

ON THE FAMILY RANICIPITIDÆ.

BY

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(With Plate XVIII.)

In 1872, I named the family *Ranicipitidæ* and in 1884 defined its external characteristics. Not then having a skeleton, however, some doubt was entertained as to its relations as well as standing. A skeleton, since made by Mr. F. Lucas, enables me now to give the full characteristics. The family proves to be nearly related to the *Gadidæ*, but presents some remarkable peculiarities, especially the enlarged system of suborbital bones and the preceding nasal as well as succeeding supraopercular bones.

In 1837, Dr. Richard Parnell first drew attention to the divergence of the genus *Raniceps* from the true *Gadidæ*.* His remarks were as follows:

The œsophagus is short and wide; the stomach is of an oval form, and the intestines are entirely destitute of cœca. In this last respect the tadpole fish is an exception in the family *Gadidæ*, where the cœcal appendages are numerous, so as to form one of the principal characters of that family; and it is evident that Cuvier had not been acquainted with its anatomical structure, for had he been so he would not have placed this fish in the family in which it now stands. A new family ought to be constituted for it, inasmuch as it differs from the *Gadi* in having the head covered with scales, as well as in having the intestines free from cœca.

The intestines are *not entirely* free from cœca, inasmuch as two small ones are present, as in many *Brotulids* and *Lycodids*, nor is the extension of scales on the head a character of family value. Nevertheless, the physiognomy is so peculiar as to excite attention and the characters revealed by dissection warrant the isolation of *Raniceps* in a special family.

In 1863, the present writer † remarked that "from the *Gadoids* I am disposed to separate the genera *Raniceps* of Cuvier and *Bregmaccros* of Thompson, the former of which has been already considered by Dr. Parnell as the type of an independent family, and to similar rank the latter is probably likewise entitled." In 1872 I named the family and in 1884 diagnosed it. I now give an amended diagnosis and a full description of the family characters.

Contributions to the Ichthyology of the Firth of Forth. No. II.—The Tadpole Fish. By Richard Parnell. < Mag. Zool. and Bot., I, pp. 344-347 (347), pl. 1.

†Descriptions of the genera of Gadoid and Brotuloid Fishes of Western North America. By Theodore Gill. < Proc. Acad. Nat. Sc., Phila., 1863, pp. 242-254 (243).

RANICIPITIDÆ.*

Family Syn.

- = New family [unnamed] *Parnell*, Mag. Zool. and Bot., v. 1, p. 347 (indicated), 1837.
 = Ranicipitidæ *Gill*, Arrangement Fam. Fishes, p. 2 (named only), 1872.
 = Ranicipitidæ *Gill*, Proc. Acad. Nat. Sc., Phila., 1884, p. 173 (diagnosed), 1884.
Jugulaires gen. *Duméril*, 1806.
Gadinea gen. *Rafinesque*.
Gadoides gen. *Cuvier*.
Gadidæ gen. *auct. pl.*
Gadoidei gen. *Bleeker*.
Gadi gen. *Fitzinger*.

Subfamily Syn.

- = Ranicipini *Bonaparte*, Trans. Linn Soc. London, v. 18, p. 298 (diagnosed), 1841.
 = Ranicipini *Bonaparte*, Cat. Met. Pesci Europei, p. 6.*
 = Ranicipitini *Bonaparte*, Consp. Syst. Ich., 1850.

Diagnosis.

Gadoidea with a moderate caudal portion coniform behind and with caudal rays procurrent, submedian anus, a chain of muciferous bones consisting of the enlarged nasal bones connected at the middle, followed by the suborbitals, the fourth of which is extended backwards and connected with a special system of dermal bones over the operculum and continued on the humeral region behind; the hyomandibular obliquely extending forwards and upwards, and with the posterior limbs of the pelvis rod-like.

Description.

Body elongated, antrorsiform, depressed forwards, compressed backwards, graduated from the head to the caudal, and with the caudal peduncle slender and continued into the caudal; anus antemedian.

Scales small and regularly imbricated.

