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The Nitidulidae and Kateretidae of Sardinia: recent data and updated checklist (Coleoptera)*

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Abstract

This paper deals with the Coleoptera Nitidulidae and Kateretidae collected in Sardinia during the surveys organized by Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale "Bosco Fontana" of Verona in 2003–2008, with a few selected additional data collected on the island by the author during entomological trips carried out in 1982–2008, and by several Italian and European entomologists in the last few decades. The paper is also completed with the updated checklist of the species so far recorded from the island, including those based on a few unpublished data or extracted from recently examined material. 79 species (73 Nitidulidae, including 10 the presence of which is based only on very doubtful ancient records, and 6 Kateretidae) are listed for Sardinia. The updated list includes two species endemic to the Corso-Sardinian System: *Sagittogethes nuragicus* (Audisio & Jelínek, 1990), and *Thymogethes foddaii* (Audisio, De Biase & Trizzino, 2009) **n. comb.** *Sagittogethes minutus* (C. Brisout de Barneville, 1872) is recorded for the first time from continental Italy (SE Calabria).

Key words: *Nitidulidae, Kateretidae, Sardinia, faunistics.*

Riassunto

Checklist aggiornata e dati recenti sui Nitidulidi e Cateretidi della Sardegna (Coleoptera: Nitidulidae, Kateretidae)

In questo contributo vengono riassunti i dati sui Coleoptera Nitidulidae e Kateretidae raccolti in Sardegna durante le ricerche organizzate dal Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale "Bosco Fontana" di Verona negli anni tra il 2003 e il 2008, oltre ad alcuni dati di presenza sull'Isola desunti da missioni di raccolta sul campo effettuate dall'autore negli anni tra il 1982 e il 2008, e da numerosi altri entomologi italiani ed europei nei più recenti decenni. Complessivamente sono elencate 73 specie di Nitidulidae (10 delle quali riportate però sulla sola base di antiche e dubbie citazioni) e 6 di Kateretidae, tra cui i due rari endemiti sardo-corsi Sagittogethes nuragicus *(Audisio & Jelínek, 1990), e* Thymogethes foddaii *(Audisio, De Biase & Trizzino, 2009)* ***n. comb.*** *L'elenco è integrato con la checklist di tutte le specie finora segnalate per la Sardegna e con alcuni altri dati inediti, desunti dall'esame di materiale museale e di collezioni private.* Sagittogethes minutus *(C. Brisout de Barneville, 1872) è segnalato per la prima volta per l'Italia continentale (SE Calabria).*

INTRODUCTION

The families Nitidulidae and Kateretidae (Audisio 1993; Angelini et al. 1995; Jelínek & Audisio 2007; Audisio & Jelínek 2011) are represented by more than 200 species in Italy.

Many species of Nitidulidae are strictly or prevalently phytophagous or phytosaprophagous, spending most of their life cycle on plants, flowers, or on decaying organic material such as fungi, fruits, sap, or (only a few species) carrion. Within the Nitidulidae, the Meligethinae are strictly anthophagous (Audisio 1993; Audisio et al. 2009a), while the Cybocephalinae prey on scale-insects (Silvestri 1910; Endrödy-Younga 1968). The Kateretidae are mostly anthophagous, but a few species are spermophagous (Audisio 1993).

The systematic knowledge of the Italian species of Nitidulidae and Kateretidae is good, especially following the publication of the volume of the series "Fauna d'Italia" (Audisio 1993), with the single exception of the subfamily Cybocephalinae (as considered by Jelínek & Audisio 2007), previously considered as a separate family and for this reason not treated by Audisio (1993). To my knowledge, nobody except the writer has specifically collected extensively these beetles in Sardinia, or the results of such studies

have not been published; the Sardinian fauna of these beetles is therefore mainly known from the ancient generic regional records provided by Bargagli (1871, 1872), Bertolini (1904), Luigioni (1929), and Porta (1929). Besides these generic citations there are only few literature records where a detailed locality is provided (cf. Audisio & Jelínek 1990; Audisio & De Biase 2005; Audisio et al. 2009b).

MATERIAL AND METHODS

The aim of this work is to provide an updated account of the presence and distribution of the families Nitidulidae and Kateretidae in Sardinia. It is partly based on the results of field trips carried out in 2003–2008 by the CNBFVR staff (Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale "Bosco Fontana" di Verona, Italy) (cf. Cerretti et al. 2009; Bardiani 2011), and in years 1982–2008 by the author of the present paper. The former collections (see "CNBFVR records") were made mainly in the central-southern Sardinian provinces, the latter ones (see "Other records") mainly in the central-northern provinces. Sampling by CNBFVR was prevalently carried out in open or forest habitats with the aid of sweep netting, or using a wide series of alternative methods such as pitfall traps, window traps, Malaise traps, light traps, and other, as listed below. These data have been integrated with all available literature records of regional presence. For many species (chiefly the most common and widespread ones), several additional detailed localities from Sardinia are known to the author, mostly derived from the inventory of recently examined museum and private collections in Italy and other European countries, but for reasons of brevity only the most relevant unpublished data have been included in this paper. The list of taxa also includes a few species doubtfully recorded from Sardinia only basing on ancient literature citations (e.g., Bargagli 1871, 1872; Bertolini 1904; Luigioni 1929; Porta 1929; Borchert 1938; Horion 1960).

The systematic-nomenclatural order followed is that of Jelínek (2007), Jelínek & Audisio (2007), Audisio & Jelínek (2011) and, for the Nitidulid subfamily Meligethinae, Audisio et al. (2009a), this implying the inclusion of the Cybocephalinae in the Nitidulidae (Bouchard et al. 2011), despite the systematic treatment of this taxon as an isolated subfamily of Nitidulidae or as separate family remains still controversial (Audisio 1993).

For each species, which are numbered consecutively, nomenclatural combinations, chorotype (according to the categories of Vigna Taglianti et al. (1993, 1999) and the distributions provided in Audisio (1993), Angelini et al. (1995), Jelínek (2007), Jelínek & Audisio (2007), Audisio & Jelínek (2011), and any relevant notes or citation following the publication of Audisio's (1993) monograph and Audisio & De Biase's (2005) data-base, are given.

Records collected by CNBFVR staff (2003–2008) are listed as follows: alphanumerical abbreviation of the locality (for details of commune and province see the list of sampling sites below), date, collector, collecting method and habitat, number of specimens, and collection (in parenthesis). For generic information on the vegetation of the main study area surveyed by CNBFVR (Monte Marganai), see Angius et al. (2011). For records taken from the literature the source is given after the mentioned locality or the generic regional record. Provinces are cited considering the updated administrative subdivision including, besides the previously established provinces of Sassari, Nuoro, Oristano and Cagliari, the recently introduced provinces of Olbia-Tempio, Ogliastra, Medio Campidano and Carbonia-Iglesias.

