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Redescription and taxonomical position of Strandesia sudanica Sywula, 1970 (Crustacea, Ostracoda)

by

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Summary: A population of *Strandesia sudanica* was discovered in a guelta of the Tassili-n-Ajjer (Algeria) and this opportunity is taken to present a morphological redescription of this species. *S. sudanica* is here lodged in the subgenus *Neocypris,* in which it nevertheless takes an isolated position due to a number of aberrant morphological characteristics. Thus far, this species has been reported from two mountainous regions in the Sahara only.

Additional keywords: *Neocypris.* Algeria. Cypricercinae.

INTRODUCTION

Broodbakker (1983) recently published a partial revision of the subfamily Cypricercinae McKenzie, 1971 and included the following genera: *Strandesia* Stuhlmann, 1888; *Cypricercus* Sars, 1895; *Bradleystrandesia* Broodbakker, 1983; *Astenocypris* G.W. Müller, 1912; *Tanycypris* Triebel, 1959 and the enigmatic *Spirocypris* Sharpe, 1903. *Gesa* Hartmann, 1957 was described on an immature female and might be a (senior) synonym of *Tancypris* (McKenzie, 1971). *Neocypris* Sars, 1895 (syn. = *Bradleycypris* McKenzie, 1982) and *Acanthocypris* Claus, 1892 were retained as subgenera of *Strandesia* s.l. Although this already introduced some order into this group, the majority of the species remains lodged in *Strandesia* s. l. and we are still far from presenting a Linnean hierarchy of the Cypricercinae. The only way to reach this ultimate goal appears to be a broad revision of the entire group, based on good and complete (re)descriptions of all major taxa. Broodbakker (loc. cit.) concentrated on species from Central and South America

and corrected earlier views on Holarctic taxa. The present paper aims to contribute towards a revision of the African Cypricercinae. The taxonomic importance of this fauna should not be underestimated, as both *Cypricercus* and *Strandesia* s.s. were originally described from African inland waters. Their redescription will be presented elsewhere.

Sywula (1970) reported *Strandesia sudanica* from Gebel Marra (Dar Fur, Western Sudan). As he only had decalcified specimens, carapace morphology was illustrated briefly. Since then, this taxon was never reported again. Dr Y. Bouvet (Lyon, France), however, recently collected this species from a guelta in the Tassili-n-Ajjer (Algeria). These specimens were excellently preserved and provided the opportunity to redescribe this species. It should finally be noted that *S. sudanica* was not included in the checklist of Martens (1984).

MATERIAL: c. 10 females, collected from a guelta (= desert lake) near Ihérir in Tassili-n-Ajjer, Algeria (Station 10 in the survey of Bouvet, 160 km NW of DJANET, approximate coordinates: 25° 26' N, 8° 26' E. All specimens were collected on 16.10.1985. Water temperature at the time of collecting was 22°C, pH = 7.8, conductivity = 1327 μS/cm, alkalinity = 190.4 mg/l. Illustrated specimens have registration numbers OC 1465-1468; 5 in toto specimens are kept in spirit under number OC 1469. All specimens are kept in the collections of the Koninklijk Belgisch Instituut voor Natuurwetenschappen (Brussels).

ABBREVIATIONS USED IN TEXT AND FIGURES: A1 antennula; A2 antenna; db dorsal branch of furcal attachment; H height (of valve); L length (of valve); LV left valve; Md mandibula; Mx1 maxillula; Mx2 maxilla; RV right valve; T1 first thoracopod; T2 second thoracopod; vb ventral branch of furcal attachment; W width (of valve). All other combinations are symbols used to name different setae on the limbs.

TAXONOMIC DESCRIPTIONS

Family Cyprididae Baird, 1845
Subfamily Cypricercinae McKenzie, 1971

DIAGNOSIS: Cypridid genera with divided penultimate segment on T1: 'c'-seta absent on Mx2 and furcal attachment with Triebel's loop. Carapace morphology thus far universally ignored, some species with marginal selvage on RV.

Genus *Strandesia* Stuhlmann, 1888
Subgenus *Neocypris* Sars, 1901

DIAGNOSIS: Carapace without prominent spines, generally oblique in frontal view; width about half or more of the length. Furcal attachment stout, with Triebel's loop large, situated in the dorsal branch; furcal ramus relatively stout, but not set with rows of spines, only with ventral setulae.

