

Description of a new species of *Anchomenidius* HEYDEN from the Montes de León in north-west Spain (Coleoptera: Carabidae, Carabinae)

D.W. WRASE & Th. ABMANN

Abstract

Description of *Anchomenidius feldmanni* sp.n. (Coleoptera: Carabidae) from the Montes de León (Sierra del Teleno) in north-west Spain. Differentiating characters from *A. astur* (SHARP, 1873) are given, illustrations of the habitus of the new species and of the male and female genitalia of both species are presented, and a description of the habitat and some biogeographical notes are included.

Key words: Coleoptera, Carabidae, Sphodrini, Dolichina, *Anchomenidius*, new species, north-west Spain.

Introduction

The attention of entomologists has been focussed on the Montes de León in recent years as previous investigations resulted in the discovery of several species of Carabidae which were new to science and have since been published. In this paper, a further new species from this region belonging to the genus *Anchomenidius* HEYDEN, 1880 is described. The finding of this interesting species in the Montes de León gives justified hope of discovering further undescribed species in these mountain massifs, which seem to be less well-explored than other Spanish regions.

Recently SCIAKY & FACCHINI (1997) and SCIAKY & WRASE (1998) discussed the systematic position and the phylogenetic relations of this genus to its relatives. *Anchomenidius*, formerly included in the subtribe Calathina of the tribe Sphodrini, was placed in the subtribe Dolichina (together with some Asian genera), based on morphological characters and zoogeographical considerations.

Methods and Acknowledgements

Total body length is measured from the tip of the mandibles to the apex of the right elytron; the width of the head (HW) as the maximum linear distance across the head, including the compound eyes; the length of the pronotum (PL) from the anterior to the posterior margin along the midline; the length of the elytra (EL) from the tip of the scutellum to the apex of the right elytron; the width of the pronotum (PW) and elytra (EW) at their broadest point.

These measurements, made at a magnification of 12.8X and using an ocular micrometer in a SM 20 stereobinocular microscope (Carl Zeiss Jena), were combined in ratios or added as follows:

BL:	total body length
PW/PL:	width /length of pronotum
PW/HW:	width of pronotum /width of head
EL/EW:	length/width of elytra
EW/PW:	width of elytra/ width of pronotum
EL/PL:	length of elytra/length of pronotum

