

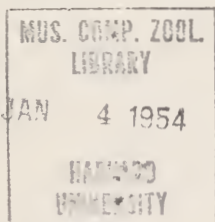
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OSTRINCOLA GRACILIS C. B. WILSON, A PARASITE OF
MARINE PELECYPODS IN LOUISIANA
(COPEPODA, CYCLOPOIDA)

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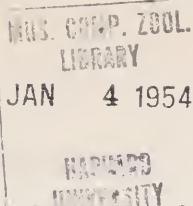
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OSTRINCOLA GRACILIS C. B. WILSON, A PARASITE OF
MARINE PELECYPODS IN LOUISIANA

(COPEPODA, CYCLOPOIDA)

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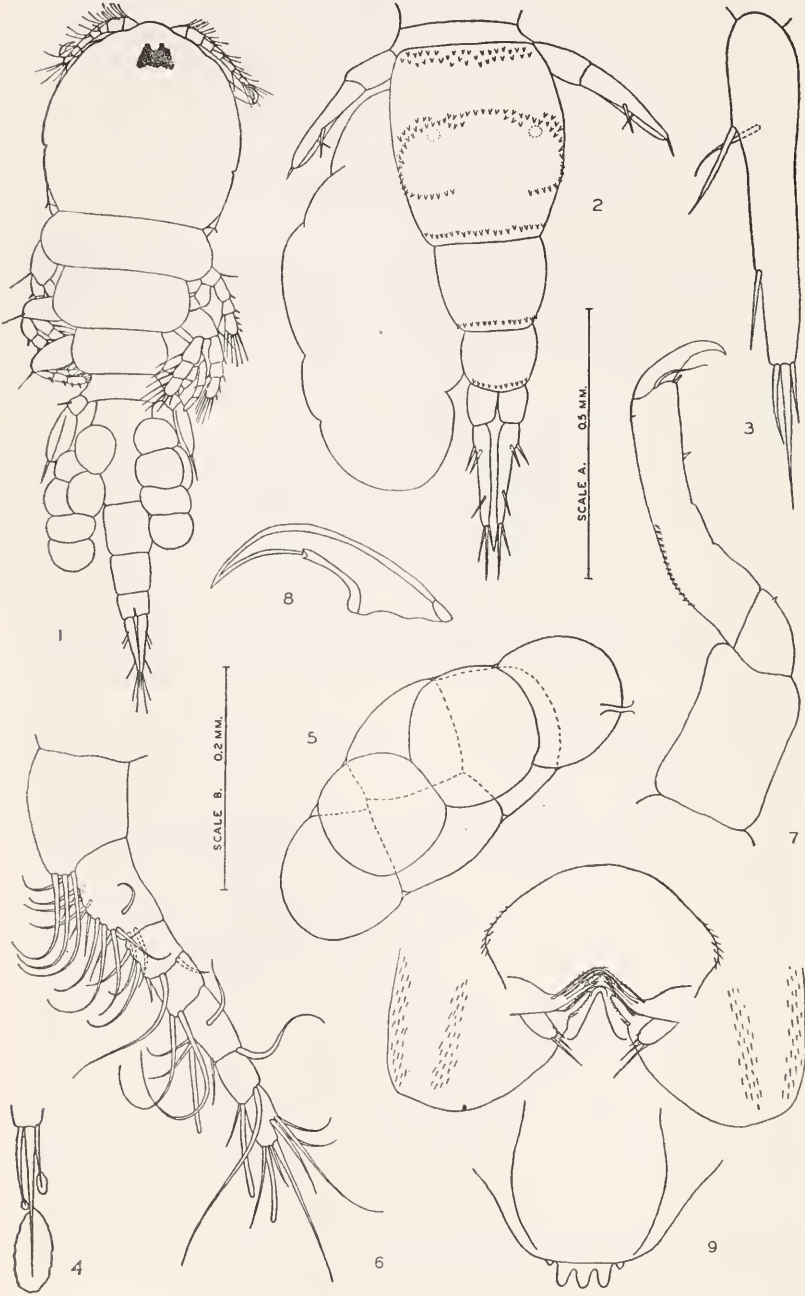
In June, 1947, a parasitic copepod, *Ostrincola gracilis* C. B. Wilson (1944), was discovered in the mantle cavity of four species of pelecypods from the Barataria Bay region of Louisiana. The hosts were the Virginia oyster (*Crassostrea virginica* Gmelin), the ribbed mussel (*Modiolus demissus granosissimus* Sowerby), the recurved mussel (*Mytilus recurvus* Rafinesque), and the hard shelled clam or quahaug (*Venus mercenaria mercenaria* Linné.).

