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# TWO SPECIES OF A NEW TREMATODE GENUS *THYNOTREMA* (SPIRORCHIIDAE: COEURITREMATINAE) FROM THE FISH *THYNNUS THUNNIA* OF KARACHI COAST, PAKISTAN

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**ABSTRACT**

A new trematode genus *Thynotrema* is described here to accommodate two new undescribed trematodes in the family Spirorchiidae Stunkard, 1921 and subfamily Coeuritrematinae Dwivedi, 1968. The trematodes belonging to the new genus have small, delicate, elongate body, acetabulum smaller than oral sucker, ceca reaching to posterior end of the body, flower-shaped lobed testes, tandem in position, situated near to posterior end of the body. Genital opening is anterolateral or posterolateral to acetabulum seminal vesicle free in parenchyma, tubular or elongated in shape, almost reaching to ovary, cirrus sac is also long terminating posterior to acetabulum or extending anterior to it, metraterm weakly developed or distinct, vitellaria consisting of small follicles, lateral in position, circumcecal posteriorly, between intestinal bifurcation and posterior end of the body. Excretory vesicle is a wide tube extending to level of ovary or posterior testis. The new species *Thynotrema elongatum* has genital opening posterolateral to acetabulum, seminal vesicle is tubular free in parenchyma and metraterm is weakly developed. Another new species reported here is *Thynotrema thynotrema* characterized by having genital opening anterolateral to acetabulum, seminal vesicle not tubular but large and elongate, and metraterm is distinct.

**Key words:** Trematoda, *Thynotrema*, new genus, two new species, *Thynnus thunnia*, Karachi coast (Pakistan).

## INTRODUCTION

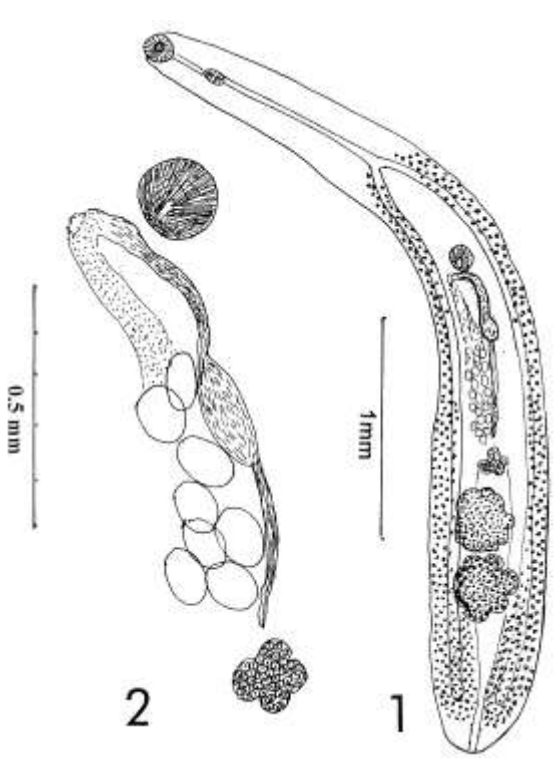
Trematodes are one of the common parasites of fishes of Karachi coast (Bilqees, 1981, Zaidin and Khan, 1975). But trematodes of the fish *Thynnus thunnia* were not known until recently (Bilqees and Khatoon, 2004a, b). Present is the third genus reported from the *Thynnus thunnia* of Karachi coast. The present new genus *Thynotrema* belongs to family Spirorchiidae Stunkard, 1921 and is included in the subfamily Coeuritrematinae Dwivedi, 1968 as the present specimens have some characters similar to the subfamily. The genus name refers to the host and the species *T. elongatum* n.sp., indicates elongate body, another new species name *T. thynotrema* refers to the host. This is the first report of the trematodes belonging to the subfamily Coeuritrematinae from the fish of Karachi coast. The other two recently described genera from *T. thunnia* are *Neoenenterum* (Bilqees and Khatoon, 2004a) and *Thynostenopera* (Bilqees and Khatoon, 2004b).

