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ON THE STATUS OF SOME DIGENETIC TREMATODES OF MARINE FISHES OF INDIA

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ABSTRACT

This study was prompted after detecting certain inaccuracies in the literature developed recently, and overlappings of accounts of some species of digenetic trematodes of marine fishes of India from almost the same areas along the coasts of India. The study is well supported by collections of relevant material. As a result of the study of this material, *Lasiotocus hasti* Madhavi, 1974 and *Retractomonorchis* Madhavi, 1977 fall synonyms of *Genolopa trifolifer* Nicoll, 1915 and *Opisthomonorcheides* Parukhin, 1966 respectively. Further, *Opisthomonorcheides indicus* Karyakarte and Yadav, 1976, *O. indicus* Ahmad, 1977, *O. indicus* Gupta, S. P. and Gupta, R. C., 1978, *O. nigeri* Gupta, N. K. and Puri, 1981, and *Retractomonorchis delicatus* Madhavi, 1977 are considered synonyms of *Opisthomonorcheides karwarensis* Karyakarte and Yadav, 1976 in the family Monorchiidae. In view of *Opisthomonorchis carangis* Yamaguti, 1952 and *O. thapari* Varma and Singh, 1979, the genus *Pseudopisthomonorchis* Madhavi, 1974 is considered synonymous with *Opisthomonorchis* Yamaguti, 1952, and thus, Varma and Singh's species becomes identical to *O. carangi* (Madhavi, 1974) n. comb. In the family Depropristiidae Skrjabin, 1958, *Opisthodiplomonorchis* Madhavi, 1974 and three species, viz., *Opisthodiplomonorchis elongatus* Madhavi, 1974, *Skrjabinopsolus indicus* Gupta, V. and Ahmad, 1976 and *S. kurotchkini* Parukhin, 1976 are considered synonyms of *Skrjabinopsolus* Ivanov in Ivanov and Murygin, 1937 and *S. elongatus* (Madhavi, 1974) n. comb. respectively. Similarly, *Karachitrema* Bilqees, 1973 and three species, viz., *K. trilobata* Bilqees, 1973, *Monascus chauhani* Vasantha Kumari, 1975 and *M. elongatus* Karyakarte and Yadav, 1976 are concluded to be synonyms of *Monascus* Looss, 1907 and *Monascus filiformis* (Rud., 1819) Looss, 1907 respectively. Travassos *et al.* (1965) raised the status of the subfamily Monascina Dollfus, 1947 to the rank of family Monascidae which is proposed to be suppressed in favour of Fellodistomidae (Nicoll, 1913) in the light of the important result of the SEM study of *Monascus filiformis* (Rud., 1819) by Køie (1979) that the oesophagus in its cercariae and adults does bifurcate into two caeca.

Introduction

During the last decade or so, collections of digenetic trematodes of marine fishes of India were made by various workers from same or adjoining areas along the Indian coasts. The published accounts of these collections resulted in some overlappings of the descriptions of identical materials, one worker remaining unaware of the work of the other. Moreover, certain erroneous observations have crept in the literature on the groups published during the recent days. These overlappings and erroneous records are required to be corrected, more so, when Zoological Survey of India has taken up the project of writing Fauna of India on various groups. Through this communication, an attempt is made to set right the records of literature on certain genera and species. This attempt is well supported by a good collec-

tion of relevant material, which is deposited with the Zoological Survey of India, Calcutta.

The scientific and English names of the host fishes have been taken from the FAO Species Identification Sheets (1974).

Systematic Account

Family Monorchiidae Odhner, 1911

Subfamily Lasiotocinae Yamaguti, 1958

Genolopa trifolifer Nicoll, 1915

Host : *Pomadaysis hasta* (Bloch), lined silver grunt, (Pisces : Pomadaysidae).

Location : Intestine

Locality : Bombay (Arabian Sea)

Number of specimens : 8, on 4 slides, collected by Prof. Ather H. Siddiqi on 16.5. 1963

Specimens deposited : Z. S. I. Reg. Nos. W 7442/1 to 7445/1.

