

## NOTE ON THE POMATOMIDÆ.

BY THEODORE GILL.

In 1862, in a "Synopsis of the Carangoids of the Eastern Coast of North America" (Proc. Acad. Nat. Sci. Phila., 1862, pp. 430-443), the family of Carangoids was limited, the chief subfamilies defined, and one established for the blue-fish and named "Pomatominae," but the statement was made that "although the genus *Pomatomus* Lac. (*Temnodon* Cuv.) is here retained in the family, I am not certain that it truly belongs to it" (p. 430). Two years later I proposed and defined a peculiar family for the genus. In the catalogue of the fishes of the eastern coast of North America, in 1873, it was intended to have been placed, as were all the families 60-65, among the Acanthopteri "incertæ sedis," but through some inadvertence the word "incertæ sedis" was omitted. In order to determine the affinities of the doubtful form, I have re-examined the fish and its skeleton, and am now satisfied that the approximation of the type to the Carangidæ was correct, but still believe that it should be regarded as a peculiar family group. Pending a more detailed comparative study of the Scombroids, this may be briefly diagnosed as follows:

## POMATOMIDÆ.

*Synonym as family.*

= Pomatomidæ, Gill, Can. Nat., n. s., v. 2, p. 246 (defined), 249, Aug., 1865.

= Pomatomidæ, Gill, Cat. Fishes E. Coast N. Am., p. 10 (name only), 1873.

*Synonym as subfamily.*

= Pomatominae, Gill, Proc. Acad. Nat. Sci. Phil. [v. 14,] pp. 431 (defined), 443, 1862.

Scombroidea of Carangoid aspect, with the lateral line nearly parallel with the back (not angulated toward the middle) and elevated behind, and continuous on the base of the caudal; soft vertical fins densely scaly, and anal spines inseparable from the rayed portion.

## NOTE ON THE AFFINITIES OF THE EPHIPPIIDS.

BY THEODORE GILL.

The Ehippiids, although presenting a superficial resemblance to the Chætodontids, otherwise exhibit such peculiarities as to have made me doubtful respecting their affinities, and to consider the family as incertæ sedis. The post-temporal bones were found to be bifurcated and thus failed to fulfill the requisites of Professor Cope's suborder Epilasmia wherein the Chætodontidæ were arranged. To satisfy myself as to

their relations, I have examined their osteology, and am now convinced that, notwithstanding this deviation, they are most nearly connected with Chætodonts. They exhibit the following external and skeletal characteristics.

### EPHIPPIIDÆ.

#### *Synonymy.*

- = Ehippioids, *Gill*, Proc. Acad. Nat. Sci. Phila. [v. 14,] p. 238 (not defined), 1862.
- = Ehippiidæ, *Gill*, Arrangement Families Fishes, p. 8 (named only), 1872.
- = Ehippidi, *Poey*, Anal. de la Soc. Esp. de Hist. Nat., t. 4, p. 7 (named only), 1875.
- Squamipennes gen., *Curier*, etc.
- Chætodontidæ gen., *Bonaparte*, etc.

### EPHIPPIINÆ.

#### *Synonymy.*

- < Ehippiformes, *Bleeker*, Enum. Sp. Piscium Archipel. Indico, p. xx, 1859.
- < Chætodipteriformes, *Bleeker*, Archives Néerlandaises, t. 11, p. 300 (s. f. of Chætodontoidei), 1876.
- Chætodontinæ gen., *Bonaparte*, *Günther*, etc.

Body much compressed and elevated, highest under the dorsal spines, and with the caudal peduncle short.

Scales of small or moderate size, either very finely ciliated or smooth, covering the whole body and head, and encroaching on uninterruptedly and more or less investing the vertical fins.

Lateral line continuous, parallel with the back and ending at the base of the caudal fin.

Head moderate, much compressed, short and high; eyes moderate, high and lateral, situated nearly midway between the snout and occiput.

Infraorbital chain with the bones decreasing backwards, and none articulated with the preoperculum; preorbital moderately developed.

Opercular bones normal.

Nostrils double.

Mouth moderate, terminal, with the cleft lateral, scarcely extending to the vertical of the eyes. Upper jaw not or little protractile.

Teeth setiform, in a band in each jaw; none on the palate.

Branchial apertures lateral and separated from each by a wide, scaly isthmus.

Branchiostegal rays seven on each side.

Dorsal fin commencing some distance behind the nape, and thence extending nearly to the caudal; its spinous and soft portions are unequally developed; spinous portion highest about the third spine, and emarginated behind; the soft long and elevated in front.

Anal fin similar to and opposite the soft dorsal, and armed in front with three spines.

Caudal fin expanded vertically and with its margin concave.

Pectoral fins normally situated on the scapular cineture, and with its lower rays branched.

Ventral fins thoracic, each with a spine and five rays, the first or second of which is longest.

