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PARASITES OF COMMERCIAL SHRIMPS AND FISHES IN ARGENTINE SEA: ON THE ADULT AND METACERCARIA OF *OPECOELOIDES FELICIAE* N. SP. (DIGENEA: OPECOELIDAE)

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Opecoeloides feliciae *n. sp., first record of opecoelid metacercariae in commercial shrimps of South Atlantic Ocean, parasitizing* Cynoscion striatus *(adults) and* Artemesia longinaris *(metacercariae), is described, illustrated and compared with related species of the genus. Adults, immature worms and metacercariae are compared, and rates of prevalence and intensity of infection are also given.*

Key words: *Opecoeloides feliciae* n. sp. – Digenea – Sciaenidae fishes – crustacean intermediate hosts – South Atlantic Ocean

This is the first of a series of studies on the diseases and parasites of peneid shrimps in the South Atlantic Ocean. Parasites of marine crustacean in Argentine Coast are still unknown.

Artemesia longinaris Bate (Decapoda) is one of the main exploited crustaceans in Argentina and has a wide distribution, ranging from Rio de Janeiro to North of Patagonia (Boschi, 1964); in spite of that its parasite fauna is undescribed.

The specific goals of this study were: description, identification and comparison of the opecoelid adult and metacercariae found in the fish *Cynoscion striatus* (Cuvier, 1829) Jordan & Evermann, 1889 (Sciaenidae) and in the shrimp *A. longinaris* respectively; and recording data related to prevalence and intensity of infection of those flukes.

MATERIALS AND METHODS

The shrimps and fishes were obtained from commercial catches at Mar del Plata port (Buenos Aires province) from 1987 through 1990. They were dissected immediately after death and their parasites were studied *in vivo* and *in totum;* 200 shrimps and 12 fishes were examined.

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Cysts used for morphological studies were removed with needles from the cephalotorax of *A. longinaris*. Excysted metacercariae were obtained opening the cysts with needles under stereomicroscope. Adults were recovered from the guts of *C. striatus*. Larvae and adults used for study were fixed in AFA, stained in Langeron's acetic carmin, cleared in creosote and mounted in Canadian balsam. All the drawings were made with the aid of a camera lucida and measurements are given in micrometers.

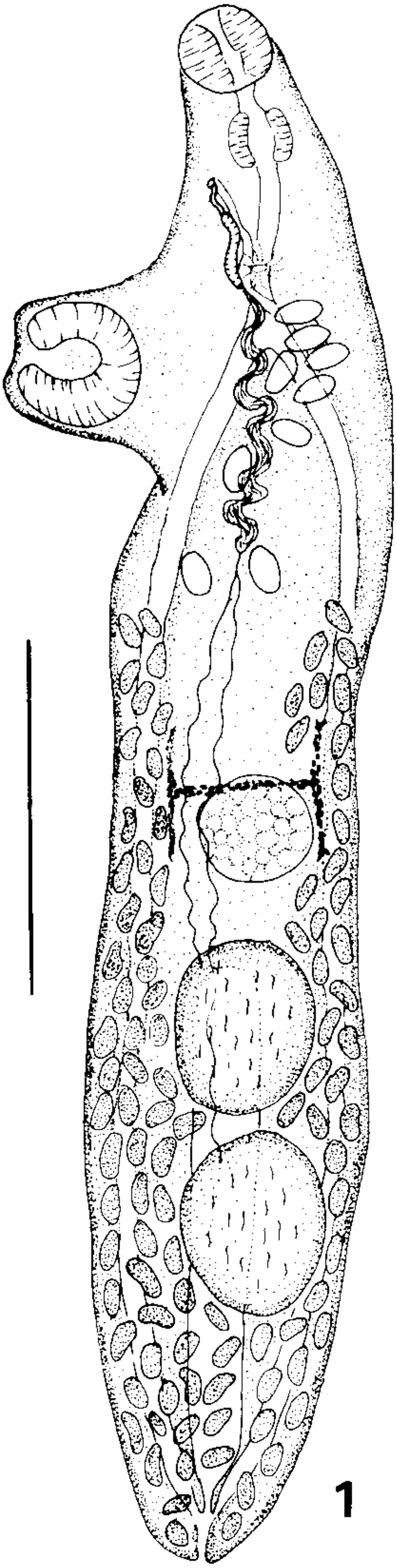
The compared data (measurements and ratios) of the metacercariae, immature worms and adults, were statistically analyzed by the ANOVA test (Sokal & Rohlf, 1969).

