

NOTES ON SERRANIDÆ.

BY HENRY W. FOWLER.

The material on which this paper is based is all contained in the collections of the Academy of Natural Sciences of Philadelphia.

PERCICHTHYINÆ.

Percichthys melanops Girard.

No. 22,892, A. N. S. P. Cotype.

Percichthys trucha (Valenciennes).

Argentina. Recently reported by Drs. Evermann and Kendall.

PARALABRACINÆ.

Maxillary with a supplemental bone. Tongue smooth. Gill-rakers long and slender. Scales very small. Dorsals 2, connected at base, XI-XIII, I-II, 12-14. Anal spines III, well developed. Ventrals inserted behind bases of pectorals.

The only genus examined seems to be *Percalabrax* Schlegel, *Fauna Japonica*, Poiss., I, 1842, p. 2 (type *Labrax japonicus* Cuvier, only species), which has priority over *Lateolabrax* Bleeker, *Verh. Batav. Genoot.* (Nalez. Ich. Jap.), XXVI, 1854, pp. 4, 53 (type *Labrax japonicus* Cuvier, only species).

Percalabrax japonicus (Cuvier).

Tsuruga, Japan (D. S. Jordan and J. O. Snyder).

MORONINÆ.

Roccus chrysops (Rafinesque).

Southern Illinois (R. Kennicott).

Roccus lineatus (Bloch).

Trenton, N. J.; Sing Sing, N. Y. (S. F. Baird); Chestertown, Md. (E. G. Vanatta); Connecticut River (Smiths. Inst.); North Carolina? (E. D. Cope).

Labrax labrax (Linnæus).

Italy (Bonaparte Coll.).

Labrax Klein, in Walbaum, *Pet. Arted. Gen. Pisc.*, 1792, p. 584 (type

Perca labrax Linnæus, understood by tautonymy) has priority over *Dicentrarchus* Gill, *Proc. Acad. Nat. Sci. Phila.*, 1860, pp. 109, 111 (type *Perca elongata* Geoffroy St. Hilaire = *Perca labrax* Linnæus specified).

CHRYSOPECA subgen. nov.

Type *Morone interrupta* Gill.

Dorsal fins slightly connected, spines robust and longest somewhat more than half of head. Color brassy-yellow with about 7 distinct longitudinal lines interrupted posteriorly.

Related to subgenus *Morone* Mitchill, which has shorter fins well connected, spines moderate and shorter, and coloration more silvery.

(Χρυσος, gold; πέρκα, perch.)

Morone interrupta Gill.

Two examples, probably cotypes(?), from the Smiths. Inst. Both would agree with Dr. Gill's statement concerning the anal spines, the second of which is about equal to the third.

Wabash River, Indiana (E. D. Cope).

Morone americana (Gmelin).

Newport, R. I. (Dr. W. Gibson); Bayport, Fla. (E. D. Cope); Mount Desert, Me. (Dr. H. C. Chapman); Boston Harbor, Mass. (Dr. J. H. Slack); Potomac River (Smiths. Inst.); New York Harbor (T. Norris).

LIOPROPOMINÆ.

Labracopsis japonicus Steindachner.

Yokohama, Japan (D. S. Jordan and J. O. Snyder).

CENTROGENINÆ.

To replace *Myriodontinae*, *Myriodon* preoccupied.

Centrogenys vaigiensis (Quoy and Gaimard).

Singapore, Malacca (Dr. J. B. McCartee).

POLYPRIONINÆ.

Stereolepis gigas Ayres. Fig. 1.

Proc. Cal. Acad. Nat. Sci., II, 1858, p. 28. ? Type No. 32,753, A. N. S. P. Bay of San Francisco.

Head $3\frac{1}{2}$; depth $3\frac{1}{3}$; D. XI, 9; P. 17; scales in lateral line to base of caudal about 77? (squamation damaged); about 120? scales in a lateral series to base of caudal along lateral line above; about 16? scales between origin of spinous dorsal and lateral line; about 27? scales in a vertical series between origin of anal and lateral line; width of head

about $1\frac{2}{7}$ in its length; snout nearly 3; eye about 9; maxillary $2\frac{1}{6}$; interorbital space $3\frac{1}{2}$; second dorsal spine $6\frac{1}{4}$; third dorsal ray 3; third anal spine 4; second anal ray $3\frac{1}{8}$; upper caudal lobe $1\frac{4}{7}$; least depth of caudal peduncle $3\frac{3}{5}$; pectoral 2; ventral $2\frac{2}{3}$. A slight median predorsal keel. Snout about half as long as wide. Eye a little longer than deep, and placed near first third in head. Upper jaw slightly protruding. Lips thick. Distal expansion of maxillary about half of orbit. Nostrils close together, similar. Interorbital space broad and somewhat convex. Edges of bones on head entire. About 13 rows of scales on cheek. Lateral line on 1 or more alternate scales in its course, concurrent with dorsal profile, and also extending out on base of caudal.

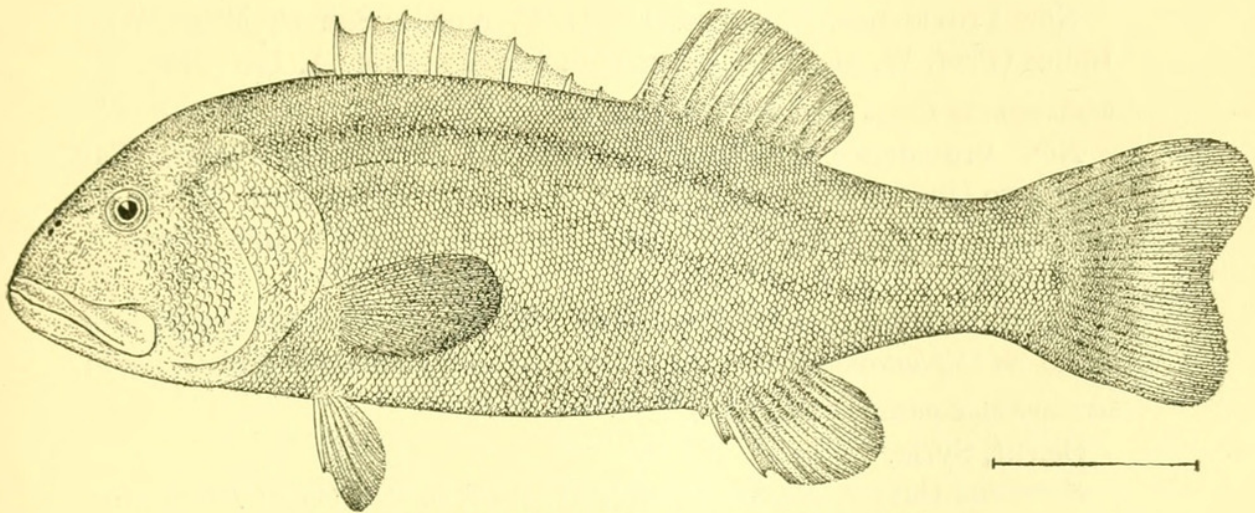


Fig. 1.—*Stereolepis gigas* Ayres. (Cotype?)

Spinous dorsal inserted a little behind origin of ventral. Rayed dorsal begins well in front of anal or much nearer origin of pectoral than base of caudal. Spinous anal inserted about opposite base of third dorsal ray, spines slender and second longest. Caudal slightly marginate. Pectoral reaches about half way to origin of rayed dorsal. Ventral reaches $\frac{1}{3}$ of space to anal. Color of dried skin more or less uniform brownish. Length 6 feet 2 inches.

In the original account 2 examples are mentioned, one taken in 1857, which measured 5 feet 8 inches, and the other in 1859, which was 7 feet long. Allowing for shrinkage in the above example it is more likely the latter. This was stated to have weighed 360 pounds. Ayres gives D. IX, A. III, 8, P. 19, and other discrepancies, which may possibly be explained by the preparation of the specimen as a dried skin, typographical errors, etc.?