Strandesia (Neocypris) sudanica Sywula, 1970
(Figs 1,2,3A-C,4)

DIAGNOSIS: Carapace elongated (length c. twice the height); valves without prominent marginal structures.
A2 with natatory setae short, not reaching beyond half of the penultimate segment. Palp of Mx2 somewhat reduced. Proximal furcal seta claw-like and fused (= without articulation) with the furcal ramus.

Description of female

Carapace (Fig. 4C,D) elongated, with both height and width c. 50% of length. In frontal view oblique, RV situated higher than LV; RV thus overlapping LV dorsally, the latter overlapping the RV on frontal, caudal and ventral sides. In dorsal view, both valves evenly rounded, greatest width situated in the middle.

RV (Fig. 4B) with greatest height situated somewhat in front of the middle, anterior margin slightly narrower than caudal margin, the latter with a submarginal selvage. Calcified part of inner lamella wider anteriorly than posteriorly (c. 2x), this inner lamella evenly descending into the cavity of the valve. Dorsal margin with a narrow, but prominent folded margin. Ventral margin sinuous in the anterior half.

LV (Fig. 4A) with general outline as the RV, but without the folded dorsal margin. Calcified part of inner lamella with an inner list along the frontal, ventral and caudal margins. This inner lamella furthermore not evenly curving, but steeply descending into the valve cavity, then building an abrupt angle towards the center of the valve, immediately after which the inner list is situated. (Fig. 4G). Proximal to the inner list, especially on the caudal side, a row of minuscule, calcareous bumps with unknown function is present (Figs 4E,F,H).

Measurements (in μm):
RV: L = 841, H = 447 (n = 1); LV: L = 867, H = 460 (n=1);
W = 381-394 (n=2).

A1 (Fig. 1A) with first segment of protopodite huge, bearing 1 short subapical and 2 long apical setae. Second segment wider than long, with one short apical seta and a well developed, subapical Rome organ consisting of 1 segment only (Fig. 1A'). Length ratio's of 5 endopodal segments: 27:15:14:15:13. First segment with one short (as long as the second endopodal segment) and one intermediate seta; second segment with 2 short (about as long as the 3rd endopodal segment) and 2 long natatory setae; third endopodal segment with 1 intermediate and 3 long setae; 4th segment with 4 long setae; terminal segment with 2 long setae, 1 aesthetasc Ya and 1 short seta.

A2 (Fig. 1B) of the normal Cypridid structure, with the following peculiarities: aesthetasc Y large and stout, with a long terminal part; natatory setae short, the longest (= most proximally inserted one) seta not reaching half-