A study of the copepods thus obtained has revealed certain important omissions and inaccuracies in the original description. The holotype and allotype specimens, U. S. National Museum No. 79697, have not been available for dissection and study, but a male and a female, U. S. National Museum No. 79698, having the same collection data as the holotype and allotype and apparently paratypes though not designated as such by Wilson, have been compared in detail with the Louisiana forms. The specimens from Louisiana proved to be conspecific with the actual specimens of *O. gracilis* as identified by Wilson.

For helpful suggestions in connection with this paper I am indebted to Mrs. Mildred S. Wilson.

Female.—The body (fig. 1) in living specimens is colorless, except for a dark reddish-black median eye and a brownish intestine. (In glycerine and polyvinyl alcohol mounts the eye is bluish.) The total length (from the tip of the head to the posterior end of the caudal rami), based on an average of five specimens, is 1.083 mm and the greatest width of the cephalothorax is 0.274 mm. The abdomen is three-segmented. The ventral surface of the genital segment and abdomen bears minute spines arranged as in figure 2, but the dorsal surface lacks spines. The caudal ramus (fig. 3) bears three terminal setae and three along its outer edge. The terminal setae in many specimens show brownish accretions around their tips (fig. 4). The egg sacs (fig. 5) both contain about seven eggs and are attached dorsolaterally. The first antenna (fig. 6) has seven podomeres and bears several aesthetes. The arrangement of the setae on the distal podomere suggests a subdivision into two podomeres

¹ The material upon which this paper is based was collected while the author was a guest investigator at the Louisiana State University Marine Laboratory at Grand Isle, Louisiana.



but there is no articulation. The second antenna (fig. 7) has a notch-like interruption on the inner margin of the claw (fig. 8).

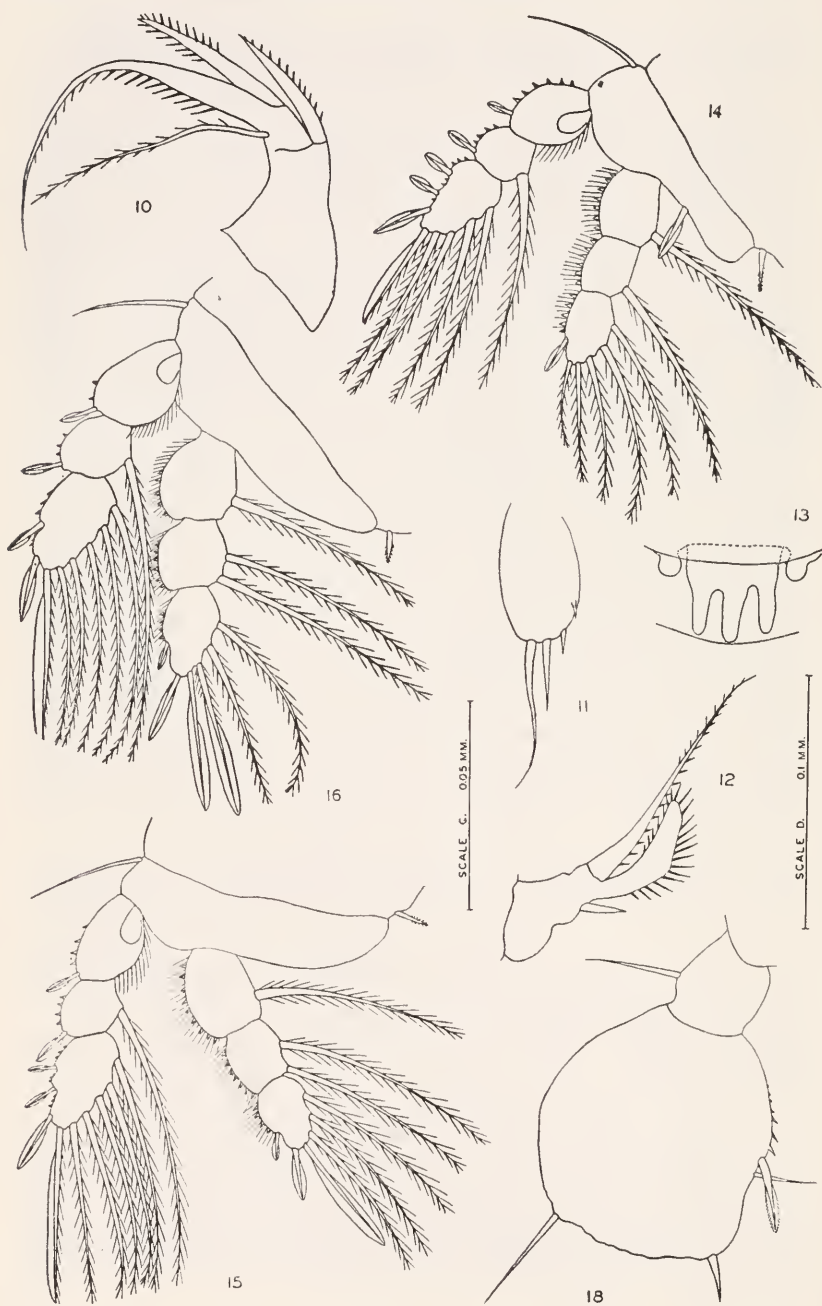
The mouthparts (fig. 9) are much reduced. The labrum is wider than long and bears on each side a group of small spines. Its posterior edge seems to be entire and not deeply incised, although this feature is difficult to ascertain because of the impinging of the labrum and the mouthparts. The mandible (fig. 10) has a somewhat elongated base with an apical armature of four elements. The first maxilla (fig. 11) is minute and arises from a point along the distal half of the basal part of the mandible. In unmounted specimens the first maxillae extend nearly vertically from the ventral body surface, but in pressed whole mounts they appear to be directed more posteriorly. Each first maxilla consists of a single lobe bearing four setae which are progressively shorter toward the midline of the body. The second maxilla (fig. 12) has a much inflated basal part and a relatively small apex with tripartite armature. The distal portions of both the mandibles and the second maxillae in unmounted specimens are directed vertically from the ventral body surface and somewhat anteriorly. The mandibles and both pairs of maxillae are minute and closely appressed, so that it is only with great care that they can be isolated for study. The labium is small and rather poorly delimited, with a longitudinal concavity on its posterior surface. The maxillipeds are lacking. In the median region of the head posterior to the labium there is a prominent postoral protuberance, especially conspicuous in lateral view. In the midline of the body on the anterior surface of the ridge between the bases of the first pair of legs there is a trilobed structure (fig. 13). In pressed specimens this trilobed area appears to be overlapped by the posterior edge of the postoral protuberance.