Hafeezullah (1971) recored *Genolopa trifolifer* Nicoll, 1915 from the marine fish host, *Pomadaysis hasta*, from Bombay. He only illustrated it just for the sake of completeness of the Indian Fauna of Digenetic Trematodes, and did not feel the necessity to provide detailed description of a known species. Madhavi (1974), while describing *Lasiotocus hasti* as a new species from the same fish host from Waltair, contended that in Nicoll's species "Body shape is oval, oral sucker is circular in outline and prepharynx is absent", and therefore Hafeezullah's specimens could not be *Genolopa trifolifer* Nicoll, 1915. She further observed that, "In the absence of knowledge of the structure of terminal genitalia it is difficult to relegate Hafeezullah's specimens to any particular species", in spite of the fact that it was identified to be a known species. The confusion arose because Nicoll (1915) in his original account did not describe spines on the terminal parts of the male and female ducts as well as in the atrium but he considered them present by analogy with the result that workers, even like Manter and Pritchard (1961), were unable to give it a definite status. Yamaguti (1971), however, treated it under the genus *Lasiotocus*.

Originally, Hafeezullah had assigned his specimens to a new species of the genus *Lasiotocus* (viz. *Lasiotocus pomadasi*) as Madhavi has done. The description and the same illustration which appeared in Hafeezullah's (1971) paper were communicated to Late Prof. H. W. Manter of Nebraska University, U. S. A., who was a world authority on trematodology, for his opinion and comments through Prof. Ather H. Siddiqi of Aligarh Muslim University, Aligarh, India. He wrote back in a personal communication to Prof. Ather H. Siddiqi observing "*Lasiotocus pomadasi* is *Genolopa trifolifer* Nicoll, 1915 from the same host in Australia. Nicoll does not show spines in the cirrus and metraterm but assumed their presence. I saw his type specimens when I was in Australia and can confirm such spines and also spines in the atrium. Thus, the genus is indeed *Genolopa*." But Hafeezullah insisted to maintain it as *Lasiotocus pomadasi* n. sp. In another communication, Dr. Manter further observed that "*Lasiotocus pomadasi* is without doubt, I believe, *Genolopa trifolifer* Nicoll, 1915. This makes it more interesting", and he suggested to make necessary correction while sending the manuscript for publication, and Hafeezullah did accordingly. One should accept Late Prof. Manter's observations and suggestion particularly because he had himself studied and re-examined the type specimen of *Genolopa trifolifer* while he was in Australia on a study tour. If one accepts Late Prof,

Manter's confirmation of identification of Nicoll's specimens, and every worker should, *Lasiotocus hasti* Madhavi, 1974 becomes a synonym of *Genolopa trifolifer* Nicoll, 1915.

It seems that some of Nicoll's specimens (including the one which has been illustrated) were contracted giving them oval body shape and making the short prepharynx indiscernible. In Nicoll's now words "Not infrequently the body is of fairly uniform breadth. ....." and "the pharynx is *almost* absent". The oral sucker has been shown to be conical or funnel-shaped (definitely not circular as Madhavi has stated). These facts only indicate correctness of confirmation of the identification of *Genolopa trifolifer* Nicoll, 1915.

This note becomes necessary and important in order to set right the literature on *Genolopa trifolifer*, and to bring on record the presence of fine spines in the terminal genitalia of the male and female ducts as well as in the atrium of Nicoll's species as checked by Late Prof. H. W. Manter in its type specimen.

Subfamily OPISTHOMONORCHEIDINAE Yamaguti, 1971

Genus **Opisthomonorcheides** Parukhin, 1966

Syn. *Retractomonorchis* Madhavi, 1977 n. syn.

Opisthomonorcheides karwarensis Karyakarte and Yadav, 1976

Syn. *O. indicus* of Karyakarte and Yadav, 1977 n. syn.

O. indicus of Ahmad, 1977 n. syn.

O. indicus of Gupta, S. P. and Gupta, R. C. 1978 n. syn.

O. indicus of Gupta, N. K. and Puri, 1981 n. syn.

Retractomonorchis delicatus Madhavi, 1977 n. syn.

