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AN ANNOTATED CHECKLIST OF THE AQUATIC ADEPHAGA (COLEOPTERA) OF EGYPT. II. DYTISCIDAE: HYDROPORINAE

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Abstract: Data from previous literature were used to compile a checklist of the hydroporine fauna of aquatic Adephaga (Coleoptera, Dytiscidae: Hydroporinae) of Egypt. The subfamily Hydroporinae is the most diverse subfamily in the family Dytiscidae and contains 49 valid species and 16 genera belonging to 7 tribes (Bidessini, Hydroporini, Hydrovatini, Hygrotini, Hyphydrini, Methlini and Vatellini). Bidessini is the most diverse tribe, with 13 species and 5 genera. The present checklist provides notes concerning the type localities, type specimens, descriptors, new combinations and geographic distributions.
Keywords: Coleoptera, Dytiscidae, Hydroporinae, checklist, Egypt.

Lista comentada de la adefagofauna acuática (Coleoptera) de Egipto. II. Dytiscidae: Hydroporinae
Resumen: En base a bibliografía retrospectiva, se ha elaborado la lista faunística comentada de los coleópteros adéfagos acuáticos de la familia Dytiscidae de Egipto pertenecientes a la subfamilia Hydroporinae. Esta es la más diversa en Egipto y comprende 16 géneros y 49 especies distribuidas en 7 tribus (Bidessini, Hydroporini, Hydrovatini, Hygrotini, Hyphydrini, Methlini y Vatellini). La primera de ellas, Bidessini, resulta ser la de mayor riqueza taxonómica, con 5 géneros y 13 especies. Esta lista aporta varios datos de interés nomenclatural para posteriores catálogos zoogeográficos, como son las localidades de donde se han descrito los tipos, institución de depósito, descriptores, modificaciones de estatus y distribución geográfica.
Palabras clave: Coleoptera, Dytiscidae, Hydroporinae, lista faunística, Egipto.

Introduction

Aquatic Coleoptera constitute a significant part of the macrozoobenthos of freshwater habitats. Approximately 25 families in three of four suborders of Coleoptera are typically aquatic in some of their life stages (Balke, 2005). Among these, the predaceous diving beetles of family Dytiscidae, with some 4223 described species represent the most speciose family of water beetles within the suborder Adephaga (Nilsson, 2013). They occur in most running and stagnant freshwater habitats in all zoogeographic regions of the world and show a broad range of ecological strategies, mainly reflected in different swimming behaviors and their associated morphotypes (Ribera & Nilsson, 1995; Balke, 2005).

Family Dytiscidae includes 10 subfamilies. Approximately half of the species are included in the subfamily Hydroporinae (nearly 2199 species) and the rest are distributed in the remaining nine subfamilies: Laccophilinae, Agabinae, Dytiscinae, Colymbetinae, Lancetinae, Matinae, Coptotominae and Hydrodytinae (Nilsson, 2013). The subfamily Hydroporinae is a heterogeneous grouping of minute- to moderate-sized beetles composed of eight tribes worldwide (Bidessini, Hydroporini, Hydrovatini, Hygrotini, Hyphydrini, Laccornini, Methlini and Vatellini (Nilsson, 2013). The small Hydroporinae are intimately associated with shallow waters and stream margins (Larson *et al.,* 2000).

The study of African diving beetles has received considerable attention from several European taxonomists, and there is a long history of research on the water beetles of Egypt. However, descriptions, taxonomic notes and distribution of most Egyptian species are found scattered in the old literature which are often available only with considerable difficulty. Recently, Salah & Régil (2014) substantially updated the knowledge of Dytiscidae in Egypt, and listed 31 species from 5 subfamilies; Agabinae, Colymbetinae, Copelatinae, Dytiscinae and Laccophilinae.

The current study aims to compile an annotated checklist of the Egyptian Hydroporinae, in order to extend and complement the results of Salah & Régil (2014). In addition, the study provides a summary of the general situation of Dytiscidae that can serve as the basis for future progress in the knowledge of this group.

Materials and Methods

Biogeography of Egypt:

Egypt occupies the north-eastern corner of the African continent, with a surface area of just over one million square kilometers (1,019,600 km²). The country lies at the centre of the largest and driest desert region on the globe. Average temperatures are high (mean: summer 20–30°C, winter 10–20°C) and the mean annual rainfall over most of the country is less than 10 mm (Baha El Din, 2001). Perhaps the most significant feature of Egypt's landscape is the Nile river, which divides Egypt into two parts, east and west of the river. Egypt east of the Nile has much relief, including the country's highest mountain peaks; west of the Nile the landscape is generally featureless, largely made up of vast expanses of serir and sand desert, dotted with scattered oases. According to Hoath (2003) six ecological zones can be distinguished in Egypt: Nile valley and Delta, Eastern Desert, Western Desert, Northern coastal strip, Sinai Peninsula and Gebel Elba.

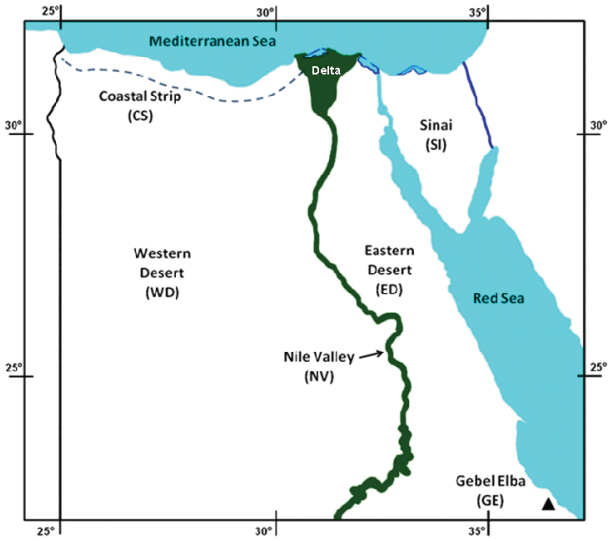

Fig. 1: Map of bioregions in Egypt. (CS) Northern Coastal Strip; (ED) Eastern Desert; (GE) Gebel Elba; (NV) Nile Valley and Delta; (SI) Sinai Peninsula; (WD) Western Desert.

Checklist arrangement:

The present checklist includes all valid names of extant beetle taxa belonging to the subfamily Hydroporinae known to occur in Egypt. The data have been extracted from published data from a variety of different sources, excluding all dubious and erroneous records. This paper follows the classification and nomenclature of the aquatic beetles suggested by Nilsson (2013); Nilsson & Hájek (2013).

Information in the text is given in the following order: the present name of the taxon (the most recent combination) followed by the author name, year and page number of original citation are given; the type locality; the type specimen and the type depository; a reference in which the species is described in detail; past new combinations and geographic distribution (in both worldwide and Egypt) as given by Nilsson (2013) and Nilsson & Hájek (2013), and the published works with reference to Egyptian material.

Type depository is given with the following acronyms that follow Nilsson (2013). Information given refers to current depository, which may differ from the one given in the original description. An "unknown" in this position means that the depository is not reported in the literature.

BMNH: The Natural History Museum, London, United Kingdom.
IRSNB: Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium.
MNHN: Museum National d'Histoire Naturelle, Paris, France.
MTD: Museum für Tierkunde, Dresden, Germany.
RMNH: Nationaal Natuurhistorische Museum ('Naturalis'), Leiden, Netherlands.
SAMC: Iziko Museum of Capetown, Cape Town, South Africa
ZIN: Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.
ZMHB: Museum für Naturkunde der Humboldt-Universität, Berlin, Germany.
ZMUC: Zoological Museum, University of Copenhagen, Copenhagen, Denmark.
ZSM: Zoologische Staatssammlung, München, Germany.

The geographic distribution of taxa is indicated by a three letter abbreviation and given as presence in one or more of the following seven zoogeographical regions: (AFR) Afrotropical, (AUS) Australian, (NEA) Nearctic, (NEO) Neotropical, (ORI) Oriental, (PAC) Pacific, and (PAL) Palearctic. Distribution in Egypt is indicated by a two letter abbreviation and given as presence in one or more of the following six biogeographical zones (CS) Northern coastal strip, (ED) Eastern Desert, (GE) Gebel Elba, (NV) Nile valley and delta, (SI) Sinai Peninsula, and (WD) Western Desert (Figure 1).

Results

I- Checklist of Hydroporinae of Egypt

The following checklist comprises 49 valid species from 16 genera belong to 7 tribes: Bidessini, Hydroporini, Hydrovatini, Hygrotini, Hyphydrini, Methlini and Vatellini known from Egypt. The list of species and their taxonomic position is summarized in Table (I).

Table I. List of Hydroporinae species known from Egypt.

Tribe Species
Bidessini
1- *Bidessus complicatus* Sharp, 1904
2- *Bidessus ovoideus* Régimbart, 1895
3- *Clypeodytes (Clypeodytes) cribrosus* (Schaum, 1864)
4- *Hydroglyphus angularis* (Klug, 1834)
5- *Hydroglyphus confusus* (Klug, 1834)
6- *Hydroglyphus dakarensis* (Régimbart, 1895)
7- *Hydroglyphus geminus* (Fabricius, 1792)
8- *Hydroglyphus major* (Sharp, 1882)
9- *Hydroglyphus pentagrammus* (Schaum, 1864)
10- *Hydroglyphus signatellus* (Klug, 1834)
11- *Yola enigmatica* Omer-Cooper, 1954
12- *Yola porcata* (Klug, 1834)
13- *Yolina insignis* (Sharp, 1882)
Hydroporini
14- *Hydroporus humilis* Klug, 1834
15- *Hydroporus memnonius* Nicolai, 1822
16- *Hydroporus oasis* Wewalka, 1992
17- *Hydroporus tessellatus* (Drapiez, 1819)
18- *Nebrioporus ceresyi* (Aubé, 1838)
19- *Nebrioporus crotchi* (Preudhomme de Borre, 1871)
20- *Nebrioporus insignis* (Klug, 1834)
21- *Nebrioporus lanceolatus* (Walker, 1871)
22- *Nebrioporus stearinus stearinus* (Kolenati, 1845)
23- *Scarodytes halensis* (Fabricius, 1787)
Hydrovatini
24- *Hydrovatus acuminatus* Motschulsky, 1859
25- *Hydrovatus aristidis* Leprieur, 1879
26- *Hydrovatus clypealis* Sharp, 1876
27- *Hydrovatus compactus* Sharp, 1882
28- *Hydrovatus cuspidatus* (Kunze, 1818)
29- *Hydrovatus deserticola joyceae* Nilsson, 2001
30- *Hydrovatus longicornis* Sharp, 1882
31- *Hydrovatus mundus* Omer-Cooper, 1931
32- *Hydrovatus villiersi* Guignot, 1955
Hygrotini
33- *Herophydrus guineensis* (Aubé, 1838)
34- *Herophydrus musicus* (Klug, 1834)
35- *Hygrotus (Coelambus) confluens* (Fabricius, 1787)
36- *Hygrotus (Coelambus) inscriptus* (Sharp, 1882)
37- *Hygrotus (Coelambus) lernaeus* (Schaum, 1857)
38- *Hygrotus (Coelambus) pallidulus* (Aubé, 1850)
39- *Hygrotus (Coelambus) saginatus* (Schaum, 1857)
40- *Hyphoporus solieri* (Aubé, 1838)
Hyphydrini
41- *Heterhydrus senegalensis* (Laporte, 1835)
42- *Hyphydrus cycloides* Régimbart, 1889
43- *Hyphydrus grandis* Laporte, 1835
44- *Hyphydrus maculatus* Babington, 1841
45- *Hyphydrus pictus* Klug, 1834
46- *Hyphydrus signatus* Sharp, 1882
Methlini
47- *Methles cribratellus* (Fairmaire, 1880)
48- *Methles spinosus* Sharp, 1882
Vatellini
49- *Derovatellus bisignatus* Ahlwarth, 1921

The Checklist

Order COLEOPTERA Leach, 1815

Suborder **ADEPHAGA** Schellenberg, 1806

Family **DYTISCIDAE** Leach, 1815

Subfamily **HYDROPORINAE** Aubé, 1836 (7 tribes)

I. Tribe **BIDESSINI** Sharp, 1880 (5 genera; 13 spp.)

Genus ***Bidessus*** Sharp, 1882 (2 spp.)

1- *Bidessus complicatus* Sharp, 1904
Bidessus complicatus Sharp, 1904:4.
TYPE LOCALITY: White Nile (Sudan).
LECTOTYPE: Biström (1985:12) BMNH.
DESCRIPTOR: Biström (1985:12).
GEOGRAPHIC DISTRIBUTION: AFR PAL - NV.
REFERENCES: Biström (1985); Nilsson (2003); Nilsson & Hájek (2013).
REMARKS: All the Egyptian members of Bidessini have been mentioned previously in the genus *Bidessus* Sharp, 1882 (Alfieri, 1976). This genus has been subsequently subdivided, and all the previous records of *Bidessus* species in Alfieri (1976) are considered invalid today. Zalat *et al.* (2000) introduced a single species of this genus, *Bidessus ovoideus* Régimbart, 1895 from Lower Egypt as a new record for the Egyptian fauna, without any mention to *Bidessus complicatus* reported in the revision of Biström (1985) and then reported by Nilsson (2003) and Nilsson & Hájek (2013).

