

AN ANNOTATED CHECKLIST OF THE AQUATIC ADEPHAGA (COLEOPTERA) OF EGYPT. I. DYTISCIDAE: AGABINAE, COLYMBETINAE, COPELATINAE, DYTISCINAE AND LACCOPHILINAE

Mohamed Salah^{1,2} & Juan Antonio Régil Cueto²

^{1,2} Zoology and Entomology Department, Faculty of Science, Helwan University, 11795 - Helwan, Cairo (Egypt).

² Department of Biodiversity and Environmental Management (Area: Zoology), León University, 24071 - León (Spain).

¹ msalahcoleo@gmail.com; ² jaregc@unileon.es

Abstract: Data from previous literature were used to compile a checklist of the fauna of aquatic Adephaga (Coleoptera) of Egypt. Five subfamilies of the family Dytiscidae were studied: Agabinae, Colymbetinae, Copelatinae, Dytiscinae and Laccophilinae. The checklist contains 31 valid species from 12 genera belonging to 9 tribes: Agabini, Colymbetini, Copelatini, Aciliini, Cybistrini, Dytiscini, Eretini, Hydaticini and Laccophilini. The present checklist provides notes concerning the type localities, type specimens, descriptors, new combinations and biogeographic distributions.

Key words: Coleoptera, Dytiscidae, Agabinae, Colymbetinae, Copelatinae, Dytiscinae, Laccophilinae, checklist, Egypt.

Lista comentada de la adefagofauna acuática (Coleoptera) de Egipto. I. Dytiscidae: Agabinae, Colymbetinae, Copelatinae, Dytiscinae y Laccophilinae

Resumen: En base a datos bibliográficos previos, se ha elaborado la lista faunística de los coleópteros adéfagos acuáticos de Dytiscidae de Egipto, correspondientes a las 5 subfamilias: Agabinae, Colymbetinae, Copelatinae, Dytiscinae y Laccophilinae. Esta relación comprende 31 especies distribuidas en 12 géneros y 9 tribus: Agabini, Colymbetini, Copelatini, Aciliini, Cybistrini, Dytiscini, Eretini, Hydaticini y Laccophilini. Para cada taxón se hace mención de lo concerniente a localidad-tipo, especie-tipo, aspectos nomenclaturales relacionados con la combinación original o subsiguiente y datos de distribución biogeográfica.

Palabras clave: Coleoptera, Dytiscidae, Agabinae, Colymbetinae, Copelatinae, Dytiscinae, Laccophilinae, lista faunística, Egipto.

Introduction

Beetles represent the world most speciose and most successful animal order. Although about 400,000 species have been described until today (representing about 38% of all species in 39 insect orders), some biodiversity experts estimate that millions of species may actually roam the earth (Jäch and Balke, 2008; Slipinski *et al.*, 2011). The value of these animals to terrestrial ecosystems and to humankind is enormous, and thus, knowledge of their fauna is of particular importance (Tamutis *et al.*, 2011).

Approximately 25 families in three of four suborders of Coleoptera are typically aquatic in some of their life stages (Balke, 2005). Among these, the Dytiscidae (predaceous diving beetles), 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 and Nilsson, 1995; Balke, 2005). More details of the taxonomy, biology and morphology of diving beetles can, for example, be found in Balke (2005).

Family Dytiscidae includes 10 subfamilies. According to Nilsson (2013), approximately half of the species are included in the subfamily Hydroporinae (nearly 2199 species) and the rest are distributed in the remaining nine subfamilies as follows: Copelatinae (648 species), Laccophilinae (416 species), Agabinae (405 species), Dytiscinae (376 species), Colymbetinae (140 species), Lancetinae (22 species), Matinae (8 species), Coptotominae (5 species) and Hydrodytinae (4 species).

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. The most important old works dealing with the study of aquatic Coleoptera of Egypt were published by Klug (1834); Aubé (1838); Apetz (1854); Motschulsky (1855); Schaum (1864); Walker (1871), Leprieur (1879); Sharp (1882) and Régimbart (1895). The study of diving beetles from Egypt was continued by many other taxonomists during the 20th century in more scattered publications such as Sahlberg (1903a, 1903b, 1908, 1913); Peyerimhoff (1907); Ferrante (1908); Innes Bey (1908); Pic (1909); Reitter (1909); Ahlwarth (1910); Andres (1913a, 913b); Alfieri (1916, 1917, 1957); Storey (1916); Ebner (1921); Bedel and Peyerimhoff (1925); Zimmermann (1930, 1931, 1933, 1934); Gschwendtner (1935, 1936, 1937, 1938); Omer-Cooper (1954); Guignot (1959a, 1959b, 1961). Alfieri (1976) (one of the most thorough collectors of insect specimens all over the country, especially in deserts, oases and other non-cultivated habitats) published the first work collecting all Egyptian beetles in a single memory. This work includes information about the distribution of beetles in Egypt, monthly occurrence, and some ecological and taxonomical notes. Recently, Zalat *et al.* (2000) and Ahmed (2004) studied the diving beetles of Egypt and gave an account of the taxonomy and distribution of the families Dytiscidae and Noteridae.

The aim of this study is to compile an annotated list of the Egyptian diving beetles of the subfamilies Agabinae, Colymbetinae, Copelatinae, Dytiscinae and Laccophilinae of the family Dytiscidae, integrating all published sources and bringing together all the scattered literature on the family, thereby providing a summary that can serve as the basis for future progress in the knowledge of the 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). We can divide Egypt into 6 ecological zones (Hoath, 2003):

1- Nile Valley and Delta (NV): Perhaps the most significant feature of Egypt's landscape is the Nile river, which is the largest and most important source of fresh water in the country. The Nile divides Egypt into two parts, east and west of the river. The Delta is formed by the division of the branches of the River Nile as it flows south through the valley formed by the Nile in Upper Egypt. The river branches spread out in a V-shaped fan and make their way towards the Mediterranean through Lower Egypt. The Delta begins north of Cairo.

2- Eastern Desert (ED): The Eastern Desert is very different from its western counterpart. It broadly consists of a range of sedimentary mountains that separate the Nile Valley from the Red Sea, the northernmost extension of which are the Muqattam Hills east of Cairo. The area is essentially uninhabited. There are no oasis or cultivation centers.

3- Western Desert (WD): The vast expanse of Egypt west of the Nile Valley and south of the north coast is collectively known as the Western Desert. This Biogeographic zone is characterized by the presence of oases scattered along fossil watercourses. Among these are Siwa, Bahariya, Farafra, Dakhla, Kharga, and Wadi El-Natrun. El Fayoum is not strictly speaking an oasis but rather nowadays a dead-end branch of the Nile.

4- Northern coastal strip (CS): Stretching from the border with Libya to Alexandria, the coastal desert's distinctive feature is the relatively high, and more consistent, rainfall and low temperature compared to the rest of Egypt.

5- Sinai Peninsula (SI): The Sinai Peninsula is of immense importance in any discussion of the fauna of Egypt. It is an inverted triangle of land, with a northern shoreline on the Mediterranean and its southern sides defined by the Gulfs of Aqaba and Suez of the Red Sea. It is the land connection between Africa and Asia and, at the same time, the land barrier. It is the land connection because in pre-historic times, i.e., until ten thousand years ago, the climate was such that there was a continuous band of non-desert vegetation across Sinai connection Asia Minor with the Nile Valley.

6- Gebel Elba (GE): The rocky massif of Gebel Elba in the very southeasternmost part of Egypt is of great faunal significance. Rainfall, largely orographic, makes this region far less hyper-arid than the Eastern Desert to its north.

Checklist arrangement:

The present checklist includes all valid names of extant beetle taxa belonging to the studied subfamilies of Dytiscidae 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) and Nilsson and 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), Nilsson and 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.

MNHN: Museum National d'Histoire Naturelle, Paris, France
MSNG: Museo Civico di Storia Naturale 'Giacomo Doria', Genova, Italy.

NHRS: Naturhistoriska Riksmuseet, Stockholm, Sweden.

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.

ZMUM: Zoological Museum, Moscow State University, Moscow, Russia.

