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An updated checklist of the scarab beetle fauna of Asinara Island, Sardinia, Italy (Coleoptera: Trogidae, Geotrupidae, Scarabaeidae, Aphodiidae, Cetoniidae, Dynastidae, Hybosoridae)

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Abstract

The island of Asinara, located in the northwest of Sardinia, is characterized by a large number of feral grazing mammals belonging to four herbivorous species (horse, donkey, mouflon, and goat) and an omnivorous one (wild boar). Hand-collections of scarabs in 2014 and the examination of unpublished records revealed the presence of five species new for Asinara (*Trox nodulosus*, *Ateuchetus laticollis*, *Sisyphus schaefferi*, *Caccobius schreberi* and *Cetonia carthami*). Based on all records (published and unpublished) we present a new checklist of the scarab beetle fauna of Asinara which increased from 30 to 43 species belonging to seven families: 2 Trogidae, 2 Geotrupidae, 13 Scarabaeidae, 19 Aphodiidae, 5 Cetoniidae, 1 Dynastidae, and 1 Hybosoridae.

Key words: Mediterranean island, dung beetles, National Park, Scarabaeoidea.**Introduction**

The Mediterranean island of Asinara (41° 04' N, 8° 18' E) is located in the northwest of Sardinia and comprises an area 51.9 km². The island has a typical Mediterranean climate with a dry hot summer and a rainy season between October and April, and a long history of land use, particularly grazing (Doneddu 2008). Asinara was used for almost a century as a prison island with a part being an agro-penitentiary. Due to this, the island was rarely visited by beetle collectors until 1997, when the prison closed and a National Park was established. Knowledge of the distribution of scarab beetles in the Sardinian archipelago has been summarized in the same time and no other comprehensive overview has been published since then (Carpaneto et al. 1997; Carpaneto & Piattella 1996). Recent ecological research on Asinara have led to an increasing knowledge of interactions between land-use, vegetation and animals (Mantilla-Contreras et al. 2018; Pisanu et al. 2014; Treitler et al. 2017a, 2017b; Winter et al. 2017). In addition, the presence of species and their distribution on Asinara are now better known what is a prerequisite for management decisions in the National Park. The goal of this publication is to present new records of scarab beetles and to provide a checklist of this taxonomic group for Asinara.

Material and Methods*Records from 2014*

We present records of scarab beetles obtained by non-stratified hand collecting on Asinara in 2014. Hand collecting was done by J.T. Treitler and J. Buse at different locations on Asinara in May, November, and December 2014. We also include records made during ecological investigations in three habitat types from March to June 2014 (Treitler et al. 2017a).

Checklist and species distribution

We provide an overview of the distribution of scarab beetles on Asinara using our own data, unpublished records of S. Riese (1966/67) and M. Bologna (1980s), and information provided in previous literature (Carpaneto et al. 1997). There are 23 different localities that have been sampled (Table 1, Fig. 1). Unfortunately, most old records from Asinara do not mention exact localities. In this case only presence for the island is confirmed and no detailed distribution is available. Therefore, detailed information on localities for the following four species are missing: *Aphodius fimetarius*, *Eudolus quadriguttatus*, *Subrinus sturmi*, *Pentodon algerinus*.

Table 1 – Localities sampled by different collectors on Asinara.

ID	Location	Latitude	Longitude
1	Alta Valle Riu Baddi Longa	41°06' N	08°18' E
2	Cala Arena	41°06' N	08°19' E
3	Cala d'Oliva	41°04' N	08°20' E
4	Cala Reale	41°03' N	08°17' E
5	Cala Sabina	41°05' N	08°20' E
6	Cala Sant'Andrea	41°00' N	08°14' E
7	Cala Scombro	41°03' N	08°15' E
8	Campu Perdu	41°04' N	08°17' E
9	Crastu Sanguinosu	41°04' N	08°18' E
10	Diga Ruda	41°04' N	08°16' E
11	Elighe Mannu	41°05' N	08°18' E
12	Fornelli	40°59' N	08°13' E
13	Granito	40°59' N	08°15' E
14	Isola Piana dell'Asinara	40°58' N	08°13' E
15	Porto Mannu di Fornelli	40°59' N	08°13' E
16	Punta Fregata	41°05' N	08°17' E
17	Punta Scomunica	41°05' N	08°17' E
18	Punta Scorno	41°07' N	08°19' E
19	Santa Maria	40°59' N	08°14' E
20	Stretti	41°03' N	08°15' E
21	Tanca Niccolino	41°00' N	08°13' E
22	Trabuccato	41°03' N	08°19' E
23	Tumbarino	41°02' N	08°14' E