Lateral line indistinct, moderately high in front, thence decurved and obsolete behind.

Head wide and depressed, with the snout roundish or declivous.

Eyes within the anterior half of the head, mostly lateral, but also inclined upwards.

Nostrils double; the anterior tubular, the posterior with a raised margin; the two separated by a moderately wide bridge.

Mouth with the cleft semicircular, quite deep and slightly oblique or nearly horizontal; lower jaw closing within upper.

Jaws of the gadoid type; each *intermaxilline* with a short posterior process and a thin crest near the distal end; the *supramaxilline* slightly decurved to the end and with a subterminal inferior process.

Teeth conic, curved and cardiform on the jaws and vomer.

*Ranicipitidæ < *Raniceps*, *g. Ranicipitis* (in analogy with anceps, ancipitis, biceps, bicipitis) + *idæ*.

Lips thick; the lower divided at the chin by a wide frænum.

Tongue well developed, thick, and slightly free all around.

Periorbitals concealed by the skin, enlarged, and peculiarly developed; first connected with the nasal, fourth widening and extending backwards to connect with a system of supraopercular bones, and succeeding periorbitals (fifth, etc.) procurrent to the orbits.

Opercular apparatus well developed; *operculum* a subtriangular lamina with an antero-posterior internal rib (above which there is an expansion to connect with a system of supraopercular bones) and also with an anterior inferior marginal rib; *suboperculum* and *interoperculum* normally laminar; *preoperculum* normally bilaminar and crescentiform.

Branchiotremes (*branchial apertures*) ample, extending forwards and with the branchiostegal membrane deeply incised.

Branchiostegals seven; the inner three attached to the inner side of the *ceratohyal*, the rest outside, the outermost to the epiphyal.

Dorsalis double; the anterior fin rudimentary or very small and separate; the posterior very long.

Anal elongated, not shorter than the dorsal.

Caudalis distinct, with its external rays procurrent above and below the caudal peduncle.

Pectorales moderately developed.

Ventrals anterior, separated by a quite wide interval, narrow, but with about seven rays each.

The skeleton exhibits all the characteristics of a typical Gadoidean* and the principal modifications consist of the lateral extension of the cranium, and especially the prefrontal and pterotic, and modifications of the suspensorium and pelvis.

The *hyomandibular* is especially distinguished by its development at almost a right angle with the metapterygoid and its extension forwards considerably beyond the quadrate, as well as for the oblique trend of the large fenestra for the posterior branch of the facial nerve. The fenestra for the anterior branch of the facial nerve is concealed from direct observation by the preoperculum, the symplectic being pushed backwards. The metapterygoid alone intervenes between the hyomandibular and the quadrate. The relation of the hyomandibular, quadrate, symplectic and metapterygoid to each other and the neighboring bones, in fact, contrast strongly with those of any true Gadid known to me, and are probably co-ordinates of the abbreviation of the cranium.

The *pelvic bones* are reduced by the attenuation of its limbs; the articular portion is narrow but well defined, the interno-posterior extension or limb rod-like and short, and the interno-anterior extension or limb longer and oar-like.