The first, second, third, and fourth swimming legs are shown in figures 14-17 respectively. The spine and setal formula is as follows:

	leg 1		leg 2		leg 3		leg 4	
	exp	end	exp	end	exp	end	exp	end
first podomere	1:0	0:1	1:0	0:1	1:0	0:1	1:0	0:1
second podomere	1:1	0:1	1:1	0:2	1:1	0:2	1:1	0:2
third podomere	8	6	9	6	8	6	8	5

The fifth leg (fig. 18) has two podomeres, the proximal one small with a single outer seta, the distal one expanded into a broad, in-

Figures 1-9. *Ostrincola gracilis*, female: 1, dorsal view; 2, genital segment and abdomen, ventral view; 3, caudal ramus; 4, terminal setae of caudal ramus with accretions; 5, egg sac; 6, first antenna; 7, second antenna; 8, detail of claw of second antenna; 9, area of mouthparts.



wardly concave disk with four marginal setae.

Male.—The color in life resembles that of the female. The total length, based on an average of five specimens, is 0.760 mm and the greatest width of the cephalothorax is 0.200 mm. The abdomen is four-segmented (fig. 19). The ventral surface of the genital segment and abdomen bears minute spines as in figure 20. The caudal rami are like those of the female. The first antenna (fig. 21) has seven podomeres, with all but the proximal one having an aesthete.

