

THE OSTEOLOGICAL CHARACTERISTICS OF THE FAMILY SIMENCHELYIDÆ.

BY  
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In 1878 several specimens of a remarkable fish, with an anguilliform body but with a head very unlike that of an eel, were received at the Smithsonian Institution. So different was the fish from an eel that Messrs. Goode and Bean were doubtful as to its relations and referred it to me to determine its affinities, kindly resigning to me the privilege of naming and describing it. I determined it to be the representative of a peculiar family, but to be otherwise a true eel or apodal, and drew up a preliminary description, which was published by Messrs. Goode and Bean in "a list of the fishes of Essex County, including those of Massachusetts Bay," contributed to the "Bulletin of the Essex Institute."\* The new type was introduced in the following terms: †

This strange form has much of the physiognomy of a *Carapus* (*Gymnotus*), and has a short, blunt snout, but is a true Apodal and has an eel-like tail. The branchial apertures are short longitudinal slits on each side of the throat below the pectorals, which are well developed; the dorsal commences about a head's length behind the pectorals, the anal considerably in advance of the second half of the total length. The skin has scales like those of *Anguilla*, linear, scattered, and disposed at right angles to each other. The head is very short; the premaxillaries and maxillaries of each side consolidated into a single piece; and separated from that of the opposite side by the ethmoid, and provided with lamelliform posterior margin and an expanded antero-terminal process; mandible very deep; teeth blunt, uniserial; the operculum saber-shaped. The type appears to belong to the suborder of *Enchelecephali*. The single species (*Simenchelys parasiticus*) is dark brown colored in life, and individuals have been found burrowing into the flesh of the halibut.

After too long an interval, I supplement the diagnosis thus given by the following detailed description of the characters.

Meanwhile the name has appeared in several catalogues and works, and the family has been adopted by Messrs. Goode, Bean, and Jordan.

In 1889 numerous examples of an anguilliform fish were taken in

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\* "Simenchelys parasiticus Gill, MS. Pug-nosed eel. Several specimens of an undescribed eel-like fish were obtained on the halibut trawls, on the off-shore banks." Goode and Bean, *op. cit.*, p. 27.

† Gill MSS. in *op. cit.*, v. 11, p. 27, 1879.

‡ The suggestion that each jaw bone represented an intermaxillary and supra-maxillary (borrowed from Prof. Cope) was not more happy than previous guesses.

nets at the Azore Islands at depths varying from 844 to 2,000 meters by the yacht *Hirondelle*, under the auspices of the Prince of Monaco.\* These were subsequently determined to belong to a peculiar form called by Dr. Robert Collett *Conchognathus Grimaldii*. A comparison of the description given indicates plainly that the supposed new generic type is identical with *Simenchelys*. It has the same scaly skin, short truncated head, small mouth, acrodont teeth, inferior branchial slits, and large "conchiform" lower jaw, reference to which is conveyed in the generic name.†

#### SIMENCHELYIDÆ.

##### *Synonyms as family names.*

- =Simenchelyidæ Gill. (with Goode & Bean), Bull. Essex Inst., v. 11, p. 27, 1879.
- =Simenchelyidæ Gill, Standard Nat. Hist., v. 3, p. 107, 1885.
- =Simenchelyidæ Jordan, An. Rep. Com. Fish. for 1885, v. 13, p. 844, (Sep., p. 56, 1885) 1887.
- =Anguillidæ s. f. Jordan & Gilbert, 1882.
- =Murænidæ gen. Günther, Collett.

##### *Synonym as subfamily name.*

- =Simenchelyinæ Jordan & Gilbert, Syn. Fishes N. Am., p. 357, 1882.

#### *Diagnosis.*

Apodal fishes with a blunt snout, transverse anterior mouth, massive jaws with an acrodont dentition, and inferior longitudinal branchial slits moderately far apart from each other.

#### *Description.*

*Body* stoutly anguilliform, moderately compressed anteriorly, much compressed towards end of tail, and with the anus little in advance of the middle of the total length.

*Scales* small, linear, arranged in small groups obliquely and at right angles to those of the neighboring groups, well embedded in the skin.

*Lateral* line distinct, quite high up, and on each side of the back in front, but gradually declining and near the middle behind.

*Head* small, compressed, ovate laterally, obtuse in front, with all the bones invested in the skin.

*Eyes* about or within the anterior third of the head's length, entirely lateral, small, and covered by thin skin.

*Nostrils* lateral; the posterior close in front of the eye, the anterior on the front of the snout and subtubular.

