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On the occurrence of *Prosogonotrema carangi* Velasquez 1961 in the teleost *Monacanthus monoceros* (Day) of Waltair Coast with a note on the family *Prosogonotrematidae*

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Abstract. A prosogonotrematid digenean (Trematoda) obtained from the marine fish *Monacanthus monoceros* (Day) of Bay of Bengal is referable to the species *Prosogonotrema carangi* Velasquez, 1961. But extreme variability in structures like vitelline tubules, intestinal caeca and/or measurements of suckers and body parts have prompted Nasir to propose drastic synonymy reducing all eight hitherto known species to the type *P. bilabiatum*. *P. carangi* however appears to be distinct. The family *Prosogonotrematidae* is reviewed including the new genus *Bhaleraoia* Srivastava 1948 described fully by Sahai and Srivastava.

Keywords. *Prosogonotrematidae*; *Prosogonotrema carangi* Velasquez 1961; *Monacanthus monoceros*.

1. Introduction

In May 1979 trematodes of the genus *Prosogonotrema* Perez Vigueras (1940) were collected from the stomach of the fish *Monacanthus monoceros* (Day) caught off the Waltair Coast (Bay of Bengal). Out of eight fishes examined, three trematodes could be obtained from one specimen.

This is the first report of the adult *Prosogonotrema* in a teleost from the Bay of Bengal. Todate eight species in the genus *Prosogonotrema* are reported. But extensive synonymy has been proposed by Nasir (1973). More recently another genus *Bhaleraoia* has been included in the family *Prosogonotrematidae*. The occurrence of an adult *Prosogonotrema* in a fish of the Bay of Bengal is significant in the light of its metacercaria having been reported from plankton of Bay of Bengal by Hanumantha Rao (1974).

2. Materials and methods

Fish were brought from the fishing harbour after landing and were examined for parasites in the laboratory soon after arrival. The worms were fixed overnight under appropriate cover glass pressure in FAA solution and stained with alum

carmine. Figure was drawn with the aid of camera lucida. All measurements are in millimeters unless otherwise stated. Catechol or Fast red salt B treated preparations have been examined.

3. Description

Body elongated, muscular, thick, slightly broad at both ends, measures 5·632–7·152 mm in length and 1·488–1·568 mm in maximum width at the level of acetabulum. Preoral lobe 0·048–0·072 mm thick in front of oral sucker with a slight median depression showing slightly bilobed condition. Suckers well-developed, large and strong. Oral sucker sub-terminal 0·320–0·400 mm long and 0·372–0·468 mm wide. Pharynx 0·208–0·272 mm long and 0·208–0·224 mm wide. Oesophagus short. Caeca diverging, slightly sinuous continuing to the posterior end of the body and terminating blindly. Sucker ratio 1 : 3–1 : 3·2. Acetabulum large 1·120–1·208 mm by 0·990–1·184 mm in diameter located at about anterior two-thirds of the body length.

Testes two, unequal, symmetrical, intercaecal, situated midway between acetabulum and oral sucker, separated by convoluted vesicula seminalis and anterior uterine coils. Left testis larger than right measures 0·192–0·208 ×0·192–0·228 mm in diameter. Right testis globular 0·144–0·208 × 0·128–0·144 mm in diameter. Seminal vesicle tubular and coiled, pretesticular followed by a tightly coiled or convoluted pars prostatica surrounded by dense layer of prostatic cells. Ejaculatory duct convoluted embedded in muscular tissue at the base of genital cone, its terminal portion at the middle of genital cone joining metraterm and the hermaphroditic duct so formed opening at the tip of the genital cone. Genital cone 0·352–0·432 mm long and 0·208–0·244 mm wide at base, narrow anteriorly, conspicuous circular muscles forming cup-like structure at the base of genital cone. Genital atrium enclosing genital cone opening ventrally at the base of oral sucker. Genital pore median ventral to oral sucker.

Ovary single, globular 0·272–0·320 × 0·272–0·369 mm in diameter situated anterodorsal to acetabulum. Vitellaria consisting of slender winding tubules extending anterior to ovary, five tubules on right side and four on left side overstepping caeca. Uterus preovarian, mostly intercaecal, occupying space anterior to acetabulum extending laterally to left and right sides of the body ascending up between testes, forming a few more coils and finally continuing as metraterm into the genital cone. A hermaphroditic duct opens at the tip of genital cone. Eggs 23–31 μ × 11–19 μ in diameter.

Excretory vesicle Y-shaped; stem reaching posterior border of acetabulum, divided into a broad posterior and narrow anterior tubular part, both joining through a narrow isthmus. Excretory pore ventral, well anterior to posterior end of body. Accessory excretory vesicle broadly elongated reaching posterior border of acetabulum and opening outside at the posterior end of the body.

4. Discussion

The genus *Prosogonotrema* and the family *Prosogonotrematidae* were erected by Perez vigueras (1940). The type species *P. bilabiatum* was originally described from *Ocyurus chrysurus* at Havana, Cuba.

Yamaguti (1971) in his compendium on digenea of the world known up to that date revised the list and that of his species *P. clupeae* (Yamaguti 1952) Syn. of *P. labiatum* Manter (1969). Other species are *P. abalisti* from *Abalistes stellaris* described by Parukhin (1964) from the Gulf of Tonkin. *P. carangis* Velasquez (1961) is from *Caranx* sp. at Philippines and *P. subequilatum* Pritchard (1963) is from *Naso unicornis* and *N. hexacanthus* from Hawaii. *P. symmetricum* of Oshmarin (1965) is from *Pristipomoides typus* of Tonkin Bay and *Pristipomoides microlepis* and *P. sieboldi* of Hawaii also are hosts of this species (See Yamaguti 1970).

