

## Short notes

In this section 218 species of arthropods are recorded, collected in Sardinia mainly during the researches carried out by CNBFVR (cf. Bardiani 2011). All or part of the records of most species (207) come from the Marganai and/or Montimannu wilderness areas. They belong to taxa not treated in the previous pages nor by Cerretti et al. (2009). All taxa are listed in alphabetical order according to the nomenclature and systematics of the Fauna Europaea Web Service (de Jong 2011) unless otherwise stated. Collecting sites from the region-owned forests of Marganai and Montimannu and neighbouring areas are listed under "Records", while those from other Sardinian sites are listed under "Other records". Almost all the sites investigated during the faunistic survey carried out by CNBFVR on the island are indicated with abbreviations (see further on), while all the other sites are listed in full. All sites and/or their abbreviations are listed in alphabetical order. Sites listed in full are listed after those abbreviated, alphabetically according to province. Further details on most of the sampling sites are provided by Bardiani (2011). The material, unless otherwise stated, is stored in the CNBFVR collection.

### ABBREVIATIONS

CNBFVR SAMPLING SITES. **A01** = Medio Campidano prov., Arbus, Piscinas, dune, 0 m, 32S 452927 4376897; **A02** = Medio Campidano prov., Arbus, Marina di Arbus, 10 m, 32S 454504 4383252; **A04** = Oristano prov., Arborea, Stagno di s'Ena Arrubia, 0 m, 32S 462842 4408878; **A05** = Carbonia-Iglesias prov., Buggerru, R. Mannu, foce, dune, 3 m, 32S 449437 4365545; **A06** = Carbonia-Iglesias prov., Buggerru, Cala Domestica, 10 m, 32S 446540 4358436; **A08** = Medio Campidano prov., Arbus, Capo Pecora, 15 m, 32S 446760 4367599; **A09** = Medio Campidano prov., Arbus, Piscinas, guado del R. Piscinas, 18 m, 32S 454087 4376193; **A10** = Oristano prov., San Vero Milis, sa Marigosa, spiaggia, 5 m, 32T 448490 4432720; **A11** = Oristano prov., San Vero Milis, sa Marigosa, stagno, 5 m, 32T 449217 4432397; **A12** = Cagliari prov., Domus de Maria, Torre di Chia, spiaggia di Su Portu, 1 m, 32S 490072 4305296; **A13** = Carbonia-Iglesias prov., Sant'Anna Arresi, Porto Pino, dune, 5 m, 32S 467025 4311362; **A15** = Carbonia-Iglesias prov., Gonnese, Plage Mesu, Sa Punta e s'Arena, 5 m, 32S 450884 4347330; **A16** = Carbonia-Iglesias prov., Gonnese, Fontanamare, 3 m, 32S 451423 4348717; **A17** = Carbonia-Iglesias prov., Fluminimaggiore, Portixeddu, 6 m, 32S 449437 4365741; **A18** = Carbonia-Iglesias prov., Sant'Antioco, Stagno di S. Caterina, 0 m, 32S 455569 4326716; **A19** = Carbonia-Iglesias prov., Sant'Antioco, Capo Sperone, spiaggia, 0 m, 32S 451831 4314957; **A21** = Oristano prov., Terralba, Stagno di Marceddi, 0 m, 32S 457917 4397594; **C01** = Carbonia-Iglesias prov., Iglesias, Case Marganai, 725 m, 32S 463890 4355925; **C02** = Carbonia-Iglesias prov., Iglesias, Pta Serra Pirastu, 656 m, 32S 463237 4355678; **C03** = Carbonia-Iglesias prov., Iglesias, Vecchia Cantoniera Marganai, 491 m, 32S 462272 4354677; **C05** = Carbonia-Iglesias prov., Iglesias, Pta Cungiaus, 636 m, 32S 462440 4355161; **C06** = Carbonia-Iglesias prov., Domusnovas, Grotta di S. Giovanni, 325 m, 32S 467900 4354891; **C07** = Carbonia-Iglesias prov., Domusnovas, dint. Planargia - Scoveri, 625 m, 32S 465523 4362921; **C08** = Carbonia-Iglesias prov., Domusnovas, Valle Oridda, pineta, 595 m, 32S 466970 4362400; **C10** = Medio Campidano prov., Villacidro, dint. Pta piscina Argiolas, Serbatoio, 282 m, 32S 472049 4360081; **C11** = Medio Campidano prov., Villacidro, Can.li Serci, 381 m, 32S 472208 4359497; **C12** = Medio Campidano prov., Villacidro, Can.li s'Otti, versante destro, 520 m, 32S 471690 4359611; **C13** = Medio Campidano prov., Villacidro, dint. Pta Pranu Ilixis, 563 m, 32S 471221 4359310; **C14** = Carbonia-Iglesias prov., Domusnovas, Sedda Pranu Cardu, 549 m, 32S 470926 4358924; **C15** = Carbonia-Iglesias prov., Domusnovas, Gutturu Seu, 140 m, 32S 471646 4355238; **C16** = Carbonia-Iglesias prov., Domusnovas, Gutturu Seu, 174 m, 32S 471577 4355716; **C19** = Medio Campidano prov., Villacidro, R. Cannisoni, 375 m, 32S 468713 4362692; **C20** = Medio Campidano prov., Villacidro, R. Cannisoni, 382 m, 32S 468980 4362541; **C22** = Medio Campidano prov., Villacidro, R. Cannisoni, sorg. s'acqua Frischedda, 372 m, 32S 468391 4362826; **C23** = Medio Campidano prov., Villacidro, R. Cannisoni, radura sponda sinistra, 401 m, 32S 468459 4362806; **C25** = Medio Campidano prov., Villacidro, Can.le Monincu, 450 m, 32S 468040 4363436; **C26** = Carbonia-Iglesias prov., Domusnovas, Bega d'Aleni, 621 m, 32S 467855 4361336; **C27** = Medio Campidano prov., Gonnosfanàdiga, M. Idda, strada per M. Linas, 474 m, 32S 466946 4368997; **C28** = Medio Campidano prov., Gonnosfanàdiga, sa Pta de s'Erbaceu, strada per M. Linas, 744 m, 32S 465989 4368410; **C29** = Medio Campidano prov., Gonnosfanàdiga, Genna Mirratta, 794 m, 32S 465363 4366138; **C30** = Medio Campidano prov., Gonnosfanàdiga, dint. Ovile Linas, 710 m, 32S 466346 4365201; **C31** = Carbonia-Iglesias prov., Domusnovas, L. Siuru, 322 m, 32S 467069 4357916; **C32** = Medio Campidano prov., Villacidro, L. di Montimannu, diga, 255 m, 32S 475380 4363486; **C33** =

