

FOUR NEW RECORDS TO THE ROVE-BEETLE FAUNA OF PORTUGAL (COLEOPTERA, STAPHYLINIDAE)

Pedro Martins da Silva^{1*}, Israel de Faria e Silva¹, Mário Boieiro¹,
Carlos A. S. Aguiar¹ & Artur R. M. Serrano^{1,2}

¹ Centro de Biologia Ambiental, Faculdade de Ciências da Universidade de Lisboa, R. Ernesto de Vasconcelos, Ed. C2-2º Piso, Campo Grande, 1749-016 Lisboa.

² Departamento de Biologia Animal da Faculdade de Ciências da Universidade de Lisboa, R. Ernesto de Vasconcelos, Ed. C2-2º Piso, Campo Grande, 1749-016 Lisboa.

* Corresponding author: pgpmartins@yahoo.co.uk

Abstract: In the present work, four rove beetle records - *Ischnosoma longicorne* (Mäklin, 1847), *Thinobius* (*Thinobius*) sp., *Hesperus rufipennis* (Gravenhorst, 1802) and *Quedius cobosi* Coiffait, 1964 - are reported for the first time to Portugal. The genus *Thinobius* Kiesenwetter is new for Portugal and *Hesperus* Fauvel is recorded for the first time from the Iberian Peninsula. The distribution of *Quedius cobosi* Coiffait, an Iberian endemic, is now extended to Western Portugal. All specimens were sampled in cork oak woodlands, in two different localities – Alcochete and Grândola - using two distinct sampling techniques.

Key word: Coleoptera, Staphylinidae, New records, Iberian Peninsula, Portugal.

Resumo: No presente trabalho são apresentados quatro registos novos de coleópteros estafilínidos para Portugal - *Ischnosoma longicorne* (Mäklin, 1847), *Thinobius* (*Thinobius*) sp., *Hesperus rufipennis* (Gravenhorst, 1802) e *Quedius cobosi* Coiffait, 1964. O género *Hesperus* Fauvel é registado pela primeira vez para a Península Ibérica e o género *Thinobius* Kiesenwetter é novidade para Portugal. A distribuição conhecida de *Quedius cobosi* Coiffait, um endemismo ibérico, é também ampliada para o oeste de Portugal. Todos os exemplares foram amostrados em montados de sobreiro, em duas localidades diferentes - Alcochete e Grândola – através de duas técnicas de amostragem distintas.

Keywords: Coleoptera, Staphylinidae, Novos registos, Península Ibérica, Portugal.

Cuatro nuevos registros para la fauna de estafilínidos de Portugal (Coleoptera, Staphylinidae).

Resumen: En el presente trabajo se presentan cuatro registros de nuevos coleópteros estafilínidos para Portugal: *Ischnosoma longicorne* (Mäklin, 1847), *Thinobius* (*Thinobius*) sp., *Hesperus rufipennis* (Gravenhorst, 1802) y *Quedius cobosi* Coiffait, 1964. El género *Hesperus* Fauvel se registra por primera vez para la Península Ibérica y el género *Thinobius* Kiesenwetter constituye novedad para Portugal. La distribución conocida de *Quedius cobosi* Coiffait, un endemismo ibérico, se amplía hacia el Oeste de Portugal. Todos los ejemplares fueron colectados en corteza de roble, en dos localidades diferentes: Alcochete y Grândola, mediante dos técnicas de colecta diferentes.

Palabras clave: Coleoptera, Staphylinidae, nuevos registros, Península Ibérica, Portugal.

Introduction

Rove beetles are one of the most speciose Coleoptera families, with up to 40.000 described species worldwide (Bohac, 1999). They are common in a variety of habitats ranging from tropical forests to tundra and exhibit a variety of feeding habits (e.g., predators, mycetophagous, anthrophagous, phytodetrivicolous) (Klimaszewski, 2000). Nevertheless rove beetles are essentially predators, preying upon aphids, bark beetles and other invertebrates living on trees, herbaceous plants and soil. Consequently, several studies have highlighted their role in the ecosystems and their utility as pest controllers in semi-natural and managed systems (e.g., Shah *et al.*, 2003; Lawes *et al.*, 2005). More than 1600 rove beetle species have already been reported from the Iberian Peninsula (Outerelo & Gamarra, 1985; Löbl & Smetana, 2004; Alonso-Zarazaga, 2005) among which there is a considerable number of endemics (Drugmand & Outerelo, 1997). These high levels of species richness and endemism make rove beetles an appealing tool to use in programmes of environmental monitoring and nature conservation (Borges *et al.*, 2000; Serrano, 2002), but hitherto its application in Iberia has not yet been implemented. In Portugal the family Staphylinidae is also well represented. From the

