

**COMMENTS ON THE FOUR NEW SPECIES OF RIBBON-FISHES  
(FAMILY TRICHIURIDAE) RECENTLY REPORTED FROM INDIA**

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INTRODUCTION

GUPTA (1966) described briefly two new species of ribbon-fishes of the genus *Trichiurus* Linnaeus, viz., *T. gangeticus* and *T. pantului* from the Hooghly estuarine system, strangely enough, without citing earlier literature on the group. Subsequent to this report, Dutt and Thankam (1966) described two more new species of trichiurid fish from Waltair, namely *Trichiurus russelli* and *Lepturacanthus serratus*. Later, Gupta (1967) gave further details on the two species he reported. As one with some experience with the fishes of the family Trichiuridae from India, I felt the need to comment in detail on these new species based on examination of holotypes, paratypes, other material in my possession and the published details, the particulars of which are given in this paper. In this connection, it was also felt essential to re-examine the types of at least certain species which have been synonymised with *Trichiurus lepturus* Linnaeus and *Lepturacanthus savala* (Cuvier) available at the British Museum, Paris Museum and Leiden Museum as well as published details of such species since the new species are supposed to have close affinity to them and also because the authors of the new species have not paid attention to this aspect. Particulars of these, made available to the author from the Museums mentioned above are discussed at the relevant places in the text. There are several other aspects of these fishes studied by me which have a bearing on these new species but they remained unpublished for some time. These are dealt with in detail in the memoir on the ribbon-fishes of family Trichiuridae of India, (James, 1967), where brief comments on the four new species are also given in the Addendum

MATERIAL AND METHODS

The material examined includes the holotype, Reg. No. F. 4811/2, Zoological Survey of India, Calcutta and six paratypes of *T. gangeticus* of both sexes, ranging in size from 98 to 121 mm. snout-vent length (413 to 462 mm. standard length); 27 specimens of both sexes, ranging in size from 48 to 162 mm. snout-vent length (198 to 493+\*mm. standard length) agreeing with the description of *T. gangeticus*, collected by the present author in 1959-60 from Palk Bay and the Gulf of Mannar and elsewhere along the east coast of India.

The holotype, Reg. No. F. 4812/8 Zoological Survey of India, Calcutta and six paratypes of *T. pantului* of both sexes ranging in size from 105 to 121 mm. snout-vent length (345+ to 389 mm. standard length); two female specimens 105 to 110

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\* '+' indicates that the tip of tail is broken.

mm. snout-vent length (299+ and 310+ mm. standard length) agreeing with the description of this species obtained from Hooghly estuary in 1960.

Before the results of examination of the material mentioned above are presented, the following important and special features in the study of ribbon-fishes which have already been stressed elsewhere have to be re-emphasised in this connection : (1) The tip of the tail in ribbon-fishes is highly susceptible to break and hence for reliable systematic data, observations have to be made with reference to snout-vent length. However, to make the present data comparable with earlier data given by different authors, body proportions in standard length (tip of snout to tip of tail) are also given. (2) Meristic counts of these fishes have necessarily to be enumerated from alizarin stained material or by radiographs as the posteriormost dorsal and anal fin rays are very minute and cannot be accurately counted in fresh or preserved specimens straightaway. The meristic counts given in this account are based on alizarin stained material. The dorsal and anal counts given here include even the very small basal elements that are present at the termination of these fins.

#### OBSERVATIONS

In the absence of ventral fins, lateral line descending steeply from the upper angle of operculum and running nearer the ventral profile of body and the concave lower hind margin of operculum, the four new species belong to the subfamily Trichiurinae of the Family Trichiuridae which includes the genus *Trichiurus* (represented by *T. lepturus*) and also the genus *Lepturacanthus* (represented by *L. savala*). These characters distinguish the two species of *Eupleurogrammus* (*E. intermedius* and *E. muticus*) which also occur in the Indian Seas, separately, or together with other species at several places.