DESCRIPTION

Opecoeloides feliciae n. sp.
Figs 1-7

Adult (Figs 1-3)

Description (based on 15 mature mounted specimens). Body elongated, 880 to 1780 long by 156 to 320 wide; oral sucker, 48 to 114 long by 60 to 90 wide; ventral sucker pedunculated in the anterior third of body, 84 to 156 long by 120 to 147 wide, with three anterior and two posterior apertural papillae; peduncle placed at 210 to 285 from anterior end of body;



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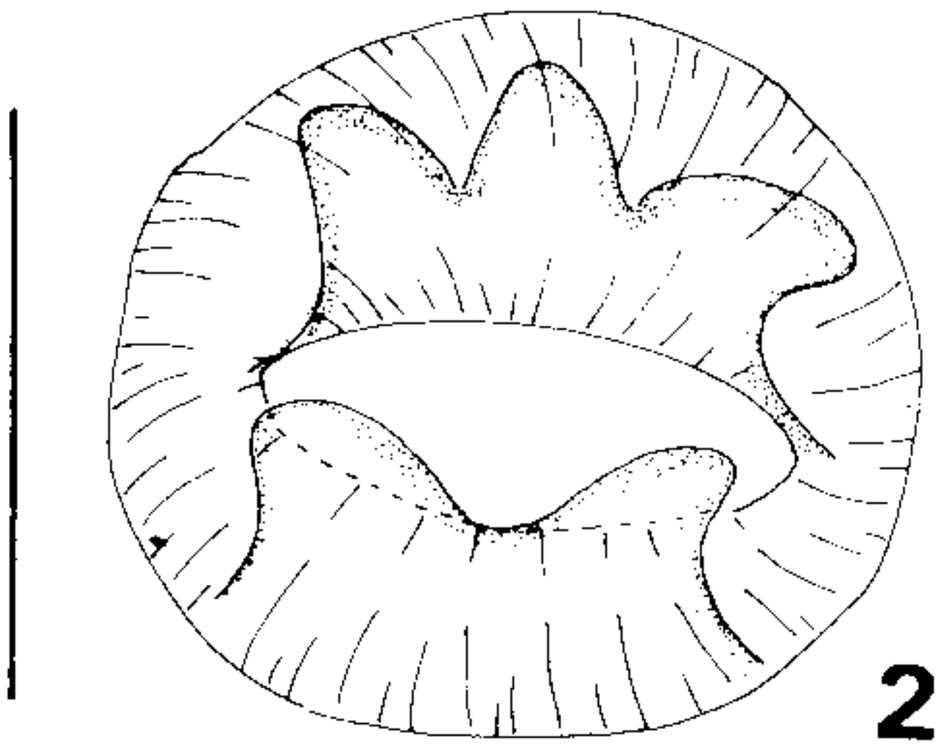