2- *Bidessus ovoideus* Régimbart, 1895
Bidessus ovoideus Régimbart, 1895:81.
TYPE LOCALITY: Natal (South Africa).
LECTOTYPE: Biström (1985:26) SAMC.
DESCRIPTOR: Biström (1985:26).
GEOGRAPHIC DISTRIBUTION: AFR PAL - GE NV SI WD.
REFERENCES: Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson & Hájek (2013).

Genus ***Clypeodytes*** Régimbart, 1894 (1 sp.)
Subgenus ***Clypeodytes*** Régimbart, 1894 (1 sp.)

3- *Clypeodytes (Clypeodytes) cribrosus* (Schaum, 1864)
Hydroporus cribrosus Schaum, 1864:107.
TYPE LOCALITY: Cairo (Egypt).
SYNTYPES: BMNH.
DESCRIPTOR: Biström (1988:212).
NEW COMBINATION: Régimbart (1894:230).
GEOGRAPHIC DISTRIBUTION: AFR PAL – CS NV.
REFERENCES: Schaum (1864); Gemminger & Harold (1868); Marseul (1871); Sharp (1882); Branden (1885); Seidlitz (1887); Régimbart (1895); Sahlberg (1903a); Sahlberg (1903b); Pic (1909); Andres (1913a); Sahlberg (1913); Zimmermann (1920); Zimmermann (1930); Balfour-Browne (1947); Guignot (1959a); Alfieri (1976); Biström (1988); Zalat *et al.* (2000); Nilsson (2003); Nilsson (2013); Nilsson & Hájek (2013).

Genus ***Hydroglyphus*** Motschulsky, 1853 (7 spp.)

4- *Hydroglyphus angularis* (Klug, 1834)
Hydroporus angularis Klug, 1834: t. 34:1.
TYPE LOCALITY: Ambikol (Sudan).
LECTOTYPE: Biström **(**1986:42) ZMHB.
DESCRIPTOR: Biström (1986:42).
NEW COMBINATION: Brancucci (1985:232).
GEOGRAPHIC DISTRIBUTION: AFR PAL - ED GE.
REFERENCES: Gemminger & Harold (1868); Régimbart (1878); Branden (1885); Seidlitz (1887); Régimbart (1895); Zimmermann (1920); Zimmermann (1930); Balfour-Browne (1951); Guignot (1952); Guignot (1959a); Alfieri (1976); Biström (1986); Zalat *et al.* (2000); Nilsson (2003); Nilsson & Hájek (2013).

5- *Hydroglyphus confusus* (Klug, 1834)
Hydroporus confusus Klug, 1834: t. 34:4.
TYPE LOCALITY: Syria.
LECTOTYPE: Biström (1986:10) ZMHB.
DESCRIPTOR: Biström (1986:10).
NEW COMBINATION: Brancucci (1985:241).
GEOGRAPHIC DISTRIBUTION: AFR PAL - CS GE NV SI WD.
REFERENCES: Schaum (1864); Gemminger & Harold (1868); Régimbart (1878); Sharp (1882); Branden (1885); Seidlitz (1887); Régimbart (1895); Sahlberg (1903a); Sahlberg (1903b); Peyerimhoff (1907); Ferrante (1908); Pic (1909); Andres (1913a); Andres (1913b); Sahlberg (1913); Peschet (1914); Storey (1916); Zimmermann (1920); Bedel & Peyerimhoff (1925); Zimmermann (1930); Guignot (1946); Balfour-Browne (1951); Guignot (1959a); Hanna (1969); Alfieri (1976); Brancucci (1979); Biström (1986); Zalat *et al.* (2000); Nilsson (2003); Nilsson & Hájek (2013).

6- *Hydroglyphus dakarensis* (Régimbart, 1895)
Bidessus dakarensis Régimbart, 1895:90.
TYPE LOCALITY: Dakar (Senegal).
LECTOTYPE: Biström (1986:23) MNHN.
DESCRIPTOR: Biström (1986:23).
NEW COMBINATION: Biström (1986:23).
GEOGRAPHIC DISTRIBUTION: AFR - SI.
REFERENCES: Ahmed (2004).

7- *Hydroglyphus geminus* (Fabricius, 1792)
Dytiscus geminus Fabricius, 1792:199.
TYPE LOCALITY: Halle (Germany).
SYNTYPES: ZMUC.
DESCRIPTOR: Biström (1986:7) (as *H. pusillus* Fabricius).
NEW COMBINATION: Motschulsky (1853:5).
GEOGRAPHIC DISTRIBUTION: PAL ORI - CS ED SI.
REFERENCES: Aubé (1838a); Aubé (1838b); White (1847); Gemminger & Harold (1868); Régimbart (1895); Guignot (1946); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Darilmaz & Kiyak (2006); Nilsson & Hájek (2013).

8- *Hydroglyphus major* (Sharp, 1882)
Bidessus major Sharp, 1882:354.
TYPE LOCALITY: Jiddah (Saudi Arabia).
LECTOTYPE: Biström (1986:36) BMNH.
DESCRIPTOR: Biström (1986:36).
NEW COMBINATION: Brancucci (1985:234).
GEOGRAPHIC DISTRIBUTION: AFR PAL - ED GE NV SI WD.
REFERENCES: Régimbart (1895); Peyerimhoff (1907); Ferrante (1908); Pic (1909); Andres (1913a); Sahlberg (1913); Storey (1916); Zimmermann (1920); Zimmermann (1921); Zimmermann (1930); Peyerimhoff (1931); Guignot (1946); Balfour-Browne (1951); Guignot (1959a); Alfieri (1976); Brancucci (1979); Biström (1986); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Hendawy *et al.* (2005); Zalat *et al.* (2008); Hájek & Wewalka (2009); Nilsson & Hájek (2013).

9- *Hydroglyphus pentagrammus* (Schaum, 1864)
Hydroporus pentagrammus Schaum, 1864:108.
TYPE LOCALITY: Cairo (Egypt).
LECTOTYPE: Brancucci (1981:229) ZMHB.
DESCRIPTOR: Biström (1986:26).
NEW COMBINATION: Biström (1986:26).
GEOGRAPHIC DISTRIBUTION: AFR PAL - CS ED NV.
REFERENCES: Schaum (1864); Gemminger & Harold (1868); Marseul (1871); Sharp (1882); Branden (1885); Seidlitz (1887); Régimbart (1878); Régimbart (1895); Pic (1909); Zimmermann (1920); Zimmermann (1930); Guignot (1946); Guignot (1955); Guignot (1959a); Alfieri (1976); Brancucci (1981); Biström (1986); Zalat *et al.* (2000); Nilsson (2003); Nilsson (2013); Nilsson & Hájek (2013).

10- *Hydroglyphus signatellus* (Klug, 1834)
Hydroporus signatellus Klug, 1834: t. 34:3.
TYPE LOCALITY: Sudan (Dongola).
LECTOTYPE: Biström (1986:50) ZMHB.
DESCRIPTOR: Biström (1986:50).
NEW COMBINATION: Yano *et al.* (1983:17).
GEOGRAPHIC DISTRIBUTION: AFR PAL - CS ED GE NV SI WD.
REFERENCES: Schaum (1864); Régimbart (1878); Sharp (1882); Branden (1885); Régimbart (1887); Seidlitz (1887); Régimbart (1895); Sahlberg (1903a); Sahlberg (1903b); Peyerimhoff (1907); Ferrante (1908); Pic (1909); Andres (1913a); Andres (1913b); Sahlberg (1913); Alfieri (1916); Storey (1916); Zimmermann (1920); Bedel and Peyerimhoff (1925); Zimmermann (1930); Peyerimhoff (1931); Balfour-Browne (1951); Omer-Cooper (1954); Guignot (1959a); Hanna (1969); Alfieri (1976); El Sherif *et al.* (1976); Brancucci (1979); Yano *et al.* (1983); Biström (1986); Bellini *et al.* (2000); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson and Hájek (2013).

Genus ***Yola*** Gozis, 1886 (2 spp.)

11- *Yola enigmatica* Omer-Cooper, 1954
Yola enigmatica Omer-Cooper, 1954:212.
TYPE LOCALITY: Djibouti.
HOLOTYPE: BMNH.
DESCRIPTOR: Biström (1983:50).
GEOGRAPHIC DISTRIBUTION: AFR PAL - CS ED GE NV SI WD.
REFERENCES: Peyerimhoff (1931); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson & Hájek (2013).
REMARKS: *Yola dohrni* (Sharp, 1882) was recorded in Egypt by Peyerimhoff (1931); Alfieri (1976) as *Bidessus dohrni* Sharp, 1882. This is a misidentified species corrected by Zalat *et al.* (2000) to *Yola enigmatica* Omer-Cooper, 1954.

12- *Yola porcata* (Klug, 1834)
Hydroporus porcatus Klug, 1834: t. 34:5.
TYPE LOCALITY: Dongola (Sudan).
LECTOTYPE: Brancucci (1980:103) ZMHB.
DESCRIPTOR: Biström (1983:30).
NEW COMBINATION: Régimbart (1895:74).
GEOGRAPHIC DISTRIBUTION: AFR PAL - CS NV.
REFERENCES: Schaum (1864); Sharp (1882); Branden (1885); Seidlitz (1887); Régimbart (1895); Sahlberg (1903a); Sahlberg (1903b); Ferrante (1908); Pic (1909); Andres (1913a); Sahlberg (1913); Storey (1916); Zimmermann (1920); Zimmermann (1930); Guignot (1959a); Hanna (1969); Alfieri (1976); Brancucci (1980); Biström (1982b); Zalat *et al.* (2000); Nilsson (2003); Nilsson & Hájek (2013).

Genus ***Yolina*** Guignot, 1936 (1 sp.)

13- *Yolina insignis* (Sharp, 1882)
Bidessus insignis Sharp, 1882:348.
TYPE LOCALITY: Al Hijaz (Saudi Arabia).
LECTOTYPE: Biström (1983:60) BMNH.
DESCRIPTOR: Biström (1983:60).
NEW COMBINATION: Biström (1983:60).
GEOGRAPHIC DISTRIBUTION: AFR PAL - ED NV.
REFERENCES: Guignot (1959a); Alfieri (1976); Rocchi (1976); Zalat *et al.* (2000); Nilsson (2003); Nilsson & Hájek (2013).

II. Tribe **HYDROPORINI** Aubé, 1836 (3 genera; 10 spp.)

Genus ***Hydroporus*** Clairville, 1806 (4 spp.)

14- *Hydroporus humilis* Klug, 1834
Hydroporus humilis Klug, 1834: t. 33:11.
TYPE LOCALITY: Sinai (Egypt).
LECTOTYPE: Balke & Fery (1993:94) ZMHB.
DESCRIPTOR: Balke & Fery (1993:94).
GEOGRAPHIC DISTRIBUTION: PAL - ED NV SI WD.
REFERENCES: Gemminger & Harold (1868); Sharp (1882); Branden (1885); Heyden (1899); Peyerimhoff (1907); Bedel & Peyerimhoff (1925); Zimmermann (1931); Guignot (1959b), Alfieri (1976); Balke & Fery (1993); Zalat *et al.* (2000); Ahmed *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson (2013); Nilsson & Hájek (2013).

15- *Hydroporus memnonius* Nicolai, 1822
Hydroporus memnonius Nicolai, 1822:33.
TYPE LOCALITY: Halle (Germany).
SYNTYPES: Unknown.
DESCRIPTOR: Nilsson & Holmen (1995:68).
GEOGRAPHIC DISTRIBUTION: PAL – Egypt.
REFERENCES: Zimmermann (1920); Zimmermann (1931); Guignot (1947); Guignot (1959b); Alfieri (1976); Nilsson (2003); Nilsson & Hájek (2013).
REMARKS: *H. memnonius* was not studied as intensively as the other species of the *H. memnonius*-subgroup. This is due to the high variability and wide distribution of the species in large parts of Europe, North Africa, and in Asia eastwards to Turkmenistan and Kamchatka (Fery, 1999). Even though this species was recorded in Egypt by many authors such as Zimmermann (1920, 1931), Guignot (1959b), Alfieri (1976) and recently Nilsson & Hájek (2013), the coleopteran list of Zalat *et al.* (2000) did not included this species.

16- *Hydroporus oasis* Wewalka, 1992
Hydroporus oasis Wewalka, 1992:53.
TYPE LOCALITY: Baharein (Egypt).
HOLOTYPE: BMNH.
GEOGRAPHIC DISTRIBUTION: PAL - WD.
REFERENCES: Wewalka (1992); Zalat *et al.* (2000); Nilsson (2003); Nilsson (2013), Nilsson & Hájek (2013).

