

United States), C (California), W (western Atlantic, West Indies, Brazil), E (Europe), A (Western Africa), B (southern coast of Brazil and southward), P (Pacific coast of Mexico and Central America), G (western coast of South America).

Genus 1.—MUGIL, (Artedi) Linnæus.

1. *Mugil liza*, Cuv. & Val. (W.).
2. *Mugil cephalus*, L. (E.) (*cephalus*), (A.) (*cephalus*), (U. W.) (*albula*), (C. P.) (*güntheri*=*mexicanus*), (G.) (*rammelsbergi*), (Asia?) (*cephalotus*). (Possibly divisible into geographical subspecies.)
3. *Mugil platanus*, Günther. (B.) (Species not sufficiently known.)
4. *Mugil incilis*, Hancock. (W. P.) (Identification of name *incilis* somewhat doubtful.)
5. *Mugil curema*, Cuv. & Val. (U. W. B. P. G.).
6. *Mugil gaimardianus*, (Desmarest) Poey (W. U.).
7. *Mugil brasiliensis*, Agassiz (W. U.).

Genus 2.—CHÆNOMUGIL, Gill.

8. *Chænomugil proboscideus*, Günther (P.).

Genus 3.—QUERIMANA, Jordan & Gilbert.

9. *Querimana?* *curvidens*, C. & V. (A. W.). (Species unknown to us; of uncertain genus.)
10. *Querimana ciliilabis*, C. & V. (G.).
11. *Querimana harengus*, Günther (P. G.). (Possibly young of *Q. ciliilabis?*)
12. *Querimana gyrans*, Jordan & Gilbert (U.).

**SYNOPSIS OF THE GENERA OF THE SUPERFAMILY TEUTHIDOIDEA
(FAMILIES TEUTHIDIDÆ AND SIGANIDÆ).**

By THEODORE GILL.

Having recently had occasion to inquire into the relations and characteristics of the constituents, and into the applicability of the names employed for the genera of the family "Teuthyes" of Cuvier, I was obliged to dissent from the taxonomic views as well as nomenclature most in vogue, and have reached the conclusions embodied in the following synopsis. The changes of nomenclature have invariably been made in obedience to the rules of the British and American associations for the advancement of science. Those who are lawless, or follow rules only when they suit their purpose or convenience, will doubtless disapprove of the changes. The necessity for the changes has been appreciated by Messrs. Jordan, Meek, and Bean, and the first two had independently reached the same conclusion with reference to the *Teuthis hepatus*.

SUPERFAMILY TEUTHIDOIDEA.

Synonym.

Teuthidoidea *Gill*, Cat. Fishes E. Coast N. Am., p. 8, 1873. (Not defined.)

Acanthopterygian teleocephals with thoracic ventrals; elongated, narrow, and closely connected pelvic bones; cranium with double floor and muscular tube; maxillary (intermaxillary and supramaxillary) bones closely united; undivided posttemporals co-ossified with the cranium; interneurals with transversely expanded buckler-like subcutaneous plates, which intervene between the spines and limit their erection forwards.

I.—TEUTHIDIDÆ.

Synonyms as families.

