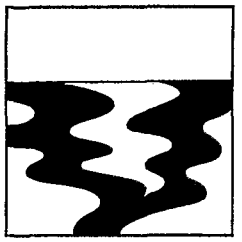

Discovery of the first representative of the genus Speocyclops (Crustacea, Copepoda) *in Africa south of the Sahara* (Speocyclops transsaharicus *n. sp.*)

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ABSTRACT

The first representative of Speocyclops *in Africa south of the Sahara* (*S.* transsaharicus) *is described from a shallow, temporary pool in the forest zone of western Ivory Coast. Biogeographically, its discovery stresses the close faunal relationship that must have existed between Europe and West Africa in pre-Pleistocene times.*

KEY WORDS: Africa. Biogeography. *Copepoda.* Climatic change.

RÉSUMÉ

DÉCOUVERTE DU PREMIER REPRÉSENTANT DU GENRE *Speocyclops* (CRUSTACÉS, COPÉPODES) AU SUD DU SAHARA (*Speocyclops transsaharicus* n. sp.)

Description illustrée de Speocyclops transsaharicus, *le premier représentant de ce genre au sud du Sahara, d'une mare à eau acide de la zone forestière à l'ouest de la Côte d'Ivoire. Comme toutes les espèces européennes de ce genre sont cavernicoles, et comme le même phénomène (espèces européennes cavernicoles, espèces africaines trouvées aussi en surface) se répète dans d'autres genres, l'hypothèse est formulée que la fraction d'espèces de surface du continent européen a été détruite par les glaciations du Pleistocène, et en Afrique du Nord par la formation du Sahara, tandis qu'en Afrique de l'Ouest, la forêt tropicale a résisté à tous les changements climatiques et a, de ce fait, réussi à conserver une faune originale. D'autre part, l'existence d'espèces congénériques en Europe et en Afrique de l'Ouest démontre les liens faunistiques étroits qui ont uni ces deux régions avant les oscillations climatiques qui ont marqué le Pleistocène.*

MOTS-CLÉ : Afrique. Biogéographie. Copépodes. Changement climatique.

DESCRIPTION OF SPEOCYCLOPS TRANSSAHARICUS (fig. 1 à 16)

Material

1 ♀, 2 ♂.

Female holotype

Total length 0.50 mm. A compactly built species; anal operculum prominent, smoothly rounded. Furcal rami about twice as long as wide, showing a dorsal chitinous crest. Lateral seta implanted at the terminal one third of the rami. Terminal appendages of furcal rami: outer appendage setiform, plumose, about twice as long as inner one, which bears a tuft of fine apical hairs. Dorsal seta as long as external one, plumose. Median appendages long, set with long spiny hairs (length more than twice the diameter of the appendix in its middle section). External median appendix unusually long, about as long as the internal one.

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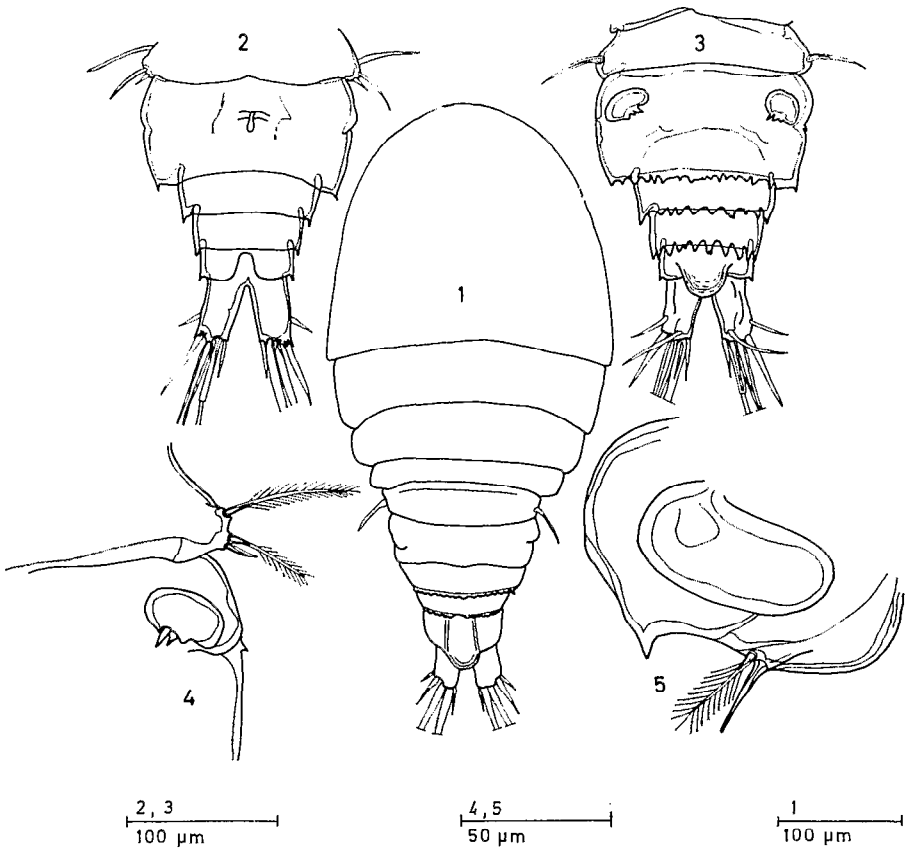

