphaeridiinae <i>Coelostoma orbiculare</i> (F.) <i>Cercyon bifenestratus</i> Kust. Subfamily Hydrophilinae <i>Berosus signaticollis</i> (Charp.) <i>Anacaena limbata</i> (F.) <i>Laccobius obscuratus</i> Rott. <i>Laccobius</i> sp. <i>Helochaeres lividus</i> Forst.

No.	Family	Species
8.	Hydrophilidae	<i>Enochrus testaceus</i> (F.) <i>E. melanocephalus</i> (Oliv.) <i>Cymbiodyta marginella</i> (F.) <i>Paracymus aeneus</i> Germ. <i>P. scutellaris</i> (Rosh.) <i>Chaetarthria seminulum</i> (Herbst) <i>Hydrobius fuscipes</i> (L.) <i>Limnoxenus niger</i> (Zschach.) <i>Hydrous piceus</i> (L.) <i>Hydrophilus flavipes</i> Stev.
9	Limnebiidae	<i>Limnebius atomus</i> Duft. <i>L. aluta</i> Bedel
10.	Helophoridae	<i>Helophorus aquaticus</i> (L.) <i>H. grandis</i> Ill. <i>Helophorus (Atracthelophorus) brevitarsis</i> Kuwert
11.	Helodidae	<i>Elodes</i> sp. (larvae)
12.	Elmidae	<i>Limnius</i> sp.
13.	Dryopidae	<i>Helichus substriatus</i> (Mull.) <i>Dryops</i> sp.
14.	Curculionidae	<i>Hydronomus alismatis</i> Marsh. <i>Phytobius comari</i> Hrbst. <i>Lithodactylus myriophylli</i> Gyll.

B. Ecosystemic diversity

Table 2

Ecosystemic diversity of aquatic coleopterans

No.	Ecosystem	Species
I.	Stagnant waters in the plain zones	<i>Noterus clavicornis</i> , <i>Noterus crassicornis</i> , <i>Hydroglyphus pusillus</i> , <i>Hygrotus inaequalis</i> , <i>Graptodytes bilineatus</i> , <i>Scarodytes halensis</i> , <i>Laccophilus minutus</i> , <i>Laccophilus variegatus</i> , <i>Rhantus pulverosus</i> , <i>Colymbetes striatus</i> , <i>Haliphus</i> sp., <i>Peltodytes caesus</i> , <i>Hydronomus alismatis</i> , <i>Phytobius comari</i> , <i>Lithodactylus myriophylli</i> .
II.	Stagnant waters in the hilly zones	<i>Noterus clavicornis</i> , <i>Noterus crassicornis</i> , <i>Coelambus impressopunctatus</i> , <i>Hydroporus dorsalis</i> , <i>Hydroglyphus pusillus</i> , <i>Hydrovatus cuspidatus</i> , <i>Hygrotus inaequalis</i> , <i>Hygrotus versicolor</i> , <i>Hyphydrus ovatus</i> , <i>Scarodytes halensis</i> , <i>Laccophilus hyalinus</i> , <i>Laccophilus minutus</i> , <i>Laccophilus variegatus</i> , <i>Colymbetes fuscus</i> , <i>Copelatus haemorrhoidalis</i> , <i>Ilybius ater</i> , <i>Rhantus pulverosus</i> , <i>Graphoderus cinereus</i> , <i>Acilius sulcatus</i> , <i>Dytiscus marginalis</i> , <i>Cybister lateralimarginalis</i> , <i>Hydaticus transversali</i> , <i>Haliphus obliquus</i> , <i>Haliphus</i> sp., <i>Peltodytes caesus</i> , <i>Spercheus emarginatus</i> , <i>Limnebius atomus</i> , <i>Hydrochus nitidicollis</i> , <i>Ochthebius</i> sp., <i>Coelostoma orbiculare</i> , <i>Berosus signaticollis</i> , <i>Anacaena limbata</i> , <i>Laccobius</i> sp. <i>Enochrus melanocephalus</i> , <i>H. lividus</i> , <i>Paracymus aeneus</i> , <i>Limnoxenus niger</i> , <i>Hydrobius fuscipes</i> , <i>Helophorus (Atracthelophorus) brevitarsis</i> , <i>H. grandis</i> , <i>Hydronomus alismatis</i> , <i>Phytobius comari</i> , <i>Lythodactylus leucogaster</i> .
III.	Running waters in the hilly zones	<i>Noterus clavicornis</i> , <i>Hydroglyphus pusillus</i> , <i>Laccophilus minutus</i> , <i>Ilybius ater</i> , <i>Rhantus pulverosus</i>
IV.	Stagnant waters in the pre-mountainous zones	<i>Scarodytes halensis</i> , <i>Laccophilus minutus</i> , <i>Ilybius fuliginosus</i> , <i>Platambus maculatus</i> , <i>Haliphus</i> sp., <i>Peltodytes caesus</i> , <i>Elodes</i> sp. (larvae).
V.	Running waters in the pre-mountainous zones	<i>Scarodytes halensis</i> , <i>Laccophilus minutus</i> , <i>Laccophilus variegatus</i> , <i>Copelatus haemorrhoidalis</i> , <i>Ilybius fuliginosus</i> , <i>Chaetarthria seminulum</i> , <i>Haliphus</i> sp., <i>Peltodytes caesus</i> , <i>Laccobius obscuratus</i> , <i>Berosus signaticollis</i> , <i>Limnius</i> sp.

