

V. — CONTRIBUTIONS TO THE KNOWLEDGE OF INDO-AUSTRALIAN FISHES.

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1. ABOUT THE NOMENCLATURE OF THE SPECIES OF FISTULARIA.

The species of *Fistularia* have caused much trouble and misunderstanding as to their proper names.

Formerly there were 2 species known, in Günther's Catalogue ²⁾ distinguished as *F. tabaccaria* L. and *F. serrata* Cuv.

F. tabaccaria is restricted to the tropical Atlantic and easily distinguished by the upper lateral edge of the snout (formed by the prefrontal and metapterygoid) which is nearly smooth, being only slightly crenulated in the adult, and by the blue spots and stripes on the upper parts of head and body.

F. serrata Cuv. is immaculate, the upper lateral edge of the snout sharply serrated and its habitat in all tropical seas.

In 1880 Günther ³⁾ found, that his *F. serrata* Cuv. contained two different species, which he separated on the following characters:

„Interorbital space concave: the two middle ridges on the upper surface of the snout, run close and parallel to each other along the anterior half of the length of the snout. Body moderately depressed with minute asperities, which render the skin rough to the touch". *F. serrata*.

„Bones of the head less deeply sculptured than in *Fistularia serrata*, but with the upper lateral edges of the snout likewise serrated. Interorbital space nearly flat. The two middle ridges on the upper surface of the snout are not very close together, and diverge again on the anterior half of the length of the snout, converging finally on the foremost part. Body much depressed, nearly smooth, the asperities of the skin being scarcely perceptible". *F. depressa*.

It was correct, that Jordan & Evermann ⁴⁾ chose an other name for *F. serrata* Cuv. sensu Günther, as it could not be made out, which of the two species of Günther had to be understood under the original name of Cuvier. The american authors applied therefore the

1) The first "Contribution" appeared in „Verhand. Kon. Akademie van Wetenschappen", Amsterdam XVII. N^o. 3, Nov. 1912.

2) Günther, Cat. Brit. Mus. III. 1859—1861, p. 529 and 533.

3) Günther, Challenger Report vol. VI, 1880, Shore fishes, p. 68 & 69.

4) Jordan & Evermann, Fishes North and Middle America I, 1896, p. 758.

name *petimba*, used by Lacépède¹⁾ for a specimen of *Fistularia* collected by Commerson in the indo-pacific region and of which Lacépède could dispose.

Günther²⁾ had treated it as a synonym of *F. tabaccaria*, in which he was wrong, as Lacépède states, that it is immaculate, and that the lateral ridges of the snout „sont dentelés comme les bords d'une scie”.

F. petimba Lac. belongs therefore to the group *serrata* Cuv. (= *serrata* sensu Günther and *depressa* Günther).

The new question now to be solved, is to which of the two *F. petimba* Lac. belongs.

Jordan & Evermann³⁾ united it with *serrata* sensu Günther, an opinion already formerly expressed by Jordan & Gilbert⁴⁾, maintained by Jordan & Snyder⁵⁾ and by Jordan & Starks⁶⁾ in a complete diagnosis of the two species.

This opinion was also accepted by Jungersen⁷⁾ and by M. Weber⁸⁾.

This nomenclature underwent again a change by Jenkins⁹⁾, who quoted, without any explanation of his motives, *F. depressa* Gthr. as synonymous with *F. petimba* Lac. and again used the name *serrata* Cuv. with *petimba* Jordan & Sn. as synonym. This proceeding was furtheron accepted in the numerous lists of fishes published by Jordan and his collaborators f. i. by Jordan & Evermann¹⁰⁾.

Renewed study of the representatives of *Fistularia* and of the descriptions of Lacépède has converted us to acknowledge the view that indeed *F. petimba* Lac. is identical with *depressa* Günther and not with *serrata* sensu Günther. One of us had formerly embraced the opposite older opinion of Jordan & Starks, as Lacépède¹¹⁾ says in his diagnosis: „La ligne latérale est droite; elle est, de plus, dentelée depuis l'anús

1) Lacépède, Hist. Nat. Poissons V. 1803, p. 349.

2) Günther, Cat. Brit. Mus. III. 1859—1861 p. 529.

3) Jordan & Evermann, Fishes North and Middle America I, 1896, p. 758.

4) Jordan & Gilbert, Synopsis Fishes North America, Bull. U. S. Nat. Mus. No. 16 (1882) 1883, p. 390.