FIG. 1-5. — *Speocyclops transsaharicus* n. sp. 1. habitus, 2. Urosome, ventral view, 3. Urosome, dorsal view, 4. P_5 and P_6, female, 5. P_6, male.

Hind ridges of abdominal segments irregularly indented dorsally, smooth ventrally. Genital segment comparatively very strongly developed.

A_1 11 segmented; hairs on the different segments apparently naked, save for one, sitting at the top of S10, which is conspicuously plumose. A_2 with a feathered hair on top of its basal segment.

Thoracopods 1-4 biarticulate. Spine formula of exopodites 3.4.4.3; seta formula of exopodites 5.5.3.4. The endopodites have a single internal seta on their basal segment. This seta is longest on P_2 and shortest on P_4. Top segments with a single apical spine. This spine is particularly strong and hook-shaped on P_1, while all hairs on P_1 are extremely short. The single external hair is flanked by two strong outgrowths of chitin around its implant. The apical outgrowth is produced into a curved, non-articulating spine that is longer than the hair itself. Similar outgrowths occur on P_2, but are smaller, and the apical outgrowth is not claw-shaped. These outgrowths further decrease in size towards P_4. Conversely, a hook on the inner angle of the basopodites of P_1-P_4 increases in size from P_1 to P_4. A spine is seen at the base of the endopodite of P_1. The shape of the two segments of the endopodite of P_4 is peculiar and highly diagnostic: basal segment swollen, wider than long. Apical segment conical, small. All endopodites 2 of P_1-P_4 bear three internal hairs.

P_5 consists of two hairs and a naked spine. It is directly implanted (no sign of a rudimentary segment) in lateral position on the thoracic segment that bears it. P_6 reduced to two spines.

Male

Total length 0.51 mm. Structurally as the female, except for the geniculate shape of A_1 and P_6, which consists of a strong, naked spine and a long plumose hair.