Carbonia-Iglesias prov., Domusnovas, dint. P.ta Planotzara, 360 m, 32S 465515 4356209; **C34** = Carbonia-Iglesias prov., Domusnovas, R. sa Duchessa, greto del R., 270 m, 32S 466700 4356979; **C35** = Carbonia-Iglesias prov., Iglesias, Mamenga, 610 m, 32S 462170 4356618; **C36** = Medio Campidano prov., Villacidro, dint. L. di Montimannu, lungo T. Leni, 256 m, 32S 474156 4363150; **C39** = Carbonia-Iglesias prov., Iglesias, Cuccuruneddu, hill top, 708 m, 32S 472379 4357784; **C41** = Carbonia-Iglesias prov., Domusnovas, su Pranu Pirastu, 147 m, 32S 471365 4353536; **C42** = Carbonia-Iglesias prov., Iglesias, Conca Margiani, 750 m, 32S 462440 4356936; **C43** = Carbonia-Iglesias prov., Iglesias, Conca Margiani, radura, 725 m, 32S 462470 4357011; **C44** = Carbonia-Iglesias prov., Iglesias, Conca Margiani, radura lungo strada, 700 m, 32S 462635 4356866; **C45** = Carbonia-Iglesias prov., Iglesias, dint. P.ta Genna Ollioni, 750 m, 32S 462840 4356811; **C46** = Medio Campidano prov., Villacidro, R. Cannisoni, 400 m, 32S 468858 4362543; **C47** = Carbonia-Iglesias prov., Domusnovas, Valle Oridda, sorg., 590 m, 32S 466681 4362696; **C48** = Carbonia-Iglesias prov., Domusnovas, P.ta Piloni de sa Figù, 750 m, 32S 465958 4360742; **C49** = Medio Campidano prov., Villacidro, T. Leni, 300 m, 32S 471317 4360510; **C50** = Medio Campidano prov., Villacidro, C. Sarais, 251 m, 32S 474215 4361145; **C51** = Carbonia-Iglesias prov., Iglesias, dint. P.ta Campu Spina, 760 m, 32S 462466 4358236; **C52** = Carbonia-Iglesias prov., Iglesias, dint. S. Benedetto, 550 m, 32S 459499 4358405; **C53** = Medio Campidano prov., Gonnosfanàdiga, M. Linas, P.ta su Filixi, 780 m, 32S 465819 4368289; **C54** = Medio Campidano prov., Gonnosfanàdiga, M. Linas, Genna su Padenti, 853 m, 32S 465485 4367656; **C55** = Medio Campidano prov., Gonnosfanàdiga, M. Linas, Genna Mirratta, sorgente, 793 m, 32S 465136 4366226; **C56** = Medio Campidano prov., Gonnosfanàdiga, M. Linas, Genna sa Xirra, 847 m, 32S 464114 4366023; **C58** = Medio Campidano prov., Villacidro, dint. P.ta piscina Argiolas, rigagnolo, 282 m, 32S 472049 4360081; **C59** = Medio Campidano prov., Villacidro, dint. M. Anzeddu, 500 m, 32S 469031 4361072; **C60** = Carbonia-Iglesias prov., Domusnovas, dint. Gutturu Abis, 580 m, 32S 468140 4360761; **C61** = Carbonia-Iglesias prov., Domusnovas, dint. P.ta su Fenu, 250 m, 32S 467159 4356713; **C63** = Carbonia-Iglesias prov., Iglesias, dint. P.ta Fenu, 300 m, 32S 472097 4357122; **C64** = Carbonia-Iglesias prov., Iglesias, dint. P.ta Fenu, 225 m, 32S 471850 4356980; **C66** = Carbonia-Iglesias prov., Buggerru, dint. Grugua, 530 m, 32S 454376 4359900; **C67** = Carbonia-Iglesias prov., Buggerru, dint. Miniera S. Luigi, 347 m, 32S 452771 4358704; **C68** = Carbonia-Iglesias prov., Domusnovas, dint. sa Duchessa, 320 m, 32S 466164 4358209; **C69** = Carbonia-Iglesias prov., Domusnovas, dint. sa Duchessa, strada per Perda Niedda, 350 m, 32S 466233 4359025; **C70** = Carbonia-Iglesias prov., Iglesias, dint. Case Marganai, 660 m, 32S 463341 4356196; **C71** = Carbonia-Iglesias prov., Domusnovas, dint. P.ta Genna Ollioni, 650 m, 32S 463293 4356570; **C72** = Carbonia-Iglesias prov., Domusnovas, dint. P.ta Planotzara, 