Ali and Bagwan (1971) reported *P. zygaenae* from the hammer head shark *Zygaena malleus* at Bombay. This report is of interest because of the involvement of an elasmobranch as a host. Hafeezullah (1971) described *P. pritchardae* from *Gastrophysus spadiceus* (Richardson) and *Pristipomoides argyrogrammicus* Val. (Anthiidae) from Arabian Sea. Karyakarte and Yadav (1973) reported *P. pritchardae* Hafeezullah, 1971 in *Stromateus niger* from Ratnagiri, India.

There are now eight described species of *Prosogonotrema* including the type *P. bilabiatum*. Nasir (1973) reduced six of them into synonymy and in the footnote *P. zygaenae* also disappears.

Yamaguti (1971) reported that as yet nothing seems to be known about the life-history of Prosogonotrematids. Hanumantha Rao (1974) recorded the metacercaria of *Prosogonotrema* in a plankton collection of Waltair Coast. This report suggests the possibility of a planktonic organism serving as an intermediate host.

A more recent account of *Prosogonotrematidae* together with a description and taxonomic implications of *Bhaleraoia piscicola* Srivastava 1948 a new genus comes from Sahai and Srivastava 1978. *Bhaleraoia piscicola* reported as a new genus and species from the marine fish locally called " Hira " in Karachi (Arabian Sea) by Srivastava in 1948 is now validated by a fuller description and discussion by Sahai and Srivastava 1978. The genus *Bhaleraoia* stands distinctly separate from the genus *Prosogonotrema* in possessing an uroproct and the acetabulum occu ring in a characterlstic transverse oval muscular fold of body. This has necessitated Sahai and Srivastava 1978 to erect a new sub family *Bhaleraoinae* in the family *Prosogonotrematidae*. The main characters of all the members in the family are presented in table 1.

The present specimens resemble closely *P. carangi* Velasquez, 1961 in having preoral lobe with the median depression showing bilobed condition, in sucker ratio, in the position of the testes and their unequal nature, genital cone, in the nature of vitelline tubules and also in the position of the ovary. However, our specimens differ in body shape and measurements, in the lack of dilatations in the intestinal caeca, vitelline tubules occurring in the space between the caeca and in the longer hermaphroditic duct and larger genital cone. These characters are not sufficient to warrant the erection of a new species. But the ensemble of characters like unequal testes (figure 1) (Coroborated also by the same condition in the metacercaria, see Hanumantha Rao 1974) sucker ratio, nature of vitellaria and position of ovary are points on which *P. carangi* Velasquez, 1961 may be considered a distinct species. In the light of these facts we are at present unable to consider *P. carangi* as a synonym of *P. bilabiatum* as proposed by Nasir (1973). However, the genus *Prosogonotrema* becomes a valuable example in the assessment and interpretation of variations in respect of almost every structure in the digenean

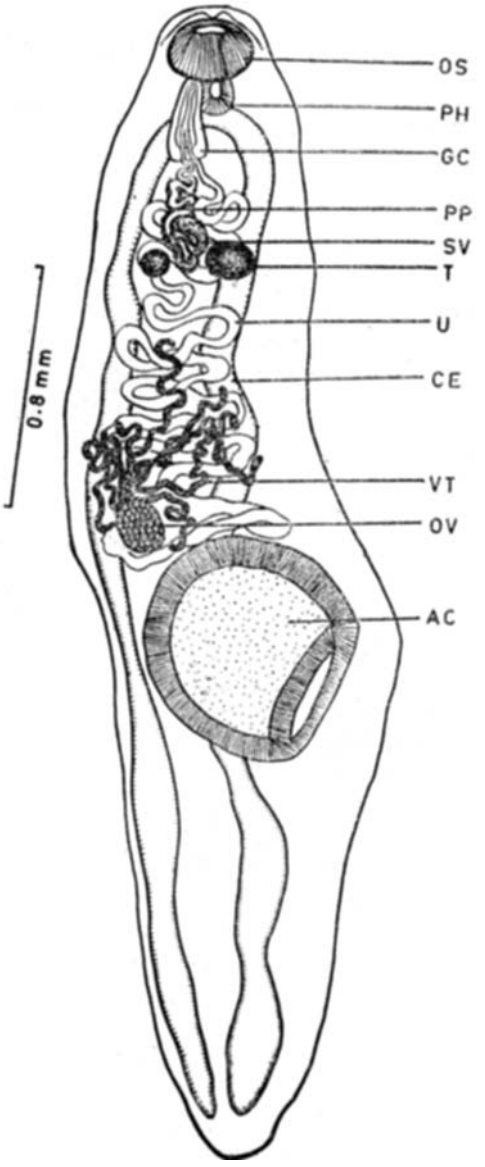

Figure 1. *Prosogonotrema carangi* Velasquez 1961.
Abbreviations : AC, acetabulum; CE, caecum; GC, genital cone; OS, oral sucker; OV, ovary; PH, pharynx; PP, pars prostatica; SV, seminal vesicle; T, testis; U, uterus; VT, vitellaria.

anatomy, and from this, light could be thrown on the tremendous incredibility of certain structures in species determination.

As more material become available, it could be examined whether it is possible to delve into extensive synonymy unequivocally on the lines suggested by Nasir (1973).

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