A NEW SPECIES OF *MUGILICOLA* PARASITIC ON SOUTH AFRICAN ELVERS (COPEPODA, THERODAMASIDAE)

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ABSTRACT

A new species of parasitic copepod belonging to the genus *Mugilicola* Tripathi, 1960 (CYCLOPOIDA: THERODAMASIDAE) is described. The copepods were embedded in the buccal cavity of elvers of *Anguilla mossambica* caught in South African rivers.

INTRODUCTION

An examination of 70 elvers of *Anguilla mossambica* Peters, 1852, caught in the Keiskamma River, South Africa, revealed 12 infected with parasitic copepods which were embedded in the roof of the buccal cavity. In addition, one glass eel in a sample of 296 was found to be infected with a copepodid stage of the same parasite, suggesting that the eels become infected shortly after they enter fresh-water, where the change from the glass eel stage to pigmented elver occurs.

Examination of 36 elvers of *A. mossambica* from the Umtata River revealed one infection, but no copepods were found in any of 105 glass eels examined.

The elvers containing copepods were fixed in formalin. Copepods were dissected from the eel heads and preserved in alcohol. The appendages of two copepods were dissected and mounted in Berlese fluid, and drawn with the aid of a camera lucida.

Order CYCLOPOIDA

Family THERODAMASIDAE Tripathi, 1960
Mugilicola Tripathi, 1960 (emended)

FEMALE: body consisting of head, with or without processes, continuous with neck. Trunk continuous with neck, without segmentation. Antennule 5-segmented. Three pairs of legs on trunk, biramous, rami with three joints. One pair of legs placed medially on ventral surface of trunk, the other two pairs close together on ventral posterior margin.

MALE: unknown.

Mugilicola smithae n.sp.

Material

Nine female copepods, 6 bearing eggs, taken from 7 elvers of *Anguilla mossambica* Peters 1852 caught in Keiskamma River (33° 25′ S / 27° 29′ E), South Africa, by P M Hine, on 4 February 1977. One female, designated as holotype, deposited with South African Museum, Cape Town (SAM A 15679). Two female paratype specimens deposited in the New Zealand National Museum, Wellington (Cr.2171), one female paratype specimen in the Institute of Ichthyology, Rhodes University (RUSI 929), other paratypes in author's (JBJ) collection. One copepodid from a glass eel (*A. mossambica*) caught at the same locality and date as above, deposited in N.Z. National Museum (Cr. 2172).

Description

FEMALE (Figs 1–3). Average length, excluding eggstrings, 2,2 mm (1,7–3,0 mm). Eggstrings 0,2 × 0,5 mm, eggs 0,05 mm. (All measurements from four specimens).

HEAD (Fig. 1 A–C) 0,45 mm long, greatest width 0,40 mm. Anterior margin rounded, small triangular rostrum. Posterio-lateral margins of head expanded into broad trilobate processes. Antennules and antennae near anterior margin. Mouth with associated cephalic appendages one quarter distance from anterior margin.

Antennule (Fig. 1 D) 5-segmented. Armature: 13; 4; 1; 2; 4.

Antenna (Fig. 1 E) 3-segmented. First segment rectangular, without ornamentation. Second segment with curved distal margin, length twice width. Terminal segment bears stout blunt claw, closing against second segment.

Labrum (Fig. 2 A). Situated immediately anterio-lateral to mouth. Width one-third length, bears 4 distinct teeth on oral margin.

Mandible (Fig. 2 B). Wide base, basal width half length, narrows to spatulate top with row of fine spines on margin. Palp (?) arises near base, length equals mandible base, pointed distally with transverse striations on inner margin.

Maxilla (Fig. 2 B). Lobate structure immediately posterior to mandible. Two setae on rounded distal margin.

Maxilliped (Fig. 2 A, B). Rounded distally, distal margin covered by a clump of stout spines.

NECK. Long and narrow, passes imperceptibly into trunk.

TRUNK. Ovoid, width two-thirds length, bears three pairs legs ventrally. First legs at mid-point, second and third legs close together in posterior quarter.