5) Jordan & Snyder, Proc. U. S. Nat. Mus. Wash. vol. XXIII. 1900, p. 350.

6) Jordan & Starks, Proc. U. S. Nat. Mus. Wash. vol. XXVI. 1902, p. 67.

7) H. Jungersen, Ichthyotomical Contributions II. Vidensk. Selsk. Skr. Kjöbenhavn (7) afd. VIII. 5, 1910, p. 280, 336.

8) M. Weber, Siboga-Expeditie, Fische, 1913, p. 101.

9) Jenkins, Bull. U. S. Fish Comm. XXII. (1902) 1904, p. 437.

10) Jordan & Evermann, Shore-fishes. Hawaiian Islands. Bull. U. S. Fish Comm. XXIII. (1903) 1905, p. 116.

11) Lacépède, Hist. Nat. Poissons V. 1803, p. 351.

jusqu'à l'endroit où elle se termine", which corresponds with the statement of Jordan & Starks: "The lateral line is armed posteriorly with sharp bony plates", but Jordan & Evermann¹⁾ themselves used later on this character in quite an opposite meaning in the key to discriminate the species of *Fistularia*. They write:

- a. the long plates of posterior portion of lateral line unarmed *petimba*.
- aa. long plates of lateral line each armed with a compressed spine directed backwards *serrata*.

Under *F. petimba* Lac. they understand now *F. depressa* Gthr., meanwhile Jungersen²⁾ had shown that this character is of no specific value.

We have therefore to look at other indications in the diagnosis of Lacépède.

It says: „La peau est unie, et n'est pas garnie d'écaillés facilement visibles". This points to *F. depressa* Günther, for it is known, and Jungersen has demonstrated it over again, that this species is naked even in the youngest stage, while Jordan & Starks³⁾ correctly remarked for *F. petimba* Lac. „the species may be at once distinguished by the touch, the skin feeling harsh like very fine shagreen".

Finally the following is of importance in this direction.

It was under the influence of a remark of Steindachner, that Günther⁴⁾ — as he avows himself expressly — divided *serrata* of his „Catalogue" into *F. depressa* Gthr. and a second species for which e, again in accordance with Steindachner, maintained the name *F. serrata*.

At first therefore also Steindachner used accordingly these specific names, but in his communication⁵⁾ about fishes from Samoa he changes his opinion. He mentions sub N^o. 157 a species:

„*Fist. petimba* Lacép. sec. Jenkins, Jord. et Everm. (= *F. depressa* Gthr.)".

His latest opinion is therefore also, that *F. depressa* Gthr. is identical with *F. petimba* Lac.

Now rises the other question: may the name *serrata* be maintained.

Without regard to the changes which underwent its appreciation, its content was doubtful from the beginning.

Cuvier⁶⁾ based it on the drawing of the head of a *Fistularia*,

1) Jordan & Evermann, l. c. p. 116.

2) l. c. p. 282.

3) l. c. p. 68.

4) Günther, Challenger Report, Shore-Fishes, VI. 1880, p. 68.

5) Steindachner, Sitzber. Akad. Wien, 1906, p. 1419.

6) Cuvier, Règne animal II, 1817, p. 349, note.

which was published by Bloch¹⁾. The only conclusion with certainty to be derived from it is, that the drawing is not one of *F. tabaccaria*, but otherwise it is impossible to make out if it represents the head of *F. petimba* Lac. (= *depressa* Gthr.) or of *F. serrata* sensu Günther, for there are wanting the cristae on the dorsal surface of the snout by which the two species are easy to discriminate. In case the name *serrata* is to be maintained, Günther is to be recognized as author and the species ought to be named *F. serrata* Günther (1880) [G. Cuvier p.p.]; but properly its name ought to be *F. villosa* Klunzinger (1871), for the young specimen, described by Klunzinger under that name, is without question identical with the fish later on described by Günther as *F. serrata*. This follows immediately from the fact that the skin is covered with spinelets and also from the strongly concave front.

Our conclusion is therefore that the synonymy of the two species is as follows:

F. petimba Lac.

F. serrata Günther (Catalogue 1859—1861 p.p.). — *serrata* Klunzinger (1871). — *depressa* Günther (1880). — *depressa* Jordan & Evermann (1896). — *depressa* Jordan & Starks (1902). — *petimba* Jenkins (1904). — *petimba* Jordan & Evermann (1905). — *petimba* Steindachner (1906). — *depressa* M. Weber (1913).

