

Two new species of *Aphelocheirus* from the Iberian Peninsula (Heteroptera: Naucoridae)

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Abstract: Two new species of *Aphelocheirus*, *A. murcius* from South Spain and *A. occidentalis* from North Portugal and North West Spain are described. A key is given to the three known West European species and the poorly known Moroccan *A. rottroui* Bergevin.

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Introduction

During preparation of a key to the water bugs of the Iberian Peninsula we came across two new species of *Aphelocheirus* which are discussed below. Most of the specimens have been collected by the authors and donated to various museums.

Aphelocheirus is a large rather specialized naucorid genus adapted to a permanently benthic life in streams. *Aphelocheirus* differs from other European Naucoridae by being predominantly micropterous, having a very long and slender rostrum and the anterior femur less strongly developed. Its species seem to be nocturnal, hiding in the substrate during the day, and because of a highly effective plastron respiration do not need to surface to replenish air. Like all naucorids they are predacious.

Some students, especially those working mainly at the impoverished European fauna, tended to give *Aphelocheirus* family rank but in view of the morphological and ecological diversity in the Naucoridae it is usually, together with a few tropical relatives, considered to form a subfamily, Aphelocheirinae, only.

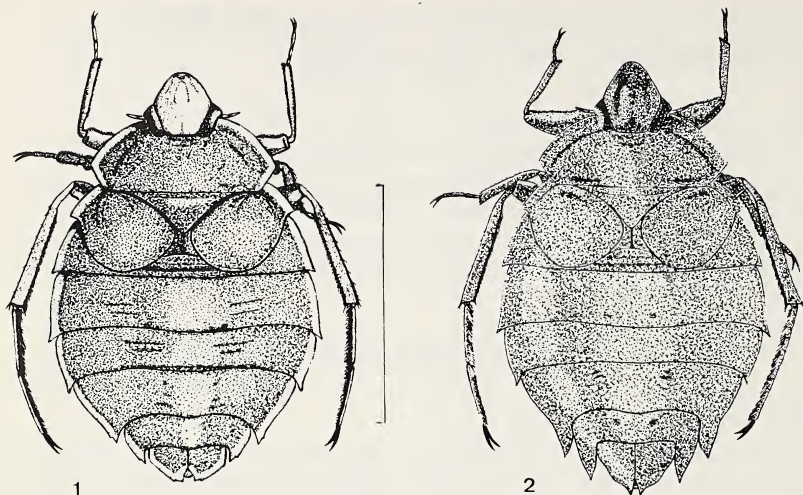
In the greater part of Europe there is only one species, *Aphelocheirus aestivalis* (F.) (*A. breviceps* Horváth and *A. nigrinus* Horváth are synonyms), which seems to be common and widespread in oxygen rich waters, but is often overlooked by the casual collector

(Nieser 1978). The variety *A. a. montandoni* Horváth is considered by some a subspecies as it mainly occurs in the United Kingdom. Records of *A. aestivalis* from the West Iberian Peninsula (Seabra, 1926, 1939; Murillo, 1984; Nieser & Montes 1984) most likely all refer to *A. occidentalis* n. sp. Another species, *A. rottroui* Bergevin (1925), has been recorded from North Africa. This species is known from 1 macropterous ♂ collected at Taza, Morocco, at light.

The first abdominal segment in Naucoridae is greatly reduced and the first abdominal segment visible is actually the second. In determining the number of an abdominal segment one should thus start at segment 2 and count backward toward tip of abdomen. Key characters for Aphelocheirinae will be discussed and figured in a forthcoming paper by D. A. Polhemus on Aphelocheirinae of tropical Asia.

The following abbreviations are used:

- | | |
|------|--|
| BMNH | British Museum of Natural History,
London |
| JTPC | Polhemus collections, University of
Colorado Museum, Englewood Co.
USA |
| MCNM | Museo de Ciencias Naturales, Madrid |



Figs. 1-2. *Aphelocheirus* spec., scale 5 mm. 1, *A. murcius* n. sp., paratype ♀ from Spain, R. Mundo; 2, *A. occidentalis* n. sp., paratype ♀ from Portugal, R. Corgo.

UMC Zoological department, University of Murcia

NC Nieser collections, Tiel

ZMA Zoological Museum, dept. Entomology, Amsterdam

Description

Micropterous form. General shape broadly oval (fig. 1) general colour greyish brown variegated with yellowish.