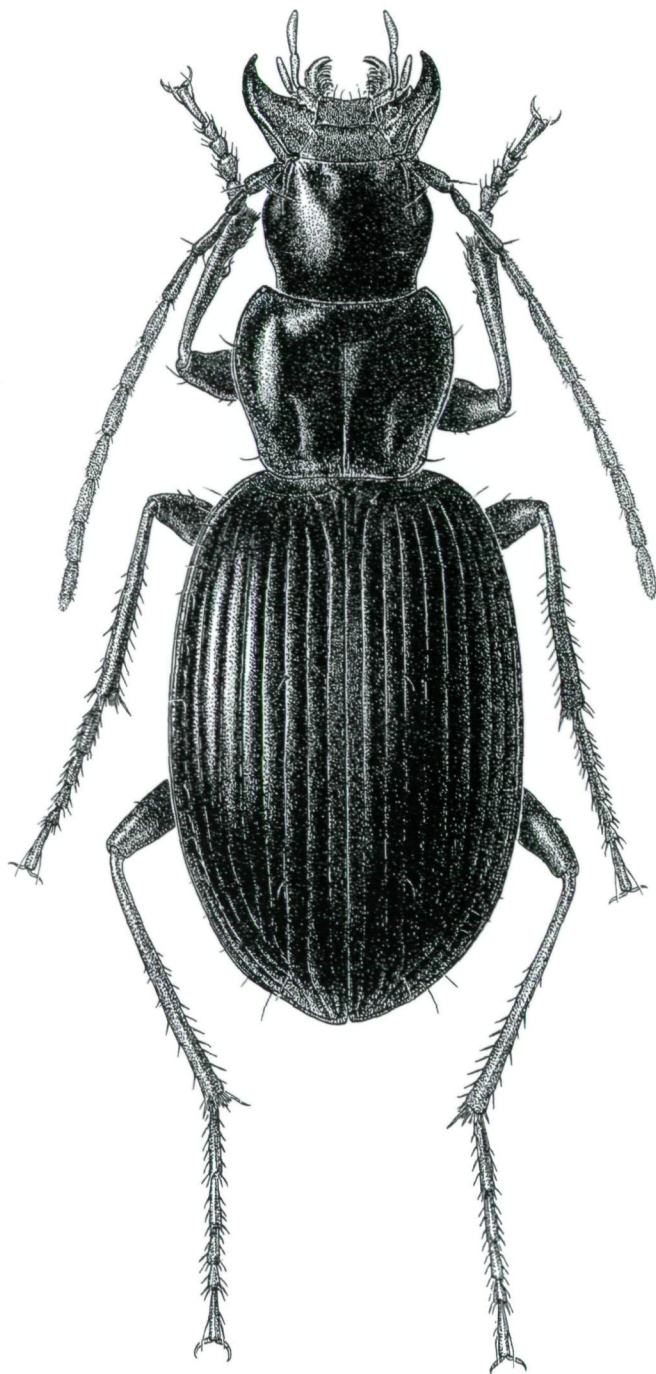


Fig. 1: *Anchomenidius feldmanni* sp.n., habitus (paratype).

Microsculpture was examined at a magnification of 100X.

Line drawings were prepared by using an ocular grid (15 X 15 squares) attached to a SM 20 stereobinocular microscope. Dissections were made with standard techniques; genitalia were preserved in Euparal on acetate labels; other parts were glued to cards and were attached to the pin of the appropriate specimen.

35 specimens of *A. astur* (SHARP, 1873) were examined for comparisons (both sexes from different localities, 6 were dissected for the investigation of genitalia, 5 ♂♂ and 5 ♀♀ were used for measurements to yield the above-mentioned ratios).

We greatly appreciate the assistance of our colleagues and friends Dr. I. Ruiz-Tapiador, Dr. J.M.P. Zaballos (Madrid) and Werner Starke (Warendorf) who lent us a part of the material of *A. astur* necessary for comparisons with the new species. We would like to thank Dr. Robert L. Davidson (Pittsburgh) for his valuable comments on the manuscript. For finding important literature we owe a special debt of gratitude to our friend and colleague B. Jaeger (Museum für Naturkunde, Berlin). Technical assistance, for which we are grateful, was received from P. Schüle (Nunfringen) who prepared the habitus drawing.

Results

Anchomenidius feldmanni sp.n.

TYPE MATERIAL: **Holotype** ♂ "Spain (León) \ Montes de León \ Sierra del Teleno \ Cabeza de la Yegua \ 3 km SE Alto las Portillinas \ 2050 m, 42.24N/06.32W \ 28.V.1999, B. Feldmann leg." (Coll. Wrase/Berlin). **Paratypes**: 2 ♀♀, labelled same as holotype, but "Th. Abmann leg." (Coll. W. Starke/Warendorf, Coll. J.M.P. Zaballos in Coll. Departamento de Biología Animal I, Facultad de Biología, Catedra de Entomología, Universidad Complutense de Madrid/Madrid). 2 ♂♂: labelled same as holotype, but "09.VI. 2000, Th. Abmann leg." (Coll. Th. Abmann/Bleckede, Coll. Zoologische Staatssammlung/Munich).