- <Leptosomes, *Duméril*, Zoöl. Anal., p. 134, 1806.
- <Acanturini, *Raf.*, Indice d'Ittiol. Sic., p. 16, 1810.
- <Zedia, *Raf.*, Analyse de la Nature, 6. fam., 1815.
- <Teuthides, *Latreille*, Fam. Nat. du Règne Animal, p. 130, 1825.
- <Teuthyes, *Cuvier*, Règne Animal, 2 ed. t. 2, p. 222, 1829.
- <Teuthyes, *Cuv. & Val.*, Hist. Nat. des Poissons, t. 10, p. 111, 1835.
- <Teuthididæ, *Bonaparte*, Giorn. Arcad. di Scienze, v. 52 (Saggio Distrib. Metod. Animali Vertebr. a Sangue Freddo, p. 34), 1833.
- <Teuthydæ, *Bonaparte*, Nuovi Annali delle Sci. Nat., t. 2, p. 130?, 1838; t. 4, p. 190, 1840.
- <Teuthyes, *Agassiz*, Recherches sur les Poissons Fossiles, v. 4, p. [xiii, 2, 12,] 41* 206, 1843.
- <Teuthies, *Agassiz*, Rep. Brit. Ass. Adv. Science, 1844, p. 288, 1845.
- <Teuthididæ, *Richardson*, Encycl. Brit., v. 12, p. 304, 1856.
- =Acanthuroidei, *Bleeker*, Enum. sp. Piscium Arch. Ind., p. xxii, 1859.
- <Teuthidoidæ, *Gill*, Cat. Fishes E. Coast N. A., p. 34, 1861.
- =Aronuridae, *Günther*, Cat. Fishes in Brit. Mus., v. 3, p. 325, 1861.
- <Acrouuridæ, *Cope*, Trans. Am. Phil. Soc., n. s., v. 14, p. 459 (Oct. 7, 1870), 1871.
- =Acanthuridæ, *Gill*, Arrangement Fam. Fishes, p. 7, 1872.
- =Acanthuri, *Fitzinger*, Sitzungsber. k. Akad. der Wissensch. (Wien), b. 67, 1. Abth., p. 31, 1873.
- =Acanthuridi, *Poey*, Anal. Soc. Esp. Hist. Nat., t. 4 (Enum. Pisc. Cub., pp. 7, 65), 1875.
- =Teuthididæ, *Gill*, Cat. Fishes E. Coast N. Am., pp. 8, 23, 1873.
- =Aronuridæ, *Günther*, Int. to Study of Fishes, p. 438, 1880.
- =Teuthididæ, *Jordan & Gilbert*, Syn. Fishes N. Am., p. 78, 1882.
- =Acanthuridæ, *Jordan & Gilbert*, Syn. Fishes N. Am., p. 616, 1882.

Synonyms as subfamilies.

- =Teuthydini, *Bonaparte*, Trans. Linn Soc. London, v. 18, p. 302, 1840.
- =Acanthuriuæ, *Swainson*, Nat. Hist. and Class. Fishes, etc., v. 2, pp. 177, 255, 1839. (S. F. of Coryphænidæ.)

* Teuthies, pp. xiii, 2, 12; Teuthyei, p. 41; Teuthyes, p. 206.

- =Teuthyini, *Bonaparte*, Nuovi Annali delle Sci. Nat., t. 2, p. 130, 1838; t. 4, p. 190, 1840.
- =Teuthyini, *Bonaparte*, Cat. Metod. dei Pesci Europei, p. 7, 1846. (2. S. F. of Teuthidæ.)
- =Teuthiinae, *Gill*, Cat. Fishes E. Coast N. A., p. 34, 1861.

Teuthidoidea with the abdominal (vertebral) portion much shorter than the caudal; the rayed portions of the dorsal and anal equal and much exceeding the spinous; the ventrals with an external spine and with three to five rays; the head with its rostral portion produced and long, and with epipleurals developed from the ribs.

The neural spine of the last abdominal vertebra (in the nine-spined species) is in advance of the interneural spine, whose head is behind and embraces the base of the recumbent last dorsal spine.

SYNOPSIS OF GENERA.

- I. Caudal armature developed as immovable laminae.
 - 1. Ventrals with 5 rays each; anal with 3 spines; caudal plates, typically, 4 to 6.....PRIONURUS (1).
 - 2. Ventrals with 3 rays each; anal with 2 spines; caudal plates typically 2 (rarely 1 or 3).....MONOCEROS (2).
- II. Caudal armature developed as movable antrorse spines, erectile from and depressible in grooves.
 - 1. Ventrals with 5 rays.
 - a¹. Teeth fixed and strong.
 - b¹. Dorsal spines 9 (rarely 7 or 8).....TEUTHIS (3).
 - b². Dorsal spines 3 to 5.....ZEBRASOMA (4).
 - a². Teeth movable and setiform, but with dilated apices;
 - (D. 8)CTENOCHÆTUS (5).
 - 2. Ventrals with 3 rays.....COLOCOPUS (6).