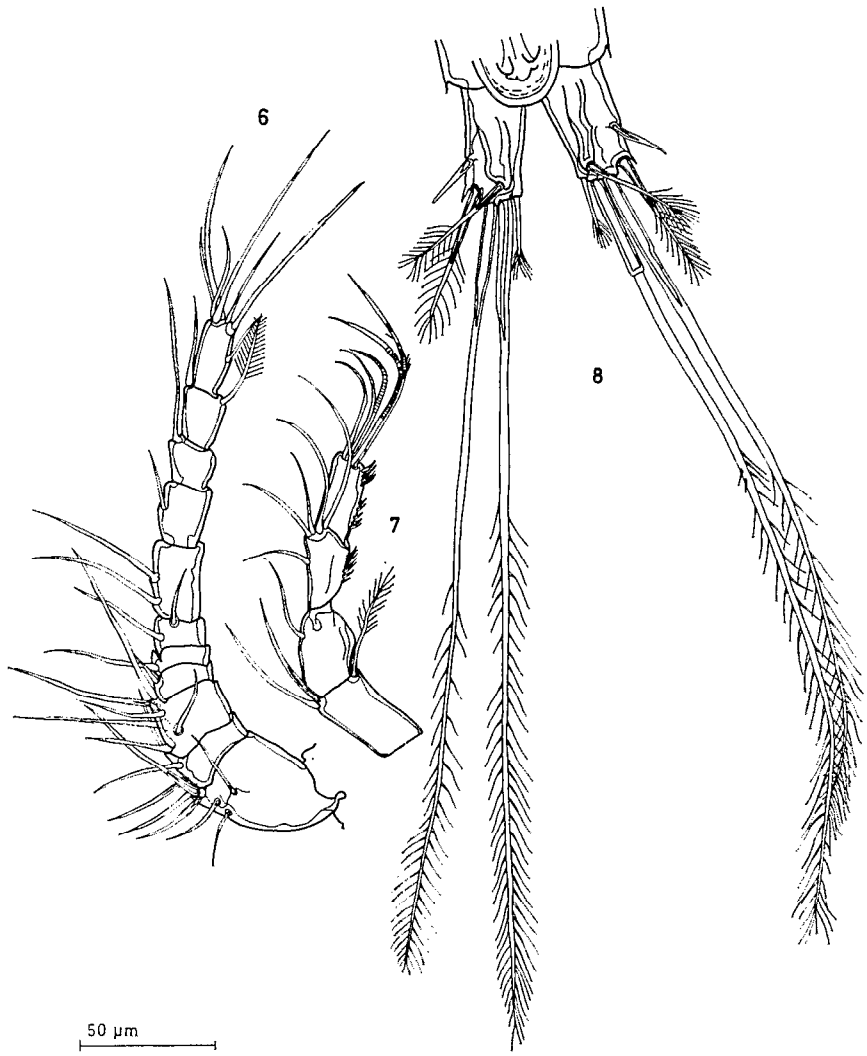

FIG. 6-8. — *Speocyclops transsaharicus* n. sp. 6. A_1, 7. A_2, 8. Furca.

Repository of the holotype

Koninklijk Museum voor Midden-Afrika, Tervuren, Belgium.

NATURE OF THE TYPE LOCALITY

The species was found in a shallow, temporary but natural pool, situated in dense rain-forest about 1 km from the village of Guiglo, W. Ivory Coast, in the valley of the river Cavally (forming the border with Liberia), January 1974. The water of the pool was distinctly brown-coloured, possibly acid, and devoid of aquatic macrophytes.

RELATIONSHIP

S. transsaharicus shows numerous characteristic features, some among which are not seen in any of the described species in its genus (*e.g.* the structure of the endopodite of P_4), while others, like the structure of the endopodite of P_1, clearly link it up with two species known from the mediterranean islands of Crete and Sardegna (LINDBERG, 1955, 1956). *S. sardus* and *S. creticus* indeed both show the tremendous claw on P_1. However, the presence of three hairs on the inner surface of En 2 P_1 is unique to the African species, not to mention other distinctive characters such as the anal operculum, the extremely long external median seta of the furca, and the spine and seta formula of all exopodites.