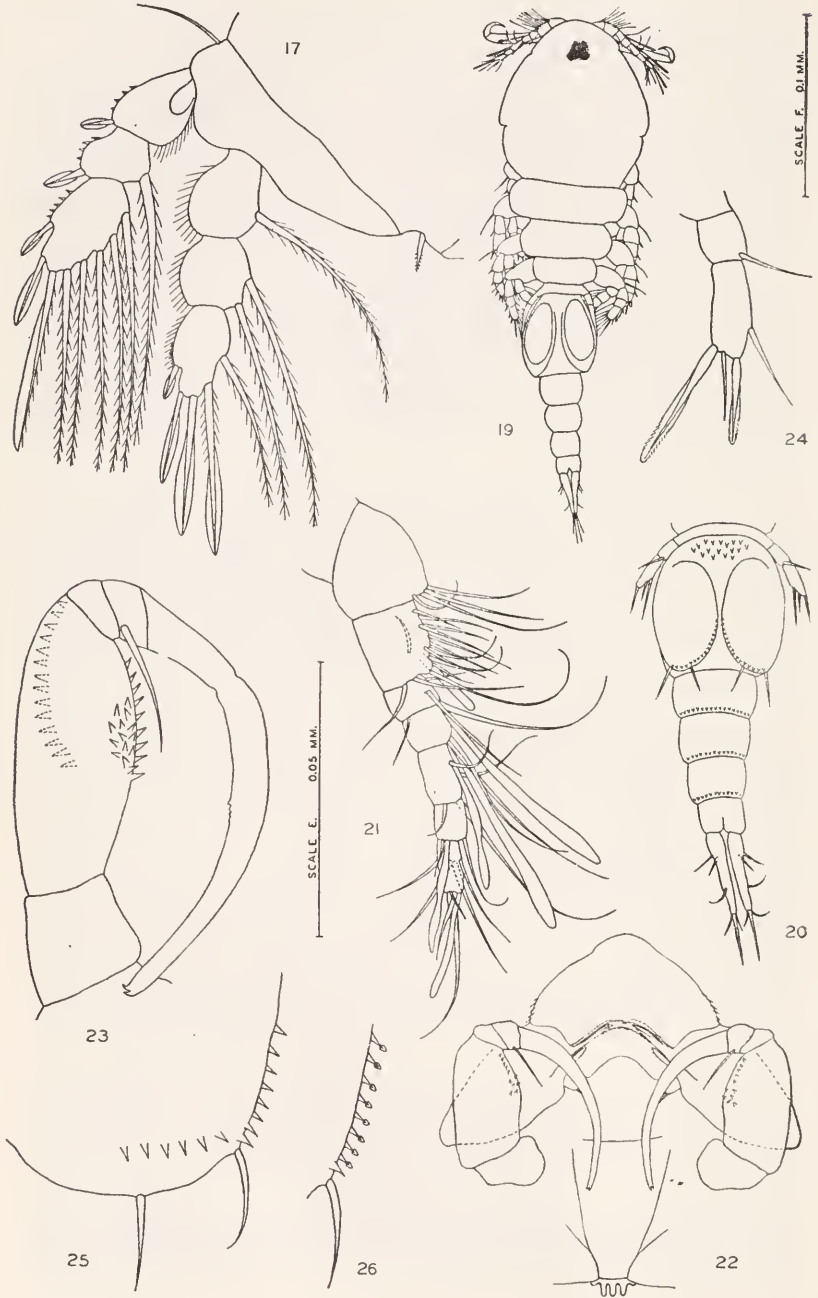
The second antennae, mandibles, first maxillae, and second maxillae are like those of the female. The maxilliped (figs. 22, 23) has five podomeres, the proximal one short, the second large and spinose on its outer and inner margins, the third short, the fourth short also with an inner seta, and the last elongated, arcuate, and slender. The last podomere is as long as or slightly longer than the rest of the podomeres together.

The four pairs of swimming legs are identical in structure with those of the female, having the same spine and setal arrangement. The fifth leg (fig. 24) has two podomeres, the first with a single outer seta, the second longer, not expanded, but with more or less parallel margins, and with four marginal setae. The sixth leg (figs. 20, 25) consists of two setae at the posterior corner of the genital segment. In a few males some of the spines near the sixth legs show brownish caps covering their tips (fig. 26).

Remarks.—*Ostrincola* seems to stand between the ergasilid genus *Myicola* Wright (1885) and the Lichomolgidae as represented by the genus *Pseudomyicola* Yamaguti (1936). The segmentation and armature of the first antenna, the mandible, the first and second maxilla, the male maxilliped, and the segmentation and armature of legs 1-4 resemble *Myicola metisiensis* Wright. In two respects at least *Ostrincola* differs from *Myicola*. The second antenna is rather elongated and slender, while in *Myicola* it is shortened and robust. The distal podomere of the fifth leg in the female is much expanded, while in *Myicola* it has nearly subparallel margins. In both these characters *Ostrincola* resembles the condition in *Pseudomyicola*, differing from that genus, however, in the first antenna, the mandible, and other features.

The generic validity of *Ostrincola* seems to rest upon the future discovery of other related species. In the meantime, however, the original generic description may be emended as follows:

Figures 10-16, 18. *Ostrincola gracilis*, female: 10, mandible; 11, first maxilla; 12, apex of second maxilla; 13, trilobed structure between bases of first legs; 14, first leg; 15, second leg; 16, third leg; 18, fifth leg.