There is but one genus, so far as known, which appears to belong to

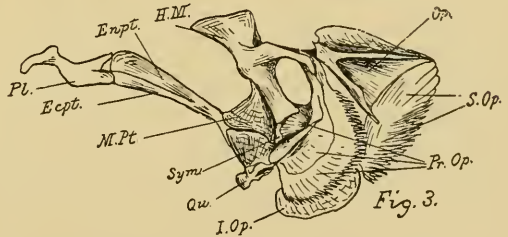
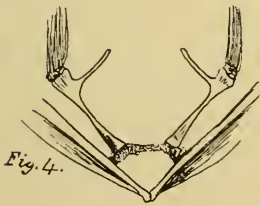
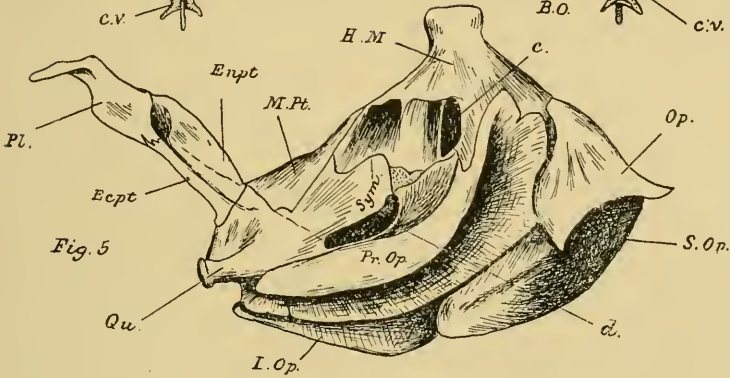
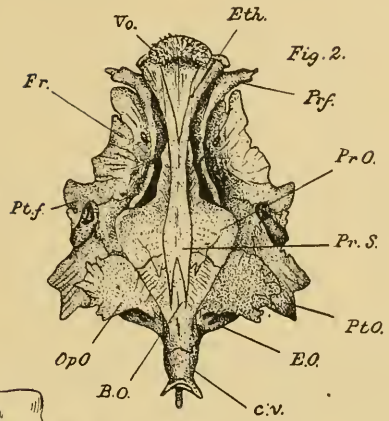
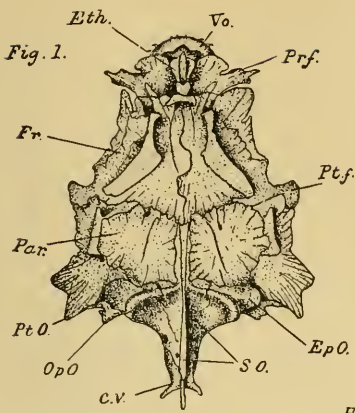
* Gadoidea Gill, Proc. Acad. Nat. Sc., Phila., 1884, p. 170.

the family, and that genus has only a single species, confined to the seas of northern Europe.

RANICEPS Cuvier Rigue Animal, t. 2, p. 217, 1817=*Batrachocephalus* Holböll Göth. Vet. Selsk N. Handlingar, v. 3, p. 39.

The proper name of the species appears to be *Raniceps raninus* (= *Blennius raninus* Linn, Syst. Nat., ed. x, p. 258, 1758). Dr. Günther, however, has called it *Raniceps trifurcus* (= *Gadus trifurcus* Walbaum).

I am indebted to my friend, Dr. R. W. Shufeldt, for the original drawings of the skull of *Raniceps*, and the copy of the suspensorium and its appendages of the haddock (*Melanogrammus aeglefinus*) derived from the Proceedings of the Royal Dublin Society for 1884 (The Osteology and Arthrology of the Haddock, by H. St. John Brooks)



FIGS. 1-4. *Raniceps raietus*: (1) Skull, from above; (2) skull, from below; (3) suspensorium and opercular apparatus; (4) pelvis and proscapula.
 FIG. 5. *Melanogrammus aeglefinus*: Suspensorium and opercular apparatus.

B.O. Basi-occipitine.
 c. Fenestra for passage of posterior branch of facial nerve.
 C.V. Cervical vertebra.
 d. Fenestra for passage of anterior branch of facial nerve.
 Ecpt. Ectopterygoid.
 Enpt. Entopterygoid.
 E.O. Exoccipitine.
 Ep. Epitotic.
 Eth. Ethmoid or prosthmoid.
 Fr. Frontine.
 H.M. Hyomandibular.
 I.O. Interoperculum.

M.P. Metapterygoid.
 Op. Operculum.
 Op.O. Opisthotic.
 Par. Parietine.
 Pf. Prefrontal or ectethmoid.
 Pl. Palatine.
 Pr.S. Parasphenoid.
 Pt.f. Postfrontal or sphenotic.
 Pto. Pterotic.
 Q. Quadrate.
 S.O. Suboperculum.
 Sym. Symplectic.
 V. Vomer or anteaal.