3600-3800 species of Coleoptera reported to occur in Portugal (Serrano, 2000; Grosso-Silva, 2003) about a fifth belong to the Staphylinidae family and the number of endemic rove beetles attains approximately 174 species. However, and despite some contributions made in the past (e.g., Oliveira, 1894; Seabra, 1943; Ferreira, 1962; Coiffait, 1974, 1978; Serrano, 1981; Serrano & Aguiar, 1995; Boieiro *et al.*, 1999), these numbers are far from complete since the knowledge we have on this hyperdiverse and taxonomically complex group of beetles is still very incipient.

Material and methods

Rove beetle specimens were sampled from agro-ecosystems in two different Provinces of Portugal, namely Baixo Alentejo and Ribatejo. The first sampling site was located in “Serra de Grândola” (Grândola) at the “Centro de Biologia Ambiental” (CBA) Field Station. Flight-interception traps were set in the canopy of cork oak trees (*Quercus suber*) in three habitats that differed considerably in plant cover density, in order to study the biodiversity of beetles associated with this particular microhabitat.

The other sampling site derived from the Project “Biodiversity Assessment Tools” (“BioAssess”) that took place in several cork oak woodland habitats near Alcochete. There, the specimens were collected in pitfall traps (sixteen plot points per site).

In both study sites cork oak trees were dominant and the undercover was mainly composed by *Daphne gnidium*, *Lavandula luisieri*, *Cistus ladanifer* and *Cistus salvifolius* plants.

Results

Tachyporinae Macleay, 1825

Genus *Ischnosoma* Stephens, 1829

- *Ischnosoma longicorne* (Mäklin, 1847)

EXAMINED MATERIAL: Alcochete - “Companhia das Lezírias” and “Campo de Tiro de Alcochete” (29SNC09), 29-05-01, 2♀.

The specimens were collected in pitfall traps in cork oak woodlands. Members of the genus *Ischnosoma* are generally found in forest leaf litter, moss, decaying vegetation, under bark of fallen trees and rotten wood, as well as under stones and in mushroom communities (Campbell, 1991). Both adults and larvae usually occur in moist habitats where they are fast-moving and mainly generalist predators, but some *Ischnosoma* species are mycophagous too, showing a particular preference for moss in damp woods (Campbell, 1991). The species *Ischnosoma longicorne* is widely distributed in Europe and has also been recorded from Japan and Russia (Löbl & Smetana, 2004; Alonso-Zarazaga, 2005).

Oxytelinae Fleming, 1821

Genus *Thinobius* Kiesenwetter, 1844

- *Thinobius (Thinobius)* sp.

EXAMINED MATERIAL: Alcochete - “Companhia das Lezírias” and “Campo de Tiro de Alcochete” (29SNC09), 23-10-01, 2♂♂.

The knowledge on the biology of these beetles is scarce; probably they are mostly saprophagous, feeding on forest litter, decaying vegetable material, dung and carrion (Klimaszewski, 2000). Other species of this genus have subterranean habits, only rarely seen at the soil surface. The two specimens identified were collected in pitfall traps in cork oak woodlands. This genus is distributed all over Europe, Middle East and North Africa (Alonso-Zarazaga, 2005; Löbl & Smetana, 2004).

Staphylininae Latreille, 1802

Genus *Hesperus* Fauvel, 1874

- *Hesperus (Hesperus) rufipennis* (Gravenhorst, 1802)

EXAMINED MATERIAL: “Serra de Grândola” - CBA Field Station (29SNC31), 16-09-1999, 1♂, 1♀.