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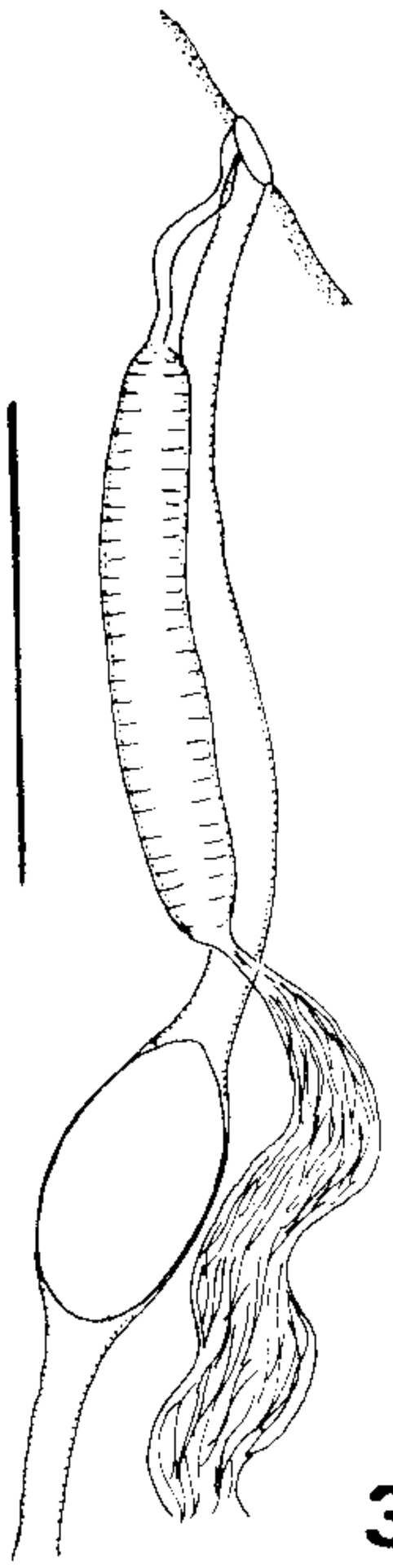

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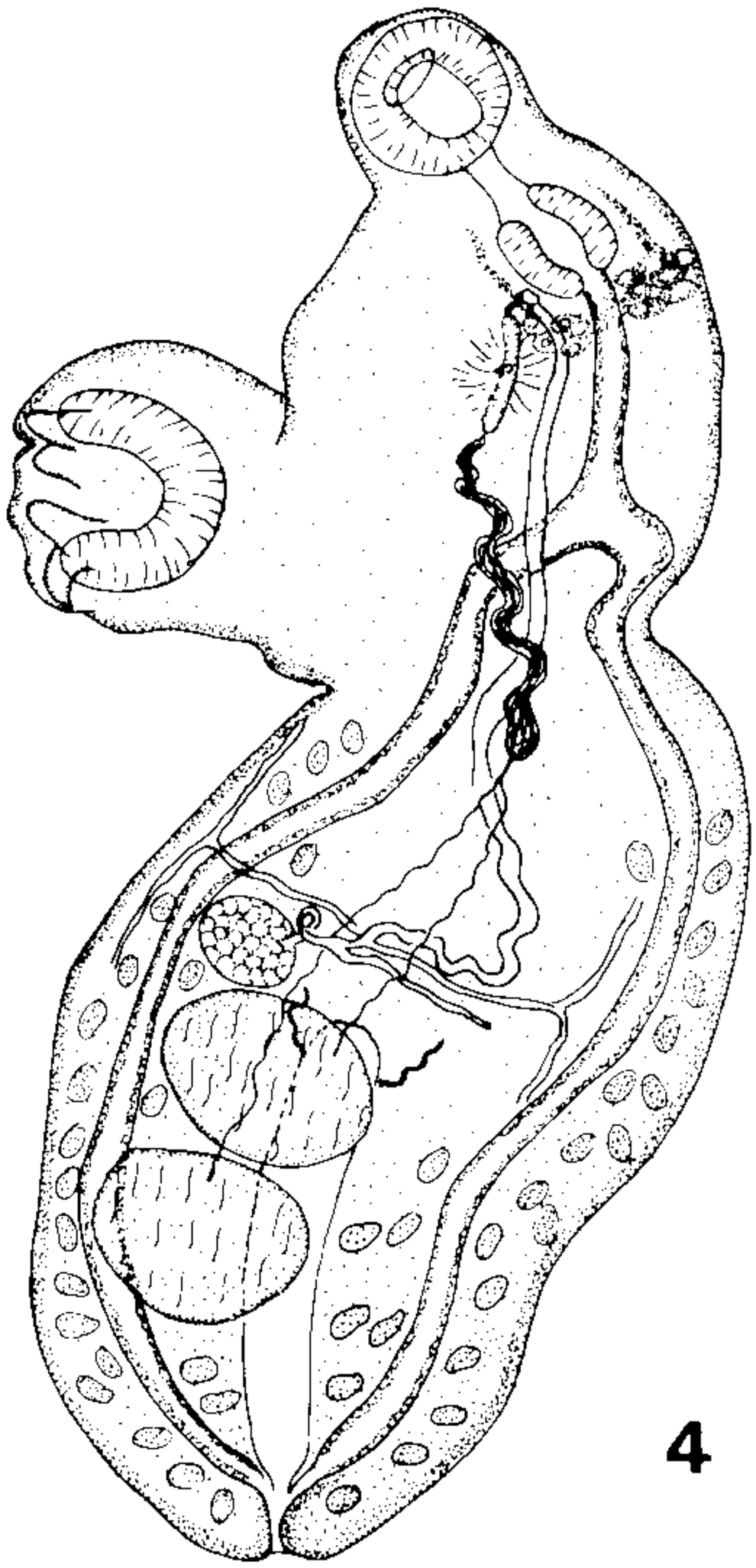
Opecoeloides feliciae n. sp., adult. Fig. 1: ventrolateral view of type specimen, bar = 0.5 mm. Fig. 2: acetabulum with apertural papillae, bar = 0.1 mm. Fig. 3: terminal genital ducts, bar = 0.1 mm.