Results

Records from 2014 listed in alphabetical order

New records for Asinara are marked with (*)

Geotrupidae

Jekelius (Jekelius) intermedius (Costa O. G., 1839)

Campu Perdu: 04.V.2014, 1 Ex., leg. J. BUSE, 16.XI.2014, 2 Ex., leg. J.T. TREITLER; 18.XI.2014, 2 Ex., leg. J.T. TREITLER; Cala d'Oliva: 13.XI.2014, 1 Ex., leg. J.T. TREITLER; Fornelli: 01.V.2014, 3 Ex., leg. J.T. TREITLER; 02.XII.2014, 1 Ex., leg. J.T. TREITLER; Santa Maria: 02.XII.2014, 1 Ex., leg. J.T. TREITLER; Cala Sant'Andrea: 26.XI.2014, 3 Ex., leg. J.T. TREITLER; Granito: 28.XI.2014, 2 Ex., leg. J.T. TREITLER; Punta Scomunica: 20.XI.2014, 2 Ex., leg. J.T. TREITLER

Sericotrupes niger (Marsham, 1802)

Cala Sant'Andrea: 03.V.2014, 1 Ex., leg. J. BUSE; 10.VI.2014, 1 Ex., leg. J.T. TREITLER; Cala Reale: 18.XI.2014, 1 Ex., leg. J.T. TREITLER; Granito: 28.XI.2014, 2 Ex., leg. J.T. TREITLER; Fornelli: 02.XII.2014, 1 Ex., leg. J.T. TREITLER;

ITLER; Santa Maria: 02.XII.2014, 1 Ex., leg. J.T. TREITLER; Tumbarino: 16.VI.2014, 1 Ex., leg. J.T. TREITLER

Scarabaeidae

Ateuchetus laticollis (Linnaeus, 1767) (*)

Punta Fregata: 02.V.2014, 1 Ex., leg. J. BUSE; Punta Scomunica: 20.XI.2014, 2 Ex., leg. J.T. TREITLER

Bubas bison (Linnaeus, 1767)

Campu Perdu: 04.V.2014, 1 Ex., leg. J. BUSE; 18.XI.2014, 1 Ex., leg. J.T. TREITLER; Santa Maria: 01.V.2014, 1 Ex., leg. J. BUSE; 02.XII.2014, 3 Ex., leg. J.T. TREITLER; Cala Sant'Andrea: 03.V.2014, 1 Ex., leg. J. BUSE; 26.XI.2014, 3 Ex., leg. J.T. TREITLER; Fornelli: 19.III.2014, 1 Ex., leg. J.T. TREITLER ; 02.XII.2014, 2 Ex., leg. J.T. TREITLER; Cala Reale: 18.XI.2014, 1 Ex., leg. J.T. TREITLER; Granito: 28.XI.2014, 3 Ex., leg. J.T. TREITLER; Tumbarino: 21.III.2014, 1 Ex., leg. J.T. TREITLER

Caccobius schreberi (Linnaeus, 1767) (*)

Cala Sant'Andrea: 03.V.2014, 2 Ex., leg. J. BUSE

Cheironitis furcifer (Rossi, 1792)

Fornelli: 01.V.2014, 1 Ex., leg. J. BUSE; 09.VI.2014, 1 Ex. and 11.VI.2014, 1 Ex., leg. J.T. TREITLER

Copris hispanus hispanus (Linnaeus, 1764)

Santa Maria: 01.V.2014, 1 Ex., leg. J. BUSE; Granito: 28.XI.2014, 1 Ex., leg. J.T. TREITLER; Fornelli: 02.XII.2014, 1 Ex., leg. J.T. TREITLER

Euoniticellus fulvus (Goeze, 1777)