Legs 1–3 (Figs 2 D, C; 3 A). Biramous, rami trimerous. Setal formula (Arabic numerals represent setae, Roman numerals spines):

P_1	0–0	0–0	Exp. 1–0	0–1	I–5
			End. 0–1	0–2	II–4
P_2	0–0	0–0	Exp. 0–0	0–1	0–6
			End. 0–1	0–1	I–4
P_3	0–0	0–0	Exp. 0–0	0–1	0–6
			End. 0–1	0–2	I–4

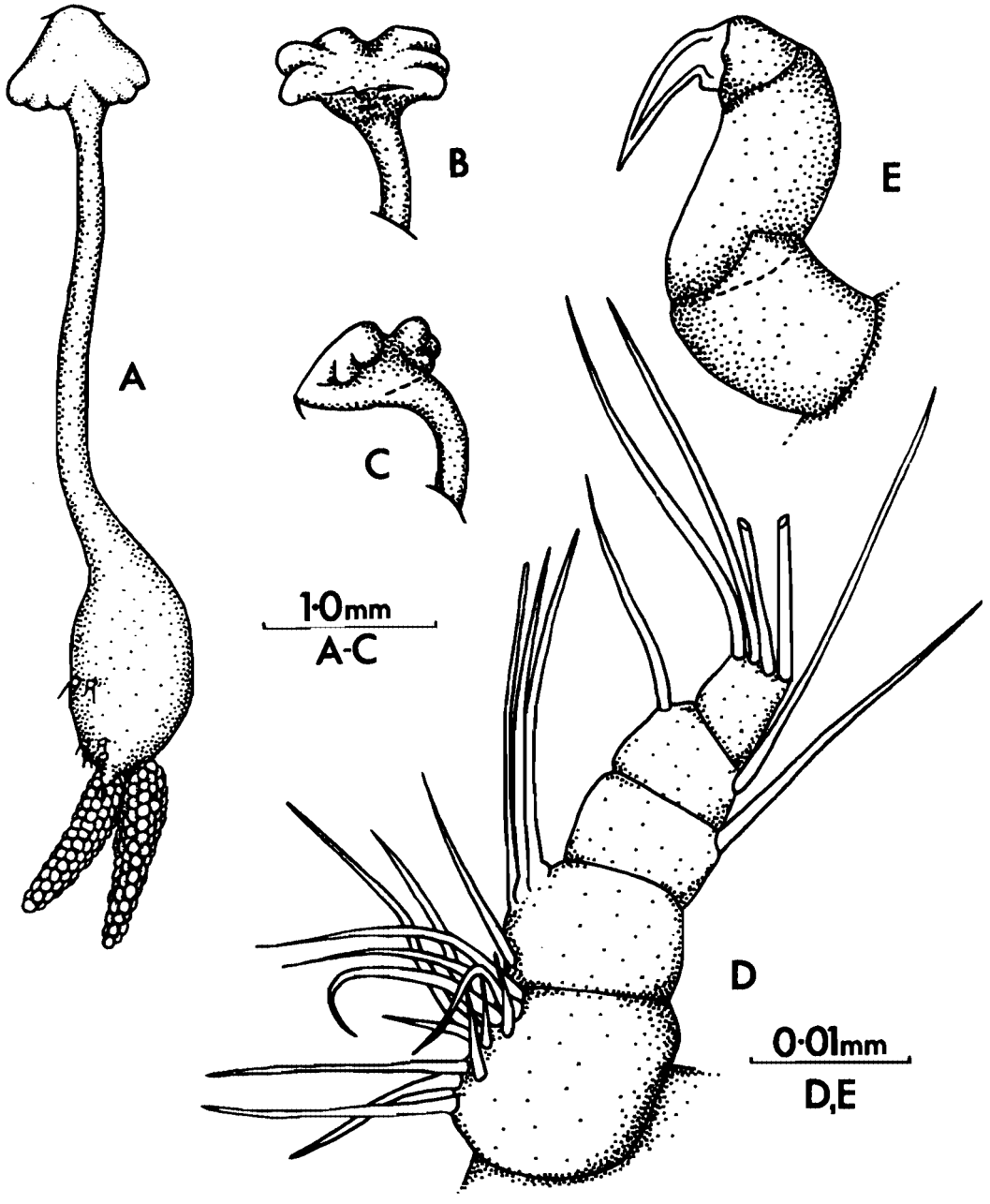

FIGURE 1.

Mugilicola smithae n. sp., female: A, whole mount; B, head, frontal aspect; C, head, posterio-lateral aspect; D, antennule; E, antenna.