Length ♂ 8.2-8.6, ♀ 8.1-9.1; width of pronotum ♂ 4.3-4.6, ♀ 4.3-4.7; maximal width ♂ 5.9-6.1, ♀ 6.0-6.8.

Colour. Head including antennae yellow, eyes blackish. Thorax and abdomen dorsally greyish with broad yellowish lateral bands, in most specimens centre of scutellum, meso- and metanotum also yellowish. Legs yellow. Venter greyish centrally with lateral parts yellowish.

Head: length 1.8; greatest width 2.1-2.2; distance between eyes anteriorly 1.6; synthlipsis 1.2-1.3, length of eye 0.9. Dorsal surface of interocular finely alveolate, part anterior to eyes about 0.7. Eyes anteriorly somewhat wider than posteriorly, outer margin distinctly sinuate. Length of antennal segments 1-4 : 0.1,

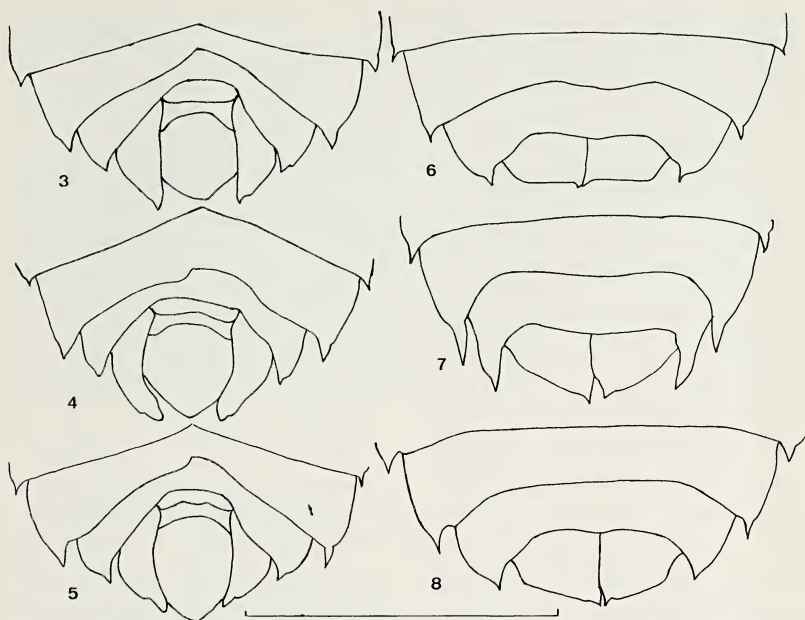
Measurements are in mm.

Aphelocheirus murcius n. sp.

(figs. 1, 3, 6, 10, 12, 18)

Material examined

ESPAÑA: Albacete, Río Mundo, at bridge to Los Alejos, 30.iv.1987, leg. N. Nieser: holotype male, allotype female, 1 ♂, 1 ♀ paratypes ZMA; additional paratypes from this series; 2 ♂, 2 ♀ JTPC; 20 ♂, 20 ♀ NC; 2 ♂, 2 ♀ BMNH; 3 ♂, 3 ♀ MCNM. Additional paratypes (except larvae): R. Mundo, La Alfera, 20.iii.1983, leg. Montes et al., 3 ♂, 3 ♀ UMC, NC; R. Mundo, Los Alejos, 11.x.1982, leg. Montes et al., 1 ♂, 1 ♀ NC; same 20.vii.1983, 8 ♂, 3 ♀, 1 larva V, UMC, NC; Río Tus, Baños del Tus, 21.vii.1983, leg. Millán, 1 ♀, UMC; Río Tus, Rala, 21.vii.1983, leg. Millán, 1 larva, UMC.