Genera and species are all listed in alphabetical order.

ABBREVIATIONS

Sampling sites of CNBFVR field campaigns. **C01** = Carbonia-Iglesias prov., Iglesias, Case Marganai, 725 m, 32S 463890 4355925; **C03** = Carbonia-Iglesias prov., Iglesias, Vecchia Cantoniera Marganai, 491 m, 32S 462272 4354677; **C10** = Medio Campidano prov., Villacidro, P.ta piscina Argiolas, 282 m, 32S 472049 4360081; **C11** = Medio Campidano prov., Villacidro, Can.li Serci, 381 m, 32S 472208 4359497; **C14** = Carbonia-Iglesias prov., Domusnovas, Sedda Pranu Cardu, 549 m, 32S 470926 4358924; **C16** = Carbonia-Iglesias prov., Domusnovas, Gutturu Seu, 174 m, 32S 471577 4355716; **C23** = Medio Campidano prov., Villacidro, Rio Cannisoni, radura sponda sinistra, 401 m, 32S 468459 4362806; **C26** = Carbonia-Iglesias prov., Domusnovas, Bega d'Aleni, 621 m, 32S 467855 4361336; **C31** = Carbonia-Iglesias prov., Domusnovas, Lago Siuru, 322 m, 32S 467069 4357916; **C32** = Medio Campidano prov., Villacidro, L. di Montimannu, diga, 255 m, 32S 475380 363486; **C36** = Medio Campidano prov., Villacidro, dint. L. di Montimannu, lungo T. Leni, 256 m, 32S 474156 4363150; **C41** = Carbonia-Iglesias prov., Domusnovas, su Pranu Pirastu, 147 m, 32S 471365 4353536; **C46** = Medio Campidano prov., Villacidro, Rio Cannisoni, 400 m, 32S 468858 4362543; **S1** = Carbonia-Iglesias prov., Iglesias, dint. colonia Beneck, 636 m, 32S 462391 4355441; **S2** = Carbonia-Iglesias prov., Domusnovas, sa Duchessa, 371 m, 32S 464990 4358384; **S3** = Carbonia-Iglesias prov., Domusnovas, Valle Oridda, 592 m,

32S 466973 4362228; **SAR1** = Carbonia-Iglesias prov., Iglesias, Marganai, plot CONECOFOR SAR1, 700 m, 32S 462853 4355582.

Collectors. CBa = C. Baviera;. DA = D. Avesani; DB = D. Birtele; DW = D. Whitmore; GC = G. Chessa; GN = G. Nardi; LF = L. Fancello; MB = M. Bardiani; MM = M. Mei; MZ = M. Zapparoli; PA = P. Audisio; PCe = P. Cerretti; PCo = P. Cornacchia; PL = P. Leo.

Collecting methods. lt = light trap; mt = Malaise traps; pt = pitfall trap; sn = sweep net; wt = window flight trap.

Depositories. CAR = P. Audisio (Sapienza Università di Roma, Rome); CBM = C. Baviera (Messina); CNBFVR = Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale "Bosco Fontana" di Verona (Marmirolo, Mantua); CPC = P. Cornacchia (Porto Mantovano, Mantua); MSNT = Museo Regionale di Scienze Naturali di Torino (Turin).

Other abbreviations and recurrent terms used in faunistic list. Vecchia Cantoniera = Old Roadman's House; Case = Houses; diga = dam; dint. = environs of; ex = specimen/s; L. di = Lake of; lungo = along; piscina = pool; prov. = province; P.ta = Peak; radura = clearing; Rio = Stream; sponda sinistra = left bank; T. = Torrente = Torrent; Valle = Valley.

FAUNISTIC LIST

NITIDULIDAE Latreille, 1802

Cybocephalinae Jacquelin du Val, 1858

The tiny members of this subfamily are difficult to identify, and ancient records for Sardinia by Luigioni (1929), Porta (1929) and others authors, before the more recent revision of Endrödy-Younga (1968), are to be ignored.

1. *Cybocephalus diadematus* Chevrolat, 1861

Other records. "Sardinien", 1 ex (CAR).

Notes. A W-Mediterranean species, only known to me basing on the above-listed single and ancient specimen bearing a meagre and uncertain label.

2. *Cybocephalus freyi* Endrödy-Younga, 1968

Notes. A W-Mediterranean species, probably rare in Sardinia, known from Capo Caccia (Sassari prov.) (Endrödy-Younga 1968).

3. *Cybocephalus similiceps* Jacquelin du Val, 1858

Other records. "Sardinien", 1 ex (CAR).

Notes. A W-Mediterranean species, probably rare in Sardinia, only known to me basing on the above-mentioned single and ancient specimen bearing a meagre data.

4. *Cybocephalus wollastoni* Har. Lindberg, 1951

Notes. A Macaronesian and W-Mediterranean species, probably rare in Sardinia, known from Monte dei Sette Fratelli (Cagliari prov.) (Endrödy-Younga 1968).

Cryptarchinae Thomson, 1859

5. *Cryptarcha strigata* (Fabricius, 1787)

Notes. Species rare in Sardinia, only known from Gennargentu (Monte Tonneri) (Audisio & De Biase 2005).

6. *Glischrochilus quadripunctatus* (Linnaeus, 1758)

Notes. Species mentioned from Sardinia by Luigioni (1929) and Borchert (1938), based on data never confirmed by subsequent authors (Audisio 1993).

Nitidulinae Latreille, 1802

7. *Ipidia binotata* Reitter, 1875

Notes. This species is known, in Sardinia, only from Gennargentu (Audisio 1993).

8. *Nitidula carnaria* (Schaller, 1783)

CNBFVR records. **C23**: 19–24.V.2006, PCo, 1 ex (CNBFVR).

Notes. Species widespread in Sardinia.

9. *Nitidula flavomaculata* Rossi, 1790

CNBFVR records. **C16**: 28.III.2006, PCo, 1 ex (CAR).

Notes. Species widespread in Sardinia.

10. *Omosita discoidea* (Fabricius, 1775)

Notes. Species widespread in Sardinia.

11. *Soronia grisea* (Linnaeus, 1758)

Notes. Species mentioned from Sardinia by Luigioni

(1929) and Borchert (1938), based on data considered likely correct by subsequent authors (Audisio 1993), even though no sure records are known.