DIAGNOSES OF GENERA.

1. PRIONURUS.

Synonymy.

- = Prionurus *Lacépède*, Ann. Mus. d'Hist. Nat., t. 4, p. 205.
- = Prionurus *Cuvier*, Règne Animal, 2. ed., t. 2, p. 224, 1829.
- = Prionurus *Günther*, Cat. Fishes Brit. Mus., v. 3, p. 347, 1861.
- Acanthurus* sp. *Langdorff*.
- Naseus* sp. *Bleeker*, olim.

Teuthidids with many (4 to 6) pairs of fixed carinated caudal plates, 5-rayed ventrals, and 3 anal spines.

TYPE.—*P. microlepidotus*, Lac.

2. MONOCEROS.

Synonymy.

- > Monoceros, *Bloch*, Syst. Ich., *Schneid.* ed., p. 180, 1801.
- > *Naso*, *Lacépède*, Hist. Nat. des Poissons, t. 3, p. 106, 1802.
- > *Nasonus*, *Rafinesquè*, Analyse de la Nature, p. —, 1815.

- > *Les Nasens* (*Nasens*), *Cuvier*, Règne Animal, ed. 2, t. 2, p. 224, 1829.
- > *Les Axinures*, *Cuvier*, Règne Animal, ed. 2, t. 2, p. 225, 1829.
- > *Les Priodons*, *Cuvier*, Règne Animal, ed. 2, t. 2, p. 225, 1829.
- > *Priodontichthys*, *Bonaparte*, Saggio Distrib. Metod. Animali Vertebr. a Sangue Freddo, p. 34, 1833.
- > *Keris*, *Cuv. & Val.*, Hist. Nat. des Poissons, t. 10, p. 304, 1835.
- > *Callicanthus*, *Swainson*, Nat. Hist. Fishes, etc., v. 2, pp. 256, (*C. elegans*), 1839.
- = *Nasens*, *Günther*, Cat. Fishes Brit. Mus., v. 3, p. 347, 1861.
- > *Keris*, *Günther*, Cat. Fishes Brit. Mus., v. 3, p. 355, 1861.
- Chætodon* sp., *Hasselquist* et al.
- Harpurus* sp., *Forster*.
- Acanthurus* sp., *Shaw*.
- Aspisurus* sp., *Rüppell*.
- Acronurus* sp., *Gronow*.

Teuthidids with, typically, 2 (rarely 1 or 3) pairs of fixed carinated caudal plates, 3-rayed ventrals, 2 anal spines, and generally with an autorse horn-like frontal process.

TYPE.—*M. unicornis*, (Forsk.).

This genus appears to be a composite one, but I have not the material to satisfy myself whether such is the case or not.

3. TEUTHIS.

Synonymy.