Polyprion americanum (Schneider).

Italy (Bonaparte Coll.).

SERRANINÆ.

To replace *Epinephelinæ*.

Petrometopon cruentatum (Lacépède).

Viequas, Porto Rico (U. S. F. C.).

Petrometopon cruentatum coronatum (Valenciennes).

New Providence, Bahamas (Dr. H. C. Wood).

Cephalopholis argus Schneider.

Recorded by me as *Bodianus guttatus* in *Proc. Acad. Nat. Sci. Phila.*, 1899, p. 485, from Thornton Islands (C. D. Voy).

Apia, Samoan Islands (D. S. Jordan).

Cephalopholis fulvus (Linnæus).

New Providence, Bahamas (Dr. H. C. Wood); San Domingo, West Indies (Prof. W. M. Gabb); Bermuda Islands (Prof. A. Heilprin).

Cephalopholis fulvus ouatalibi (Valenciennes).

New Providence, Bahamas (E. Tatnall, Dr. H. C. Wood); San Domingo (Prof. W. M. Gabb), St. Croix (Capt. T. Davidson, Dr. R. E. Griffith) and St. Kitts (B. H. Lightfoot); Bermuda Islands (Prof. A. Heilprin).

The Sumatran species I recorded in 1904 under *Bodianus* should now stand as *Cephalopholis aurantius indelebilis*, *C. miniatus* and *C. rogaa*.

Serranus alexandrinus Valenciennes.

Beirut, Syria.

Serranus Cuvier, *Règne Animal*, II, 1817, p. 276 (type *Perca gigas* Brünnich first species = *Labrus guaza* Linnæus), is the first name available for the fishes of this genus, as the first species under *Epinephelus* Bloch, and therefore its type, is an *Alphestes*. *Daba* Forskål, *Descript. Animal.*, 1775, p. 44 (type *Perca areolata* Forskål understood from the Arabic vernacular) is uncertain.

Serranus maculosus Valenciennes.

New Providence, Bahamas (Dr. H. C. Wood); San Domingo (Prof. W. M. Gabb); St. Martin's (Dr. R. E. van Rijgersma); St. Thomas (Henry Warrington); St. Kitts (B. H. Lightfoot).

Serranus flavolimbatus (Poey).

San Domingo (Prof. W. M. Gabb).

Serranus niveatus Valenciennes.

Newport, R. I. (Samuel Powell); Katama Bay, Martha's Vineyard, Mass. (Dr. H. M. Smith).

Serranus quernus (Seale).

Honolulu, H. I. (Dr. T. D. Wood).

Serranus guaza (Linnæus).

Italy (Bonaparte Coll.); Beirut, Syria.

Serranus guaza mentzelii (Valenciennes).

Epinephelus brachysoma Cope, Trans. Amer. Philos. Soc. Phila., (2) XIV, 1871, p. 466. Type, No. 13,372, A. N. S. P. Rio Janeiro, Brazil. Dr. W. S. W. Ruschenberger.

Head $2\frac{1}{2}$; depth $2\frac{9}{10}$; scales 103 in lateral line to base of caudal, and about 10 more out on latter; tubes about 64 in lateral line to base of caudal, and 8 more on latter; 15 scales in a vertical series between origin of rayed dorsal and lateral line; 22 scales in a vertical series between origin of spinous anal and lateral line; width of head $2\frac{1}{8}$ in its length; fourth dorsal spine $2\frac{1}{5}$; eleventh dorsal ray $2\frac{1}{2}$; second anal spine $3\frac{1}{8}$; fifth anal ray 2; least depth of caudal peduncle $3\frac{2}{5}$; caudal $1\frac{3}{5}$; pectoral $1\frac{4}{7}$; ventral $1\frac{7}{8}$; snout $4\frac{2}{5}$ in head measured from tip of snout; eye 5; maxillary $2\frac{1}{10}$; interorbital space $7\frac{1}{8}$. Body oblong, compressed. Head elongate, profiles similar. Snout a little broader than long. Eye a little longer than deep, high and near first third of head. Mouth inclined, and mandible protruding. Maxillary reaches nearly opposite posterior margin of eye, and its expansion about $\frac{2}{3}$ of same. Teeth in bands in jaws, sharp, conic and canines $\frac{1-1}{1-1}$. Inner mandibular series and upper inner teeth depressible. Fine teeth on vomer and palatines. Tongue long and free. Nostrils close. Interorbital space a little convex, flattened medianly. Preopercular margin finely serrated posteriorly, serræ increasing in size toward angle. Median opercular spine largest, most posterior, and nearer lower. Gill-rakers VI, 2 + 12, III, and a trifle less than filaments, which are $\frac{4}{7}$ of eye. About 32 irregular series of scales on cheek. Tubes in lateral line simple. Spinous dorsal inserted about midway between origin of rayed dorsal and tip of snout. Rayed dorsal inserted about midway between base of third dorsal spine and base of caudal, posterior rays longest, and edge of fin rounded. Spinous anal inserted about midway between origin of ventral and base of caudal, second spine robust and longest, and third slender and but little shorter. Rayed anal rounded, and its base about $1\frac{2}{3}$ in its height. Vent near last fifth in space between ventral and anal. Color in alcohol more or less uniform brown generally. Margins of fins more or less dusky-brown, and this color sharply contrasting on rayed dorsal and anal with paler basal color. On dusky area of caudal distally 2 pale or whitish spots about median rays. Pectorals brownish with narrow pale edge. Side of body with obscure whitish flakes of various sizes. A dusky streak back from end of maxillary above, and

below this a whitish streak. Iris warm brownish. Length $7\frac{3}{8}$ inches. Type.

I retain *Serranus mentzelii* Valenciennes for this fish, as I have not compared any examples of corresponding size of *Labrus guaza* Linnæus. Cope states the length of his type as 8 inches.

***Serranus labriformis* Jenyns.**

Epinephelus ordinatus Cope, Trans. Amer. Philos. Soc. Phila., (2) XIV, 1871, p. 466. Type, No. 13,457, A. N. S. P. Panama. Dr. W. S. W. Ruschenberger.

Head $2\frac{1}{2}$; depth $3\frac{1}{10}$; scales about 100? (squamation injured) counted along lateral line to base of caudal, and about 10 more somewhat enlarged on latter; about 46 pores in lateral line to base of caudal; about 12 scales in a vertical series between origin of rayed dorsal and lateral line; 33 scales in a vertical series between origin of spinous anal and lateral line; width of head $2\frac{2}{5}$ in its length; third dorsal spine $3\frac{7}{8}$; sixth dorsal ray $2\frac{1}{3}$; second anal spine 3; third anal ray 2; least depth of caudal peduncle $3\frac{3}{5}$; caudal $1\frac{3}{5}$; pectoral $1\frac{3}{5}$; ventral $2\frac{1}{5}$; snout 5 in head measured from tip of upper jaw; eye $4\frac{1}{6}$; maxillary $2\frac{1}{5}$; interorbital space $9\frac{1}{2}$. Body elongate. Head compressed. Length of snout about $1\frac{1}{3}$ in its width. Eye a little longer than deep and placed about first third in its length. Mandible protruding a little in front. Maxillary reaching a trifle behind posterior margin of eye, with narrow supplemental bone, and its distal expansion half of eye horizontally. Narrow bands of teeth in jaws, inner in front of upper a little elongate and depressible. An inner series of rather enlarged depressible mandibular teeth, and at first teeth irregularly triserial and then becoming biserial on posterior portions of rami. Canines small, $\frac{2-1}{1-2}$, a little curved. Small vomerine and palatine teeth. Tongue slender, smooth and free. Nostrils close. Lower preopercular margin entire. Interorbital space narrow, flat, and slightly depressed in front. Median opercular spine most posterior, uppermost anterior, and median about midway between upper and lower. Gill-rakers VI, 2 + 11, VI, larger than filaments and about $2\frac{1}{8}$ in eye. Scales finely ctenoid, and about 24 series on cheek. Maxillary naked. Tubes in lateral line simple. Spinous dorsal inserted nearly midway between tip of mandible and origin of rayed dorsal, and spines graduated down from third and fourth, which are subequally longest. Rayed dorsal inserted a little nearer base of caudal than origin of spinous fin, rounded. Spinous anal inserted nearer origin of pectoral than base of caudal, second spine longest, and third subequal. Color in alcohol dull pale brown, head and trunk blotched with a number of scattered or grayish-