12. *Soronia oblonga* C. Brisout de Barneville, 1863

CNBFVR records. **SAR1**: 30.VI–17.VII.2004, GC, pt, 69 ex (CAR; CNBFVR); 30.VI–17.VII.2004, GC, wt, 3 ex (CNBFVR); 16.VII–1.VIII.2004, GC, pt, 8 ex (CAR; CNBFVR); 1–18.VIII.2004, GC, pt, 3 ex (CAR; CNBFVR); 14.VII–5.VIII.2005, GC, pt, 6 ex (CAR; CNBFVR); 6–21.IX.2005, GC, pt, 1 ex (CNBFVR).

Notes. Species widespread in Sardinia, mostly in mature holm-oak forests.

13. *Soronia punctatissima* (Illiger, 1794)

Notes. Species mentioned from Sardinia by Bargagli (1872), based on data never confirmed by subsequent authors (Audisio 1993).

14. *Thalycra fervida* (Olivier, 1790)

Notes. As reported by Audisio (1993) and Audisio & De Biase (2005), this species is known with certainty, in Sardinia, only from a single locality: Asuni (Oristano prov.), 300 m (CAR).

15. *Xenostrongylus deyrollei* Jacquelin du Val, 1860

Notes. Species widespread in Sardinia.

Carpophilinae Erichson, 1842

16. *Carpophilus bifenestratus* Murray, 1864

Notes. Species widespread in Sardinia, previously confused with the similar *C. bipustulatus* (Heer, 1841), or mentioned under its recently established synonym *C. tersus* Wollaston, 1865 (Jelínek & Audisio 2007).

17. *Carpophilus bipustulatus* (Heer, 1841)

CNBFVR records. **C14**: 8.IX.2006, GN, 1 ex (CAR). **C31**: 12.XI.2006, GN, 1 ex (CNBFVR). **S3**: 15.VII.2006, DW, 1 ex (CNBFVR). **SAR1**: 6–21.IX.2004, GC, pt, 1 ex (CNBFVR).

Notes. Species widespread in Sardinia, in mature forest habitats.

18. *Carpophilus dimidiatus* (Fabricius, 1792)

Notes. Species widespread in Sardinia.

19. *Carpophilus hemipterus* (Linnaeus, 1758)

CNBFVR records. **C14**: 9.IX.2006, DA MB DB PCe MM DW, lt, 2 ex (CNBFVR).

Notes. Species widespread in Sardinia.

20. *Carpophilus marginellus* Motschulsky, 1858

Notes. Species widespread in Sardinia.

21. *Carpophilus mutilatus* Erichson, 1843

CNBFVR records. **SAR1**: 1–18.VIII.2004, GC, pt, 1 ex (CNBFVR).

Notes. Species widespread in Sardinia.

22. *Carpophilus nepos* Murray, 1864

CNBFVR records. **SAR1**: 14.VII–5.VIII.2005, GC, pt, 1 ex (CNBFVR).

Notes. Species widespread in Sardinia (Audisio 1993, as *C. freemani* Dobson, 1956; Audisio & De Biase 2005).

23. *Carpophilus obsoletus* Erichson, 1843

Notes. Species widespread in Sardinia.

24. *Carpophilus truncatus* Murray, 1864
= *pilosellus* Auct., nec *pilosellus* Motschulsky, 1858

Notes. Species widespread in Sardinia (Audisio 1993, as *C. pilosellus*; Audisio & De Biase 2005, as *C. pilosellus*).

25. *Carpophilus quadrisignatus* Erichson, 1843

Notes. Species widespread in Sardinia.

26. *Carpophilus sexpustulatus* (Fabricius, 1791)

CNBFVR records. **SAR1**: 21.IX–6.X.2004, GC, pt, 1 ex (CNBFVR).

Notes. Species widespread in Sardinia, in mature forest habitats.

27. *Urophorus humeralis* (Fabricius, 1798)

Notes. Species widespread in Sardinia.

28. *Urophorus rubripennis* (Heer, 1841)

Notes. Species widespread in Sardinia.

Epuraeinae Kirejtshuk, 1986

29. *Epuraea aestiva* (Linnaeus, 1758)

Notes. Species rare in Sardinia, only known from Gennargentu (Monte Tonneri) and from Tempio Pausania (Audisio & De Biase 2005).

30. *Epuraea fuscicollis* (Stephens, 1832)

CNBFVR records. **C10**: 10.IV.2005, LF, sn small stream, 1 ex (CAR); 12.IX.2006, DA MB DB GN, 1 ex (CNBFVR); 10–11.XI.2006, MZ MB GN DW, pt, 1 ex (CNBFVR); 12–13.XI.2006, MZ MB GN DW, lt, 1 ex (CNBFVR). **C11**: 12.VII.2006, DA MB DB GN, lt, 1 ex (CNBFVR). **C31**: 12.XI.2006, GN, 1 ex (CNBFVR). **SAR1**: 1.IV.2002, LF, 1 ex (CAR); 21.IX–6.X.2004, GC, pt, 12 ex (CAR; CNBFVR); 6.X–5.XI.2004, GC, pt, 1 ex (CNBFVR); 5–22.XI.2004, GC, pt, 4 ex (CNBFVR); 22.XI–17.XII.2004, GC, pt, 1 ex (CNBFVR); 14.VII–5.VIII.2005, GC, pt, 6 ex (CAR; CNBFVR); 8–21.IX.2005, GC, pt, 2 ex (CNBFVR); 13–30.IX.2005, GC, mt, 1 ex (CNBFVR); 30.IX–17.X.2005, GC, wt, 1 ex (CNBFVR); 20.V–16.VI.2006, GC, pt, 1 ex (CNBFVR).

Notes. Species widespread in Sardinia.

31. *Epuraea guttata* (Olivier, 1811)

Notes. Species mentioned from Sardinia by Borchert (1938) and Horion (1960), based on data never confirmed by subsequent authors (Audisio 1993).

32. *Epuraea limbata* (Fabricius, 1787)

Notes. Species known, in Sardinia, only from Gennargentu (Audisio 1993).

33. *Epuraea luteola* Erichson, 1843

CNBFVR records. **SAR1**: 5.VIII–13.IX.2005, pt, GC, 1 ex (CAR); 30.IX–17.X.2005, pt, GC, 1 ex (CNBFVR); 12.XI.2006, GN, 1 ex (CAR).

Notes. A pantropical and subcosmopolitan species, phytosaprophagous and carpophagous, first mentioned from Europe, Sardinia, and peninsular Italy only at the end of the past century (Trematerra 1988; Audisio & Scaramozzino 1989; Audisio 1993; Busato 2002a; Audisio & De Biase 2005), now common and widespread almost everywhere in peninsular and insular Italy, at low altitudes.

