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Family Periophthalmidae

Body very elongated, partly cylindrical to compressed. Head large, broad, truncate, deep. Eyes conspicuous, close set, above upper profile of head, with well developed lower eyelid. Upper teeth in one or two rows, lower in one row. Gill openings somewhat narrow. D₁th-mus broad. Branchiostegals 5. Scales cycloid or weakly ctenoid, very small. Head scaled above, on sides and front, or scales may be rudimentary. Two separate dorsals, second larger. Caudal lanceolate, or obliquely truncate. Pectoral with muscular base, modified as locomotive organ when fish goes ashore. Ventrals more or less united, or separated, with thick base.

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Shore fishes of tropical regions, widely distributed. Some soon drown if confined to deep water from which they are unable to emerge.

Analysis of genera

- a.¹ Erect teeth in both jaws.
- b.¹ Scales 75 to 100; dorsal spines 10 to 15; ventrals divided, merely united basally. Periophthalmus
- b.² Scales 50 to 60; dorsal spines none to 15; ventrals separated in young, united with age. Periophthalmodon
- a.² Lower teeth horizontal; ventrals united.
- c.¹ Scales 60 to 100; dorsal V, I, 23 to 27; lower teeth with dilated tips, ^{truncated} ^{apiculated}; slightly emarginate or lobate. Bolopthalmus
- c.² Scales microscopic; dorsal V or VI, I, 24 to 26; lower teeth acute, simple or medium. Scartelaos

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Genus Periophthalmus Schneider

Periophthalmus Schneider, Syst.
Ichth. Bloch, p. 63, 1801. (Type

~~Periophthalmus papilio Schneider,~~
designated by Bleeker, Arch. Néerl.
Sci. Nat., Harlem, vol. 9, p. 326, 1874.)

Gobius hoelreuteri Pallas, designated by
Gill, Proc. Acad. Nat. Sci. Philadelphia, 1863 (p. 271).

Euchoristopus Gill, Proc. Acad. Nat.
Sci. Philadelphia, p. 271, 1863.

(Type Periophthalmus hoelreuteri
Schneider, monotypic.)

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1812

Body elongate, little compressed. Head compressed. Snout blunt, long as eye. Eyes in front half of head, close set, prominent above upper profile of head, with lower eyelid well developed. Mouth horizontal, jaws equal. Teeth uniserial in jaws, uneven, front ones more or less canine like. Tongue rounded, nearly entirely adnate to mouth floor. Gill openings narrow, before lower $\frac{3}{4}$ of pectoral fin. Isthmus wide. Scales 60 to 100, cycloid to feebly ctenoid. Head scaled above behind eyes and on opercle and preopercle to entirely scaled. Dorsals close set, first with 10 to 15 spines, second with 12 to 14 rays. Anal rays 11 to 14. Caudal asymmetrical oblong, upper rays longer. Pectoral with muscular mobile base. Ventral below pectoral, ^{inner} rays

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entirely separated to completely united.

A single widely ranging polymorphic species, with a dozen or more nominal forms, none of which appear to have any very trenchant characters. Herre says "It is one of the most extraordinary of all fishes, and detailed accounts of its habits may read like an extravaganza to one who has never seen it performing on some mud flat or beside some jungle-embowered tide creek."

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Periophthalmus cantonensis (Osbeck)

Apocryptes cantonensis Osbeck,
Iter. Chin., p. 171, 1765 (type locality,
Canton).

Periophthalmus cantonensis Jordan
 and Snyder, Proc. U. S. Nat. Mus.,
 vol. 24, p. 49, 1901 (Yotoku on
 Tokyo Bay). — Jordan and Seale,
 Proc. U. S. Nat. Mus., vol. 29, p. 527,
 1905 (Shanghai). — Franz, Abhandl.
 Kon. Bayer. Akad. Wiss., vol. 4, Suppl.
 Band 1, p. 66, 1910 (Fukuoka; Yokohama).
 — Jordan, Tanaka, Snyder, Journ. College Sci., vol. 33, art. 1, p. 340, 1913 (reference).
 — Chu, Biol. Bull. St. John's Univ.,
 no. 1, p. 167, Jan. 1931 (reference).
 — Tomiyama, Jap. Journ. Zool.,
 vol. 7, no. 1, p. 99, 1936 (Tokyo;
 Formosa; Korea; Carolines; Truk;
 Palau).
 — Anonymous, Illustrat. Jap. Aquat. Pl.
 Animals, vol. 1, pl. 47, fig. 1, 1931.

Gobius tannoao Osbeck, Reise nach
 China Ost-Ind., vol. 1, p. 201, 1757
 (type locality, Canton) (pre-Linnaean).
 — Richardson, Ichth. China and
 Japan, p. 206, 1846 (Canton).