- < *Hepatus*, *Gronow*, Zoophylacium, p. 113, 1763.
- < *Teuthis*, *Linne*, Systema Naturæ, 12. ed., t. 1, p. 507, 1766.
- < *Acanthurus*, *Forsk.*, Descriptiones Animalium, p. 25, 1775 (section of *Chætodon* Linn.)
- < *Harpurus*, *Forster* in Linnæi Syst. Nat., ed. Gmelin, t. 1, p. 1269? 1738.
- < *Acanthurus*, *Bloch*, Systema Ichthyologiæ, ed. Schneider, p. 211, 1801.
- × *Aspisurus*, *Lacépède*, Hist. Nat. des Poissons, t. 4, p. 556, 1802.
- < *Les Theuthies* (*Teuthis*), *Cuvier*, Tab. El. Hist. Nat., p. 371, an. 6 (1798.)
- < *Les Acanthures*, Bl (*Teutis*, L., *Harpurus*, *Forsk.*) *Cuvier*, Règne Animal, t. 2, p. 330, 1817.
- < *Teuthis*, *Bonaparte*, Giorn. Arcad. di Scienze, t. 52 (Saggio Distrib. Metod. Animali Vertebr. a sangue freddo, p. 34), 1833.
- !! *Acanthurus*, *Bonaparte*, Giorn. Arcad. di Scienze, t. 52 (Saggio Distrib. Metod. Animali Vertebr. a sangue freddo, p. 34), 1833. (Subgenus of *Teuthis* without diagnosis or type.)
- > *Acanthurus*, *Swainson*, Nat. Hist. and Class. Fishes, &c., v. 2, pp. 255, 1839.
- > *Teuthys*, *Swainson*, Nat. Hist. and Class. Fishes, &c., v. 2, pp. 255, 1839.
- × *Ctenodon*, *Swainson*, Nat. Hist. and Class. Fishes &c., v. 2, pp. 255, 1839.
- = *Acronurus*, *Gronow*, Cat. of fish collected and described, p. 142, 1854.
- = *Acanthurus* § 1, *Günther*, Cat. Fishes, Brit. Mus., v. 3, pp. 325, 327, 1861.
- = *Acanthurus* A. *Rhombotides*, *Day*, Fishes of India, v. 1, p. 202, 1876.
- < *Acanthurus*, *Gthr.*, Ann. and Mag. Nat. Hist., v. 2, p. 320, 1871 (*Keris* young).
- < *Acanthurus*, *Lütken*, 1880.

Teuthidids with a pair of autorse movable caudal spines, strong fixed teeth, 5-rayed ventrals, and generally 9 (rarely 7 or 8) dorsal spines.

TYPE.—*T. hepatus*, Linn. = *Acanthurus chirurgus*, Bloch, &c.

4. ZEBRASOMA.

Synonymy.

- ??Scopas, *Bonaparte*, Giorn. Arcad. di Scienze, t. 52 (Saggio Distrib. Metod. Animali Vertebr. a sangue freddo, p. 34)* 1833.
 >Harpurus, *Swainson*, Nat. Hist. and Class. Fishes, &c., v. 2, pp. 256, 1839 (not Forskål).
 >Zebrasoma, *Swainson*, Nat. Hist. and Class. Fishes, &c. v. 2, pp. 256, 1839.
 =Acanthurus (§ 4), *Günther*, Cat. Fishes, Brit. Mus., v. 3, pp. 326, 342, 1861.
 =Acanthurus D. Harpurus, *Day*, Fishes of India, v. 1, pp. 202, 207, 1876.

Teuthidids with a pair of movable antrorse spines, movable setiform teeth with dilated apices, 5-rayed ventrals, and 3 to 5 dorsal spines.

TYPE.—*Z. velifer*, (Bloch).

5. CTENOCHÆTUS.

Synonymy.

- ??Ctenodon, *Bonaparte*, Giorn. Arcad. di Scienze, t. 52 (Saggio Distrib. Metod. Animali, a sangue freddo, p. 34), 1833; not described nor type specified.
 <Ctenodon, *Swainson*.
 =Acanthurus, § 3, *Günther*, Cat. Fishes Brit. Mus., v. 3, pp. 326, 342, 1861.
 =Acanthurus C. Ctenodon, *Day*, Fishes of India, v. 1, pp. 202, 207, 1876.

Teuthidids with a pair of movable antrorse spines, fixed strong teeth, 5-rayed ventrals, and 8 dorsal spines.

TYPE.—*C. strigosus* = *Acanthurus strigosus*, Bennett.

6. COLOCOPUS.

Synonymy.

- = Acanthurus § 2, *Günther*, Cat. Fishes Brit. Mus., v. 3, pp. 325, 341.
 = Acanthurus, "B," *Day*, Fishes of India, v. 1, pp. 202, 206, 1876.