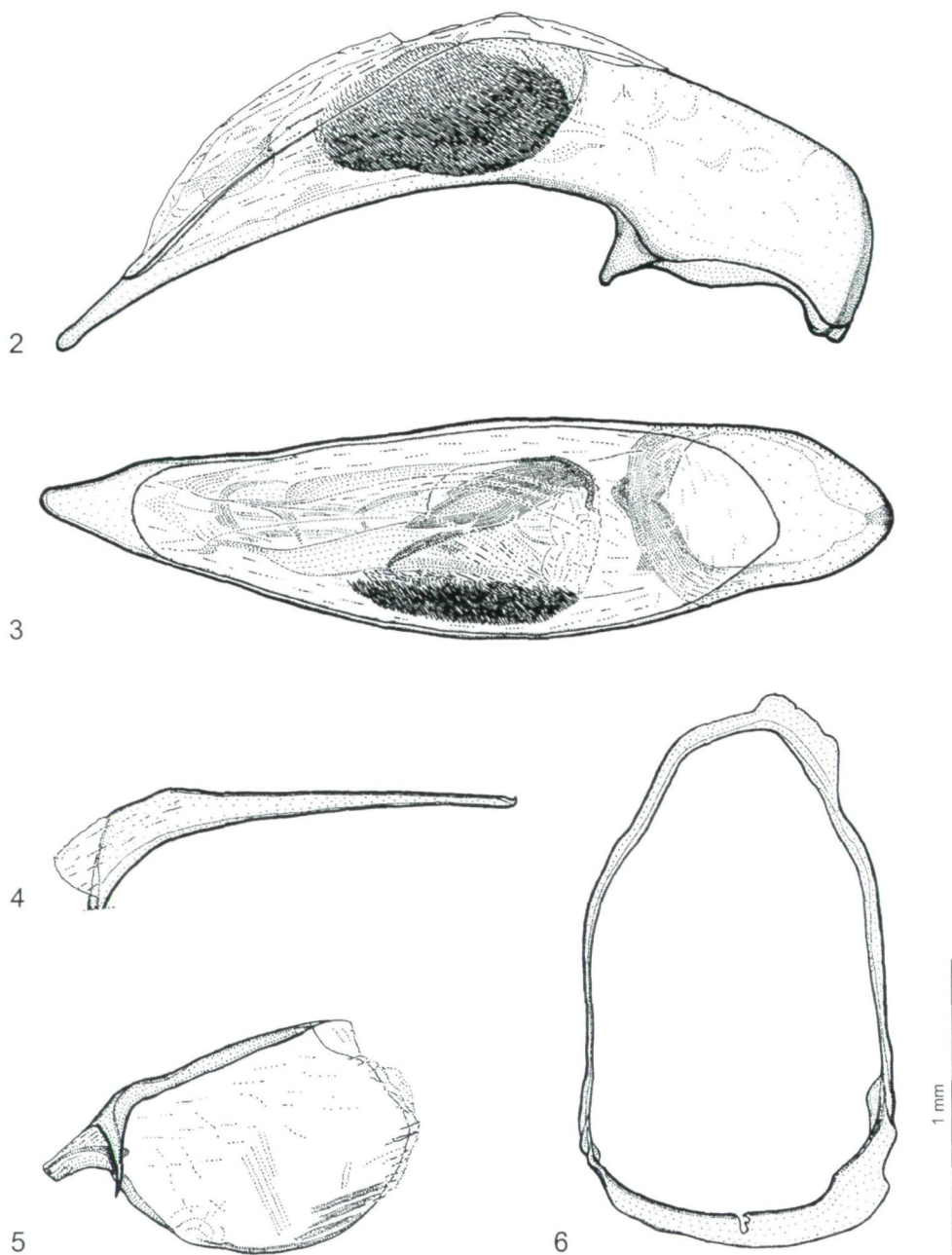
DIAGNOSIS: A micropterous species, with light or dark reddish brown coloration and lighter appendages. Extremely similar to *A. astur* in external characteristics, but the body is larger, and in addition there are differences in the male and female genitalia, in the habitat (and therefore in the way of life) and in distribution.

DESCRIPTION: Body length 9.7 - 10.3 mm (HT 10.2 mm). Habitus as in Fig. 1.

