CONTRIBUTION TO THE STUDY OF HETEROPTERA, GERROMORPHA
(SEMIAQUATIC BUGS)
VI- HEBRIDAE AND HYDROMETRIDAE OF EGYPT

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ABSTRACT

The present study deals with the rare families, Hebridae which is not represented in the Egyptian collection, and the poorly represented Hydrometridae. This study revealed the presence of the genera, Hebrus Curtis with three species, H. jeanneli Poisson, H. montanus Kolenati, and H. pusillus (Fallén) of the family Hebridae, and Hydrometra Latreille with two species, H. aegyptia Hungerford and Evansand, and H. gracilenta Horváth of the family Hydrometridae. H. gracilenta Horváth is recorded from Egypt for the first time. Keys to species and outline drawings of representatives of each genus are presented. In addition, short diagnosis with notes on habitat and distribution are given for each species.

Keywords: Hebridae, Hydrometridae, Egypt.

INTRODUCTION

Hebrids or the velvet water bugs are small, inconspicuous, stout-bodied bugs that are densely covered with a velvety pile of hydrofuge hairs. They live in moist surroundings, either humid terrestrial habitats (litter, moss), marginal aquatic habitats (sphagnum bogs), or rarely on water surface covered with floating plants (Andersen, 1995). While they are associated with fresh water habitats, some species have a tolerance to brackish situation. All species are predators of arthropods (Polhemus and Polhemus, 1988). They have five nymphal instars and usually overwinter as adults. Most species are wing-dimorphic; winged forms are common (Lansbury, 1990).

The Hebridae are nearly worldwide in distribution (Schuh and Slater 1995), with greatest generic diversity in the Asian tropics. Seven genera and about 163 species were recognized (Andersen and Weir, 2004). Drake and Chapman (1958) provided a checklist of new world species. Linnavuori (1980, 1981) described numerous new species of Hebrus Curtis from the Afrotropical Region. Cobben (1982) gave an account of some of the Afrotropical hebrids. Lansbury (1990) revised the Australian Hebridae, recognising two genera (Hebrus Curtis and Merragata White) and five species. Andersen and Weir (2004) studied the taxonomy and phylogeny of Australian Hebridae. Hebrids of Egypt were studied sporadically as part of the Hemiptera of Egypt (Priesner and Alfieri, 1953; Priesner and Wagner, 1961; Linnavuori, 1964), perhaps partly because of the shortage of the study material. This family was represented in Egypt by a single genus, Hebrus Curtis (Andersen, 1995).

Hydrometrids are commonly called marsh treading or water measurers. They are the most fragile of the surface water bugs, with very slender bodies and threadlike legs. They are typically inhabitants of fresh and quiet waters having abundant emergent vegetation which provide protection for them. They are also known from saltwater and brackish water (Polhemus and Chapman, 1979) and from rock surfaces above water (Smith, 1988). All species are slow-moving predators, feeding upon dead or disabled insects and other invertebrates that they find on the water or floating vegetation (Zettel and Chen, 1996). They have five nymphal instars and usually overwinter as adults. Wing polymorphism is a common phenomenon in hydrometrids. In Hydrometra Latreille macropterous individuals are more prevalent than brachypterous or apterous forms (Andersen, 1982).
The Hydrometridae are most diverse in tropical and subtropical regions (Zettel and Chen, 1996). Hydrometrids count about 119 species in seven genera and three subfamilies. The Hydrometrinae, which is worldwide, contains the majority of the species of the family, about 110, and most of these belong to the genus Hydrometra Latreille (Andersen and Weir, 2004). The most comprehensive studies on the classification and phylogeny of Hydrometridae are those of Andersen (1977, 1982). Hydrometrids of Egypt were treated very briefly in the account of the Hemiptera of Egypt (Priesner and Alfieri, 1953; and Linnavauri, 1964). This family is represented in Egypt by a single genus, Hydrometra Latreille (Andersen, 1995).

The present study includes a taxonomic review of all species of the families Hebridae and Hydrometridae from Egypt, with referring to their habitats and distribution.

MATERIALS AND METHODS

In the present study, most of the specimens examined have been collected over the years 1991–2004 by the second author and deposited in her collection, Zoology Department, Faculty of Science, Suez Canal University. Since species of these families are very rare in Egypt and are poorly represented in the Egyptian collections, additional specimens were obtained from the private collection of Prof. R. Linnavauri, Finland.

The names of species were updated according to Andersen (1995) and these were further confirmed through personal contact of the second author with Prof. R. Linnavauri. The used morphological terms were those of Polhemus and Lansbury (1997), and Andersen and Weir (2004) based on Andersen (1982).