17- *Hydroporus tessellatus* (Drapiez, 1819)
Dytiscus tessellatus Drapiez, 1819:43.
TYPE LOCALITY: Moorsel (Belgium).
NEOTYPE: Balke & Fery (1993:93) IRSNB.
DESCRIPTOR: Balke & Fery (1993:93).
NEW COMBINATION: Bedel (1881:241).
NOMEN PROTECTUM: Fery (2002:26).
GEOGRAPHIC DISTRIBUTION: PAL - NV.
REFERENCES: Guignot (1959b); Franciscolo (1975); Balke & Fery (1993); Alfieri (1976); Nilsson (2003); Nilsson & Hájek (2013).

Genus ***Nebrioporus*** Régimbart, 1906 (5 spp.)

18- *Nebrioporus ceresyi* (Aubé, 1838)
Hydroporus ceresyi Aubé, 1838a:260.
TYPE LOCALITY: Sardinia (Italy).
LECTOTYPE: Fery *et al.* (1996:308) MNHN.
DESCRIPTOR: Fery *et al.* (1996:307).
NEW COMBINATION: Nilsson & Angus (1992:287).
GEOGRAPHIC DISTRIBUTION: PAL - CS ED GE NV SI WD.
REFERENCES: Aubé (1838a); Aubé (1838b); White (1847); Schaum (1864); Sharp (1882); Régimbart (1895); Ferrante (1908); Andres (1913a); Sahlberg (1913); Storey (1916); Zimmermann (1921); Bedel & Peyerimhoff (1925); Zimmermann (1933); Omer-Cooper (1954); Guignot (1959b); Alfieri (1976); Wewalka (1986); Rocchi & Schembri (1992); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Toledo (2009); Nilsson & Hájek (2013).

19- *Nebrioporus crotchi* (Preudhomme de Borre, 1871)
Hydroporus crotchi Preudhomme de Borre, 1871:13.
TYPE LOCALITY: Sinai (Egypt).
LECTOTYPE: Toledo (2009:47) IRSNB.
DESCRIPTOR: Toledo (2009:47).
NEW COMBINATION: Nilsson (2001:171).
GEOGRAPHIC DISTRIBUTION: PAL - CS ED SI WD.
REFERENCES: Walker (1871); Marseul (1882); Branden (1885); Heyden (1899); Peyerimhoff (1907); Zimmermann (1920); Zimmermann (1921); Kneucker (1922); Zimmermann (1933); Balfour-Browne (1951); Alfieri (1957); Alfieri (1976); Ahmed *et al.* (2000);

Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Zalat *et al.* (2008); Toledo (2009); Angus & Tatton (2011); Nilsson (2013); Nilsson & Hájek (2013); Tawfik *et al.* (2013).

20- *Nebrioporus insignis* (Klug, 1834)
Hydroporus insignis Klug, 1834: t. 33:10.
TYPE LOCALITY: Sinai (Egypt).
LECTOTYPE: Toledo (2009:56) ZMHB.
DESCRIPTOR: Toledo (2009:54).
NEW COMBINATION: Nilsson & Angus (1992:287).
GEOGRAPHIC DISTRIBUTION: PAL - CS ED SI WD.
REFERENCES: Klug (1834), Gemminger & Harold (1868); Walker (1871); Marseul (1882); Sharp (1882); Branden (1885); Régimbart (1895); Heyden (1899); Peyerimhoff (1907); Pic (1909); Peschet (1914); Zimmermann (1920); Zimmermann (1921); Zimmermann (1933); Balfour-Browne (1951); Guignot (1959b); Zaitzev (1972); Alfieri (1976); Nilsson & Angus (1992); Ahmed *et al.* (2000); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Zalat *et al.* (2008); Toledo (2009); Angus & Tatton (2011); Nilsson (2013); Nilsson & Hájek (2013); Tawfik *et al.* (2013).

21- *Nebrioporus lanceolatus* (Walker, 1871)
Hydroporus lanceolatus Walker, 1871:11.
TYPE LOCALITY: Sinai, Wadi Feiran (Egypt).
LECTOTYPE: Zalat *et al.* (2000:34) BMNH.
DESCRIPTOR: Toledo (2009:81).
NEW COMBINATION: Nilsson & Angus (1992:288).
GEOGRAPHIC DISTRIBUTION: PAL - CS ED SI WD.
REFERENCES: Walker (1871); Sharp (1882); Régimbart (1895); Heyden (1899); Peyerimhoff (1907); Ferrante (1908); Pic (1909); Peschet (1914); Storey (1916); Zimmermann (1921); Zimmermann (1933); Balfour-Browne (1951); Guignot (1959b); Alfieri (1976); Ahmed *et al.* (2000); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Zalat *et al.* (2008); Toledo (2009); Angus & Tatton (2011); Nilsson (2013); Nilsson & Hájek (2013).
REMARKS: *Hydroporus insignis* Klug, 1834 was recorded in Sinai (Egypt) by Walker (1871). It is a misidentification, likely corresponding to *Nebrioporus lanceolatus* (Nilsson, 2013).

22- *Nebrioporus stearinus stearinus* (Kolenati, 1845)
Hydroporus stearinus Kolenati, 1845:84.
TYPE LOCALITY: Karabagh province; Muroff-Dagh Mountain (Azerbaijan).
LECTOTYPE: Toledo (2009:74) ZIN.
DESCRIPTOR: Toledo (2009:73).
NEW COMBINATION: Nilsson & Angus (1992:288).
GEOGRAPHIC DISTRIBUTION: PAL - NV.
REFERENCES: Zimmermann (1933); Guignot (1959b); Zaitzev (1972); Nilsson & Angus (1992); Foster (1993); Nilsson (2003); Toledo (2009); Nilsson & Hájek (2013).
REMARKS: *Potamonectes turca* Seidlitz, 1887 is a synonym to *Nebrioporus stearinus stearinus* (Kolenati, 1845) and it is known from the Egyptian fauna. However, the species was not included in the coleopteran list of Zalat *et al.* (2000) although the species was recorded in many previous works.

Genus ***Scarodytes*** Gozis, 1914 (1 sp.)

23- *Scarodytes halensis* (Fabricius, 1787)
Dytiscus halensis Fabricius, 1787:192.
TYPE LOCALITY: Germany.
SYNTYPES: ZMUC.
DESCRIPTOR: Nilsson & Holmen (1995:82).
NEW COMBINATION: Falkenström (1939:94).
GEOGRAPHIC DISTRIBUTION: PAL - SI.
REFERENCES: Sharp (1882); Branden (1885); Régimbart (1895); Bedel & Peyerimhoff (1925, Egypt?); Zimmermann (1933); Guignot (1959b); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Darilmaz & Kiyak (2006); Nilsson & Hájek (2013).

III. Tribe **HYDROVATINI** Sharp, 1880 (1 genus; 9 spp.)

Genus ***Hydrovatus*** Motschulsky, 1853 (9 spp.)

24- *Hydrovatus acuminatus* Motschulsky, 1859
Hydrovatus acuminatus Motschulsky, 1859:42.
TYPE LOCALITY: Indian Continent (Southeast Asia).
SYNTYPES: Unknown.
DESCRIPTOR: Biström (1997:351).
GEOGRAPHIC DISTRIBUTION: AFR ORI PAL – CS ED NV SI WD.
REFERENCES: Marseul (1882); Sharp (1882); Branden (1885); Régimbart (1895); Régimbart (1906); Pic (1909); Zimmermann (1920); Zimmermann (1930); Sharp (1904); Guignot (1946); Balfour-Browne (1951); Guignot (1959a); Hanna (1969); Alfieri (1976); Wewalka (1989); Biström (1997); Zalat *et al.* (2000); Nilsson (2003); Brancucci & Biström (2013); Nilsson & Hájek (2013).

25- *Hydrovatus aristidis* Leprieur, 1879
Hydrovatus aristidis Leprieur, 1879:82.
TYPE LOCALITY: Egypt.
SYNTYPES: MNHN.
DESCRIPTOR: Biström (1997:204).
GEOGRAPHIC DISTRIBUTION: AFR PAL - CS ED NV.
REFERENCES: Marseul (1882); Sharp (1882); Branden (1885); Seidlitz (1887); Régimbart (1895); Pic (1909); Alfieri (1917); Zimmermann (1920); Zimmermann (1930); Guignot (1955); Guignot (1959a); Alfieri (1976); Brancucci (1985); Wewalka (1989); Biström (1997); Zalat *et al.* (2000); Nilsson (2003); Nilsson (2013); Nilsson & Hájek (2013).

26- *Hydrovatus clypealis* Sharp, 1876
Hydrovatus clypealis Sharp, 1876:61.
TYPE LOCALITY: England.
LECTOTYPE: Biström (1997:552) BMNH.
DESCRIPTOR: Biström (1997:551).
GEOGRAPHIC DISTRIBUTION: PAL - CS NV WD.
REFERENCES: Ferrante (1908); Alfieri (1916); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Nilsson & Hájek (2013).

27- *Hydrovatus compactus* Sharp, 1882
Hydrovatus compactus Sharp, 1882:333.
TYPE LOCALITY: Gabon.
HOLOTYPE: BMNH.
DESCRIPTOR: Biström (1997:433).
GEOGRAPHIC DISTRIBUTION: AFR PAL - NV WD.
REFERENCES: Régimbart (1895); Sharp (1904); Zimmermann (1920, 1930); Guignot (1959a); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Nilsson & Hájek (2013).

28- *Hydrovatus cuspidatus* (Kunze, 1818)
Hyphydrus cuspidatus Kunze, 1818: 68.
TYPE LOCALITY: Halle (Germany).
SYNTYPES: MTD.
DESCRIPTOR: Biström (1997:372).
NEW COMBINATION: Motschulsky (1853:4).
GEOGRAPHIC DISTRIBUTION: AFR PAL - CS ED GE NV SI WD.
REFERENCES: Bedel & Peyerimhoff (1925); Andres (1913a); Sahlberg (1913); Guignot (1947); Omer-Cooper (1954); Guignot (1959a); Alfieri (1976); Biström (1997); Ahmed *et al.* (2000); Zalat *et al.* (2000); Nilsson (2003); Zalat *et al.* (2008); Nilsson & Hájek (2013).

29- *Hydrovatus deserticola joyceae* Nilsson, 2001
Hydrovatus deserticola joyceae Nilsson, 2001:10, as replacement name for *Hydrovatus badius* Omer-Cooper, 1931:760.
TYPE LOCALITY: Shewa, Hora Harsadi lake, Debre Zeyit (Ethiopia).
HOLOTYPE: BMNH.
GEOGRAPHIC DISTRIBUTION: AFR PAL - NV.
REFERENCES: Biström (1997); Nilsson (2003); Ahmed (2004); Nilsson & Hájek (2013).

REMARKS: Although *H. deserticola joyceae* was recorded in Cairo by Biström (1997), the coleopteran list of Zalat *et al.* (2000) did not include this species. Furthermore, the species was recorded as a new record from Egypt by Ahmed (2004) (as *Hydrovatus badius* Omer-Cooper, 1931 which replaced by *Hydrovatus deserticola joyceae* by Nilsson, 2001) even though there are previous records by Biström (1997) and Nilsson (2003).

30- *Hydrovatus longicornis* Sharp, 1882
Hydrovatus longicornis Sharp, 1882:323;
TYPE LOCALITY: Egypt.
LECTOTYPE: Biström (1997:278) BMNH.
DESCRIPTOR: Biström (1997:278).
GEOGRAPHIC DISTRIBUTION: AFR PAL - CS ED NV.
REFERENCES: Marseul (1882); Sharp (1882); Branden (1885); Régimbart (1895); Ferrante (1908); Storey (1916); Zimmermann (1920); Zimmermann (1930); Guignot (1946); Guignot (1959a, Egypt?); Alfieri (1976); El Sherif *et al.* (1976); Yano *et al.* (1983); Biström (1997); Zalat *et al.* (2000); Nilsson (2003); Nilsson (2013); Nilsson & Hájek (2013).

31- *Hydrovatus mundus* Omer-Cooper, 1931
Hydrovatus mundus Omer-Cooper, 1931:762.
TYPE LOCALITY: Lake Ziway, Sucsuci River (Suc-Suci) (Ethiopia).
HOLOTYPE: BMNH.
DESCRIPTOR: Biström (1997:417).
GEOGRAPHIC DISTRIBUTION: AFR - SI.
REFERENCES: Ahmed (2004).
REMARKS: *H. mundus* was introduced to the Egyptian fauna by Ahmed (2004). According to Biström (1997), this species is known from Ethiopia and Uganda. Records from Ghana, Sudan, Kenya and Malawi (Balfour-Browne, 1939) are regarded as unreliable and refer, at least partly, to other *Hydrovatus* species.