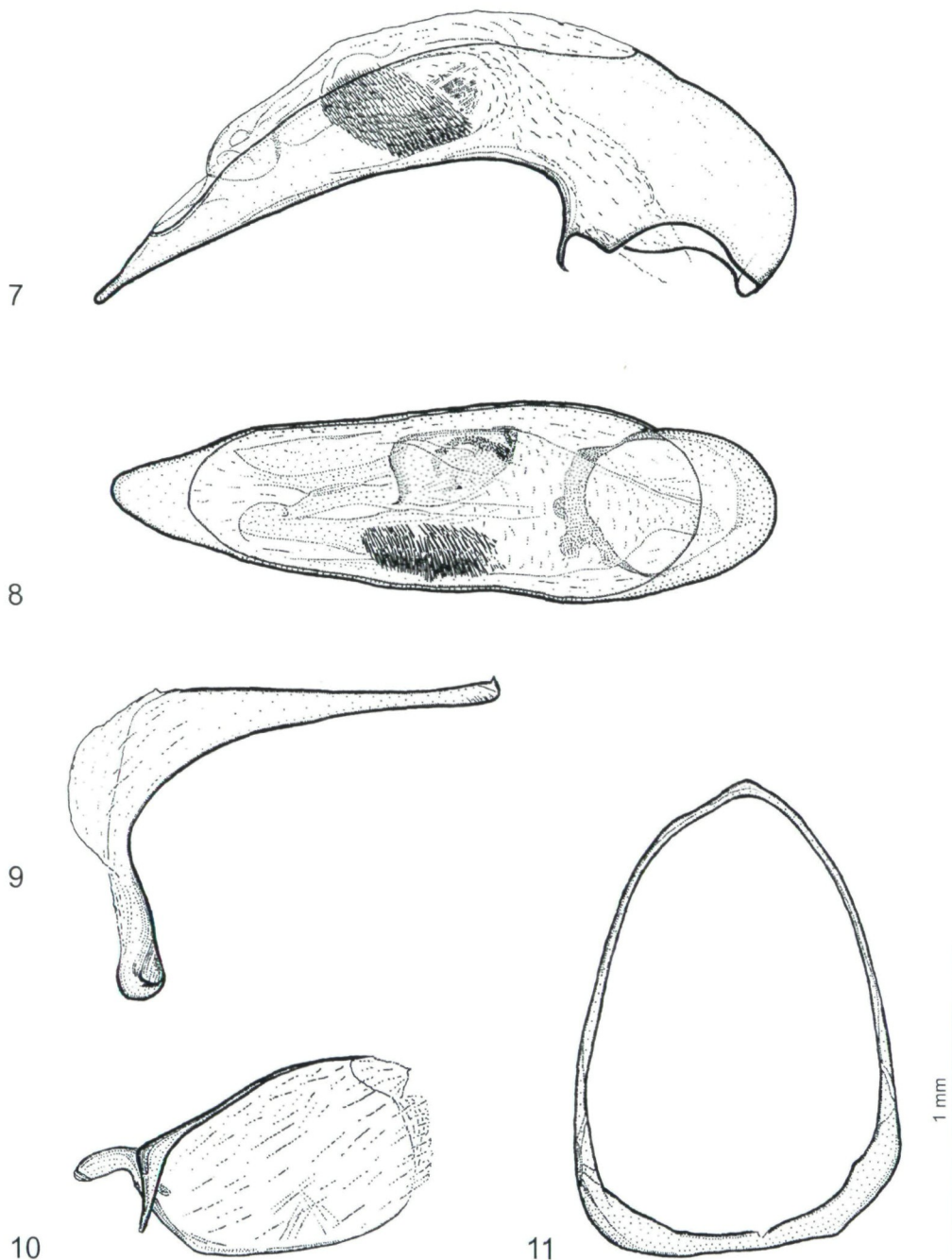
The whole body light or dark (HT) reddish brown, the appendages lighter.

Head in comparison with pronotum fairly large (PW:HW = 1.21 - 1.33/holotype 1.33, Ø 1.26), impunctate, convex. Eyes small and flat, tempora almost straight, about same as diameter of eye. Antennae long and slender, reaching almost half of body length.

Pronotum (Fig. 1) of average size, subquadrate (PW:PL = 1.20 - 1.26/holotype 1.26, Ø 1.23). Sides regularly rounded at middle, slightly sinuate posteriad. Anterior seta inserted at point of maximum width, at about the end of anterior third, very close to margin, posterior seta in hind angle. Anterior margin regularly slightly emarginate, finely bordered with exception of middle, anterior angles prominent and fairly sharp, hind angles produced forwards, rounded, with suggestion of an obtuse angle at insertion of hind seta. Disc almost flat with median line fairly well impressed. Lateral gutter fine, narrow, becoming very broad toward hind angles and impunctate, margin here moderately reflexed. One impunctate long but linear and shallow basal impression on each side, a somewhat oblong flat elevation between basal impression and lateral margin (holotype, one paratype; not very distinct in two paratypes and obsolete in the last one). Base fairly broadly margined, margin becoming obsolete at middle. Anterior and posterior transverse impressions fine but visible.



