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## **ИТОГИ И ПЕРСПЕКТИВЫ РАЗВИТИЯ ЭНТОМОЛОГИИ В ВОСТОЧНОЙ ЕВРОПЕ**

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## NEW FAUNISTIC RECORDS OF AMERICAN WHIRLIGIG AND PREDACEOUS DIVING BEETLES (INSECTA: COLEOPTERA: GYRINIDAE, DYTISCIDAE)

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*New localities from Northern and Southern America for *Macrogyrus* (*Andogyrus*) *buqueti* Aubé, 1838 of Gyrinidae, and 10 species of Dytiscidae are recorded. *Macrogyrus* (*Andogyrus*) *buqueti*, *Platynectes* (*Agametrus*) *muelleri* (Kirsch, 1865), *Thermonectus depictus* Sharp, 1882, *T. margineguttatus* (Aubé, 1838), *Copelatus abonnenci* Guignot, 1939, *C. alternatus* Sharp, 1882, *C. amazonicus* Régimbart, 1889, *C. concolor* Sharp, 1882 are firstly recorded for Ecuador. *Thermonectus intermedius* Crotch, 1873 is firstly recorded for Florida and Louisiana fauna. Additional records from the USA for *Hydaticus* (*Prodaticus*) *bimarginatus* (Say, 1830) and *Cybister* (*Cybister*) *fimbriolatus* (Say, 1823) are given.*

### INTRODUCTION

The family Gyrinidae includes about 750 species (Gustafson, Miller, 2017), but the family Dytiscidae includes 4440 species (Nilsson, Hájek, 2018). These beetles are important components of aquatic ecosystems. The study of their biodiversity and ecological role is primarily relevant to poorly studied regions of the Earth.

In November-December 2018, a Belarusian zoological expedition consisting of A.V. Derunkov A.P., Kashtalian and S.K. Ryndevich conducted research in specially protected natural areas (Yasuni Biosphere Reserve, El Pahuma Orchid Reserve, Lalo Loor Dry Forest Reserve) in Ecuador (South America). One of the objectives of the expedition was to study the biological diversity of water beetles in Neotropic Region. Data on biodiversity of water beetles of Ecuador are extremely limited, as well as information about environmental preference, feeding habits and geographic distribution of the species.

This article presents the initial results of the study of whirligig and predaceous diving beetles diversity based on the materials of the expedition. Moreover, data on the distribution of some Nearctic species of Dytiscidae are given.

### MATERIAL AND METHODS

Material is deposited in the following collections: Universidad San Francisco de Quito, Quito, Ecuador (USFQ) and S.K. Ryndevich's collection, Baranovichi, Belarus (CSR).

Beetles were dissected; their genitalia were placed in water-soluble glue on a plastic plate pinned below the respective specimens. Specimens were examined using a Nikon SMZ-745T and Nikon SMZ-800 stereomicroscopes.

### RESULTS

The annotated check-list of eleven American species of Gyrinidae and Dytiscidae including information on their environmental features is given below.

#### *Species new for regional fauna.*

Family **GYRINIDAE**  
Subfamily **GYRININAE**  
Tribe **DINEUTINI**

Genus *Macrogyrus* Straneo, 1939. There are now 54 species of *Macrogyrus* with the inclusion of the former genus *Andogyrus*. This neotropical subgenus has twenty known species (Brinck, 1977; Gustafson, Miller, 2017).

*Macrogyrus (Andogyrus) buqueti* Aubé, 1838: *Neotropic*: S. America, Ecuador, Pichincha Prov., El Pahuma Orchid Reserve, creek of stream near hotel, 27.11.2018, S 00°02'53,3''W 78°63'30,8, leg. Ryndevich S.K, 1 specimen (CSR). New species for Ecuador.

*Ecology*. The specimen was collected in a fast-flowing mountain stream, 1 m from the coast, among a few macrophytes (Figure 1).

Family **DYTISCIDAE**  
Subfamily **AGABINAE**  
Tribe **PLATYNECTINI**

Genus *Platynectes* Régimbart, 1879. Includes 67 species: The genus has 23 species in Neotropic Region (Nilsson, Hájek, 2018).