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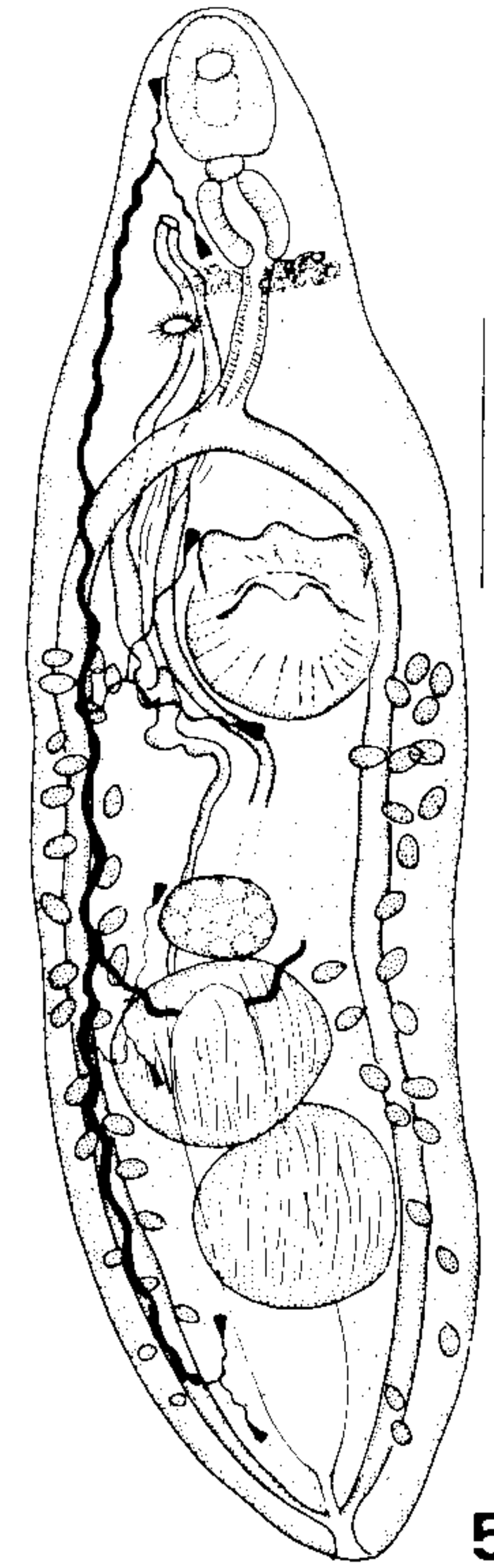

