

**Taxonomic Notes on *Cephalolepidapedon saba* and *Opechona orientalis*  
(Trematoda: Lepocreadiidae) of the Marine Fish,  
*Scomber japonicus* (Teleostei: Scombridae)**

TAKESHI SHIMAZU

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**Abstract**

*Lepocreadium misakiense* Shimazu, 1986, is reduced to a synonym of *Cephalolepidapedon saba* Yamaguti, 1970. It is redescribed from new specimens found in the intestine of *Scomber japonicus* from Japan. *Opechona scombri* Yamaguti, 1938, another intestinal parasite of *S. japonicus*, is considered synonymous with *O. orientalis* (Layman, 1930) Ward et Fillingham, 1934.

**Key words:** *Cephalolepidapedon saba*, *Opechona orientalis*, synonyms, *Scomber japonicus*

This paper discusses the taxonomy of two lepecreadiid trematodes, *Cephalolepidapedon saba* Yamaguti, 1970, and *Opechona orientalis* (Layman, 1930) Ward et Fillingham, 1934, of the marine fish, *Scomber japonicus*, from examination of their specimens. *C. saba* is briefly redescribed.

**Materials and Methods**

Museum specimens were borrowed from the National Science Museum, Tokyo (NSMT); the Meguro Parasitological Museum (MPM), Tokyo; and the U.S. National Museum Helminthological Collection (USNM Helm. Coll.), Beltsville. New specimens were obtained from the intestine of the marine fish, *Scomber japonicus* (Teleostei: Scombridae), taken in Moroiso Bay, Misaki, Kanagawa Prefecture, in July, 1987 and 1988. Most of them were flattened, fixed in Nozawa's fluid, stained with Heidenhain's iron hematoxylin and mounted in Canada balsam. Some were fixed unflattened in Nazawa's fluid, made into serial paraffin sections (10  $\mu$ m) and stained with Delafield's hematoxylin and eosin. The specimens are deposited at the NSMT. Measurements

(length by width) are given in millimeters unless otherwise stated.

Trematoda: Lepocreadiidae  
*Cephalolepidapedon saba* Yamaguti, 1970  
(Figs. 1—2)

*Cephalolepidapedon saba* Yamaguti, 1970, p. 57, fig. 85.

*Lepocreadium misakiense* Shimazu, 1986, pp. 569—570, fig. 1. (Syn. n.)

**Specimens studied**

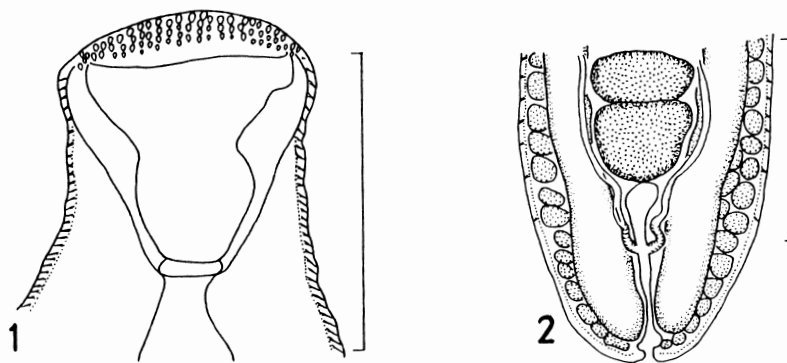
1) The type series (3 immature and 8 gravid whole-mounts, USNM Helm. Coll. No. 63698) of *Cephalolepidapedon saba* Yamaguti, 1970, found in the pyloric ceca of *Scomber japonicus* from Hawaii (Yamaguti, 1970).

2) The type series (6 gravid whole-mounts, NSMT-P1 2925) of *Lepocreadium misakiense* Shimazu, 1986, found in the intestine of *S. japonicus* from Aburatsubo Bay (Shimazu, 1986).