34. *Epuraea oculari*s Fairmaire, 1849

CNBFVR records. **C11**: 8.XI.2006, GN, 6 ex (CNBFVR). **C31**: 12.XI.2006, GN, 2 ex (CNBFVR). **SAR1**: 16.VII–1.VIII.2004, GC, pt, 2 ex (CNBFVR); 1–18.VIII.2004, GC, pt, 1 ex (CNBFVR); 8–21.IX.2004, GC, pt, 9 ex (CAR; CNBFVR); 21.IX–6.X.2004, GC, pt, 8 ex (CNBFVR); 6.X–5.XI.2004, GC, pt, 2 ex (CNBFVR); 5.XI.2004, GC, pt, 2 ex (CNBFVR); 14.VII–25.VIII.2005, GC, pt, 2 ex (CAR); 25.VIII–13.IX.2005, GC, pt, 5 ex (CNBFVR); 17.X–3.XI.2005, GC, pt, 5 ex (CNBFVR); 3–16.XI.2005, GC, pt, 12 ex (CNBFVR).

Notes. A pantropical and subcosmopolitan species, phytosaprophagous and carpophagous, first mentioned from Europe and northern Italy only at the beginning of the present Century (Audisio 2002; Busato 2002b; Ratti 2007; Cline & Audisio 2011), now common and widespread almost everywhere in peninsular and insular Italy, at low altitudes.

35. *Epuraea unicolor* (Olivier, 1790)

CNBFVR records. **SAR1**: 1–18.VIII.2004, GC, pt, 1 ex (CAR).

Notes. Species widespread in Sardinia.

Meligethinae Thomson, 1859

36. *Acanthogethes brevis* (Sturm, 1845)

Notes. Species mentioned from Sardinia by Bargagli (1872, as *Meligethes mutabilis* Rosenhauer, 1856), based on data never confirmed by subsequent authors (Audisio 1993, as *M. brevis*).

37. *Acanthogethes fuscus* (Olivier, 1790)

CNBFVR records. **S3**: 21.III.2005, PCo, sn, 1 ex (CNBFVR); 20.V.2006, PCo, sn, 1 ex (CAR).

Notes. Species widespread in Sardinia, in garrigue habitats.

38. *Afrogethes planiusculus* (Heer, 1841)

CNBFVR records. **C31**: 6.VI.2004, GN, sn, 7 ex (CAR; CNBFVR). **S2**: 21.III.2006, PCo, sn, 1 ex (CNBFVR); 16–30.V.2006, GC, mt, 1 ex (CNBFVR).

Notes. Species widespread in Sardinia.

39. *Astylogethes substrigosus* (Erichson, 1845)
= *Astylogethes subrugosus* Auct., nec (Gyllenhal, 1808)

Notes. Species rare in Sardinia, only known from Mamoiada (Nuoro prov.) (Audisio & De Biase 2005, as *Meligethes subrugosus*). See the recent paper by Rutanen et al. (2010, as *M. substrigosus*) for updated taxonomy and nomenclature for this species.

40. *Brassicogethes aeneus* (Fabricius, 1775)

CNBFVR records. **C23**: 21.III.2006, PCo, sn, 1 ex (CNBFVR). **C26**: 24.V.2006, PCo, sn, 1 ex (CNBFVR). **S1**: 11.VI.2004, DB, sn, 1 ex (CAR). **S3**: 21.III.2006, PCo, sn, 1 ex (CNBFVR); 7.VI.2006, GN, sn, 1 ex (CAR). **SAR1**: 20.V–16.VI.2005, GC, wt, 8 ex (CAR; CNBFVR); 16.VI–14.VII.2005, GC, wt, 1 ex (CNBFVR); 14.VII–5.VIII.2005, GC, wt, 1 ex (CNBFVR).

Notes. Species widespread in Sardinia.

41. *Brassicogethes fulvipes* (C. Brisout de Barneville, 1863)

Notes. Species mentioned from Sardinia by Horion (1960, as *M. fulvipes*), based on data never confirmed by subsequent authors (Audisio 1993, as *M. fulvipes*).

42. *Brassicogethes gracilis* (C. Brisout de Barneville, 1863)

Notes. Species mentioned from Sardinia by Bargagli (1872, as *M. gracilis*), basing on data never confirmed by subsequent authors (Audisio 1993, as *M. gracilis*).

43. *Brassicogethes viridescens* (Fabricius, 1787)

Notes. Species widespread but uncommon in Sardinia.

44. *Clypeogethes rotundicollis* (C. Brisout de Barneville, 1863)

Notes. Species widespread in Sardinia.

45. *Fabogethes nigrescens* (Stephens, 1830)

CNBFVR records. **C01**: 10.IV.2005, LF, sn, 1 ex. (CAR). **C26**: 24.V.2006, PCo, sn, 1 ex (CNBFVR). **C36**: 2–16.V.2006, GC, mt, 8 ex (CNBFVR). **S2**: 21.III–4.IV.2006, GC, mt, 1 ex (CNBFVR).

Notes. Species widespread in Sardinia.

46. *Fabogethes opacus* (Rosenhauer, 1856)

Notes. A rare W-Mediterranean species, associated with *Ononis* spp. (Fabaceae), known to occur in Italy only in a few coastal localities of SW Sardinia, and locally threatened (Audisio 1993, as *M. opacus*; Audisio & De Biase 2005, as *M. opacus*).

47. *Fabogethes varicollis* (Wollaston, 1854)

Notes. A rare W-Mediterranean and Macaronesian species, in Europe and North Africa mainly associated with *Lotus* spp. (Fabaceae), known to occur in Italy only in a few coastal and subcoastal localities of W Sardinia (Audisio 1993, as *M. varicollis*; Audisio & De Biase 2005, as *M. varicollis*).

48. *Genistogethes erichsonii* (C. Brisout de Barneville, 1863)

Notes. Species widespread in Sardinia.

49. *Genistogethes bidentatus* (C. Brisout de Barneville, 1863)

Notes. Species widespread in Sardinia, especially in mountain areas.

50. *Genistogethes carinulatus* (Förster, 1849)

Notes. Species widespread in Sardinia.

51. *Genistogethes immundus* (Kraatz, 1858)

Notes. Species widespread in Sardinia.

52. *Genistogethes punctatus* (C. Brisout de Barneville, 1863)

Notes. Species widespread in Sardinia.

53. *Lamiogethes bidens* (C. Brisout de Barneville, 1863)

Notes. Species rare in Sardinia, only known from Gennargentu (Monte Tonneri) (Audisio & De Biase

2005, as *M. bidens*).