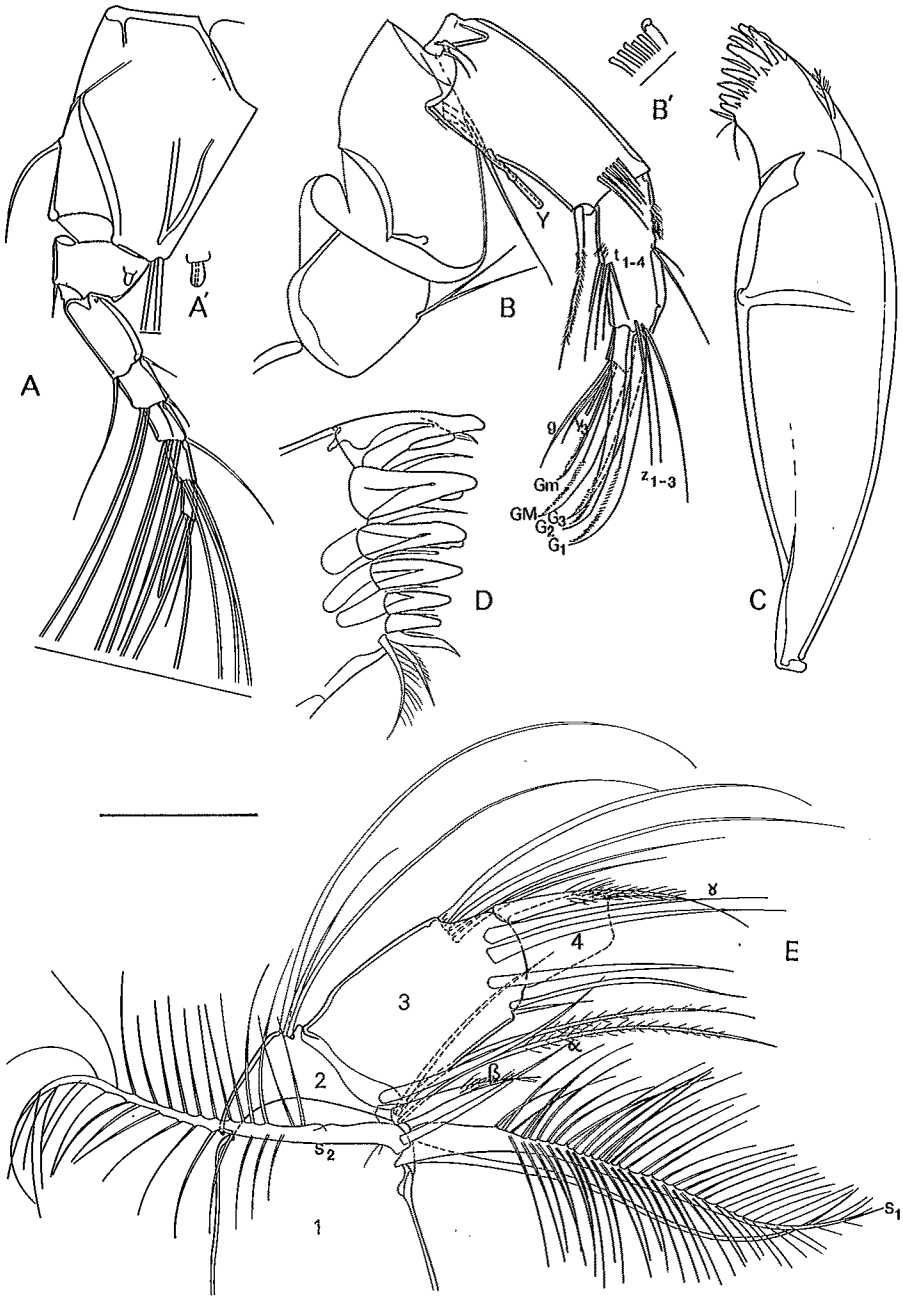


Fig. 1. - *Strandesia (Neocypris) sudanica* Sywula
A: A1 (no. OC 1465); A': Detail of Rome organ; B: A2 (no. OC 1468); B': Detail of base of natatory setae; C: Md-coxa (no. OC 1465); D: Idem, detail of teeth; E: Md-palp (chaetotaxy of 4th segment and respiratory plate not shown) (no. OC 1468). Scale = 33 μm for A',B',D,E; 81 μm for A-C.



Fig. 2. - *Strandesia (Neocypris) sudanica* Sywula (all no. OC 1468).
A: Mx1-palp and 3rd endite; B: Mx1, first endite; C: Mx2; D: T1; E: T2; F: T2, detail of pincer; G: rake-like organ. Scale = 33μm for A-C,F,G; 81 μm for D,E.

way the penultimate segment and with the shortest seta at its base c. twice as wide as the others (Fig. 1B').

Md with coxal plate of the normal type (Figs 1C,D) and without special features. Palp (Figs 1E, 3A) with a large respiratory plate on the first segment. The latter subapically also with 2 huge setae (s1 and s2), a long and smooth unnamed seta and a relatively long, slender and smooth alpha-seta. Second segment dorsally with an apical group of 3 (2 long, 1 shorter) setae, ventrally with subapically a stout and hirsute beta-seta, surrounded by 3 hirsute but slender and 1 smooth setae. Penultimate segment with 3 subapical groups of setae: dorsally with a group of 2 long and 2 shorter setae, laterally with 1 apical, stout, but long and hirsute gamma-seta and 3 smooth, subapical setae and ventrally with 1 short and 1 long apical setae. Terminal segment apically with 3 claws and 3 or 4 setae; these claws only weakly set with setulae.

Mx1 (Fig. 2A,B) consisting of a large respiratory plate, a 2-segmented palp and 3 endites, the latter 4 all strikingly elongated. Basal segment of palp with 7 subapical setae; terminal segment elongated and with 3+3 claws and setae, the former only weakly sclerified. Third endite with 2 large tooth bristles, serrated in their apical third and c. 7 setae and claws of other types. Second endite without special features. First endite with c. 10 normal setae and with 1 large, reflexed and serrated 'o'-seta.