32- *Hydrovatus villiersi* Guignot, 1955
Hydrovatus villiersi Guignot, 1955:860.
TYPE LOCALITY: Bafrechie (Mauritania).
LECTOTYPE: Biström (1997:490) MNHN.
DESCRIPTOR: Biström (1997:489).
GEOGRAPHIC DISTRIBUTION: AFR PAL - Egypt.
REFERENCES: Nilsson (2003); Nilsson & Hájek (2013).
REMARKS: *H. villiersi* was recorded in Egypt by Nilsson (2003) and Nilsson & Hájek (2013) and we have not been able to verify the previous literature records of this species from Egypt.

IV. Tribe **HYGROTINI** Portevin, 1929 (3 genera; 8 spp.)

Genus ***Herophydrus*** Sharp, 1880 (2 spp.)

33- *Herophydrus guineensis* (Aubé, 1838)
Hyphydrus guineensis Aubé, 1838b:455.
TYPE LOCALITY: Senegal.
LECTOTYPE: Biström & Nilsson (2002:51) IRSNB.
DESCRIPTOR: Biström & Nilsson (2002:50).
NEW COMBINATION: Sharp (1882:393).
GEOGRAPHIC DISTRIBUTION: AFR PAL - CS ED NV WD.
REFERENCES: White (1847); Apetz (1854); Schaum (1864); Régimbart (1878); Sharp (1882); Branden (1885); Régimbart (1895); Sahlberg (1903a); Sahlberg (1903b); Ferrante (1908); Pic (1909); Andres (1913a); Andres (1913b); Sahlberg (1913); Alfieri (1916); Storey (1916); Zimmermann (1920); Ebner (1921); Bedel & Peyerimhoff (1925); Zimmermann (1930); Omer-Cooper (1954); Alfieri (1976); El Sherif *et al.* (1976); Yano *et al.* (1983); Zalat *et al.* (2000); Biström & Nilsson (2002); Nilsson (2003); Hendawy *et al.* (2005); Nilsson (2013); Nilsson & Hájek (2013).

34- *Herophydrus musicus* (Klug, 1834)
Hydroporus musicus Klug, 1834: t. 33:12.
TYPE LOCALITY: Sinai (Egypt).
LECTOTYPE: Biström & Nilsson (2002:58) ZMHB.
DESCRIPTOR: Biström & Nilsson (2002:58).
NEW COMBINATION: Régimbart (1895:43).
GEOGRAPHIC DISTRIBUTION: AFR ORI PAL - CS NV SI WD.
REFERENCES: Aubé (1838b); Kolenati (1845); White (1847); Schaum (1864); Gemminger & Harold (1868); Régimbart (1878); Sharp (1882); Branden (1885); Seidlitz (1887); Régimbart (1895); Sahlberg (1903a); Sahlberg (1903b); Peyerimhoff (1907); Ferrante (1908); Pic (1909); Andres (1913a); Andres (1913b); Sahlberg (1913); Alfieri (1916); Storey (1916); Ebner (1921); Bedel & Peyerimhoff (1925); Zimmermann (1930); Peyerimhoff (1931); Balfour-Browne (1951); Guignot (1959b); Bertrand (1966); Crovetti (1966); Alfieri (1976); Rocchi & Schembri (1992); Zalat *et al.* (2000); Biström & Nilsson (2002); Nilsson (2003); Ahmed (2004); Nilsson (2013); Nilsson & Hájek (2013).

Genus ***Hygrotus*** Stephens, 1828 (5 spp.)
Subgenus ***Coelambus*** Thomson, 1860 (5 spp.)

35- *Hygrotus (Coelambus) confluens* (Fabricius, 1787)
Dytiscus confluens Fabricius, 1787:193.
TYPE LOCALITY: Kiel, Halle (Germany).
SYNTYPES: ZMUC.
DESCRIPTOR: Nilsson & Holmen (1995:38).
NEW COMBINATION: Stephens (1828:47).
GEOGRAPHIC DISTRIBUTION: PAL - CS ED GE NV SI WD.
REFERENCES: Aubé (1838a); Aubé (1838b); Régimbart (1878); Régimbart (1895); Peyerimhoff (1907); Ferrante (1908); Pic (1909); Alfieri (1916); Bedel & Peyerimhoff (1925); Zimmermann (1921); Zimmermann (1930); Peyerimhoff (1931); Guignot (1947); Balfour-Browne (1951); Omer-Cooper (1954); Guignot (1959b); Crovetti (1966); Alfieri (1976); Brancucci (1979); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson & Hájek (2013); Tawfik *et al.* (2013).

36- *Hygrotus (Coelambus) inscriptus* (Sharp, 1882)
Coelambus inscriptus Sharp, 1882:404.
TYPE LOCALITY: Iran.
LECTOTYPE: Brancucci (1981:229) BMNH.
DESCRIPTOR: Brancucci (1981:229).
NEW COMBINATION: Omer- Cooper (1954:258).
GEOGRAPHIC DISTRIBUTION: PAL - CS WD.
REFERENCES: Omer-Cooper (1954); Alfieri (1976); Brancucci (1981); Zalat *et al.* (2000); Nilsson (2003); Nilsson & Hájek (2013).

37- *Hygrotus (Coelambus) lernaeus* (Schaum, 1857)
Hydroporus lernaeus Schaum, 1857:153.
TYPE LOCALITY: Nauplia (Greece).
LECTOTYPE: Fery (1992a:119) ZSM.
DESCRIPTOR: Fery (1992a:119).
NEW COMBINATION: Ribera *et al.* (1999:56).
GEOGRAPHIC DISTRIBUTION: PAL - ED NV WD.
REFERENCES: Sharp (1882); Branden (1885); Régimbart (1895); Ferrante (1908); Omer-Cooper (1954); Guignot (1959b); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Nilsson & Hájek (2013).

38- *Hygrotus (Coelambus) pallidulus* (Aubé, 1850)
Hydroporus pallidulus Aubé, 1850:300.
TYPE LOCALITY: Sicily (Italy).
SYNTYPES: Unknown
DESCRIPTOR: Guignot (1959b:334).
NEW COMBINATION: Ribera *et al.* (1999:57).
GEOGRAPHIC DISTRIBUTION: PAL - ED SI.
REFERENCES: Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson & Hájek (2013).

39- *Hygrotus (Coelambus) saginatus* (Schaum, 1857)
Hydroporus saginatus Schaum, 1857:154.
TYPE LOCALITY: Zakinthos, Zante (Greece).
LECTOTYPE: Fery (1992b:343) "Incorrect page number in Nilsson, 2013:190" ZSM.
DESCRIPTOR: Fery (1992b:343).
NEW COMBINATION: Nilsson (2001:209).
GEOGRAPHIC DISTRIBUTION: PAL - NV SI WD.

REFERENCES: Marseul (1882); Sharp (1882); Branden (1885); Régimbart (1895); Zimmermann (1920); Zimmermann (1930); Guignot (1959b); Alfieri (1976); Brancucci (1985); Fery (1992); Fery (2003); Zalat *et al.* (2000); Nilsson (2003); Nilsson (2013); Nilsson & Hájek (2013); Tawfik *et al.* (2013).

Genus ***Hyphoporus*** Sharp, 1880 (1 sp.)

40- *Hyphoporus solieri* (Aubé, 1838)
Hydroporus solieri Aubé, 1838b:554.
TYPE LOCALITY: Egypt.
SYNTYPES: Unknown.
DESCRIPTOR: Guignot (1959b:337).
NEW COMBINATION: Sharp (1882:391).
GEOGRAPHIC DISTRIBUTION: PAL - CS ED GE NV SI WD.
REFERENCES: Aubé (1838b); White (1847); Apetz (1854); Schaum (1864); Gemminger & Harold (1868); Régimbart (1878); Sharp (1882); Branden (1885); Seidlitz (1887); Régimbart (1895); Sahlberg (1903a); Sahlberg (1903b); Peyerimhoff (1907); Ferrante (1908); Pic (1909); Reitter (1909); Andres (1913a); Andres (1913b); Sahlberg (1913); Alfieri (1916); Storey (1916); Alfieri (1917); Zimmermann (1920); Ebner (1921); Zimmermann (1930); Guignot (1959b); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson (2013); Nilsson & Hájek (2013).

V. Tribe **HYPHYDRINI** Sharp, 1882 (2 genera; 6 spp.)

Genus ***Heterhydrus*** Fairmaire, 1869 (1 sp.)

41- *Heterhydrus senegalensis* (Laporte, 1835)
Hyphydrus senegalensis Laporte, 1835:106.
TYPE LOCALITY: Senegal.
SYNTYPES: MNHN.
DESCRIPTOR: Wewalka (1980:99).
NEW COMBINATION: Sharp (1882:337).
GEOGRAPHIC DISTRIBUTION: AFR PAL - ED NV SI.
REFERENCES: Guignot (1959a); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson & Hájek (2013).

Genus ***Hyphydrus*** Illiger, 1802 (5 spp.)

42- *Hyphydrus cycloides* Régimbart, 1889
Hyphydrus cycloides Régimbart, 1889:56.
TYPE LOCALITY: Humpata (Angola).
LECTOTYPE: Biström (1982a:66) RMNH.
DESCRIPTOR: Biström (1982a:66).
GEOGRAPHIC DISTRIBUTION: AFR PAL- ED WD.
REFERENCES: Zalat *et al.* (2000); Nilsson (2003); Nilsson & Hájek (2013).

43- *Hyphydrus grandis* Laporte, 1835
Hyphydrus grandis Laporte, 1835:107.
TYPE LOCALITY: Senegal.
LECTOTYPE: Biström (1982a:26) MNHN.
DESCRIPTOR: Biström (1982a:26).
GEOGRAPHIC DISTRIBUTION: AFR PAL - CS ED NV SI.
REFERENCES: Aubé (1838b); White (1847); Schaum (1864); Marseul (1882); Sharp (1882); Branden (1885); Seidlitz (1887); Régimbart (1895); Ferrante (1908); Pic (1909); Andres (1913a); Sahlberg (1913); Storey (1916); Zimmermann (1920); Zimmermann (1930); Guignot (1955); Guignot (1959a); Bertrand (1966); Hanna (1969); Alfieri (1976); Biström (1982a); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson (2013); Nilsson & Hájek (2013).

44- *Hyphydrus maculatus* Babington, 1841
Hyphydrus maculatus Babington, 1841:12.
TYPE LOCALITY: São Tiago (Cape Verde).
LECTOTYPE: Biström (1982a:85) BMNH.
DESCRIPTOR: Biström (1982a:85).
GEOGRAPHIC DISTRIBUTION: AFR PAL - GE NV.
REFERENCES: Sharp (1882); Zalat *et al.* (2000); Nilsson (2003); Nilsson & Hájek (2013).
REMARKS: *H. maculatus* was introduced as a new species for the Egyptian Coleoptera fauna by Zalat *et al.* (2000) although there is a previous record in Sinai by Sharp (1882).

45- *Hyphydrus pictus* Klug, 1834
Hyphydrus pictus Klug, 1834: 33:9.
TYPE LOCALITY: Sinai (Egypt).
LECTOTYPE: Biström (1982a:81) ZMHB.
DESCRIPTOR: Biström (1982a:81).
GEOGRAPHIC DISTRIBUTION: AFR PAL - ED NV SI.
REFERENCES: Gemminger & Harold (1868); Walker (1871); Marseul (1882); Sharp (1882); Branden (1885); Seidlitz (1887); Régimbart (1895); Peyerimhoff (1907); Ferrante (1908); Pic (1909); Andres (1913a); Sahlberg (1913); Ferrante (1914); Alfieri (1916); Zimmermann (1920); Zimmermann (1921); Zimmermann (1930); Balfour-Browne (1951); Guignot (1959a); Alfieri (1976); Rocchi (1976); Biström (1982a); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson (2013); Nilsson & Hájek (2013).

46- *Hyphydrus signatus* Sharp, 1882
Hyphydrus signatus Sharp, 1882:379.
TYPE LOCALITY: Guinea.
LECTOTYPE: Biström (1982a:79) BMNH.
DESCRIPTOR: Biström (1982a:79).
GEOGRAPHIC DISTRIBUTION: AFR - SI.
REFERENCES: Ahmed (2004).
REMARKS: *H. signatus* is widely distributed in Africa. Biström (1982a) in his revision to the genus *Hyphydrus* stated that he had seen some specimens labeled as collected from Egypt, but he considered the labeling uncertain.

VI. Tribe **METHLINI** Branden, 1885 (1 genus; 2 spp.)

Genus ***Methles*** Sharp, 1882 (2 spp.)