Gobius hoebrenleri Pallas, Spicilegium
Zool., fasc. 8, p. 8, pl. 2, figs. 1-3, 1770
 (type locality, Country unknown).
 — Bonnaterre, Tabl. Ichth., p. 64,
 pl. 36, fig. 139, 1788 (copied). —
Gmelin, Syst. Nat. Linnaeus, pt. 1,
 p. 1205, 1789 (copied). — Walbaum,
Artedi Pisc., vol. 3, p. 198, 1792 (copied).

Pseudechidna brummeri (Bleeker).

Muraena brummeri Bleeker, Nat. Tyds. Ned. Indie, vol. 17, 1858-59, p. 37 (type locality, Atapupu, Timor).—Schmeltz, Cat. Mus. Godeffroy, no. 7, 1879, p. 60 (Raiatea).—Pohl, op. cit., no. 9, 1884, p. 40 (Raiatea).

Strophidon brummeri Schmeltz, op. cit., no. 6, 1877, p. 18 (Raiatea).—
Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 429 (Huahine).—
Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 5 (compiled); vol. 11, no. 5, 1931, p. 317 (reference).

Pseudechidna brummeri Fowler, Mem. Bishop Mus., vol. 11, no. 6, 1934, p. 389 (reference).

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Gobius koelreuteri Pallas, Spicilegia
Zool., fasc. 8, p. 8, pl. 2, figs. 1-3, 1770
(type locality, locality unknown).

Periophthalmus koelreuteri Schneider,
Syst. Ichth. Bloch, p. 65, 1801 (locality
not given) — Rüppell, Neue Wirbelth. Fische, p. 140, 1835 (Massang)
— Valenciennes, Hist. Nat.
Poiss., vol. 12, p. (181) 136, 1837 (Seychelles;
Calcutta; Bombay; Port Praslin; Waigiu; Dualau;
Bouro; New Guinea; Vanicolo; Red Sea).

Nat. Tijds. Ned. Indië, vol. 6, p. 252, 1850 (Padang);
— Bleeker, Verh. Batavia. Genoot.
(Nat. Ichth. Bengal), vol. 25, p. 50, 1853
(reference); Nat. Tijds. Ned. Indië,
vol. 6, p. 313, 1854 (Larantuka, Flores).

— Günther, Cat. Fish. Brit. Mus., vol. 3,
p. 97, 1861 (reference).

Periophthalmus cantonensis (Osbeck)

Apocryptes cantonensis Osbeck, Reise
nach China Ost-Ind., vol. 1, p. 171, 1757;
ed. , p. 201, 1771 (type locality, Canton).

— Schmeltz, Cat. Mus. Godeffroy, no. 3, p. 9, 1866 (South Seas). — Bleeker, Arch. Néerl. Sci. Nat. Harlem, vol. 2, p. 398, 1867 (Halmahera). — Schmeltz, op. cit., no. 4, p. 18, 1869 (South Seas; ^{Klunginger, Verh. zool. bot. Gesell. Wien, vol. 21, p. 485, 1871 (Red Sea)} Red Sea). — Peters, Günther, Ann. Mag. Nat. Hist. London, ser. 4, vol. 12, p. 242, 1873 (Shanghai); Journ. Mus. Godeffroy, vol. 6, pt. 11, p. 185, 1877 (Peléws; Samoa; Fiji). — Schmeltz, op. cit., no. 7, p. 47, 1879 (South Seas).

— Mantens, Preuss. Exped. Ost Asien, vol. 1, p. 392, 1876 (^{Canton; Manila; Pontianak;} ~~Indonesien; Larentula; Flores~~). — Peters, Monatsb. Akad. Wiss. Berlin, p. 840, 1876 (1877) (Amboina; Mermaid Strait, Port Australia). — Day, Fishes of India, pt. 2, p. 303, pl. 64, fig. 8, 1876 (Sind, Andaman).

— Károli, Termesz. Füzetek Budapest, vol. 5, p. 166, 1881 (⁽¹⁸⁸²⁾ ~~Singapore;~~ ^{Sarawak; Santabug; Nagasaki}). — Macleay, Proc. Linn. Soc. New South Wales, vol. 7, p. 361, 1882 (New Guinea). — Meyer, An. Soc. Esp. Hist. Nat., Madrid, vol. 14, p. 29, 1885 (Cebu; Ternate). — Hickson, Nat. in North Celebes, pp. 30-32, colored frontispiece, 1889. — Day, Fishes Fauna British India, Fishes, vol. 2, p. 288, fig. 95, 1889.