According to Gupta (*op. cit.*), *T. gangeticus* is closer to *T. haumela* (= *T. lepturus*) than to any other species of the genus (including *Eupleurogrammus* species also under *Trichiurus*) but differs from it mainly in certain body proportions and the presence of a serrated spine in the pectoral fin, the latter character noticed and remarked upon by the present author (James, 1961). While the similarity to and divergence from *T. haumela* of this species was pointed out, the striking affinity it shows to *L. savala* has been altogether ignored. In fact, it shows a combination of characters of *L. savala* and *T. lepturus* but the affinity to the former is certainly greater and obvious. While the body proportions of trichiurids are wellknown to vary, the narrow body, the characteristic filamentous tail, the anal spinules breaking through the ventral profile of body, the structure of the posteriormost vertebrae and the number of pyloric caeca (16 in two paratypes and 15, 16, 17 in three other specimens) reveal amply its affinity to *L. savala*. Two mature individuals of stage IV, 156 and 150 mm. in snout-vent length from Thangachimadam (Palk Bay) were examined for fecundity estimation and the type of maturation of gonads. The numbers of mature ova in the two specimens were 10,899 (156 mm. S-V. length) and 11,369 (150 mm. S-V. length). In the ovary from the larger specimen, three groups of ova, the immature, maturing and mature, with modes at 0.12, 0.44 and 0.75 mm. respectively are present, the maturing group about half way between the immature and mature groups showing that individuals spawn more than once. In these respects also, these individuals are akin to *L. savala* in which the fecundity ranges from 9,178 to 17,347 in individuals 179 to 195 mm. in snout-vent length and three groups of ova are found in mature ovary. The main characters of difference

with *L. savala* are (1) its higher meristic counts, (2) the serrated pectoral spine and (3) the smaller second anal spine. On the other hand, its superficial resemblance to *T. lepturus* could be seen in the large eye and smaller second anal spine. Individuals conforming to the description of *T. gangeticus* appear to be distributed along the east coast of India, from the Hooghly estuarine system in the north to the Palk Bay and Gulf of Mannar in the south, as the collections of the present author indicate. They have, however, not been met with along the west coast of India so far.

Data on the syntypes of *Trichiurus savala* Cuvier in the Paris Museum, the holotype of *Trichiurus roelandti* Bleeker in the Leiden Museum and the holotype of *Trichiurus armatus* Gray in the British Museum with specific reference to length of second anal spine and the serrations on the anterior margin of pectoral spine show that the former is about half diameter of eye and the latter is not serrated. Detailed particulars of these are given in Table I. While it is clear that the above two important characters of *L. gangeticus* are not found in these types (= *L. savala*) it is possible that the types of species considered synonymous to *T. lepturus* which have not been re-examined, may throw some light on this problem especially because *L. gangeticus* resembles *T. lepturus* in some characters.

The second new species, *T. pantului*, according to its author, is closer to *T. haumela* (= *T. lepturus*) than to any other species of the genus (including *Eupleurogrammus* species also under *Trichiurus*). Apart from certain body proportions, the bigger second anal spine, the breaking through the ventral margin of body by anal spinules and the serrated nature of some of them are supposed to distinguish it from *T. haumela* but unlike what was stated by Gupta (*op. cit.*), even in the holotype and six paratypes examined by me, the second anal spine is only more than half diameter of pupil (agreeing with that of *T. lepturus* which is less than pupil) and none of the anal spinules are serrated. Therefore, these characters of difference do not hold good. As in the case of *T. gangeticus*, this species also shows a combination of characters of *T. lepturus* and *L. savala*. It resembles *T. lepturus* in the large eye, greater body depth, small snout and pectoral fin, and the gradual tapering of tail. The meristic counts, though differ slightly, are nearest those of *T. lepturus*. In the anal spinules breaking through the ventral profile of body and the number of pyloric caeca (13 in two and 15 in another two of the paratypes and 13 and 14 in the two specimens from Hooghly estuary—1960), it resembles *L. savala*. Therefore, its affinity is obviously closer to *T. lepturus* than to any other species and hence it is considered a synonym of *T. lepturus*. Individuals conforming to the description of *T. pantului* seem to have a rather restricted distribution, at present known only from Hooghly estuary and Waltair.