Teuthidids with a pair of antrorse movable spines, strongly fixed teeth, 3-rayed ventrals, and 9 dorsal spines.

TYPE.—*C. lambdurus* (new name) = *Acanthurus hepatus* (Bloch, Schneider) *Günther* Fische Südsee, B, 1, p. 115, pl. 75 (not *Teuthis hepatus*, Linn.).

II.—SIGANIDÆ.

Synonyms as families.

- < Chætonia, *Raf.*, Analyse de la Nature, 5e. fam., 1815.
 < Theutyes, *Cuvier*, Règne Animal, 2. ed., t. 2. p. 222, 1829.
 < Teuthides, *Latreille*, Fam. Nat. du Règne Animal, p. 130, 1825.
 < Teuthyes, *Cuv. & Val.*, Hist. Nat. des Poissons, t. 10, p. 111, 1835.
 = Teuthididæ, *Bon.*, Giorn. Arcad. di Scienze, v. 52, p.—, (Saggio Distrib. Metod. Animali Vertebr. a sangue freddo, p. 34), 1832.
 < Siganoideæ, *Richardson*, Fauna. Bor.-Am., vol. 3, p. 86, 1836.
 = Teuthididæ, *Richardson*, Encycl. Brit., vol. 12, p. 304, 1856.

* No diagnosis. No type is given.

- = Amphacanthoidei, *Bleeker*, Enum. Sp. Piscium Archipel. Indico, p. xxii, 1859.
 = Teuthididæ, *Günther*, Cat. Fishes Brit. Mus., v. 3, p. 313, 1861.
 = Teuthididæ, *Günther*, Archiv für Naturg., 28. Jahrg., B. 1, p. 59, 1862.
 < Aconuridæ, *Cope*, Proc. Am. Assoc. Adv. Sci., v. 20, p. 342, 1872.
 = Amphacanthidæ, *Gill*, Arrangement Families Fishes, p. 7, 1872.
 ?? Acanthuri, *Fitzinger*, Sitzungsber. K. Akad. der Wissensch. (Wien), B. 67, 1 Abth., p. 33, 1873.

Teuthidoidea with the abdominal (vertebral) about as long as the caudal region, the rayed portions of the dorsal and anal fins subequal and shorter than the spinous portions of the dorsal or anal, the ventrals each with two marginal (external and *internal*) spines, between which intervene three rays, the head with its rostral portion moderate, and without epipleurals to ribs.

The type is also characterized by a singular uniformity of the fins, all known species (over 30) having alike 13 spines and 10 rays in the dorsal, and 7 spines and 9 rays in the anal; there are 23 vertebrae—10 abdominal and 13 caudal.

SIGANUS.

Synonymy.

- < Hepatus, *Artedi*, Genera Piscium.
 < Hepatus, *Gronow*, Zoophylacium, p. 113, 1763.
 < Teuthis, *Linné*, Systema Naturæ, 12 ed., t. 1, p. 507, 1766.
 = Siganus, *Forskål*, Desc. Animal. quæ observ., pp. x, 26, 1775.*
 = Centrogaster, *Houttuyn*, Acta. Soc. Harlem, v. 20, p. 333, 1782.
 = Amphacanthus, *Bloch*, Systema Ichthyologiæ, ed. *Schneider*, p. 206, 1801.
 = Centrogaster, *Lacépède*, Hist. Nat., des Poissons, t. 3, p. 307, 1802.
 = Les Sidjans (Amphacanthus Schn.), *Cuvier*, Règne Animal, t. 2, p. 330, 1817.
 = Les Sidjans (Siganus Forsk.), *Cuvier*, Règne Animal, 2 ed., t. 2, p. 223, 1829.
 = Teuthis, *Cantor*, Cat. Malayan Fishes, p. 207.
 = Teuthis, *Gronow*, Cat. Fish. collected and described, p. 142, 1854.
 Scarus, sp., *Forskål*.
 Chætodon sp., *Bloch*.