Host : *Fomio niger* (Bloch), black pomfret, (Pisces : Formionidae)

Location : Intestine

Locality : Gopalpur (Bay of Bengal) and Mangalore (Arabian Sea). Specimens from Mangalore were collected by Dr. T. D. Soota & Party in January, 1976.

No. of Specimens : 25 from Gopalpur on 10 slides and 17 from Mangalore on 3 slides, total 42 on 13 slides.

Specimens deposited : Z. S. I. Reg. Nos. W 7446 to W 7458/1.

Parukhin (1966) proposed the ganus *Opisthomonercheides* with *O. decapteri* as type species for the specimens he collected from the fish hosts *Decapterus* sp. and *Selar mate* (Carangidae) from the Gulf of Tokin. Since then, Karyakarte and Yadav (1976a and 1977) descrided two species, *O. karwarensis* and *O. indicus* respectively from the fish host *Stromateus niger* from the Arabian Sea. Ahmad (1977) described the fourth species, *O. indicus* from the fish host *Apogonichthys ellioti* from the Bay of Bengal. Gupta, S. P. and Gupta, R. C. (1978) described the fifth species, *O. indicus*, from the fish host *Caranx malabaricus* from the Arabian Sea. Gupta, N. K. and Puri (1981) decribed still another species, *O. nigeri*, from the fish *Stromateus niger* from Calicut. Madhavi (1977) proposed a new genus *Retractomonorchis*, with *R. delicatus* as type species resembling *Opisthomonorcheides*, from the fish hosts *Pampus chinensis* and *Pampus argenteus* from the Bay of Bangal, but in the differential diagnosis she qualified the proposal that her genus would only be valid "pending verification of the presence or absence of a genital atrium and the position of genital pore in *Opisthomonorcheides*", because in some of her specimenes of *Ratractomonorchis delicatus* "it was difficult to detect the genital pore and such specimens look like *Opisthomonorcheides*".

The study of 42 specimens collected from black pomfret from the Bay of Bengal and Arabian Sea reveals the following facts :

1. In some specimens the genital pore is apparently postacetabular where male and female ducts come close to each other ;

2. In some others the ova are seen lying in a linear fashion between the anterior margin of acetabulum and the point where the male and female ducts come close to each other in the postacetabular regien ; and

3. Still in some other speciments one or two ova are see immediately before the acetabulum.

These conditions can vey well be explained by correctly interpreting that the genital atrium is tubular and opens immediately in front of the acetabulum as Madhavi (*loc. cit.*) described in *R. delicatus*, and that its wall is so thin that it becomes difficult to detect and therefore the point where spined male and female terminal genitalia open into the the thin-walled tubular genital atrium behind the acetabulum is easily mistaken as the position of the gental pore. The same situation, it is presumed, was also probably confrented by Parukhin (*loc. cit.*) who proposed the genus *Opisthomonorcheides* with postacetabular genital pore. Under the circumstances mentioned above on the basis of two big populations from the Bay of Bengal and Arabian Sea, it should be taken for granted that the position of the genital pore in *Opisthomonorcheids* Parukhin, 1966 is immediately preacetabular. Consequently, the author is inclined to believe that *Retractomonorchis* Madhavi, 1977 is congenric with *Opisthomonorcheides* Parukhin, 1966.

Six species, as listed above, have been described from India from the three species of pomfret, a carangid and an apogonid fish from the Bay of Bengal and the Arabian Sea under two genera *Opisthomonorcheides* and *Retractomonorchis*. There are overlappings among them because probably the various papers having their descriptions were simultaneously in press. Only one of them, *Opisthomonorcheides karwarensis* Karyakarte and Yadav, 1976 is valid, and other five species, viz., *O. indicus* of Karyakarte and Yadav, 1977, *O. indicus* of Ahmad, 1677, *O. indicus* of Gupta, S. P. and Gupta, R. C., 1978, *O. nigeri* Gupta, N. K. and Puri, 1981, and *R. delicatus* Madhavi, 1977 have been found to be identical to it and therefore conspecific with the former. Thus, so far there are only two species in the genus *Opisthomonorcheides*, viz. *O. decapteri* Parukhin, 1966 from the Gulf of Tonkin, and *O. karwarensis* Karyakarte and Yadav, 1976 from Arabian Sea, the latter mainly differing from the former in having lobed ovary.