Campu Perdu: 04.V.2014, 1 Ex., leg. J. BUSE; Fornelli: 18.III.2014, 1 Ex., leg. J.T. TREITLER; 19.III.2014, 84 Ex., leg. J.T. TREITLER; 21.III.2014, 30 Ex., leg. J.T. TREITLER; 01.V.2014, 4 Ex., leg. J.T. TREITLER; 01.V.2014, 2 Ex., leg. J. BUSE; 11.VI.2014, 15 Ex., leg. J.T. TREITLER; Santa Maria: 18.III.2014, 1 Ex., leg. J.T. TREITLER; 01.V.2014, 9 Ex., leg. J.T. TREITLER; 01.V.2014, 1 Ex., leg. J. BUSE; 09.VI.2014, 9 Ex., leg. J.T. TREITLER; Cala d'Oliva: 02.V.2014, 1 Ex., leg. J. BUSE; Sant'Andrea: 10.VI.2014, 36 Ex., leg. J.T. TREITLER; Tanca Niccolino: 09.VI.2014, 49 Ex., leg. J.T. TREITLER; Tumbarino: 16.VI.2014, 1 Ex., leg. J.T. TREITLER

Euoniticellus pallens (Olivier A. G., 1789)

Campu Perdu: 04.V.2014, 2 Ex., leg. J. BUSE; Fornelli: 21.III.2014, 1 Ex., leg. J.T. TREITLER; 01.V.2014, 3 Ex., leg. J.T. TREITLER; 01.V.2014, 2 Ex., leg. J. BUSE; 11.VI.2014, 7 Ex., leg. J.T. TREITLER; Santa Maria: 18.III.2014, 2 Ex., leg. J.T. TREITLER; 09.VI.2014, 1 Ex., leg. J.T. TREITLER; Tanca Niccolino: 09.VI.2014, 1 Ex., leg. J.T. TREITLER

Onthophagus (Onthophagus) taurus (Schreber, 1759)

Santa Maria: 18.III.2014, 5 Ex., leg. J.T. TREITLER; 01.V.

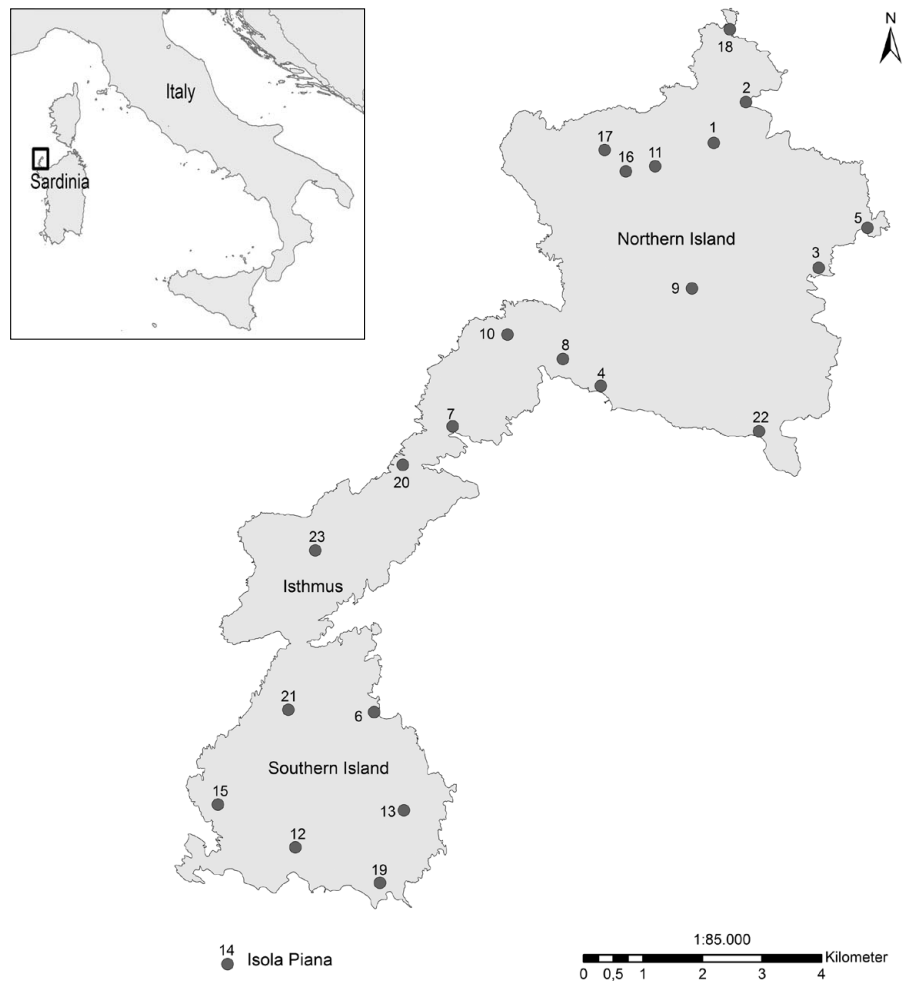


Fig. 1 – Location of the island Asinara and sampled localities. Detailed information on sampling locations is listed in Table 1.