*Platynectes (Agametrus) muelleri* (Kirsch, 1865). *Neotropic*: S. America, Ecuador, Pichincha Prov., El Pahuma Orchid Reserve, stream near hotel, 27.11.2018, S 00°02'53,3''W 78°63'30,8, leg. Ryndevich S.K, 1 specimen (CSR). Recorded for Ecuador for the first time. Previously recorded only from Colombia.

*Ecology*. The specimen was founded in stream backwater among macrophytes, 0.3 m from the coast, depth 0.1 m, sandy bottom with some mud (Figure 1).



Figure 1 – Habitats of *Macrogyrus buqueti* (yellow arrow) and *Platynectes muelleri* (blue arrow) in El Pahuma Orchid Reserve (Ecuador). Photo by S.K Ryndevich.

Tribe **ACILIINI**

Genus *Thermonectus* Dejean, 1833. Genus includes 20 species: Seven species inhabit the Nearctic, 19 species – in Neotropic Region (Nilsson, Hájek, 2018).

*Thermonectus depictus* Sharp, 1882. *Neotropic*: S America, Ecuador, Manabí Prov., 19 km SW Pedernales, Lalo Loor Dry Forest Reserve, stream, S 00°08'18,6'', W 80°16'29,4'' 3.XII.2018, leg. Ryndevich S.K, 4 specimens (3 imago+1 larva) (USFQ, CSR). New species for Ecuador fauna.

*Ecology*. All specimens were collected in a slow-flowing stream, up to 2 m from the coast,

among macrophytes thickets, depth up to 0.5 m, bottom with mud and organic residues.

***Thermonectus intermedius*** Crotch, 1873. *Nearctic*: N America, USA, Florida, Santa Rosa county, near Santa Rosa Beach, Grayton Beach State Park, h=2m, N 30°20'08,2'', W 86°10'46'' 3. IX.2011, leg. A.V. Derunkov, 1 specimen (CSR); USA, Louisiana, Baton Rouge, at light, 25 May 1998, leg. A.K. Tishechkin, 1 specimen (CSR); same data, 10.VI.1998, 2 specimens (CSR). Recorded for Florida and Louisiana for the first time.

*Ecology*. Specimens were collected at light.

***Thermonectus margineguttatus*** (Aubé, 1838). *Neotropic*: S America, Ecuador, Manabí Prov., 19 km SW Pedernales, Lalo Loor Dry Forest Reserve, stream, S 00°08'18,6'', W 80°16'29,4'' 3. XII.2018, leg. Ryndevich S.K, 4 specimens (USFQ, CSR). New species for Ecuador.

*Ecology*. Similar to *T. depictus*. These two species lived sympatrically.



Figure 2 – Habitats of *Thermonectus depictus* (yellow arrow) and *T. margineguttatus* (blue arrow) in Lalo Loor Dry Forest Reserve (Ecuador). Photo by S.K Ryndevich.

#### Subfamily COPELATINAE

##### Tribe COPELATINI

Genus *Copelatus* Erichson, 1832. Includes 442 species (Nilsson, Hájek, 2018): Previously four species recorded for Ecuador.

***Copelatus abbonenci*** Guignot, 1939. *Neotropic*: S America, Ecuador, Orellana Prov., Yasuni Biosphere Reserve, near Tiputini Biodiversity Station, temporary pool in petioles of fallen palm leaf, S 00°38'00,3'' W 76°09'48,6'', 17.XI.2018, leg. Ryndevich S.K, Derunkov A.V., 3 specimens (USFQ, CSR); same data 20.XI.2018, leg. Ryndevich S.K, 2 specimens (CSR); same data S 00°38'01,1'' W 76°08'02,8'', 20.XI.2018, leg. Ryndevich S.K, 2 specimens; (CSR). The species is firstly recorded for Ecuador.

*Ecology*. All specimens were collected from temporary pools in petioles of fallen leaves of *Socratea* palm under the canopy of the equatorial forest (Figure 3).