54. *Lamiogethes difficilis* (Heer, 1841)

Notes. Species rare in Sardinia, only known from Monte Timidone near Porto Conte (Sassari prov.) (Audisio & De Biase 2005, as *M. difficilis*).

55. *Lamiogethes morosus* (Erichson, 1845)

Notes. Species rare in Sardinia, only known from Monte Timidone near Porto Conte (Sassari prov.) (Audisio & De Biase 2005, as *M. morosus*).

56. *Meligethinus pallidulus* (Erichson, 1843)

Notes. Species widespread in Sardinia.

57. *Pria dulcamarae* (Scopoli, 1763)

Notes. Species widespread in Sardinia.

58. *Sagittogethes ater* (C. Brisout de Barneville, 1863)

Notes. Species mentioned from Sardinia by Bargagli (1872, as *Meligethes ater*), probably based on a single specimen to be referred to *M. maurus* Sturm, 1845, and erroneously labelled (MSNT; Audisio 1993).

59. *Sagittogethes incanus* (Sturm, 1845)

Notes. Species mentioned from Sardinia by Bargagli (1872, as *M. incanus*), based on data never confirmed by subsequent authors (Audisio 1993, as *M. incanus*).

60. *Sagittogethes hoffmanni* (Reitter, 1871)

Notes. A rare S-Palaearctic species, associated with *Teucrium scordium* L. (Lamiaceae) in damp places, widespread in Italy but threatened; in Sardinia known to occur only in a coastal locality (between Sarroch and Molentargius) near Cagliari, and in Alghero.

61. *Sagittogethes lindbergi* (Rebmann, 1940)

Notes. Species widespread in Sardinia.

62. *Sagittogethes maurus* (Sturm, 1845)

Notes. Species mentioned from Sardinia by Audisio (1993, as *M. maurus*), based on ancient material (MSNT) previously referred (Bargagli 1872; Porta 1929) to *Meligethes ater* C. Brisout de Barneville 1863, but bearing rather doubtful and generic regional label. It is probably absent in Sardinia.

63. *Sagittogethes nuragicus* (Audisio & Jelínek, 1990)

CNBFVR records. **C03**: 23.V.2006, PCo, sn, 4 ex (CAR). **C31**: 12.VII.2006, DA MB DB GN, sn, 1 ex (CAR). **S3**: 7.VI.2006, GN, sn, 4 ex (CAR; CNBFVR).

Other records. **Cagliari prov.**: Cagliari, 110 m, 19.V.2008, PL, on flowered stems of *Teucrium polium* L. (Lamiaceae), 5 ex (CAR).

Notes. As discussed by Audisio & Jelínek (1990) and Audisio (1993), and as reported by Audisio & De Biase (2005), this rare species, endemic to the Corso-Sardinian System, was previously known with certainty, in Sardinia, only from a few localities on the Gennargentu Massif, even though also the record of *S. distinctus* (Sturm, 1845) sensu Auctorum [= *S. minutus* (C. Brisout de Barneville, 1872), see also discussion below] from Sassari published by Strassen (1954) is probably to be referred to this species. The above listed localities show that this species, in Sardinia oligophagous on *Teucrium massiliense* L., *T. marum* L., and *T. polium* L. (Lamiaceae), is widespread also in mountain areas of southern Sardinia. It is interesting to note that one of the Sardinian host-plants of *S. nuragicus*, *T. polium* L., is also the only known host-plant of the related *S. minutus* (C. Brisout de Barneville, 1872), a peculiarly rare and local W-Mediterranean species, in Italy known so far only from SE Sicily near Siracuse (Audisio 1993; Audisio & De Biase 2005). Two new Italian localities of the latter species have been recently found: Calabria, Catanzaro prov., near Petrizzi, 38.41.19.9N, 16.26.55.4E, 400 m, 27.V.2006, PA, on *Teucrium polium* L. (Lamiaceae), 6 ex (CAR); Sicily, Ragusa prov., Iblei Mts., W slope of Mount Casale, 37.04.07.3N, 14.48.57.5E, 670 m, 24.V.2010, PA CBa, on *Teucrium polium* L., 18 ex (CAR; CBM).

64. *Sagittogethes umbrosus* (Sturm, 1845)

Notes. Species mentioned from Sardinia by Horion (1960, as *M. umbrosus*), based on data never confirmed by subsequent authors (Audisio 1993, as *M. umbrosus*).

65. *Stachygethes ruficornis* (Marsham, 1802)

Notes. Species widespread in Sardinia on *Ballota* spp. (Lamiaceae).

66. *Stachygethes nigerrimus* (Rosenhauer, 1856)

Other records. **Carbonia-Iglesias prov.**: Domusnovas, 110 m, 19.V.2008, PA MTr GN MB, on flowered stems of *Marrubium vulgare* L. (Lamiaceae), 5 ex (CAR).

Notes. An uncommon W-Mediterranean species associated with *Marrubium* spp. (Lamiaceae), in Italy known to occur only in a few coastal and subcoastal localities of western Sardinia (Audisio 1993, as *Meligethes nigerrimus*; Audisio & De Biase 2005, as *M. nigerrimus*).

67. *Stachygethes villosus* (C. Brisout de Barneville, 1863)

Notes. Species widespread in Sardinia.

68. *Thymogethes egenus* (Erichson, 1845)

Notes. Species widespread in Sardinia.

69. *Thymogethes exilis* (Sturm, 1845)

Notes. Species widespread in Sardinia, almost exclusively in mountain areas, locally associated with *Thymus herba-barona* Loisel. (Audisio 1993, as *M. exilis*).

70. *Thymogethes grenieri* (C. Brisout de Barneville, 1872)

Notes. Species widespread in Sardinia, in garrigue habitats dominated by rosemary.

71. *Thymogethes foddaii* (Audisio, De Biase & Trizzino 2009) **n. comb.**

Meligethes foddaii Audisio, De Biase & Trizzino, 2009c: 387.

CNBFVR records. **C36**: 6.IX.2006, GN, sn, 3 ex (CAR; CNBFVR).

Other records. See Audisio et al. (2009b).

Notes. Refer to Audisio et al. (2009b, as *M. foddai*) for a detailed discussion on the taxonomy and ecology of the Corso-Sardinian populations previously tentatively attributed to atypical populations of the widespread but rare *T. lugubris* (Sturm, 1845) (Easton 1954, as *M. lugubris*; Audisio 1993, as *M. lugubris*), now attributed to this distinct, Corso-Sardinian endemic species. A molecular research aimed to give more insight on this problem, based on comparison of DNA sequences of the COI mitochondrial gene, is to be completed (Audisio et al., in prep.). I am confident that these molecular data will allow to better clarify the phylogenetic position and evolutionary origin of *T. foddaii*.