2014, 22 Ex., leg. J.T. TREITLER; 01.V.2014, 3 Ex., leg. J. BUSE; Cala Sant'Andrea: 10.VI.2014, 4 Ex., leg. J.T. TREITLER; 20.III.2014, 2 Ex., leg. J.T. TREITLER; 01.V.2014, 1 Ex., leg. J.T. TREITLER; Fornelli: 19.III.2014, 13 Ex., leg. J.T. TREITLER; 01.V.2014, 19 Ex., leg. J.T. TREITLER; 11.VI.2014, 56 Ex., leg. J.T. TREITLER; Sant'Andrea: 10.VI.2014, 12 Ex., leg. J.T. TREITLER; Tanca Niccolino: 09.VI.2014, 4 Ex., leg. J.T. TREITLER; Tumarino: 16.VI.2014, 11 Ex., leg. J.T. TREITLER

Onthophagus (Palaeonthophagus) opacicollis Reitter, 1892
Punta Fregata: 02.V.2014, 1 Ex., leg. J. BUSE; Campu Perdu: 04.V.2014, 1 Ex., leg. J. BUSE; 16.XI.2014, 4 Ex., leg. J.T. TREITLER; 18.XI.2014, 5 Ex., leg. J.T. TREITLER; Punta Scomunica: 20.XI.2014, 4 Ex., leg. J.T. TREITLER; Cala d'Oliiva: 13.XI.2014, 2 Ex., leg. J.T. TREITLER; Cala Reale: 18.XI.2014, 6 Ex., leg. J.T. TREITLER; Fornelli: 01.V.2014, 2 Ex., leg. J.T. TREITLER; Tumarino: 22.III.2014, 3 Ex., leg. J.T. TREITLER

Onthophagus (Palaeonthophagus) vacca (Linnaeus, 1767)
Punta Fregata: 02.V.2014, 1 Ex., leg. J. BUSE; Cala d'O-

liiva: 02.V.2014, 1 Ex., leg. J. BUSE; 13.XI.2014, 7 Ex., leg. J.T. TREITLER; Santa Maria: 18.III.2014, 5 Ex., leg. J.T. TREITLER; 01.V.2014, 3 Ex., leg. J.T. TREITLER; 01.V.2014, 1 Ex., leg. J. BUSE; 09.VI.2014, 6 Ex., leg. J.T. TREITLER; 02.XII.2014, 1 Ex., leg. J.T. TREITLER; Grani-to: 28.XI.2014, 3 Ex., leg. J.T. TREITLER; Campu Perdu: 18.XI.2014, 3 Ex., leg. J.T. TREITLER; Cala Sant'Andrea: 20.III.2014, 11 Ex., leg. J.T. TREITLER; 21.III.2014, 1 Ex., leg. J.T. TREITLER; 22.III.2014, 3 Ex., leg. J.T. TREITLER; 26.XI.2014, 4 Ex., leg. J.T. TREITLER; 28.XI.2014, 1 Ex., leg. J.T. TREITLER; Cala Reale: 18.XI.2014, 1 Ex., leg. J.T. TREITLER; Punta Scomunica: 20.XI.2014, 3 Ex., leg. J.T. TREITLER; Fornelli: 18.III.2014, 2 Ex., leg. J.T. TREITLER; 19.III.2014, 26 Ex., leg. J.T. TREITLER; 21.III.2014, 1 Ex., leg. J.T. TREITLER; 01.V.2014, 2 Ex., leg. J.T. TREITLER; 09.VI.2014, 17 Ex., leg. J.T. TREITLER; 11.VI.2014, 105 Ex., leg. J.T. TREITLER; 02.XII.2014, 1 Ex., leg. J.T. TREITLER; Sant'Andrea: 10.VI.2014, 29 Ex., leg. J.T. TREITLER; Tanca Niccolino: 09.VI.2014, 91 Ex., leg. J.T. TREITLER; Tumarino: 22.III.2014, 11 Ex., leg. J.T. TREITLER; 16.VI.2014, 24 Ex., leg. J.T. TREITLER

Sisyphus schaefferi schaefferi (Linnaeus, 1758) (*)
Crastu Sanguinosu: 13.IX.2014, 1 Ex., leg. J.T. TREITLER