No.	Ecosystem	Species
VI.	Oligotrophic swamps (peat bogs)	<i>Hydroporus planus</i> , <i>Hydroporus (Suphrodytes) dorsalis</i> , <i>Hygrotus inaequalis</i> , <i>Porhydrus oblinquesignatus</i> , <i>Copelatus haemorrhoidalis</i> , <i>Agabus solieri</i>
VII.	Delta of Danube	Fam. Haliplidae: <i>Haliplus (Liaphus) variegatus</i> , <i>Haliplus</i> Fam. Dytiscidae. Subfam. Hydroporinae: <i>Hydroporus angustatus</i> , <i>Hydroporus sp.</i> , <i>Hydrovatus cuspidatus</i> , <i>Hygrotus inaequalis</i> , <i>Hydroglyphus (=Guignotus) pusillus</i> , <i>Bidessus nasutus</i> , <i>Porhydrus lineatus</i> , <i>Coelambus sp.</i> Subfam. Noterinae: <i>Noterus clavicornis</i> , <i>N. crassicornis</i> . Subfam. Laccophilinae: <i>Laccophilus variegatus</i> . Subfam. Colymbetinae: <i>Rhantus pulverosus</i> . Subfam. Dytiscinae: <i>Graphoderus cinereus</i> , <i>Dytiscus dimidiatus</i> . Fam. Gyrinidae: <i>Gyrinus substriatus</i> . Fam. Hydrophilidae: Subfam. Sphaeridiinae: <i>Coelostoma orbiculare</i> , <i>Cercyon bifenestratus</i> . Subfam. Hydrophilinae: <i>Berosus signaticollis</i> , <i>Anacaena limbata</i> , <i>Helochares obscurus</i> , <i>H. lividus</i> , <i>Enochrus testaceus</i> , <i>E. melanocephalus</i> , <i>Cymbiodyta marginella</i> , <i>Paracymus scutellaris</i> , <i>Hydrobius fuscipes</i> , <i>Limnoxenus niger</i> , <i>Hydrous piceus</i> , <i>Hydrophilus flavipes</i> . Fam. Hydraenidae: <i>Hydraena palustris</i> , <i>Ochthebius minimus</i> . Fam. Hydrochidae: <i>Hydrochus elongatus</i> Fam. Limnebiidae: <i>Limnebius atomus</i> , <i>L. aluta</i> . Fam. Helophoridae: <i>Helophorus aquaticus</i> . Fam. Dryopidae: <i>Helichus substriatus</i> , <i>Dryops sp.</i> Fam. Curculionidae sp.

Conclusions

1. Taxonomic diversity of aquatic coleopterans collected from east region of Romania include 67 species from 14 families.

2. There are found that some species are more frequent and wider adapted, being met in several types of basins, especially at lower altitudes, such as: *Noterus clavicornis*, *Noterus crassicornis*, *Hydroglyphus pusillus*, *Scarodytes halensis*, *Laccophilus minutus*, *Laccophilus variegatus*, *Rhantus pulverosus*. Other species have a narrower distribution and are connected with higher, pre-mountainous altitudes: *Ilybius fuliginosus*, *Platambus maculatus*, *Copelatus haemorrhoidalis*, and a few species were found only in peat bogs: *Hydroporus planus*, *Porhydrus oblinquesignatus*, *Agabus solieri*.

3. In this paper we mentioned 23 new species of aquatic coleopterans from Danube Delta: 5 species belonging to Hydroporinae, 1 species belonging to Colymbetinae, 1 species belonging to Gyrinidae, 2 species belonging to Spheridiinae, 5 species belonging to Hydrophilinae, 2 species belonging to Hydraenidae, 1 species belonging to Hydrochidae, 1 species belonging to Helophoridae, 2 species belonging to Dryopidae and 1 species belonging to Curculionidae.

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Ion COJOCARU

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