47- *Methles cribratellus* (Fairmaire, 1880)
Hydroporus cribratellus Fairmaire, 1880:248.
TYPE LOCALITY: Batna (Algeria).
HOLOTYPE: MNHN.
DESCRIPTOR: Guignot (1959a:54).
NEW COMBINATION: Régimbart (1895:118).
GEOGRAPHIC DISTRIBUTION: AFR PAL - Egypt.
REFERENCES: Nilsson (2003); Nilsson & Hájek (2013).

48- *Methles spinosus* Sharp, 1882
Methles spinosus Sharp, 1882:489.
TYPE LOCALITY: Cairo (Egypt).
HOLOTYPE: BMNH.
DESCRIPTOR: Guignot (1959a:56).
GEOGRAPHIC DISTRIBUTION: AFR PAL - ED NV SI.
REFERENCES: Marseul (1882); Sharp (1882); Branden (1885); Seidlitz (1887); Régimbart (1895); Pic (1909); Zimmermann (1920); Bedel & Peyerimhoff (1925); Zimmermann (1933); Guignot (1959a); Zaitzev (1972); Alfieri (1976); Wewalka (1989); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson (2013); Nilsson & Hájek (2013).

VII. Tribe **VATELLINI** Sharp, 1880 (1 genus; 1 sp.)

Genus ***Derovatellus*** Sharp, 1882 (1 sp.)

49- *Derovatellus bisignatus* Ahlwarth, 1921
Derovatellus bisignatus Ahlwarth, 1921:442.
TYPE LOCALITY: Kyaka (Kifumbiro), (Tanzania).
HOLOTYPE: ZMHB.
DESCRIPTOR: Biström (1979:15).
GEOGRAPHIC DISTRIBUTION: AFR - SI
REFERENCES: Ahmed (2001); Ahmed (2004); Tawfik *et al.* (2013).

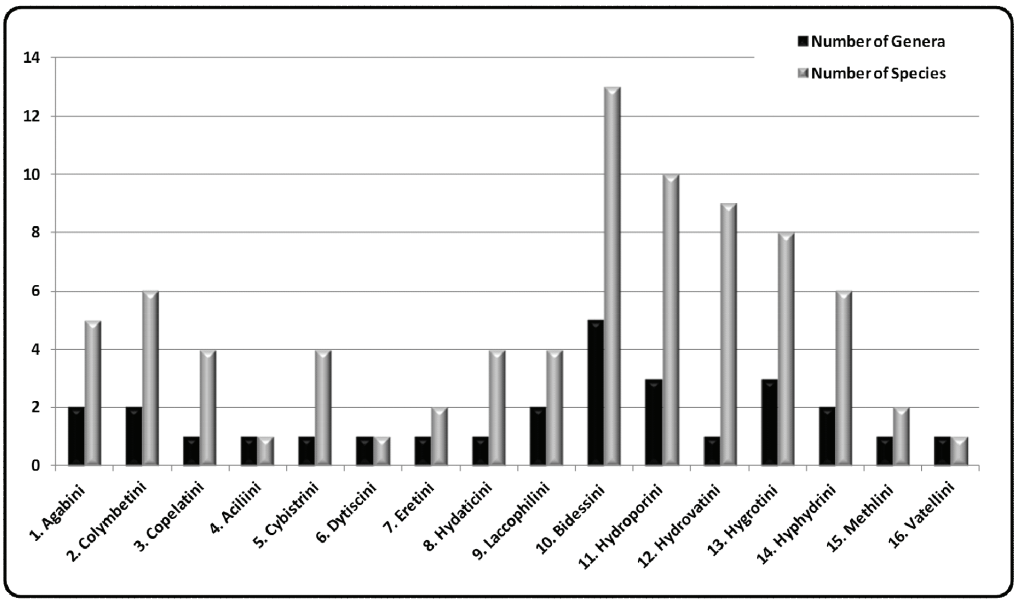

Fig. 2: Genera and species richness of the family Dytiscidae of Egypt.

II- Taxonomic status of the Egyptian Dytiscidae

Taking into account the results obtained by Salah & Régil (2014), the Egyptian Dytiscidae comprises 80 valid species belonging to 28 genera from 16 tribes and 7 subfamilies. Hydroporinae is the most diverse subfamily with 49 valid species from 16 genera belonging to 7 tribes (Bidessini, Hydroporini, Hydrovatini, Hygrotini, Hyphydrini, Methlini and Vatellini). Also, Bidessini is the most diverse tribe with 13 species belonging to 5 genera (Table II & Figure 2).

Table II. A summary of the taxonomic status of the family Dytiscidae of Egypt. No. Gen.: N° Genera: No. Spe: No Species.

Subfamily	Tribe	No. Gen.	No. Spe
I. Agabinae	1. Agabini	2	5
II. Colymbetinae	2. Colymbetini	2	6
III. Copelatinae	3. Copelatini	1	4
IV. Dytiscinae	4. Aciliini	1	1
	5. Cybistrini	1	4
	6. Dytiscini	1	1
	7. Eretini	1	2
	8. Hydaticini	1	4
V. Laccophilinae	9. Laccophilini	2	4
VI. Hydroporinae	10. Bidessini	5	13
	11. Hydroporini	3	10
	12. Hydrovatini	1	9
	13. Hygrotini	3	8
	14. Hyphydrini	2	6
	15. Methlini	1	2
	16. Vatellini	1	1
7 Subfamilies	**16 Tribes**	**28**	**80**

Discussion

In this publication we present an updated checklist for the Egyptian Hydroporinae. Alfieri (1976) and Zalat *et al.* (2000) summarized all the available information on the subfamily Hydroporinae and their distribution in Egypt. Alfieri (1976) listed 12 valid species and 32 invalid species, while Zalat *et al.* (2000) listed 35 valid species and 3 invalid species. However, the studied taxonomic groups have undergone major revision, and are subject to change even today. In comparing the current study with previous studies we can summarize the following observations:

1- Tribe Bidessini:

The more than 600 world species and 44 genera of Bidessini are mainly smaller than 5 mm and represent most of the smaller species of Dytiscidae (Nilsson, 2013 and Balke & Ribera 2004). Bidessines inhabit a wide range of aquatic habitats, such as stream margins and all kinds of wetland pools and ditches rich in vegetation (Balke & Ribera, 2004). Bidessini is represented in Egypt by 5 genera and 15 species, and it is the most diverse tribe, not only for the Hydroporinae but also for the Dytiscidae as a whole.

2- Tribe Hydroporini:

Hydroporini are medium sized Dytiscidae, ranging in size from about 1 to 7 mm, and occupy a great variety of habitats, and occur in almost every kind of shallower non-marine habitats (Balke, 1995). Worldwide, Hydroporini currently comprises more than 700 species classified in 38 different genera (Nilsson, 2013). Hydroporini includes 3 genera with 10 species known from Egypt.

● *Hydroporus lucasi* Reiche, 1866: This species was recorded in Egypt by Régimbart (1895), Andres (1913b) and Alfieri (1976) as *Hydroporus confusus* Lucas, and by Guignot (1959b) as *Hydroporus lucasi* Reiche. According to Zimmermann (1931), *Hydroporus confusus* Lucas, 1846 (not 1849 as mentioned by Guignot, 1959b:392), is not related to the Egyptian Coleoptera fauna. The species was not included in the coleopteran list of Zalat *et al.* (2000), and it was recorded from many North African countries such as Algeria, Libya, Morocco and Tunisia (Nilsson & Hájek, 2013).

● *Hydroporus mariannae* Wewalka, 1974: This species was recorded in Sinai by Wewalka (1974). In his original description the type localities Ne'ot HaKikkar and Ein Drus were erroneously assigned to the Sinai area. According to Wewalka (1992) the distribution of this species is restricted to the Dead Sea Area (Israel).

● *Hydroporus ignotus* Mulsant and Rey, 1861: This species is a synonym to *Graptodytes ignotus* (Mulsant & Rey, 1861) and reported with more or less certainty from Sinai (Egypt) by Sharp (1882). However, the genus *Graptodytes* is completely absent from Egypt and appearing to be common throughout Algeria, Morocco and Tunisia (Nilsson & Hájek, 2013).

● *Hydroporus brucki* Wehncke, 1875: The species was recorded in Egypt by Omer-Cooper (1954) and Alfieri (1976). According to Fery & Petrov (2006) and Nilsson & Hájek (2013) the species does not belong to the Egyptian fauna.

● *Hydroporus troglodytes* Dejean, 1833: The type locality of this species is Egypt. This name is a nomen nudum (Nilsson, 2013).

● *Hydroporus fenestratus* Aubé, 1838a: This species is a synonym to *Nebrioporus fenestratus* (Germar, 1836) and reported from Egypt by Aubé (1838a). According to Nilsson (2013) and Nilsson and Hájek (2013) the distribution of this species appears to be restricted to Sicily (Italy).

● *Hydroporus moestus* Fairmaire, 1858: This species is a synonym to *Deronectes moestus* (Fairmaire, 1858) and reported in Egypt by Sharp (1882), Branden (1885) and Régimbart (1895). As stated by Bedel & Peyerimhoff (1925), Guignot (1959b) and Fery & Brancucci (1997) this record is undoubtedly erroneous, where the distribution of this species appears to be common throughout Corse (France) and Sardinia (Italy) (Nilsson & Hájek, 2013).

3- Tribe Hydrovatini:
This tribe includes 2 genera: *Queda* Sharp with 3 species in Central and South America, and the large and wide spread *Hydrovatus* Motschulsky, with about 205 species worldwide and was revised by Biström (1997). The Egyptian Hydrovatini is represented by the most diverse Dytiscidae genus *Hydrovatus* with 9 species.

Considering the diving beetles list of Zalat *et al.* (2000), it was comprised 6 species of *Hydrovatus* one of them *Hydrovatus sordidus* Sharp, 1882 is a synonym to *Hydrovatus acuminatus* Motschulsky, 1859 which is known from the Egyptian Coleoptera fauna. Three species are added to this list: *Hydrovatus deserticola joyceae* Nilsson, 2001, *Hydrovatus mundus* Omer-Cooper, 1931 and *Hydrovatus villiersi* Guignot, 1955.

4- Tribe HYGROTINI:
This group of genera was previously placed in the Hydroporini by most authors (for an exception see Houlbert, 1934). However, some important larval and adult characters strongly suggested that it should be separated from the Hydroporini (Nilsson & Holmen, 1995). Worldwide, Hygrotini currently comprises about 135 species classified in 4 genera (Nilsson, 2013). Hygrotini includes 3 genera and 8 species known from Egypt.

5- Tribe HYPHYDRINI:
This tribe includes 16 genera and 369 species worldwide (Nilsson, 2013). It is represented in Egypt by 2 genera and 6 species.

5- Tribe METHLINI:
This tribe includes 2 genera and 41 species worldwide (Nilsson, 2013). It represented in Egypt by a single genus *Methles* with 2 species *M. spinosus* and *M. cribratellus*. The later species was recorded in Egypt by Nilsson (2003) and Nilsson and Hájek (2013) and we have not been able to verify the literature records of this species from Egypt.

6- Tribe VATELLINI:
The tribe Vatellini includes 2 genera and 57 species worldwide (Nilsson, 2013). Members of this tribe are among the most morphologically distinctive of the Dytiscidae. Their long legs, large eyes and characteristic habitus make them very different in general appearance from more typical members of the family (Miller, 2005). African species (all historically placed in *Derovatellus*) have had a relatively long history of taxonomic treatment including a modern revision and phylogenetic analysis (Biström, 1979). The tribe is represented in Egypt by *Derovatellus bisignatus* Ahlwarth, 1921, and recorded by Ahmed (2001); Ahmed (2004) and recently by Tawfik *et al.* (2013).

In conclusion, the Egyptian Dytiscidae comprises actually 80 species, belonging to 28 genera from 16 tribes and 7 subfamilies. In Egypt, a large country with distinctly different geographical regions and different ambiances, the number of Dytiscidae species must be expected to be much higher than has been recorded so far. New intensive studies of these insects are suggested.

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Literature Cited

AHLWARTH, K. 1921. Coleoptera. Dytiscidae, Gyrinidae. *Wissenschaftliche Ergebnisse der Deutschen Zentral-Afrika- Expedition 1907-1908. 5. Zoologie*, **3**(5): 441-447 + pl. XIII.

AHMED, R.S. 2001. First record of the tribe Vatellini Sharp and its genus *Derovatellus* Sharp (Dytiscidae- Coleoptera) from shallow water pool in Hurghada, Egypt. *Journal of Egyptian German Society of Zoology,* **36**E: 29-38.

AHMED, R.S. 2004. Some new records of diving beetles from Sinai Peninsula, Egypt. *Bulletin of the Entomological Society of Egypt,* **81**: 29-42.

AHMED, R.S., R.B. ANGUS, S. ZALAT & F. SHAARAWI 2000. Chromosomal analysis of some Egyptian diving beetles (Coleoptera: Dytiscidae). *Egyptian Journal of Biology,* **2**: 76-84.