It should be mentioned here, after the examination of the holotype and paratypes of *T. pantului* Gupta, the present author felt that the figure of *Trichiurus lajor* Bleeker, given by Boeseman (1962, fig. 3) has a marked resemblance to specimens of *T. pantului*. Data on the holotype of *T. lajor* in the Leiden Museum are given below :

*Trichiurus lajor* Bleeker (RMNH 6030 ; Menado Celebes)  
(Measurements in mm.)

(1) Total length—222 (from tip lower jaw) ; (2) Snout-vent length—77 ; (3) Depth at vent—13 ; (4) Head length —30.5 (to post. tip opercle), (27.5 excl. L. jaw) 26.0 to upp. angle gill apert. (23.0 excl. L. jaw) ; (5) Eye diameter—5.5 ; (6)

Diameter of the pupil 2? (lens 2.5); (7) Length of 2nd anal spine—2? (region damaged); (8) Whether anal spinules break through ventral profile and any of them are serrated—break through ventral profile, not serrated.

The above particulars confirm that the second anal spine is not more than pupil (may even be less but the region near the vent is stated to be damaged), the anal spinules break through ventral profile and none of them are serrated. These and the original description of *T. lajor* by Bleeker (1854) are in agreement with the author's observations on the holotype and paratypes of *T. pantului*. But *T. lajor* has been synonymised with *T. lepturus* by many earlier authors including the present. In any case, the name *T. lajor* Bleeker has priority over *T. pantului* Gupta.

Although the new species were reported first from the Hooghly estuary, no reference was made to the description of a ribbon-fish by Hamilton (1822) from the river Ganges which he tentatively assigned to *Trichiurus lepturus*. The same was later relegated to the synonymy of *Lepturacanthus savala* (Cuvier) by Silas and James (1960).

Regarding the second report of two other new species, examination of the published details of *T. russelli* and *L. serratus* show that they agree with *T. pantului* and *T. gangeticus* respectively of Gupta (*op. cit.*) except (1) that their affinity is correctly indicated by Dutt and Thankam (*op. cit.*) by placing them under two different genera with which the present author is in agreement, instead of both being placed under the genus *Trichiurus* as done by Gupta (*op. cit.*), (2) the dorsal rays and anal spinules of *T. russelli* are shown in the figure as extending almost to tip of tail (rather unusual in ribbon-fishes, quite likely the tip of tail was broken, as suggestive from its low total vertebral count (146-149) which was found to be 175 and 178 in two paratypes of *T. pantului*; vertebral numbers against which the fins terminate will be accurate), (3) serrations reported on some anal spinules of *T. pantului* are not mentioned in *T. russelli*.

Body proportions and meristic counts of the four new species from examination of material and published details and of specimens collected earlier by the present author and agreeing with the above are given in Tables II to VII for comparison, along with the same particulars for *T. lepturus* and *L. savala*.

#### DISCUSSION AND CONCLUSIONS

Since the above mentioned two pairs of new species represent but two new species as explained above, the correct nomenclature should therefore be *Trichiurus pantului* Gupta (= *T. lepturus*) for the first species and *Lepturacanthus gangeticus* (Gupta) for the second species, synonymising *T. russelli* Dutt and Thankam with the former and *L. serratus* Dutt and Thankam with the latter. Therefore, the second report has, in substance, suggested only a nomenclatorial change.

Preliminary observations on them indicate that the new species are not established on a sound basis. Based on all details, if at all there is any case for distinction, it may be for *L. gangeticus*, especially based on its meristic counts and serrations in the pectoral spine and not for *T. pantului* which is considered synonym of *T. lepturus* and also found to agree with *T. lajor* Bleeker (= *T. lepturus*).