309 m, 32S 465718 4356515; **C74** = Medio Campidano prov., Villacidro, dint. T. Leni, eucalipteto, 300 m, 32S 469793 4361088; **C77** = Carbonia-Iglesias prov., Iglesias, dint. Case Marganai, car net from C85 to C01, 650 m; **C80** = Carbonia-Iglesias prov., Domusnovas, M.ti Marganai, Miniera Reigraxius, 465 m, 32S 464160 4357039; **C81** = Carbonia-Iglesias prov., Domusnovas, Valle Oridda, 643 m, 32S 465399 4362770; **C82** = Carbonia-Iglesias prov., Iglesias, M.ti Marganai, Tintillonis, 480 m, 32S 462590 4355061; **C84** = Carbonia-Iglesias prov., Iglesias, S. Benedetto, 500 m, 32S 459882 4357019; **C85** = Carbonia-Iglesias prov., Iglesias, M.ti Marganai, 540 m, 32S 463010 4355249; **G01** = Nuoro prov., Oliena, M. Maggione, 624 m, 32T 535451 4456520; **G02** = Nuoro prov., Oliena, P.ta sos Nidos, 986 m, 32T 536075 4456422; **G03** = Nuoro prov., Oliena, Oliena, 424 m, 32T 534746 4457479; **G04** = Nuoro prov., Orgosolo, Oristillai, 947 m, 32T 529688 4446725; **G05** = Ogliastra prov., Seui, dint. M. Tonneri, 876 m, 3 S 530745 4410020; **G06** = Ogliastra prov., Seui, dint. M. Tonneri, sorg. Nuletta, 892 m, 32S 531716 4412341; **G07** = Ogliastra prov., Seui, dint. M. Tonneri, Sa ucca 'e su Oe, 912 m, 32S 531228 4413496; **G08** = Ogliastra prov., Seui, dint. M. Tonneri, 919 m, 32S 530651 4412895; **G09** = Cagliari prov., Villanovatulo, dint. Nuraghe is Cangialis, 373 m, 32S 517956 4400645; **G11** = Cagliari prov., Sinnai, dint. M. Castangia, 584 m, 32S 532700 4351568; **G12** = Cagliari prov., Burcei, dint. Burcei, 631 m, 32S 528639 4356088; **G13** = Cagliari prov., Burcei, dint. Burcei, 725 m, 32S 528219 4356591; **G14** = Cagliari prov., Burcei, dint. P.ta Serpeddì, 785 m, 32S 526996 4356738; **G15** = Cagliari prov., Burcei, dint. P.ta Serpeddì, 954 m, 32S 525266 4356808; **G31** = Medio Campidano prov., Gesturi, Giara di Gesturi, 568 m, 32S 495926 4401318; **G35** = Nuoro prov., Lodé, S. Anna, strada per Siniscola, 490 m, 32T 554459 4491980; **G36** = Nuoro prov., Lula, dint. Lula, 530 m, 32T 542525 4480254; **G39** = Ogliastra prov., Talana, dint. Talana, 478 m, 32T 542523 4433941; **G41** = Ogliastra prov., Gairo, M. Perda Liana, 1219 m, 32S 535096 4417848; **G44** = Nuoro prov., Desulo, R. Aratu, 958 m, 32T 521882 4431913; **G46** = Nuoro prov., Gadoni, F. Flumendosa, riva, 402 m, 32S 516364 4416019; **G49** = Cagliari prov., Nurri, dint. Nuraghe Tacquara, fontana, 533 m, 32S 515371 4395479; **G50** = Oristano prov., Cabras, Tharros, 9 m, 32S 452048 4414023; **G51** = Cagliari prov., Vallermosa, dint. Cant. de s'Acquacotta, 83 m, 32S 483910 4361992; **G52** = Ogliastra prov., Seui, dint. M. Tonneri, 825 m, 32S 533277 4411585; **G54** = Ogliastra prov., Gairo, M. Tonneri, lecceta, 1020 m, 32S 530263 4415529; **G55** = Ogliastra prov., Gairo, M. Tonneri, dint. nuraghe Ardassai, lecceta, 1020 m, 32S 529111 4415819; **G56** = Ogliastra prov., Seui, Seui, 800 m, 32S 527585 4409970; **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. AB = A. Briganti; AD = A. Dodero; AK = A.H. Krausse; AM = A. Campanaro; AMo = A. Molinu; AT = A. Tenga; BM = B. Merz; CG = C. Giusto; CM = C. Meloni; CT = C. Torti; DA = D. Avesani; DB = D. Birtele; DD = D. Deidda; DW = D. Whitmore; EB