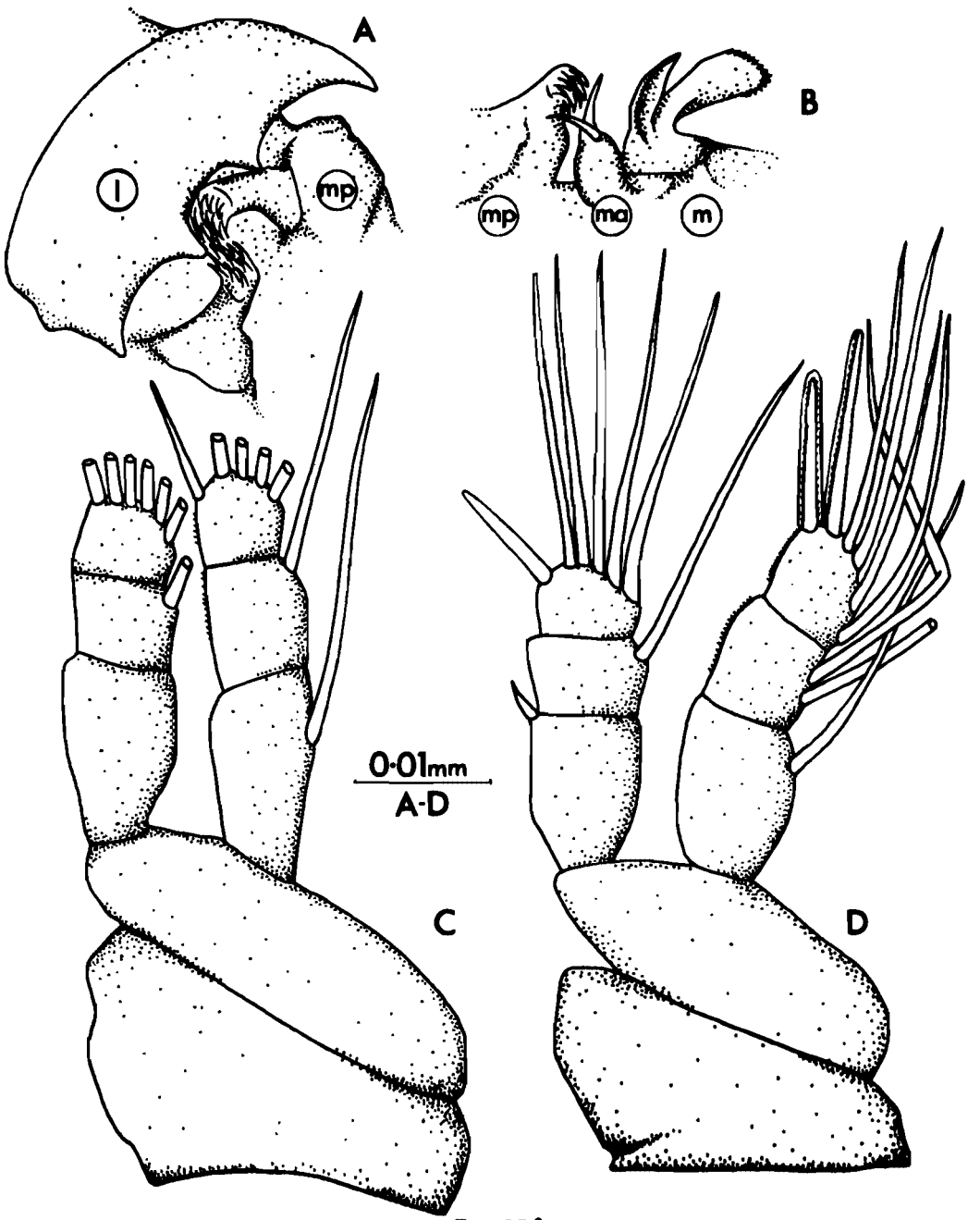

FIGURE 2.

Mugilicola smithae n. sp., female; A, mouth region, ventral aspect; B, mouth parts, lateral aspect; C, second leg; D, first leg.

KEY: *l*, labrum; *m*, mandible; *ma*, maxilla; *mp*, maxilliped.