In this context, the following facts which apparently the authors of new species do not seem to be aware or recognise, need serious thought :

(1) Each of the two new species, as already explained, exhibits a combination of characters of two known valid and well established species.

(2) The two known valid species (*T. lepturus* and *L. savala*) to which the new species show affinity are well founded, distinctly demarcated and widely distributed (as also the species of *Eupleurogrammus*) which is not the case with the new species.

(3) Young ones of ribbon-fishes show serrations on dorsal spines, the second anal spine, some anal spinules (James, 1967) and pelvic spines (Narasimham : personal communication), which apparently disappear after a certain stage. The significance of serrations on the pectoral spine of *L. gangeticus*, which are stated to increase with length of fish, are to be considered in the light of observations in juveniles of ribbon-fishes. It could perhaps be considered a family character, appearing in a variety of fins in juveniles and adults alike, indicating the coherence of the members of the group.

(4) The proportion of the second anal spine and the prominence or otherwise of anal spinules in young and adult stages of the same species also differ considerably. The short and long second anal spines of *L. gangeticus* and *T. pantului* respectively and the prominent anal spinules of the latter should be examined in relation to the condition in juveniles.

(5) Meristic counts of ribbon-fishes are better indications of intraspecific and interspecific affinity of ribbon-fishes which have to be enumerated only by alizarin staining or radiographs, adopting a uniform method of counting.

In conclusion, the following statement of Hamilton (1822) should serve as a useful caution in work on this group of fishes : 'I think it unnecessary to multiply distinctions, and shall only add a full description, so that those who have an opportunity may judge how far any differences to be observed in different places may be adequate to distinguish these kindred fishes into different species.'

#### SUMMARY

Based on an examination of holotypes, paratypes, other material collected earlier by the author, published details and data on certain types of trichiurids in British Museum, Paris Museum and Leiden Museum, the four new species of ribbon-fishes (Family-Trichiuridae) recently reported from India were commented upon. Of these, the two new species *Trichiurus russelli* and *Lepturacanthus serratus* described by Dutt and Thankam (1966, issued 20-7-'67) from Waltair are synonymised with *Trichiurus pantului* and *Trichiurus gangeticus* reported earlier by Gupta (1966, issued 25-2-'67) from the Hooghly estuarine system, of which *T. pantului* is considered a synonym of *Trichiurus lepturus* Linnaeus. Further, *T. pantului* agrees with *T. lajor* Bleeker (= *T. lepturus*). The other species, *T. gangeticus*, which should correctly be designated as *Lepturacanthus gangeticus* (Gupta) because of its greater affinity to genus *Lepturacanthus* than to *Trichiurus*, might prove to be distinct, especially based on its meristic counts and serrations in pectoral spine, if, particularly, the combination of characters of other species it exhibits, the serrations in the dorsal, anal and pelvic spines of young stages of other species of ribbon fishes which are

similar to those in its pectoral spine (which perhaps suggest the coherence of the group) and its restricted distribution are proved to be of no significance.

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TABLE I

Data\* on types of trichiurids from British Museum, Paris Museum and Leiden Museum.

S. No.	Character	British Museum <i>Trichiurus armatus</i> Gray Holotype BMNH 1955.5.131 India.	Paris Museum <i>Trichiurus savala</i> (Cuvier) Syntypes			Leiden Museum <i>Trichiurus roelandti</i> Bleeker Holotype RMNH. 6032 Soengadoeri, Western Borneo.	
			A. 5357 Bombay	A. 5358 Malabar			
				1	2		3
1.	Total length .. .. .	411	870	525	580	300	Ca 880
2.	Snout-vent length .. .. .	123.3	340	190	208	100	285
3.	Depth at vent .. .. .	23.9	55	36	41	17	46
4.	Head length .. .. .	49.7	140	77	85	39	97.5
5.	Eye diameter .. .. .	6.9	23	9	9	7	10
6.	Diameter of pupil .. .. .	3.0	11	4	4	3	3?
7.	Length of second anal spine .. .. .	2.85	?	4	4.5	1.5(?)	6.5
8.	Anterior margin of pectoral spine-serrated or not	Not serrated	Not serrated	Not serrated	Not serrated	Not serrated	Not serrated.