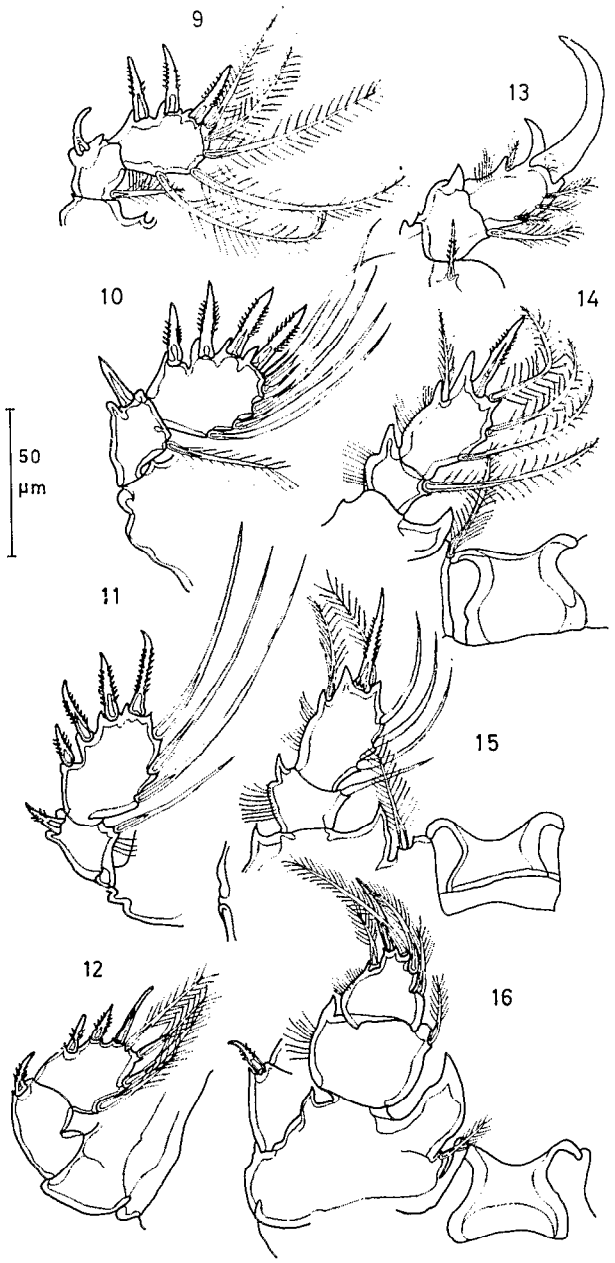

FIG. 9-16. — *Speocyclops transsaharicus* n. sp. 9. Exopodite P_1, 10. Exopodite P_2, 11. Exopodite P_3, 12. Exopodite P_4, 13. Endopodite P_1, 14. Endopodite P_2, 15. Endopodite P_3, 16. Endopodite P_4.

BIOGEOGRAPHICAL RELEVANCE

Speocyclops was to date considered an exclusively European genus (KIEFER, 1978), even though it extends to the Ponto-Caspian area and though a single North-African record from Tunisia is available (LESCHER-MOUTOUÉ, 1973). The latter record precisely pertains to the only species that is not endemic to a very limited area, but extends over most of Europe: *S. demeliensis* (Scourfield). Also, this was, to date, the only species that could occasionally be found in surface waters, although like its congeners, its true habitat is groundwater or caves.

The discovery—unexpected as it may be—of a new species in the humid tropical forest zone of West-Africa, thus considerably widens the known range of the genus, while its occurrence in surface water adds a new feature to the type of habitats likely to be colonized by *Speocyclops*-species. This phenomenon, that certain crustacean genera, in the European part of their range adopt predominantly cavernicolous habits, while in West and/or Central Africa they may also occur in surface waters, is certainly not new. It has long been known in harpacticoid genera such as *Echinocamptus*, and was recently also illustrated in the cyclopoid genus *Allocyclops* (DUMONT and LAMOOT, 1978). The latter is represented in Africa by three species, two of which are known from surface pools. In Europe, two other species are found. They are restricted to some caves in the karst area of Yugoslavia (PETKOVSKI, 1971).

It has been argued (DUMONT, 1979) that extremely specialized forms such as the species of *Allocyclops* and *Speocyclops* are very vulnerable to changes in their habitat, and that climatic changes in particular are likely to eradicate species quite quickly and easily. Thus, hypothetical surface-dwelling species in Europe probably went extinct as a consequence of Pleistocene glaciations, and north-african species (with the exception of the Atlas area, which has been insufficiently explored to this end) disappeared during the formation of the sahara desert. However, the forest zone of West-Africa, although at times fragmented and reduced to only a fraction of its modern surface, was never completely destroyed, and could therefore conserve an original fauna in those same genera.

On the other hand, the presence of congeneric species of such genera as *Echinocamptus*, *Allocyclops*, and now also *Speocyclops*, provides fresh evidence for a former (late-Tertiary) faunal continuum between Europe and West-Africa, that was brought to an end at the beginning of the Pleistocene by repeated major climatic oscillations, and is nowadays far better apparent from a study of the smaller relict invertebrates than from, say, vertebrate faunas.

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