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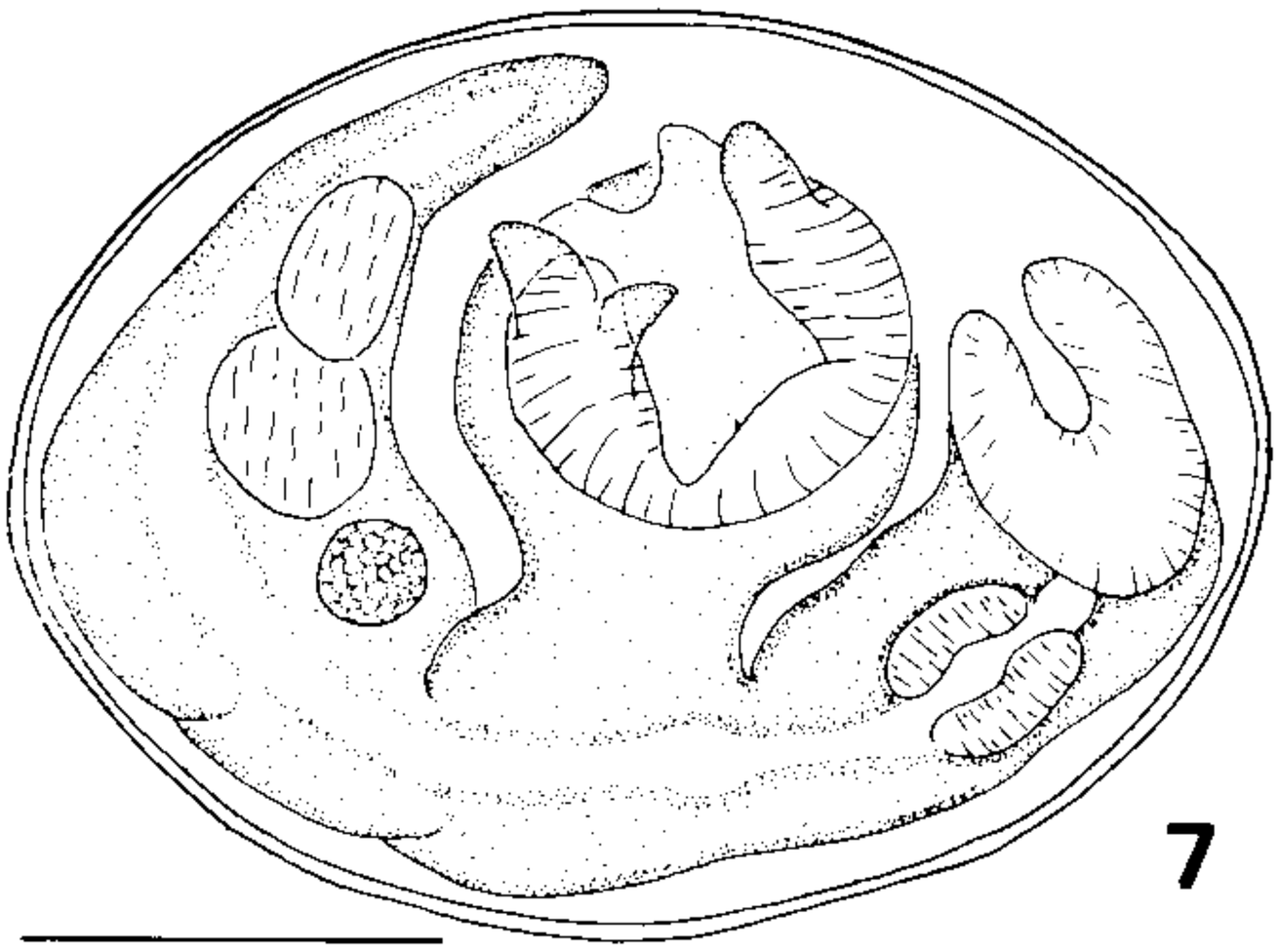