- Sauvage, Hist. Nat. Madagascar, Poiss., p. 520, Pl. 40 A, fig. 4, 1891 (reference).
- Ogilby, Proc. Linn. Soc. New South Wales, vol. 22, p. 770, 1897 (New Caledonia).
- Steel, Proc. Linn. Soc. New South Wales, vol. 23, p. 363, 1898 (British New Guinea).
- Seale, Occas. Pap. Bishop Mus., vol. 1, no. 35, p. 126, 1900 (Guam). — Johnstone, Fasc. Malayenses, Annandale and Robinson, Zool., pt. 2, p. 295, 1903 (Patani; Jhering).
- Weber, Nova Guinea, vol. 5, pt. 2, p. 262, 1908 (Tjintan Bay, Merauke R. mouth).
- Garman, Bull. Mus. Comp. Zool., vol. 39, p. 236, 1903 (Great Barrier Reef).
- Pellegrin, Bull. Mus. Hist. Nat. Paris, vol. 18, p. 206, 1912 (Port Sandwich, New Hebrides). — Weber, Nova Guinea, vol. 9, pt. 4, p. 603, 1913 (Lorentz River).
- Beaufort, Bijdr. Dierk. Amsterdam, vol. 19, p. 147, 1913 (Saonek; Sorang).
- Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, p. 403, 1917 (reference).
- Ann. South African Mus., vol. 13, p. 81, 1913 (Katal; Durban Bay).

~~— McCulloch and Ogilby, Rec. Austral.
Mus., vol. 12, no. 10, p. 194, pl. 31, fig.
1, July 14, 1919 (Cape Bedford and
Cooktown, Queensland; Sunday I.,
North West Australia; Indita;
Samoa, Bougainville I., Solomons).~~

— Fowler, Bull. Bishop Mus., no. 22,
p. 36, 1925 (Samoa); Proc. Acad. Nat.
Sci. Philadelphia, vol. 79, p. 291, 1927
(Santa Maria, Philippines). —
Fowler and Bean, Proc. U. S. Nat.
Mus., vol. 71, art. 10, p. 11, 1927
(Benboelen, Sumatra). — Barnard,
Ann. South African Mus., vol. 21, pt.
2, p. 828, Oct. 1927 (Natal; Delagoa
Bay; Zulimane). — Fowler, Mem.
Bishop Mus., vol. 10, p. 416, fig. 63,
1928 (Pacific Ocean; Apia; Fata;
Guam; Suva; Ascension I.; Kusaie;
Strong I.; Samoa; Truk; New
Guinea); vol. 11, no. 5, p. 363, 1931
(reference); Proc. Acad. Nat. Sci.
Philadelphia, vol. 83, p. 245, 1931
(Mombasa); Occas. Pap. Bishop Mus.,

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vol. 9, no. 20, p. 12, Aug. 1932 (Suva);
Mem. Bishop Mus., vol. 11, no. 6, p.
444, 1934 (reference); Cat. Fish.
Malaya, p. 220, 1937 (reference).

Periophthalmus köbreuteri Schmeltz,
Cat. Mus. Godeffroy, no. 1, p. 9, 1864
(South Seas); no. 2, p. 8, 1865 (South
Seas); — Günther, Rep. Voy. Chall-
enger, vol. 1, pt. 6, p. 35, 1880 (Kand-
avu, Fiji).

(— Martens, Preuss. Exped. Ost Asien,
vol. 1, p. 392, 1876 (Canton; Manila;
Pontianak; Moluccas; Larentuka, Flores).

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Periophthalmus koebrenleri Alleyne and
Macleay, Proc. Linn. Soc. New South
Wales, vol. 1, p. 334, 1876 (Katow
River mouth, New Guinea).

Periophthalmus koebrenleri Pöhl,
Cat. Mus. Godeffroy, no. 9, p. 33, 1884
(South Seas).

Periophthalmus koebrenleri Pellegrin,
Bull. Mus. Hist. Nat. Paris, no. 4, p.
229, 1898 (Sayapan, Marianas).

Periophthalmus papilio Schneider,
Syst. Ichth., p. 55, pl. 14, 1801
(Type locality, Tranquebar). —
Valenciennes, Hist. Nat. Poiss., vol.
12, p. ⁽¹⁴⁵⁾190, fig. 353, 1837 (Senegal;
Gorée). — Günther, Cat. Fish. Brit.
Mus., vol. 3, p. 99, 1861 (Ceylon; Fernando Po;
Sierra Leone; Africa).

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Periophtalmus kalolo Lesson, Voy.
Coquille, Zool., vol. 2, pt. 1, p. 146,
1830 (type locality, Waigiu; Port
Praslin, New Ireland; Ovalau).

Periophtalmus argentilineatus
Valenciennes, Hist. Nat. Poiss., vol.
12, p. (144) 191, 1837 (type locality,
Waigiu; Ovalau; New Guinea;
Irawaddy River, Burma; Java).
— Bleeker, Nat. Tijds. Ned. Indie,
vol. 3, p. (237) 276, 1852 (Wahai, Ceram);
vol. 6, p. 458, 1854 (Amboina);
vol. 10, p. 469, 1856 (Saparoea);
vol. 12, p. 215, 1856 (Nias);
vol. 13, p. 56, 1857 (Kajeli, Buru);
vol. 16, p. 209, 1858 (Batjan);
Act. Soc. Sci. Ind. Ned. (Sumatra)
vol. 8, p. 14, 1859 (Tandjong); ^{(Acht. Sumatra), vol. 8, p. 43, Feb. Aug. 1859 (Tandjong; Priaman);} Nat.
Tijds. Ned. Indie, vol. 20, p. 219,
1859-60 (Tandjong), p. 331 (Amboina);
Verslag. Kon. Akad. Wet. Amsterdam,
ser. 2, vol. 2, p. 300, 1860 (Waigiu).