Figure 3 – Habitat of *Copelatus* species in petioles of fallen leaf (yellow arrow) in Yasuni Biosphere Reserve (Ecuador). Photo by A.V. Derunkov

*Copelatus alternatus* Sharp, 1882. *Neotropic*: S America, Ecuador, Orellana Prov., Yasuni Biosphere Reserve, near Tiputini Biodiversity Station, temporary pool in petioles of fallen palm leaf, S 00°38'00,3'' W 76°09'48,6'', 17.XI.2018, leg. Ryndevich S.K, 3 specimens (USFQ, CSR); S America, Ecuador, Orellana Prov., Yasuni Biosphere Reserve, near Tiputini Biodiversity Station, forest temporary pool, S 00°38'07,8'' W 76°08'53,3'', 20.XI.2018, leg. Ryndevich S.K, Derunkov A.V., Kashtalian A.P., 1 specimens (CSR); same data, forest temporary pool, “jaguar trail”, S 00°38'12,7'' W 76°08'52,8'', 20.XI.2018, leg. Ryndevich S.K, 2 specimens; (USFQ, CSR); same data, stream, S 00°38'13'' W 76°08'53,2'', 21.XI.2018, leg. Ryndevich S.K, 1 specimens; (CSR). New species for fauna of Ecuador.

*Ecology*. The species was collected late in the evening and at night in forest temporary pools under shrub branches, bottom with many fallen leaves. One specimen was collected in a small forest stream, deep to 0.2 m. In addition, several specimens were found in water in petioles of fallen leaves of *Socratea* palm under the canopy of forest.

*Copelatus amazonicus* Régimbart, 1889. *Neotropic*: S America, Ecuador, Orellana Prov., Yasuni Biosphere Reserve, near Tiputini Biodiversity Station, temporary pool in palm leaf, S 00°38'00,3'' W 76°09'48,6'', 17.XI.2018, leg. Ryndevich S.K, Derunkov A.V., 1 specimen (CSR). Recorded for Ecuador for the first time.

*Ecology*. The same as *C. abonnenci*.

*Copelatus concolor* Sharp, 1882. *Neotropic*: S America, Ecuador, Orellana Prov., Yasuni Biosphere Reserve, near Tiputini Biodiversity Station, temporary pool in petioles of fallen palm leaf, S 00°38'00,3'' W 76°09'48,6'', 17.XI.2018, leg. Ryndevich S.K, Derunkov A.V., Kashtalian A.P., 18 specimens (USFQ, CSR); S America, Ecuador, Orellana Prov., Yasuni Biosphere Reserve, near Tiputini Biodiversity Station, forest temporary pool, S 00°38'07,8'' W 76°08'53,3'', 20.XI.2018, leg. Ryndevich S.K, Derunkov A.V., Kashtalian A.P., 3 specimens (CSR) same data, stream, S 00°38'12,7'' W 76°08'52,8'', 21.XI.2018, leg. Ryndevich S.K,

Derunkov A.V., Kashtalian A.P., 2 specimens; (USFQ, CSR). The species is firstly recorded for Ecuador fauna.

*Ecology.* The same as *C. alternatus*.

***Additional records of species.***

Family **DYTISCIDAE**  
Subfamily **DYTISCINAE**  
Tribe **HYDATICINI**

Genus *Hydaticus* Leach, 1817. Genus includes 146 species (Nilsson, Hájek, 2018):

*Hydaticus (Prodaticus) bimarginatus* (Say, 1830). *Nearctic*: N America, USA, Florida, Santa Rosa county, near Santa Rosa Beach, Grayton Beach State Park, h=2m, N 30°20'08,2'', W 86°10'46'' 3.IX.2011, leg. A.V. Derunkov, 2 specimens (CSR); USA, Louisiana, Baton Rouge, 15.VI.1998, leg. A.K. Tishechkin, 1 specimen (CSR).

*Ecology.* The specimens were collected at light.

Subfamily **CYBISTRINAE**  
Tribe **CYBISTRINI**

Genus *Cybister* Curtis, 1827. Includes 96 species (Nilsson, Hájek, 2018):

*Cybister (Cybister) fimbriolatus* (Say, 1823). *Nearctic*: N America, USA, Florida, Santa Rosa county, near Santa Rosa Beach, Grayton Beach State Park, h=2m, N 30°20'08,2'', W 86°10'46'' 3. IX.2011, leg. A.V. Derunkov, 2 specimens (CSR).

*Ecology.* The beetles were collected at light.

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