## MATERIALS AND METHODS

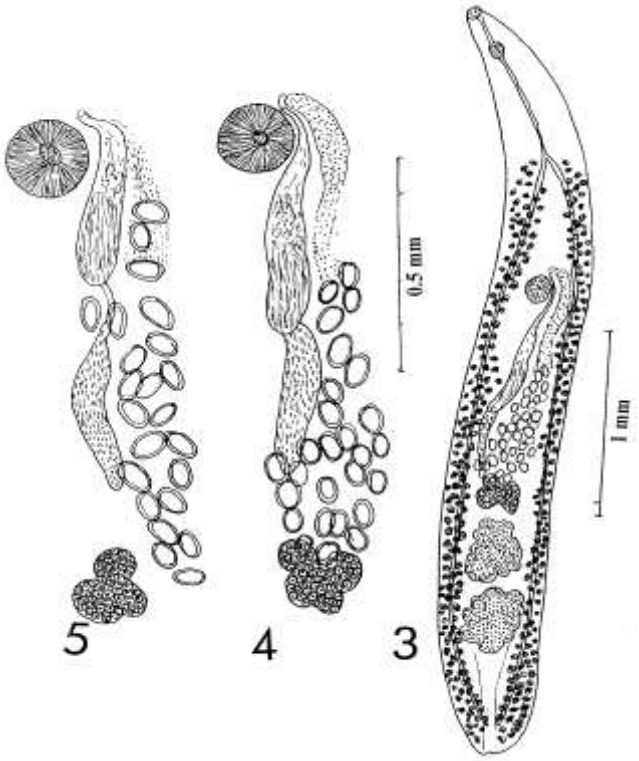
The present collection of fish *Thynnus thunnia* is in addition to described previously (Bilqees and Khatoon, 2004a,b). Seventeen fishes were examined for helminth parasites, two of these were infected with numerous small, delicate trematodes. Fifty six trematodes were collected from the intestine of one fish and 16 from another fish. Trematodes were fixed in F.A.A., stained with Mayer's carmalum, dehydrated, cleared and mounted permanently in Canada balsam by usual method. Diagrams are made with a camera lucida and measurements are given length by width in millimeters. Holotype and paratype specimens were kept in the senior author's collection.

### *Thynotrema elongatum* n.gen., n.sp.
### (Figs. 1-2)

**Host:** *Thynnus thunnia*
**Location:** Intestine
**Locality:** Karachi coast
**Number:** 35 specimens from one fish, 17 fishes were examined
**Cat No:** BM coll. T-1232, holotype
BM coll. T-1233-1254, paratypes




Figs. 1-2. *Thynotrema elongatum*, holotype.
Fig. 1. Entire specimens,
Fig. 2. Genital opening and associated structures of the holotype.




Figs. 3-5. *Thynotrema thynotrema.*
Fig. 3. Entire specimens, holotype.
Figs. 4-5. Genital opening and associated structures of two paratypes.

**DESCRIPTION**

Small, delicate trematodes with elongate, lanceolate body, rounded posteriorly, narrower in the preacetabular region, 3.45-3.71 by 0.48-0.51 in size, widest at the testicular region. Oral sucker is terminal 0.12-0.21 in diameter. Prepharynx is relatively small 0.29-0.30 in length, pharynx much smaller than oral sucker 0.11-0.12 by 0.08-0.91 in size. Esophagus long bifurcating at about one fourth to one third of body length from the anterior end, 0.80-0.87 in length, ceca long reaching to near posterior extremity. Acetabulum is smaller than oral sucker, rounded, 0.76-0.87 in diameter and preequatorial in position. Testes two, tandem, lobed, flower-shpaed, 0.30-0.33 in diameter, situated nearer to the posterior end of body. Genital pore lateral or posterolateral to the acetabulum. Cirrus sac is elongate 0.51-0.57 in length. External seminal vesicle is tubular free in parenchyma, reaching near to the ovary 0.41-0.47 in length. Internal seminal vesicle elongate, par prostatica poorly developed. Ovary is pretesticular, smaller than testes, 3 to 4 lobed, 0.18-0.19 by 0.19-0.20 in size, metraterm is weakly develop. Vitellaria consist of small, laterally arranged follicles, surrounding the ceca posteriorly, extending from cecal bifurcation to posterior end of the body. Eggs are relatively large and few, 0.13-0.15 by 0.090-0.091 in size. Excretory vesicle is a wide bube extending anteriorly upto the ovary.