\* Measurements in millimeters.

TABLE II

Comparison of body proportions of *T. gangeticus* Gupta (1966), of six paratypes of the same, of *L. serratus* Dutt & Thankam (1966) and of comparable specimens from Palk Bay and Gulf of Mannar:

S. No.	Character	<i>T. gangeticus</i> †		<i>T. gangeticus</i> (Paratypes) (98-121 mm. S-V. length)		<i>L. serratus</i> * (109-512 mm. S.L.)		Specimens from Palk Bay and Gulf of Mannar (48-162 mm. S-V. length)			
		Range	Mean	No. of specimens	Range	Mean	No. of specimens	Range	No. of specimens	Range	Mean
<b>IN STANDARD LENGTH</b>											
1.	Head length	9.18-11.23	10.13	6	9.24-9.88	9.61	164	9.09-10.63	15	8.23-10.75	9.87
2.	Depth of body	18.10-23.30	20.88	6	19.22-22.40	20.71	164	21.25-33.06	15	15.42-28.28	21.27
3.	Snout-vent length	3.71-4.49	4.11	6	3.81-4.21	3.99	—	—	15	3.54-4.16	3.92
<b>IN HEAD LENGTH</b>											
1.	Height of head	2.63-3.16	2.84	4	2.80-3.06	2.95	—	—	19	2.66-3.54	2.98
2.	Snout	2.61-2.93	2.81	6	2.80-2.94	2.95	—	—	19	2.55-3.00	2.80
3.	Eye diameter	5.67-6.77	6.22	6	6.00-6.66	6.17	—	—	19	5.71-7.33	6.42
4.	Pectoral length	2.32-2.68	2.46	6	2.38-2.86	2.59	—	—	18	2.28-2.78	2.58
5.	Maxillary length	2.09-2.67	2.51	4	2.40-2.52	2.44	—	—	19	2.30-2.66	2.48
<b>IN SNOUT</b>											
1.	Eye ..	2.00-2.46	2.22	6	2.13-2.26	2.15	164	1.93-2.25	19	2.00-2.55	2.28
<b>IN SNOUT-VENT LENGTH</b>											
1.	Head length	2.33-2.66	2.48	6	2.27-2.46	2.40	—	—	19	2.32-2.57	2.48
2.	Height of head	No data	—	4	6.86-7.33	7.19	—	—	19	6.85-8.72	7.43
3.	Depth of body	4.77-5.77	5.17	6	4.90-5.50	5.17	—	—	19	4.34-7.00	5.29
4.	Eye diameter	No data	—	6	14.00-16.13	14.86	—	—	19	14.00-18.00	15.96
5.	Predorsal distance	No data	—	6	3.26-3.50	3.36	—	—	19	3.20-3.76	3.45
6.	Height of longest dorsal fin ray	No data	—	6	3.92-4.65	4.34	—	—	19	4.47-6.53	5.14

† Number and size range of specimens not indicated.

\* Description stated to be based on 164 specimens but it is not known whether body proportions and meristic counts are also based on same number



TABLE III

*Body proportions as hundred times ratios to snout-vent length of six paratypes of T. gangeticus, of comparable specimens from Palk Bay and Gulf of Mannar and of L. savala*