— Günther, Cat. Fish. Brit. Mus., ²¹⁹⁴ vol. 3, p. 98, 1861 (Java; Amboina; Borneo; Fiji)

— Bleeker, Ned. Tijds. Dierk., vol. 1, p. 73, 1863 (Banka), p. 228 (Ternate), p. 264 (Atapupu, Timor); Verslag. Kon. Akad. Wet. Amsterdam, vol. 16, p. 361, 1864 (Saparoua). —

Schmeltz, Cat. Mus. Godeffroy, no. 3, p. 9, 1866 (Samoa). — Bleeker, Arch. Néerl. Sci. Nat. Harlem, vol. 2, p. 398, 1867 (Halmahera); Verslag. Kon. Akad. Wet. Amsterdam, Ser. 2, vol. 2, p. 272, 1868 (Guebe, Moluccas).

— Schmeltz, Cat. Mus. Godeffroy, no. 7, p. 47, 1879 (Samoa). — Fowler, Proc. Acad. Nat. Sci. Philadelphia, p. 513, fig. 14, Aug. 16, 1905 (Baram, Borneo).

— Whitley, Journ. Pan-Pac. Res. Inst., vol. 3, no. 1, p. 13, Jan. - March 1928 (Santa Cruz Is.).

— McCulloch, Austral. Mus. Mem., no. 5, pt. 3, p. 381, Nov. 28, 1929 (reference).

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Periophthalmus koebrenleri var.
argentilineatus Schmeltz, Cat. Mus.
Godeffroy, no. 4, p. 18, 1861 (Samoa).
— Steindachner, Sitzs. Ber. Akad.
Wiss. Wien, vol. 115, pt. 1, p. 1407, 1906
(Upolu, Samoa). — McCulloch and
Ogilby, Rec. Austral. Mus., vol. 12, no.
10, p. 194, pl. 31, fig. 1, July 14, 1919
(Cape Bedford and Cooktown, Queensland;
Sunday Is., north west Australia;
India; Samoa; Bougainville I.,
Solomons).

Periophthalmus koebrenleri argentilineatus
Giltay, Mem. Mus. Roy. Hist. Nat.
Belg., vol. 5, fasc. 3, p. 100, 1933
(Sorang, New Guinea).
— McCulloch and Whitley, Mem. Queensland Mus.,
vol. 8, pt. 2, p. 172, July 7, 1925 (reference).

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Periophthalmus modestus Cantor,
Ann. Mag. Nat. Hist. London, vol. 9,
p. 29, 1842 (type locality, Chusan).
— Richardson, Ichth. China and
Japan, p. 208, 1846 (reference). —
Bleeker, Verh. Batavia. Genoot.
(hal. Ichth. Japan), vol. 25, p. 16,
1853 (reference); Nat. Tijds. Ned.
Indie, vol. 20, p. 235, 1859-60
(Nagasaki). — Jordan and Snyder,
Ann. Zool. Japon., vol. 3, p. 114, 1901
(Nagasaki).

— Günther, Cat. Fish. Brit. Mus., vol. 3, p. 98, 1860
(Hingpo; Hong Kong; Chusan; China).

Periophthalmus hoebrenleri var.
modestus Günther, Cat. Fish. Brit.
Mus., vol. 3, p. 98, 1861 (type; Hingpo;
Hong Kong).

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Periophthalmus borneensis Bleeker,
Nat. Tijds. Ned. Indie, vol. 1, p. (3) 11,
1850 (type locality, Bandjermassing,
Borneo); vol. 2, p. 416, 1851 (Sambas);
vol. 8, p. 152, 1855 (Bandjermassing);
vol. 9, p. 418, 1855 (Bandjermassing);
Act. Soc. Sci. Ind. Neerl., vol. 5,
no. 6, p. 3, 1858-59 (Palembang);
Ned. Tijds. Dierk., vol. 2, pp. 34, 174,
1865 (Siam).
(Acht. Sumatra) vol. 8, p. 43, Feb.-Aug. 1859 (reference);

Periophthalmus chrysopterus Bleeker,
Nat. Tijds. Ned. Indie, vol. 3, p. (717) 728,
1852 (type locality, Karang hadji, Banka);
vol. 22, p. 108, 1860 (Muntok, Banka).
— Günther, Cat. Fish. Brit. Mus., vol. 3, p. 109, 1861 (copy).
— Steindachner, Sitzb. Ber. Akad.
Wiss. Wien, vol. 60, Pt. 1, p. 563, 1870
(Singapore). ←

Periophthalmus chrysopterus Károli,
Termész. Füzetek, Budapest, vol. 5,
p. 166, 1881⁽¹⁸⁸²⁾ (Serangoon). Jordan
and Seale, Bull. Bur. Fisher., vol. 26,
p. 41, 1906 (1907) (Panay).
Periophthalmus chrysopterus Hardenberg, Treubia,
vol. 13, livr. 1, p. 141, July 1931 (Rokan-R. mouth (Sumatra)).