Subfamily OPISTHOMONORCHIINAE Yamaguti, 1952

Genus **Opisthomonorchis** Yamaguti, 1952

Opisthomonorchis carangi (Madhavi, 1974) n. comb.

Syn. *Pseudopisthomonorchis carangi* Madhavi, 1974 n. syn.

Opisthomonorchis thapari Varma and Singh, 1979 n. syn.

Host : *Carangoides malabaricus* (Bloch), (Pisces : Carangidae)

Location : Intestine

Loclity : Bombay (Arabian Sea)

No. of specimens : Several, on 6 slides, collected by Prof. Ather H. Siddiqi in May, 1963.

Specimens deposited : Z. S. I. reg. Nos. W 7459/1 to 7464/1

Madhavi (1974) proposed the genus *Pseudopisthomonorchis* to accommodate her species

P. carangi in the intestine of the fish *Carangoides malabaricus* (Bloch) from Waltair coast, Bay of Bengal. She distinguished her genus *Pseudopisthomonorchis* from *Opisthomonorchis* Yamaguti, 1952 in having a globular cirrus sac, short unarmed cirrus, spacious genital atrium with spines, and preacetabular vitellaria. Varma and Singh (1979) described *Opisthomonorchis thapari* in the intestine of the fish *Caranx armatus* (Cu. & Val.) at Quilon, Arabian Sea with minut spines on the cirrus. Apparantly, they were unaware of Madhavi's (1974) work on monorchiid trematodes from marine fishes of Waltair, Bay of Bengal, and therefore, compared their species only with the type species *O. carangis* Yamaguti, 1952. Now, a comparision of *O. thapari* Varma and Singh, 1979 with *P. carangi* Madhavi, 1974 shows that the two species (from the same group of fish hosts) are identical, differing only in the spined genital atrium. It may be observed that Madhavi (*loc. cit.*) might have escaped observation of the minute spines on the cirrus, or the minute spines of the cirrus might have been mixed up with those of the genital atrium, leading to erroneous conclusion. The identicality and sameness of the species is beyond doubt.

Ultimately, the distinctness of *Pseudopisthomonorchis* Madhavi, 1974 from *Opisthomonorchis* Yamaguti, 1952 narrows down to acetabular and preacetabular vitellaria in the former and postacetabular in the latter. Varma and Singh (*op. cit.*) cosidered the difference of the position of vitellaria with respect to acetabulum as specific only. In the absence of any other important supporting character to this character, Varma and Singh's treatment to consider their specimens to belong to the genus *Opisihomonorchis* sounds more logical than Madhavi's. Therefore, *Pseudopisthomonorchis* should be considered as congeneric with *Opisthomonorchis* Yamaguti, 1952, *O. thapari* becoming synonymous with *P. carangi* Madhavi, 1974.

Family DEROPRISTIIDAE Skrjabin, 1958

Subfamily DEROPRISTIINAE Cable and Hunninen, 1942

Genus **Skrjabinopsolus** Ivanov in Ivanov & Murygin, 1937

Syn. *Pristotrema* Cable, 1952

Skrjabinopsolus elongatus (Madhavi, 1974) n. comb.

Syn. *Opisthodiplomonorchis elongatus* Madhavi, 1974 n. syn.

Skrjabinopsolus indicus Gupta, V. & Ahmad, 1976 n. syn.

S. kurotchkini Parukhin, 1976 n. syn.

Hosts : *Polynemus sextarius*, black-spot threadfin, (Pisces : Polynemidae) ; *P. xanthonemus*, silver thread tassel fish, (Pisces : Polynemidae) ; and *P. heptadactylus*, seven finger threadfin, (Pisces : Polynemidae)

Location : Intestine

Localities : Porto- Novo (Vellar Estuary) ; Digha (Bay of Bengal), and Veraval (Arabian Sea) respectively.