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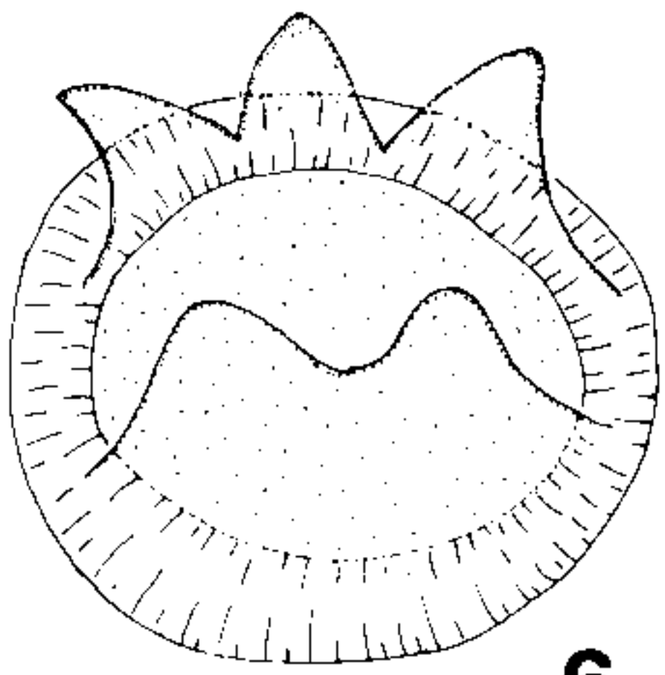

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Opecoeloides feliciae n. sp., metacercaria. Fig. 4: ventrolateral view of unencysted metacercaria, bar = 0.1 mm. Fig. 5: ventral view of unencysted metacercaria, bar = 0.2 mm. Fig. 6: acetabulum with apertural papillae, bar = 0.1 mm. Fig. 7: encysted metacercaria, bar = 0.1 mm.

accessory sucker without limiting membrane, 30 to 75 in diameter. Prepharynx short; pharynx well developed, smaller than oral sucker, 45 to 84 long by 54 to 90 wide; oesophagus 72 to 129 long, bifurcating at peduncle level; intestinal caeca extending to posterior end, fusing with excretory vesicle. Testes two, rounded, tandem, anterior testis 135 to 210 long by 132 to 210 wide; posterior testis 135 to 189 long by 132 to 180 wide; seminal vesicle tubular, winding, reaching the end of peduncle; pars prostatica long; ejaculatory duct short; genital pore situated at pharyngeal level. Ovary median, rounded, 60 to 100 in diameter, immediately pretesticular or slightly separated from the anterior testis; uterus preovarian; Laurer canal present; vitelline folicles large, extending from the posterior end of body to halfway between peduncle and ovary or to peduncle level; eggs 58 to 70 long by 26 to 36 wide. Excretory vesicle tubular, reaching level of anterior testis, uroproct terminal.

Type host: *Cynoscion striatus.*

Site: gut.

Locality: Mar del Plata, Argentina.

Type material: deposited in the Collection of La Plata Museum (MLP), Helminthological Section No. 3129.

Prevalence: 66% (n = 12).

Intensity: the number of worms for fish varying from 1 to 47 and the mean intensity is 10. Etymology. The specific name of the new species is in honor of my wife Felicia Cardillo in appreciation for her aid in this study.

Metacercaria (Figs 4-7)

Description (based on 15 excysted mounted specimens). The shape of the cyst are ovoid and the size depend on the age of the infection; the averge size of the young cyst is 233 by 120 and 380 by 251 in the older ones. The cyst wall measurements are 3.7 to 4.6 thick.

Body elongated, 680 to 1130 long by 210 to 390 wide; oral sucker, 72 to 117 long by 62 to 104 wide; ventral sucker 87 to 130 long by 93 to 144 wide, with three anterior and two posterior apertural papillae; peduncle in the anterior third of body, 130 to 310 of anterior end; accessory sucker post pharyngeal 51 to 61 in diameter. Eight pairs of cephalic glands located between pharynx and acessory sucker. Prepharynx short; pharynx smaller than oral sucker, 49 to 96 long by 45 to 48 wide; oesophagus 52 to 110 long; caeca narrower than esophagus, uroproct present. Testes two, rounded, tandem, anterior testis 72 to 130 long by 80 to 180 wide; posterior testis 81 to 182 long by 80 to 156 wide; seminal vesicle tubular, winding, reaching the posterior extremity of peduncle; pars prostatica long; ejaculatory duct short; genital pore located at pharyngeal level. Ovary round, 37 to 91 in diameter, justaposed or not to anterior testis; uterus preovarian; Laurer canal present; vitelline folicles large, extending from the posterior end of body to halfway between peduncle and ovary or to peduncle level. Excretory vesicle tubular, reaching the level of the anterior testis, excretory formula 2[(2+2) (2+2)] = 16.