Periophthalmus kallopterus Bleeker²⁴⁹⁸,
Nat. Tijds. Ned. Indie, vol. 5, p. (320)
342, 1853 (type locality, Amboina).

Periophthalmus dipus Bleeker, Nat.
Tijds. Ned. Indie, vol. 7, p. (313) 320,
1854 (type locality, Tjiringin;
Padang; Larantuba); Act. Soc. Sci.
Ind. Neerl., vol. 3, no. 9, p. 2, 1857-58
(Padang); vol. 8 (Sumatra), p. 12,
1859 (Benculen); (Acht. Sumatra) vol. 8,
p. 43, Feb. - Aug. 1859 (reference). — Günther,
Cat. Fish. Brit. Mus., vol. 3, p. 98,
1861 (reference).

Periophthalmus phya } Johnstone, Fascic. ²¹⁹⁹
malayenses, Annandale and Robinson,
Zool., pt. 2, p. 296, pl. 14, 1903 (type
locality, Estuaries of Jambou and
Patani Rivers). — Fowler, Cat. Fish.
Malaya, p. 220, 1937 (reference).

Periophthalmus barbarus (not Linnaeus)
Seale, Occas. Pap. Bishop Mus., vol. 4,
no. 1, p. 84, 1906 ('Fate'). — Jordan
and Seale, Bull. Bur. Fisher.,
vol. 25, p. 393, fig. 1 (on p. 174), 1905
(1906) (Anua, Pago Pago, Vaisigano
River at Apia). — Kendall and
Goldsbrough, Mem. Mus. Comp. Zool.,
vol. 26, p. 317, 1911 (Moeni; Suva).

Periophthalmus harmsi Eggert, Zeits. Wiss.
Zool., vol. 35, p. 398, 1928 (type locality,
Poeloe Popale, Java); Zool. Jahrb.,
vol. 67, p. 69, pl. 4, figs. 16-17, 1935
(types).

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Euchoristopus baloro regius Whitley,
Austral. Zoologist, vol. 6, p. 326, 1931
(type locality,

Periophthalmus pearsei Eggert, Zool.
Jahrb., vol. 67, p. 57, pl. 5, fig. 10, 1935
(type locality, Port Canning, India).

Periophthalmus variabilis Eggert, op. cit.,
p. 63, pl. 3, fig. 13, pl. 4, figs. 14-15, text
figs. 5-8, 1935 (type locality, Java;
Sumatra; Siam; Baboet Island,
Malakkeira).

Periophthalmus gracilis Eggert, op. cit.,
p. 79, pl. 6, fig. 22 (type locality, Java;
Batavia; Sumatra).

Periophthalmus vulgaris Eggert, op. cit.,
p. 80, pl. 6, figs. 23-26, pl. 7, figs. 27-30 (type
locality, Ceylon; New Guinea; Australia).

Periophthalmus minutus Eggert, op. cit.,
p. 90, pl. 8, fig. 33, text figs. 15-16 (type
locality, Sumatra).

Periophthalmus sobrinus Eggert, op. cit.,
p. 95, pl. 9, figs. 37-38 (type locality, Loé
Arakal, Red Sea; Genova; Santali;
Gumbo).

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Depth $5\frac{1}{2}$; head 4, width $1\frac{4}{7}$.
Snout $3\frac{1}{4}$ in head; eye $3\frac{3}{5}$,
subequal with snout; maxillary
reaches opposite middle of eye;
mouth width $2\frac{4}{5}$ in head; lips
broad, fleshy; interorbital space
hardly defined. Gill rakers few
short weak points.

Scales about 80 in axial lateral
series from above gill opening to
caudal base and 4 more on latter;
23 transversely from soft dorsal
origin to anal origin. Head with
small scales above and on sides,
also on back about first dorsal,
on chest, breast and belly. Of
fins on pectoral and caudal
bases scaly.

D. XIII - 13, first spine $1\frac{2}{5}$
in head, first ray $2\frac{1}{8}$; A. 11,
last ray $3\frac{1}{2}$; caudal (damaged)

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$1\frac{1}{3}$; pectoral to scaly base $1\frac{1}{2}$; ventral length nearly 2; least depth of caudal peduncle 3. Anal papilla moderate.

Deep brown, back darker and lower surface more livid or soiled brownish, on abdomen and lower surface of head somewhat whitish. On lower side of head number of small whitish round spots, and on lower side of trunk number of short indistinctly defined vertical bars of same color. Trunk and head also more or less mottled with a darker shade of brown than general body color, sprinkled with various irregular blackish spots. Iris slaty, dorsals brownish, margins whitish, below which broad blackish submarginal band, most distinct on spinous fin. Below dark band on each dorsal

another pale or whitish one, similar to margins. Basal portions of dorsals brownish marked with a number of rather large whitish spots of irregular distribution. Other fins brownish, pectoral and caudal darker, and anal pale.

