New species of *Aphthona* (Coleoptera: Chrysomelidae: Alticinae) and key to Iberian species of *Aphthona hammarstroemi* group

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**Abstract**—*Aphthona sandrae* sp.nov. is described from specimens collected on *Euphorbia polygalifolia* Boiss. et Reuter (Euphorbiaceae) in Galicia, Spain. Its relationship with *Aphthona ovata* Foudras and the *Aphthona hammarstroemi* Jacobson group of species is established. A key to the species of this group occurring in the Iberian peninsula is provided. *Aphthona herbigrada* (Curtís) and *Aphthona espagnoli* Kral, previously not belonging to any group, are here considered belonging to the *A. hammarstroemi* group.

Abstract—*Aphthona sandrae* sp.nov. is described from specimens collected on *Euphorbia polygalifolia* Boiss. et Reuter (Euphorbiaceae) in Galicia, Spain. Its relationship with *Aphthona ovata* Foudras and the *Aphthona hammarstroemi* Jacobson group of species is established. A key to the species of this group occurring in the Iberian peninsula is provided. *Aphthona herbigrada* (Curtís) and *Aphthona espagnoli* Kral, previously not belonging to any group, are here considered belonging to the *A. hammarstroemi* group.


**Introduction**

The genus *Aphthona* Chevrolat (Coleoptera: Chrysomelidae: Alticinae) comprises more than 330 species that are distributed in the Palaearctic, Oriental, Afrotropical, and Australian regions. The Palaearctic species were revised by Heikertinger (1944) and recently by Konstantinov (1998); however, there was no attempt to revise the genus *Aphthona* of the Iberian peninsula. In the Iberian peninsula, the total diversity of leaf beetles is lower than expected (partly because of sampling deficiencies) than in other regions of Europe, but the number of endemic species represents a greater proportion of the total number of species (Vela and Bastazo 1999). The discovery of new species could be expected and studies of the diversity of Chrysomelidae from Galicia, northwest Spain, were initiated. During that study several specimens of *Aphthona* belonging to an unknown species were found. Below, we describe this new taxon and establish its relationship with the *Aphthona hammarstroemi* species group in the Iberian peninsula.

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Aphthona sandrae sp.nov.
(Figs. 1-9)

Type material


Etymology

We name this new species after Sandra Barallobre, in gratitude for her collaboration on many expeditions that collected Chrysomelidae.

Diagnosis

Aphthona sandrae can be separated from all known species of Aphthona by the following characters: dorsal color metallic dark blue; supracalcallinar sulcus well developed; humeral calus poorly developed; pro- and meso-femur dark brown to black; median lobe of aedeagus almost parallel sided, its ventral side concave, with two impressions situated laterally to middle ridge in distal half; ligula wide and truncate; pump of spermatheca thin and duct attached to lateral side of receptacle; posterior branches of tignum well delineated, broadly separated basally, curved, and widening apically.

Description

Body convex (Fig. 1). Length of males: 1.95–2.10 mm; length of females: 2.00–2.40 mm. Dorsum metallic dark blue; venter and metafemur shiny black; profemur, mesofemur, and base of first antennomere dark brown to black; rest of legs and antennae reddish brown, with second to fourth antennomeres paler. Head: moderately convex; vertex shiny, slightly wrinkled to almost smooth; antennal cali moderately convex, trapezoidal, not connected, and forming obtuse angle to each other; supracalcallinar sulcus well developed; second antennomere slightly longer than third but shorter than fourth, fifth antennomere longer than fourth and sixth separately; antennomeres slightly wider in males (Fig. 2). Pronotum: transverse, 1.35–1.45 times broader than long, widest at middle; lateral sides weakly convex and narrowly explanate; anterolateral callosity short, straight, forming obtuse denticile at setiferous pore; posterolateral callosity poorly developed. Surface shiny, finely punctate, and wrinkled; punctuation moderately coarser basally than apically. Elytra: oval, convex, widest at middle, 1.30–1.40 times longer than wide; humeral calius poorly developed, micropteron species; lateral margins narrowly explanate; apical margin slightly convex and obtusely angulate at apex. Dorsal surface shiny and punctate; punctuation large and deep forming irregular striae and effaced towards apex. Legs: first protarsomere of female narrower than third; first protarsomere of male (Fig. 3) clearly enlarged, as wide as third; metatibia straight, apically widening, dorsally flat at apical half; first metaatarsomere slightly narrower basally than apically, narrower than third metaatarsomere. Abdomen: median lobe of aedeagus
almost parallel sided in ventral view (Fig. 4), slightly widening apically; its ventral side
concave, with two impressions situated laterally to middle ridge in distal half; apex
curved dorsally in lateral view (Fig. 5); dorsal side of median lobe with ligula wide and
truncate (Fig. 6). Receptacle of spermatheca (Fig. 7) 1.6 times longer than wide with
duct attached to its lateral side; inner side of receptacle convex, outer side concave;
pump of spermatheca moderately long, thin, not widening apically. Vaginal palpus
elongate (Fig. 8), anterior sclerotization longer than posterior sclerotization, tapering
apically. Tignum slightly curved anteriorly (Fig. 9), thin medially, abruptly widening
anteriorly; posterior branches of tignum well delineated, broadly separated basally,
curved, and widening apically.