The examination and drawing of specimens were made by using a binocular microscope and a camera lucida. The total length (TL) of the body was measured by using a micrometer eye-piece in a binocular microscope.

RESULTS AND DISCUSSION

Family Hebridae Amyot and Serville, 1843

Hebridae Amyot and Serville, 1843: Libraire Encycl. De Roret, Paris x1: 293.


Diagnosis: Hebrids are small and stout, usually dull brown and range in length from 1 to 2.5 mm. The body is clothed with a velvety hydrofuge pile. The antennae appear 5-segmented and segments III and IV are slender (Plate I, Fig. 1). The bucculae form a groove that houses the labium (Plate I, Figs. 2, 3). The pronotum has raised humeral angles and scutellum is well developed (Plate II, Figs. 8, 10). The legs are short and the coxal cavities are widely separated. The tarsi are 2-segmented, with the first segment very short and the second segment much longer. The pretarsus is inserted apically, the claws are very long, and dorsal and ventral arolia are present (Plate I, Fig. 5). Wing polymorphism is common. The venation of the forewings is greatly reduced, the apical half (clavus) lacks distinct veins and the basal half (corium) has a single cell (Plate I, Fig. 4 and Plate II, Figs. 9, 11). The abdomen is relatively long (Plate I, Fig. 6). Abdominal scent orifices are present in nymphs and adults. Genitalia are more or less the same in all species (Plate II, Figs. 12-14). They are apparently inserted anteapically on abdomen in both male and female, pygophore is small, paramere usually symmetrical (Plate II, Fig., 12), ovipositor valves weakly sclerotized, platelike (Plate II, Figs. 13, 14).

This family currently includes two subfamilies and seven genera (Andersen and Weir, 2004). Only one genus, Hebrus Curtis which belongs to the subfamily Hebrinae Amyot and Serville, was recorded from Egypt and is confirmed in this study.
Genus *Hebrus* Curtis


*Naeogaeus* Laporte, 1833: Mag. Zool. (Guerin) 2 (Suppl.): 34. (Syn. Harris, 1942: Pan-Pacific Ent. 18: 124); variant, incorrect spellings *Naeogaeus*, *Neogaeus*.

**Type species:** *Hebrus*: *Lygaeus pusillus* Fallén, 1807 by monotypy. *Naeogaeus*: *Naeogaeus erythrocephalus* Laporte, 1833 (= *Lygaeus pusillus* Fallén, 1807) by monotypy.

**Current status:** Genus of Hebrinae Amyot and Serville, 1843 (Andersen, 1995; Andersen and Weir, 2004).

**Diagnosis:** Very small in size. Pronotum is as wide or wider than rest of body (Plate II, Figs. 7, 8, 10). Antennae five-segmented and with intercalary rings between segments II-III, III-IV, and IV-V (Plate I, Fig. 1). Abdomen with six segments, well developed carina and broad connexivum (Plate I, Fig. 6). Winged forms are common but apterous and brachypterous are rare.

**Habitat:** Hebridae are found in semiaquatic habitats, particularly in moist detritus or amongst floating plants (Polhemus and Polhemus 1988). Unlike other gerromorphans which favour the water surface, hebrids prefer marginal aquatic habitats. Hebrids are predators and scavengers, and are known to feed on springtails and other small arthropods (Bennett and Cook 1981). They lay their eggs on moss or algae (Hungerford 1920; Polhemus and Chapman 1979).

*Hebrus* Curtis is a cosmopolitan genus with about 163 species (Andersen and Weir, 2004). According to this study three species, *H. montanus* Kolenati, *H. jeanneli* Poisson and *H. pusillus* (Fallén) are confirmed from Egypt.

**Key to Egyptian species of Hebrus**

1- Scutellum 0.7x as long as pronotum (Plate II, Fig. 8), hemelytra with golden pubescence ................................................................. *montanus* Kolenati

- Scutellum 0.5x as long as pronotum (Plate II, Fig. 7, 10), hemelytra with whitish pubescence ............................................................. *pusillus* (Fallén)

2- Antennae covered with long hairs, clavus with narrow milky- brown basal spot (Plate II, Fig. 11).

- Antennae covered with short hairs, clavus with wide milky- brown basal spot (Plate II, Fig. 7) .......................................................... *jeanneli* Poisson

**Hebrus jeanneli** Poisson (Plate I, Fig. 7)

*Hebrus jeanneli* Poisson, 1944: Revue Franc. d'Entomol. 10: 106

**Type localities:** Africa: Kenya, Tanzania (Zanzibar).


**Diagnosis:** Body 2–2.1 mm. General color dark brown with metallic luster. Pronotum brown, Scutellum blackish brown, antennae with 1st segment brown, 2nd – 5th light brown, legs brown, apex of tarsi dark brown. Hemelytra brown, clavus with wide milky- brown basal spot extending to the level of apex of scutellum (Plate II, Fig. 7), membrane uniformly light brown with pale patches.