white flakes of uneven size, though all smaller than pupil and with a number of obscure deep brownish mottlings scattered about between. Lower surface of head and body scarcely paler or more grayish. Fins pale brownish like general body-color, margin of spinous dorsal a little deeper brown, and also its base with deep shades about third to seventh and tenth to third dorsal rays. Outer or submarginal portions of other fins deeper brownish than otherwise. Edges of rayed fins narrowly whitish. Pectoral and ventral dusky-brownish, pale basally. A large dusky saddle on caudal peduncle above. Iris slaty-gray. Length $5\frac{1}{2}$ inches. Type of *Epinephelus ordinatus* Cope.

Tower Island, Galapagos (R. E. Snodgrass and E. C. Heller).

Serranus striatus (Bloch).

New Providence, Bahamas (Dr. H. C. Wood); St. Croix (Dr. R. E. Griffith); no locality (Dr. A. L. Heermann); San Antonio Bridge and Puerto Real, Porto Rico (U. S. F. C.).

Serranus morio Valenciennes.

Key West, Fla. (Dr. Murray).

Serranus merra (Bloch).

Thornton Island, south Pacific Ocean (C. D. Voy); Apia, Samoa (D. S. Jordan).

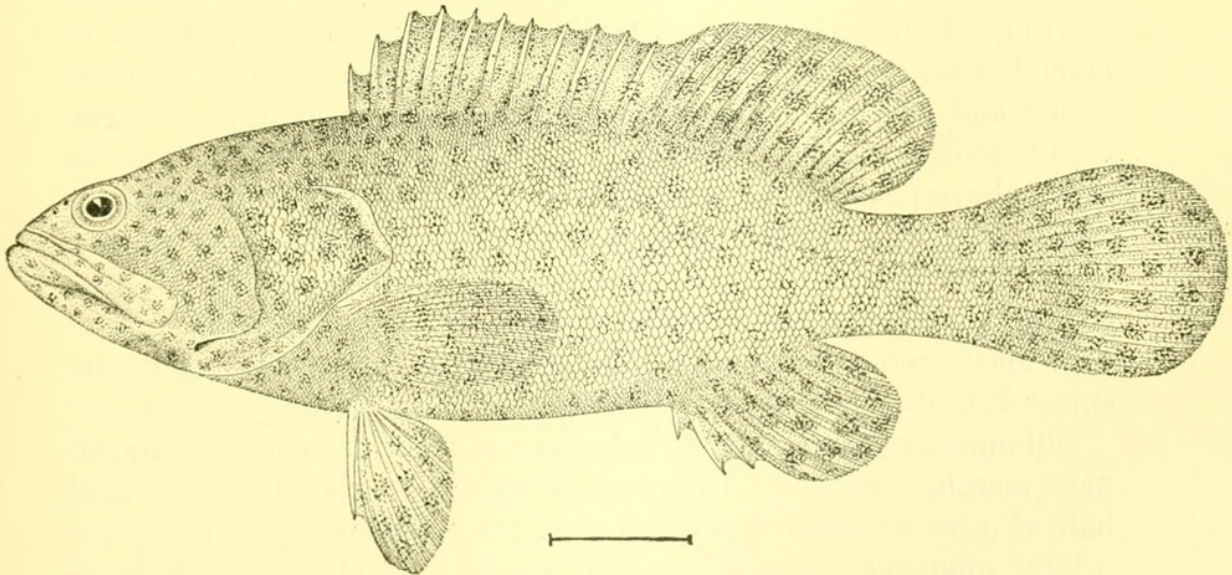


Fig. 2.—*Serranus phaeostigmæus* Fowler. (Type.)

Serranus phaeostigmæus sp. nov. Fig. 2.

Epinephelus fuscoguttatus Fowler, Proc. Acad. Nat. Sci. Phila., 1900, p. 502. Sandwich Islands. Dr. J. K. Townsend. (Probably not of Forskål.)

Head $2\frac{1}{2}$; depth $3\frac{1}{8}$; D. XI, 16, 1; A. III, 8, 1; P. 18; V. I, 5; scales about 102 in lateral line to base of caudal, and 6 more on latter; tubes 61 in lateral line to base of caudal, and about 5 more on latter; 14 scales in a

vertical series between origin of rayed dorsal and lateral line; about 20 scales between origin of spinous dorsal and lateral line in a vertical series; width of head 2 in its length; depth of head $1\frac{2}{3}$; mandible $1\frac{5}{6}$; fourth dorsal spine $3\frac{1}{3}$; eleventh dorsal ray $2\frac{3}{7}$; third anal spine $3\frac{9}{10}$; seventh anal ray $3\frac{1}{5}$; caudal $1\frac{3}{5}$; least depth of caudal peduncle $3\frac{1}{4}$; pectoral $1\frac{5}{7}$; ventral 2; ventral spine $3\frac{1}{2}$; snout $5\frac{1}{5}$ in head measured from tip of snout; eye 7; maxillary $2\frac{1}{10}$; interorbital space 5.

Body robust, elongate, compressed, profiles rather evenly and similarly convex, so that contour is somewhat fusiform, and greatest depth at base of fifth dorsal spine. Edges of body rounded, chest broadly so. Caudal peduncle compressed, and least depth about $\frac{2}{3}$ its length.

Head large, robust, slightly compressed, and with greatest width swollen below. Upper profile more inclined than lower, nearly straight, and but slightly concave over eye. Snout convex, its length about half its width. Eye a little longer than deep, rounded, high, and near first quarter in length of head. Mouth inclined obliquely, and broad mandible protruding a little in front. Lips a little broad and fleshy. Maxillary well exposed, reaching about $\frac{4}{5}$ an eye-diameter beyond eye, and its expansion about $\frac{7}{8}$ of horizontal orbital diameter. Bands of rather small fine teeth in jaws, a few canine-like in front of upper and along rami of lower posteriorly. Rami of mandible not elevated inside of mouth. Bands of minute teeth on vomer and palatines. Buccal membranes broad in mouth. Tongue broad, rounded and a little free. Nostrils close together on side of snout above front of eye, anterior with a tube ending in a cutaneous flap posteriorly. Posterior nostril midway between anterior and upper front of eye. Preorbital narrow, its width about $\frac{3}{7}$ horizontal orbital diameter. Preopercular margin convex posteriorly, that edge finely serrated, and about 3 large denticles at corner. Opercular spines 3, median largest and closer to lower, also a little posterior.

Gill-opening extending forward opposite front of orbit, and uppermost margin horizontal. Gill-rakers VI, 3 + 8, VI, clavate, and longest half of orbit or same of gill-filaments. Gill-filaments $\frac{3}{4}$ of horizontal orbital diameter. Pseudobranchiæ about $\frac{3}{5}$ of filaments. Isthmus broad, bevelled in front, and broadly keeled posteriorly.

Scales all rather finely ctenoid, largest on opercle and middle of side, and very small and reduced along edges of body, especially predorsal region and chest. On predorsal region, and cheek above, scales more or less truncate. Scales disposed over trunk in more or less longitudinal series, and somewhat inclined posteriorly, also

extending over lateral line. Minute scales on bases of all fins. Axil of pectoral with a pit, covered by a scaly flap above. About 28 scales on cheek. Head almost scaly everywhere, except on lips and maxillary. Lateral line of slightly arborescent tubes, and concurrent with dorsal profile till out in middle of base of caudal.