TYPE.—*S. rivulatus*, *Forsk.*

The names proposed in chronological order for genera of the Teuthidoidea are as follows:

§ 1. "Prelinnæan."

1738. *Hepatus* *Artedi* = TEUTHIS.
 1744. *Rhombotides* *Klein* = TEUTHIS.
 1763. *Hepatus* *Gronow* = TEUTHIS.

§ 2. "Binomial."

1766. *Teuthis* *Linné* = TEUTHIS.
 1775. *Siganus* *Forskål* = SIGANUS.
 1775. *Acanthurus* *Forskål* = *Teuthis*.
 1782. *Centrogaster* *Houttuyn* = *Siganus*.

* According to *Cuvier* and *Valenciennes* (*Hist. Nat. des Poissons*, v. 10, p. 112—foot note), "Forskål, Faun. arab., dans un feuillet sans pagination à la suite de la préface."

1788. *Harpurus* Forster (MSS ?) = Teuthis.
 1788. *Harpurus* vel *Acanthurus* Forster in Gmelin = Teuthis.
 1792. *Harpurus* Forster in Walbaum = Teuthis.
 1801. *Monoceros* (Bloch) Schneider = MONOCEROS.
 1801. *Amphacanthus* (Bloch) Schneider = Siganus.
 1801. *Acanthurus* (Bloch) Schneider = Teuthis.
 1802. *Naso* Lacépède = Monoceros.
 1802. *Aspisurus* Lacépède = Teuthis.
 1803. *Buro* Commerson in Lacépède = Siganus.
 1803. *Opisotomus* Commerson *vide* Day = Siganus.
 1803. *Prionurus* Lacépède = PRIONURUS.
 1815. *Nasouus* Rafinesque = Monoceros.
 1817. *Siganus* Cuvier = Siganus.
 1829. *Naseus* (Commerson) Cuvier = Monoceros.
 1829. *Axinurus* Cuvier = Monoceros.
 1829. *Priodon* Cuvier = Monoceros.
 1832. *Teuthis* Bonaparte (subg. of Teuthis).
 1832. *Acanthurus* Bonaparte (subg. of Teuthis).
 1832. *Scopas* Bonaparte (subg. of Teuthis) = Zebrasoma ?
 1832. *Ctenodon* Bonaparte (subg. of Teuthis) = Ctenochætus ?
 1832. *Priodontichthys* Bonaparte = Monoceros (= Priodon Cuvier).
 1835. *Keris* Cuvier & Valenciennes = Monoceros.
 1839. *Acanthurus* Swainson = Teuthis.
 1839. *Teuthys* Swainson = Teuthis.
 1839. *Ctenodou* = Teuthis.
 1839. *Harpurus* = Zebrasoma.
 1839. *Zebrasoma* = ZEBRASOMA.
 1839. *Callicanthus* = Monoceros.
 1839. *Teuthis* Gray = Teuthis.
 1854. *Teuthis* Gronow = Siganus.
 1854. *Acronurus* Gronow = Teuthis.
 1861. *Acronurus* Günther = Teuthis.
 1861. *Rhombotides* Bleeker = Teuthis.
 1861. *Scopas* Kner = Zebrasoma.
 1876. *Rhombotides* Day = Teuthis.
 1876. *Ctenodon* Day = Ctenochætus.
 1876. *Harpurus* Day = Zebrasoma.
 1884. CTENOCHÆTUS Gill.
 1884. COLOCOPUS Gill.

A REVIEW OF THE SPECIES OF THE GENUS HÆMULON.

By DAVID S. JORDAN and JOSEPH SWAIN.

In the present paper is given the synonymy of the known species of the genus *Hæmulon* Cuvier, with an analysis of their characters, and re-descriptions of the species which have been collected by Professors Jordan and Gilbert.

All the species of *Hæmulon* are American. The genus is very closely related to *Pomadasys*, Lac. (= *Pristipoma*, Cuv.), the only tangible points of difference being the large mouth with curved gape, and the closely