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

The following coleopteran checklist comprises 31 valid Egyptian species from 12 genera belongs to 9 tribes from the family Dytiscidae: Agabini, Colymbetini, Copelatini, Aciliini, Cybistrini, Dytiscini, Eretini, Hydaticini and Laccophilini. The list of species and their taxonomic position is summarized in Table (1).

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

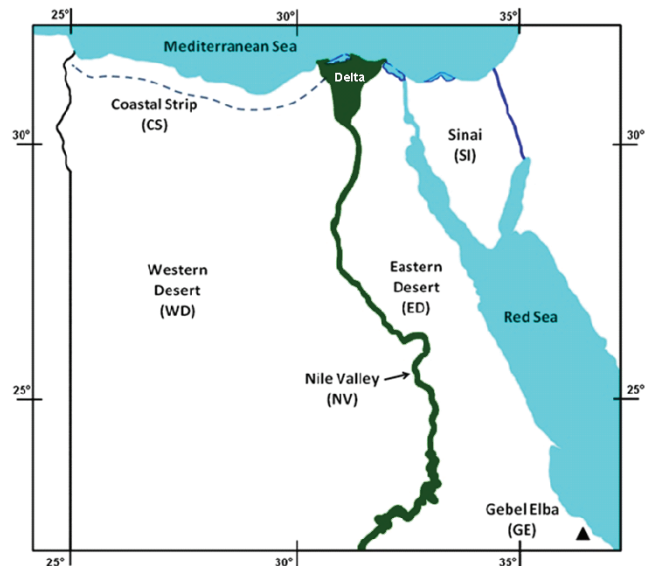


Table I: List of species recorded from the studied subfamilies of the Egyptian Dytiscidae.

Subfamily	Tribe	Species
I. AGABINAE	Agabini	1- <i>Agabus (Gaurodytes) biguttatus</i> (Olivier, 1795)
		2- <i>Agabus (Gaurodytes) conspersus</i> (Marsham, 1802)
		3- <i>Agabus (Gaurodytes) dilatatus</i> (Brullé, 1832)
		4- <i>Agabus (Gaurodytes) nebulosus</i> (Forster, 1771)
		5- <i>Platambus lunulatus</i> (Fischer von Waldheim, 1829)
II. COLYMBETINAE	Colymbetini	6- <i>Colymbetes fuscus</i> (Linnaeus, 1758)
		7- <i>Colymbetes piceus</i> Klug, 1834
		8- <i>Rhantus (Rhantus) consputus</i> (Sturm, 1834)
		9- <i>Rhantus (Rhantus) hispanicus</i> Sharp, 1882
		10- <i>Rhantus (Rhantus) includens</i> (Walker, 1871)
		11- <i>Rhantus (Rhantus) suturalis</i> (Macleay, 1825)
III. COPELATINAE	Copelatini	12- <i>Copelatus erichsonii</i> Guérin-Méneville, 1847
		13- <i>Copelatus gestroi</i> (Sharp, 1882)
		14- <i>Copelatus ibrahimi</i> Zalat, Saleh, Angus and Kaschef, 2000
		15- <i>Copelatus pulchellus</i> (Klug, 1834)
IV. DYTISCINAE	Aciliini	16- <i>Rhantaticus congestus</i> (Klug, 1833)
		17- <i>Cybister (Cybister) lateralimarginalis</i> (De Geer, 1774)
	Cybistrini	18- <i>Cybister (Cybister) reichei</i> Aubé, 1838
		19- <i>Cybister (Cybister) tripunctatus africanus</i> Laporte, 1835
		20- <i>Cybister (Melanectes) vulneratus</i> Klug, 1834
		21- <i>Dytiscus circumflexus</i> Fabricius, 1801
	Dytiscini	22- <i>Eretes griseus</i> (Fabricius, 1781)
		23- <i>Eretes sticticus</i> (Linnaeus, 1767)
	Eretini	24- <i>Hydaticus (Prodaticus) bivittatus</i> Laporte, 1835
		25- <i>Hydaticus (Prodaticus) decorus</i> Klug, 1834
	Hydaticini	26- <i>Hydaticus (Prodaticus) leander</i> (Rossi, 1790)
		27- <i>Hydaticus (Prodaticus) ponticus</i> Sharp, 1882
28- <i>Laccophilus pictipennis</i> Sharp, 1882		
V. LACCOPHILINAE	Laccophilini	29- <i>Laccophilus poecilus</i> Klug, 1834
		30- <i>Laccophilus sordidus</i> Sharp, 1882
		31- <i>Philodytes umbrinus</i> (Motschulsky, 1855)

The Checklist

Order COLEOPTERA Leach, 1815

Suborder ADEPHAGA Schellenberg, 1806

Family Dytiscidae Leach, 1815

I. Subfamily AGABINAE Thomson, 1867 (1 tribe)

Tribe AGABINI Thomson, 1867 (2 genera; 5 spp.)

Genus *Agabus* Leach, 1817 (4 spp.)

Subgenus *Gaurodytes* Thomson, 1859 (4 spp.)

1- *Agabus (Gaurodytes) biguttatus* (Olivier, 1795)

Dytiscus biguttatus Olivier, 1795:26.

TYPE LOCALITY: Fréjus (France).

SYNTYPES: Unknown.

DESCRIPTOR: Zaitzev (1972:241).

NEW COMBINATION: Aubé (1837:166).

GEOGRAPHIC DISTRIBUTION: PAL - ED NV SI.

REFERENCES: Walker (1871); Sharp (1882); Régimbart (1895); Peyerimhoff (1907); Bedel and Peyerimhoff (1925); Zimmermann (1934); Guignot (1959b); Alfieri (1976); Ahmed *et al.* (2000); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Ghosh and Nilsson (2012); Nilsson and Hájek (2013).

2- *Agabus (Gaurodytes) conspersus* (Marsham, 1802)
Dytiscus conspersus Marsham, 1802:427.
TYPE LOCALITY: Great Britain.
SYNTYPES: Unknown.
DESCRIPTOR: Nilsson and Holmen (1995:105).
NEW COMBINATION: Hornung (1844:20).
GEOGRAPHIC DISTRIBUTION: PAL - ED NV SI WD.
REFERENCES: Omer-Cooper (1954); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Ghosh and Nilsson (2012); Nilsson and Hájek (2013).

3- *Agabus (Gaurodytes) dilatatus* (Brullé, 1832)
Colymbetes dilatatus Brullé, 1832:127.
TYPE LOCALITY: Greece.
SYNTYPES: Unknown.
DESCRIPTOR: Zimmermann (1934:166).
NEW COMBINATION: Aubé (1837:165).
GEOGRAPHIC DISTRIBUTION: PAL - ED SI.
REFERENCES: Bedel and Peyerimhoff (1925); Bodenheimer and Theodor (1929); Zimmermann (1934); Guignot (1959b); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson and Hájek (2013).

4- *Agabus (Gaurodytes) nebulosus* (Forster, 1771)
Dytiscus nebulosus Forster, 1771:56.
TYPE LOCALITY: Anglia (England).
SYNTYPES: Unknown.
DESCRIPTOR: Nilsson and Holmen (1995:106).
NEW COMBINATION: Wollaston (1854:84).
GEOGRAPHIC DISTRIBUTION: PAL - WD.
REFERENCES: Ferrante (1908); Bedel and Peyerimhoff (1925); Guignot (1947); Guignot (1959b); Alfieri (1976); Nilsson (2003); Nilsson and Hájek (2013).

Genus *Platambus* Thomson, 1859 (1sp.)

5- *Platambus lunulatus* (Fischer von Waldheim, 1829)
Colymbetes lunulatus Fischer von Waldheim, 1829:26.
TYPE LOCALITY: Caucasus.
LECTOTYPE: Brancucci (1988:208) ZMUM.
DESCRIPTOR: Brancucci (1988:206).
NEW COMBINATION: Zimmermann (1919:215).
GEOGRAPHIC DISTRIBUTION: PAL - NV.
REFERENCES: Zimmermann (1920); Gschwendtner (1935); Guignot (1959b); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Nilsson and Hájek (2013).