**Etymology:** Species name indicates the elongate body of the specimens.

***Thynotrema thynotrema* n.gen., n.sp.**
**(Figs. 3-5)**

**Host:** *Thynnus thunnia*
**Location:** Intestine
**Locality:** Karachi coast
**Number:** 5 specimens from one fish and 12 from other
**Cat No:** BM coll. T-1267, holotype; BM coll. T-1268-1284 paratypes

**DESCRIPTION**

Small delicate trematodes with elongate body, 3.37-4.25 by 0.41-0.50 in size, widest at the testicular region. Oral sucker terminal, 0.09-0.11 in diameter, prepharynx is prominent, 0.21-0.30 in length, pharynx smaller or equal

to oral sucker, 0.010-0.011 by 0.09-0.1, esophagus long, 0.71-0.82 in length, bifurcation at about one third or one fourth of body length. Ceca are long reaching to near posterior end of the body. Acetabulum is larger or equal to oral sucker, rounded in shape 0.11-0.19 in diameter, preequatorial in position. Testes two, tandem, in posterior half of the body, lobed, flower-shaped, 0.35-0.39 by 0.31-0.35 in size. Genital pore anterolateral to acetubulum. Cirrus sac is elongate, 0.49-0.51 long and 0.09-0.12 in width. External seminal vesicle relatively large, elongate free in parenchyma and reaching to near about ovary, 0.41-0.43 by 0.08-0.09 in size. Internal seminal vesicle oval in shape, pars prostatica prominent. Ovary is pretesticular, three to four lobed smaller than testes, 0.19-0.21 by 0.19-0.23 in size. Metraterm is prominent, vitellaria consist of small, rounded follicles, arranged laterally, scattered from cecal bifurcation to posterior end of the body encircling the ceca posteriorly. Uterus confined between preovarian to acetabular level. Eggs oval to elongate 0.09-0.095 by 0.051-0.072 in size. Excretory vesicle is shorter, wide extending to the level of ovary.

**Etymology:** Species name indicates the fish host.

## REMARKS

The two new species described here *Thynotrema elongatum* and *T. thynotrema* are included in the family Spirorchiidae Stunkard, 1921 and subfamily Coeuritrematinae Dwivedi, 1968 are placed in a new genus *Thynotrema* of the subfamily which is described and discussed the following pages. *Thynotrema elongatum* n.sp. has terminal oral sucker larger than acetabulum, the genital opening posteriolateral to acetabulum, tubular external seminal vesicle free in parenchyma, poorly visible internal seminal vesicle and pars prostatica. The metraterm is also weakly developed but the eggs are relatively large.

The second new species *T. thynotrema* closely resembles the above mention type species of the genus *T. elongatum* from the same fish host as far as gross appearance, morphology and situation of testes, ovary and vitellaria is concerned. But *T. thynotrema* n. sp., is different from the above mentioned new species *T. elongatum* in having oral sucker equal or slightly larger than acetabulum, different in having different sucker width ratio, anterolateral position of the genital opening instead of posterolateral, large seminal vesicle instead of tubular, larger cirrus sac and prominent metraterm which is poorly developed in *T. elongatum*. Eggs are smaller than in *T. elongatum* which is smaller in body size than *T. thynotrema*. Due to these differences in the important diagnostic features the two species can be differentiated.