F. villosa Klunzinger.

F. serrata Cuvier (1817 p.p.). — *serrata* Günther (Catalogue 1859—1861 p.p.). — *villosa* Klunzinger (1871). — *serrata* Günther (1880). — *petimba* Jordan & Evermann (1896). — *petimba* Jordan & Starks (1902). — *serrata* Jenkins (1904). — *serrata* Jordan & Evermann (1905). — *petimba* M. Weber (1913).

2. SOME REMARKS ABOUT THE VALIDITY OF THE NAME GASTROTOKEUS KAUP.

It is easy to demonstrate that the generic name *Syngnathoides* of Bleeker has preference above the name *Gastrotokeus* Kaup (Arch. f. Naturgesch. XIX. 1853, p. 230 and Cat. Lophobranch. fish London 1856, p. 18). The latest author about *Syngnathidae* G. Duncker (Mitt. Naturhist. Mus. Hamburg 1915), to whom we are indebted for a valuable monograph about this group of fishes, seems to have been

1) Bloch, Ichth. 1794, tab. CCCLXXXVII. fig. 2.

2) Klunzinger, Synopsis Fische Roth. Meeres, Abhandl. zool.-bot. Ges. Wien, Bd. XXI. 1871, p. 516.

in doubt about this question, for in quoting (p. 38) *Syngnathoides* Bleeker 1851 under the synonyms of *Gastrotokeus* Kaup 1856, he adds behind the quotation („Diagnose unvollständig”).

Now Bleeker (Nat. Tijdschr. Ned. Indië II. 1851, p. 231) says: „De soorten van *Syngnathus* Cuv., welke slechts rug-, borst- en aarsvinnen bezitten en de staartvin missen, breng ik onder den generischen naam van *Syngnathoides Blochii*”¹⁾. On page 259 he gives a very good and extensive description of *Syngnathoides Blochii* Blkr., which is without any doubt identical with *Gastrotokeus biaculeatus* (Bl.) of Kaup and later authors; besides, Bleeker himself quotes *Syngnathus biaculeatus* Bloch as a synonym.

The description of Bleeker's genus *Syngnathoides*, completed by the very sufficient description of the typical species (the only one of the genus!), cannot therefore be called „unvollständig”, the less so as Bleeker (Verh. Batav. Genootsch. XXV. 1853, Bijdr. Kennis d. Troskieuwige visschen) in 1853, in his list of lophobranchiate fish, quotes on page 5: „14. *Solegnathus Blochii* Blkr. = *Syngnathus tetragonus* L. Gmel. = *Syngnathus biaculeatus* Bl. Cant. = *Syngnathoides Blochii* Blkr.” He had thus changed his opinion and thinks his *Syngnathoides* identical with *Solegnathus* of Swainson of 1839. It is of no interest, that this opinion was erroneous; more important is, that he gives on pag. 9 the following definition of *Solegnathus*: „Pinnæ dorsalis, pectorales. Cauda prehensilis aptera. Caput collo indistincto vel non curvato cum trunco unitum”. As Bleeker's *Solegnathus* is identical with his *Syngnathoides* and the quoted definition certainly may be called sufficient, the more so as it is completed on pag. 12 by a description of the single species, there can be no doubt about what is to be understood under *Syngnathoides* Bleeker 1851 and 1853.

We understand very well the difficulty of Duncker to abolish the name *Gastrotokeus*, in common use since 1856 and to change it for a much less preferable name. But even when one lacks sympathy for the modern rules of nomenclature, there can not be any doubt, that the name *Syngnathoides* has the priority. Kaup himself quotes it as a synonym of *Gastrotokeus*. But in his time a lack of feeling prevailed for nomenclatorial rights. Kaup puts behind the generic name *Gastrotokeus* „Heck.”, indicating therefore Heckel as author of the name. But as we did not know of any publication of Heckel before 1856

1) Translated: „The species of *Syngnathus* Cuv., which have only dorsal, pectoral and anal fins and are wanting a caudal, I have united under the generic name of *Syngnathoides*, reason why I have named *Syngnathus biaculeatus* Bl.: *Syngnathoides Blochii*”.

