

New records of adephagous water beetles (Coleoptera: Gyrinidae, Haliplidae, Dytiscidae) from the Maltese Islands

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ABSTRACT. The following new records of Hydradephaga from the Maltese Islands are reported: *Gyrinus* (*Gyrinus*) *urinator* Illiger, *Agabus* (*Gaurodytes*) *bipustulatus* (Linnaeus), *Cybister* (*Cybister*) *tripunctatus africanus* Laporte, *Eretes griseus* (Fabricius) and *Hydaticus* (*Prodatiscus*) *leander* (Rossi). With the exception of *Eretes griseus* (Fabricius), all other records are also new for the fauna of the islands of the Sicilian Channel. The presence in Malta of *Colymbetes fuscus* (Linnaeus), recorded only in the beginning of last century, is confirmed. *Dytiscus circumflexus* Fabricius is also recorded for the first time for the island of Gozo.

KEY WORDS. Malta, Mediterranean, *Gyrinus*, *Agabus*, *Cybister*, *Eretes*, *Hydaticus*.

INTRODUCTION

The Hydradephaga represents a highly diverse group of aquatic beetles occurring in a large variety of habitat types (e.g. JÄCH & BALKE, 2008; BEUTEL & LESCHEN, 2016; SHORT, 2018). In the western Palaearctic region, this group is represented by five families: Gyrinidae, Haliplidae, Noteridae, Hydrobiidae and Dytiscidae (LÖBL & LÖBL, 2017). Of these, the Dytiscidae, commonly known as predaceous diving beetles, is the most species rich family with 4,540 described species (YEE, 2014; MILLER & BERGSTEN, 2016; NILSSON & HÁJEK, 2020).

Species of three families (Gyrinidae, Haliplidae and Dytiscidae) occur in the Maltese Islands and these have been revised by ROCCHI & SCHEMBRI (1992) providing original collecting data for one species of Haliplidae and ten species of Dytiscidae (of which half represented new records for the Maltese Islands). In recent years, additional field work was carried out and material of Hydradephaga was examined from various collections in Malta and new records were found which are reported here under.

MATERIAL AND METHODS

The classification and sequence of species follows that of the Catalogue of Palaearctic Coleoptera (HÁJEK, 2017; HÁJEK & FERY, 2017; VONDEL, 2017). Chorotypes follow VIGNA TAGLIANTI *et al.* (1999) and where relevant, extensions or restrictions to the “standard” chorotype was noted. Unless otherwise stated material is deposited in the private collections of both authors.

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The habitats of the Maltese Islands have been treated in many works (e.g. ROCCHI & SCHEMBRI, 1992; MIFSUD & SCUPOLA, 1998; LANFRANCO, 2001; MIFSUD *et al.*, 2004), which can be consulted for further information.

ANNOTATED CHECKLIST OF NEW RECORDS

GYRINIDAE Latreille, 1810

Gyrinus (Gyrinus) urinator Illiger, 1807

Material examined. MALTA: Buskett, mixed woodland, *Arundo*, 3.v.2001, 1 ♀, leg. M.J. Ebejer.

Chorotype. European-Mediterranean with extension Canary Islands (HÁJEK & FERY, 2017).

Notes. New record for the Maltese Islands and for the islands of the Sicilian Channel. *Gyrinus (G.) urinator* is one of commonest gyrinid species in Sicily and mainland Italy (ROCCHI, 2007). Buskett is the only semi-natural wooded area in Malta dominated by *Pinus halepensis*. The water valley in Buskett (Wied il-Luq) dries up completely during the hot summer months as most other valley systems in the Maltese Islands.

SCHEMBRI (1990) recorded *Gyrinus (Gyrinus) dejeani* Brullé, 1832 which was later overlooked by MAZZOLDI (2003), AUDISIO *et al.* (2015) and HÁJEK & FERY (2017) whereas GULIA (1858) recorded *Gyrinus fontanalis* [*nomen nudum*]. Most records of GULIA (1858) have been questioned and often not taken into any account (e.g. CAMERON & CARUANA GATTO, 1907).