**Distribution**

The new species is known only from Ardaña (Carballo) and Piladaleña (Monfero),
two moderately distant localities (60 km) in the Spanish province of A Coruña. Both
localities are at altitudes below 500 m.
Host

The specimens from Piladaleña (Monfero) were found in a heathland where the dominant species are *Ulex gallii* Planch (Fabaceae), *Erica ciliaris* L. ex L., and *Calluna vulgaris* (L.) Hull (Ericaceae). In that locality, specimens of *A. sandrae* were
observed feeding on leaves of *Euphorbia polygalifolia* Boiss. et Reuter (Euphorbiaceae) [A. Baselga det.].

**Discussion**

*Aphthona sandrae* belongs to the *A. hammarstroemi* species group (Konstantinov 1998) because the ventral side of median lobe has two impressions situated laterally to middle ridge, the posterior part of tignum has two branches, the dorsal part of body is metallic blue and the basal part of pronotum has much coarser punctuation than apical. The new species can be incorporated into Konstantinov's (1998) key of Palaearctic species by modifying couplet 44 as follows:

44 (43). Elytral callus poorly developed .................................................. 44a
— Elytral callus well developed ................................................................. 45

44a (44). Body length more than 2.50 mm. Second antennomere shorter than third. Supracallinal sulcus weakly developed. Ventral ridge and impressions of median lobe short, occupying apical quarter. Posterior branches of tignum poorly developed basally. Spermathecal duct attached to apex of receptacle .......................................................... *A. reitteri*
— Body length less than 2.50 mm. Second antennomere slightly longer than third. Supracallinal sulcus well developed. Ventral ridge and impressions of median lobe long, occupying apical half. Posterior branches of tignum well developed basally. Spermathecal duct attached to lateral side of receptacle. .......................................................... *A. sandrae*

*Aphthona reitteri* Allard is endemic to the Caucasian region, whereas *A. sandrae* seems to be restricted to a small area in northwest Spain. Among the species of the *A. hammarstroemi* group occurring in the Iberian peninsula, *A. sandrae* is closely related to *Aphthona albertinae* Allard and *Aphthona ovata* Foudras by the absence of elytral callus, but it can be easily distinguished from both species by the darkprofemur and mesofemur. *Aphthona sandrae* differs also from the Cantabrian–Pyrenean endemic *A. albertinae* by the second antennomere longer than third, the poorly developed ventral ridge of the median lobe, the longer spermathecal receptacle, and the well-developed posterior branches of the tignum. These characters suggest that the new species is more closely related to *A. ovata*, a European species which is found in the Spanish Pyrenees (Doguet 1994).

*Aphthona sandrae* can be separated from *A. ovata* by the following characters.