3) Seventeen whole-mounted and 8 sectioned gravid specimens (NSMT-P1 3130—3134) found in the pyloric ceca and intestine of *S. japonicus* from Moroiso Bay on June 21 to 23, 1987, and June 21, 1988. (Aburatsubo and Moroiso bays make a larger bay opening into Sagami Bay.)

*Nagano-ken Junior College, Nagano 380, Japan*

嶋津 武 (長野県短期大学)



Figs. 1–2. *Cephalolepidapedon saba* from *Scomber japonicus*. 1. Anterior part of body, dorsal view. 2. Posterior part of body, reconstructed from frontal sections, semischematic. Scale bars: 0.2 mm.

### Description

Eight of the 17 new whole-mounts measured (Figs. 1–2). Body 1.12–1.90 by 0.34–0.56; forebody 0.48–0.60 long, 29–43% of total body length. Tegument spined. Cuticular scales arranged in 3 to 4 rows around aperture of oral sucker. Oral sucker 0.12–0.18 by 0.12–0.17. Prepharynx 0.08–0.13 long. Pharynx 0.09–0.13 by 0.07–0.09. Esophagus not epithelial, short, 0.04–0.05 long. Ventral sucker 0.14–0.17 by 0.15–0.18; sucker width ratio 1: 1.04–1.19.

Testes 0.08–0.19 by 0.13–0.24. Cirrus pouch 0.16–0.27 by 0.04–0.07, including globular internal seminal vesicle, pars prostatica, prostatic cells and cirrus; external seminal vesicle tubular, undulating, lying free in parenchyma, extending posteriorly to ovary. Genital pore slightly sinistrosubmedian, about bifurcal. Ovary 0.06–0.12 by 0.07–0.16. Seminal receptacle 0.06–0.12 by 0.12–0.16. Metraterm almost as long as cirrus pouch. Eggs 50–58 by 32–36  $\mu\text{m}$ . Vitellaria distributed anteriorly a little further than ovarian level. Excretory vesicle tubular, short, barely reaching to posterior testis; main collecting ducts ciliated internally in distalmost part, emptying into excretory vesicle at about its midlevel.

### Discussion

The type material of *L. misakiense* lacks the tegumental spines and circumoral scales (Shimazu, 1986; present reexamination). The present new specimens from Moroiso Bay have

the both. They may have been lost from the type material during preparation. The new specimens agree well with Yamaguti's (1970) original description of *C. saba* in every morphological feature except in the length of the excretory vesicle. In them the excretory vesicle is short, barely reaching to the posterior testis. Re-examination of their material has shown that both Yamaguti (1970) and Shimazu (1986) are incorrect in their descriptions and figures of the excretory vesicle. It is concluded that *L. misakiense* is a synonym of *C. saba*.

*Cephalolepidapedon* Yamaguti, 1970, which is monotypic with *C. saba*, is characterized by the circumoral scales. It seems more closely related to *Lepocreadium* Stossich, 1903, than *Lepidapedon* Stafford, 1904, in having a short excretory vesicle and no pseudoesophagus.

The slide (USNM Helm. Coll. No. 63698) has proved to contain not only the type series of *C. saba* but also 33 immature specimens of *Opechona orientalis* (Layman, 1930) Ward et Fillingham, 1934 (see below). Yamaguti (1970) probably assigned the latter to *C. saba* as well, because he mentioned nothing about *O. orientalis*.

*Opechona orientalis* (Layman, 1930) Ward et Fillingham, 1934

*Pharyngora orientalis* Layman, 1930, pp. 65–66, 93–94, fig. 14.

*Pharyngora orientalis*: Yamaguti, 1934, pp. 327–328.

*Opechona orientalis*: Ward and Fillingham, 1934, p. 29.

*Opechona scombri* Yamaguti, 1938, pp. 44–46, fig. 26.  
(Syn. n.)  
*Lepocreadium scombri*: Ching, 1960, p. 244.