II. Subfamily COLYMBETINAE Erichson, 1837 (1 tribe)

Tribe COLYMBETINI Erichson, 1837 (2 genera; 6 spp.)

Genus *Colymbetes* Clairville, 1806 (2 spp.)

6- *Colymbetes fuscus* (Linnaeus, 1758)
Dytiscus fuscus Linnaeus, 1758:411.
TYPE LOCALITY: Europe.
SYNTYPES: Unknown.
DESCRIPTOR: Nilsson and Holmen (1995:142).
NEW COMBINATION: Clairville (1806:201).
GEOGRAPHIC DISTRIBUTION: PAL - CS SI WD.
REFERENCES: Omer-Cooper (1954); Guignot (1961); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Ghosh and Nilsson (2012); Nilsson (2013); Nilsson and Hájek (2013).

7- *Colymbetes piceus* Klug, 1834
Colymbetes piceus Klug, 1834: t. 33:6.
TYPE LOCALITY: Sinai (Egypt).
LECTOTYPE: Zalat *et al.* (2000:38) ZMHB.
DESCRIPTOR: Gschwendtner (1936:91).
GEOGRAPHIC DISTRIBUTION: PAL - ED SI WD.
REFERENCES: Gemminger and Harold (1868); Walker (1871); Marseul (1882); Sharp (1882); Peyerimhoff (1907); Ferrante (1908); Pic (1909); Storey (1916); Zimmermann (1920); Gschwendtner

(1936); Alfieri (1976); Ahmed *et al.* (2000); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson (2013); Nilsson and Hájek (2013).

Genus *Rhantus* Dejean, 1833 (4 spp.)

Subgenus *Rhantus* Dejean, 1833 (4 spp.)

8- *Rhantus (Rhantus) consputus* (Sturm, 1834)
Colymbetes consputus Sturm, 1834:83.
TYPE LOCALITY: Speyer (Germany).
HOLOTYPE: Unknown.
DESCRIPTOR: Gschwendtner (1936:70).
NEW COMBINATION: Sharp (1882:621).
GEOGRAPHIC DISTRIBUTION: PAL - ED NV WD.
REFERENCES: Ferrante (1908); Andres (1913a); Sahlberg (1913); Alfieri (1976).

9- *Rhantus (Rhantus) hispanicus* Sharp, 1882
Rhantus hispanicus Sharp, 1882:622.
TYPE LOCALITY: El Escorial, Valladolid (Spain).
SYNTYPES: BMNH.
DESCRIPTOR: Gschwendtner (1936:71).
GEOGRAPHIC DISTRIBUTION: PAL - NV.
REFERENCES: Sahlberg (1903b); Zimmermann (1920); Gschwendtner (1936); Guignot (1947); Guignot (1961); Nilsson (2003); Nilsson and Hájek (2013).

10- *Rhantus (Rhantus) includens* (Walker, 1871)
Colymbetes includens Walker, 1871:11.
TYPE LOCALITY: Sinai, Wadi Feiran (Egypt).
LECTOTYPE: Brancucci (1985:236) BMNH.
DESCRIPTOR: Balke (1992:294).
NEW COMBINATION: Zimmermann (1920:202).
GEOGRAPHIC DISTRIBUTION: PAL - CS SI WD.
REFERENCES: Walker (1871); Peyerimhoff (1907); Zimmermann (1920); Gschwendtner (1936); Alfieri (1976); Brancucci (1985); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson (2013); Nilsson and Hájek (2013); Tawfik *et al.* (2013).

11- *Rhantus (Rhantus) suturalis* (Macleay, 1825)
Colymbetes suturalis Macleay, 1825:31.
TYPE LOCALITY: Java (Indonesia).
LECTOTYPE: Balfour-Browne (1939a:109) BMNH.
DESCRIPTOR: Balke (1993:60).
NEW COMBINATION: Balfour-Browne (1939a:109).
GEOGRAPHIC DISTRIBUTION: AUS ORI PAL - CS NV SI WD.
REFERENCES: Schaum (1864); Sharp (1882); Régimbart (1895); Sahlberg (1903b); Andres (1913a); Andres (1913b); Sahlberg (1913); Bedel and Peyerimhoff (1925); Omer-Cooper (1954); Guignot (1961); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Zalat *et al.* (2008); Ghosh and Nilsson (2012); Nilsson and Hájek (2013).

III. Subfamily COPELATINAE Branden, 1885 (1 tribe)

Tribe COPELATINI Branden, 1885 (1 genus; 4 spp.)

Genus *Copelatus* Erichson, 1832 (4 spp.)

12- *Copelatus erichsonii* Guérin-Méneville, 1847
Copelatus erichsonii Guérin-Méneville, 1847:51.
TYPE LOCALITY: Ethiopia.
SYNTYPES: Unknown.
DESCRIPTOR: Guignot (1961:667).
GEOGRAPHIC DISTRIBUTION: AFR PAL - NV.
REFERENCES: Nilsson and Hájek (2013).

13- *Copelatus gestroi* (Sharp, 1882)
Aglymbus gestroi Sharp, 1882:597.
TYPE LOCALITY: Seiotel, Bogos region (Eritrea).
HOLOTYPE: MSNG.
DESCRIPTOR: Wewalka (1974:110).
NEW COMBINATION: Shaverdo *et al.* (2008:50).

GEOGRAPHIC DISTRIBUTION: AFR PAL - CS ED SI WD.
REFERENCES: Wewalka (1974); Alfieri (1976); Brancucci (1980); Zalat *et al.* (2000); Zalat *et al.* (2008); Nilsson (2003); Ahmed (2004); Nilsson and Hájek (2013).

14- *Copelatus ibrahimi* Zalat, Saleh, Angus and Kaschef, 2000
Copelatus ibrahimi Zalat, Saleh, Angus and Kaschef, 2000:15.
TYPE LOCALITY: Suez (Egypt).

HOLOTYPE: BMNH.

DESCRIPTOR: Zalat *et al.* (2000:16).

GEOGRAPHIC DISTRIBUTION: PAL - ED NV.

REFERENCES: Zalat *et al.* (2000); Nilsson (2013); Nilsson and Hájek (2013).

15- *Copelatus pulchellus* (Klug, 1834)

Agabus pulchellus Klug, 1834: t. 33:7.

TYPE LOCALITY: Sinai (Egypt).

LECTOTYPE: Angus (2003b:15) ZMHB.

DESCRIPTOR: Bilardo and Pederzani (1972:73).

NEW COMBINATION: Sharp (1882:583).

GEOGRAPHIC DISTRIBUTION: AFR PAL - SI.

REFERENCES: Peyerimhoff (1907); Guignot (1961); Rocchi (1975); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson (2013); Nilsson and Hájek (2013).

IV. Subfamily DYTISCINAE Leach, 1815 (5 tribes)

Tribe ACILIINI Thomson, 1867 (1 genus; 1 sp.)

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

16- *Rhantaticus congestus* (Klug, 1833)

Hydaticus congestus Klug, 1833:48.

TYPE LOCALITY: Madagascar.

LECTOTYPE: Angus (2003a:14) ZMHB.

DESCRIPTOR: Guignot (1961:843).

NEW COMBINATION: Branden (1885:107).

GEOGRAPHIC DISTRIBUTION: AFR AUS ORI PAL - NV WD.

REFERENCES: Zalat *et al.* (2000); Nilsson (2003); Ghosh and Nilsson (2012); Nilsson and Hájek (2013).

Tribe CYBISTRINI Sharp, 1880 (1 genus; 4 spp.)

Genus *Cybister* Curtis, 1827 (4 spp.)

Subgenus *Cybister* Curtis, 1827 (3 spp.)

17- *Cybister (Cybister) lateralimarginalis* (De Geer, 1774)

Dytiscus lateralimarginalis De Geer, 1774:396.

TYPE LOCALITY: Sweden.

SYNTYPES: NHRS.

DESCRIPTOR: Nilsson and Holmen (1995:169).

NEW COMBINATION: Bedel (1881:255).

GEOGRAPHIC DISTRIBUTION: PAL - CS WD ED.