**External features**: strong metallic color; profemur and mesofemur dark brown to black; male antennomeres (Fig. 2) wider than female ones, whereas in male *A. ovata* antennomeres are not enlarged (Fig. 10); first protarsomere of male of *A. sandrae* clearly enlarged, larger than second and as large as third (Fig. 3), instead of first protarsomere as large as second and narrower than third for *A. ovata* (Fig. 11). **Male genitalia**: median lobe of aedeagus slightly narrower medially than apically and parallel sided near the apex (Fig. 4), whereas in *A. ovata* the median lobe is mediately as large as apically and its lateral sides are clearly situated near the apex (Fig. 12); apex of median lobe is more curved dorsally in lateral view (Figs. 5, 13); dorsal side of median lobe with ligula wide and truncate (Fig. 6), instead of narrow and attenuate to the apex (Fig. 14). **Female genitalia**: spermathecal receptacle longer than in *A. ovata* and spermathecal pump not widening apically (Figs. 7, 15); anterior and posterior sclerotizations of vaginal palpus (Fig. 8) shorter than in *A. ovata* (Fig. 16), the anterior one tapering apically; posterior branches of tignum well delineated, broadly separated basally, curved, and widening apically (Fig. 9), instead of poorly delineated, narrowly separated basally, straight, and as narrow apically as basally (Fig. 17).
Aphthona hammarstroemi group of species in the Iberian peninsula

Among the species included by Konstantinov (1998) into the A. hammarstroemi group of species were five species occurring in the Iberian peninsula: Aphthona melancholica Weise, Aphthona venustula Kutschera, Aphthona nonstriata (Goeze), A. ovata Foudras and A. albertinae Allard. Doguet (1979) had noted that Aphthona herbigrada (Curtis) forms a group of closely related species with A. ovata and A. albertinae. Also, A. herbigrada possess all the diagnostic characters of the A. hammarstroemi group, even the median lobe of aedeagus with an unusual shape but with two impressions situated laterally to a middle ridge. For all these reasons A. herbigrada and the closely related Aphthona espagnoli Kral must be included in this group, as well as A. sandrae. Therefore, we provide the following key for the eight species of the A. hammarstroemi group occurring in the Iberian peninsula.

Key to Iberian species of Aphthona hammarstroemi group

1. Frontal ridge wide and flat. Body length more than 2.5 mm. ............................................. A. nonstriata
   — Frontal ridge narrow and convex. Body length less than 2.5 mm ........................................ 2

2. Humeral calus well developed. Ventral side of median lobe with lateral impressions extremely shallow and short .......................................................... 3
   — Humeral calus poorly developed. Ventral side of median lobe with lateral impressions deeper and longer .......................................................... 4

   — Base of pro- and meso-femur yellow. Apex of median lobe acute ........................................ A. melancholica

4. Metafemur yellow .................................................. 5
   — Metafemur black ........................................................................................................ 6

5. Lateral sides of median lobe nearly parallel to each other, ventral impression deep (Konstantinov 1998: 375, Fig. 535). Aphthona herbigrada
   — Lateral sides of median lobe slightly converging anteriorly, ventral impression shallow (Konstantinov 1998: 372, Fig. 523) ........................................ A. espagnoli

6. Second antennomere slightly shorter than third ................................................................. A. albertinae
   — Second antennomere slightly longer than third ............................................................ 7

7. Pro- and meso-femur yellow. First protarsomere of male as large as second and narrower than third (Fig. 11). Lateral sides of median lobe clearly situated to the apex (Fig. 12), ligula narrow and attenuate to the apex (Fig. 14). Spermathecal receptacle short, pump widening apically (Fig. 15). Posterior branches of tignum poorly delineated, narrowly separated basally, straight and as narrow apically as basally (Fig. 17) ........................................ A. ovata
   — Pro- and meso-femur dark brown to black. First protarsomere of male larger than second and as large as third (Fig. 3). Median lobe slightly narrower medially than apically and parallel sided near the apex (Fig. 4), ligula wide and truncate (Fig. 6). Spermathecal receptacle longer, pump not widening apically (Fig. 7). Posterior branches of tignum well delineated, broadly separated basally, curved, and widening apically (Fig. 9) ........................................ A. sandrae

Acknowledgments

We thank G Cerviño (A Coruña) for providing the paratype from Carballo, M Biondi (L'Aquila) and M Döberl (Abensberg) for the loan of several specimens of A. ovata, and E Petitpierre (Palma de Mallorca) for helpful comments on the A. sandrae characters and the comparison with other species of his collection. This paper was supported by project XUGA 20012B98 of the Xunta de Galicia.
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(Received: 25 June 2001; accepted: 24 October 2001)