ALFIERI, A. 1916. Coléoptères et Hémiptères de la faune aquatique d'un étang d'Abou-Zaabal et observations diverses sur certaines espèces. *Bulletin de la Société Entomologique d'Égypte,* **4**: 93-95.

ALFIERI, A. 1917. Une liste d'insects coléoptères recueillis par le feu Aristide Letourneux en Egypte. *Bulletin de la Société Entomologique d'Égypte,* **5**: 69-71.

ALFIERI, A. 1957. Additions a la faune coléoptérologique de l'Egypte et du Sinai. *Bulletin de la Société Entomologique d'Égypte,* **41**: 123-127.

ALFIERI, A. 1976. Coleoptera of Egypt. Family Dytiscidae. *Mémoires de la Société entomologique d'Egypt,* **5**: 31-37.

ANDRES, A. 1913a. Note Bibliographique; Coleoptera mediterranea orientalia, quae in Aegypto, Palaestina, Syria, Caramania atque in Anatolia occidentali anno 1904 collegerunt John Sahlberg et Unio Saalas. *Bulletin de la Société Entomologique d'Égypte,* **3**: 84-132.

ANDRES, A. 1913b. Sur une Liste de Coléoptères capturés en 1867 á 1869 par le Dr. O. Schneider á Ramleh près d'Alexandrie. *Bulletin de la Société Entomologique d'Égypte,* **3**: 39-48.

ANGUS, R.B. & A. TATTON 2011. A karyosystematic analysis of some water beetles related to *Deronectes* Sharp (Coleoptera, Dytiscidae). *Comparative Cytogenetics,* **5**(3): 173-190.

APETZ, J.H. 1854. *De coleopteris, quae Oscarus et Alfredus Brehm in Africa legerunt*. Altenburgi: Ex typographeo aulico, 15 pp.

AUBÉ, C. 1836. Hydrocanthares. In: *Iconographie et histoire naturelle des coléoptères d'Europe.* (Ed. P.F Dejean), Méquignon-Marvis, Paris, **5**: 1-64.

AUBÉ, C. 1838a. Hydrocanthares. In: *Iconographie et histoire naturelle des coléoptères d'Europe.* (Ed. P.F Dejean), Méquignon-Marvis, Paris, **5**: 225-416.

AUBÉ, C. 1838b. Species general des Hydrocanthares et Gyriniens. In: *Species général des coléoptères de la collection de M. le Comte Dejean.* (Ed. P.F Dejean), Méquignon Père et Fils, Paris, **6**: xvi + 804 pp.

AUBÉ, C. 1850. Description de quelques insectes coléoptères appartenant à l'Europe et à l'Algérie. *Annales de la Société Entomologique de France,* **2**(8): 299-346.

BABINGTON, C.C. 1841b. Dytiscidae Darwinianae. *The Transactions of the Entomological Society of London* **3**(1841-1843): 1-17 + 1 pl.

BAHA EL DIN, S.M. 2001. Egypt. In: *Important bird areas in Africa and associated islands: Priority sites for conservation.* (Eds. L.D.C. Fishpool & M.I. Evans). Newbury and Cambridge, UK: Pisces Publications & Birdlife International, pp. 241-264.

BALFOUR-BROWNE, J. 1939. Scientific results of the Cambridge Expedition to the East African Lakes, 1930-1. No. 19. Coleoptera of the families Dytiscidae and Gyrinidae. *Journal of the Linnean Society (Zoology),* **40**: 475-485.

BALFOUR-BROWNE, J. 1947. New and interesting aquatic Coleoptera from the Sudan. *The Proceedings of the Royal Entomological Society of London (B)*, **16**(11-12): 133-142.

BALFOUR-BROWNE, J. 1951. Coleoptera: Haliplidae, Dytiscidae, Gyrinidae, Hydraenidae, Hydrophilidae. *Expedition to South-West Arabia* **1**(16): 179-220 + pls. 10, 11.

BALKE, M. & H. FERY 1993. Taxonomic notes on Western Palaearctic species of *Hydroporus* Clairville and *Coelambus* Thomson (Coleoptera: Dytiscidae). *Annales de la Société Entomologique de France (N.S.),* **29**: 89-101.

BALKE, M. & I. RIBERA 2004. Jumping across Wallace's line: *Allodessus* Guignot and *Limbodessus* Guignot revisited (Coleoptera: Dytiscidae, Bidessini) based on molecular-phylogenetic and morphological data. *Australian Journal of Entomology,* **43**: 114-128.

BALKE, M. 1995. The Hydroporini (Coleoptera: Dytiscidae: Hydroporinae) of New Guinea: Systematics, distribution and origin of the fauna. *Invertebrate Taxonomy,* **9**(5): 1009-1019.

BALKE, M. 2005. Dytiscidae Leach, 1915. In: *Handbook of Zoology, Vol. IV Arthropoda: Insecta. Part 38. Coleoptera, Vol. 1: Morphology and Systematics (Archostemata, Adephaga, Myxophaga, Polyphaga partim)*. (Eds. N.P. Kristensen & R.G. Beutel), Walter De Gruyter, Berlin, New York, pp. 90-116.

BEDEL, L. & P. PEYERIMHOFF 1925. *Catalogue raisonné des coléoptères du Nord de l'Afrique (Maroc, Algérie, Tunisie et Tripolitaine) avec notes sur la faune des Îles Canaries et de Madère. Première partie.* Société Entomologique de France, Paris, pp. 321-402.

BEDEL, L. 1881. Faune des coléoptères du bassin de la Seine. 1er Sousordre. Carnivora. *Annales de la Société Entomologique de France,* **5** (11): 257-359.

BELLINI, R., F. PEDERZANI, R. PILANI, R. VERONESI & S. MAINI 2000. *Hydroglyphus pusillus* (Fabricius) (Coleoptera: Dytiscidae): Its role as a mosquito larvae predator in rice fields. *Bollettino dell'Istituto di Entomologia "Guido Grandi". dell'Università di Bologna,* **54**: 155-163.

BERTRAND, H. 1966. Larves de coléoptères aquatiques de l'Angola (Insecta, Coleoptera). En Museu do Dundo: subsídios para o estudo da biologia na Lunda: estudos diversos, Companhia de Diamantes de Angola, Luanda (Angola). *Publicações culturais da Companhia de Diamantes de Angola, Lisboa*, **72**: 135-161.

BISTRÖM, O. & A.N. NILSSON 2002: *Herophydrus* Sharp: Cladistic analysis, taxonomic revision of the African species, and world check list (Coleoptera: Dytiscidae). *Koleopterologische Rundschau,* **72**: 15-111.

BISTRÖM, O. 1979. A revision of the genus *Derovatellus* Sharp (Coleoptera, Dytiscidae) in Africa. *Acta Entomologica Fennica,* **35**: 1-28.

BISTRÖM, O. 1982a. A revision of the genus *Hyphydrus* Illiger (Coleoptera, Dytiscidae). *Acta Zoologica Fennica,* **165**: 1-121.

BISTRÖM, O. 1982b. *Yola* species from Africa, with the description of *Yola panelii* sp.n. (Coleoptera, Dytiscidae). *Annales Entomologici Fennici,* **48**:116-118.

BISTRÖM, O. 1983. Revision of the genera *Yola* Des Gozis and *Yolina* Guignot (Coleoptera, Dytiscidae). *Acta Zoologica Fennica,* **176**: 1-67.

BISTRÖM, O. 1985. A revision of the species group *B. sharpi* in the genus *Bidessus* (Coleoptera, Dytiscidae). *Acta Zoologica Fennica,* **178**: 1-40.

BISTRÖM, O. 1986. Review of the genus *Hydroglyphus* Motschulsky (= *Guignotus* Houlbert) in Africa (Coleoptera, Dytiscidae). *Acta Zoologica Fennica,* **182**: 1-56.

BISTRÖM, O. 1988. Revision of the genus *Clypeodytes* Régimbart in Africa (Coleoptera: Dytiscidae). *Entomologica Scandinavica,* **19**: 199- 238.

BISTRÖM, O. 1997. Taxonomic revision of the genus *Hydrovatus* Motschulsky (Coleoptera, Dytiscidae). *Entomologica Basiliensia,* **19**: 57-584.

BRANCUCCI, M. 1979. Insects of Saudi Arabia. Coleoptera: Fam. Haliplidae, Dytiscidae, Gyrinidae. *Fauna of Saudi Arabia,* **1**: 156- 161.

BRANCUCCI, M. 1980. Insects of Saudi Arabia. Coleoptera: Haliplidae, Dytiscidae, Gyrinidae. Part 2. *Fauna of Saudi Arabia,* **2**: 102-111.

BRANCUCCI, M. 1981. Insects of Saudi Arabia. Coleoptera: Fam. Dytiscidae (Part 3). *Fauna of Saudi Arabia,* 3: 227-230.

BRANCUCCI, M. 1985. Insects of Saudi Arabia. Coleoptera: Fam. Haliplidae, Noteridae, Dytiscidae, Gyrinidae (Part 4). *Fauna of Saudi Arabia,* **6**(1984): 229-242.

BRANCUCCI, M. & O. BISTRÖM 2013. Review of the Hydrovatini, Hygrotini and Hyphydrini in Laos (Coleoptera, Dytiscidae). *Entomologica Basiliensia et Collectionis Frey,* **34**: 89-102.

BRANDEN, C. VAN DEN 1885. Catalogue des coléoptères carnassiers aquatiques (Haliplidae, Amphizoidae, Pelobiidae et Dytiscidae). *Annales de la Société Entomologique de Belgique,* **29**(1): 5-116.

CLAIRVILLE, J.P. DE 1806. *Entomologie helvétique ou catalogue des insectes de la Suisse, rangés d'après une nouvelle méthode, avec descriptions et figures*. (Eds. J.P. Clairville de & J.R. Schellenberg), Zürich: Orell, Fussli et Co., 2: xliii + 247 pp. + 32 pls.

CROVETTI, A. 1966. Considerazioni sulla fauna acquatica e ripicola degli Uidian Caam e Bu el-Gherab (Tripolitania). In Risultati delle missioni entomologiche dei proff. G. Fiori ed E. Mellini nel Nord Africa 19. *Annali della facolta di agraria dell'Universita di Sassari,* **14**: 1-30.

DARILMAZ, M. & S. KIYAK 2006. A contribution to the knowledge of the Turkish water beetles fauna (Coleoptera). *Munis Entomology and Zoology,* **1**(1):129-144.

DEJEAN, P. F. M. A. 1833. *Catalogue des coléoptères de la collection de M. le comte Dejean*. Livraisons 1 & 2. Méquignon-Marvis, Paris, 176 pp.

DRAPIEZ, P. A. J. 1819. Description de huit espèces d'insectes nouveaux. *Annales Générales des Sciences Physiques,* **2**: 42-50 + pl. xvi.

EBNER, R. 1921. Wissenschaftliche ergebnisse der mit unterstützung der akademie der wissenschaften in wien aus der erbschaft treitl von F, Werner unternommenen zoologischen expedition nach dem Anglo-Ägyptischen Sudan (Kordofan) 1914. XI. Coleoptera A. *Denkschriften der kaiserlichen Akademie der*

Wissenschaften mathematisch-naturwissenschaftliche Klasse, **98**: 165-199.

EL SHERIF, S. I., A. LATIF ISA & A. F. LUTFALLAH 1976. Survey of aquatic insects in rice nurseries and fields. *Agricultural Research Review,* **54**(1): 93-98.

FABRICIUS, J. C. 1787. *Mantissa Insectorum sistens species nuper detectas adiectis characteribus genericis, differentiis specificis, emendationibus, observationibus*. 2 vols. Hafniae: C.G. Proft, xx + 348 +382 pp.

FABRICIUS, J. C. 1792. *Entomologia systematica emendata et aucta. Secundum classes, ordines, genera, species adjectis synonimis, locis, observationibus, descriptionibus*. Hafniae: C.G. Proft. **1**(1): xx + 330 pp.

FAIRMAIRE, L. 1858. Coleoptera Corsica a Ph. Lareynie detecta et a L. Fairmaire descripta. *Revue et Magazine de Zoologie,* (2) **10**: 455- 456.

FAIRMAIRE, L. 1869. Notes sur les coléoptères recueillis par Charles Coquerel à Madagascar et sur les côtes d'Afrique. 2e partie. *Annales de la Société Entomologique de France,* (4) **9**: 179-260.

FAIRMAIRE, L. 1880. Descriptions de coléoptères nouveaux du nord de l'Afrique. 4. Partie (1). *Annales de la Société Entomologique de France,* (5) **10**: 245-252.

FALKENSTRÖM, G. A. 1939. Beitrag zur Revision einiger Dytisciden-Gattungen, vor allem *Deronectes* Sharp und *Oreodytes* Seidlitz. *Entomologisk Tidskrift,* **60**: 69-101.