A. N. S. P., three examples.
Baram, British North Borneo. 1898.
Dr. William H. Furness 3rd.
Wistar Institute of Anatomy.
Length of largest 73 mm. (Caudal
damaged).

Two examples. Alimango River, Buria Island. March 5, 1909. Length 30 to 32 mm.

^{Four} ~~One~~ examples [1591]. Batan Island. Tide pools. June 5, 1909. Length 68 to 85 mm.

Ten examples. Batan Island. Tide pools. July 22, 1909. Length 73 to 104 mm.

P. 19371. Beach near Caholo River, Ulugan Bay, Palawan. December 29, 1908. Length 75 mm.

Five examples. Cebu Bay, Catanduanes Island. Seine. June 9, 1909. Length 40 to 47 mm.

One example. Caholo River, Ulugan Bay, Palawan. Seine. December 29, 1908. Length 59 mm.

Two examples. Cascade River, Murcielagos Bay, Mindanao. August 20, 1909. Length 43 to 70 mm.

Six examples. Estero, Sablayan Bay, Mindoro. December 13, 1908. Length 70 to 80 mm.

Two examples. Cannabala Bay, ²²⁰⁶
Ragay Gulf. Small stream.
March 11, 1909. Length 80 to 98 mm.

One example. Looa Bay, Lubang.
 July 19, 1908. Length 103 mm.
 Taken by Buffalo Bill with a
 38 Smith and Wesson six shooter.
 Only 14 shots required to down
 this beast, after which Murray
 Frank came to the rescue with
 a jar of formaline.

Two examples. Mansalay, Mindoro. ²²⁰⁸
150 foot seine. June 4, 1908.
Length 122 to 138 mm.

Nine examples. Malabang River.
Caught by hand. May 21, 1908.
Length 32 to 62 mm.

Six examples. Malinao River.
April 2, 1909. Length 68 to 93 mm.

Fourteen examples. Mactan Island.
August 28, 1909. Length 47 to 93
mm.

6597, 14612. Off Laet.
Line fisherman. June 3, 1909.
Length 118 to 132 mm.

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2210

One example. Port Dupon, fresh
water river. March 17, 1909. Length
37 mm.

Three examples. Port Ciego, Balabac.
January 3, 1909. Dynamite. January
3, 1909. Length 78 to 120 mm.

Fourteen examples. Port San
Pio Duinto, Camiguin Island.
Seine. November 11, 1908. Length
18 to 87 mm.

Two examples. Panajato River,
Celebes, Dutch East Indies.
November 16, 1909. Length 88 to 92
mm.

Twenty-nine examples. Port Van
Vicente, Palani River, November
14, 1908. Seine. Length 32 to 72
mm. In poor condition.

Four examples. Po Bui Island,
North Borneo. March 1, 1908.
Length 75 to 92 mm.

Eleven examples. Port Matalvi,
Luzon. November 22, 1908. Length
38 to 98 mm.

Seven
One examples. River at Pasacao, ²²¹¹
Luzon. March 9, 1909. Seine. Length
35 ~~mm~~ to 63 mm.

Thirty examples. Ragay River,
Ragay Gulf, Luzon. March 10, 1909.
Length 26 to 74 mm.

One example. Romblon Harbor.
March 25, 1908. Length 132 mm.

Seven examples. River at Port
Dupon, Leyte. Brackish water.
March 17, 1909. Length 33 to 85 mm.

Seven examples. Reef opposite
Cebu. April 7, 1908. Length 42 to 115
mm. [522, 523]

Six examples. Santiago River, Pagapa^{22/2}
Bay, Luzon. February 20, 1909.

Length 37 to 74 mm.

⁶⁵⁹⁶
20757 [2020]. Sebatic Island,

Borneo. October 1, 1909. Length ^{128 to} 190
mm. Six examples.

^{five}
Six examples. Sebatic Island.
Borneo. January 2, 1909. Length
137 to 190 mm.

One example. Shore above Iloilo
River. June 2, 1908. Length 55 mm.

Three examples. Sabayan, Mindoro.
Short collection. December 12, 1908.

Length 106 to 109 mm.

One example. Sablayan, Mindoro.
Tide pool. December 13, 1908.

Length 80 mm.

Four examples. Siasi Island,
Jolo. Shore. February 17, 1908.

Length 45 to 70 mm.

One example. Sebatic Island.
November 3, 1909. Length 192 mm. Drawn.

Two examples. Small creeks at
Veradero Bay, Mindoro. October 27, 1909.
Length 38 to 48 mm.

One example, San Pascual. 2213
Tide pool. March 8, 1909. Length
50 mm.

Two examples. Simalua, Bisibisi
Island. Tide pool. September 23,
1909. Length 93 to 103 mm.