Host: *Artemesia longinaris.*

Sites: host tissue of cephalotorax (digestive gland, gonads, stomach, head and under the exoskeleton, with major number in anterior end).

Locality: Mar del Plata, Argentina.

Prevalence: 44.5% (n = 200).

Intensity: the number of cyst for shrimps varying from 1 to 180 and the mean intensity is 27.

REMARKS

The metacercariae compared with adults – The morphology of the worms when exysted, resemble that of the adult, except for the absence of eggs. Also, the inmature specimen recovered from the intestine of the fish are identical to metacercariae. The general appearence; shape and size of the body and suckers; shape and number of apertural papillae; distribution of vitelline folicles; and pattern and position of gonads, pars prostatica, ejaculatory duct, seminal vesicle and excretory vesicle are similar.

Some measurements and relationships of the excysted metacercariae, inmature worms and adults are compared with an ANOVA test. In all cases the level of significance (Table) confirm that these three groups of parasites belong to the same specie.

TABLE

Comparison of measurements and ratios of metacercariae, inmature worms and adults of *Opecoeloides feliciae* n. sp.

	Metacercariae	Immature worms	Adults	ANOVA (F test)
Accessory sucker diameter	50-61 (55)	54-66 (60)	30-75 (53)	f = .155[a]
Anterior end to peduncle length	130-310 (211)	156-300 (215)	210-285 (259)	f = 1.13[a]
Acetabulum/oral sucker width ratio	1:1.11-1.58	1:1.17-1.75	1:1.11-1.82	f = 2.71[a]
Oral sucker/pharynx width ratio	1:1.06-1.62	1:1.14-2.00	1:1.32-2.34	f = 2.68[a]
Acetabulum/accessory sucker width ratio	1.90-2.50	1:1.60-2.80	1:1.20-3.40	f = 0.32[a]

Results of ANOVA test. (*a* = not significative). Measurements in μm (n = 15).

Moreover the shrimp *A. longinaris* represent a substantial proportion of the amount of *C. striatus* stomach contens (Cordo, 1986; Castelli-Vieira, 1990). This is the form in which fish infection with *O. feliciae* n. sp. occurs, through the food chains, being *A. longinaris* an excelent natural intermediate host.

Taxonomic discussion – Three species of the genus *Opecoeloides* (Linton, 1900) Von Wicklen, 1946; *O. vitellosus* (Hunninen & Cable, 1940), *O. catarinensis* Amato, 1983 and *O. melanopteri* Amato, 1983; together with this new species have five apertural papillae in the acetabulum.

Opecoeloides. feliciae n. sp. differs from *O. vitellosus* principally by the shape and size of the metacercarial cysts, number of cephalic glands and the absence of eggs in the encysted worm. Also the intermediate hosts for *O. vitellosus* are marine amphipods instead of marine decapods as for the present species.

Opecoeloides feliciae n. sp. differs from *O. catarinensis* by having smaller suckers and pharynx, oral sucker/pharyns and acetabulum/ oral sucker width ratios, shape and smaller size of the body, more anterior extent of the vitellaria, larger size of the vitelline folicles, longer size of the eggs and in the shape of the seminal vesicle.

Opecoeloides feliciae n. sp. is similar to *O. melanopteri* in the general appearance, size and distribution of vitellaria, but differs in the smaller size of the body and suckers, oral sucker/pharynx ratio, larger size of the eggs, smaller pharynx, longer pars prostatica, smaller ejaculatory duct and in the posteerior extent of the seminal vesicle.

Finally, *O. feliciae* n. sp. differ from *O. fimbriatus* (Linton, 1934), previously mentioned with metacercariae parasitizing penaeid shrimps (Sogandares-Bernal & Hutton, 1959; Kruse, 1959), in the general appearance, smaller size of the body, shape of gonads and mainly in the shape and number of apertural papillae.

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