Figs. 2 - 6: *Anchomenidius feldmanni* sp.n. (holotype), 2) median lobe, lateral aspect, 3) median lobe, dorsal aspect, 4) right paramere, lateral aspect, 5) left paramere, lateral aspect, 6) genital sclerite, dorsal aspect.



Figs. 7 - 11: *Anchomenidius astur*, 7) median lobe, lateral aspect (Santander, Picos de Europa, Camping El Redondo), 8) median lobe, dorsal aspect (Asturias, Pto. de Tarna), 9) right paramere, lateral aspect (León, Puerto del Pontón), 10) left paramere, lateral aspect (León, Puerto del Pontón), 11) genital sclerite, dorsal aspect (Santander, Picos de Europa, Camping El Redondo).

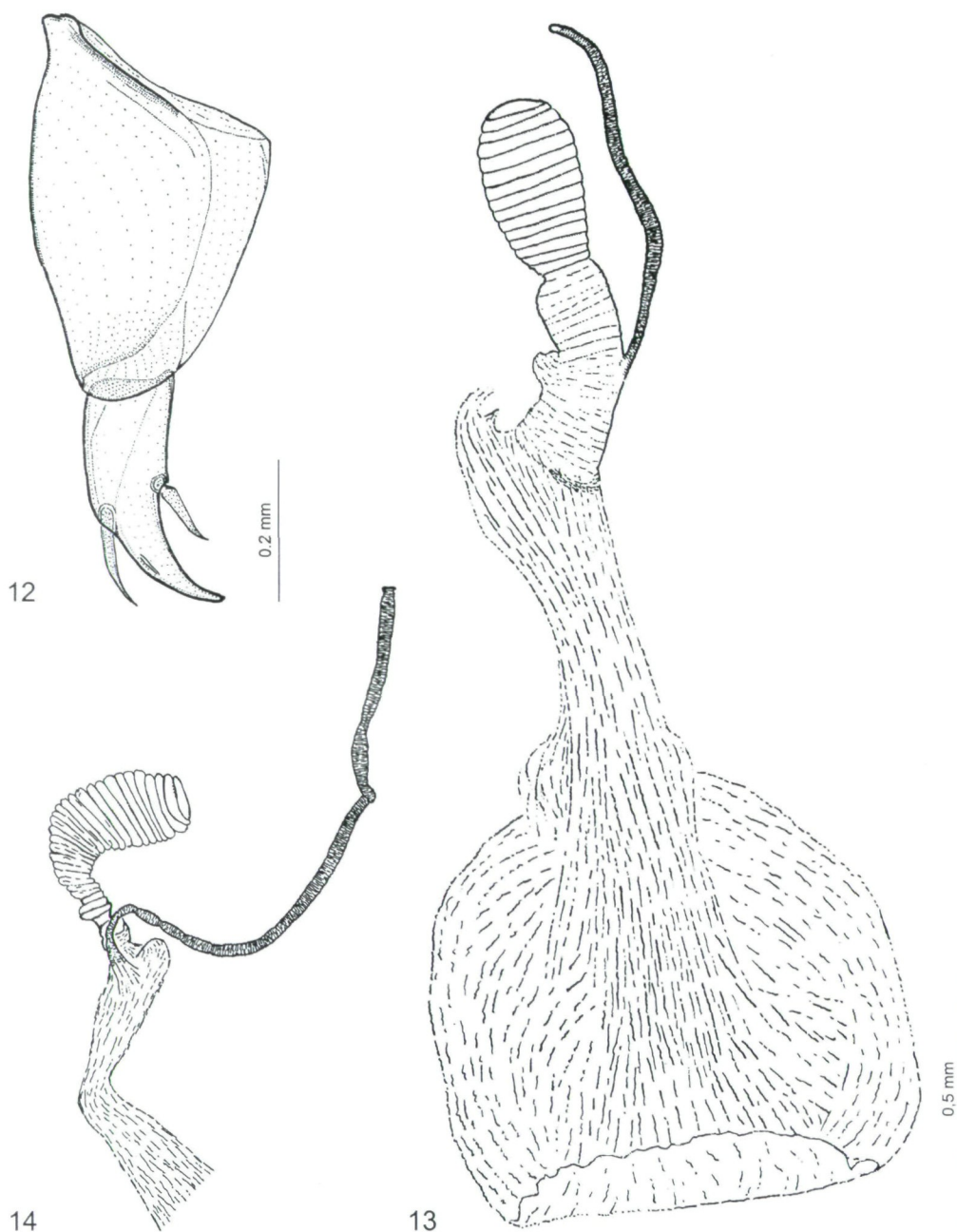


Fig. 12: *Anchomenidius feldmanni* sp.n., right stylomeres, ventral aspect (paratype).

Figs. 13, 14: bursa copulatrix, spermatheca and spermathecal gland, 13) *A. feldmanni* sp.n. (with vagina, paratype), 14) *A. astur* (Lugo, Cebreiro/Linares).

Elytra (Fig. 1) oval (EL:EW = 1.44 - 1.52/holotype 1.49, Ø 1.48), with humeri very regularly rounded, without humeral tooth, fused together at suture. Basal margin meeting lateral margin at a distinctly obtuse angle. Maximum width at about middle. Striae complete, deep and impunctate, intervals weakly convex. Scutellar stria short, between suture and first stria, scutellar pore puncture variable in presence and position, holotype with only the right pore puncture at beginning of first stria, one paratype without either and the other three paratypes with both pore punctures at first stria, a little behind basal margin. Third interval with two setigerous punctures adjoining third stria, the first at about the end of basal half, the second at about beginning of apical fifth. Disc weakly convex, somewhat flattened along the suture in the apical half, apex moderately acute. Umbilicate series variable in number of punctures and their position: holotype with 17 punctures on the