Spinous dorsal inserted about midway between front of eye and origin of rayed dorsal, graduated from fourth spine which is longest, and margin of fin deeply notched, so that cutaneous points occur behind tip of each spine. Rayed dorsal inserted midway between origin of spinous fin and base of caudal, fin rounded, and posterior rays a little longest. Spinous anal inserted nearer base of caudal than origin of ventral, and graduated to third spine which is longest. Rayed anal with posterior rays longest, and fin rounded. Caudal rounded. Pectoral broadly expanded, inserted before dorsal, and reaching $\frac{5}{8}$ of space to spinous anal. Ventral inserted just behind base of pectoral, and reaching $\frac{4}{7}$ of space to spinous anal, but not so far posteriorly as tip of pectoral. Ventral spine $\frac{4}{7}$ length of fin. Vent midway between tip of ventral and origin of spinous anal.

Color in alcohol dull drab generally, lower or under regions not paler. Head and body with obscure spots almost everywhere of vandyke-brown, not sharply defined but most intense in color in center, about size of pupil, and disposed over body and all fins alike. Fins brownish like general body-color, not especially pale marginally but with deepest color basally. Iris dull brownish with a narrow golden circle around pupil.

Length $8\frac{1}{2}$ inches.

Type, No. 13,463, A. N. S. P. Hawaiian Islands. Dr. J. K. Townsend.

This fish was originally identified by me with *Perca summana* var. *fuscoguttata* Forskål, a species to which it is certainly closely related. *Serranus* (*Epinephelus*) *dictyophorus* Steindachner, *Sitz. Ak. Wiss. Wien*, C, II, 1893, p. 219, from Honolulu, differs apparently, according to Dr. Steindachner's excellent description, in the deep body, narrower interorbital space, other proportions, etc.

(Φοιδς, brown; στίγμα, spot.)

Other species examined are *Serranus heniochus*, *S. maculatus*, *S. sexfasciatus*, *S. megachir*, *S. dermochirus*, *S. horridus* and *S. lanceolatus*, all from Sumatra, and which I formerly included under *Epinephelus*.

Garrupa nigrita (Holbrook).

Serranus nigritus Holbrook, *Ichth. S. Car.*, 1855, p. 173, Pl. 25, fig. 2. Type No. 13,468, A. N. S. P. Charleston, S. C. Dr. J. E. Holbrook.

This example is 16 inches long (caudal damaged), though Holbrook states that the total length is 2 feet. However, the original label indicates this as the type, together with the locality as Charleston. Holbrook also says that the caudal was somewhat mutilated in the only example he ever saw.

Color in alcohol of young deep chocolate-brown generally. Dorsals, anals and ventrals inclining to slaty or livid blackish. Margin of rayed dorsal broadly, and rayed anal more narrowly, becoming pale brownish and then whitish along edges. Caudal and pectoral white, latter chocolate-brown at base. Lower surface of head and jaws tinted with dull brown. Iris slaty. Length $3\frac{1}{2}$ inches. Katama Bay, Martha's Vineyard, Mass. Dr. H. M. Smith.

***Epinephelus chloropterus* (Cuvier).**

St. Martin's (Dr. R. E. van Rijgersma).

Prof. Peters long ago examined Bloch's type of *Epinephelus afer* and found it identical with *Plectropoma chloropterus*. Provisionally, as Bloch's fish is said to have come from West Africa, I allow Cuvier's name to stand for the American fish.

Epinephelus Bloch, *Nat. Ausl. Fisch.*, VII (X), 1793, p. 11 (type *Epinephelus afer* Bloch first species) has priority over *Alphestes* Schneider, *Syst. Ich. Bloch*, 1801, p. 236 (type *Epinephelus afer* Bloch first species).

***Epinephelus lightfooti* sp. nov. Fig. 3.**

Head $2\frac{1}{2}$; depth $2\frac{4}{5}$; D. XI, 18, 1; A. III, 9, 1; P. I, 16; V. I, 5; scales about 70 in lateral line to base of caudal, and about 10 more rather enlarged on latter; 12 scales in a vertical series between origin of rayed dorsal and lateral line; 26 scales in a vertical series between origin of spinous anal and lateral line; pores about 61 in lateral line to base of caudal and about 5 more on latter; width of head $2\frac{1}{4}$ in its length; depth of head over posterior margin of orbit $1\frac{3}{4}$; mandible 2; third dorsal spine $2\frac{2}{7}$; third dorsal ray $2\frac{1}{6}$; third anal spine $2\frac{1}{4}$; third anal ray 2; least depth of caudal peduncle $3\frac{3}{5}$; caudal $1\frac{4}{7}$; pectoral $1\frac{4}{7}$; ventral $1\frac{7}{8}$; snout $5\frac{2}{5}$ in head measured from tip of upper jaw; eye 4; maxillary $2\frac{2}{5}$; interorbital space 8.

Body elongate, compressed, rather ellipsoid, with evenly convergent convex profiles both in front and behind, back a little elevated and greatest depth about base of fourth dorsal spine. Edges of body rounded. Caudal peduncle compressed, and its length about $1\frac{1}{2}$ in its least depth.

Head compressed, rather elongate, upper profile nearly straight to predorsal region and a trifle more inclined than lower. Snout convex,

and its length about $\frac{2}{3}$ its width. Eye circular, high or touching upper profile, rounded, and about first third in length of head. Mouth rather large, oblique, and mandible protruding. Maxillary exposed, reaching middle of orbit, and its distal expansion 2 in latter. Supplemental maxillary narrow. Lips rather thin. Teeth fine, pointed, in bands in jaws, some of inner anterior upper, and inner series of lower, a little enlarged and depressible. Mandibular teeth mostly biserial along sides. A pair of small curved canines in front of each jaw and mandibular close set. Fine teeth on vomer and palatines. Tongue elongate, slenderly attenuate, smooth and free. Nostrils close together on side of snout above front rim of eye,

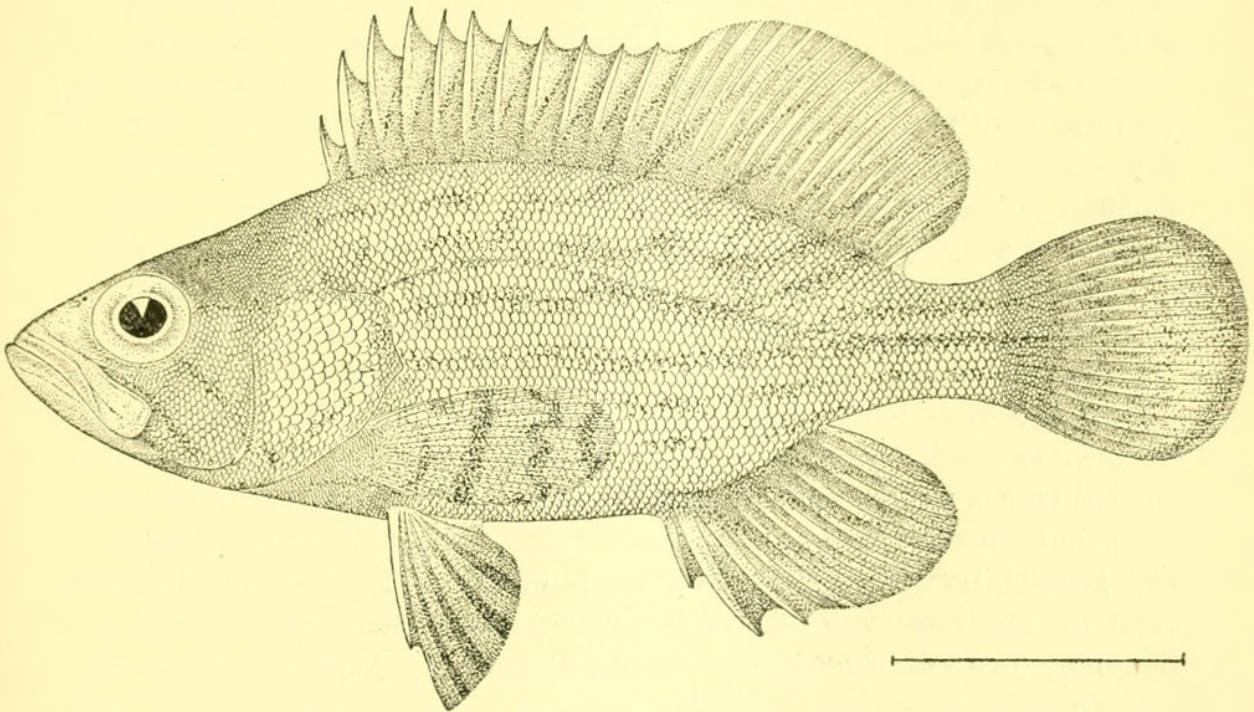


Fig. 3.—*Epinephelus lightfooti* Fowler. (Type.)