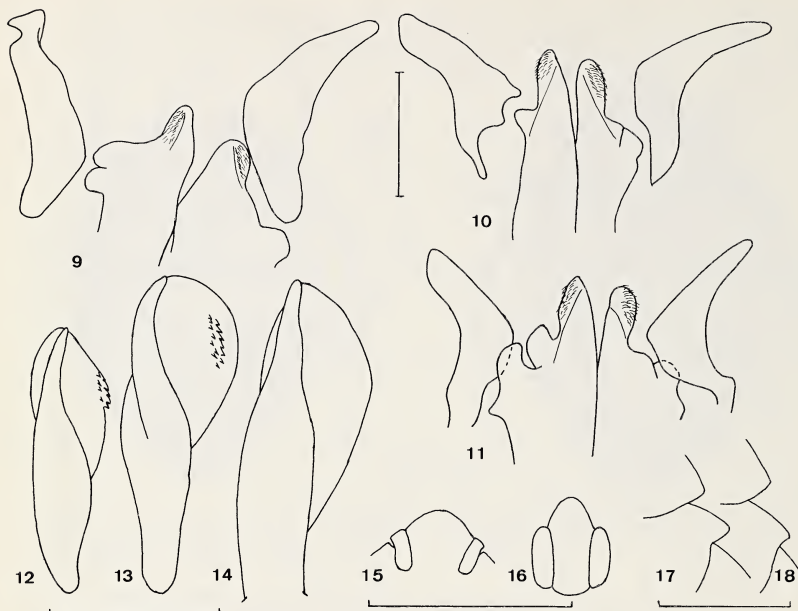
Figs. 3-8. *Aphelocheirus* spec., scale 5 mm. 3-5, ventral view of apex of abdomen in ♂; 6-8, dorsal view of apex of abdomen in ♀; 3, 6, *A. murcius*; 4, 7, *A. occidentalis*; 5, 8, *A. aestivalis*.

0.2, 0.25, 0.4. Labrum evenly rounded apically, length of rostrum 3.1-3.4, attaining middle coxae.

Pronotum rugose with scatterend short, shiny, setae, more densely near lateral margin which is narrowly glabrous and bears 12-14 small spinules, median length 1.2, maximal length 1.7-1.8, anterolateral and posterolateral angles obtuse. Scutellum rugose, with scattered small setae, median length 1.0, basal width 2.7-2.8, lateral margins very indistinctly sinuate, narrowly glabrous, the rounded apex somewhat more broadly glabrous. Hemelytra rugose, reduced, just or just not attaining base of tergite 3, smallest distance between hemelytra 0.5, clavus not differentiated, narrowly glabrous embolar margin with an obtuse point roughly at right angles caudolaterally. Prosternum with a weak median carina anteriorly ending in widened tip. Inner margins of propleura broadly incised to give room for coxae,

caudomedial angle with small, blunt, medially directed point, just anterior of this an ill defined notch. Mesosternum with a weak median carina, in lateral view ventral margin bifid, anterior tip small. Caudal part (mesoxiphus) thickened with small point medially in posterior margin. Metasternum not carinate, metaxiphus with distinct mediocaudal point.

Anterior leg: length of femur 2.0-2.2, width of femur 0.7-0.8, length of tibia 1.8-1.9. Intermediate leg, length of femur 2.2-2.4, width of femur 0.7-0.8, length of tibia 1.8-1.9. Posterior leg: length of femur 2.6-2.8, width of femur 0.7-0.8, length of tibia 3.0-3.2. Fore and middle legs from trochanter to tarsi with thick pads of light hairs on ventral faces. Pilosity of coxae less conspicuous, all femora and tibiae with scattered small spines, thickest and most distinct on dorsal (outer) side of middle tibia and hind tibia and tarsi. Middle and hind tibiae with apical row of medium sized spines. Hind



Figs. 9-18. *Aphelocheirus* spec. 9-11, parameres (outer) and styloids (inner), scale 1 mm; 12-14, aedeagus, scale 1 mm; 15-16, head in dorsal view, scale 5 mm; 17-18, outline of posterolateral angle of pronotum and lateral angle of embolium, scale 1 mm; 9, 14, 15, *A. occidentalis*; 10, 12, 18, *A. murcius*; 8, 11, 13, 17, *A. aestivalis*; 16, *A. rottroui* (after Bergevin, 1925).

tibia and tarsi with well developed swimming hairs (sometimes indistinct in dry specimens).

Abdominal tergites rugose, tergite 2 with indistinct transverse sulci medially, lateral (connexival) margins narrowly glabrous with 6-8 small spinules on segments 3-6. Connexivum: segment 2 not pointed, segments 3-5 with progressively larger points. Venter pruinose centrally, with some scattered shining setae. Hydrostatic organ on abdominal sternite 2 large, length 0.45, with pointed posterior border.