= E. Braga; EG = E. Gatti; EM = E. Minari; FC = F. Chessa; FM = F. Mason; FMa = F. Mazzocchi; GC = G. Chessa; GGa = G. Gardini; GGr = G. Grafitti; GN = G. Nardi; GS = G. Scaglioni; GZ = G. Zandi; IMA = I. Marcellino; JW = J. De Waele; LB = L. Briganti; L? = no collector mentioned; LF = L. Fancello; LS = L. Spada; MA = M. Armeni; MB = M. Bardiani; ME = M. Eggenberger; MM = M. Mei; MMu = M. Mucedda; MR = M. Rampini; MT = M. Tisato; MTr = M. Trizzino; MZ = M. Zapparoli; NS = N. Sanfilippo; PA = P. Audisio; PCe = P. Cerretti; PCo = P. Cornacchia; PL = P. Leo; RA = R. Argano; RM = R. Manconi; RRz = R. Rizzerio; SRi = S. Riese; SZ = S. Zoia; VC = V. Cottarelli; VV = V. Vomero.

SAMPLING METHODS. al = collecting at light; ba = bait (small pieces of meat mixed with hay placed in an open plastic tube); bz = glass trunk trap (beer and sugar); cn = car net; dc = direct collecting; lt = light trap; mt = Malaise trap; nt = hand net; oe = entomological umbrella; pt = pitfall trap (vinegar and salt); sn = sweep net; vg = sieve; wn = water net; wt = window flight trap.

OTHER ABBREVIATIONS AND RECURRENT TERMS USED IN FAUNISTIC LIST. C. = Casa = House; Can.le = Canale = Canal; Can.li = Canali = Canals; Cant. = Cantoniera = Roadman's house; coll. = collection; D = deutonymph/s; dint. = surroundings of; ex = specimen/s; dune = dunes; eucalipreto = eucalyptus plantation; foce = river mouth; F. = Fiume = River; Foresta = Forest; fontana = fountain; greto del = bed of [river]; Grotta = Cave; ingresso = entrance of; Isola = Island; L. = Lago = Lake; lecceta = holm-oak forest; leg. = collector/s; litoranea = coastal road; loc. = locality; Miniera = Mine; M. = Monte = Mount; M.ti = Monti = Mounts; P = protonymph/s; pineta = pinewood; prov. = province; P.ta = Punta = Peak; R. = Rio = stream; radura = clearing; radura con = clearing with; radura lungo strada = clearing alongside road; reg. = region; rigagnolo = rivulet; riva = bank; S. = San/Santa/Santo = Saint; sdb = same data but; Serbatoio = Reservoir; sorg. = sorgente = spring; sotto corteccia = under bark; spiaggia = beach; sponda sinistra = left bank; Stagno = Pond; strada = road; strada per = road to; su cadavere di = on carcass of; T. = Torrente = Torrent; tfi = translation from Italian; Tr = tritonymph/s; versante = slope; Valle = Valley; verso = in direction of; wdc = without date of collection.

DEPOSITORIES. CGG = G. Gardini collection (Genoa, Italy); CGN = G. Nardi collection (Cisterna di Latina, Latina, Italy); CGP = G. Platia collection (Gatteo, Forlì-Cesena, Italy); CKR = K. Rognes collection (Stavanger, Norway); CMM = M. Mei collection (Rome, Italy); CNBFVR = Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale "Bosco Fontana" di Verona (Marmirolo, Mantua, Italy); CPC = P. Cornacchia collection (Porto Mantovano, Mantua, Italy); MHNG = Muséum d'histoire naturelle (Genève, Switzerland); MSNM = Museo Civico di Storia Naturale di Milano (Milan, Italy); MCZR = Museo Civico di Zoologia (Rome, Italy); TCUB = M. von Tschirnhaus collection, University of Bielefeld (Bielefeld, Germany); ZSM = Zoologische Staatssammlung München (Munich, Germany).

#### Quotation-sample of single notes:

Podenas S., 2011. Short notes 15. Diptera, Limoniidae, pp. 862-866. In: Nardi G., Whitmore D., Bardiani M., Birtele D., Mason F., Spada L. & Cerretti P. (eds), Biodiversity of Marganai and Montimannu (Sardinia). Research in the framework of the ICP Forests network. Conservazione Habitat Invertebrati, 5. Cierre Edizioni, Sommacampagna, Verona.

#### REFERENCES

- Bardiani M., 2011. Introduction, pp. 15-56. In: Nardi G., Whitmore D., Bardiani M., Birtele D., Mason F., Spada L. & Cerretti P. (eds), Biodiversity of Marganai and Montimannu (Sardinia). Research in the framework of the ICP Forests network. Conservazione Habitat Invertebrati, 5. Cierre Edizioni, Sommacampagna, Verona.
- Cerretti P., Mason F., Minelli A., Nardi G. & Whitmore D., 2009. Foreword, pp. 5-7. In: Cerretti P., Mason F., Minelli A., Nardi G. & Whitmore D. (eds), Research on the terrestrial Arthropods of Sardinia. Zootaxa, 2318.
- de Jong Y.S.D.M. (ed.), 2011. Fauna Europaea version 2.4. Web Service available online at <http://www.faunaeur.org> [accessed 1 September 2011 as version 2.4 of 27 January 2011].

habitats, while the smaller *E. sicanus* mainly colonizes peripheral areas. Crevices of man-made structures (e.g. walls, houses) represent some of the most favourable microhabitats, as they retain humidity and mild temperatures during the seasons. For this reason, *E. sicanus* populations can be common in the most humid microhabitats around houses where populations of the larger competitor, *E. flavicaudis*, are absent.

Although the Sardinian scorpiofauna has been extensively studied in the past, it is still of high interest. Further studies on the still unresolved Balkan and Aegean *Euscorpius* taxonomy (Kaltas et al. 2008; Fet 2010) could bring to a better understanding of the entire genus, including the Sardinian *E. sicanus*. Also, distributional data on Sardinian scorpions are still deficient, especially for *E. flavicaudis*, which appears to be present only in the northern part of the island (Crucitti et al. 1998). Both Sardinian scorpions are not of medical importance since the sting, apart from rare exceptions, only causes local effects (Torregiani & La Cavera 1990).