Mx2 (Fig. 2C) with protopodite and undivided plate, bearing 2 unequal 'a'-setae and relatively short setae 'b' and 'd'; no 'c'-seta present; apically with a group of 14 unequal setae. Exopodite a respiratory plate with 5 long and 1 short rays. Endopodite a weakly build palp.

T1 (Fig. 2D) with seta d1 about twice as long as d2; penultimate segment divided, segment 4A with a long apical seta, segment 4B with only 1, short apical seta. Apical claw long and set with weak setulae on its distal third only.

T2 (Figs 2E,F) with an apical pincer, third segment not divided. No apical rows of setulae on penultimate segment observed.

Furca (Figs 3B,C) with ramus relatively stout and wide (L = c. 14x W), ventral margin set with rows of fine setulae, apically with 2 claws and a seta, the latter not reaching halfway the larger claw, subapically with a claw-like seta, directly inserted on and fused with the ramus (i.e. without articulation). Furcal attachment stout, wide and curved, with Triebel's loop situated in the dorsal branch; remainder of this dorsal branch short and hook-like; ventral branch short.

Rake-like organs (Fig. 2G) stout, solid and short, not T-shaped, with c. 8 blunt teeth.

Males unknown.

DISCUSSION

Zoogeography and ecology

S. (N.) sudanica is the only representative of this group in North Africa with short natatory setae on the A2 and is as such easily recognisa-