\* Nombres exemples toujours pris dans les nasses au large des îles de Graciosa, Fayal, San Jorge, Pico, Florès, et Corro, Açores, Juillet et Août, 1888. Profondeur : 844<sup>m</sup> à 2,000<sup>m</sup>. *Op. cit.*, p. 124.

† Diagnoses des poissons nouveaux provenant des campagnes de l'*Hirondelle* par Robert Collett < Bull. Soc. Zool. de France pour 1889, pp. 122-125 (1.—Sur un genre de la famille des *Murænidæ*, pp. 123-125).

*Mouth* with the cleft transverse and slightly extending laterally backwards.

*Jaws* very stout; *maxillines* approximated to the front of the antea, with the clasping processes narrow, selliform, and appressed closely and obliquely to the sides of the antea behind its head; each has a broad, ledge-like extension extending obliquely upwards within along most of the length, and behind expanding downwards into a cleaver-shaped process obliquely truncated behind; *mandible* with the rami very stout, and deep, each dentary has the coronoid process well developed, and the inferior edge is strongly bowed downwards; articular extending forwards on the outer surface of the mandible scarcely in advance of the condyle.

*Teeth* blunt, uniserial, on the edge of the jaws and aerodont.

*Lips* completely suppressed.

*Tongue* large, filling the whole floor of the mouth, with its margin free and bevelled, having a trenchant upper edge.

*Periorbital* bones almost membranous.

*Opercular apparatus* peculiarly developed; *operculum* falciform, inserted nearly midway on the hyomandibular and decurved downwards and then upwards in harmony with the branchiostegal rays; *suboperculum* below and parallel with the operculum; *interoperculum* lamelliform and widened upwards towards its junction with the operculum; *preoperculum* well developed and closely appressed to the suspensorium.

*Branchiotremes* inferior and manifest as longitudinal slits moderately distant from each other.

*Branchiostegals* in reduced number (8-9), moderately stout and partly widening towards their ends, long, and recurved over the operculum.

*Dorsal*, *anal*, and *caudal* confluent into an uninterrupted fin, with the rays readily perceptible through the skin; *dorsal* commencing not very far behind the head; *anal* close behind the anus; *caudal* prominent backwards.

*Pectorals* well developed, near the breast and with narrow bases and median branched rays.

*Branchial arches* nearly complete, with a styliform glossohyal and a much abbreviated urohyal, and with the first and second basibranchials ossified; first and second hypobranchials ossified; third cartilaginous; fourth suppressed; ceratobranchials and epibranchials of four pairs ossified; pharyngobranchials of three (?) pairs connected with epibranchials; those of the last pair developed as thin dentigerous epipharyngeals dislocated towards the ceratobranchials; hypopharyngeals with narrow dentigerous surfaces and closely appressed to the fifth branchial arch.\*

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\* The branchial apparatus described is imperfect and the description may possibly be defective or erroneous.

The family is well marked by the peculiar form of the head and the inferior *longitudinal* branchial fissures, as well as by the massiveness of the jaws and branchiostegals. Only one genus is known, viz:

SIMENCHELYS Gill, with Goode & Bean, Bull. Essex Inst., v. 11, p. 27, 1880 = *Conchognathus* Collett, Bull. Soc. Zool. France, 1889, p. 122.

Type *S. parasiticus* Gill.

The question naturally arises whether the *Simenchelys parasiticus* and *Conchognathus Grimaldii* are distinct. So far as can be judged from the description of Dr. Collett, this question must be answered in the negative. The measurements of two specimens of nearly the same size correspond closely enough for specific purposes except as to height. That measurement for the *Conchognathus Grimaldii* has evidently been obtained from a specimen with a very full belly\* and not at the pectoral or anal region. The measurements from an American specimen are subjoined for comparison with measurements of an Azorean one given by Dr. Collett.

*Measurements.*

	American.	Azores.	
	<i>Mm.</i>	<i>Mm.</i>	
Total length .....	419	417	
Snout to branchial slit .....	34	37	
Snout to dorsal .....	64	67	
Snout to anus .....	184	180	
Height of trunk:			
At pectoral .....	30	.....	
At belly .....	33	40	
At anus .....	23	.....	
Width of mouth .....	11	11	
Diameter of eye-ball .....	6	6	
Length of pectoral .....	18	15	
<i>Numbers.</i>			
Teeth .....	Ocular orbital maxillary	} 28	
Branchiostegals .....			8
Pectoral rays .....			15

\*Le corps est comprimé; le museau est tronqué; le ventre un peu pendant, très dilatable.—Collett, op. cit., p. 124.