## REFERENCES

- Bardiani M., 2011. Introduction, pp. 15–56. In: Nardi G., Whitmore D., Bardiani M., Birtele D., Mason F., Spada L. & Cerretti P. (eds), Biodiversity of Marganai and Montimannu (Sardinia). Research in the framework of the ICP Forests network. Conservazione Habitat Invertebrati, 5. Cierre Edizioni, Sommacampagna, Verona.
- Crucitti P., Buccedi S. & Malori M., 1998. Il genere *Euscorpius* nell'Italia centrale. La distribuzione nel Lazio (Scorpiones, Chactidae). Bollettino dell'Associazione romana di Entomologia, 53 (1-4): 1–17.
- Di Caporiacco L., 1950. Le specie e sottospecie del genere *Euscorpius* viventi in Italia e alcune zone confinanti. Atti dell'Accademia nazionale dei Lincei. Memorie. Classe di Scienze fisiche, matematiche e naturali. Serie 8. 2: 159–230.
- Fanzago F., 1872. Sugli scorpioni italiani. Atti della Società veneto-trentina di Scienze naturali, 1: 75–89.
- Fet V., 2010. Scorpions of Europe. Acta zoologica Bulgarica, 62 (1), 2010: 3–12.
- Fet V., Soleglad M.E., Gantenbein B., Vignoli V., Salomone N., Fet E.V. & Schembri P.J., 2003. New molecular and morphological data on the *Euscorpius carpathicus* species complex (Scorpiones: Euscorpiidae) from Italy, Malta, and Greece justify the elevation of *E. c. sicanus* (C. L. Koch, 1837) to the species level. Revue suisse de Zoologie, 110 (2): 355–379.
- Guerra M., 1979. Catalogo degli scorpioni del genere *Euscorpius* conservati nella raccolta del Museo civico di scienze naturali di Bergamo. Rivista del Museo civico di Storia naturale "E. Caffi", 0: I–V + 1–294.
- Kaltsas D., Stathi I. & Fet V., 2008. Scorpions of the Eastern Mediterranean, pp. 209–246. In: Makarov S.E. & Dimitrijević R.N. (eds), Advances in Arachnology and Developmental Biology. Papers dedicated to Prof. Dr. Božidar Čurčić. Monographs, 12.
- Polis G.A. & McCormick S.J., 1987. Intraguild predation and competition among desert scorpions. Ecology, 68 (2): 332–343.
- Thorell T., 1876. On the classification of scorpions. Annals and Magazine of Natural History, 4 (17): 1–15.
- Torregiani F. & La Cavera C., 1990. Puntura di scorpione (*Euscorpius*, sp.) in Italia e rassegna dello scorpionismo. Minerva Medica, 81 (Suppl. 2) (7–8): 137–145.
- Vachon M., 1978. Remarques sur *Euscorpius carpathicus* (Linné, 1767) *canestrinii* (Fanzago, 1872) (Scorpionida, Chactidae). Annales Historico-Naturales Musei Nationalis Hungarici, 70: 321–330.
- Valle A., 1975. Considerazioni intorno alle sottospecie di *Euscorpius carpathicus* (L.) (Scorpiones, Chactidae). L'Ateneo Parmense, Acta naturalia, 11: 209–234.
- Vignoli V., 2002. Il genere *Euscorpius* Thorell, 1876 (Scorpiones: Euscorpiidae). Unpublished B. Sc. thesis, Università di Siena, Italy, 110 pp.
- Vignoli V., Salomone N., Caruso T. & Bernini F., 2005. The *Euscorpius tergestinus* (C.L. Koch, 1837) complex in Italy: Biometrics of sympatric hidden species (Scorpiones: Euscorpiidae). Zoologischer Anzeiger, 244: 97–113.
- Vignoli V. & Salomone N., 2008. A review of and additions to the current knowledge of the scorpion genus *Euscorpius* Thorell, 1876 (Scorpiones, Euscorpiidae). Fragmenta entomologica, 40 (2): 189–228.

## INSECTA

## 4. Coleoptera, CLERIDAE

Paolo CORNACCHIA

c/o MiPAAF, Corpo Forestale dello Stato, Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale "Bosco Fontana", Strada Mantova 29, I-46045 Marmirolo (MN), Italy. E-mail: paolocornacchia@yahoo.it

This family is distributed chiefly in the tropical and subtropical regions. Thirty-three species are known from Italy, more than half of which (19) are known also from Sardinia (Audisio et al. 1995; Löbl et al. 2007; Zappi & Pantaleoni 2010). The larvae of most species of the subfamilies Tillinae and Clerinae are predaceous on larvae of saproxylic beetles (Bostrichidae, Cerambycidae, Scolytidae, etc.) (cf. Gobbi 1984; Gerstmeier et al. 1999; Opitz 2002), whereas those of many species of *Trichodes* Herbst, 1792 (Clerinae) are predaceous on the pre-imaginal stages of Hymenoptera Apoidea (Gerstmeier et al. 1999). Both the larvae and adults of the Korinetinae develop in carrion (cf. Opitz 2002).

During the researches carried out by CNBFVR in Sardinia (cf. Bardiani 2011) nine species were collected (by sweep net, Malaise traps, window traps, etc.), mostly from March to November 2006.

The examined material, with the exception of specimens in the author's collection (CPC), is stored in the collection of CNBFVR. Possible interpolations are given in square brackets.

The nomenclature adopted hereunder is that used by Löbl et al. (2007).

*Denops albofasciatus* (Charpentier, 1825)

RECORDS. **S2**: 8–22.VIII.2006, GC, mt, 1 ex. **S3**: 2–16.V.2006, GC, mt, 1 ex. **SAR1**: 15–30.VI.2004, GC, mt, 1 ex.

OTHER RECORDS. **Olbia-Tempio prov.**: Golfo Aranci, wdc, AD, 1 ex (CPC). **Sassari prov.**: Tissi, 2.VI.1964, Moscardini leg., 1 ex (CPC).