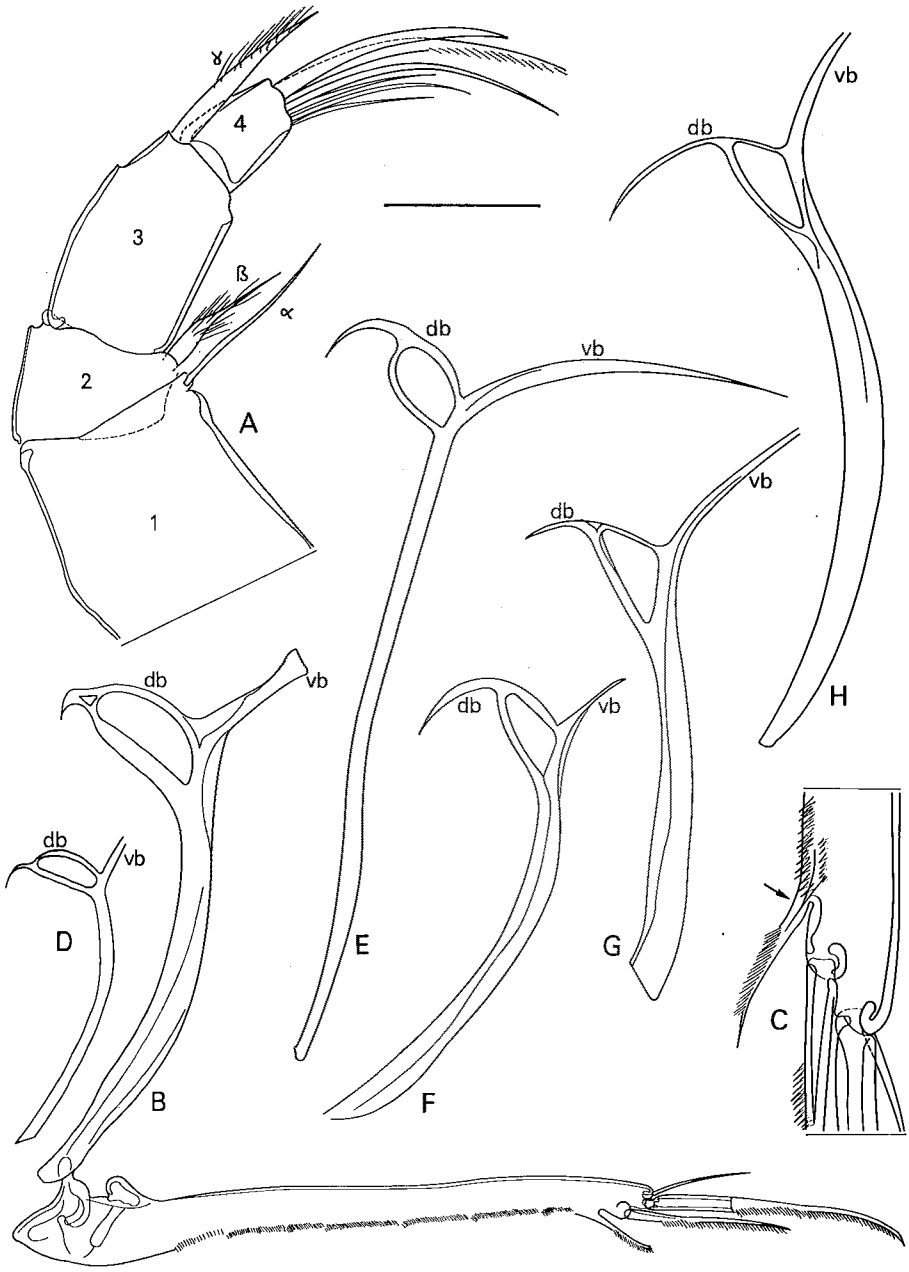


Fig. 3. - *Strandesia (Neocypris) sudanica* (all no. OC 1468)
A: Md-palp, showing chaetotaxy of 4th segment and alpha, beta and gamma setae;
B: Furca and furcal attachment; C: Furca: detail of apical part.
Strandesia parva. D: Furcal attachment (S. Yemen).
Bradleystrandesia reticulata. E: Idem (Belgium).
Cypricercus episphaena. F: Idem (South Africa, no SAM A11294).
Strandesia vinciguerra. G: Idem (Algeria).
Strandesia cyprinotoides. H: Idem (Zaire, no. DW 1956/158/3).
Scale = 33μm for A,C; 81 μm for B,D,E,G; 156 μm for F,H.