The specimens were sampled in the canopy of cork oak trees by flight-interception traps. This uncommon rove beetle species has been recorded mainly from old growth forests, where it seems to be highly associated with hollows in trees and fungi communities (Coiffait, 1974, Ponel 1993). *Hesperus rufipennis* has been reported from various countries in Central and South Europe, as well as from Morocco (Löbl & Smetana, 2004; Alonso-Zarazaga, 2005).

Genus *Quedius* Stephens, 1829

- *Quedius (Quedius) cobosi* Coiffait, 1964

EXAMINED MATERIAL: Alcochete - “Companhia das Lezírias” and “Campo de Tiro de Alcochete” (29SNC09), 10-10-01, 4♂♂, 3♀♀.

The specimens were captured with pitfall traps in cork oak woodlands regularly pastured by bovines. The majority of *Quedius* species are known to be predaceous and live in ground litter, wet moss, decaying organic matter, marshes, swamps, other wet biotopes and some of them are also found under bark and ground nests (Smetana, 1971; Topp & Smetana, 1998). However, the biology of *Q. cobosi* is still almost unknown since this Iberian endemic has hitherto been solely recorded a few times from several localities in Andalusia (Coiffait, 1974, 1978; Alonso-Zarazaga, 2005).

Conclusion

Despite the high species richness and high number of endemics, rove beetles are still a relatively poor studied group in the Iberian Peninsula. In Portugal, during the last century, there have been a few sporadic contributions to the knowledge of this group of beetles, but no systematic work has been carried on, in order to allow a clearer assessment of the Staphylinidae biodiversity. However, recently, Gamarra & Outerelo (2005) made an important contribution to the knowledge of Iberian Staphylinidae by updating the knowledge on the subfamily Aleocharinae, a speciose and taxonomically very difficult group, providing a valuable tool and a stimulus for subsequent research.

In this work, four species and two genera were reported for the first time to Portugal. One genus (*Hesperus*) was also a novelty to the Iberian Peninsula. These data make us believe that many more species (and even supraspecific taxa) are still to be found in Portugal or even described as new for science since many peculiar microhabitats have not yet been conveniently prospected.

References

- ALONSO-ZARAZAGA, M. A. 2005. Fauna Europaea: Coleoptera, Staphylinidae. Fauna Europaea version 1.2, <http://www.faunaeur.org>
- BOHAC, J. 1999. Staphylinid beetles as bioindicators. *Agriculture, Ecosystems and Environment*, **74**: 357-372.
- BOIEIRO, M., A. R. M. SERRANO & C. A. S. AGUIAR 1999. Contribuição para o conhecimento dos coleópteros estafilínídeos de Portugal (Coleoptera, Staphylinidae). *Boletim da Sociedade Portuguesa de Entomologia*, **6**: 59-69.
- BORGES, P. A. V., A. R. M. SERRANO & J. A. QUARTAU 2000. Ranking the Azorean Natural Forest Reserves for conservation using their endemic arthropods. *Journal of Insect Conservation*, **4**: 129-147.
- CAMPBELL, J. M. 1991. A revision of the genera *Mycetoporus* Mannerheim and *Ischnosoma* Stephens (Coleoptera: Staphylinidae: Tachyporinae) of North and Central America. *Memoirs of the Entomological Society of Canada*, **156**: 1-169.
- COIFFAIT, H. 1974. Coléoptères Staphylinidae de la région paléarctique occidentale, II - Sous famille Staphylininae, Tribus Philonthini et Staphylinini. *Nouvelle Revue d'Entomologie*, **4**(4): 1-593.