The vertebræ number 24—10 abdominal and 14 caudal; their bodies are compressed and higher than long. The first two are specially modified: (1) The first has its central portion directed downwards, and its articular facets for the exoccipitals nearly vertical and directed forwards; its spine fits into the second neural spine. (2.) The second vertebra has a very short body, compressed antero-posteriorly, and its spine is erect, and with the basal portion expanded forwards. The other vertebræ are gradually modified.

The anterior zygapophyses are well developed, as are also the posterior of the caudal vertebræ, and about the middle the posterior partly overlap the anterior of the succeeding; inferior zygapophyses are rudimentary; the neurapophyses and neural spines arise direct from the anterior margins of the vertebræ, and those of the middle of the column (*e. g.*, 7 to 16) are erect, while the hindmost gradually decline backwards; the parapophyses of the third to ninth vertebræ arise near the inferior surface of the vertebral bodies, are well developed, spiniform, and are all directed downwards and outwards, and partly (7 to 10) with a hæmal canal; those of the tenth are expanded at their base externally, and their points converge and repose in the first hæmal spine; the first hæmal spine is grooved in front and somewhat expanded mesially. The sockets for the ribs are on the sides of the centra and at the external bases of the (third—eighth) parapophyses.

These characters have been formulated on comparison of specimens in alcohol and skeletons of *Chatodipterus faber* with those of Chætodontids, Serranids, Pristipomatids, &c. The resemblance to the Chætodonts (*e. g.*, *Chatodon* or *Pomacanthus paru*) is much greater than to any other. *Chatodipterus* differs from most fishes, and resembles the typical Chætodontids in the specialization of the two foremost vertebræ, the great development of the parapophyses, and the inferior position of the sockets for the ribs. The skull likewise resembles that of the Chætodontids in general characters, and especially in the oblique occipito-sphenoid axis and the development of the exoccipital condyles. In fine, the Ephippiiids are very closely related to the Chætodontids, but may be distinguished as follows:

Chætodontoidea with a wide scaly isthmus extending from the pectoral region to the chin and separating the branchial apertures; spinous partially differentiated from the soft portion of the dorsal; upper jaw scarcely protractile; ethmoid cariniform above (not sunk and concave) and vomer declivous (not projecting forwards or retuse), parapophyses spiniform and, posteriorly inclosing a hæmal canal, and post-temporal bones bifurcated.

Only two genera certainly belong to the family, *Ephippus* Cuv.

(not Blkr) and *Chatodipterus* Lac. (= *Parephippus* Gill). *Drepane*, according to Cape, is a Carangid, and *Scatophagus*, judging from the figure of its skeleton (Agassiz's *Poissons Fossiles*, t. 4, pl. II. f. 1), belongs to a peculiar family—the *Scatophagida*—the ribs of which are simple and received in sockets comparatively high on the centra, and, apparently,\* the post-temporal is forked. In fact, *Scatophagus* appears to have no direct affinity with the Chatodontids.

#### ON THE RELATIONS OF THE FAMILY LOBOTIDÆ.

BY THEODORE GILL.

Among those families which are "incertæ sedis" has been that designated as Lobotidæ. Its type—*Lobotes surinamensis*—has been almost universally placed with the Pristipomids except by American authors. There was, however, nothing in its physiognomy or characteristics, except the unarmed palate, to justify such a reference, and recent examination shows that the skepticism as to the propriety of such association was amply warranted. On the whole it appears to be most nearly related to the Serranidæ of the families whose characters are to some extent known, and may be provisionally defined as follows:

#### LOBOTIDÆ.

##### *Synonymy.*

< [Lobotidæ] Gill, Proc. Acad. Nat. Sc. Phila., [v. 14,] p. 238 (not named or defined †), 1862.

? Lobotidi Poey, Repertorio Fisico Nat. de Cuba, t. 2, p. 324 (not defined), 1838.

= Lobotidæ, Gill, Cat. Fishes E. Coast N. Am., p. — (not defined), 1873.

Sciënoides gen., Cuvier, etc.

Pristipomidæ gen., Günther, etc.

Percoidæ gen., Bleeker.

Percoidæ with an oblong compressed body equally developed above and below, a short snout and anterior eyes, edentulous palate, dorsal and anal with the soft portions equal and opposite, the former preceded by a much larger spinous portion, the latter with three spines, vertebrae 24, 12 abdominal and 12 caudal; ‡ the fifth to eleventh with short but gradually lengthening parapophyses projecting sideways and behind downwards, and the twelfth with the parapophyses elongated, converging at their extremities, and fitting into a groove of the first haemal spine, the costiferous pits excavated obliquely in the developed parapophyses, and gradually ascending forwards on the vertebrae, and finally

\*The figure given by Professor Agassiz is ambiguous.

† "*Lobotes* Cuvier and *Dalnooides*, Blkr., rather represent a family, perhaps, somewhat allied to the Nandoidæ." Gill, *op. cit.*

‡ Dr. Günther has attributed to the "*L. auctororum*" "Vert. 13 | 11" (Cat. Fishes B. M., i, 338).