S.No.	Character	<i>T. gangeticus</i> (paratypes) (98-121 mm. S-V. length)			Specimens from Palk Bay and Gulf of Mannar (48-162 mm. S.-V. length)			<i>L. savala</i> (93.0-197.0 mm. S-V. length)		
		No. of speci- mens	Range	Mean	No. of speci- mens	Range	Mean	No. of speci- mens	Range	Mean
1.	Head length .. ..	6	40.56-43.87	41.60	19	38.70-43.06	40.23	32	39.38-46.66	41.61
2.	Height of head .. ..	4	13.63-14.56	13.90	19	12.82-14.59	13.48	32	12.74-16.19	14.22
3.	Depth of body .. ..	6	18.18-20.40	19.33	19	14.28-22.99	19.25	32	18.84-22.63	20.14
4.	Eye diameter .. ..	6	6.19-7.14	6.73	19	5.55-7.14	6.29	32	4.06-7.36	6.28
5.	Predorsal distance .. ..	6	28.51-30.61	29.71	19	26.58-31.25	28.91	32	26.90-31.82	29.50
6.	Height of longest dorsal fin ray ..	6	21.48-25.51	23.08	19	15.30-22.33	19.59	31	13.65-19.04	16.55

TABLE IV

Comparison of meristic counts\* of *T. gangeticus* Gupta (1966), of two paratypes of the same, of *L. serratus* Dutt & Thankam (1966), of comparable specimens from Palk Bay and Gulf of Mannar and of *L. savala* §

S. No.	Character	<i>T. gangeticus</i>	<i>T. gangeticus</i> (paratypes)	<i>L. serratus</i>	Specimens from Palk Bay and Gulf of Mannar	<i>L. savala</i> §
1.	Dorsal fin (aggregate)	120-133	120, 124(2)	124-127(164)	122-127(12)	112-115(14)
2.	Anal fin (aggregate)	73-89	89, 94(2)	88-99(164)	76-93(12)	76-79(14)
3.	Precaudal vertebrae	no data	34(1)	—	32-36(12)	35-38(14)
4.	Caudal vertebrae	no data	146 †, (1)	—	132 † to 150 †, (10)	133-139(9)
5.	Total vertebrae	no data	180 †, (1)	178-188(164)	167 † to 184 †, (10)	169-174(8)
6.	Number of vertebra at end of dorsal fin	no data	121, 125(2)	—	123-128(12)	113-116(14)
7.	Number of vertebra at end of anal fin	no data	124, 129(2)	—	125-129(12)	115-119(14)

\* The range is given followed by number of specimens examined in parentheses.

† denotes that tail is incomplete.

§ Counts revised from memoir (James, 1967) after separation of individuals with serrated pectoral spine.

TABLE V.

Comparison of body proportions of *T. pantului* Gupta (1966), of six paratypes of the same, of *T. russelli* Dutt & Thankam (1966), of two comparable specimens collected from Hooghly estuary in 1960 and of *T. lajor* Bleeker††