One example. Tataan, Tawi-Tawi. ⁴²²¹⁴
February 20, 1908. Shore. Length
88 mm. Pale in color.

2215

Eleven examples. Village at
Chase Head, Endeavour River,
Palawan. Seine. December 22,
1908. Length 27 to 88 mm.

Twenty examples. Great Toba
Island, Dutch East Indies. December
14, 1909. Length 58 to 80 mm.

Pteropoda 2216
One example. Great Toba Island.
Tide pool. December 15, 1909. Length
96 mm.

Forty examples. Labuan Blanda Island.
December 14, 1909. Length 41 to 98 mm.

Four examples. Lumbe Strait,
Celebes. November 12, 1909. Length
62 to 105 mm. [2042]

Eleven examples. Lumbe Strait.
November 12, 1909. Length 51 to 127 mm.

- U. S. N. M., no. 49951. Tokyo, Japan.
Imperial Museum of Japan.
Length 63 to 90 mm. Six examples.
- U. S. N. M., no. 56416. Shanghai,
China. P. L. Jouy. Length 39 to 53 mm.
Nine examples.
- U. S. N. M., no. 57707. Japan.
P. L. Jouy. Length 70 to 74 mm.
Two examples.
- U. S. N. M., no. 59564. Onomichi,
Japan. June 4. Dr. H. M. Smith.
Length 45 to 82 mm. Two examples.
- U. S. N. M., no. 59565. Hamashima
Japan. Dr. H. M. Smith. Length
63 to 74 mm. Two examples.
- U. S. N. M., no. 73866. Higo,
Japan. December 10, 1911. E. S. Morse.
Length 62 to 85 mm. Fourteen
examples.
- U. S. N. M., no. 82137. Miyazaki,
Japan. June 26, 1902. Rev. C. A.
Clark. Length 79 mm.

U. S. N. M., no. 42215.

Africa. W. H. Brown. U. S. Eclipse
Expedition. Length 171 mm.

U. S. N. M., no. 42216.

Africa. W. H. Brown. U. S. Eclipse
Expedition. Length 130 mm.

U. S. N. M., no. 42217.

Africa. W. H. Brown. U. S. Eclipse
Expedition. Length 144 mm.

U. S. N. M., no. 42218.

Africa. W. H. Brown. U. S. Eclipse
Expedition. Length 129 mm.

U. S. N. M., no. 42219.

Africa. W. H. Brown. U. S. Eclipse
Expedition. Length 153 mm.

U. S. N. M., no. 42227.

Africa. W. H. Brown. U. S. Eclipse
Expedition. Length 55 to 98 mm.

Two examples.

U. S. N. M., no. 42233.

Africa. W. H. Brown. U. S. Eclipse
Expedition. Length 55 to 83 mm.

Two examples.

U. S. N. M., no. 42243.

Africa. W. H. Brown. U. S. Eclipse Expedition. Length 100 to 150 mm. Three examples.

U. S. N. M., no. 52035. Negro Island Philippines. 1901. Dr. Bashford Dean. Nine examples. Length 24 to 81 mm.

U. S. N. M., no. 52214. Apia, Samoa. Bureau of Fisheries. Length 62 to 108 mm. Twelve examples.

U. S. N. M., no. 52222. Apia, Samoa. Bureau of Fisheries. Length 23 to 77 mm. Twelve examples.

U. S. N. M., no. 65978. Truk, Caroline Islands, Micronesia. Albatross Collection. 1900. Length 108 to 120 mm. Two examples, in poor preservation.

U. S. N. M., no. 72179. Ticao, Philippines. R. C. Mc Gregor. Length 98 mm.

U. S. N. M., no. 76267. Apia, Samoa. Bureau of Fisheries. Length 56 mm.

U. S. N. M., no. 86376. China.

A. de C. Sowerby. Length 57 mm.

D. XV - 12; A. 12.

U. S. N. M., no. 86467. China.

A. de C. Sowerby. Length 86 mm.

D. XII - 13; A. 14.

U. S. N. M., no. 86468. China.

A. de C. Sowerby. Length 83 mm.

D. XII - 12; A. 12.

U. S. N. M., no. 50237. Pei Ho,

China. M. L. Robb. Length 53 to 92

mm. Six examples. As

Periophthalmus chrysopterus.

U. S. N. M., no. 4319. Liberia,

West Africa. J. C. Brevoort.

Length 148 mm. As Periophthalmus

papilio.

U. S. N. M., no. 91551. Canning,

India. July 1, 1930. A. S. Pearse.

Length 36 mm.