NOTES. Species known from central-southern Europe, North Africa, Lebanon and Israel (Löbl et al. 2007), and which occurs throughout the whole of Italy, major islands included (Audisio et al. 1995).

The larvae develop in *Quercus*, *Vitis*, *Olea*, *Ficus* and *Ceratonia* wood (Gerstmeier 1998) where, like the adults, they are predaceous on Coleoptera Cerambycidae and Bostrichidae (Gerstmeier et al. 1999; Kolibáč et al. 2005). In Calabria (southern Italy), the species has been collected also under bark of *Tamarix* sp. (Ratti 1997), while on the Island of Vulcano (Aeolian Islands, Sicily) its remains were found in dead *Spartium junceum* wood infested by *Deilux fugax* (Olivier, 1790) (Cerambycidae) (Cecchi & Lo Cascio 1999).

The few above-mentioned specimens were all collected with Malaise traps.

*Tilloidea transversalis* (Charpentier, 1825)

RECORDS. **S1**: 13–27.VI.2006, GC, mt, 4 ex; 27.VI–11.VII.2006, GC, mt, 2 ex.

OTHER RECORDS. **Cagliari prov.**: Pula, VI.1937, L?, 3 ex (CPC); [Villaputzu], Salto di Quirra, 1.VII.1982, CM, 2 ex (CPC); Villasimius, Isola Serpentara, 25.VI.1987, VV, 20 ex; Villaspeciosa, 13.VI.1982, CM, 3 ex (CPC). **Nuoro prov.**: Monte Albo, 600–800 m, 8.VII.2001, PCo GS, sn, 4 ex (CPC); Orgosolo, VII.1939, Pomini leg., 1 ex (CPC). **Ogliastra prov.**: Seui, [Riu?] S. Girolamo, 800 m, 28.VI.1983, CM, 1 ex (CPC). **Sassari prov.**: Alghero, litoranea Alghero-Bosa, 1.VII.1999, PCo, 3 ex (CPC); Golfo dell'Asinara, Osilo San Lorenzo in Valle, sentiero dei mulini, 18.VII.2004, DB, sn, 2 ex; Porto Torres, Isola Asinara, Cala d'Arena, 1.VII.1987, VV, 2 ex.

NOTES. Species distributed in south-eastern Europe, Turkey and North Africa (Gerstmeier 1998; Löbl et al. 2007), known in Italy from the peninsular regions, Sicily and Sardinia (Audisio et al. 1995; Gerstmeier 2004). Its phytophagous larvae feed on the marrow of Umbelliferae and Compositae, occasionally also on eggs and larvae of other insects. The adults, which are anthophilous, feed on pollen as well as on small insects, especially beetles of the families Curculionidae, Cerambycidae and Anobiidae (Sparacio 1997). I collected the above three specimens from the coastal road Alghero-Bosa on *Cynara* sp. (Compositae), together with specimens of the genus *Lixus* Fabricius, 1801 (Curculionidae).

*Opilo domesticus* (Sturm, 1837)

RECORDS. **C11**: 8.IX.2006, GN, al, 1 ex. **C31**: 12.XI.2006, GN, dc under stones, 1 ex. **C82**: 22–25.IX.2004, DB PCe EG FM DW, mt, clearing with *Foeniculum vulgare*, 1 ex. **S1**: 8–22.VIII.2006, FC, mt, 1 ex; 22.VIII–5.IX.2006, FC, mt, 1 ex. **S2**: 25.VII–8.VIII.2006, GC, mt, 1 ex; 8–22.VIII.2006, GC, mt, 1 ex; 22.VIII–5.IX.2006, GC, mt, 1 ex.

NOTES. Species recorded from the Palaearctic, Nearctic and Neotropical Regions (Löbl et al. 2007); it is widespread but generally uncommon (Gerstmeier 1998). It is distributed throughout the whole of mainland Italy and Sardinia, but has not yet been found in Sicily (Audisio et al. 1995; Gerstmeier 2004). Both the larvae and adults live in wood, including construction timber, where they prey upon other xylophagous beetles (chiefly Cerambycidae but also Anobiidae and Bostrichidae) (Gerstmeier 1998). On Lipari Island (Sicily) it was collected at night on branches of *Ficus carica* (Cecchi & Lo Cascio 1999).

*Thanasimus formicarius formicarius* (Linnaeus, 1758)

RECORDS. **S3**: 24.III–24.V.2006, MB DB PCo DW, wt, 1 ex.

NOTES. Species distributed in Europe, North Africa, Palaearctic Asia (reaching the Russian Far East eastwards) and introduced in North America (Kolibáč et al. 2005; Löbl et al. 2007), occurring in the mainland regions of Italy as well as in Sicily and Sardinia (Audisio et al. 1995). During the larval stages it lives in wood in the tunnels bored by Scolytidae (Coleoptera), where it preys upon the larvae of these beetles; the adults, which show similar feeding habits, can be found on logs and stumps, mainly of conifers (Sparacio 1997; Kolibáč et al. 2005). The

single specimen listed above was collected with a window flight trap suspended about 2 m above the ground, in a reforestation area with *Pinus radiata* (cf. Bardiani 2011).

*Clerus mutillarius mutillarius* Fabricius, 1775

RECORDS. **SAR1**: 11.VI.2004, GN, dc, 1 ex; 16.VII–1.VIII.2004, GC, wt, 1 ex; 1–16.VIII.2004, GC, wt, 3 ex; 16.VIII–9.IX.2004, GC, wt, 1 ex; 20.V–16.VI.2005, GC, pt, 1 ex; 16.VI–14.VII.2005, GC, wt, 2 ex; 16.VI–14.VII.2005, GC, mt, 2 ex; 14.VII–5.VIII.2005, GC, mt, 1 ex; 14.VII–5.VIII.2005, GC, wt, 13 ex.