- COIFFAIT, H. 1978. Coléoptères Staphylinidae de la region paléarctique occidentale, III - Sous famille Staphylininae, Tribus Quediini et Sous famille Paederinae, Tribu Pinophilini. *Nouvelle Revue d'Entomologie*, **8**(4): 1-364.
- DRUGMAND, D. & R. OUTERELO 1997. Les Staphylinidae endémiques de l'ouest de l'Europe continentale (Coleoptera): premiers résultats. *Documents de travail de l'Institut royal des Sciences naturelles de Belgique*, **87**: 1-150.
- FERREIRA, R.N. 1962. Contribuição para um catálogo da família Staphylinidae da fauna portuguesa. *Memórias e Estudos do Museu Zoológico da Universidade de Coimbra*, **280**: 1-21.
- GAMARRA, P. & R. OUTERELO 2005. Catálogo iberobaleár de los Aleocharinae (Coleoptera: Staphylinidae). *Boletín Sociedad Entomológica Aragonesa*, **37**: 1-81.
- GROSSO-SILVA, J. M. 2003. Introdução aos Insectos. pp. 6-25. In: Maravalhas, E. (Ed.). *As Borboletas de Portugal*. 455 pp.
- KLIMASZEWSKI, J. 2000. Diversity of the rove beetles in Canada and Alaska (Coleoptera Staphylinidae). *Mémoires de la Société Royale Belge d'Entomologie*, **39**: 1-126.
- LAWES, M. J., D. J. KOTZE, S. L. BOURQUIN & C. MORRIS 2005. Epigaeic invertebrates as potential ecological indicators of Afromontane forest condition in South Africa. *Biotropica*, **37**(1): 309-318.
- LÖBL, I. & A. SMETANA 2004. *Catalogue of Palaearctic Coleoptera, Volume 2: Hydrophiloidea- Histeroidea- Staphylinidea*. Apollo Books, Stenstrup, 942 pp.
- OLIVEIRA, M. P. 1894. *Catalogue des insectes du Portugal*. Coléoptères. Coimbra.
- OUTERELO, R. & P. GAMARRA 1985. *Las familias y géneros de estafilínidos de la península Ibérica*. Claves para la identificación de la Fauna Española, 10. Cátedra de Entomología. Facultad de Biología. Universidad Complutense. Madrid. 139 pp.
- PONEL, P. 1993. Coléoptères du massif des Maures et de la dépression permienne périphérique. *Faune de Provence (Bulletin du Conservatoire – Études des Ecosystèmes de Provence/Alpes du Sud)*, **14**: 5-23.
- SEABRA, A. F. 1943. Contribuições para o inventário da fauna lusitânica. *Memórias e Estudos do Museu Zoológico da Universidade de Coimbra*, **299**: 1-15.
- SERRANO, A. R. M. 1981. *Contribuição para o estudo dos coleópteros do Parque Natural da Arrábida*. Coleção "Parques Naturais" 9. SNPRCN Eds., Lisboa.
- SERRANO, A. R. M. 2000. Estado do conhecimento dos coleópteros (Insecta) de Portugal. In: Martín-Piera, F., J.J. Morrone & A. Melic (Eds). *Hacia un Proyecto Cyted para el Inventario y Estimación de la Diversidad Entomológica en Iberoamérica: PRIBES 2000*. Pp. 155-170. m3m-Monografías Tercer Milenio, 1. Sociedad Entomológica Aragonesa (SEA), Zaragoza, 326 pp.
- SERRANO, A. R. M. 2000. Os coleópteros carabóides endémicos da Península Ibérica em Portugal (Coleoptera: Caraboidea): Padrões de distribuição e tentativa de ordenação das áreas protegidas. In: C. Costa, S.A. Vanin, J.M. Lobo & A. Melic (Eds). *Proyecto de Red Iberoamericana de Biogeografía y Entomología Sistemática: PRIBES 2000*. Pp. 277-293. m3m-Monografías Tercer Milenio, 2. Sociedad Entomológica Aragonesa (SEA), Zaragoza, 326 pp.
- SERRANO, A. R. M. & C. A. S AGUIAR 1995. Estudo faunístico e ecológico dos coleópteros (Insecta, Coleoptera) do Concelho de Cascais (Portugal). *Boletim da Sociedade Portuguesa de Entomologia*, **155**: 41-66.
- SHAH, P.A., D. R. BROOKS, J. E. ASHBY, J. N. PERRY & I. P. WOIWOD 2003. Diversity and abundance of the coleopteran fauna from organic and conventional management systems in southern England. *Agricultural and Forest Entomology*, **5**: 51-60.
- SMETANA, A. 1971. Revision of the tribe Quediini of America north of Mexico (Coleoptera: Staphylinidae). *Memoires of the Entomological Society of Canada*, **79**: 1-303.
- TOPP, W. & A. SMETANA 1998. Distributional pattern and development of the winter-active beetle *Quedius peltax* (Staphylinidae). *Global Ecology and Biogeography Letters*, **7**: 189-195.