DYTISCIDAE Leach, 1815

Agabus (Gaurodytes) bipustulatus (Linnaeus, 1767)

Material examined. MALTA: Fiddien, 24.v.2003, 1 ♀, leg. D. Mifsud & P. Sammut; Qrendi, 28.v.2001, 1 ♀, UV light trap, leg. D. Magro.

Chorotype. Palaearctic (except Egypt, Japan, most of China and Siberia), with extension into some northern parts of the Afrotropical Region (ROCCHI, 2007; HÁJEK, 2017).

Notes. New record for the Maltese Islands and for the islands of the Sicilian Channel. This euryoecious species is one of commonest dytiscid species in Italy (including Sicily) (ROCCHI, 2007). It is a good flier, frequently collected at light (e.g. FRANCISCOLO, 1979; NARDI & MALTZEFF, 2001). Fiddien forms part of a large valley system which also dries up completely during the hot summer months.

Colymbetes fuscus (Linnaeus, 1758)

Material examined. MALTA: Ghajn Rihana, 24.v.2003, 3 ♂♂, leg. D. Mifsud & P. Sammut; Il-Qaws, near Ta' Baldu, 20.v.2003, 1 ♂, leg. D. Mifsud & P. Sammut; M'Xlokk, 20.xii.1991, 1 ♀, in saltmarsh, leg. A. Bonello; Qrendi, 19.vii.2003, 1 ♂, UV light trap, leg. D. Mifsud.

Chorotype. Centralasiatic-European-Mediterranean with easternmost records from western China (Xizang) (HÁJEK, 2017).

Notes. This species was recorded from Malta by CAMERON & CARUANA GATTO (1907) as *Cymanopterus fuscus* L., and based on such a record, it was later included as occurring in Malta by various authors (LUIGIONI, 1929; PORTA, 1949; BARAJON, 1966; NILSSON, 2003; HÁJEK, 2017). No material of this species was available to ROCCHI & SCHEMBRI (1992). For a long time, this species was confused with *C. schildknechti* Dettner, 1983 (a W-Mediterranean species known also from nearly Sicily and Tunisia - NARDI & MALTZEFF, 2001; HÁJEK, 2017). The above cited material was mainly collected from large valley systems which dry up during the hot summer months. The specimen from M'Xlokk was however collected from a saltmarsh, which also dries up completely during summer and the specimen from Qrendi (rural village) was collected at light.

Cybister (Cybister) tripunctatus africanus Laporte, 1835

Material examined. MALTA: Fiddien, 24.v.2003, 1 ♀, leg. D. Mifsud & P. Sammut; Il-Qwas, near Ta' Baldu, 20.v.2003, 2 ♀♀, leg. D. Mifsud & P. Sammut; Qrendi, Siggiewi, 25.v.2003, 2 ♀♀, UV light trap, leg. D. Magro; Rabat, 20.viii.2001, 1 ♂, UV light trap., leg. P. Sammut; Chadwick Lakes, 3.v.2014, 1 ♀, leg. T. Cassar; Mdina, 8.viii.2007, 1 ♀, UV light trap, leg. J.J. Borg; Dingli Cliffs, 4.x.2004, 1 ♀, 400w light trap, leg. A. Seguna.

Chorotype. Subcosmopolitan (Palaeartic, Afrotropical, Oriental and Australian Regions); the above subspecies has an Afrotropical-Mediterranean distribution (HÁJEK, 2017).

Notes. New record for the Maltese Islands and for the islands of the Sicilian Channel. *Cybister (C.) tripunctatus* (Olivier, 1795) occurs in subtropical and tropical areas of the Old World whereas *C. (C.) t. africanus* occurs in continental Africa, reaching southern Europe in the North and the Arabian Peninsula in the East (HÁJEK & REITER, 2014; HÁJEK, 2017). *C. (C.) t. africanus* lives in various aquatic habitats, mostly in larger pools at low altitude, and is frequently attracted to light (NARDI & MALTZEFF, 2001; NARDI, 2005; ROCCHI, 2007; HÁJEK & REITER, 2014). Most of the material cited above was collected via UV light traps or in large bodies of fresh water.