72. *Thymogethes nigritus* (Lucas, 1849)

CNBFVR records. **C03**: 23.V.2006, PCo, sn, 1 ex (CAR). **C23**: 22.V.2006, MB DB PCo DW, 1 ex (CNBFVR). **C31**: 6.VI.2004, GN, 2 ex (CAR). **C32**: 22.V.2006, MB DB PCo DW, sn, 2 ex (CAR; CNBFVR). **C46**: 21.III.2006, MB PCo, sn, 4 ex (CAR; CNBFVR; CPC). **S3**: 21.III.2006, GN, sn, 1 ex (CAR); 7.VI.2004, GN, sn, 2 ex (CAR; CNBFVR).

Notes. Species widespread in Sardinia. A recent paper (Kurochkin & Kirejtshuk 2005, as *Meligethes exilis*), among a series of other merely anecdotic taxonomic acts (deliberately ignored in the recent Palaearctic Catalogue by Jelínek & Audisio (2007)), proposed the synonymy of *Thymogethes nigritus* (Lucas, 1849) and *T. exilis* (Sturm, 1845). The mentioned paper is based on inconsistent data, wrongly identified material, and superficial approach, and the conclusions therein are completely contradicted by available morphological, ecological, and molecular data (allozyme and mtDNA data) (Audisio et al. 1984; Audisio 1993, and unpublished data). *Thymogethes nigritus* is a quite distinct species, strictly associated throughout its whole W-Mediterranean range to *Lavandula* spp. in garrigue habitats.

73. *Thymogethes submetallicus* (Sainte-Claire Deville, 1908)

CNBFVR records. **C31**: 6.VI.2004, GN, sn, 7 ex (CAR).

Notes. Species widespread in Sardinia.

KATERETIDAE Kirby, 1837

74. *Kateretes rufilabris* (Latreille, 1807)

Notes. Species widespread in Sardinia.

75. *Brachypterus glaber* Stephens, 1832

CNBFVR records. **S2**: 21.III–4.IV.2006, GC, mt, 1 ex (CNBFVR).

Notes. Species widespread in Sardinia.

76. *Brachypterus labiatus* Erichson, 1843

CNBFVR records. **C01**: 10.IV.2005, LF, sn, 1 ex (CAR). **S1**: 16–30.V.2006, GC, mt, 1 ex (CNBFVR).

Notes. Species widespread in Sardinia.

77. *Brachypterus curtulus* Wollaston, 1864

Notes. A rare species, only known, in Italy, from a few localities from western Sardinia, Sicily, Calabria, eastern Basilicata and Apulia (Audisio 1993).

78. *Brachypterolus antirrhini* (Murray, 1864)

Notes. Species widespread in Sardinia.

79. *Brachypterolus pulicarius* (Linnaeus, 1758)

Notes. Species widespread in Sardinia, maybe introduced from peninsular Italy together with its invasive host-plants (*Linaria vulgaris* Mill.) (Scrophulariaceae).

FAUNISTIC AND BIOGEOGRAPHIC CONSIDERATIONS

The Nitidulidae and Kateretidae known with certainty from Sardinia are represented by 69 species (tab. 1), i.e. nearly one third of the whole Italian fauna (Angelini et al. 1995; Jelínek & Audisio 2007; Audisio & Jelínek 2011), excluding a dozen species listed from the island based only on ancient generic regional records, never confirmed by specialists, or later explicitly excluded from the Sardinian fauna. As expected, the relatively more frequent chorotype (14 species, 20 %) is the Western-Mediterranean one (WME; fig. 1), with a relevant presence also of European, European-Mediterranean, and Palaearctic elements. 12 over 69 species (17 %) are introduced and acclimatized taxa, mostly of subtropical origin. This percentage is higher than in any other Italian region, probably due to the central position of Sardinia in the Mediterranean, combined with its climate particularly propitious for most of the introduced taxa (usually thermophilous elements, cosmopolitan or sub-cosmopolitan, associated with stored products,

Tab.1. Checklist and synoptic table of Sardinian Nitiduloidea.
Chorotypes abbreviations. Chorotypes in parentheses indicate secondary geographic ranges, due to extensive anthropogenic introductions. AFM = Afrotropical-Mediterranean; ASE = Asiatic-European; CAE = Centralasiatic-European; CAM = Centralasiatic-Mediterranean; CEM = Centralasiatic-European-Mediterranean; COS = Cosmopolitan; EUM = European-Mediterranean; EUR = European; MED = Mediterranean; OLA = Holartic; PAL = Palaearctic; SACO = Sardo-Corsican endemic; SCO = Subcosmopolitan; SEU = S-European; SIE = Siberian-European; TEM = Turanian-European-Mediterranean; TUE = Turanian-European; TUM = Turanian-Mediterranean; WEU = W-European; WME = W-Mediterranean.
Other abbreviations. i = introduced and acclimatized species; n.a. = information not applicable; * = species of which the actual presence in Sardinia is strongly doubtful.

N.	Species	Chorotype	Ecological role	Host plants
	NITIDULIDAE			
1.	**Acanthogethes brevis*	EUR	anthophagous, mainly in xeric meadows	*Helianthemum* spp. (Cistaceae)
2.	*Acanthogethes fuscus*	WME	anthophagous, mainly in xeric garrigues	*Cistus* spp. (Cistaceae)
3.	*Afrogethes planiusculus*	TUM	anthophagous, mainly in meadows	*Echium* spp. (Boraginaceae)
4.	*Astylogethes substrigosus*	PAL	anthophagous, mainly in meadows	*Campanula* spp., *Jasione* spp. (Campanulaceae)
5.	*Brassicogethes aeneus*	OLA	anthophagous, mainly in meadows	Several genera and species of Brassicaceae
6.	**Brassicogethes fulvipes*	WEU	anthophagous, in xeric meadows	Several genera and species of Brassicaceae
7.	**Brassicogethes gracilis*	WEU	anthophagous, in rocky habitats	*Iberis* spp. (Brassicaceae)
8.	*Brassicogethes viridescens*	PAL (OLA)	anthophagous, mainly in meadows	Several genera and species of Brassicaceae
9.	*Carpophilus bifenestratus*	AFM – i (?)	phytosaprophagous, mainly on dried fruits, and in anthropogenic habitats	n.a.
10.	*Carpophilus bipustulatus*	TEM	phytosaprophagous, mainly under barks	n.a.
11.	*Carpophilus dimidiatus*	(COS) – i	phytosaprophagous, mainly on dried fruits, and in anthropogenic habitats	n.a.