and of about equal size. Interorbital space flattened, with a slight depression in front. Margin of preorbital entire, slightly undulate. Posterior preopercular margin serrate, serræ enlarging towards angle which ends in a forwardly directed enlarged spine, and lower edge entire or but slightly roughened. Opercular spines 3, upper and median opposite though latter largest and nearer lowest, which is anterior.

Gill-opening extending forward opposite middle of eye. Gill-rakers lanceolate, $7 + 15$, equal to filaments or about $2\frac{1}{2}$ in eye. Pseudo-branchiæ a little less than filaments. Isthmus narrowly convergent and with a median groove. Branchiostegals 7.

Scales smooth, cycloid, largest on opercle and side, and extending in slightly wavy longitudinal series crossing lateral line posteriorly. Small scales on bases of fins, especially vertical ones. Head largely scaly, except intermandibular region, lips and maxillary. Scales on cheek in 17 series. A broad scaly flap over axil of pectoral, which has a pit. Lateral line of small simple tubes, more or less concurrent with dorsal profile, though rather abruptly convex at summit, and running a little high along side of caudal peduncle.

Spinous dorsal inserted midway between tip of mandible and origin of rayed dorsal, and spines graduated down from third and fourth which are subequally longest, with margin of fin a little notched between each. Origin of rayed dorsal falling nearly midway between that of spinous fin and base of caudal, antero-median rays longest, and edge of fin rounded. Spinous anal inserted a little nearer origin of pectoral than base of caudal, and second and third spines subequal, much longer than first. Rayed anal similar to rayed dorsal only smaller. Caudal rounded. Pectoral rounded and reaching $\frac{4}{5}$ of space to spinous anal. Ventral inserted behind base of pectoral, reaching $\frac{5}{7}$ of space to origin of spinous anal, and spine $1\frac{1}{2}$ in fin. Vent in last third of postventral space just before tips of depressed ventrals.

Color in alcohol pale or dull tawny-brown, with traces of darker or deeper brownish longitudinal streaks over sides, and these slightly inclined on back to extend out on bases of dorsals. Some similar colored bars or streaks indistinctly on head. Rayed dorsal pale brownish on outer portion, and on caudal a trifle darker. Anal deep brownish like general body-color. Pectoral very pale brownish with about 4 deep brown transverse bands. Ventral pale brownish basally and becoming dusky-brown distally. Under surface of head and abdomen scarcely paler than sides. Iris slaty.

Length $4\frac{3}{16}$ inches.

Type, No. 16,514, A. N. S. P. San Domingo, West Indies. Prof. William M. Gabb.

The single example described above differs from *E. chloropterus* chiefly in coloration, the pectoral having but 3 dark transverse bands, while in the latter there are 8 or 9. They are shown by MM. Vaillant and Bocourt, in *Miss. Sci. Mex., Poiss.*, 1875, p. 107, Pl. 5, fig. 3 *a-c*, as rather large sparse pale brown blotches.

(Named for Benjamin H. Lightfoot, who collected fishes at St. Kitts, West Indies.)

Mycteroperca venenosa apua (Bloch).

St. Martin's, W. I. (Dr. R. E. van Rijgersma); St. Croix, W. I. (Dr. R. E. Griffith).

Mycteroperca acutirostris (Valenciennes).

Epinephelus chalinus Cope, Trans. Amer. Philos. Soc. Phila., (2) XIV, 1871, p. 465. Type, No. 12,768, A. N. S. P. St. Martin's, West Indies. Dr. R. E. van Rijgersma.

Head $2\frac{1}{2}$; depth $2\frac{5}{7}$; scales 72 in lateral line to base of caudal and 9 more on latter; about 22 scales between origin of spinous dorsal and lateral line in a vertical series; 34 scales in a vertical series between origin of spinous anal and lateral line; width of head 3 in its length; fourth dorsal spine 3; seventh dorsal ray $2\frac{1}{2}$; third anal spine $3\frac{1}{2}$; sixth anal ray 2; caudal $1\frac{1}{2}$; least depth of caudal peduncle $2\frac{1}{2}$; pectoral $1\frac{1}{2}$; ventral $1\frac{3}{4}$; snout $3\frac{2}{3}$ in head measured from tip of upper jaw; eye $4\frac{1}{2}$; maxillary $2\frac{1}{2}$; interorbital space $6\frac{1}{2}$. Body well compressed. Head compressed, rhomboidal. Snout short, convex. Eye a little longer than deep, high and anterior. Mouth oblique. Mandible protruding, with slight process at symphysis. Maxillary not quite reaching posterior margin of pupil, and its distal expansion $\frac{1}{2}$ of eye. Teeth biserial in jaws, conic, pointed, and inner mandibulars a little enlarged. A pair of canines in front above. Several depressible inner teeth in front of upper jaw. About 2 irregular series of small teeth on vomer and palatines. Tongue smooth, slender and free. Nostrils separated. Interorbital space nearly flat. Opercular spines 3, middle closer to lower, though most posterior. Gill-rakers III, 13 + 32, III, slender, a little longer than filaments or about $\frac{1}{2}$ of eye. Scales in rather wavy longitudinal series, upper crossing lateral line. About 25 series of scales on cheek. Tubes in lateral line simple. Spinous dorsal inserted much nearer origin of rayed dorsal than tip of snout. Rayed dorsal inserted about midway between origin of pectoral and base of caudal, rounded. Spinous anal inserted about midway between origin of ventral and tip of most posterior depressed anal ray, third spine longest, second but little shorter. Ventral spine about $\frac{2}{3}$ length of fin. Color in alcohol faded more or less brownish, and lower surface scarcely paler. From eye about 3 narrow deeper brown wavy lines extend longitudinally to become more or less reticulated about caudal peduncle. Also several others above and below though somewhat obscure. Traces of reticulated pattern are also seen on bases of vertical fins, whose edges together with those of ventrals are more or less broadly deep brownish. Iris silvery and brassy. Length $4\frac{1}{2}$ inches.

I do not accept Bloch's name *Epinephelus ruber*, as it does not seem to apply to the fish before me and therefore use the next one available.

Mycteroperca acutirostris tinea (Cantraine).

Italy (Bonaparte Coll.). Only a single large example, differing from

the preceding a little in the fins, scales, etc., and therefore it may provisionally be retained as a distinct form until satisfactory comparisons can be made.

CENTROPRISTINÆ.

To replace *Serraninæ*, as *Serranus* replaces *Epinephelus*.

Hypoplectrus unicolor crocotus (Cope). Fig. 4.

Plectropoma crocota Cope, Trans. Amer. Philos. Soc. Phila., (2), XIV, 1871, p. 466. Cotypes Nos. 13,291 (type) and 13,292, A. N. S. P. St. Martin's, West Indies. Dr. R. E. van Rijgersma.