Dytiscus circumflexus Fabricius, 1801

Material examined. GOZO: Sara Valley, 7.vi.1990, 1 ♂, leg. D. Mifsud.

Chorotype. Turanic-European-Mediterranean, with easternmost records from Kyrgyzstan (HÁJEK, 2017).

Notes. This species is here recorded for the first time from the island of Gozo. It was previously recorded from Malta by GULIA (1858), CAMERON & CARUANA GATTO (1907), CILIA (1989) and ROCCHI & SCHEMBRI (1992) and on the basis of these works, it was reported as occurring in Malta by LUIGIONI (1929), PORTA (1949), BARAJON (1966), ROUGHLEY (1990), NILSSON (2003) and HÁJEK (2017). The Maltese vernacular name of this species is “Wirdiena ta' l-llma” (CILIA, 1989). This species lives chiefly in stagnant waters (FRANCISCOLO, 1979; ROUGHLEY, 1990). The above specimen from Gozo was found in a relatively small freshwater pool in a valley system which dries up completely during summer time.

Eretes griseus (Fabricius, 1781)

Material examined. MALTA: Qormi, Wied is-Sewda, 14.x.2004, 1 ♂, leg. D. Magro; Qrendi, Siggiewi, 25.v.2003, 1 ♂, UV light trap, leg. D. Magro; Rabat, 31.v.2003, 1 ♂, UV light trap, leg. P. Sammut, (CMI); Rabat, 8.xi.2003, 1 ♂, UV light trap, leg. P. Sammut; Rabat, 4.ix.2004, 1 ♂, UV light trap, leg. P. Sammut.

Chorotype. Subcosmopolitan (southern Palaearctic, Afrotropical, Oriental and northern Australian Regions) (MILLER, 2002; HÁJEK, 2017).

Notes. New record for the Maltese Islands. This species occurs in most subtropical and tropical areas of the Old World, except Australia (MILLER, 2002). This species was only recognized as valid by MILLER (2002), as it was previously confused with *E. sticticus* (Linnaeus, 1767). The record of *Eretes sticticus* from the nearby island of Pantelleria (RATTI, 1994; ROMANO, 1995) was later referred to as *E. griseus* (ROCCHI, 2007) but the specimens needs to be re-examined since the two species are syntopic in some Palaearctic territories (HÁJEK *et al.*, 2014; HÁJEK & REITER, 2014; TRONQUET, 2016). *Eretes griseus* lives in stagnat waters, it is a good flyer, frequently collected at light as most of the above cited material from Malta (MILLER 2002; NARDI, 2005; HÁJEK & REITER, 2014).

Hydaticus (Prodaticus) leander (Rossi, 1790)

Material examined. MALTA: Mellieha, Kortin, 10.viii.2004, leg. H. Borg Barthet, UV light trap, 1 ♂; Naxxar, 20.x.1998, 1 ♀, UV light trap, leg. A. Seguna; Naxxar, 20.x.1998, 1 ♂, 400w light trap, leg. A. Seguna; Zurrieq, Wied Badu, 21.x.2003, 1 ♀, leg. D. Magro.

Chorotype. Afrotropical-Mediterranean with extension into Turkmenistan (HÁJEK, 2017).

Notes. New record for the Maltese Islands and for the islands of the Sicilian Channel. In Italy this species occurs mostly on coastal and subcoastal stagnant waters (FRANCISCOLO, 1979; NARDI, 2005; ROCCHI, 2007). The above cited material from Malta was collected via light traps.