No. of specimens : 4+1+1, 4 in good condition, 2 not good for study, on 4 slides ; specimens from Porto-Novo were collected by Dr. T. D. Soota & Party in March, 1975

Specimens deposited : Z. S. I. Reg. Nos. W 7465/1 to W 7468/1

Opisthodiplomonorchis elongatus Madhavi, 1974 has been described from the fishes *Polynemus sextarius* and *Psettodes erumei* collected at Waltair coast under the family Monorchiidae. Describing the female terminal duct, Madhavi (1974) mentions the presence of terminal organ and calls it "small, simple, oval, undivided, armed with spines similar to those of cirrus". According to her, the

terminal part of the uterus opens into the distal end of the 'terminal organ'.

The specimenes in the author's collection are from the type host and other fishes of the same genus. Moreover, they have also been collected from the coast of the Bay of Bengal. They show no differences from that which has been illustrated by Madhavi (*loc. cit.*). What she calls a simple and undivided 'terminal organ' is nothing but well differentiated metraterm armed with spines as is found in the genera *Skrjabinopsolus* Ivanov in Ivanov & Murygin, 1937, *Deropristis* Odhner, 1902, and *Pristicola* Cable, 1952 (subfamily Deropristiinae Cable and Hunninen, 1942). By all probabilities *Opisthodiplomonorchis* Madhavi, 1974 fits well within the concept of the genus *Skrjabinopsolus*. Therefore, *Opisthodiplomonorchis* is considered as congeneric with *Skrjabinopsolus*. Thus, *Opisthodiplomonorchis elongatus* Madhavi, 1974 becomes *Skrjabinopsolus elongatus* (Madhavi, 1974) n. comb.

Opisthodiplomonorchis had been described to possess no seminal receptacle. Of the four specimens collected from the fish genus *Polynemus*, in one (collected at Digha) the seminal receptacle is very small and lies anterior to the lobed ovary while in the other one (collected at Veraval), it is quite big and lies dorsolateral to the female gonad. In the ramaining two (from Porto-Novo), this structure is undistinguishable from the lobes of the ovary, probably it got pressed with the latter. It is quite likely that Madhavi might have missed the receptacle in her specimens too as did Bychowsky and Dubinina (1954) in the specimens of the type species *Skrjabinopsolus acipenseris*, which fact has been emphatically pointed out by Cable (1955). He also pointed out the correct designation of *Skrjabinopsolus* which has been followed in this paper.

Gupta, V. and Ahmed (1976) described their specimens from a marine fish *Glyphiodon bengalensis* (Günther), from Chilka Lake adjoining to Waltair from where Madhavi (*loc. cit.*) described *O. elongatus*, as *S. indicus* with seminal receptacle. There seems to be no morphological difference between the two except in the egg size and hence they are considered as identical species, Madhavi's having priority over that of Gupta, V. and Ahmad. Parukhin (1976) described *Skrjabinopsolus Kurotchkini* from the fish *Polydactylus sextarius* (=*Polynemus sextarius*) from Indian Ocean. Its morphological details indicate that it is also synonymous with Madhavi's species. This is the first species of *Skrjabinopsolus* which has been reported from a teleostei. All other species have been reported from Chondrostei.

Skrjabin (1958) erected the family Deropristiidae to accommodate the genera *Deropristis*, *Pristicola* and *Skrjabinopsolus*. Peters (1961) feels that *Cestrahelmins* Fischthal, 1957 should also be included in this family but under a separate subfamily Cestrahelminae Peters, 1961 and consequently emended the diagnosis of the family. Yamaguti (1971), however, treated *Cestrahelmins* as a monorchiid under the subfamily Lasciotocinae.

Family Fellodistomidae (Nicoll, 1913)

Subfamily Monascinae Dollfus, 1947

Genus **Monascus** Looss, 1907

Syn. *Haplocladus* Odhner, 1911
Karachitrema Bilqees, 1973 n. syn.