NOTES. Species present in central-southern Europe (reaching the Caspian Sea eastwards) and North Africa (Gerstmeier 1998; Löbl et al. 2007), recorded in Italy from the mainland regions, Sicily and Sardinia (Audisio et al. 1995). Its biology is similar to those of the previous two species (Sparacio 1997).

*Trichodes alvearius* (Fabricius, 1792) (fig. 4.1)

RECORDS. **C01**: 13.VI.2004, GN, sn, 1 ex. **C03**: 23.V.2006, PCo MB DB DW, sn, 1 ex. **C23**: 19.V.2006, PCo MB DB DW, sn, 4 ex; 19–24.V.2006, MB DB PCo DW, bz, 5 ex; 24.V.2006, PCo MB DB DW, sn, 1 ex. **C27**: 22.V.2006, PCo MB DB DW, sn, 1 ex. **C81**: 10.VI.2004, GN, dc, 1 ex. **C82**: 7.VI.2004, GN, dc, 1 ex. **S1**: 16–30.V.2006, GC, mt, 1 ex.

OTHER RECORDS. **A05**: 13.VI.2004, GN DB PCe MT DW, sn, 2 ex; 14.VI.2004, GN PCe DB MT DW, sn, 1 ex. **G46**: 17.V.2008, GN, sn, 1 ex. **G49**: 18.V.2008, GN PA MB MTr, dc on Compositae, 1 ex. **G51**: 19.V.2008, GN PA MB MTr, sn, 1 ex. **Cagliari prov.**: Capoterra, Rio S. Lucia, 4.VI.1985, CM, 2 ex (CPC). **Oristano prov.**: Oristano, 6.V.2003, MA, 1 ex.

NOTES. Species occurring in central-southern Europe and Maghreb (Gerstmeier 1998; Löbl et al. 2007), recorded in Italy from the mainland and major islands (Audisio et al. 1995). The larvae are commensals or predators of various species of both solitary and social hymenopterans, and occasionally prey upon larvae of xylophagous beetles (Sparacio 1997). The adults, which are anthophilous, are mainly pollen feeders but also prey upon small insects (Sparacio 1997). Most of the above-mentioned specimens were collected by sweeping grasses and flowers, whereas a small series was collected with an aerial trap (baited with beer and sugar) placed on the trunk of a cork-oak (*Quercus suber*) in a small clearing alongside the Rio Cannisoni stream. *T. alvearius* is the sole species of the genus found during the recent researches in

Sardinia, despite the fact that two other congeneric species, with a similar ecology, are recorded from the island: *T. ammios* (Fabricius, 1787) and *T. apiarius* (Linnaeus, 1758) (Porta 1929; Audisio et al. 1995).

*Necrobia rufipes* (DeGeer, 1775)

RECORDS. **C15**: 23.III.2006, PCo DW, dc on sheep carcass, 3 ex.

NOTES. A cosmopolitan, necrophilous species (Gerstmeier 1998; Löbl et al. 2007), often also anthrophilous on stored foodstuffs (Ratti 1997). In Italy it is recorded from all regions (Audisio 1976; Audisio et al. 1995). The above specimens were collected in the wool of a sheep carcass; I have also collected this species in the Po Plain (Lombardy reg., Mantua prov., San Cataldo, 13.IX.1979, 1 ex), among dejections in a mink (*Mustela* sp.) farm.

*Necrobia violacea* (Linnaeus, 1758)

RECORDS. **C15**: 23.III.2006, PCo DW, dc on sheep carcass, 1 ex.

NOTES. A cosmopolitan species (Gerstmeier 1998; Löbl et al. 2007) recorded in Italy from the mainland regions, Sicily and Sardinia (Audisio et al. 1995). It was collected together with the previous species, also in the cited mink farm, where it was the most common of the two. Moreover, in the Abruzzi region (Teramo prov., Monti della Laga, between Morrice and Ceppo, along Provincial Road 48, 1000 m, 16.V.2005), I collected various specimens in a meadow on a stripped bovine skeleton, together with *Nitidula rufipes* (Linnaeus, 1767) and *N. carnaria* (Schaller, 1783) (Coleoptera, Nitidulidae).

*Korynetes pusillus* Klug, 1842

RECORDS. **S2**: 18.IV–2.V.2006, GC, mt, 2 ex; 13–27.VI.2006, GC, mt, 2 ex; 5–19.IX.2006, GC, mt, 1 ex.

NOTES. Species known from Corsica, Italy (Emilia-Romagna, Elba Island, central regions, Capri Island, Sicily and Sardinia), Albania, (Porta 1929, as *Corynetes pusillus*; Zangheri 1969; Gerstmeier 1998; Löbl et al. 2007) and Israel (Gerstmeier et al. 1999). It is synanthropic and feeds on the larvae of Anobiidae (Coleoptera) and other insects (Gerstmeier 1998) on corpses, during the preskeletal phase of decomposition (Porta 1929). In Emilia-Romagna, it has been found also under debris in an oak wood (Zangheri 1969). During the recent researches in Sardinia, it was collected only with Malaise traps.



Fig. 4.1. *Trichodes alvearius* (Sassari prov., Villanova Monteleone, 1.V.2007) (photo by P. Niolu).