Male. Abdominal tergite 5 large, covering most of tergites 6-9, segment 8 reduced, tergite 6 with normal connexival point, 7 with a large blunt connexival point. Apex of abdomen in ventral view as in fig. 3. Heel of left paramere somewhat pointed (fig. 10), right paramere with rounded heel, parameres without a thick

fringe of hairs, aedeagus with spines in apical part (fig. 12).

Female. Tergites 5 and 6 normal, 7 divided in two valves with small mediocaudal points (fig. 6). Operculum rather blunt, with lateral hair tufts consisting only of a few hairs, apical pilosity not developed into a real tuft.

Etymology: the name refers to the old arabic kingdom of Murcia (Mursiyah).

Comparative notes

A. murcius is closely related to *A. aestivalis*, especially to its colour variety *A. a. montandoni*. *A. murcius* is, however, smaller on an average, has different male parameres (figs. 10, 11, see key) and the lateral edge of the embolium in the micropterous form is less pronounced in *A. murcius* (fig. 17).

Aphelocheirus occidentalis n. sp.

(figs. 2, 4, 7, 9, 14, 15)

Material examined

PORTUGAL, Trás os Montes, Rio Corgo, near Vila Real, 13.v.1987, leg. N. Nieser: holotype ♂, allotype ♀, ZMA; paratypes from this series: 1 ♂, 1 ♀ BMNH; 3 ♂, 3 ♀ MCNM; 2 ♂, 2 ♀ JTPC; 20 ♂, 20 ♀ paratypes NC; 1 ♂, 1 ♀ UMC. Additional paratypes: ESPAÑA, Pontevedra, R. Umia, Portas, 26.vii.1986, leg. A. Cordero 3 ♀; same locality, 12.vii.1987 leg. A. Cordero: 1 ♂, 3 ♀ CN; 2 ♀ ZMA; 1 ♂, 1 ♀ BMNH; 2 ♂, 2 ♀ (col. Cordero); Río Fontanes, Sta Maria de Xeve, 2.vii.1985, leg. A. Cordero, 1 ♂ NC; Río Almolfeí, Bora, 29.viii.1984, leg. A. Cordero, 2 ♀ NC; La Coruña, Río Tambre, Sigueiro, 200 m, x.1983, leg. J. Murillo, 1 ♀ (Murillo collection, Barcelona); Orense, Río Vibey, downstream of power station, San Augustín, 11.v.1987, leg. Nieser, 2 ♂, 1 ♀, 1 larva V (NC).

Description

Micropterous form, general shape broadly oval (fig. 2), general colour (dorsal view) dark greyish to blackish with narrow yellowish margins.

Length ♂ 9.3-9.7, ♀ 9.2-9.8; width of pronotum ♂ 4.4-4.6, ♀ 4.4-4.8; maximal width ♂ 6.1-6.4, ♀ 6.1-6.8.

Colour. Head, including antennae, yellowish, eyes, anterior and posterior margin dorsally blackish. Dorsum of pronotum and abdomen dark greyish, lateral margin of pronotum, embolium and connexival points yellowish. Mesonotum between hemielytra and ill defined spots on abdominal tergites 3 and 4 yellowish. Legs yellowish, central part of venter greyish, its margins yellowish, genital sternites of ♂ yellow.

Head: length 1.6-1.8; greatest width 2.2-2.3; distance between eyes anteriorly 1.6-1.7, synthipsis 1.1-1.2, length of eye 0.9, width of eye 0.40-0.45. Dorsal surface of interocular densely punctate, part anterior to eyes 0.5-0.6. Outer margin of eye distinctly sinuate. Length of antennal segments 1-4: 0.1, 0.2, 0.3, 0.4. Labrum bluntly rounded apically, length of rostrum 3, attaining middle coxae.

Scattered short, shiny, setae, on dorsum of body present but indistinct. Pronotum: lateral margin narrowly glabrous, bearing about 18 short stout indistinct spinules, median length

1.1-1.2, maximal length 1.6-1.7, anterolateral and posterolateral angles obtuse. Scutellum rugose, with scattered small setae, median length 0.9-1.0, basal width 2.4-2.7, lateral margins very indistinctly sinuate, very narrowly glabrous, rounded apex somewhat more broadly glabrous, basally with broad ill defined transverse sulcus. Hemielytra rugose to alveolar, reduced, just not attaining base of tergite 3, smallest distance between hemielytra 0.5 mm, clavus not differentiated, narrowly glabrous embolar margin with obtuse point roughly at right angles caudolaterally.