REFERENCES: Aubé (1838); Petroff (1932); Omer-Cooper (1954); Guignot (1961); Schaum (1864); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Nilsson and Hájek (2013).

18- *Cybister (Cybister) reichei* Aubé, 1838

Cybister reichei Aubé, 1838:79.

TYPE LOCALITY: Senegal.

SYNTYPES: MNHN (Guignot, 1961:907).

DESCRIPTOR: Guignot (1961:907).

GEOGRAPHIC DISTRIBUTION: AFR PAL - NV

REFERENCES: Schaum (1864); Marseul (1882); Sharp (1882); Régimbart (1895); Pic (1909); Zimmermann (1920); Gschwendtner (1938); Mouchamps (1957); Nilsson (2003); Nilsson and Hájek (2013).

19- *Cybister (Cybister) tripunctatus africanus* Laporte, 1835

Cybister africanus Laporte, 1835:99.

TYPE LOCALITY: Senegal [etc.].

SYNTYPES: Unknown.

DESCRIPTOR: Omer-Cooper (1967:52).

NEW STATE: Gschwendtner (1931:65).

GEOGRAPHIC DISTRIBUTION: AFR PAL - CS ED NV SI WD.

REFERENCES: Schaum (1864); Gemminger and Harold (1868); Walker (1871); Marseul (1882); Régimbart (1895); Peyerimhoff (1907); Ferrante (1908); Innes Bey (1908); Andres (1913a); Andres (1913b); Sahlberg (1913); Alfieri (1916); Storey (1916); Zimmermann (1920); Petroff (1932); Gschwendtner (1938); Ebner (1921); Guignot (1961); Khalil and Farahat (1969a, 1969b); Rocchi (1975); Alfieri (1976); El Sherif *et al.* (1976); Rocchi (1976); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Zalat *et al.* (2008); Nilsson (2013); Nilsson and Hájek (2013).

Subgenus *Melanectes* Brinck, 1945 (1 sp.)

20- *Cybister (Melanectes) vulneratus* Klug, 1834

Cybister vulneratus Klug, 1834: t. 33:1.

TYPE LOCALITY: Arabia.

LECTOTYPE: Zalat *et al.* (2000:46) ZMHB.

DESCRIPTOR: Guignot (1961:870).

GEOGRAPHIC DISTRIBUTION: AFR PAL - ED SI WD.

REFERENCES: White (1847); Petroff (1932); Omer-Cooper (1954); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Nilsson and Hájek (2013).

Tribe DYTISCINI Leach, 1815 (1 genus; 1 sp.)

Genus *Dytiscus* Linnaeus, 1758 (1 sp.)

21- *Dytiscus circumflexus* Fabricius, 1801

Dytiscus circumflexus Fabricius, 1801:258.

TYPE LOCALITY: Tangier (Morocco).

SYNTYPES: ZMUC.

DESCRIPTOR: Roughley (1990:490).

GEOGRAPHIC DISTRIBUTION: PAL - CS.

REFERENCES: Zalat *et al.* (2000); Nilsson (2003); Nilsson and Hájek (2013).

Tribe ERETINI Crotch, 1873 (1 genus; 2 spp.)

Genus *Eretes* Laporte, 1833 (2 spp.)

22- *Eretes griseus* (Fabricius, 1781)

Dytiscus griseus Fabricius, 1781:293.

TYPE LOCALITY: India.

SYNTYPES: ZMUC.

DESCRIPTOR: Miller (2002:262).

NEW COMBINATION: Laporte (1833:397).

GEOGRAPHIC DISTRIBUTION: AFR AUS ORI PAL - SI.

REFERENCES: Ghosh and Nilsson (2012); Nilsson and Hájek (2013).

23- *Eretes sticticus* (Linnaeus, 1767)

Dytiscus sticticus Linnaeus, 1767:666.

TYPE LOCALITY: Barbaria (Africa).

SYNTYPES: BMNH.

DESCRIPTOR: Miller (2002:264).

NEW COMBINATION: Sharp (1882:699).

GEOGRAPHIC DISTRIBUTION: AFR NEA NEO PAL-CS ED NV SI WD.

REFERENCES: White (1847); Walker (1871); Marseul (1882); Gemminger and Harold (1868); Régimbart (1895); Ferrante (1908); Pic (1909); Andres (1913a); Sahlberg (1913); Storey (1916); Zimmermann (1920); Ebner (1921); Gschwendtner (1937); Omer-Cooper (1954); El Sherif *et al.* (1976); Ahmed *et al.* (2000); Zalat *et al.* (2000); Zalat *et al.* (2008); El-Moursy *et al.* (2001); Nilsson (2003); Ahmed (2004); Hendawy *et al.* (2005); Nilsson and Hájek (2013); Tawfik *et al.* (2013).

Tribe HYDATICINI Sharp, 1880 (1 genus; 4 spp.)

Genus *Hydaticus* Leach, 1817 (4 spp.)

Subgenus *Prodaticus* Sharp, 1882 (4 spp.)

24- *Hydaticus (Prodaticus) bivittatus* Laporte, 1835

Hydaticus bivittatus Laporte, 1835:98.

TYPE LOCALITY: Senegal.

SYNTYPES: Unknown.
DESCRIPTOR: Guignot (1961:792).
GEOGRAPHIC DISTRIBUTION: AFR PAL - GE.
REFERENCES: Zalat *et al.* (2000); Nilsson (2003); Nilsson and Hájek (2013).

25- *Hydaticus (Prodaticus) decorus* Klug, 1834
Hydaticus decorus Klug, 1834: t. 33:5.
TYPE LOCALITY: Sinai (Egypt).
LECTOTYPE: Zalat *et al.* (2000:43) ZMHB.
DESCRIPTOR: Guignot (1961:804).
GEOGRAPHIC DISTRIBUTION: AFR PAL - ED SI.
REFERENCES: Walker (1871); Marseul (1882); Sharp (1882); Régimbart (1895); Peyerimhoff (1907); Ferrante (1908); Zimmermann (1920); Gschwendtner (1937); Guignot (1961); Alfieri (1976); Brancucci (1980); Ahmed *et al.* (2000); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Zalat *et al.* (2008); Nilsson (2013); Nilsson and Hájek (2013); Tawfik *et al.* (2013).

26- *Hydaticus (Prodaticus) leander* (Rossi, 1790)
Dytiscus leander Rossi, 1790:202.
TYPE LOCALITY: Toscana (Italy).
SYNTYPES: Unknown.
DESCRIPTOR: Guignot (1961:817).
NEW COMBINATION: Aubé (1836:81).
GEOGRAPHIC DISTRIBUTION: AFR PAL - CS ED NV SI WD.
REFERENCES: Apetz (1854); Schaum (1864); Sharp (1882); Régimbart (1895); Peyerimhoff (1907); Ferrante (1908); Pic (1909); Alfieri (1916); Storey (1916); Alluaud (1928); Guignot (1961); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Zalat *et al.* (2008); Abdel-Gawad *et al.* (2011); Nilsson and Hájek (2013).

27- *Hydaticus (Prodaticus) ponticus* Sharp, 1882
Hydaticus ponticus Sharp, 1882:662.
TYPE LOCALITY: Mesopotamia.
LECTOTYPE: Wewalka (1979:131) BMNH.
DESCRIPTOR: Wewalka (1979:131).
GEOGRAPHIC DISTRIBUTION: ORI PAL - SI WD.
REFERENCES: Omer-Cooper (1954); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Ghosh and Nilsson (2012); Nilsson and Hájek (2013).

V. Subfamily LACCOPHILINAE Gistel, 1856 (1 tribe)

Tribe LACCOPHILINI Gistel, 1856 (2 genera; 4 spp.)

Genus *Laccophilus* Leach, 1815 (3 spp.)

28- *Laccophilus pictipennis* Sharp, 1882
Laccophilus pictipennis Sharp, 1882:305.
TYPE LOCALITY: Al Hijaz (Saudi Arabia).
LECTOTYPE: Brancucci (1983:274) BMNH.
DESCRIPTOR: Brancucci (1983:273).
GEOGRAPHIC DISTRIBUTION: AFR PAL - CS ED NV WD.
REFERENCES: Marseul (1882); Sharp (1882); Régimbart (1895); Sharp (1904); Pic (1909); Sharp (1909); Ferrante (1917); Zimmermann (1920); Zimmermann (1930); Guignot (1946); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Nilsson (2013); Nilsson and Hájek (2013).