in which he used the name *Gastrotokeus*, we asked the late Dr. F. Steindachner for information. He was kind enough to inform us, that in the Museum of Vienna, then under his charge, there is a bottle containing 2 specimens of Bloch's *Syngnathus biaculeatus* with the label: „*Gasterotokeus biaculeatus* Heck. 1845, III. 24 Neu Guinea”. Dr. Steindachner writes: „Zweifellos hat Heckel an Dr. Kaup, als dieser zur Bearbeitung der Lophobranchier sich entschlossen hatte, mehrere Exemplare dieser Art als *Gasterot. biaculeatus* zugesendet und der Empfänger, der Sitte der Zeit entsprechend, den von Heckel vorgeschlagenen Gattungsnamen beibehalten, da ja doch Heckel zuerst die Notwendigkeit einer generischen Trennung der Bloch'schen Art *Syn. biaculeatus* von *Syngnathus* erkannt hatte”.

Gastrotokeus Heckel is therefore a museum name and it dates only from the year 1853, when Kaup published the first description of it. *Syngnathoides* Bleeker is evidently the older name provided with a sufficient diagnosis.

An other question is connected with the specific name „*biaculeatus*” introduced in 1785 by Bloch (Ausl. Fische i. 1785, p. 10; plate 121, fig. 1) when he described his *Syngnathus biaculeatus*. The question is if this name is older than the name „*tetragonus*” given by C. P. Thunberg to a *Syngnathus*, which he described in his article „Beskrifning på *Syngnathus tetragonus*, en obekant Fisk ifran Java”, and which is identical with *Syngnathus aculeatus* Bloch. The article of Thunberg appeared in Physiographisk Selskabets Handlingar, Lund t. I, which was edited between 1776 and 1786. As the article of Thunberg appears on page 301 of that volume it was possible that it was published before 1785. Prof. Einar Lönnberg of Stockholm was kind enough to inform us, that part 4 of the first volume contained the articles 28—33 and was distributed in May 1786. It is therefore probable that Thunberg's article (N^o. 30) appeared already in 1785 or even earlier and that therefore his name *S. tetragonus* is prior to *S. biaculeatus* Bloch. One is the more inclined to that supposition as in the 13th edition of Linné's Syst. nat. edited in 1788 by Gmelin the species in question is called on p. 1453 *Syngnathus tetragonus* and Thunberg is quoted as author, while *Syngnathus biaculeatus* Bloch is quoted as a synonym. But it cannot be proven that Gmelin was right in doing so, for Prof. Lönnberg had the kindness to ask the present secretary of the Physiographic Society of Lund for further information. He kindly informed us, that the „protocol” of the Society contains nothing about the date of Thunberg's article. As no further information is available, there is no reason to abolish the timehonoured name *S. biaculeatus* of Bloch.

3. On *Sphyraena picuda* Bl. Schn.

We don't think it possible to separate the indo-pacific *S. commersoni* C. V. from the atlantic *S. picuda* Bl. Schn. The differences between the two, as mentioned by different authors, do not hold good. According to Cuvier & Valenciennes (Hist. Nat. Poissons III, 1829, p. 343), the atlantic species misses the small teeth on the palatines behind the canines. Bleeker (Verh. Bat. Gen. XXVI, 1849, Bijdr. Sphyraenoiden, p. 16) thought that this was a difference between the two species. This is however not the case, Jordan & Evermann f. i. describe them in their „Fishes of North America, Part I, 1896, p. 823” and we found them too in a specimen from Curaçao. At the time that Günther prepared the second volume of the „Catalogue”, the British Museum did not possess any specimens of *S. commersonii*; Günther followed therefore Bleeker's description of this species. The chief differences between the two species, here under consideration, are according to Günther that in *S. picuda* the insertion of the dorsal would be in a vertical with that of the ventrals, whereas in *S. commersonii* the dorsal is inserted behind the ventrals. The statement for *S. picuda* is erroneous; as well as in *S. commersoni* in *S. picuda* the dorsal begins behind the ventrals.

Fowler says of *S. snodgrassi* Jenk., which is a synonym of *S. commersoni*: „close to *S. baracuda* (= *picuda*) of the West Indies, apparently differing in the shorter maxillary”. This difference too does not hold good: In a specimen of 316 mm length from Curaçao the maxillaries go 2.3 in head, in a specimen of 350 mm. from Celebes 2.2. In these two specimens of about the same length, the atlantic has, to the contrary of Fowler's statement, the shorter maxillary. We have carefully compared the two specimens mentioned above and cannot find any difference, either in height, length of head or position and length of fins, or in the form or number of teeth or in the number of scales.