FERRANTE, G. 1908. Contributo al catalogo dei Coleotteri dell' Egitto (Haliplidae, Dytiscidae, Gyrinidae). *Bulletin de la Société Entomologique d'Égypte,* **1**: 167-172.

FERY, H. 1992a. *Coelambus lagari* n. sp. und *Coelambus sanfilippoi* n. sp. aus dem westlichen Mittelmeergebiet (Coleoptera: Dytiscidae). *Entomologische Zeitschrift,* **102**(7): 113-124.

FERY, H. 1992b. Revision der *saginatus*-Gruppe der Gattung *Coelambus* Thomson (Coleoptera: Dytiscidae). *Linzer Biologische Beiträge,* **24**: 339-358.

FERY, H. 1999. Revision of a part of the *memnonius*-group of *Hydroporus* Clairville, 1806 (Insecta: Coleoptera: Dytiscidae) with the description of nine new taxa, and notes on other species of the genus. *Annalen des Naturhistorischen Museums in Wien,* **101** (B): 217-269.

FERY, H. 2002. Nomenklatorische und taxonomische Notizen zu einigen Dytiscidae (Coleoptera). *Entomologische Zeitschrift, Stuttgart,* **112**: 25-30.

FERY, H 2003.Taxonomic and distributional notes on *Hygrotus* Stephens, with emphasis on the Chinese fauna and a key to the Palearctic species. In: *Water beetles of China*. (Eds. M.A. Jäch & L. Ji).*Zoologisch-Botanische Gesellschaft in Österreich and Wiener Coleopterologenverein, Wien,* **3**:133-193.

FERY, H. & M. BRANCUCCI 1997. A taxonomic revision of *Deronectes* Sharp, 1882 (Insecta: Coleoptera: Dytiscidae) (part I). *Annalen des Naturhistorischen Museums in Wien*, **99** (B): 217-302.

FERY, H. & P.N. PETROV 2006. Nomenclatural, taxonomic, and faunistic notes on selected species of *Hydroporus* Clairville, 1806 (Coleoptera: Dytiscidae). *Russian Entomological Journal,* **14**(2005) (4): 251-262.

FERY, H., J. FRESNEDA & A. MILLÁN 1996. Bemerkungen zur *Nebrioporus ceresyi*-Gruppe sowie Beschreibung von *Nebrioporus schoedli* n. sp. (Coleoptera: Dytiscidae). *Entomologische Zeitschrift,* **106**(8): 306-328.

FOSTER, G.N. 1993. Goodbye *Potamonectes* for ever?. *Latissimus,* **2**: 9-10.

FRANCISCOLO, M. E. 1975. 'Dytiscidae' raccolti a Montecristo dal Prof. M. Pavan (12 Contributo alla conoscenza dei Coleotteri Idrocantaridi). *Atti del Museo Civico di Storia Naturale di Trieste,* **29**(1): 7-16.

GEMMINGER, M. & E. VON HAROLD 1868. *Catalogus Coleopterorum hucusque descriptorum synonymicus et systematicus.* (Ed. E.H. Gummi), Monachii, **2**: 425-752.

GERMAR, E. F. 1836. *Fauna Insectorum Europae*. XVIII. Halae: C.A. Kümmel, 25 pp. + 25 pls.

GOZIS, M. DES 1886. *Recherche de l'espèce typique de quelques anciens genres, rectifications synonymiques et notes diverses*. Montlucon: Imprimerie Herbin, 36 pp.

GOZIS, M. DES 1914. Tableaux de détermination des dytiscides, notérides, hyphydrides, hygrobiides et haliplides de la faune franco-rhénane (part). *Miscellanea Entomologica,* **21**(10): 97-112.

GSCHWENDTNER, L. 1935. Monographie der paläarktischen Dytiscidae. VI. Colymbetinae (2. Teil: Agabini; Colymbetini: Gattung *Ilybius* Er.). *Koleopterologische Rundschau,* **21**: 61-92.

GSCHWENDTNER, L. 1936. Monographie der paläarktischen Dytiscidae. VII. Colymbetinae (Colymbetini: *Rhantus*, *Nartus*, *Melanodytes*, *Colymbetes*, *Meladema*). *Koleopte-rologische Rundschau,* **22**: 61-102.

GSCHWENDTNER, L. 1937. Monographie der paläarktischen Dytisciden (Begonnen von Alois Zimmermann, fortgesetzt von L. Gschwendtner). VIII. Dytiscinae (Eretini, Hydaticini, Thermonectini). *Koleopterologische Rundschau,* **23**: 57-92.

GSCHWENDTNER, L. 1938. Monographie der paläarktischen Dytiscidae. IX. Dytiscinae. *Koleopterologische Rundschau,* **24**: 33-76.

GUIGNOT, F. 1936. Mission scientifique de l'Omo 4(31). Coleoptera. 10. Haliplidae et Dytiscidae (1re partie). *Mémoires du Muséum National d'Histoire Naturelle Paris,* **8**(1938): 1-75.

GUIGNOT, F. 1946. Mission scientifique de l'Omo 6(58). Coleoptera Dytiscidae (2e partie). *Mémoires du Muséum National d'Histoire Naturelle Paris,* **19**(1945): 215-322.

GUIGNOT, F. 1947. Coléoptères hydrocanthares. *Faune de France,* **48**: 1-287.

GUIGNOT, F. 1952. Contribution à l'étude du peuplement de la Mauritanie. *Bulletin de l'Institut Français d'Afrique Noire (A),* **14**: 529-536.

GUIGNOT, F. 1955. Contribution à l'étude du peuplement de la Mauritanie. Dytiscides (2e note). *Bulletin de l'Institut Français d'Afrique Noire (A),* **17**: 859-866.

GUIGNOT, F. 1959a. Revision des hydrocanthares d'Afrique (Coleoptera Dytiscoidea). 1. *Annales du Musée Royal du Congo Belge Série 8vo (Sciences Zoologiques),* **70**: 1-313.

GUIGNOT, F. 1959b. Revision des hydrocanthares d'Afrique (Coleoptera Dytiscoidea). 2. *Annales du Musée Royal du Congo Belge Série 8vo (Sciences Zoologiques),* **78**: 323-648.

GUIGNOT, F. 1961. Revision des hydrocanthares d'Afrique (Coleoptera Dytiscoidea). 3. *Annales du Musée Royal du Congo Belge Série 8vo (Sciences Zoologiques),* **90**: 659-995.

HÁJEK, J. & G. WEWALKA 2009. New and little known species of *Hydroglyphus* (Coleoptera: Dytiscidae) from Arabia and adjacent areas. *Acta Entomologica Musei Nationalis Pragae,* **49**(1): 93-102.

HANNA, H. M. 1969. Studies on catches of Coleoptera in a light trap, at Assiut. *Bulletin de la Société Entomologique d'Égypte,* **53**: 591-613.

HENDAWY, A. S., M. R. SHERIF, A. E. ABADA & M. M. EL-HABASHY 2005. Aquatic and semi-aquatic insects occurring in the Egyptian rice fields and hazardous effect of Insecticides. *Egyptian Journal of Agricultural Research,* **83**(5B): 493-502.

HEYDEN, L. F. J. D. VON 1899. Beitrag zur Coleopteren-Fauna der Halbinsel Sinaï. *Deutsche Entomologische Zeitschrift,* **2**: 240-256.

HOATH, R. 2003. *A field guide to the mammals of Egypt*. The American University in Cairo Press, Egypt, 234 pp.

HOULBERT, C. 1934. Faune entomologique armoricaine. Coléoptères, hydrocarabiques. *Bulletin de la Société des Sciences de Bretagne,* **11**: 1-147.

ILLIGER, J. K. W. 1802. Aufzählung der Käfergattungen nach der Zahl der Fussglieder. *Magazin für Insektenkunde, Braunschweig,* **1**(3-4): 285-305.

INNES BEY, W. 1908. Note sur la faunule coléoptèrologique des Oasis Egyptiennes. *Bulletin de la Société Entomologique d'Égypte,* **1**: 133-137.

KLUG, J. C. F. 1834. *Symbolae physicae, seu icones et descriptions Insectorum, quae ex itinere per Africam borealem et Asiam occidentalem Friderici Guilelmi Hemprich et Christiani Godofredi Ehrenberg studio novae aut illustratae redierunt*. Vol. 3. Insecta. Decas quarta. Officina Academica, Berolini, 186 pp. + pls. 31-40.

Kneucker, J. A. 1922. Zoologische Ergebnisse zweier in den Jahren 1902 und 1904 durch die Sinaihalbinsel unternommener botanischer Studienreisen. II. Teil. *Entomologische Blätter,* **18**: 20-28.

KOLENATI, F. A. R. 1845. *Meletemata entomologica. Fasc. 1. Insecta Caucasi cum distributione geographica. Coleopterorum Pentamera Carnivora*. Petropoli: Imperialis Academiae Scientiarum, 88 pp. + 2 pl.

KUNZE, G. 1818. Entomologische Fragmente. *Neue Schriften der Naturforschenden Gesellschaft zu Halle,* **2**(4): 1-76.

LAPORTE, F. L. N. CAUMONT DE 1835. *Études entomologiques.* Première partie. Paris: Méquignon-Marvis Père et Fils, 159 pp. [95-159]

LARSON, D.J ., Y. ALARIE & R. E. ROUGHLEY 2000. *Predaceous diving beetles (Coleoptera: Dytiscidae) of the Nearctic Region, with emphasis on the fauna of Canada and Alaska*. Ottawa: NRC Research Press, 982 pp.

LEACH, W. E. 1815. Entomology. In: *The Edinburgh encyclopaedia*. (Ed. D. Brewster). Edinburgh: Baldwin, **9**(1): 57-172.

LEPRIEUR, C.-E. 1879. Insectes recueillis en Égypte. *Annales de la Société Entomologique de France, Bulletin des Séances,* **5** (9): 82-83.

LUCAS, P. H. 1846. *Histoire naturelle des animaux articulés. Deuxième partie. Insectes. In: Exploration scientifique de l'Algérie pendant les années 1840, 1841, 1842 publiée par ordre du Gouvernement et avec le concours d'une Commission Académique*. Sciences physiques. Zoologie. Paris: A. Bertrand, **2**: 590 pp. [Pp. 1-360.]

MARSEUL, S. A. DE 1871. Répertoire des Coléoptères d'Europe décrits isolément depuis 1864. *L'Abeille,* **8**: 1-164.

MARSEUL, S. A. DE 1882. Nouveau répertoire contenant les descriptions des espèces de coléoptères de l'ancien-monde publiées isolément ou en langues étrangères, en dehors des monographies ou traités spéciaux et de l'Abeille. *L'Abeille,* **20**: 1-196.

MILLER, K. B. 2005. Revision of the New World and south-east Asian Vatellini (Coleoptera: Dytiscidae: Hydroporinae) and phylogenetic analysis of the tribe. *Zoological Journal of the Linnean Society,* **144**: 415-510.

MOTSCHULSKY, V. DE 1853. *Hydrocanthares de la Russie*. Helsingfors: Imprimerie de la Société de Litérature Finnoise, 15 pp.

MOTSCHULSKY, V. DE 1859. Insectes des Indes orientales, et de contrées analogues. 2de Série. *Études Entomologiques Motschulsky,* **8**: 25-118.

MULSANT, E. & C. REY 1861. Description de quelques coléoptères nouveaux ou peu connus. *Annales de la Société Linnéenne de Lyon (NS),* **7**(1860): 300-345.

NICOLAI, E. A. 1822. *Dissertatio inauguralis medica sistens Coleopterorum species agri Halensis*. Halae: Grunert, 48 pp.

NILSSON, A .N. 2001. *World catalogue of insects. Vol. 3. Dytiscidae Coleoptera*. Stenstrup: Apollo Books, 395 pp.

NILSSON, A. N. 2003. Dytiscidae. In: *Catalogue of Palaearctic Coleoptera, Vol. 1. Archostemata, Myxophaga, Adephaga*. (Eds. I. Löbl & A. Smetana), Apollo Books, Stenstrup, pp 35-78.

NILSSON, A. N. 2013. *A world catalogue of the family Dytiscidae, or the diving beetles (Coleoptera, Adephaga)*. Version 1.I.2013. Distributed as a PDF file via Internet. Available from: *http://www2.emg.umu.se/projects/biginst/andersn/* (Accessed 28 December 2013).

NILSSON, A. N. & J. HÁJEK 2013. *Catalogue of Palearctic Dytiscidae (Coleoptera)*. Version 2013-01-01. Distributed as a PDF file via Internet. Available from: *http://www2.emg.umu.se/projects/biginst/andersn/Cat_main.htm* (Accessed 28 December 2013).

NILSSON, A. N. & M. HOLMEN 1995. The aquatic Adephaga (Coleoptera) of Fennoscandia and Denmark. II. Dytiscidae. *Fauna Entomologica Scandinavica,* **32**: 1-192.