29- *Laccophilus poecilus* Klug, 1834
Laccophilus poecilus Klug, 1834: t. 33:8.
TYPE LOCALITY: Egypt.
LECTOTYPE: Ahmed and Angus (1998:3) ZMHB.
DESCRIPTOR: Guignot (1959b:534).
GEOGRAPHIC DISTRIBUTION: PAL - CS ED GE NV SI WD.
REFERENCES: White (1847); Schaum (1864); Gemminger and Harold (1868); Marseul (1882); Sharp (1882); Régimbart (1895); Ferrante (1917); Zimmermann (1920); Bedel and Peyerimhoff (1925); Zimmermann (1930); Omer-Cooper (1954); Guignot (1959b); Alfieri (1976); Brancucci (1979); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Ghosh and Nilsson (2012); Nilsson (2013); Nilsson and Hájek (2013).

30- *Laccophilus sordidus* Sharp, 1882
Laccophilus sordidus Sharp, 1882:302.
TYPE LOCALITY: Al Hijaz (Saudi Arabia).
LECTOTYPE: Brancucci (1980:107) BMNH.
DESCRIPTOR: Brancucci (1983:266).
GEOGRAPHIC DISTRIBUTION: PAL - ED SI.
REFERENCES: Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Nilsson and Hájek (2013).

Genus *Philodytes* Balfour-Browne, 1939b (1 sp.)

31- *Philodytes umbrinus* (Motschulsky, 1855)
Laccophilus umbrinus Motschulsky, 1855:83.
TYPE LOCALITY: Egypt.
SYNTYPES: ZIN.
DESCRIPTOR: Guignot (1959b:588).
NEW COMBINATION: Balfour-Browne (1939b:479).
GEOGRAPHIC DISTRIBUTION: AFR PAL - CS ED NV SI WD.
REFERENCES: Schaum (1864); Gemminger and Harold (1868); Marseul (1871, 1882); Sharp (1882); Régimbart (1895); Sahlberg (1903b); Ferrante (1908); Pic (1909); Andres (1913a); Sahlberg (1913); Storey (1916); Alfieri (1916); Ferrante (1917); Zimmermann (1920); Ebner (1921); Zimmermann (1930); Peyerimhoff (1931); Guignot (1959b); Alfieri (1976); Zalat *et al.* (2000); Nilsson (2003); Ahmed (2004); Nilsson (2013); Nilsson and Hájek (2013).

Discussion

The present checklist includes 31 valid coleopteran species known from Egypt from 12 genera belonging to 9 tribes: Agabini, Colymbetini, Copelatini, Aciliini, Cybistrini, Dytiscini, Eretini, Hydaticini and Laccophilini. Alfieri (1976) and Zalat *et al.* (2000) summarized all the available information on the studied taxonomic groups and their distribution in Egypt. Alfieri (1976) listed 18 valid species and 14 invalid species, while Zalat *et al.* (2000) listed 24 valid species and 2 invalid species. However, the studied taxonomic groups have undergone major revision, and are subject to change even today. In comparing the current study with the previous studies, we can summarize the following observations:

1- Subfamily Agabinae: It is a morphologically homogeneous group exhibiting few characters useful for systematic (Nilsson, 2000). They were traditionally considered a tribe within the subfamily Colymbetinae, and placed among the basal lineages of Dytiscidae. Phylogenetic analyses based on 18S rRNA sequences confirmed this basal placement, although the group did not form a monophyletic clade with Colymbetini (Ribera *et al.* 2002). This is consistent with the results obtained by Miller (2001) based on morphological characters, who accordingly raised Agabini to subfamily level (Ribera *et al.*, 2004).

Agabinae is widely distributed with about 11 genera and 405 species worldwide (Nilsson, 2013). Of these, 2 genera (*Agabus* and *Platambus*) and 5 species have been reported from Egypt.

• *Agabus (Gaurodytes) bipustulatus* (Linnaeus, 1767): This species was recorded by Zimmermann (1934) and Guignot (1959b). Alfieri (1976) considered our *Agabus conspersus* as belonging to *Agabus bipustulatus*.

• *Agabus binotatus* Aubé, 1837: This species was recorded in Sinai by Ferrante (1908). According to Franciscolo (1979) Nilsson (2013) and Nilsson and Hájek (2013), it is probably a doubtful record, where the species is known only from Sardinia (Italy), mainland Italy and Corse (France).

- *Agabus (Gaurodytes) nebulosus* (Forster, 1771): This species was recorded in Egypt by Ferrante (1908), Bedel and Peyerimhoff (1925), Guignot (1959) and Alfieri (1976). Zalát *et al.* (2000) confirmed three species among the Egyptian fauna, *A. biguttatus*, *A. dilatatus*, and *A. conspersus*. He found that the study of the Egyptian records in BMNH (London) shows that the previous record of *A. nebulosus* may indeed correspond to *A. biguttatus*. According to Nilsson & Hájek (2013) *A. nebulosus* belongs to the Egyptian fauna, and it is also recorded from many nearby countries such as Libya, Israel, Algeria, Morocco, Tunisia, Jordan, Lebanon and Syria.

2- Subfamily Colymbetinae: It is widely distributed and contains 11 genera (c. 140 species) world-wide (Nilsson, 2013). Of these, 2 genera (*Colymbetes* and *Rhantus*) and 6 species have been recorded from Egypt.

- *Rhantus (Rhantus) bistriatus* (Bergsträsser, 1778): This species was recorded in Egypt by Ferrante (1908) and Alfieri (1916). According to Alfieri (1976) this record is erroneous and the species is absent from the Egyptian Coleoptera fauna.

- *Rhantus punctatus* Fourcroy, 1785 (as reported by Régimbart, 1895 and Alfieri, 1976): Misspelling of *Rhantus punctatus* Geoffrey, 1785. This species is a synonym of *Rhantus suturalis* (Macleay, 1825), which is a valid name known from Egypt.

- *Rhantus (Rhantus) hispanicus* Sharp, 1882: This species was recorded in Egypt by Sahlberg, (1903b), Zimmermann (1920), Gschwendtner (1936) Guignot (1947) and Guignot (1961). Bedel and Peyerimhoff (1925) mentioned that the specimens of *Rhantus hispanicus* recorded from Egypt by Sahlberg (1903b) were *Hydaticus leander* (Rossi, 1790). According to Alfieri (1976) and Guignot (1961) the Egyptian records are very doubtful. In the recent version of the Catalogue of Palearctic Dytiscidae of Nilsson & Hájek (2013) the species was reported as present in Egypt. However, this record needs confirmation, although this species was recorded from other North African countries like Algeria and Morocco.

- *Rhantus notatus* Fabricius, 1792: This species was recorded in Egypt by Gozis (1911:35) and it is of 1781 not 1792, and it is a synonym to *Rhantus frontalis* (Marsham, 1802). However, the species is completely absent not only in Egypt but in the entire Africa (Nilsson, 2013 and Nilsson & Hájek, 2013).

3- Subfamily Copelatinae: With about 7 genera and 648 species worldwide (Nilsson, 2013). Of these, 4 species from a single genus (*Copelatus*) have been recorded from Egypt.

- *Copelatus erichsonii* Guérin-Méneville, 1847: This species was recorded in Egypt by Nilsson & Hájek (2013). According to Guignot (1961), this species is common throughout continental Africa south of the Sahara and Egypt. We have not been able to verify the literature records of this species from Egypt.

4- Subfamily Dytiscinae: It is widely distributed and contains 19 genera (c. 376 species) world-wide (Nilsson 2013). Of these, 12 species belonging to 5 genera from 5 tribes - Aciliini, Cybistrini, Dytiscini, Eretini and Hydaticini- have been recorded from Egypt. The two tribes Aciliini and Dytiscini are represented by a single species (Table 1).