Monascus filiforms (Rud., 1819) Looss, 1907

Syn. *Distoma filiformis* Rudolphi, 1819
Haplocladus filiformis (Rud., 1819) Odhner, 1911

Monascus typicus (Odhner, 1911) Looss, 1912
M. monenteron Looss, 1907 (*nom. nud.*)
M. netci Travassos et al., 1965
M. trilobatus (Bilqees, 1973) n. syn,
M. elongatus Karyakarte and Yadav, 1976

Hosts : 1. *Formio niger*, black pomfret, (Pisces : Formionidae)
2. *Stromateus sinensis*, Chinese, pomfrent, (Pisces Stromateidae) ;
3. *Caranx* sp., (Pisces : Carangidae)

Location : Intestine

Localities : Gopalpur (Bay of Bengal), collected on 0.3.05.1972 ; Madras (Bay of Bangal), collec-ted on 03.12.1964 ; Junput (Bay of Bengal), collected on 07.01.1977.

No. of specimens : 1+2+5 respectively, on 3 slides

Specimens deposited ; Z. S. I. Reg. Nos. N 7469/1 to W 7471/1.

Bilqees (1973) proposed a new genus *Karachitrema* with type species *K. trilobata*, on the basis of five specimens she recovered from the marine fish *Caranx affinis* from Karachi coast (Arabian Sea). She assigned this genus to the family Allocreadiidae. From the morphology and figures of the species, there remains little doubt that her five specimens should actually belong to a known genus *Monascus* Looss, 1907 in the family Fellodistomidae. She does mention that the oesophagus bifurcates anterior to acetabulum and the caeca reach posterior end of body, but she does not show the bifurcation of the oesophagus in the figure. Actually, the genus *Monascus* had been known to possess a single caecum (right one) since its inception, but the Scanning Electron Microscopic studies of the life-history of the type species, *M. filiformis*, by Kϕie (1979) have revealed that its cercariae and abults do not have a single unbranched caecum as previously described, but have a long right caecum and a short, reduced left caecum, the bifurcation of the pseudo-oesophagus taking place much behind the acetabulum in front of the ovary. Kϕie (*op. cit.*) observes that "the bifurcation of the intestine has been overlooked in all the previous descriptions of both *M. typicus* and *M. filiformis*". As a matter of fact, this has happened in the descriptions of all the subsequent species in the genus *Monascus*. The unbranched nature of intestine was taken for granted. The SEM studies of life-cycle of *M. filiformis* are revealing and set right for ever all the discrepancies in the various species of the genus *Monascus*, which have been puzzling and misleading the workers. The long standing hezitation to merge *M. typicus* with *M. filiformis* has been removed by working out the life-history of the latter species by Kϕie (1979). It has now been proved beyond doubt that *M. typicus* is not valid, and is a synonym of *M. filiformis*. Bray and Gibson (1980), unware of Kϕie's work, have also done so.

Vasantha Kumari and Srivastava (1976) recorded *M. orietalis* (= *Haplocladus orientalis* Srivastava, 1941) from two unrelated host fishes viz. a sole (*Synaptura orientalis*) and a cat-fish (*Arius jella*) from Digha (Bay of Bengal near Sunderbans). This is the second record of the species from India. It has not been reported from the rest of the world. Its record from a cat-fish is interesting. I personally examined the speciemens of *M. orientalis*. It was found that its characters overlap those of *M. filiformis* (Syn. *M. typicus*.). It is felt that *M. orientalis* is not valid, and is a synonym of *M. filiformis*. Bray and gibson

(*op. cit.*) have already suggested this synonymy.

M. filiformis (syn. *M. typicus*) is known to have an entire ovary without any sign of indentation or lobation of its contour. But Dollfus' (1947) redescription of *M. filiformis* is based on a collection of specimens from the type host-a collection which was mixed with specimens having trilobed ovary also. Lamothe-Argumendo's *M. typicus* from Puerto Escondido and Salina, Oaxaca, from Carangid fishes *Trachurops crumenophthalmus* and *Caranx hippos* respectively, also had trilobed ovary. Even some of the specimens of *M. filiformis* from dab (Kie's, 1979 SEM study) have trilobed ovary. In my own collection identified as *M. filiformis*, two of the three specimens recovered from *Formio niger* from Gopalpur have trilobed ovary. On these evidences, there seems to be strong justification in suspecting that *M. netoi* Travassos, *et al.* discribed on the basis of a single specimen, may be a synonym of *M. filifomis* as pointed out by Kϕie. The cylindrical pharynx longer than the length of the oral sucker is considered by him as changeable relative character. However, all the five specimens recovered from *Caranx* sp. from Junput, W. Bengal, have unlobed ovary. By the same reasoning, *M. trilobata* (syn. *Karachitrema trilobata*), *M. chauhani* Vasantha Kumari, 1975 and *M. elongatus* Karyakarte and Yadav, 1976 having lobed overy also fall synonyms of the type species *M. filiformis*. Bray and Gibson (1980) have alread listed species having lobed ovary as synonyms of *M. filiformis*.