NILSSON, A. N. & R. B. ANGUS 1992. A reclassification of the *Deronectes*-group of genera (Coleoptera: Dytiscidae) based on a phylogenetic study. *Entomologica Scandinavica,* **23**: 275-288.

OMER-COOPER, J. 1931. Report on the Dytiscidae (Coleoptera), Mr. Omer-Cooper's investigation of the Abyssinian fresh waters (Hugh Scott Expedition). *Proceedings of the Zoological Society of London,* **101**(3): 751-801.

OMER-COOPER, J. 1954. Results of the Armstrong College Expedition to Siwa Oasis (Libyan desert), 1935, under the leadership of Prof. J. Omer-Cooper. Dytiscidae (Coleoptera). *Bulletin de la Société Fouad Ier d'Entomologie,* **38**: 251-290.

PESCHET, R. 1914. Dytiscidae et Gyrinidae recueillis par la délégation scientifique en Perse. (Mission J. de Morgan, 1904) (Coléopt.). *Annales de la Société Entomologique de France,* **83**: 225-232.

PEYERIMHOFF, P. M. DE FONTENELLE 1907. Liste des Coléoptères du Sinai. *L'Abeille,* **31**: 1-48.

PEYERIMHOFF, P. M. DE FONTENELLE 1931. Mission scientifique du Hoggar. Coléoptères. *Mémoires de la Société d'Histoire Naturelle de l'Afrique du Nord,* **2**: 1-173.

PIC, M. 1909. Liste d'Hydrocanthares, Gyrinides et de quelques Palpicornes recueillis en Egypte. *Bulletin de la Société Entomologique d'Égypte,* **1**(4): 148-152.

PORTEVIN, G. 1929: *Historie naturelle des coléoptères de France. Vol. 1. Adephaga - Polyphaga: Staphylinoidea.* Encyclopédie entomologique (A) Paris: Paul Lechevalier, **12**: 649 pp. + 4 pls.

PREUDHOMME, DE BORRE C. F. P. A. 1871. Description d'une espèce nouvelle du genre *Hydroporus*. *Annales de la Société Entomologique de Belgique,* **14**(1870-1871), Comptes Rendu xiii-xiv.

RÉGIMBART, M. 1878. Énumération des dytiscides et gyrinides recueillis par Ch. Piochard de la Brûlerie dans ses voyages en Orient (1). *Annales de la Société Entomologique de France,* (5) **7**(1877): 347-354.

RÉGIMBART, M. 1887. Dytiscidae et Gyrinidae collectés dans le royaume de Scioa (Abyssinie), par Mr. le Dr. Ragazzi en 1885. *Annali del Museo Civico di Storia Naturale Giacomo Doria Genova,* (2) **4**: 636-641.

RÉGIMBART, M. 1889. Dytiscidae et Gyrinidae nouveaux ou rares de la collection du Musée Royal de Leyde. *Notes from the Leyden Museum,* **11**: 51-63.

RÉGIMBART, M. 1894. Voyage de M.E. Simon dans l'Afrique australe (Décembre - Mars 1893). Haliplidae, Dytiscidae & Gyrinidae. *Annales de la Société Entomologique de France,* **63**: 227-240.

RÉGIMBART, M. 1895. Révision des Dytiscidae et Gyrinidae d'Afrique, Madagascar et îles voisines. En contribution à la faune entomologique du Congo. *Mémoires de la Société Entomologique de Belgique,* **4**: 1-244.

RÉGIMBART, M. 1906. Voyage de M. Ch. Alluaud dans l'Afrique Orientale. Dytiscidae, Gyrinidae, Hydrophilidae. *Annales de la Société Entomologique de France,* **75**: 235-278.

REICHE, L. 1866. *Hydroporus lucasi* p. 19. In: Marseul S.-A.: Catalogue des coléoptères d'Europe et des pays limitrophes. *L'Abeille,* **4**(1867): 1-131.

REITTER, E. 1909. Espèces nouvelles de Coléoptères égyptiens. *Bulletin de la Société Entomologique d'Égypte,* **1**(1):29-32.

RIBERA, I. & A. N., NILSSON 1995. Morphometric patterns among diving beetles (Coleoptera: Noteridae, Hygrobiidae, Dytiscidae). *Canadian Journal of Zoology,* **73**: 2343-2360.

RIBERA, I., C. HERNANDO & P. AGUILERA 1999. An annotated checklist of the Iberian water beetles (Coleoptera). *Zapateri, Revista Aragonesa de Entomología,* **8**(1998): 43-111.

ROCCHI, S. 1976. Coleotteri ditiscidi dell'Oasi di Galgala (Somalia) con descrizione di una nuova specie di *Prodaticus*. *Monitore Zoologico Italiano (N.S.), Supplemento* **8**: 287-293.

ROCCHI, S., & S. SCHEMBRI 1992. I coleotteri idroadefagi delle Isole Maltesi (Coleoptera, Haliplidae, Gyrinidae e Dytiscidae). *Bollettino della Società Entomologica Italiana,* **124**(2): 121-126.

SAHLBERG, J. 1903a. Entomologiska forskningsresor i Medelhafstrakterna och Centralasien företegna aren 1895-1896 samt 1898-1899. Resenberättelse. II. Resor i Palestina, Egypten, Tunisien och Algeriet. *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar, Helsingfors,* **45**(17): 1-39 pp.

SAHLBERG, J. 1903b. Coleoptera Levantina mensibus Februario et Martio in Palaestina et Aegypto inferiore collecta. *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar, Helsingfors,* **45**(18): 1-36.

SAHLBERG, J. 1913. Coleoptera mediterranea orientalia, quae in Aegypto, Palaestina, Syria, Caramania atque in Anatolia occidentali anno 1904 collegerunt John Sahlberg et Unio Saalas. *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar, Helsingfors, (A)* **55**(19): 1-281.

SALAH, M. & J. A. RÉGIL 2014. An annotated checklist of the aquatic Adephaga (Coleoptera) of Egypt. I. Dytiscidae: Agabinae, Colymbetinae, Copelatinae, Dytiscinae and Laccophilinae. *Boletín de la Sociedad Entomológica Aragonesa,* **54**: 145-155.

SCHAUM, H. R. 1857. Beitrag zur Käferfauna Griechenlands. Erstes Stück: Cicindelidae, Carabici, Dytiscidae, Gyrinidae. *Berliner Entomologische Zeitschrift,* **1**: 116-158.

SCHAUM, H. R. 1864. Die egyptischen Dytisciden. *Berliner Entomologische Zeitschrift,* **8**: 105-108.

SCHELLENBERG, J.R. 1806. *Helvetische Entomologie, oder, Verzeichniss der schweizerischen Insekten nach einer neuen Methode geordnet: mit Beschreibungen und Abbildungen*. Bei Orell, Fu□ssli und compagnie, Zurich, 2: - XLIII, 248 S.: 32 III.

SEIDLITZ, G. K. M. VON. 1887. Bestimmungs-Tabelle der Dytiscidae und Gyrinidae des europäischen Faunengebietes. *Verhandlungen des Naturforschenden Vereines in Brünn,* **25**(1886):3-136.

SHARP, D. 1876. Diagnose d'une espèce nouvelle de la famille des dytiscides. *Petites Nouvelles Entomologiques,* **2**(154): 61.

SHARP, D. 1880. Avis préliminaire d'une nouvelle classification de la famille des Dytiscidae. *Annales de la Société Entomologique de Belgique, Comptes Rendus,* **23**: cxlvii-cli.

SHARP, D. 1882. On aquatic carnivorous Coleoptera or Dytiscidae. *Scientific Transactions of the Royal Dublin Society,* **2**(2): 179-1003 + pls. 7-18.

SHARP, D. 1904. Water beetles (Dytiscidae & Hydrophilidae) of the Swedish Zoological Expedition to Egypt and the White Nile. In: *Results of the Swedish Zoological Expedition to Egypt and the White Nile*. (Ed. L.A. Jägerskiöld), **10**: 1-10.

STEPHENS, J. F. 1828. *Illustrations of British entomology*. Mandibulata. Vol. 2. London: Baldwin & Cradock, 200 pp. [Pp. 1-112]

STOREY, G. 1916. *List of Egyptian insects in the collection of the Ministry of agriculture*. Technical and Scientific Service (Entomological section), Government Press, Cairo.no. **5**.

TAWFIK, M. M., F. M. SEMIDA, R. S. AHMED & G. M. ORABI 2013. Biodiversity of the Aquatic Entomofauna at St. Katherine Protectorate and Wadi Feiran, South Sinai, Egypt. *Asian Journal of Biological Sciences,* **6**(1):40-53.

THOMSON, C. G. 1860. *Skandinaviens Coleoptera, synoptiskt bearbetade*. Vol. II. Lund: Berlingska Boktryckeriet, 304 pp.

TOLEDO, M. 2009. Revision in part of the genus *Nebrioporus* Régimbart, 1906, with emphasis on the *N. laeviventris*-group (Coleoptera: Dytiscidae). *Zootaxa,* **2040**: 1-111.

WALKER, F. 1871. *List of Coleoptera collected by J.K. Lord in Egypt, Arabia and near the African shore of the Red Sea. With characters of the undescribed species*. (Ed. E.W. Janson), London, 19 pp.

WEHNCKE, E. 1875. Zwei neue europäische *Hydroporus*. *Deutsche Entomologische Zeitschrift,* **19**(1): 234.

WEWALKA, G. 1974. Systematische und faunistische Bemerkungen zu einigen paläarktischen Dytisciden (Coleoptera). *Koleopterologische Rundschau,* **51**: 105-113.

WEWALKA, G. 1980. Revision der afrikanischen Gattung *Heterhydrus* Fairm. (Coleoptera, Dytiscidae). *Annales Historico-Naturales Musei Nationalis Hungarici,* **72**: 97-101.

WEWALKA, G. 1986. Zoogeography and ecology of the Dytiscidae fauna of the Levant. *Entomologica Basiliensia,* **11**: 273-288.

WEWALKA, G. 1989. Systematic and faunistic notes on Noteridae and Dytiscidae of the Near East (Coleoptera). *Koleopterologische Rundschau,* **59**: 143-152.

WEWALKA, G. 1992. Revisional notes on Palearctic species of the *Hydroporus planus* group (Coleoptera: Dytiscidae). *Koleopterologische Rundschau,* **62**: 47-60.

WHITE, A. 1847. *Nomenclature of coleopterous insects in the collection of the British Museum*. Part 2. Hydrocanthari. Edward Newman, London, 59 pp.

YANO, K., Y. I. CHU & M. SATÔ 1983. Faunal and biological studies on the insects of paddy fields in Asia. XI. Records on aquatic Coleoptera from paddy water in the world. *Chinese Journal of Entomology,* **3**: 15-31.

ZAITZEV, F. A. [PH.] 1972. *Fauna of the USSR. Coleoptera. Families: Amphizoidae, Hygrobiidae, Haliplidae, Dytiscidae, Gyrinidae*. Israel Program for Scientific Translations, Jerusalem, 401 pp.

ZALAT, S., F. GILBERT, H. FADEL, M. S. EL-HAWAGRY, M. SALEH, S. KAMEL & J. GILBERT 2008. Biological explorations of Sinai: flora and fauna of Wadi Isla and Hebran, St Katherine Protectorate, Egypt. *Egyptian Journal of Natural History,* **5**: 6-15.

ZALAT, S., R. SALEH, R. B. ANGUS & A. KASCHEF 2000. Diving beetles (Coleoptera: Dytiscidae and Noteridae) of Egypt. *Egyptian Journal of Natural History,* **2**: 1-107.

ZIMMERMANN, A. 1920. Dytiscidae, Haliplidae, Hygrobiidae, Amphizoidae. In: *Coleopterorum Catalogus*. (Ed. S. Schenkling). W. Junk, Berlin, **4**(71): 326 pp.

ZIMMERMANN, A. 1921. Zoologische Ergebnisse zweier in den Jahren 1902 und 1904 durch die Sinaihalbinsel unternommener botanischer Studienreisen. *Entomologische Blätter,* **17**: 84-91.

ZIMMERMANN, A. 1930. Monographie der paläarktischen Dytisciden, I. Noterinae, Laccophilinae, Hydroporinae (1. Teil). *Koleopterologische Rundschau,* **16**: 35-118.

ZIMMERMANN, A. 1931. Monographie der paläarktischen Dytisciden, II. Hydroporinae (2. Teil: Die Gattung *Hydroporus* Clairv.). *Koleopterologische Rundschau,* **17**:97-159.

ZIMMERMANN, A. 1933. Monographie der paläarktischen Dytisciden, IV. Hydroporinae (4. Teil). *Koleopterologische Rundschau,* **19**: 153-193.

ZIMMERMANN, A. 1934. Monographie der paläarktischen Dytisciden. V. Colymbetinae (1. Teil: Copelatini, Agabini: Gattung *Gaurodytes* Thoms.). *Koleopterologische Rundschau,* **20**: 138-214.