- *Cybister (Cybister) reichei* Aubé, 1838: This species was recorded from Egypt by Sharp (1882), Régimbart (1895), Pic

(1909), Zimmermann (1920), Gschwendtner (1938) and Mouchamps (1957). Sharp (1882) mentioned that the record was undoubtedly from Upper Egypt, but Petroff (1932) mentioned that the record of this species in Egypt is doubtful. In addition, Alfieri (1976) mentioned that *Cybister reichei* Aubé, 1838 reported by Pic (1909) in Sinai (Egypt), is actually *Cybister tripunctatus africanus* Laporte, 1835. According to Nilsson & Hájek (2013) *C. reichei* belongs to the aquatic Coleoptera fauna of Egypt.

- *Cybister bipunctatus* Bodenheimer and Theodor, 1929: Misspelling of *tripunctatus* Olivier (Alfieri 1976). This species is a synonym to *Cybister tripunctatus africanus*, which is a valid name known from Egypt (Nilsson, 2013).

- *Eretes griseus* (Fabricius, 1781) and *Eretes sticticus* (Linnaeus, 1767): The two species were recorded in Egypt by Miller (2002) in his revision to the Genus *Eretes* Laporte, 1833. However, the type locality of *Eunectes succintus* and *Eunectes helvolus* (which are considered as synonym to *Eretes griseus* and *Eretes sticticus*, respectively) was Ambukohl or “Ámbikül”, which is located in Sudan (Alfieri, 1976 and Nilsson, 2013). *Eretes griseus* was recorded in Sinai by Ghosh and Nilsson (2012) and Nilsson and Hájek (2013).

5- Subfamily Laccophilinae: Contains 13 genera (c. 416 species) world-wide (Nilsson 2013). Of these, 4 species from 2 genera *Laccophilus* and *Philodytes* have been recorded from Egypt.

In Egypt, a large country with distinctly different geographical regions and different ambiances, the number of water beetle 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

- ABDEL-GAWAD, F.KH., N.M. LOTFY, M.A. HASSANEIN & S.M. BASSEM 2011. Evaluation of DNA Damage in Fish and Aquatic Insects Induced By Environmental Pollutants in River Nile. *World Applied Sciences Journal*, **14**(7): 1085-1090.
- AHLWARTH, K. 1910. Gyrinidae. In: *Coleopterorum Catalogus*, (Ed. W. Junk), W. Junk, Berlin, pp. 1-42.
- 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 1998. *Laccophilus poecilus* Klug, 1834 - the valid name for *L. ponticus* Sharp, 1882. *Latissimus*, **10**: 3.
- 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 Letourmeux en Egypte. *Bulletin de la Société Entomologique d'Égypte*, **5**: 69-71.

- ALFIERI, A. 1957. Additions a la faune coléoptérologique de l'Égypte 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'Égypte*, **5**: 31-37.
- ALLUAUD, C. 1928. Note sur les coléoptères carnivores (Adephaga) des îles du Cap Vert d'après les récoltes de Leonardo Fea en 1898. *Annali del Museo Civico di Storia Naturale "Giacomo Doria"*, **52**: 64-90.
- 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 à 1869 par le Dr. O. Schneider à Ramleh près d'Alexandrie. *Bulletin de la Société Entomologique d'Égypte*, **3**: 39-48.
- ANGUS, R.B. 2003a. Lectotype designation for *Rhantaticus congensus* (Klug). *Latissimus* **17**: 14.
- ANGUS, R.B. 2003b. Egyptian Dytiscidae and Noteridae. *Latissimus*, **17**: 15-17.
- APETZ, J.H. 1854. *De coleopteris, quae Oscarus et Alfredus Brehm in Africa legerunt*. Altenburgi: Ex typographeo aulico, 15pp.
- AUBÉ, C. 1836. Hydrocanthares. In: *Iconographie et histoire naturelle des coléoptères d'Europe*, (Ed. P.F Dejean), Paris: Méquignon-Marvis, Vol. 5. xi + 416 pp + 46 pls. [Pp. 1-64]
- AUBÉ, C. 1837. Hydrocanthares. In: *Iconographie et histoire naturelle des coléoptères d'Europe*, (Ed. P.F Dejean), Paris: Méquignon-Marvis, Vol. 5. xi + 416 pp + 46 pls. [Pp.65-224]
- AUBÉ, C. 1838. Species general des Hydrocanthares et Gyriniens. In: *Species général des coléoptères de la collection de M. le Comte Dejean*, (Ed. P.F Dejean), Paris: Méquignon Père et Fils, Vol. 6, xvi + 804 pp.
- 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 and M.I. Evans). Newbury and Cambridge, UK: Pisces Publications and Birdlife International, pp. 241-264.
- BALFOUR-BROWNE, J. 1939a. A contribution to the study of the Dytiscidae. I. (Coleoptera, Adephaga). *The Annals and Magazine of Natural History*, **3**(11): 97-114.
- BALFOUR-BROWNE, J. 1939b. 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.
- BALKE, M. 1992. Systematische und faunistische Untersuchungen an paläarktischen, orientalischen und afrotropischen Arten von *Rhantus* Dejean (Coleoptera: Dytiscidae). *Mitteilungen der Schweizerischen Entomologischen Gesellschaft*, **65**: 283-296.
- BALKE, M. 1993. Taxonomische Revision der pazifischen, australischen und indonesischen Arten der Gattung *Rhantus* Dejean, 1833 (Coleoptera: Dytiscidae). *Koleopterologische Rundschau*, **63**: 39-84.
- 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 and R.G. Beutel), Walter De Gruyter, Berlin, New York. pp. 90-116.
- BEDÉL, 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*. Paris: Société Entomologique de France, 402 pp. [Pp. 321-402]
- BEDÉL, L. 1881. Faune des coléoptères du bassin de la Seine. 1^{er} Sousordre. Carnivora. *Annales de la Société Entomologique de France*, **5**(11): 257-359 (sep. pagin.).
- BERGSTRÄSSER, J.A.B. 1778. *Nomenclatur und Beschreibung der Insecten in der Grafschaft Hanau-Münzenberg wie auch der Wetterau und der angränzenden Nachbarschaft dies und jenseits des Mains*. Hanau, **1**: 88 pp. + 14 pl.
- BILARDO, A. & F. PEDERZANI 1972. Contributo alla conoscenza dei *Copelatus* Er. africani con descrizione di quattro nuove specie (Coleoptera Dytiscidae). *Memorie della Società Entomologica Italiana*, **51**: 71-87.
- BODENHEIMER, F.S. & O. THEODOR 1929. *Ergebnisse der Sinai-Expedition 1927 der Hebräischen Universität, Jerusalem*. Leipzig: J.C. Hinrichs'sche Buchhandlung, 143 pp.
- 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. 1983. Révision des espèces est-paléarctiques, orientales et australiennes du genre *Laccophilus* (Col. Dytiscidae). *Entomologische Arbeiten aus dem Museum G. Frey*, **31/32**: 241-426.
- 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. 1988. A revision of the genus *Platambus* Thomson (Coleoptera, Dytiscidae). *Entomologica Basiliensia*, **12**: 165-239.
- 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.
- BRINCK, P. 1945. Nomenklatorische und systematische Studien über Dytisciden. III. Die Klassifikation der Cybisterinen. *Kungliga Fysiografiska Sällskapets Handlingar*, **56**(4): 1-20.
- BRULLÉ, G.A. 1832. IVe Classe. Insectes. In: *Expédition scientifique de Morée. Section des Sciences Physiques. Zoologie. Deuxième Section. Des animales articulés*. (Eds. F.G. Levrault), Paris, **3**(1): 64-395.
- 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.
- CROTCH, G.R. 1873. Revision of the Dytiscidae of the United States. *Transactions of the American Entomological Society*, **4**: 383-424.
- CURTIS, J. 1827. *British entomology; being illustrations and descriptions of the genera of insects found in Great Britain and Ireland*. (Ed. J. Curtis), London, **4**: plates 147-194.
- DE GEER, C. 1774. *Mémoires pour servir à l'histoire des insectes*. Stockholm: Pierre Hesselberg, **4**: xii + 456 pp. + 19 pls.
- DEJEAN, P.F.M.A. 1833. *Catalogue des coléoptères de la collection de M. le comte Dejean. Livraisons 1 & 2*. Paris: Méquignon-Marvis, 176 pp.
- 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-MOURSRY, A.A., M.S. EL-HAWAGRY, M.S. ABDEL-DAYEM & H.H. FADL 2001. Insect diversity in Zaranik Protectorate, Northern Sinai, Egypt. *Egyptian Journal of Natural History*, **3**: 62-80.
- 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.