Width of head $2\frac{1}{2}$ in its length; interorbital space 5 in head measured from tip of upper jaw. Body compressed and edges rounded. Caudal peduncle compressed. Head compressed, also snout and sides a little flattened, and its width about $\frac{7}{8}$ its length. Rami of mandible ele-

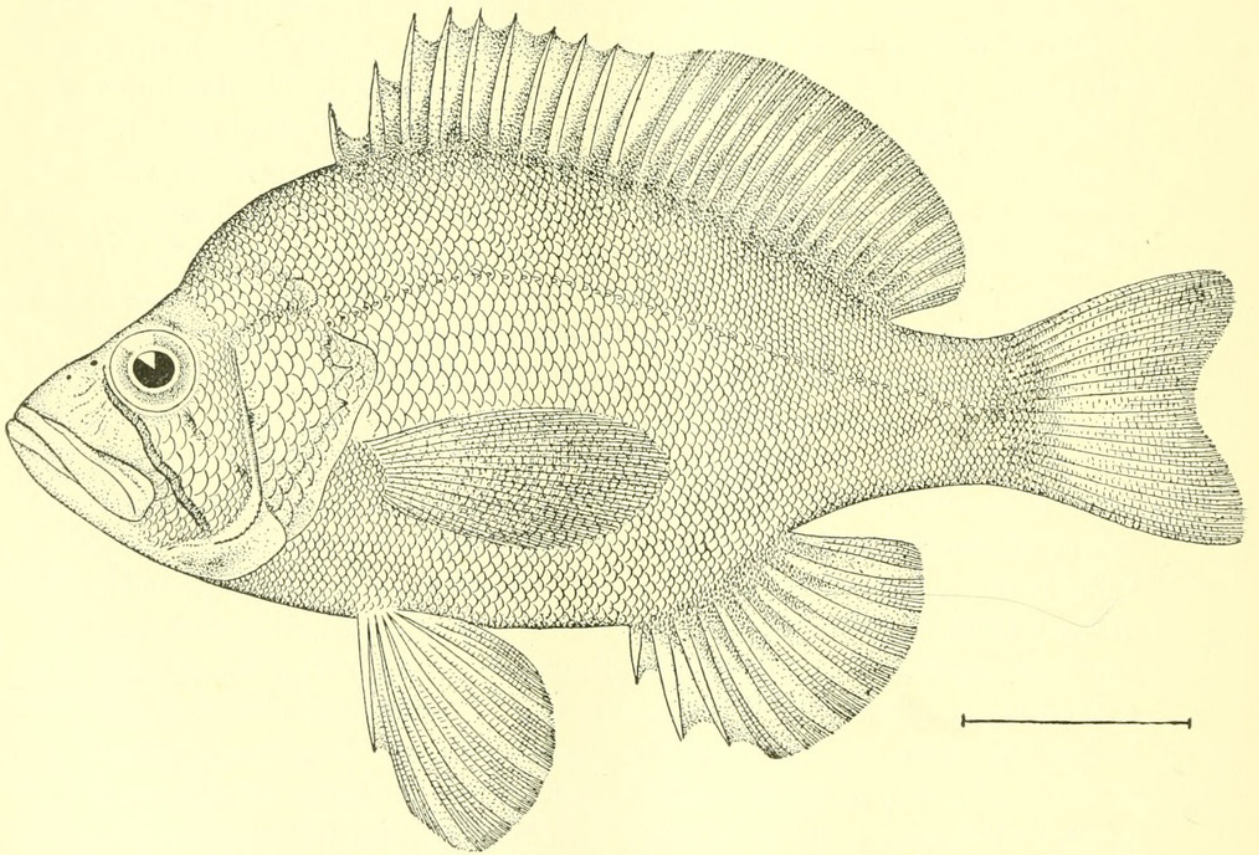


Fig. 4.—*Hypoplectrus unicolor crocotus* (Cope). (Cotype of *Plectropoma crocota* Cope.)

vated a little inside mouth. Teeth erect in jaws, in rather narrow bands in front with some of inner a little large and others becoming smaller posteriorly. Outer series a little enlarged along most of edge

of upper jaw, though becoming progressively smaller posteriorly. Canines $\frac{2-2}{2-2}$ in front of jaws, lower pairs smaller. Mandible with a narrow band of fine teeth, becoming narrower posteriorly. Each side of mandible with about 5 or 6 enlarged canines. Bands of minute teeth on vomer and palatines. Tongue long, slender, pointed and free. Interorbital space flattened. Gill-opening forward to posterior nostril. Gill-rakers v, $2 + 9$, II, equal filaments and about half of eye. Pseudo-branchiæ as long as filaments. Axil of pectoral rather deep. Scales finely ctenoid. Interorbital space and mandible naked. Tubes of lateral line simple. Vent about last fourth in space between tip of ventral spine and origin of spinous anal. Color in alcohol rather bright brown, back deeper colored, also upper surface of head. A deep brown line along upper margin of preopercle a short distance and with others below. Around eye a more or less interrupted deep brown line which in front extends down across cheek behind maxillary to lower anterior edge of preopercle. On posterior part of cheek traces of a similarly inclined obsolete line towards angle of preopercle. On snout and preorbital several small brownish spots. Fins all plain or pale brownish, spinous dorsal darkest basally. Iris slaty. Length $5\frac{1}{4}$ inches. Type.

Hypoplectrus unicolor chlorurus (Cuvier).

St. Croix, W. I. (Thomas Davidson, Dr. R. E. Griffith).

Paralabrax nebulifer (Girard).

California? (E. D. Cope); San Diego, Cal. (Mus. Comp. Zool. Camb.).

Paralabrax maculo-fasciatus (Steindachner).

Los Angeles Bay, Cal. (W. N. Lockington).

Paralabrax clathratus (Girard).

Santa Barbara, Cal. (U. S. F. C.).

Centropristis striatus (Linnæus).

Bayport, Fla. (E. D. Cope); South Carolina (Dr. J. E. Holbrook); Newport, R. I. (Samuel Powell and Dr. J. Leidy); Wood's Hole, Mass. (U. S. F. C.).

Centropristis philadelphicus (Linnæus).

South Carolina (Dr. J. E. Holbrook).

Diplectrum radiale (Quoy and Gaimard).

Rio Janeiro, Brazil (Dr. W. S. W. Ruschenberger); Mananguéz, Porto Rico (U. S. F. C.).

Diplectrum formosum (Linnæus).

Clearwater, Fla. (Dr. H. A. Pilsbry).

EUDULUS gen. nom. nov.Type *Dules auriga* Cuvier.

The species of this genus are close to *Prionodes* Jenyns, but differ in having 6 branchiostegals and a truncate caudal. The typical species, *Eudulus auriga*, has the third dorsal spine whip-like and prolonged.

In the *Proc. Acad. Nat. Sci. Phila.*, 1907, p. 150, Dr. Theodore Gill has taken exception to my contention that his genus *Kuhlia* is superseded by *Dules* Cuvier and evidently that *Dules malo* Valenciennes is older than *Dules mato* Lesson. Although my conclusions will now be found to agree somewhat with Dr. Gill's they are the results of different methods. For those who contend that *Dulus* Viellot, *Anal. Ornith. Element.*, 1816, p. 42, proposed for a genus of birds, and *Dules* Cuvier, *Règne Animal*, Ed. 2, II, 1829, p. 147, are different names, *Dules* will still be found available in place of *Kuhlia*. This led me to frame *Duleidæ*, rather than *Dulidæ*, as emended by Dr. Gill. In the *Foreign Quarterly Review* for January to March, 1829, vols. I, II, IV and V of *Règne Animal*, Ed. 2, are reviewed, and volume III is said to be delayed a few months. In this journal for 1830 volume III is seen to have at last appeared. Still further evidence is found for the early appearance of Cuvier's *Règne Animal* in Ferrusac's *Bull. Sci. Nat. Geol.*, Paris, XVIII, 1829, p. 95 where it is noticed by July. According to this last, in vol. XIX, 1829, p. 369, is found the first mention of vol. III, *Hist. Nat. Poiss.*, showing it and the succeeding volumes had not been received till November or December. Cuvier's footnote in the *Règne Animal* to "*Dules auriga* Cuv. et. Val., III, li;—*D. tæniurus*, ib., liii," etc., does not prove that they really did appear before the work in which they are quoted, thus leaving both of these names *nomina nuda* and therefore either not available as the type. In the bound copy of the plates before me only two species are shown, and both numbered 52, though the first has been corrected by the engraver as 51 for *Dules marginatus* and 52 allowed to remain for *D. auriga*. The next plate or 53 is *Therapon theraps*. The evidence I have gathered may be seen to have justified *Dules* Cuvier¹ replacing *Kuhlia* Gill, though I now consider the former preoccupied.