left and 19 on the right, only a little gap at middle, but not clearly interrupted. One paratype with umbilicate series interrupted at middle and forming three groups (left side 8+2+10, right side 6+2+9 punctures). Second paratype with a similar pattern (left side 6+2+9, right side 6+1+9 punctures). Third paratype with 16 punctures on the left, (with a little gap, but not clearly interrupted at middle) and 17 on the right (forming three groups: 7+1+9). Finally, the fourth paratype with umbilicate series on left interrupted at middle and forming two groups (9+9 punctures) and on right with three groups (6+1+10 punctures). Hindwings strongly reduced.

Metepisternum very short, a little shorter than wide, not very strongly narrowed.

Microsculpture very strong in both sexes, isodiametric meshes on head, weakly transverse meshes on pronotum and somewhat irregular, slightly transverse meshes on elytra.

Median lobe (Figs. 2, 3) slender with apex apically slightly thickened (seen laterally), slightly emarginate on right side (seen dorsally). Internal sac medially with a big spiny patch. Right paramere (Fig. 4) styloid, long and slender, evenly narrowed, apically only a little thickened and with a small hook. Left paramere (Fig. 5) oval, lateral margin semi-membranous and without distinct boundary. Genital sclerite (Fig. 6) apically with an apophysis situated on right side. Stylomere 2 (Fig. 12) conical, laterally excavate, with one large spine on each side, and without preapical sensorial furrow (only a vague trace of a sensorial furrow can be seen, similar to *Xestopus cyaneus* SCIAKY & FACCHINI, 1997; see SCIAKY & FACCHINI 1997: 238). Spermatheca and spermathecal gland see Fig. 13.

ETYMOLOGY: Named after our friend and colleague Benedikt Feldmann (Münster, Germany), specialist of Staphylinidae, who discovered a part of the series of specimens of the new species.