### ***Thynotrema*** **new genus**

**Generic diagnosis:** Spirorchiidae, Coeuritrematinae. Body elongate, lanceolate, rounded posteriorly, narrower in the forebody. Oral sucker terminal, prepharynx prominent, pharynx present, esophagus relatively long, bifurcating at about one third to one fourth of body length from the anterior end, ceca long, simple, reaching to posterior end of the body. Acetabulum equal, smaller, or slightly larger than oral sucker, preequatorial. Testes two, tandem, lobed, flower-shaped, near to posterior end of the body. Genital pore posterolateral or anterolateral to acetabulum, cirrus sac elongate, external seminal vesicle tubular or elongate, free in parenchyma reaching to near about the ovary. Ovary pretesticular, lobed, median. Metraterm weakly developed or prominent, vitellaria consist of numerous small follicles arranged laterally and circumcecal posterilrly, extending from intestinal bifurcation or preacetabular region to posterior extremity. Excretory vesicle a wide tube extending to ovary. Parasites in the intestine of marine fish. Type species *T. elongatum*, in the intestine of the fish *T. thunnia*, Karachi coast, Pakistan other species. *T. thynotrema* from the same fish.

**Etymology:** Genus name refers to the fish host.

## DISCUSSION

The present specimens are included in the family Spriorchiidae Stunkard, 1921 and the subfamily Coeuritrematinae Dwivedi, 1968. As the present specimens have a lanceolate, elongate, smooth body, oral sucker terminal, acetabulum smaller, equal or slightly larger, ceca long, two testes, posterior to ovary, cirrus pouch present, genital pore posteriolateral or anteriolateral to acetabulum, external seminal vesicle tubular. Ovary is median, anterior to testes, metraterm prominent or weakly developed, vitellaria follicular, arranged laterally and circumcecal posteriorly, extending from intestinal bifurcation or preacetabular region to posterior extremity, uterus relatively short, eggs large few.

But the present specimens of the new genus *Thynotrema* show some morphological variations to the subfamily Coeuritrematinae because in the subfamily the genital opening is at level between acetabulum and anterior testis, eggs are filamented, excretory vesicle is 'Y' shaped and members of the family and subfamily are parasitic in the blood, heart or liver of fresh water turtles. While the present specimens were recovered from the intestine of a marine fish, the excretory vesicle is a wide tube, eggs are not filamented, genital opening is posteriolateral or anteriolateral to acetasbulum. These differences are sufficient to propose a new subfamily for the new specimens. But at present these are included in the subfamily Coeuritrematinae Dwivedi, 1967.

In this subfamily at present there are three genera namely *Enterohaematotrema* Mehra, 1940, *Coeuritrema* Mehra, 1933 and *Cardiotremai* Dwivedi, 1967. But the present new trematodes cannot be included in any of the existing three genera of the subfamily because in *Enterohaematotrema* genital pore is median, ventral and just postacetabular and vitelleria commencing at levels of genital pore. This genus includes trematode parasitic in intestinal wall or liver of fresh water turtles. *Coeuritrema* contain trematodes parasitic in blood vessels or heart of fresh water turtles. In this genus genital pore is submedian, dorsal, postacetabular and vitelleria commencing at about intestinal bifurcation or anterior to it. Genus *Cardiotrema* has genital pore dorsal, submedian, at level of cirrus pouch, vitellaria extending profusely whole length of the body. Key to genera of Coeuritrematinae is given here including the new genus *Thynotrema*.

**Key to the genera of the subfamily Coeuritrematinae (Dwivedi, 1968)**

Cirrus pouch and metraterm very strongly developed; esophagus very long, bifurcating immediately in front of acetabulum; genital pore median, ventral, just postacetabular; vitellaria commencing at level of genital pore …….……..……. *Enterohaematotrema* Mehra, 1940.

Cirrus pouch not so strongly developed; esophagus moderately long, bifurcating a short distance anterior to acetabulum; genital pore submedian, dorsal, postacetabular; vitellaria commencing at about intestinal bifurcation or anterior to it ……..…… *Coeuritrema* Mehra, 1933.

Cirrus pouch large but membranous; esophagus short, bulbus, bifurcating some distance anterior to acetabulum; genital pore dorsal, submedian, at level of cirrus pouch; vitellaria extending profusely whole length of body ……..……..…… *Cardiotrema* Dwivedi 1957.

Cirrus pouch and metraterm fairly well developed; esophagus long, bifurcating slightly anterior to acetabulum; genital pore posteriolateral or anteriolateral to acetabulum; vitellaria commencing at level of intestinal bifurcation or preacetabular region, excretory vesicle is a wide tube ……..……... *Thynotrema* n. gen.

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