In the case of *Kuhlia malo* Lesson's work may have probably appeared later, as in *An. Mag. Nat.*, London, (7) XVII, 1906, p. 336, Messrs. Sherborn and Woodward make corrections to a previous paper on the dates. This would carry the reference to *Dules mato* back to Novem-

¹ The species originally noted under this name by me may now be known as *Kuhlia marginata*, *K. marginata boninensis*, *K. rupestris* and *K. malo*.

ber 12, 1831. "March 22, 1828," is a mistake for p. 223 in volume I of the *Coquille*. Dr. Gill's argument may therefore be probably justified in this respect, though I do not accept *Kuhlia mato* now as the correct form, and that "Cuvier's name may have resulted from a typographical error."

The priority of the second edition of the *Règne Animal* and the early volumes of the *Hist. Nat. Poiss* seem to have been juggled by a number of writers, causing confusion in the selection of some names, so that it is hoped the above remarks may conduce to solve the problem. As an instance *Gempylus* will thus be seen to replace *Lemnisoma*, if identical.

(*Ev*, genuine; *δοῦλος*, *Dulus* or *Dules*, in the latter form an old name applied to these fishes, meaning a slave, with reference to the fish being under the lash of the long dorsal spine.)

CALLIDULUS subgen. nov.

Type *Centropristis subligarius* Cope.

Third dorsal spine not longer at any age than fourth.

This differs from subgenus *Eudulus* chiefly in the above character.

(*Καλλος*, beauty; *δοῦλος*, *Dulus*.)

Eudulus subligarius (Cope). Fig. 4.

Centropristis subligarius Cope, Proc. Acad. Nat. Sci. Phila., 1870, p. 120.
Type, No. 13,675, A. N. S. P. Southern coast near Pensacola.

Width of head 2 in its length; interorbital space 7 in head measured from tip of upper jaw. Body compressed, edges rounded, and caudal peduncle compressed. Head compressed, its sides swollen below and becoming more narrow above. Snout much broader than long. Bands of small teeth in jaws, outer canines a little better developed than inner, and largest in front of upper jaw and on sides of mandible. Vomer with broad patch of fine teeth, and a narrow band on each palatine. Tongue narrow, free and smooth. Interorbital space narrow and flattened. Gill-opening not quite reaching front margin of eye. Rakers v, 1 + 7, v, much shorter than filaments which are 2 in eye. Gill-membranes free over broadly convex isthmus. Scales finely ctenoid. Interorbital space, mandible and branchiostegal region naked. Tubes in lateral line simple. Color in alcohol deep brownish, fading paler on lower surface of body and fins. Above lateral line about 5 narrow deeper brown lines than body-color parallel with courses of scales. Below lateral line each series of scales with a deeper brown longitudinal line similar to those above, though soon fading out on costal region. Rayed dorsal and anal, caudal and pectoral all marked

with deep brown pencillings, due to each ray marked with as many as 10 short deep brown bars or spots. Ventrals pale, each with a dusky-brown broad shade from base to tip of longest rays, though leaving a pale margin in front. Preanal region white, strikingly in contrast with deep brown color above anal, and this pale color extending up till about level with lower border of orbit, where it fades out. Its width also decreases above and its anterior boundary dark and distinct. Cheek brownish. A deep dusky-brown blotch on front of rayed dorsal,

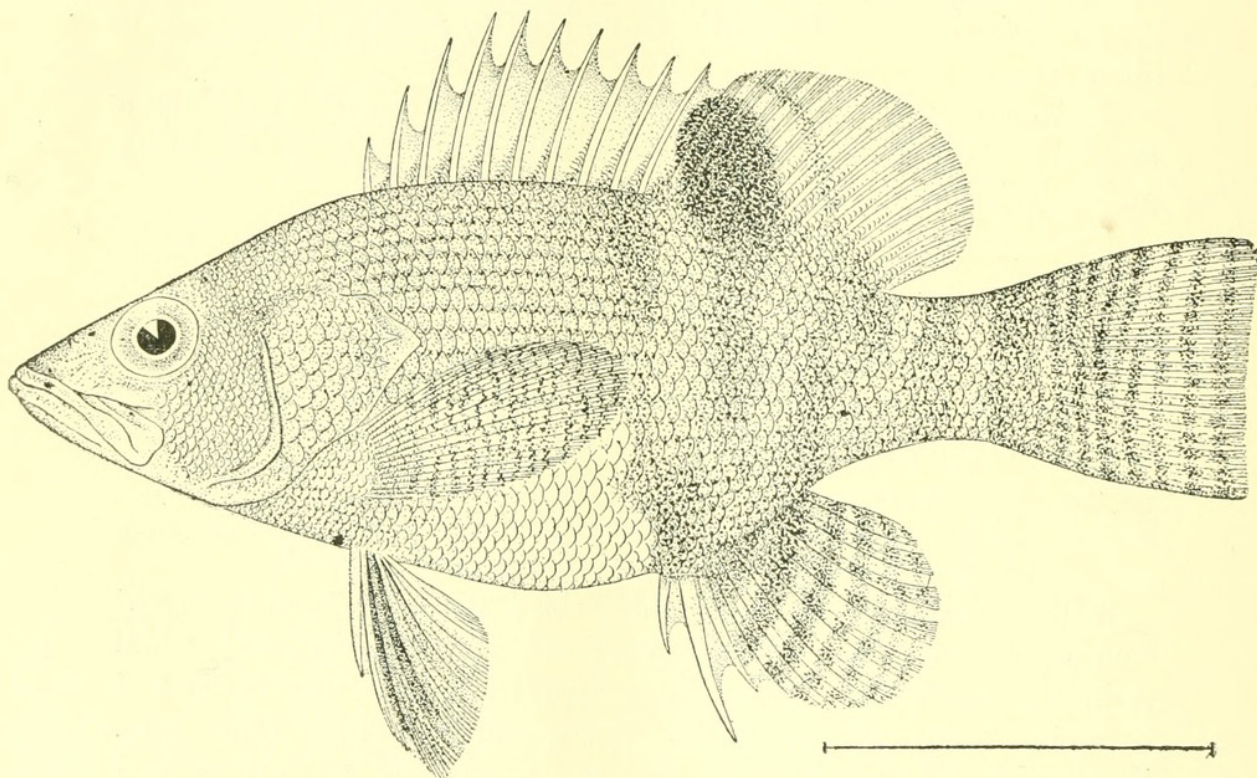


Fig. 5.—*Eudulus subligarius* (Cope). (Type of *Centropristis subligarius* Cope.)

beginning just behind tip of spinous fin, extends vertically down to back and fades out above base of spinous anal above. Also traces of another, though indistinct, from bases of last dorsal rays and Λ -shaped. At bases of uppermost caudal rays a vertical band of deep brown extends down, though it is dark and saddle-like above. Iris brownish. Length 3 inches.

Paracentropristis hepatus (Linnæus).