S. No.	Character	<i>T. pantului</i> †		<i>T. pantului</i> (paratypes) (105-121 mm. S-V. length)			<i>T. russelli</i> * (257-465 mm. S.L.)		Specimens from Hooghly estuary 1960 (105 and 110 mm. S-V. length)			
		Range	Mean	No. of specimens	Range	Mean	No. of specimens	Range	No. of specimens	Range	Mean	<i>T. lajor</i> Bleeker
<b>IN STANDARD LENGTH</b>												
1.	Head length ..	7.98-8.76	8.32	6	8.32-8.66	8.51	30	7.14-8.20	Tail incomplete		7.96	
2.	Depth of body ..	13.86-16.73	15.52	6	14.60-16.71	16.00	30	12.92-15.29	Tail incomplete		16.92	
3.	Snout-vent length	3.01-3.57	3.13	6	3.18-3.28	3.21	..	..	Tail incomplete		2.93	
<b>IN HEAD LENGTH</b>												
1.	Height of head ..	2.49-2.89	2.72	4	2.80-2.89	2.83	..	..	2	2.82-2.83	2.82	..
2.	Snout ..	2.84-3.22	3.02	6	2.89-3.06	2.97	..	..	2	2.82-2.93	2.87	..
3.	Eye diameter ..	5.33-6.64	6.07	6	5.60-6.57	5.92	..	..	2	5.31-5.85	5.58	5.00
4.	Pectoral length ..	2.86-3.48	3.17	6	2.87-3.40	3.19	..	..	2	3.15-3.26	3.20	4.00
5.	Maxillary length	2.28-2.61	2.41	4	2.21-2.35	2.29	..	..	2	2.23-2.34	2.28	..
<b>IN SNOUT</b>												
1.	Eye ..	1.79-2.27	2.02	6	1.92-2.14	1.98	30	1.55-1.81	2	1.81-2.07	1.94	..
<b>IN SNOUT-VENT LENGTH</b>												
1.	Head length ..	2.44-2.81	2.67	6	2.60-2.71	2.64	..	..	2	2.56-2.58	2.57	2.69
2.	Height of head ..	No data	..	4	7.33-7.79	7.55	..	..	2	7.24-7.33	7.28	..
3.	Depth of body ..	4.47-5.51	4.99	6	4.56-5.24	4.97	..	..	2	5.00-5.50	5.25	5.69
4.	Eye diameter ..	No data	..	6	15.00-17.28	15.69	..	..	2	13.75-15.00	14.37	13.45
5.	Predorsal distance	No data	..	6	3.40-3.78	3.61	..	..	2	3.50-3.60	3.55	..
6.	Height of longest dorsal fin ray	No data	..	6	4.14-4.91	4.57	..	..	2	4.28-5.11	4.69	..

† Number and size range of specimens not indicated.

\* Description stated to be based on 30 specimens but it is not known whether body proportions and meristic counts are also based on same number.

†† From original description and data on type.

TABLE VI

Body proportions as hundred times ratios to snout-vent length of six paratypes of *T. pantului* and of *T. lepturus*

S. No.	Character	<i>T. pantului</i> (Paratypes) (105.-121 mm. S-V. length)			<i>T. lepturus</i> (94.5-302.0 mm. S-V. length)		
		No. of specimens	Range	Mean	No. of specimens	Range	Mean
1.	Head length .. ..	6	36.86-38.42	37.74	43	38.59-45.67	41.06
2.	Height of head .. ..	4	12.83-13.63	13.23	43	13.94-16.87	15.05
3.	Depth of body .. ..	6	19.06-21.90	20.13	43	14.73-21.33	18.50
4.	Eye diameter .. ..	6	5.78-6.66	6.38	43	5.62-8.23	6.76
5.	Predorsal distance .. ..	6	26.44-29.33	27.66	43	26.31-31.27	28.63
6.	Height of longest dorsal fin ray ..	6	20.35-22.38	21.90	43	11.03-17.88	15.06

TABLE VII

Comparison of meristic counts\* of *T. pantului* Gupta (1966), of two paratypes of the same, of *T. russelli* Dutt & Thankam (1966), of *T. lajor* Bleeker† and of *T. lepturus*

S. No.	Character	<i>T. pantului</i>	<i>T. pantului</i> (paratypes)	<i>T. russelli</i>	<i>T. lajor</i> Bleeker	<i>T. lepturus</i>
1.	Dorsal fin (aggregate) .. ..	123-132	128, 132(2)	129-134(30)	128	134-139(13)
2.	Anal fin (aggregate) .. ..	90-103	98, 101(2)	..	90?	105-111(13)
3.	Precaudal vertebrae .. ..	no data	35, 37(2)	..	..	38-40(13)
4.	Caudal vertebrae .. ..	no data	140, 141(2)	..	..	127-137(13)
5.	Total vertebrae .. ..	no data	175, 178(2)	146-149(30)	..	167-175(13)
6.	Number of vertebra at end of dorsal fin ..	no data	127, 133(2)	..	..	135-140(13)
7.	Number of vertebra at end of anal fin ..	no data	136, 138(2)	..	..	143-148(13)

\* The range is given followed by number of specimens in parentheses.

† From original description.