Travassos *et al.* (1965) described *M. netoi* and raised the subfamily Monascine Dollfus, 1947 to the family rank-Monascidae because members of *Monascus* have a singie caecum which opens into the excretory vesicle near posterior end of body. To our mind, the family Monascidae on the basis of the genus *Monascus* cannot be recognised because a single caecum is not considered a family character in several other cases of Digenea. Moreover, the lifehistory studies of the type species by Kϕie (*loc. cit.*) show that the intestine apparantly does not establish relationship with the excretory baldder at the posterior end of body. Further, it has been proved beyond doubt that in the type species *M. filiformis*, ihe pseudooesophagus does bifurcate into right and left caeca although it happens between the acetabulum and ovary near the dorsal surface, and the left one is very short and reduced. Therefore, Monascidae should be suppressed in favour of Fellodistomidae (Nicoll, 1913).

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REFERENCES

ABE, T. AND PATHANSALI, D. 1974. *In* : FAO Species Identification Sheets for Fishery Purposes. Vol. II, Family Formionidae. Food and Agricultural Organisation of the United Nations, Rome.

AHMAD, J. 1977. Two new species of digenetic trematodes of fishes from Bay of Bengal. *Netherlands J. Zool.*, 27 (3) : 305-309.

BILQEES, F. M. 1973. Marine fish trematodes of Pakistan. XIII. Three new species (Allocreadiidae and Hemiuridae), including a new genus *Karachitrema* gen. n. *Acta parasit. pol.*, 21 (23) : 327-334.

BRAY, R. A. AND GIBSON, D. I. 1980. The Fellodistomidae (Digenea) of fishes from the northeast Atlantic. *Bull. Br. Mus. Nat. Hist. (Zool.)*, 37 (4) : 199-293.

BYCHOWSKY, B. E. AND DUBININA M. N. 1954. [Data on the systematics of digenetic trematodes of family Acanthocolpidae Lühe, 1909.] (In Russian), *Zool. Zhur.*, 33 (4) : 788-793.

CABLE, R. M. 1955. Taxonomy of some digenetic trematodes from sturgenons. *J. Parasit.*, 41 (4) : 441.

CHAN, W., TALBOT, F. AND SONTIRAT, S. 1974. *In* : FAO Species Identification Sheets for Fishery Purposes. Vol. I, Family Pomadasyidae. Food and Agricultural Organisation of the United Nations, Rome.

GUPTA, N. K. AND PURI, A. 1981. Studies on some digenetic trematodes of marine fishes from Calicut, Kerala (India). *Acta parasit. pol.*, 28 (3) : 21-31.

GUPTA, S. P. AND GUPTA, R. C. 1978. On four new trematodes from marine fishes. *Indian J. Helminth.*, 28 (2) : 114-126.

GUPTA, V. AND AHMAD, J. 1976. On a new species *Skrjabinopsolus indicus* n. sp. from the intestine of a marine fish *Glyphiodon bengalsis* (Günther) from Chilka Lake, Orissa. *Indian J. Zoot.*, 15 (1) : 5-6.

HAFEEZULLAH, M. 1971. On some new and known digenetic trematodes from marine fishes of India. *J. Helminth.*, 45 (1) : 73-78.

KARYAKARTE, P. P. AND YADAV, B. B. 1976a. *Opisthomonorcheides karwarensis* n. sp. (Trematoda : Monorchiidae) from the marine fish *Stromateus niger* (Bloch) in India. *Marathwada Univ. J. Sci. (nat, Sci.)*, 15 (8) : 165-168.