- ERICHSON, W. F. 1832. *Genera Dyticeorum*. Nietackianis, Berolini ii + 48 pp.
- ERICHSON, W.F. 1837. *Die Käfer der Mark Brandenburg*. (Ed. F.H. Morin), Berlin, **1**(1): viii + 384 pp.
- FABRICIUS, J.C. 1781. *Species Insectorum exhibentes eorum differentias specificas, synonyma, auctorum, loca natalia, metamorphosin adiectis observationibus, descriptionibus*. Carol Ernest Bohhn, Hamburgi et Kilonii, Hamburg and Kiel, Germany, **1**: 1-552.
- FABRICIUS, J.C. 1801. *Systema Eleutheratorum secundum ordines, genera, species; adiectis synonymis, locis, observationibus, descriptionibus*. Kiliae: Impensis Bibliopolii Academici novi, **1**: xxiv + 506 pp.
- FERRANTE, G. 1908. Contributo al catalogo dei Coleotteri dell' Egitto (Halipplidae, Dytiscidae, Gyrinidae). *Bulletin de la Société Entomologique d'Égypte*, **1**: 167-172.
- FERRANTE, G. 1917. Notes entomologiques. *Bulletin de la Société Entomologique d'Égypte*, **5**: 131-132.
- FISCHER VON WALDHEIM, G. 1829. *Museum historiae naturalis Universitatis Caesariae Mosquensis. Pars II, Insecta*. Mosquae: Typis Universitatis Caesariae, 147 pp.
- FORSTER, J.R. 1771: *Novae species Insectorum. Centuria I. Nam mihi contuenti se persuasit rerum natura, nihil incredibile existimare de ea*. (Eds. T. Davies & B. White), Londini, viii + 100 pp.
- FRANCISCOLO, M.E. 1979. *Coleoptera, Halipplidae, Hygrobiidae, Gyrinidae, Dytiscidae*. Fauna d'Italia, **14**: 1-804.
- GEMMINGER, M. & E. VON HAROLD 1868. *Catalogus Coleopterorum hucusque descriptorum synonymicus et systematicus*. (Ed. E.H. Gummi), Monachii, **2**: 425-752.
- GEOFFROY, E.L. 1785. [new species]. In: *Entomologia Parisiensis; sive catalogus Insectorum, quae in agro Parisiensi reperiuntur*. (Ed. A.F. Fourcroy), Aedibus Serpentineis, Paris, viii + 544 pp.
- GHOSH, S.KR. & A.N. NILSSON 2012. Catalogue of the diving beetles of India and adjacent countries (Coleoptera: Dytiscidae). *Skörvönöpparn, Umeå Supplement*, **3**: 1-77.
- GISTEL, J.N.F.X. 1856. *Die Mysterien der europäischen Insectenwelt*. (Ed. T. Dannheimer) Kempten, 12 + 532 pp.
- GOZIS, M. DES. 1911. Tableaux de détermination des dytiscides, notérides, hyphyrdrides, hygrobiides et haliplides de la faune franco-rhénane (part). *Miscellanea Entomologica*, **19**(11): 33-48.
- GSCHWENDTNER, L. 1931. Revision der *Cybister tripunctatus*-Gruppe. *Entomologische Blätter*, **27**: 65-70, 97-104.
- 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*). *Koleopterologische Rundschau*, **22**: 61-102.
- GSCHWENDTNER, L. 1937. Monographie der paläarktischen Dytisciden (Begonnen von Alois Zimmermann, fortgesetzt von L. Gschwendtner). VIII. Dytiscinae (Eretini, Hydaticini, Thermo-nectini). *Koleopterologische Rundschau*, **23**: 57-92.
- GSCHWENDTNER, L. 1938. Monographie der paläarktischen Dytiscidae. IX. Dytiscinae. *Koleopterologische Rundschau*, **24**: 33-76.
- GUÉRIN-MÉNEVILLE, F.É. 1847. Voyage en Abyssinie, de M. Théophile Lefebvre. Insectes. *Revue Zoologique*, **10**: 49-52.
- GUIGNOT, F. 1946. Mission scientifique de l'Omo 6(58). Coleoptera Dytiscidae (2^e 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. 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.
- 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.
- HOATH, R. 2003. *A field guide to the mammals of Egypt*. The American University in Cairo Press, Egypt, 234 pp.
- HORNUNG, E.G. 1844. *Grundlage zu einem Verzeichnisse der Käfer des Harzes und seiner Umgebungen. Erste Abtheilung: Die Laufund Schwimmkäfer*. Aschersleben: Gebrüder Haller, 24 pp.
- INNES BEY, W. 1908. Note sur la faunule coléoptérologique des Oasis Égyptiennes. *Bulletin de la Société Entomologique d'Égypte*, **1**: 133-137.
- JÄCH, M.A. & M. BALKE 2008. Global diversity of water beetles (Coleoptera) in freshwater. *Hydrobiologia*, **595**: 419-442.
- KHALIL, A. & A.Z. FARAHAT 1969a. The post-embryonic development of the labium and the maxilla of *Cybister tripunctatus africanus* Cast. (Coleoptera; Dytiscidae). *Bulletin de la Société Entomologique d'Égypte*, **52**: 319-325.
- KHALIL, A. & A.Z. FARAHAT 1969b. The feeding mechanism of the larva of *Cybister tripunctatus africanus* Cast. (Coleoptera; Dytiscidae). *Bulletin de la Société Entomologique d'Égypte*, **52**: 327-329.
- KLUG, J.C.F. 1833. *Bericht über eine auf Madagascar veranstaltete Sammlung von Insecten aus der Ordnung Coleoptera*. Druckerei der Königlichen Akademie der Wissenschaften, Berlin, 135 pp + 5 pls.
- 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.
- LAPORTE, F.L.N. CAUMONT DE. 1833. Mémoire sur cinquante espèces nouvelles ou peu connues d'insectes. *Annales de la Société Entomologique de France*, **1**(1832): 386-415.
- LAPORTE, F.L.N. CAUMONT DE. 1835. *Études entomologiques. Première partie*. Méquignon-Marvis Père et Fils, Paris, 159 pp. [Pp. 1-94 1834; 95-159 1835.]
- LEACH, W.E. 1815. Entomology. In: *The Edinburgh encyclopaedia*. (Ed. D. Brewster). Edinburgh: Baldwin, **9**(1): 57-172.
- LEACH, W.E. 1817. *The zoological miscellany; being descriptions of new or interesting animals*. (Ed. E. Nodder & Son), London, **3**: v + 155 pp. + pls. 121-150.
- LEPRIEUR, C.-E. 1879. Insectes recueillis en Égypte. *Annales de la Société Entomologique de France* **5**(9), *Bulletin des Séances*, 82-83.
- LINNAEUS, C. 1758. *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. Editio decima, reformata. Holmiae: L. Salvii, **1**: 824 pp.
- LINNAEUS, C. 1767. *Systema naturae, per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. Editio duodecima, reformata. Holmiae: L. Salvii, **1**(2): 533-1327.
- MACLEAY, W.S. 1825. *Annulosa Javanica, or an attempt to illustrate the natural affinities and analogies of the insects collected in Java by Thomas Horsfield, M.D. F.L. & G.S. and deposited by him in the museum of the honourable East-India Company*. Kingsbury, Parbury & Allen, London, **1**: xii + 50 pp. + 1 pl.
- 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.
- MARSHAM, T. 1802. *Entomologia Britannica. Vol. 1. Coleoptera*. White, Londini, xxxi + 548 pp.
- MILLER, K.B. 2001. On the phylogeny of the Dytiscidae (Insecta: Coleoptera) with emphasis on the morphology of the female reproductive system. *Insect Systematics & Evolution*, **32**: 45-92.
- MILLER, K.B. 2002. Revision of the genus *Eretes* Laporte, 1833 (Coleoptera: Dytiscidae). *Aquatic Insects*, **24**(4): 247-272.
- MOTSCHULSKY, V. DE. 1855. Nouveautés. *Études Entomologiques Motschulsky*, **4**: 82-84.
- MOUCHAMPS, R. 1957. Contribution à la connaissance des Cybisterini (Col. Dytiscidae) du Musée d'Histoire Naturelle de Vienne (9e note). *Annalen des Naturhistorischen Museum in Wien*, **61**: 278-287.
- NILSSON, A.N. 2000. A new view on the generic classification of the *Agabus*-group of genera of the Agabini, aimed at solving the problem with a paraphyletic *Agabus* (Coleoptera: Dytiscidae). *Koleopterologische Rundschau*, **70**: 17-36.
- NILSSON, A.N. 2003. Dytiscidae. In: *Catalogue of Palaearctic Coleoptera, Vol. 1. Archostemata, Myxophaga, Adephaga*. (Eds. Löbl & 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 1.1.2013. Distributed as a PDF file via Internet. Available from: <http://www2.emg.umu.se/projects/biginst/andersn/> (Accessed 10 December 2013).
- NILSSON, A.N. & J. HÁJEK 2013. *Catalogue of Palaearctic 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 10 December 2013).
- NILSSON, A. N. & M. HOLMEN 1995. The aquatic Adephaga (Coleoptera) of Fennoscandia and Denmark. II. Dytiscidae. *Fauna Entomologica Scandinavica*, **32**: 1-192.
- OLIVIER, A.G. 1795. *Entomologie, ou histoire naturelle des insectes. Vol. 3. Coléoptères*. Lanneau, Paris, 557 pp. + 65 tab.
- 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 I-er d'Entomologie*, **38**: 251-290.
- OMER-COOPER, J. 1967. Dytiscidae (Coleoptera) of Nyasaland and Southern Rhodesia. X. Cybisterini and addenda. *Journal of the Entomological Society of Southern Africa*, **30**: 48-63.
- PETROFF, A. 1932. Note sur le genre *Cybister* Curtis Coleoptera-Dytiscidae. *Bulletin de la Société Entomologique d'Égypte*, **16**: 220-222.
- PEYERIMHOFF, P.M. DE FONTENELLE 1907. Liste des Coléoptères du Sinai. *L'Abeille*, **31**: 1-55.
- 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 Égypte. *Bulletin de la Société Entomologique d'Égypte*, **1**(4): 148-152.
- 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.
- 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., A.N. NILSSON & A.P. VOGLER 2004. Phylogeny and historical biogeography of Agabinae diving beetles (Coleoptera) inferred from mitochondrial DNA sequences. *Molecular Phylogenetics and Evolution*, **30**: 545-562.
- RIBERA, I., J.H. HOGAN & A.P. VOGLER 2002. Phylogeny of Hydra-dephagan water beetles Inferred from 18S rDNA sequences. *Molecular Phylogenetics and Evolution*, **23**: 43-62.
- ROCCHI, S. 1975. Coleotteri ditiscidi dell'Africa Orientale. *Monitore Zoologico Italiano. (N.S.), Supplemento*, **6**,1: 45-56
- 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.
- ROSSI, P. 1790. *Fauna Etrusca, sistens Insecta quae in provinciis Florentina et Pisana praesertim collegit Petrus Rossius*. Thomae Masi & Sociorum, Liburnii, **1**: xxii + 272 pp.
- ROUGHLEY, R.E. 1990. A systematic revision of species of *Dytiscus* Linnaeus (Coleoptera: Dytiscidae). Part 1. Classification based on adult stage. *Quaestiones Entomologicae*, **26**: 383-557.
- SAHLBERG, J. 1903a. Entomologiska forskningsresor i Medelhafstrakterna och Centralasien företegna åren 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 Februarii et Martio in Palaestina et Aegypto inferiore collecta. *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar, Helsingfors*, **45**(18): 1-36.
- SAHLBERG, J. 1908. Coleoptera mediterranea et rosso-asiatica nova et minus cognita, maxima ex parte itineribus anniis 1896-1896, 1898-1899 et 1903-1904 collecta. III. *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar, Helsingfors*, **50**(7): 1-94.
- 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.
- SCHAUM, H.R. 1864. Die ägyptischen 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, Fussli und compagnie, Zurich, **2**: - XLIII, 248 S.: 32 III.
- SHARP, D. 1880. Avis préliminaire d'une nouvelle classification de la famille des Dytiscidae. *Annales de la Société Entomologique de Belgique*, **23**, Comptes Rendus: cxlvii-cl.
- 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.
- SHARP, D. 1909. Coléoptères égyptiens rapportés par M. Ivar Tragardh, Dytiscidae. *Bulletin de la Société Entomologique d'Égypte*, **1**(1) p21.
- SHAVERDO H.V., M.T. MONAGHAN, D.C. LEES, R. RANAIVOSOLO & M. BALKE 2008. *Madaglymbus*, a new genus of Malagasy endemic diving beetles and description of a highly unusual species based on morphology and DNA sequence data (Dytiscidae: Copelatinae). *Systematics and Biodiversity*, **6**(1): 43-51.
- SLIPINSKI, S.A., R.A.B. LESCHEN & J.F. LAWRENCE 2011. Order Coleoptera Linnaeus, 1758. In: *Animal biodiversity: An outline of higher-level classification and survey of taxonomic richness*. (Ed. Z.-Q. Zhang.), *Zootaxa*, **3148**: 203-208.