#### *Specimens studied*

1) Five gravid whole-mounts of *P. orientalis* (MPM Coll. Nos. 22046–22048) found in the intestine of *Scomber japonicus* [January 15, 1928], *Spheroides rubripes* [= *Takifugu r.*] [January 20, 1928] and *Engraulis japonica* [January 14, 1928] from Toyama Bay (Yamaguti, 1934).

2) Four gravid whole-mounts of *O. orientalis* (MPM Coll. No. 22045) found in the pyloric ceca of *S. japonicus* from the Inland Sea [Tarumi; August 26, 1938] (Yamaguti, 1939).

3) The type material (22 gravid whole-mounts) of *O. scombri* (MPM Coll. No. 22049) found in the intestine of *S. japonicus* from Tarumi on August 2, 1935 (Yamaguti, 1938).

4) Three immature and six gravid whole-mounts of *O. scombri* (MPM Coll. No. 22050) found in the pyloric ceca of *S. japonicus* from [Tarumi; August 26, 1938] (Yamaguti, 1939).

5) One gravid whole-mount of *O. scombri* (MPM Coll. No. 22051) found in the intestine of *S. kanagunta* from Macassar (Yamaguti, 1953).

6) Nineteen immature and 75 gravid whole-mounts of *O. orientalis* (MPM Coll. Nos. 11448, 11452, 12805, 12808, 12953, 12954, 13117, 13121, 13123, 13125, 13130, 13133, 13250, 13251, 13275, 13280–13282, 13354, 13380, 13395, 13471, 13475, 13478 and 13479) found in the pyloric ceca and intestine of *Pneumatophorus japonicus* [= *S. japonicus*] and *S. australasicus* from Sagami Bay from 1963 to 1966 (Ichihara *et al.*, 1968; Ichihara's unpublished specimens).

7) Thirty-three immature whole-mounts on the slide of the type material of *C. saba* (USNM Helm. Coll. No. 63698) from Hawaii (see above).

8) One immature and 25 gravid whole-mounts (NSMT-P1 3130, 3131 and 3135–3138) found in the pyloric ceca and intestine of *S. japonicus* from Moroiso Bay on July 21 to 23, 1987, and July 19, 1988.

#### *Description*

The esophagus was epithelial in its short

posteriormost portion. The ovary was globular to trilobed. The excretory vesicle could be traced in 17 out of the 22 type specimens of *O. scombri*. It extended into the prepharyngeal region or reached even to the oral sucker only in 5 out of them and ended between the bifurcal and the midpharyngeal level in 12. Its anterior extent could not be observed in the others of *O. scombri* examined. In the specimens of *O. orientalis* examined, it usually terminated between the bifurcal and the midpharyngeal level but rarely reached to the oral sucker. The main collecting ducts extended from near the bifurcal level to a short distance behind the posterior testis and were internally ciliated in their distalmost parts. They were rarely largely swollen, as noted by Manter and Van Cleave (1951).

#### *Discussion*

*Opechona scombri* and *O. orientalis* are closely similar in morphology, host fish and locality. Yamaguti (1938) distinguished *O. scombri* from *O. orientalis* by a longer excretory vesicle which reaches the midlevel of the oral sucker. As described above, the excretory vesicle seldom reaches the oral sucker even in the type series of *O. scombri*. Layman (1930) did not describe the excretory system for *O. orientalis*, but his figure (Fig. 14) suggests that the excretory vesicle extends to the bifurcal level. Yamaguti (1939, 1940) described it as reaching to the bifurcal level in his specimens of *O. orientalis*. The present reexamination has shown that it extends forward a little further, but not beyond the pharynx, in some of them. In the other Japanese specimens examined, it rarely reaches the oral sucker. Manter (1940) and Manter and Van Cleave (1951) described it as ending just posterior to the pharynx or extending even to the midpharyngeal level in their specimens of *O. orientalis*. It is impossible to separate *O. scombri* from *O. orientalis* by the anterior extent of the excretory vesicle. I consider that the two species are identical. The species should be placed not in *Lepocreadium* Stossich, 1903, but in *Opechona* Looss, 1907, owing to the presence of a short pseudoesophagus.

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