N.	Species	Chorotype	Ecological role	Host plants
	NITIDULIDAE			
12.	*Carpophilus hemipterus*	(COS) – i	phytosaprophagous, mainly on dried fruits, and in anthropogenic habitats	n.a.
13.	*Carpophilus marginellus*	(COS) – i	phytosaprophagous, mainly on dried fruits, and in anthropogenic habitats	n.a.
14.	*Carpophilus mutilatus*	(COS) – i	phytosaprophagous, mainly on dried fruits, and in anthropogenic habitats	n.a.
15.	*Carpophilus nepos*	(COS) – i	phytosaprophagous, mainly on dried fruits, and in anthropogenic habitats	n.a.
16.	*Carpophilus obsoletus*	(COS) – i	phytosaprophagous, mainly on dried fruits, and in anthropogenic habitats	n.a.
17.	*Carpophilus quadrisignatus*	AFM	phytosaprophagous, mainly on dried fruits, and in anthropogenic habitats	n.a.
18.	*Carpophilus sexpustulatus*	EUM	phytosaprophagous, under barks, in forest habitats	n.a.
19.	*Carpophilus truncatus*	(COS) – i	phytosaprophagous, mainly on dried fruits, and in anthropogenic habitats	n.a.
20.	*Clypeogethes rotundicollis*	EUM	anthophagous, mainly in garrigue habitats	mainly on *Sysymbrium* spp. (Brassicaceae)
21.	*Cryptarcha strigata*	ASE	phytosaprophagous on fermenting sap, in forest habitats	*Quercus* spp. (Fagaceae)
22.	*Cybocephalus diadematus*	WME	predacious on scale-insects, mainly in coastal sandy habitats	n.a.
23.	*Cybocephalus freyi*	WME	predacious on scale-insects, mainly in coastal sandy habitats	n.a.
24.	*Cybocephalus similiceps*	WME	predacious on scale-insects, mainly in coastal sandy habitats	n.a.
25.	*Cybocephalus wollastoni*	WME	predacious on scale-insects, mainly in coastal sandy habitats	n.a.
26.	*Epuraea aestiva*	OLA	phytosaprophagous, mainly in bumblebees nest	n.a.
27.	*Epuraea fuscicollis*	EUM	phytosaprophagous on fermenting sap	*Quercus* spp. (Fagaceae)
28.	**Epuraea guttata*	EUR	phytosaprophagous on fermenting sap	*Quercus* spp. (Fagaceae)
29.	*Epuraea limbata*	SIE	phytosaprophagous, under barks, in forest habitats	n.a.
30.	*Epuraea luteola*	(SCO) – i	phytosaprophagous, mainly on dried fruits, and in anthropogenic habitats	n.a.
31.	*Epuraea ocularis*	(SCO) – i	phytosaprophagous, mainly on dried fruits, and in anthropogenic habitats	n.a.
32.	*Epuraea unicolor*	PAL	phytosaprophagous, mainly on dried fruits, and in anthropogenic habitats	n.a.
33.	*Fabogethes nigrescens*	PAL (OLA)	anthophagous, in meadows	*Trifolium* spp. (Fabaceae)
34.	*Fabogethes opacus*	WME	anthophagous, in coastal sandy habitats	*Ononis natrix* L. (Fabaceae)
35.	*Fabogethes varicollis*	WME	anthophagous, in coastal sandy habitats	*Lotus* spp. (Fabaceae)
36.	*Genistogethes bidentatus*	EUR	anthophagous, mainly in bushy or heatland	*Genista* spp. (Fabaceae)
37.	*Genistogethes carinulatus*	EUM	anthophagous, mainly in xeric meadows	*Lotus* spp. (Fabaceae)
38.	*Genistogethes erichsonii*	EUR	anthophagous, mainly in coastal sandy habitats	*Lotus* spp., *Coronilla* spp. (Fabaceae)
39.	*Genistogethes immundus*	MED	anthophagous, in heather or garrigue habitats	Several genera and species of Genisteae (Fabaceae)
40.	*Genistogethes punctatus*	SEU	anthophagous, in garrigue habitats	*Spartium junceum* L. (Fabaceae)