- 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.
- STURM, J. 1834. *Deutschlands Fauna in Abbildungen nach der Natur mit Beschreibungen. Abt. V, Die Insecten. Vol. 8. Käfer*. Nürnberg: Privately printed, vi + 168 pp. + pls. clxxxvccii.
- TAMUTIS, V., B. TAMUTĖ, & R. FERENCA 2011. A catalogue of Lithuanian beetles (Insecta, Coleoptera). *ZooKeys*, **121**: 1- 494.
- 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. 1859. *Skandinaviens Coleoptera, synoptiskt bearbetade*. Berlingska Boktryckeriet, Lund, **1**: 215 pp.
- THOMSON, C.G. 1867. *Skandinaviens Coleoptera, synoptiskt bearbetade*. Lundbergska Boktryckeriet, Lund, **9**: 407 pp.
- 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.
- WEWALKA, G. 1974. Systematische und faunistische Bemerkungen zu einigen paläarktischen Dytisciden (Coleoptera). *Koleopterologische Rundschau*, **51**: 105-113.
- WEWALKA, G. 1979. Revision der Artengruppe des *Hydaticus (Guignotites) fabricii* (Mac Leay), (Col., Dytiscidae). *Koleopterologische Rundschau*, **54**: 119-139.
- WHITE, A. 1847. *Nomenclature of coleopterous insects in the collection of the British Museum. Part 2. Hydrocanthari*. Edward Newman, London, 59 pp.
- WOLLASTON, T.V. 1854. *Insecta Maderensia; being an account of the insects of the islands of the Madeiran group*. Taylor & Francis, London, 43 + 634 pp. + 13 pls.
- ZAITZEV, F.A. [PH.] 1972. *Fauna of the USSR. Coleoptera. Families: Amphizoidae, Hygrobiidae, Haliplidae, Dytiscidae, Gyrrinidae*. Israel Program for Scientific Translations, Jerusalem, 401 pp.
- 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.
- 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.
- ZIMMERMANN, A. 1919. Die Schwimmkäfer des Deutschen Entomologischen Museums in Berlin-Dahlem. *Archiv für Naturgeschichte*, **83**(1917) (A 12): 68-249.
- ZIMMERMANN, A. 1920. Dytiscidae, Haliplidae, Hygrobiidae, Amphizoidae. In: *Coleopterorum Catalogus*. (Ed. S. Schenckling). W. Junk, Berlin, 4(71): 326 pp.
- 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.