DISCUSSION

Table 1 summarises the knowledge on the Hydradephaga (Gyrinidae, Haliplidae and Dytiscidae) of the Maltese islands; 22 species are recorded from Malta, 4 from Gozo and 1 from Comino. In the present work, five species represent new records for the Maltese archipelago, whereas the presence of *Colymbetes fuscus* which was previously reported from Malta only by CAMERON & CARUANA GATTO (1907) is here confirmed. *Dytiscus circumflexus* is also reported for the first time from Gozo.

The record of *Graptodytes varius* (Aubé, 1838) from Malta and Gozo (CAMERON & CARUANA GATTO, 1907; ROCCHI & SCHEMBRI, 1992) need to be verified. This species occurs also in Tunisia and Sicily (QUENEY & MANUEL, 2019), but recently, *G. laeticulus* (Sharp, 1882) from North Africa (Morocco, Algeria and Tunisia) was resurrected from synonym with *G. varius* by FERY & BOUZID (2016).

Agabus (Gaurodytes) nebulosus (Forster, 1771), *Hygrotus (Coelambus) confluens* (Fabricius, 1787) and *Laccophilus hyalinus* (De Geer, 1774), recorded in the past from the Maltese Islands (CARUANA GATTO, 1893; CAMERON & CARUANA GATTO, 1907) were never collected again in recent times. The two latter records, could be based on misidentifications and only re-examination of

the original material could clear up such doubt. Moreover, further research may better outline the current distribution of species before aquatic habitats, which are slowly declining in Malta, will not be completely destroyed (LANFRANCO, 2001; MIFSUD *et al.*, 2004).

Table 1. Records of Hydradephaga from the Maltese archipelago (Abbreviations: ! = present work; C = CAMERON & CARUANA GATTO, 1907; I = SCHEMBRI, 1990; J = BILTON & RIBERA, 2017; R = RIBERA *et al.*, 2018; S = SÝKORA *et al.*, 2017; T = cf. ROCCHI & SCHEMBRI, 1992; V = VONDEL, 1991).

SPECIES		MALTA	GOZO	COMINO
1.	<i>Gyrinus (Gyrinus) dejeani</i> Brullé, 1832	I		
2.	<i>Gyrinus (Gyrinus) urinator</i> Illiger, 1807	!		
3.	<i>Haliplus (Liaphlus) guttatus</i> (Aubé, 1836)	V		
4.	<i>Haliplus (Neohalipus) lineatocollis</i> (Marsham, 1802)	C T	C	
5.	<i>Agabus (Gaurodytes) bipustulatus</i> (Linnaeus, 1767)	!		
6.	<i>Agabus (Gaurodytes) nebulosus</i> (Forster, 1771)	C		
7.	<i>Colymbetes fuscus</i> (Linnaeus, 1758)	C !	!	
8.	<i>Rhantus suturalis</i> (MacLey, 1825)	T		
9.	<i>Meladema coriacea</i> Laporte, 1835	C T J S R		
10.	<i>Cybister (Cybister) tripunctatus africanus</i> Laporte, 1835	!		
11.	<i>Dytiscus circumflexus</i> Fabricius, 1801	C T	!	
12.	<i>Eretes griseus</i> (Fabricius, 1781)	!		
13.	<i>Hydaticus (Prodaticus) leander</i> (Rossi, 1790)	!		
14.	<i>Graptodytes varius</i> (Aubé, 1838)	C T	C	
15.	<i>Hydroporus tessellatus</i> (Drapiez, 1819)	C T	T	T
16.	<i>Nebrioporus ceresyi</i> (Aubé, 1838)	C T		
17.	<i>Herophydrus guineensis</i> (Aubé, 1838)	T		
18.	<i>Herophydrus musicus</i> (Klug, 1834)	T		
19.	<i>Hygrotus (Coelambus) confluens</i> (Fabricius, 1787)	C		
20.	<i>Hyphydrus aubei</i> Ganglbauer, 1892	T		
21.	<i>Laccophilus hyalinus</i> (De Geer, 1774)	C		
22.	<i>Laccophilus minutus</i> (Linnaeus, 1758)	T		
Total species		22	4	1

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