KARYAKARTE, P. P. AND YADAV, B. B. 1976b. On a new and a known species of the genus *Monascus* Looss, 1907 (Trematoda : Monascidae) from marine fishes from the west coast of India. *Ibid*, 15 (8) ; 169-175.

KARYAKARTE, P. P. AND YADAV, B. B. 1977. *Opisthomonorcheides indicus* sp. n. (trematoda : Monorchiidae) from the marine fish, *Stromateus niger*, in India. *Riv. Parassit.*, (1976), 37 (2-3) : 157-160.

Kϕie, M. 1979. On the morphology and life-history of *Monascus* (=*Haplocladus*) *filiformis* (Rudolphi, 1819) Looss, 1907 and *Steringophorus furciger* (Olsson, 1868) Odhner, 1905 (Trematoda : Fellodistomidae). *Ophelia*, 18 (1) : 113-132.

LAMOTHE-ARGUMENDO, R. 1969. Tremátodes de peces IV. Registro de cuatro species de tremátodos de peces marinos de la costa del Pacífico Mexicano. *An. Inst. Biol. Univ. Nat. Autón, Mexico, Ser. Zool.*, 40 (2) : 179-194.

MADHAVI, R. 1974. Digenetic trematodes from marine fishes of Waltair Coast, Bay of Bengal. Family Monorchiidae. *Riv. Parassit.*, 35 (2) : 87-94.

MADHAVI, R. 1977. Some new digenetic trematodes (Monorchiidae) from marine fishes of Waltair Coast, Bay of Bengal *Excerta Parasitologica on Memoria del doctor Eduardo Caballero Y Caballero*, 233-246.

MANTER, H. W. AND PRITCHARD, M. H. 1961. Studies on digenetic trematodes of Hawaiian fishes. Families Monorchiidae and Haploporidae. *J. Parasit.*, 47 (3) : 483-492.

MENON, A. G. K. 1974. *In* : FAO Species Identification Sheets for Fishery Purposes. Vol. III, Family Polynemidae. Food and Agricultural Organisation of the United Nations, Rome.

NICOLL, W. 1915. The trematode parasites of North Queensland. III. Parasites of fishes. *Parasitology*, 8 (1) : 22-41.

PARUKHIN, A. M. 1966. New trematodes from marine fishes from Gulf of Tonkin. *Zool. Zhur.*, 45 (10) : 1462-1466.

PARUKHIN, A. M. 1976. [Trematodes of fishes in the Indian Ocean]. *Biologia Morya, Kiev (Voprosy ikologii ryb i Kal'marov)*, (In Russian), No. 38 : 76-84.

PETERS, L. E. 1961. The genus *Skrjabinopsolus* (Trematoda : Digenea), with reference to the Allocreadioid problem. *American Natur.*, 65 (2) : 436-445.

TRAVASSOS, L., FREITAS. J.F.T. AND BURNHEIM, P. F. 1965. Trematodeos de peixes do litoral Capaxaba : *Monascus netoi* sp. n., parasita de ventoleste. *Atas Soc. Biol. Rio de Janeiro*, 9 (4) : 46-48.

VARMA, P. K. AND SINGH J. P. 1979. *Opisthomonorchis thapari* n. sp. from a marine fish *Caranx armatus* (Cuv. & Val.) from the Arabian Sea at Quilon, India. *Indian J. Zoot.*, 20 (1) : 49-50.

VASANTHA KUMARI, N. 1975. A new species of the genus *Monascus* Looss, 1907 (Trematoda : Digenea : Fellodistomidae) parasitic on flat fishes. *Dr. B.S. Chauhan Comm. Vol.*, pp. 247-250.

VASANTHA KUMARI, N. AND SRIVASTAVA, C. B. 1976. On a collection of digenetic trematodes of poikilothermal vertebrates from Digha (West Bengal). *Newsl. zool. Surv. India*, 2 (4) : 163-166.

YAMAGUTI, S. 1971. Synopsis of digenetic trematodes of vertebrates. Vols. I and II. Keigaku Publ. Co., Tokyo, Japan.