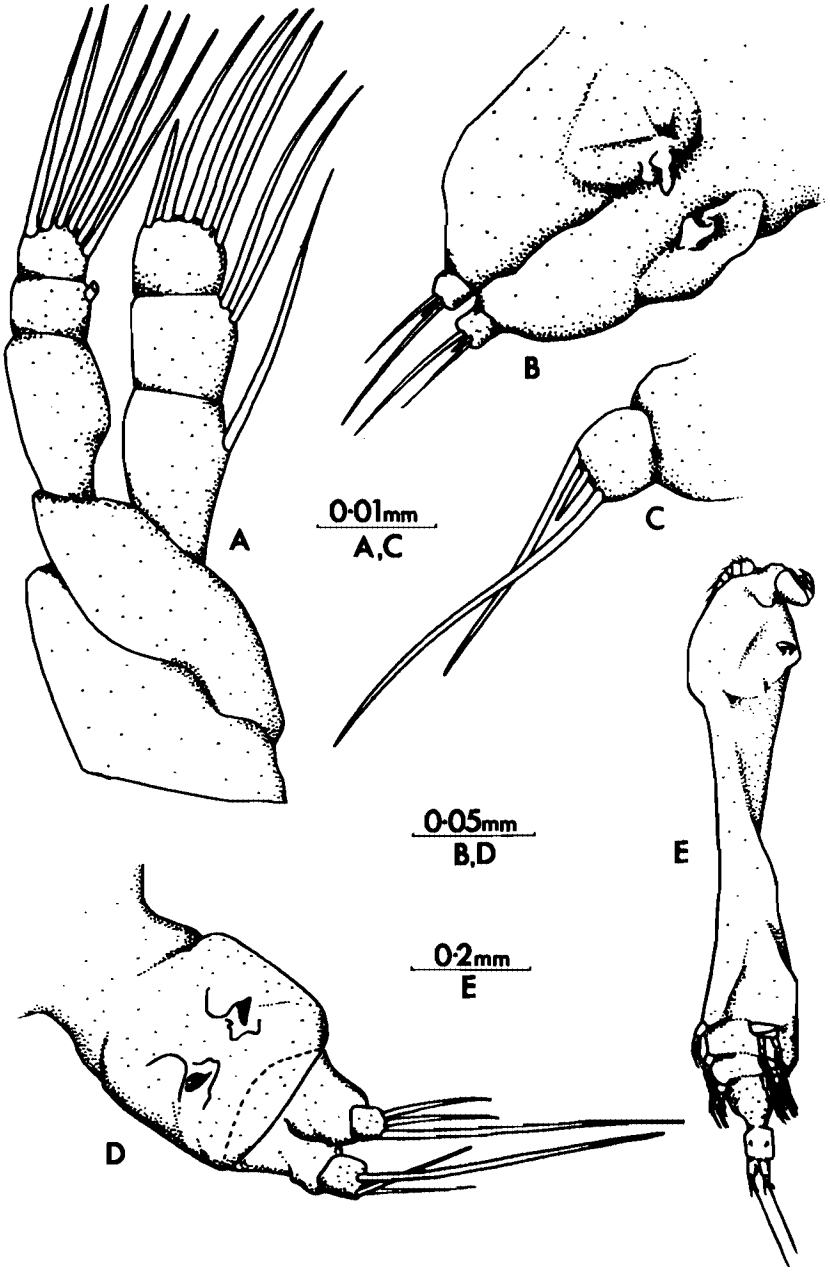

FIGURE 3.

Mugilicola smithae n. sp., female: A, third leg; B, abdomen; C, caudal furca. Copepodid: D, abdomen; E, whole mount.

Abdomen (Figs. 3 B) (0,10–0,16 × 0,16–0,17 mm), consists of fused genital segment and bifurcate posterior segment bearing caudal rami. Each ramus (Fig. 3 C) bears one setule and two apical setae on posterior margin.

COPEPODID (Figs 3 D, E). Total length 1,1 mm; width 0,2 mm. Appendages as for female except caudal ramus which bears three setae on apex, one seta 2,5 times length of other two.

DISCUSSION

The new species fits within the diagnosis for the family Therodamasidae Tripathi, 1960, as defined by Hewitt (1969) (referred to by him as Therodomasidae). This family contains only three genera: *Therodamas* Kroyer, 1863; *Paeonodes* Wilson, 1944; and *Mugilicola* Tripathi, 1960.

Therodamas and *Paeonodes* are both characterized by four pairs of legs, while *Mugilicola*, which included until now only one species *M. bulbosa* Tripathi, 1960, has three pairs of legs.

Mugilicola smithae has a very narrow neck with a cone-shaped, lobed head similar to *Paenodes nemaformis* Hewitt, 1969, and quite unlike the illustration of *M. bulbosa* (Tripathi, 1960). The appendages of the two species are similar, differing only in the setation of the antennule (which for *M. bulbosa* is described as "Last segment with five apical setae"), and of the legs, which for *M. bulbosa* are drawn with setae and spines as follows:

P_1	Exp. 0 - 1 - 5
	End. 0 - 2 - 6
P_2	Exp. 0 - 2 - 4
	End. 0 - 1 - 5
P_3	Exp. 0 - 1 - 3
	End. 1 - 2 - 4

These are all less setose than the legs of *M. smithae*.

Attempts to locate the type material of *M. bulbosa* have been unsuccessful.

Mugilicola bulbosa was found on *Mugil tade* and *M. parsia* in India, and the morphological differences, plus the geographic separation, are sufficient to justify making *M. smithae* a new species.

This copepod is named after Mrs M M Smith, director of the JLB Smith Institute of Ichthyology, in appreciation of her kindness.

ACKNOWLEDGEMENTS

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