Bleeker (Ned. Tijdschr. Dierk. II, 1865, p. 265) described a specimen from the Antilles as *S. commersonii* and remarks: „On ne savait pas jusqu'ici que cette espèce habite aussi l'Océan Atlantique. L'individu, qui a servi à ma description provenant des Antilles et conservé au Musée de Leide sous le nom de *Sphyraena picuda*, ne diffère pas spécifiquement des individus de l'Archipel Indien, décrits dans mon mémoire cité. Je l'ai comparé avec des individus indo-archipélagiques de précisément la même taille et je n'ai pu trouver la moindre différence.” It is curious that Bleeker, with these facts before him, does not seem to have doubted the validity of *S. picuda* and only mentions that his specimen was labelled by that name. The small teeth on the palatines,

on which he laid so much stress in 1849 (vide supra), are not even mentioned in his excellent description. In any case it shows that Bleeker was not able to separate the atlantic and the indo-pacific species.

Sphyraena agam Rüppell from the Red Sea, as described by Klunzinger (Fische des Rothen Meeres I, 1884, p. 128), most probably belongs to *S. picuda*. The range of this species therefore reaches from the Red Sea and Madagascar to the Philippines and Hawaiian Islands in the Indic and Pacific, and from Brazil to the Bermuda Islands in the West Atlantic.

4. Some remarks about *Hemirhamphus erythrorhynchus* Lesueur (Lesueur, Journ. Acad. Nat. Sc. Philad. II, 1821, p. 137).

Bleeker mentions this fish three times (Journ. Ind. Arch. III (1848) 1849, p. 67 & 68; Nat. Tijdschr. Ned. Indië II, 1851, p. 214; Act. Soc. Sc. Indo-Neerl. VIII, 1860, 13^{de} bijdr. Celebes, p. 47) each time from Makassar, but in his later publications as well as in the „Atlas Ichthyologique” no mention whatever is made of this species, which is ranged amongst the doubtful species by Günther and has been — with a query — very briefly and unsufficiently described by Kner (Fische Novara Exp. 1865—1867, p. 324) from Ceylon. We are at a loss which species was meant by Bleeker. Lesueur has described a variety of his *erythrorhynchus* too (l. c), and this variety has been united by Cuvier & Valenciennes (Hist. Nat. Poissons XIX, 1846, p. 35) with *H. dussumieri* (not with *H. gaimardi* as the authors themselves state by mistake on p. 41). It is thus possible that Bleeker meant *H. Dussumieri* by his *erythrorhynchus*.

We have examined the specimens mentioned above and described by Kner as *H. erythrorhynchus* Lesson?. They seem to us to belong to *H. xanthopterus* C. V. as described by Day.

5. On *Gagata schmidti* (Volz).

One of us has had lately the opportunity of studying some fishes in the Natural History Museum of Vienna. Among the fishes examined, was the type of *Callomystax Schmidti*, a Silurid described by Volz (Revue Suisse de Zool. XII, 1904, p. 470) from Sumatra, and inserted in our „Fishes of the Indo-australian Archipelago” vol. II, 1913, p. 269 under the name of *Gagata Schmidti*, the name *Gagata* of Bleeker having priority above *Callomystax* of Günther.

An examination of the type specimen showed however, that the specimen possesses a well developed adhesive apparatus between the

bases of the pectorals and that it belongs to the genus *Glyptosternum*. Further investigations showed it to belong to *G. platypogon* (C. V.), a rather common species from mountain streams and rivers of Java, Sumatra and Borneo.

Callomystax schmidti has therefore to stand as a synonym of *G. platypogon* (C. V.). The other members of the genus *Gagata* live in rivers of British India and Burma, so that the genus disappears from the list of Indo-australian fishes.

The range of the genus, curiously discontinuous as long as it was believed that a species occurred in Sumatra, is now quite comprehensible.

6. On *Stiphodon elegans* (Steind.).

One of us (de Beaufort, Bijdragen tot de dierkunde, Afl. 19, 1913, p. 143) expressed the opinion, that the Gobiid *Sicydium elegans* Steindachner (Sitzber. Akad. Wien LXXX. 1879, p. 152) from the Society Islands was the same as *Stiphodon semoni* Max Weber (Semon, Forschungsreise v. 1895, p. 270) from the indo-australian Archipelago. We compared typical specimens of lastnamed species with Steindachner's types in the Vienna Museum and could find no differences between the two.