Italy (Bonaparte Coll.).

Serranellus cabrilla (Linnæus).

Italy (Bonaparte Coll.).

Serranellus scriba (Linnæus).

Italy (Bonaparte Coll.).

Paranthias furcifer (Valenciennes).

St. Croix, W. I. (Capt. Thomas Davidson).

Anthias anthias (Linnæus).

Italy (Bonaparte Coll.).

CALLANTHIINÆ.

Branchiostegals 6. Lateral line single, and lost on upper surface of caudal peduncle or under last dorsal rays. A single dorsal. Ventral rays 5.

Callanthias ruber (Rafinesque).

Anthias bupthalmus Bonaparte, Fauna Italica, Pesc. III, II, 1833, descr., Pl. 86, fig. 3. Cotypes, Nos. 13,624 (type) to 13,637, and 17,161, A. N. S. P. Italy. Bonaparte Coll. (Nos. 75 and 80)

Head $3\frac{2}{5}$; depth $3\frac{5}{8}$; D. XI, 10; A. III, 10; scales about 40 in lateral count to base of caudal and several more on latter; about 37 scales in median lateral line to base of caudal; about 24 tubes in dorsal lateral line; 2 scales between origin of spinous dorsal and dorsal lateral line; 5 scales between dorsal lateral line and median lateral line, in a vertical series opposite origin of rayed dorsal; 8 scales in a vertical series between median course of median lateral line and origin of spinous anal; width of head 2 in its length; eleventh dorsal spine $2\frac{1}{5}$; third dorsal ray $1\frac{1}{8}$; third anal spine $2\frac{2}{7}$; sixth anal ray $1\frac{2}{5}$; median caudal rays $1\frac{2}{5}$; least depth of caudal peduncle $2\frac{1}{5}$; pectoral $1\frac{1}{4}$; ventral $1\frac{1}{6}$; snout 4 in head measured from tip of upper jaw; eye $2\frac{2}{5}$; interorbital space $3\frac{1}{2}$; maxillary $2\frac{1}{10}$. Body well compressed, and edges more or less rounded, or predorsal region with only an obsolete median keel. Caudal peduncle compressed. Head well compressed. Snout about as wide as long. Lips thin. Rami of mandible a little elevated inside mouth. Teeth in jaws uniserial, conic and rather small. At front of each jaw a pair of canines which protrude somewhat, and others along each ramus of mandible. No vomerine or palatine teeth. Tongue narrow, free and pointed. Interorbital space convex. Gill-opening forward about first third of orbit. Rakers 10 + 25, slender, much longer than filaments or about equal to eye horizontally. Pseudo-branchiæ nearly as large as filaments. Scales finely ctenoid. Color in alcohol faded more or less uniform brownish, fins pale. Iris brassy-yellow. Length $5\frac{3}{4}$ inches. Type.

PHAROPTERYGINÆ.

Branchiostegals 6. Vertebræ 25 or 26. Lateral lines 2, upper lost on upper surface of caudal peduncle or under last dorsal rays, and

lower extending along middle of side of tail. A single dorsal. Ventral rays 4.

Pharopteryx corallicola (Bleeker).

Padang, Sumatra (A. C. Harrison and Dr. H. M. Hiller).

Rypticus xanti (Gill).

Head $2\frac{3}{4}$; depth $3\frac{2}{5}$; D. III, 25, 1; A. 16, 1; scales about 103 in lateral line to base of caudal and 8 more on latter; pores about 64 in lateral line to base of caudal; about 13 scales in a vertical series between base of second dorsal spine and lateral line; about 27 scales in a vertical series between origin of spinous anal and lateral line; mandible $1\frac{7}{8}$ in head; second dorsal spine 4; fifteenth dorsal ray $2\frac{1}{3}$; eleventh anal ray $2\frac{1}{2}$; least depth of caudal peduncle 3; caudal $1\frac{4}{5}$; pectoral $1\frac{7}{8}$; ventral $3\frac{1}{4}$; snout $3\frac{4}{7}$ in head measured from tip of upper jaw; eye $5\frac{1}{4}$; maxillary $2\frac{1}{4}$; interorbital space 2 in snout. Body long, rather slender, compressed and lower profile a little more convex than upper. Head compressed, and upper profile more or less straight from tip of snout to dorsal. Snout broad as long, surface convex. Eye circular, high and about first third in head. Mouth oblique, with robust mandible well protruding. Lips fleshy. Maxillary broad, reaching posterior margin of eye and its distal expansion $\frac{4}{5}$ of eye. Rather broad bands of teeth in jaws, and some of inner a little enlarged pointed though not depressible. Bands of fine teeth on vomer and palatines. Tongue long, slender and free. Nostrils near together in front of snout a little above, and anterior in a short cutaneous tube. Interorbital space rather narrowly convex. Preorbital with entire margin convex. Margin of preopercle with 3 spines, lowest largest and uppermost smallest. Opercular spines 3, median most posterior, closer to uppermost, and lowest most anterior. Gill-rakers VIII, 1 + 8, VII, short, robust, and a little longer than filaments or half of orbit. Scales small, smooth, and in more or less slightly wavy longitudinal series crossing lateral line behind. Small scales on bases of fins. Head covered with small scales, except on lips and maxillary, and about 24 series on cheek. Lateral line convex at first under spinous dorsal and then sloping gradually down, of simple tubes. Spinous dorsal inserted near first third in entire length of fish, and second spine longest. Rayed dorsal separated (though joined by membrane) by a space about same as space between last 2 dorsal spines, origin of fin midway in length of body and posterior fourth of fin highest with convex edge. Anal inserted midway between origin of pectoral and base of caudal and most of fin more or less equally high. Caudal rounded. Pectoral about $\frac{3}{5}$ to anal and median rays longest. Ventral inserted midway

between tip of mandible and vent, well before origin of pectoral and reaching $3\frac{1}{2}$ to anal or 3 to vent, and spine 2 in fin. Color in alcohol more or less pale or uniform brownish, above variegated with darker marblings and somewhat paler below. Fins all with more or less brownish. Iris pale slaty. Length $4\frac{3}{4}$ inches. Panama. Dr. W. S. W. Ruschenberger.

Rypticus saponaceus (Schneider).

West Palm Beach, Fla. (George B. Wood).

Rypticus coriaceus (Cope).

Eleutheractis coriaceus Cope, Trans. Am. Philos. Soc. Phila., (2) XIV, 1871, p. 467, fig. 3. Type, No. 13,445, A. N. S. P. St. Martin's, West Indies. Dr. R. E. van Rijgersma.

Width of head $2\frac{1}{2}$ in its length; interorbital space 12 in head measured from tip of upper jaw. Edges of body rounded and caudal peduncle compressed. Head compressed. Supplemental maxillary narrow and long. Bands of small fine teeth in jaws and on vomer and palatines. Tongue edentulous, rather long, narrow and free. Interorbital space narrow and slightly convex. Gill-opening forward to posterior margin of pupil. Rakers IX, 2 + 5, IX, lanceolate, and about $\frac{3}{5}$ of longest filaments which are $\frac{3}{5}$ of orbit. Vent near front of anal. Color in alcohol more or less deep uniform brownish, fins little darker. Length $8\frac{3}{4}$ inches.

Rypticus bistrispinis (Mitchill).

Rhypticus maculatus Holbrook, Ich. S. Car., Ed. 2, I, 1860, p. 42, Pl. 6, fig. ? Type, No. 13,232, A. N. S. P. South Carolina (off Cape Romain) Dr. J. E. Holbrook.

The above example may be Holbrook's type, but his description gives the length of his single example as 8 inches, while the above is but $7\frac{1}{4}$. Also as the color has faded I cannot detect the markings or spots he indicates.



Fowler, Henry W. 1907. "Notes on Serranidæ." *Proceedings of the Academy of Natural Sciences of Philadelphia* 59, 249–269.

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