Aphodiidae

Alocoderus hydrochaeris (Fabricius, 1798)
Campu Perdu: 04.V.2014, 1 Ex., leg. J. BUSE; Cala Sant'Andrea: 03.V.2014, 1 Ex., leg. J. BUSE; Santa Maria: 02.XII.2014, 1 Ex., leg. J.T. TREITLER; Fornelli: 19. and 21.III.2014, 5 Ex., leg. J.T. TREITLER

Aphodius foetidus (Herbst, 1783)
Fornelli: 01.V.2014, 1 Ex., leg. J. BUSE; Cala Sant'Andrea: 03.V.2014, 2 Ex., leg. J. BUSE; Campu Perdu: 04.V.2014, 5 Ex., leg. J. BUSE; 16.XI.2014, 3 Ex., leg. J.T. TREITLER; Cala Reale: 18.XI.2014, 1 Ex., leg. J.T. TREITLER; Santa Maria: 02.XII.2014, 2 Ex., leg. J.T. TREITLER

Biralus mahunkaorum (Ádám, 1983)
Santa Maria: 01.V.2014, 1 Ex., leg. J. BUSE; 18.III.2014, 1 Ex., leg. J.T. TREITLER

Bodiloides ictericus ghardimaouensis (Balthasar, 1929)
Cala Scombro: 03.V.2014, 1 Ex., leg. J. BUSE

Bodilus lugens (Creutzer, 1799)
Fornelli: 01.V.2014, 1 Ex., leg. J. BUSE

Calamosternus granarius (Linnaeus, 1767)
Fornelli: 01.V.2014, 2 Ex., leg. J. BUSE; Campu Perdu: 04.V.2014, 3 Ex., leg. J. BUSE

Calamosternus mayeri (Pilleri, 1953)
Fornelli: 19.III.2014, 2 Ex., leg. J.T. TREITLER; 01.V.2014, 1 Ex., leg. J. BUSE; Santa Maria: 18.III.2014, 7 Ex., leg. J.T. TREITLER

Chilothorax lineolatus (Illiger, 1803)
Punta Fregata: 02.V.2014, 2 Ex., leg. J. BUSE; Fornelli: 18.III.2014, 31 Ex., leg. J.T. TREITLER; 19.III.2014, 374 Ex., leg. J.T. TREITLER; 21.III.2014, 18 Ex., leg. J.T. TREITLER; 01.V.2014, 186 Ex., leg. J.T. TREITLER; 01.V.2014, 2 Ex., leg. J. BUSE; Cala Sant'Andrea: 20.III.2014, 13 Ex., leg. J.T. TREITLER; 21.III.2014, 34 Ex., leg. J.T. TREITLER; 22.III.2014, 11 Ex., leg. J.T. TREITLER; 01.V.2014, 82 Ex., leg. J.T. TREITLER; 03.V.2014, 1 Ex., leg. J. BUSE; Granito: 28.XI.2014, 1 Ex., leg. J.T. TREITLER; Santa Maria: 18.III.2014, 181 Ex., leg. J.T. TREITLER; 01.V.2014, 1321 Ex., leg. J.T. TREITLER; Sant'Andrea: 10.VI.2014, 1 Ex., leg. J.T. TREITLER; Tanca Niccolino: 20.III.2014, 1 Ex., leg. J.T. TREITLER; Tumberino: 22.III.2014, 94 Ex., leg. J.T. TREITLER

Colobopterus erraticus (Linnaeus, 1758)
Punta Fregata: 02.V.2014, 1 Ex., leg. J. BUSE; Campu Perdu: 04.V.2014, 1 Ex., leg. J. BUSE; Santa Maria: 18.III.

2014, 3 Ex., leg. J.T. TREITLER; 01.V.2014, 3 Ex., leg. J. BUSE, Fornelli: 18.III.2014, 1 Ex., leg. J.T. TREITLER; Tanca Niccolino: 09.VI.2014, 1 Ex., leg. J.T. TREITLER; Tumberino: 22.III.2014, 4 Ex., leg. J.T. TREITLER