COMPARISONS: The new species is extremely similar to *A. astur* and, with the exception of body size, cannot be separated with certainty using external differences. *Anchomenidius astur* has, according to the material at hand, a length of 7.3 - 9.1 mm. In contrast, the smallest paratype of *A. feldmanni* sp.n. is 9.7 mm long. Body ratios are not useful for distinguishing the species, as they partly overlap (*A. astur*: PW:PL = 1.19 - 1.36, Ø 1.26; EL:EW = 1.34 - 1.49, Ø 1.40; PW:HW = 1.19 - 1.32, Ø 1.26). But the differences in the construction of the genitalia allow the separation of both species without doubt. In contrast to *A. feldmanni* sp.n., the median lobe of the male genitalia of *A. astur* (Figs. 7, 8) is stouter, the apical part is not distinctly thickened (in lateral aspect), and it is wider, without a distinct excavation on the right side (in dorsal aspect). The spiny patch situated on the left side is smaller, seen dorsally, and the structure, including the foldings of the internal sac, is also different. The right paramere (Fig. 9) is shorter, medially wider and apically not evenly narrowed but distinctly thickened. The left paramere (Fig. 10) is similar to *A. feldmanni* sp.n., but less oval. The genital sclerite (Fig. 11) apically is without an apophysis, with only a weak acute bulge. The spermatheca (Fig. 14) is more slender and basally narrowed, the spermathecal gland longer.



Fig. 15: Type locality of *Anchomenidius feldmanni* sp.n.

The presence of the scutellar pore puncture seems to be more regular in *A. astur*. Only one specimen lacks them on both sides and one has it only on the right side; the other 33 investigated specimens have both punctures, though their position is quite variable. Contrary to that, the occurrence of the scutellar pore puncture in *A. feldmanni* sp.n. is more variable.

DISTRIBUTION: Known only from the type locality.

ECOLOGICAL NOTES: The members of the new species of *Anchomenidius* were found at the edge of a subalpine plateau, where big stone slabs were arranged in layers. The specimens could be found at a certain depth where there was sufficient moisture. Two specimens were discovered under big stones deeply embedded in the ground.

BIOGEOGRAPHICAL NOTES: In addition to the morphological differences, a distinctive way of life and a different distribution pattern can be used to postulate a different history of development of each species, which surely can be interpreted as adelphotaxa. While *A. astur* is known as an inhabitant of mountain forests in eastern Galicia and in the western and central Cordillera Cantabrica (ZABALLOS & JEANNE 1994: 83), the new species lives in the southern Montes de León in a subalpine area free of timber. The disjunctive character of this zoogeographical region, separated from the northern part of the Montes de León and the mountains of Galicia and Cantabria by the river Sil, which can be seen as a natural barrier, surely caused the development of vicariants. As already mentioned (ABMANN, WRASE & ZABALLOS 2000), some endemic species, all constantly brachypterous and adapted to coldness (and discovered mainly in recent years), live in this area around the snow fields (*Leistus valcarceli*

WRASE, RUIZ-TAPIADOR & ZABALLOS, 1998; *Nebria belloti* FRANZ, 1954; *Nebria leonensis* ABMANN, WRASE & ZABALLOS, 2000; *Haptoderus cantabricus pellegrinii* ABMANN, 1998). The existence of a second species of *Anchomenidius* is surely caused by the same geological events which resulted in splitting the ancestral stock of the species occurred in the whole area before the barriers were formed, into its vicariants. As the above-mentioned species of the southern Montes de León live in the Sierra del Teleno as well as in the Sierra Cabrera Baja, we postulate the existence of *A. feldmanni* sp.n. in the last-mentioned massifs. Further investigations will surely elucidate this aspect, as well as the puzzling phenomenon that, for instance, no endemic species of the tribe Trechini are known from the Montes de León up to now.

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David W. WRASE

Dunckerstr. 78, D - 10437 Berlin, Germany (david.wrase@t-online.de)

Dr. Thorsten ABMANN

Institut für Ökologie und Umweltchemie, Universität Lüneburg, Scharnhorststr. 1, D - 21332 Lüneburg, Germany (assmann@uni-lueneburg.de)

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Autor(en)/Author(s): Wrase David W., Aßmann [Assmann] Thorsten

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