**Habitat:** It occurs among vegetation in pools.

**Distribution (Africa):** Egypt (W. Gedeirat, Sinai), Ethiopian region (Kenya, Tanzania).

**Material examined:** All macropterous ♂ and ♀, no brachypterous or apterous forms were found. Cairo 26.11.1991 (1), Saint Catherine 15.4.1993 (1), Hurghada 15.8.2003 (2).

**Hebrus montanus** Kolenati, 1857 (Plate II, Figs. 8, 9)

Type locality: Asia: Azerbaijan

Type material: *Hebrus montanus* Kolenati: Syntypes 2 ♂, Naturhistorisches Museum Wien, Austria (NHMW).

Diagnosis: Body 2–2.2 mm. General color reddish brown. Pronotum with black shoulders. Legs yellowish brown with narrow black patches at the base of tibia and apex of femur. Hemelytra with golden pubescence, membrane uniformly reddish brown with distinct pale pattern (Plate II, Fig. 9).

Habitat: It occurs among vegetation in pools.

Distribution (Africa): Egypt and Morocco.

Material examined: All macropterous ♂, no brachypterous or apterous forms were found. Alexandria 17.6.1990 (1), Matrouh 21.8.1999 (2).

*Hebrus pusillus* (Fallén, 1807)


Type locality: Sweden.

Type material: *Lygaeus pusillus* (Fallén): Syntypes 1 ♂, 1 ♀, Museum of Zoology, Lund University, Lund, Sweden (MZLU).

Diagnosis: Body 2.1–2.2 mm. General color dark brown. Pronotum dark brown, scutellum and shoulders black. Head around eye brownish yellow, antennae and legs brown. Hemelytra with dense whitish pubescence, corium dark brown, clavus with narrow milky–brown basal spot (Plate II, Fig. 11), membrane dark brown with four distinct patches. 2nd to 5th antennal segments provided with hairs.

Habitat: It occurs among vegetation in pools.

Distribution (Africa): Egypt, Libya, Algeria and Morocco.

Material examined: All macropterous ♂ and ♀, no brachypterous or apterous forms were found. Ismailia 1.8.1993 (3), Cairo 26.11.1991(2), Suez 24.3.2003 (1) and Saint Catherine 15.4.1993 (4).

Family Hydrometridae Billberg, 1820


Diagnosis: Hydrometridae are usually elongate, parallel-sided and slender, with thread-like appendages. The body length varies from 2.7 to 22 mm. The head is very long, particularly in front of the eyes (Plate III, Fig. 15 and Plate IV, Fig. 20). Ocelli are reduced or absent. The antennae are long, slender and 4-segmented (Plate III, Figs. 15, 16). The tarsi are 3-segmented and the claws are terminal. Wing polymorphism is common. The winged adults have the pronotum covering the mesonotum and the scutellum is not exposed (Plate III, Fig. 15 and Plate IV, Fig. 20). The hemelytra usually have closed cells (Plate III, Fig. 17 and Plate IV, Fig. 22). The metasternal scent gland openings are absent in the Egyptian species which belong to the Hydrometrinae. The abdomen is elongate and the ovipositor is reduced (Plate III, Fig. 19 and Plate IV, Figs. 23-26). The male pygophore is simple and protrudes from the abdomen (Andersen, 1977, 1982; Slater 1982).

This family currently includes three subfamilies and seven genera (Andersen and Weir, 2004). Only one genus, *Hydrometra* Latreille (subfamily Hydrometrinae Billberg) is recorded from Egypt and confirmed in the present work.

*Hydrometra* Latreille, 1796


Type species: *Cimex stagnorum* Linnaeus, 1758, designated by Latreille, 1810: 434.

Current status: Genus of subfamily Hydrometrinae Billberg, 1820 1843 (Andersen, 1995; Andersen and Weir, 2004).
Diagnosis: It is characterized by the elongate thorax with its nonsulcate mesosternum, and in having the midcoxae closer to the forecoxae than to the hind coxae (Plate III, Fig. 18).

Habitat: They occur on floating vegetation along the margins of still waters. While they can run across the water surface, they usually walk slowly over surface vegetation. They feed on all kinds of small aquatic organisms that they spear at and just below the water surface (Polhemus, 1997).