Melinopterus consputus (Creutzer, 1799)
Santa Maria: 18.III.2014, 83 Ex., leg. J.T. TREITLER; 02.XII.2014, 4 Ex., leg. J.T. TREITLER; Fornelli: 19.III.2014, 139 Ex., leg. J.T. TREITLER; 21.III.2014, 2 Ex., leg. J.T. TREITLER; 02.XII.2014, 3 Ex., leg. J.T. TREITLER; Granito: 28.XI.2014, 1 Ex., leg. J.T. TREITLER; Cala Sant'Andrea: 20.III.2014, 29 Ex., leg. J.T. TREITLER; 21.III.2014, 16 Ex., leg. J.T. TREITLER; 22.III.2014, 3 Ex., leg. J.T. TREITLER; Tumberino: 22.III.2014, 1 Ex., leg. J.T. TREITLER

Cetoniidae

Cetonia carthami carthami Gory & Percheron, 1833 (*)
Elighe Mannu: 02.V.2014, 1 Ex. on Apiaceae, leg. J. BUSE

Oxythyrea funesta (Poda, 1761)
Santa Maria: 01.V.2014, 1 Ex., leg. J. BUSE

Checklist of the scarab beetles of Asinara

New records for Asinara are marked with (*). Distribution on Asinara is shown in parentheses []. N = northern part of the island, I = Isthmus (central part), S = southern part of the island. Localities where the species were found are given in Table 1. For species with [?] there is no detailed distribution available but the presence on the island is confirmed. The nomenclature follows that of Löbl and Löbl (2016).

Trogidae

- 1) *Trox cribrum* Gené, 1836 [N, S, 2, 8, 15, 6]
- 2) *Trox nodulosus* Harold, 1872 (*) [N, 8]

Geotrupidae

- 1) *Jekelius (Jekelius) intermedius* (Costa O. G., 1839) [N, I, S, 1, 2, 3, 4, 6, 8, 10, 12, 13, 17, 19, 6, 22, 23]
- 2) *Sericotrupes niger* (Marsham, 1802) [N, I, S, 3, 4, 6, 8, 10, 12, 13, 15, 18, 19, 6, 20, 22, 23]

Hybosoridae

- 1) *Hybosorus illigeri* Reiche, 1853 [N, S, 12, 22]

Scarabaeidae

- 1) *Ateuchetus laticollis* (Linnaeus, 1767) (*) [N, 16, 17]
- 2) *Bubas bison* (Linnaeus, 1767) [N, I, S, 2, 3, 4, 6, 8, 10, 12, 13, 14, 15, 19, 6, 22, 23]
- 3) *Caccobius schreberi* (Linnaeus, 1767) (*) [S, 6]
- 4) *Cheironitis furcifer* (Rossi, 1792) [N, I, S, 8, 12, 18, 20, 22]
- 5) *Cheironitis irroratus* (Rossi, 1790) [N, I, S, 8, 10, 12, 15, 18, 22]

- 6) *Copris hispanus* ssp. *hispanus* (Linnaeus, 1764) [N, I, S, 1, 2, 3, 4, 8, 10, 12, 13, 19, 6, 22, 23]
- 7) *Euoniticellus fulvus* (Goeze, 1777) [N, I, S, 1, 3, 8, 12, 15, 19, 6, 21, 22, 23]
- 8) *Euoniticellus pallens* (Olivier, 1789) [N, S, 8, 12, 15, 19, 21, 22]
- 9) *Euoniticellus pallipes* (Fabricius, 1781) [S, 12]
- 10) *Onthophagus (Onthophagus) taurus* (Schreber, 1759) [N, I, S, 4, 6, 8, 10, 12, 15, 18, 19, 6, 20, 21, 22, 23]
- 11) *Onthophagus (Palaeonthophagus) opacicollis* Reitter, 1892 [N, I, S, 3, 4, 8, 10, 11, 16, 17, 18, 20, 22, 23]
- 12) *Onthophagus (Palaeonthophagus) vacca* (Linnaeus, 1767) [N, I, S, 2, 3, 4, 5, 6, 8, 10, 11, 12, 13, 15, 16, 17, 18, 19, 6, 20, 21, 22, 23]
- 13) *Sisyphus schaefferi* (Linnaeus, 1758) (*) [N, 9]