N.	Species	Chorotype	Ecological role	Host plants
	NITIDULIDAE			
41.	**Glischrochilus quadripunctatus*	SIE	phytosaprophagous/mycetophagous, under barks, in forest habitats	n.a.
42.	*Ipidia binotata*	SIE	phytosaprophagous/mycetophagous, under barks, in forest habitats	n.a.
43.	*Lamiogethes bidens*	EUR	anthophagous, mainly in forest habitats	*Clinopodium vulgare* L. (Lamiaceae)
44.	*Lamiogethes difficilis*	PAL	anthophagous, edges of bushy areas	*Lamium* spp. (Lamiaceae)
45.	*Lamiogethes morosus*	PAL	anthophagous, edges of bushy areas	*Lamium* spp. (Lamiaceae)
46.	*Meligethinus pallidulus*	WME	anthophagous, in garrigue habitats	*Chamaerops humilis* L. (Arecaceae)
47.	*Nitidula carnaria*	OLA	zoosaprophagous on dried carrion and mammal bones	n.a.
48.	*Nitidula flavomaculata*	TUM	zoosaprophagous on dried carrion and mammal bones	n.a.
49.	*Omosita discoidea*	OLA	zoosaprophagous on dried carrion and mammal bones	n.a.
50.	*Pria dulcamarae*	PAL	anthophagous, in riverine habitats	*Solanum dulcamara* L. (Solanaceae)
51.	**Sagittogethes ater*	SEU	anthophagous, in garrigue habitats	*Salvia* spp. (Lamiaceae)
52.	*Sagittogethes hoffmanni*	PAL	anthophagous, in wet habitats	*Teucrium scordium* L. (Lamiaceae)
53.	**Sagittogethes incanus*	EUR	anthophagous, mainly in xeric meadows	*Nepeta* spp. (Lamiaceae)
54.	*Sagittogethes lindbergi*	SEU	anthophagous, in limestone rocky habitats	*Teucrium flavum* L. (Lamiaceae)
55.	**Sagittogethes maurus*	CAE	anthophagous, in meadows	*Salvia* spp. (Lamiaceae)
56.	*Sagittogethes nuragicus*	SACO	anthophagous, in siliceous rocky habitats	*Teucrium massiliense* L. (Lamiaceae)
57.	**Sagittogethes umbrosus*	CAM	anthophagous, mainly in meadows	*Prunella* spp. (Lamiaceae)
58.	*Soronia grisea*	ASE	phytosaprophagous on fermenting sap	n.a.
59.	*Soronia oblonga*	EUR	phytosaprophagous on fermenting sap	*Quercus* spp. (Fagaceae)
60.	**Soronia punctatissima*	EUR	phytosaprophagous on fermenting sap	n.a.
61.	*Stachygethes nigerrimus*	WME	anthophagous, in garrigue habitats	*Marrubium* spp. (Lamiaceae)
62.	*Stachygethes ruficornis*	CEM	anthophagous, edges of bushy areas	*Ballota nigra* L. (Lamiaceae)
63.	*Stachygethes villosus*	EUM	anthophagous, in garrigue habitats	*Marrubium* spp. (Lamiaceae)
64.	*Thalycra fervida*	EUR	mycetophagous, in forest habitats	Body fruits of Lycoperdaceae (Fungi)
65.	*Thymogethes egenus*	TUE	anthophagous, in wet habitats	*Mentha* spp. (Lamiaceae)
66.	*Thymogethes exilis*	EUR	anthophagous, in garrigue habitats	*Thymus* spp. (Lamiaceae), in Sardinia on *T. herba-barona* Loisel.
67.	*Thymogethes foddaii*	SACO	anthophagous, in wet habitats	*Mentha insularis* Req. and allied species (Lamiaceae)
68.	*Thymogethes grenieri*	WME	anthophagous, in garrigue habitats	*Rosmarinus officinalis* L. (Lamiaceae)
69.	*Thymogethes nigritus*	WME	anthophagous, in garrigue habitats	*Lavandula* spp., in Sardinia only on *L. stoechas* L. (Lamiaceae)
70.	*Thymogethes submetallicus*	CEM	anthophagous, in periodically wet habitats	*Mentha pulegium* L. (Lamiaceae)
71.	*Urophorus humeralis*	(COS) – i	phytosaprophagous, mainly on fallen fruits	n.a.
72.	*Urophorus rubripennis*	SEU	phytosaprophagous, in rotten basal stems and roots	*Ferula* spp. and *Daucus carota* L. (Umbelliferae)
73.	*Xenostrongylus deyrollei*	WME	phyllophagous, mainly in wet habitats	Several genera and species of Brassicaceae; in Sardinia mainly on *Nasturtium officinale* L.

N.	Species	Chorotype	Ecological role	Host plants
	KATERETIDAE			
74.	*Kateretes rufilabris*	EUR	anthophagous-spermophagous, in low altitude wetlands	*Juncus* spp. (Juncaceae)
75.	*Brachypterus glaber*	EUM	anthophagous-spermophagous, mainly in xeric meadows	*Urtica* spp. (Urticaceae)
76.	*Brachypterus labiatus*	WME	anthophagous-spermophagous, mainly in xeric meadows	*Urtica* spp. (Urticaceae), in Sardinia mainly on *U. atrovirens* Req.
77.	*Brachypterus curtulus*	WME	anthophagous-spermophagous, mainly in xeric meadows	*Urtica* spp. (Urticaceae), in Sardinia mainly on *U. pilulifera* L.
78.	*Brachypterolus antirrhini*	MED	anthophagous-spermophagous, mainly in xeric rocky habitats	*Antirrhinum* spp. (Scrophulariaceae)
79.	*Brachypterolus pulicarius*	ASE – i ?	anthophagous-spermophagous, in disturbed meadows	*Linaria* spp. (Scrophulariaceae)

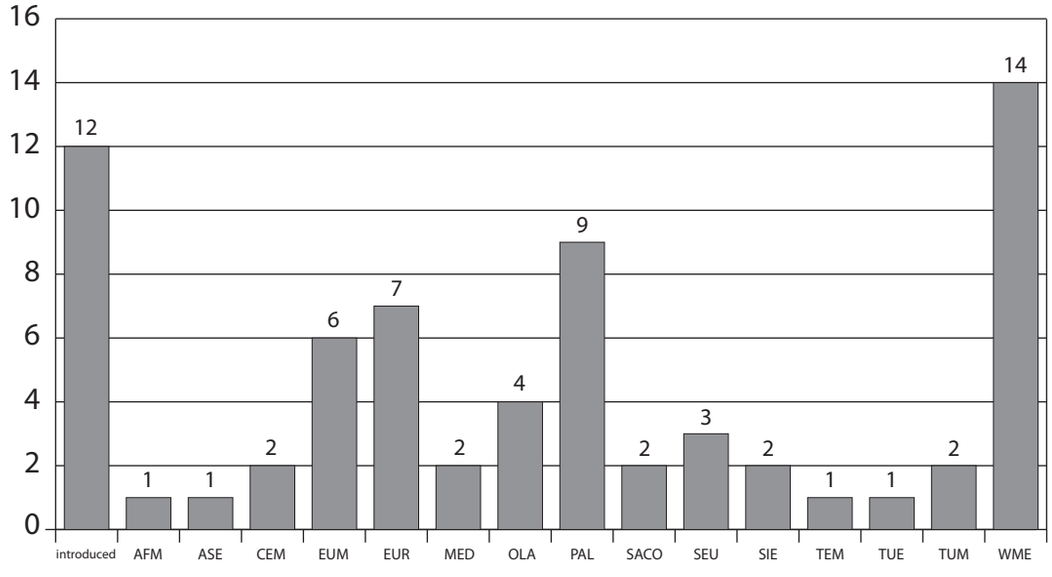

Fig. 1. Number of Sardinian species of Nitidulidae and Kateretidae, distributed in the main recognized chorotypes. Abbreviations. Refer to tab. 1 for a complete list of the recognized chorotypes; introduced = pool of taxa introduced by man (COS + SCO + ASEi).

and with introduced tropical fruits, vegetables, and wood). Only two species are so far known to be endemic (SACO) to the Corso-Sardinian System (*Sagittogethes nuragicus* and *Thymogethes foddaii*), but it should not to be excluded that, among the anthophagous taxa (e.g., Meligethinae), one or more rare and so far undescribed endemic species could be found in the future to be associated with some of the numerous plant species endemic to Sardinia. Even among the phytosaprophagous or mycetophagous taxa (e.g., among the Epuraeinae, Cryptarchinae or Nitidulinae), some rare and unknown endemic taxa could be likely discovered in some of the few relict fragments of the ancient mountain forests, especially on the Gennargentu Massif (providing appropriate collecting methods are applied also in these areas, such as intensive use of pitfall traps or baited traps placed on trees, as experimented in SW Sardinia by CNBFVR).

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