Prosternum with narrow, well defined median carina anteriorly ending in slightly widened tip. Inner margins of propleura broadly incised to give room for coxae, caudomedial angle with a small blunt, medially directed point (smaller than in *A. murcius*), just anteriorly of this an ill defined notch. Mesosternum with weak median carina, in lateral view ventral margin bifid, anterior tip small. Caudal part (mesoxiphus) thickened with a small (smaller than in *A. murcius*) point medially in posterior margin. Metasternum not carinate, metaxiphus with distinct mediocaudal point.

Anterior leg, length of femur 2.1-2.3, width of femur 0.7-0.8, length of tibia 1.7-1.8. Intermediate leg, length of femur 2.2-2.3, width of femur 0.7-0.8, length of tibia 1.8-1.9. Posterior leg, length of femur 2.8-2.9, width of femur 0.7-0.8, length of tibia 3.2-3.4.

Fore and middle legs from trochanter to tarsi with thick pads of light hairs on ventral faces. Pilosity of coxae less conspicuous, all femora and tibiae with scattered small spines, thickest and most distinct on dorsal (outer) side of middle tibia and hind tibia and tarsi. Middle and hind tibiae with apical row of medium sized spines. Hind tibia and tarsi with well developed swimming hairs (sometimes indistinct in dry specimens).

Abdominal tergites rugose, tergite 2 with indistinct transverse sulci medially, lateral (connexival) margins very narrowly glabrous with 8-10 small spinules on segments 3-6. Connexivum: segment 2 not pointed, segments 3-5 with progressively larger points. Venter pruinose centrally, not very distinctly, with some

scattered shining setae. Hydrostatic organ on abdominal sternite 2 large, length 0.45-0.5, with pointed posterior border in most specimens.

Male. Abdominal tergite 5 large, covering most of tergites 6-9, segment 8 reduced, tergite 6 with normal connexival point, 7 with a large blunt connexival point. Apex of abdomen in ventral view as in fig. 4. Heel of left paramere rounded, apex twisted (fig. 9), right paramere with rounded heel, parameres without thick fringe of hairs, aedeagus large, without spines in apical part (fig. 14).

Female. Tergites 5 and 6 normal, 7 divided in two valves with blunt mediocaudal points (fig. 7). Operculum rather blunt, with well developed lateral hair tufts, apical pilosity not developed into a distinct tuft.

Etymology: *occidentalis* refers to the locality in the westernmost part of continental Europe.

Comparative notes

In size and structure of the aedeagus *A. occidentalis* is similar to *A. kolenati* from the Kaukasus, which has, however, the right paramere more distinctly hooked, the heel very distinctly produced and the left paramere not twisted apically.

Key to species of West Europe and the Mahreb

- 1a. Length of eye 1.5 mm, lateral margin of eye not sinuate. Only known by a macropterous male from Morocco *Aphelocheirus rottrouii*
- 1b. Length of eye 1 mm, lateral margin of eyes sinuate 2
- 2a. ♂: aedeagus large, without series of spines in its apical part (fig. 14), connexival points of segment 7 large (fig. 5); ♀: connexival points of segments 5 and 6 large (fig. 7). [Colour mainly dark greyish with yellowish margins]. North Portugal and Galicia, specimens recorded from Asturias may also belong here *Aphelocheirus occidentalis*

- 2b. ♂: aedeagus of normal size, with series of spines in its apical part, connexival points of segment 7 normal ♀: connexival points of segments 5 and 6 normal (fig. 6, 8) 3

- 3a. Caudolateral angle of pronotum and lateral angle of embolium very obtuse (fig. 18). ♂: left paramere with somewhat pointed heel (fig. 10), right paramere with little developed heel. [Greyish brown variegated with yellowish, length 8-9 mm]. So far only known from Albacete *Aphelocheirus murcius*
- 3b. Caudolateral angle of pronotum and lateral angle of embolium less obtuse than in preceding species (fig. 17). ♂: left paramere with rounded heel (fig. 11), right paramere with distinct heel. [Dark greyish with narrow yellowish margins in dorsal view, except for British populations (ssp. *montandoni*) which are variegated with yellowish; length 8½-10 mm]. The "common" species in NW and Central Europe, for its distribution see Nieser (1978), reports from Spain have to be checked *Aphelocheirus aestivalis*

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