## REFERENCES

- Audisio P., 1976. I Cleridae e gli Endomychidae delle Isole Ponziane (Coleoptera). *Fragmenta entomologica*, 12 (2): 159–162.
- Audisio P., Gobbi G., Liberti G. & Nardi G., 1995. Coleoptera Polyphaga IX (Bostrichoidea, Cleroidea, Lymexyloidea), pp. 1–27. In: Minelli A., Ruffo S. & La Posta S. (eds), *Checklist delle specie della fauna italiana*, 54. Calderini, Bologna.
- Bardiani M., 2011. Introduction, pp. 15–56. In: Nardi G., Whitmore D., Bardiani M., Birtele D., Mason F., Spada L. & Cerretti P. (eds), *Biodiversity of Marganai and Montimannu (Sardinia). Research in the frame work of the ICP Forests network. Conservazione Habitat Invertebrati*, 5. Cierre Edizioni, Sommacampagna, Verona.
- Cecchi B. & Lo Cascio P., 1999. Note sui Cleridi dell'Arcipelago Eoliano (Coleoptera Cleridae). *Il Naturalista siciliano*, S. IV, 23 (1–2): 157–162.
- Gerstmeier R., 1998. Checkered beetles: illustrated key to the Cleridae and Thanerocleridae of the Western Palearctic. Margraf Verlag, Weikersheim, 241 pp. + 8 pls.
- Gerstmeier R., 2004. Fauna Europaea: Cleridae. In: Audisio P. (ed.), *Fauna Europaea: Coleoptera 2, Beetles*. Fauna Europaea version 1.1, available at <http://www.faunaeur.org> [accessed September 2010 as version 3 of 19 June 2010].
- Gerstmeier R., Halperin J. & Chekatunov V., 1999. An Annotated List of Cleridae and Thanerocleridae (Coleoptera) of Israel. *Phytoparasitica*, 27 (1): 27–33.
- Gobbi G., 1984. Appunti su Coleotteri Cleroidei predatori di xilofagi (Coleoptera, Trogositidae, Cleridae, Melyridae). *Bollettino dell'Associazione romana di Entomologia*, 38 (1–4) (1983): 51–62.
- Kolibáč J., Majer K. & Švihla V., 2005. Cleroidea. Beetles of the Superfamily Cleroidea in the Czech and Slovak Republics and neighbouring areas. Clarion Production, Praha, 186 pp. + 24 pls.
- Löbl I., Rolčik J., Kolibáč J. & Gerstmeier R., 2007. Cleridae, pp. 367–384. In: Löbl I. & Smetana A. (eds), *Catalogue of Palearctic Coleoptera. Volume 4. Elateroidea - Derodontoida - Bostrichoidea - Lymexyloidea - Cleroidea - Cucujoidea*. Apollo Books, Stenstrup.
- Opitz W., 2002. 73. Cleridae Latreille, 1804, pp. 267–280. In: Arnett R.H. Jr. (†), Thomas M.C., Skelley P.E. & Frank J.H. (eds), *American Beetles 2, Polyphaga: Scarabaeoidea through Curculionoidea*. CRC Press, Boca Raton, London, New York, Washington.
- Porta A., 1929. *Fauna Coleopterorum Italica. III. Diversicornia*. Stabilimento Tipografico Piacentino, Piacenza, 466 pp.
- Ratti E., 1997. Catalogo dei coleotteri della Laguna di Venezia. VIII – Trogositidae, Cleridae, Lymexyloidea. *Bollettino del Museo civico di Storia naturale di Venezia*, 47 (1996): 177–185.
- Sparacio I., 1997. Coleotteri di Sicilia. Parte II. Mediterraneo, *Guide Naturalistiche*, 5. L'Epos, Palermo, 206 pp.
- Zangheri P., 1969. Repertorio sistematico e topografico della Flora e Fauna vivente e fossile della Romagna. Tomo III. Museo civico di Storia naturale di Verona, *Memorie fuori serie*, 1: 855–1414.
- Zappi I. & Pantaleoni R.A., 2010. *Opilo orocastaneus* n. sp.: a new checkered beetle from Sardinia (Coleoptera Cleridae). *Bulletin of Insectology*, 63 (2): 225–231.

## 5. Coleoptera, ELATERIDAE

## Giuseppe PLATIA

Via Molino Vecchio 21, I-47043 Gatteo (FC), Italy. E-mail: [pinoplatia@teletu.it](mailto:pinoplatia@teletu.it)

The Elateridae are a family of beetles of worldwide distribution, with over 10,000 described species mainly concentrated in the tropics (Johnson 2002). In Italy, 245 species belonging to 69 genera are recorded (Platia 2005; Platia & Gudenzi 2005a, 2005b; Cate 2007; Platia & Pedroni 2010). The adults can be recognized by their elongated shape and by their ability to jump using particular thoracic structures that emit a clicking sound, hence the common name of click-beetles. Adults can be found all year round, either active or overwintering; the larvae develop mainly in the ground or in rot-holes on old trees, showing extremely varied feeding habits, from phytophagous to saprophagous or carnivorous (Platia 1994). Species are listed following the nomenclature of Cate (2007).

*Athous (Orthathous) melonii* Platia, 1984

RECORDS. **C82**: 22–25.IX.2004, DB DA MB PCe MM DW, mt glade with *Foeniculum vulgare*, 1 ♂. **S2**: 5–19.IX.2006, GC, mt, 3 ex; 19.IX–3.X.2006, GC, mt, 2 ex. **S3**: 5–19.IX.2006, GC, mt, 2 ex; 3–17.X.2006, GC, mt, 1 ex. **SAR1**: 16.VIII–8.IX.2004,