Aphodiidae

- 1) *Alocoderus hydrochaeris* (Fabricius, 1798) [N, S, 3, 4, 6, 8, 12, 19, 6, 20, 22, 23]
- 2) *Aphodius fimetarius* (Linnaeus, 1758) [?]
- 3) *Aphodius foetidus* (Herbst, 1783) [N, S, 4, 6, 8, 12, 19, 22]
- 4) *Biralus mahunkaorum* (Ádám, 1983) [S, 19]
- 5) *Bodiloides ictericus* ssp. *ghardimaouensis* (Balthasar, 1929) [N, I, S, 5, 7, 8, 12, 15, 20, 22]
- 6) *Bodilus beduinus* (Reitter, 1892) [N, S, 8, 12, 22]
- 7) *Bodilus lugens* (Creutzer, 1799) [N, I, S, 8, 10, 12]
- 8) *Brindalus porcicollis* (Illiger, 1803) [N, S, 2, 6]
- 9) *Calamosternus granarius* (Linnaeus, 1767) [N, S, 8, 12, 22]
- 10) *Calamosternus mayeri* (Pilleri, 1953) [N, I, S, 8, 12, 19, 22, 23]
- 11) *Chilothorax lineolatus* (Illiger, 1803) [N, I, S, 3, 4, 6, 8, 11, 12, 13, 16, 19, 6, 21, 22, 23]
- 12) *Colobopterus erraticus* (Linnaeus, 1758) [N, I, S, 4, 8, 10, 12, 16, 19, 21, 23]
- 13) *Eudolus quadriguttatus* (Herbst, 1783) [?]
- 14) *Euorodalus paracoenosus* (Balthasar & Hrubant, 1960) [N, 8]
- 15) *Labarrus lividus* (Olivier A. G., 1789) [N, 3, 4, 8]
- 16) *Melinopterus consputus* (Creutzer, 1799) [I, S, 6, 12, 13, 19, 23]
- 17) *Rhyssemus sulcatus* (Olivier A. G., 1789) [N, S, 5, 6]
- 18) *Subrinus sturmi* (Harold, 1870) [?]
- 19) *Trichonotulus scrofa* (Fabricius, 1787) [N, 22]

Dynastidae

- 1) *Pentodon algerinus* (Fuessly, 1778) [?]

Cetoniidae

- 1) *Cetonia carthami* ssp. *carthami* Gory & Percheron, 1833 (*) [N, S, 11, 12]
- 2) *Oxythyrea funesta* (Poda, 1761) [N, I, S, 2, 8, 10, 11, 12, 19, 22, 23]
- 3) *Protaetia (Netocia) morio* (Fabricius, 1781) [N, S, 2, 6, 8, 11, 12, 22]

- 4) *Protaetia (Netocia) sardea* (Gory & Percheron, 1833) [N, S, 2, 5, 12, 14, 17, 22]
- 5) *Tropinota (Tropinota) squalida* ssp. *squalida* (Scopoli, 1763) [N, I, S, 4, 8, 10, 11, 12, 14, 20]

Discussion

In comparison to Sardinia mainland and the other circum-Sardinian islands, the 43 species of scarabs recorded from Asinara fits the expected species richness regarding its area of 51.9 km². This represents 33% of the scarab species of Sardinia (Carpaneto et al. 2011). Particularly, dung-related beetles certainly benefit from the current natural grazing system on the island. It is not surprising that 34 of the 66 Sardinian coprophagous species (51%) were also found on Asinara. The most common species in terms of individuals and the number of localities are the following: *Chilothorax lineolatus*, *Jekelius intermedius*, *Sericotrupes niger*, *Onthophagus vacca*, *O. taurus*, *O. opacicollis*, *Bubas bison*, and *Copris hispanus*. Hotspots of species richness are the grazed plains of Campu Perdu, Fornelli, and Trabucato where also some species were found exclusively: *Euoniticellus pallipes* (Fornelli), *Euorodalus paracoenosus* (Campu Perdu), and *Trichonotulus scrofa* (Trabucato). Furthermore, *Biralus mahunkaorum* is known from Santa Maria only. This species has been reestablished and distinguished from *B. satellitius*, which is not present on Asinara (Rössner & Fery 2014). In comparison to the relatively rich dung-inhabiting fauna, only a few non-coprophagous scarabs are recorded from Asinara. We would like to mention four of them. The sandy beaches of Cala Sant'Andrea and Cala Arena are inhabited by *Brindalus porcicollis*, a species whose larvae are saprophytophagous in the sandy soil. The same habitat is used by *Rhyssemus sulcatus* that was found in Cala Sabina and Cala Sant'Andrea. Furthermore, *Cetonia carthami carthami* and *Trox nodulosus* are two endemic taxa of Corsica and Sardinia. Further species might be expected, particularly non-coprophagous species that are undersampled on the island.

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