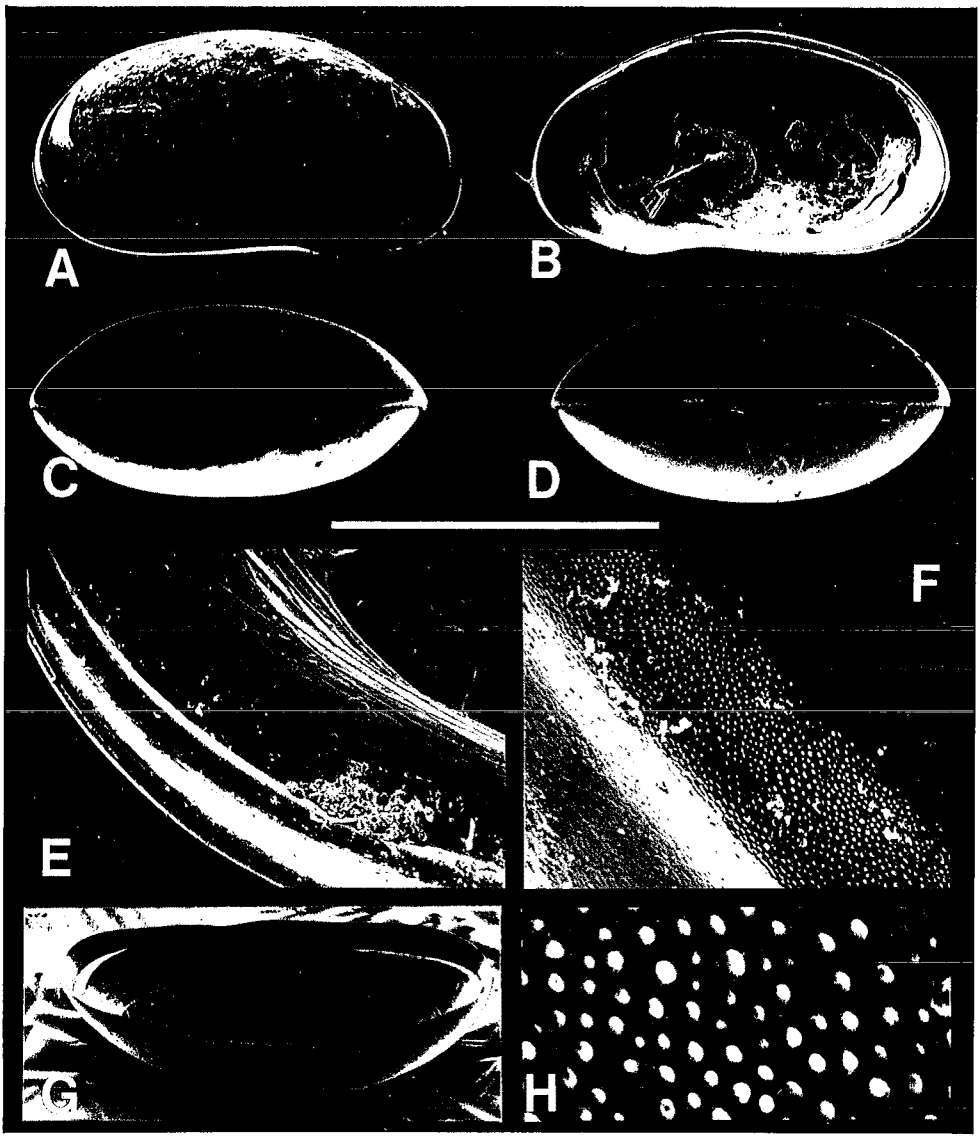


Fig. 4. - *Strandesia (Neocypris) sudanica*
A: LV, internal view (no. OC 1465); B: RV, internal view (no. OC 1465); C: Cp, dorsal view (no. OC 1467); D: Cp, ventral view (no OC 1466); E: LV, internal view, detail ventro-caudal margin (no. OC 1465); F: Idem; G: LV, internal view (tilt = 60°) (no. OC 1465); H: LV, internal view, detail of part of inner lamella (no. OC 1465). Scale = 658 μm for A-D,G; 116 μm for E; 22 μm for F; 4 μm for H.

ble. The carapace is furthermore unusually elongated, if compared to other representatives of this subgenus, and this also facilitates identification. The species nevertheless appears to be rare, as the present locality is only the second one known, this in spite of the relatively extensive research on Algerian inland waters, performed by Gauthier (in various publications).

Relying on the indeed limited number of observations, we can still consider this species a Saharian endemic (a type 2-species in Dumont 1979: 432). Other examples of species with such a distribution are found in the Harpacticoida, the Calanoida, the Odonata and the Amphibia (Dumont, loc. cit.). The ostracod *Leucocythere algeriensis* Martens, 1989 could also be an example, but this species has at the same time undeniable Palaearctic affinities (see discussion in Danielopol et al., in press).

Sywula (1970) found *S. (N.) sudanica* in Wadi Kulé, a small perennial stream on the western slopes of Gebel Marra, a mountainous area in Western Sudan. This does not mean that the species is rheophilic; most likely the specimens were collected from pools in the riverbed. Such pools may remain filled for several weeks or longer after the initial flooding.

The Algerian locality is a more permanent waterbody and this indicates that *S. (N.) sudanica* is fairly tolerant with regard to a number of abiotic environmental variables. The species is unable to swim in open water, due to the reduced natatory setae on the A2 and this, in combination with the stout furcal ramus (rather unusual in this subfamily) indicates a crawling, and perhaps even interstitial, mode of life.

Morphology and Taxonomy

Figure 3 illustrates the furcal attachment of a number of related (African) taxa. It becomes immediately clear that the long, straight and slender furcal attachment of *Bradleystrandesia reticulata* (Fig. 3E) stands out and separates this genus from *Strandesia* and *Cypricercus,* whose furcal attachments are much more stout and curved and also relatively shorter. *'Strandesia' parva* Hartmann, although much smaller, appears to be closer to *Bradleystrandesia* than to *Strandesia* s.l. (Fig. 3D). Far less clear, however, is the distinction between *Strandesia* s.l. and *Cypricercus.* McKenzie (1982, plate 1 (19)) illustrated the furcal attachment of *Strandesia bicornuta* Hartmann, 1964, which appears to have the Triebel's loop in the main, rather than in the dorsal branch. In his illustration of the furcal attachment of *Cypricercus cuneatus* Sars, 1896, this loop is clearly situated in the dorsal branch of the furcal attachment (McKenzie, 1977: fig. 12(8)). However, in most other African species of *Strandesia* s.l. (see Figs 3G,H), the Triebel's loop is also situated in the dorsal branch and such taxa therefore appear more closely related to *Cypricercus* than to the *Strandesia bicornuta* - lineage. This again illustrates that the genus *Strandesia* in its present state is highly polyphyletic and that a comprehensive revision is urgent. Furthermore, we now lack good morphological characters to distinguish between *Cypricercus* s.s. and those Cypricercoid *Strandesia*'s.

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