*Hydrometra* Latreille is by far the largest genus in the family with about 100 species (Andersen and Weir, 2004). It is represented in Egypt by two species, one is confirmed in the present work as *H. aegyptia* Hungerford and Evans, and the other one is newly recorded, *H. gracilenta* Horváth.

**Key to Egyptian species of Hydrometra**

1- Pronotum with rounded elevation (Plate IV, Fig. 21), mid-line of female VIIth sternite with faint hairs (Plate IV, Fig. 26) .................................................. *H. gracilenta*

- Pronotum without rounded elevation (Plate IV, Fig. 20), mid line of female VIIth sternite without hairs, but the apical margin with tufts of setae resembling spines (Plate IV, Fig. 24) .................................. *H. aegyptia*

*Hydrometra aegyptia* Hungerford and Evans


Type locality: Egypt, Pyramids.

Type material: Holotype ♂, Hungarian Natural History Museum, Budapest, Hungary (HNHM).

Diagnosis: Body 12-13 mm in length. The general body color is light brown, clypeus shiny, eye dark brown. Posterior lobe of head with faint, pronotum with distinct, whitish median stripe (Plate III, 15). Hemelytra mainly light brown, with dark veins. Ventral ground color shiny yellowish brown. Legs dark yellow-brown, antennae dark brown. Apical margin of female VIIth sternite with tufts of setae resembling spines (Plate IV, Fig. 24).

Habitat: collected from still water, dense vegetation around the edges of the ponds.

Distribution (Africa): Egypt, Sudan, Ethiopia.

Material examined: All macropterous ♀, no brachypterous or apterous forms were found. Kharka 5. 10. 1927 (1), Ezbet El-Nakhl 6.5.1914 (1) (Coll. Soc.); Pyramids, Cairo 12.10.1955 (2), Bahariya 8.10.1953 (1) (Coll. Ain); Meadi 16.9.1916 (1)and 12.9.1924 (1), Kharga Oasis 8.5.1918 (1), Abu Rawash 5.10.1932 (2), Kafr Hakim 19.11.1933 (1)(Coll. Agr.); Cairo 22.5.1963 (1) (Coll. Linnavuori); Ismailia 1.8.1993 (2) (Coll. Suez Canal).

*Hydrometra gracilenta* Horváth, 1899


Type localities: Hungary, Goricia (Italy), Lenkoran (Azerbaijan).

Type material: Syntypes 4♂ and 6♀, Hungarian Natural History Museum, Budapest, Hungary (HNHM).

Diagnosis: Body 11.5–12 mm in length. The general body color is dark brown, clypeus brown, eye black. Pronotum with rounded elevation (Plate IV, Fig. 21) and with faint whitish median stripe. Hemelytra dark brown with whitish median stripe (Plate IV, Fig. 22). Ventral ground color coffee- brown. Legs brown, with distal portion of femora and tibiae darker. Antennae dark brown. Mid-line of female VIIth sternite with faint hairs (Plate IV, Fig. 26).

Habitat: collected from still water, dense vegetation around the edges of the ponds.


Material examined: All macropterous ♀, no brachypterous or apterous forms were found. Cairo 3.9.1924 (2) (Coll. Soc.).
**Plate I**

![Plate I Diagram](image-url)

**Figs. 1-6** *Hebrus pusillus* (Fallen), adult female; (1) Antenna; (2) labium; (3) head and thorax, ventral view; (4) right hemelytron; (5) right hind leg; (6) abdominal sterna. Abbreviations: Bc. basal carina; Bu. buccula; Co. Corium; Conn. Connexivum; Ir. Intercalary rings; Lc. Lateral carina; Me. Membrane; Rg. Rostral groove.
Plate II

Fig. 7: *Hebrus jeanneli* Poisson, adult male; Figs. 8 and 9: *Hebrus montanus* Kolenati, adult male, (8) pronotum and scutellum, (9) right hemelytron; Figs. 10-14: *Hebrus pusillus* (Fallen), adult; (10) pronotum and scutellum, (11) right hemelytron, (12) male paramere, (13 and 14) dorsal and ventral valves of female ovipositor. Abbreviations: 1-2 Gpo. 1st–2nd gonapophysis; 1-2 Gx. 1st–2nd gonocoxae; 1-2 Rm. 1st–2nd rami; T9. paratergite 9.
Plate III

Figs. 15-19. *Hydrometra aegyptia* Hungerford and Evans; (15) adult female, (16) apex of head, (17) left hemelytron, (18) thorax, ventral view, (19) abdomen, lateral view. Abbreviations: Mes. mesosternum; Mts. metasternum; Prs. prosternum; St. sterna.
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REFERENCES