OSTRINCOLA Wilson 1944, *emended diagnosis*

Body cyclopoid with head and first thoracic segments fused. Thoracic segments 2-5 diminishing regularly in width. Genital segment longer than wide. Abdomen three-segmented in the female, four-segmented in the male. Caudal rami much elongated and sub-cylindrical. Sexual dimorphism not pronounced. Attachments of egg sacs dorsolateral; eggs relatively few in number.

First antenna in both sexes with seven podomeres. Second antenna uniramous, with four podomeres, the penultimate relatively long and slender and the last a curved claw. Mandible with a moderately long basal portion bearing an apical armature of four parts, directed anteriorly. First maxilla a minute somewhat posteriorly directed lobe arising from the area immediately behind the distal half of the base of the mandible and bearing four unequal setae. Second maxilla with a much inflated basal part and a small apical portion with tripartite armature, directed anteriorly. Anterior to the mouthparts a swollen labrum without a deeply incised posterior edge, and posterior to them a rather weakly developed labium. Behind the labium a swollen postoral protuberance. Maxillipeds lacking in the female. The male maxilliped large, with five podomeres, the second podomere elongated and relatively stout, the last podomere slender, arcuate, and about as long as the other four podomeres together.

Legs 1-4 biramous, the rami with three podomeres, and the spine and setal formula as in *Myicola*. Fifth leg uniramous in both sexes, with two podomeres; the distal podomere in the female expanded into a broad, inwardly concave disk armed along the margin with four setae, in the male elongated with subparallel margins, similarly armed.

Genotype.—*Ostrincola gracilis* Wilson 1944.

The major points in the emendation concern the number of abdominal somites, the number of first antennal podomeres, the nature of the mouthparts, and the number of podomeres in the fifth legs.

Occurrence.—In Barataria Bay *O. gracilis* was found near Chene Fleurie in *Mytilus* and *Crassostrea*, in Sugarhouse Bend Bayou at Grand Terre in *Mytilus* and *Crassostrea*, and in the tidal marsh back of Grand Isle in *Venus*, *Crassostrea*, and *Modiolus*. The collection data are summarized in Table 1.

Figures 17, 19-26. *Ostrincola gracilis*, female: 17, fourth leg. Male: 19, dorsal view; 20, genital segment and abdomen, ventral view; 21, first antenna; 22, area of mouthparts; 23, maxilliped; 24, fifth leg; 25, sixth leg; 26, setae of sixth leg with cap-like coverings.

TABLE 1
INCIDENCE OF *Ostrincola gracilis* IN PELECYPODS OF THE BARATARIA
BAY REGION OF LOUISIANA.

Clam Host	Number Examined	Number with <i>O. gracilis</i>	Percent Parasitized	Average Number Per Host
<i>Crassostrea virginica</i>	399	157	39.3	1.88 (1-11)
<i>Modiolus demissus</i> <i>granosissimus</i>	241	89	36.9	1.73 (1-7)
<i>Mytilus recurvus</i>	45	7	15.5	1.14 (1-2)
<i>Venus mercenaria</i> <i>mercenaria</i>	1	1	100	2
	686	254	37.0	1.81 (1-11)

Ecological notes concerning the four species parasitized are to be found in the publication of Harry (1942). According to observations previously made (Humes, 1942) the water in Barataria Bay seldom exceeds ten feet in depth, except in the passes leading to the open Gulf. The bottom is largely composed of sand and silt with extensive areas devoted to oyster beds. The summer water temperature ranges from 25.8 to 29.8° C. The salinity at Chene Fleurie is 9.18 grams per liter, while at the eastern end of Grand Terre near Sugarhouse Bend Bayou it is 25.30. Although no ecological information was given by Wilson (1944) regarding the type specimens at Beaufort, North Carolina, it seems probable on the basis of the Louisiana material that this copepod will be found as a parasite in pelecypods living in shallow-water, estuarine regions which are protected from the open sea.

EXPLANATION OF FIGURES

All figures were drawn with the aid of a camera lucida. Scale **A** applies to figures 1 and 19; scale **B** to figures 2, 5, and 20; scale **C** to figures 3, 4, 13, 23, 25, and 26; scale **D** to figures 6, 7, 14-18, 21, and 24; scale **E** to figures 8, and 10-12; and, scale **F** to figures 9 and 22.

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