U. S. N. M., no. 30663. New Guinea.
Australian Museum. Length 75 to
89 mm. Two examples.

U. S. N. M., no. 37976. Korea.
H. M. Ferebea. Length 62 to 65 mm.
Two examples.

U. S. N. M., no. 41565. Samoa.
C. H. White. Length 57 to 130 mm.
Seven examples, in poor preservation.

U. S. N. M., no. 44453. East Africa.
W. A. Chanler. Length 85 mm.

U. S. N. M., no. 49273. St. Barbe
Island, China Sea. August 1 and
2, 1899. Dr. W. L. Abbott. Length
172 mm.

U. S. N. M., no. 84058. Fiji Islands.
Wilkes Exploring Expedition. Length
95 mm.

U. S. N. M., no. 86960. Foochow, China.
A. de C. Sowerby. Length 30 to 70 mm.
Fourteen examples. D. X-13; A. 12.

U. S. N. M., no. 88005. Benkoelen,
Sumatra. November 1925. Lieut. H.
C. Kellers. Length 46 to 56 mm. Three
examples.

Genus Periophthalmodon Bleeker ²²²²

Periophthalmodon Bleeker, Arch.
Néerl. Sci. Nat. Harlem, vol. 9, p. 326,
1874. (Type Gobius schlosseri
Pallas, orthotypic.)

2223

Body elongate, little compressed.
Head compressed. Snout blunt,
little longer than eye. Eye in
front half of head, close set,
prominent above upper profile
of head, lower eyelid well
developed. Mouth horizontal,
jaws equal. Upper teeth biserial,
outer row anteriorly enlarged
and caninoid, inner row smaller;
lower teeth uniserial, partly
caninoid. Tongue rounded,
nearly entirely attached to mouth
floor. Gill openings narrow,
before lower $\frac{3}{4}$ of pectoral
fin. Isthmus broad. Scales
50 to 60, cycloid. Head entirely
scaled. Dorsal fins close
together, first with 4? to 15
spines, second with 12 to 15 rays.
Anal rays 12 to 14. Caudal
asymmetrical, upper rays longer,

224

fin oblong. Pectoral base
muscular, scaled, fin mobile.
Ventrals nearly entirely united,
low basal membrane developed
or only united with bases.

Periophthalmodon barbarus (Linnaeus)

Gobius barbarus Linnaeus, Syst. Nat.,
 ed. 12, pt. 1, p. 450, 1766 (type locality,
 no locality). — Bonnaterre, Tabl.
 Ichth., p. 63, pl. 35, fig. 137, 1788
 (China). — Gmelin, Syst. Nat.
 Linnaeus, pt. 1, p. 1201, 1788 (copied).
 — Schneider, Syst Ichth. Bloch,
 p. 70, 1801 (copied).

2226

Periophthalmus barbarus Jordan and
Seale, Bull. Bur. Fisher., vol. 25, p.
393, fig. 1 (p. 174), 1905 (1906) (Aua;
Tutuila; Pago Pago; Apia); Proc.
U. S. Nat. Mus., vol. 28, p. 794, 1905
(Negros). — Jordan and Richardson,
Bull. Bur. Fisher., vol. 27, p. 276, 1908
(Ticao; Aparri); Philippine Journ.
Sci., p. 46, 1910 (reference). — Herre,
Gobies of Philippines, p. 316, pl. 24,
fig. 3, 1927 (Malabon; Olongapo; Limbonex
Bay; Ambil I.; Puerto Galera; Romblon;
Tablas; Aroroy; Guinobatan; Port Sula;
Dumaguete; San Jose; Busuanga;
Balabac; Zamboanga; Davao;
Siasi; Bungaw; Sitaniki; Amoy,
China; Japan). — Fowler, Mem. Bishop
Mus., vol. 10, p. 416, 1928 (Suva). —
Herre, Journ. Pan-Pac. Res. Inst.,
vol. 6, no. 4, p. 9, Oct.-Dec. 1931 (Rulsi,
Solomons), p. 14 (New Hebrides), Fishes
Herre 1931 Philippine Exped., p. 92, 1934
(Manila Bay; Tobaco; Busuanga; Culion;
Dumaguete; Punta Flesha; Jolo).

2227

— Fowler, Mem. Bishop Mus., vol. 11, no. 6, p. 444, 1934 (Samoa; Vanikoro; Bougainville I.); Proc. Acad. Nat. Sci. Philadelphia, vol. 86, p. 497, 1934 (Natal; Durban); vol. 87, p. 163, 1935 (Paknam, Siam); ~~Cat.~~ ^{list} Fish. Malaya, p. 220, 1937 (reference).

Periophthalmus barbarus Reeves, Journ. Pan-Pac. Res. Inst., vol. 2, no. 3, p. 13, July-Sep. 1927 (reference) (error).

Periophthalmodon barbarus McCulloch and Ogilby, Rec. Austral. Mus., vol. 12, no. 10, p. 197, pl. 31, fig. 2, July 14, 1919 (Cairns; Cooktown; Cape York; Melville I.); — McCulloch, Austral. Mus. Mem., no. 5, pt. 3, p. 388, Nov. 28, 1929 (reference).

— McCulloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 172, July 7, 1925 (reference).

Gobius schlosseri Pallas, Speciligia
Zool., pt. 8, p. 1, pl. 1, figs. 1-4
 (type locality, Amboina). —
Gmelin, Syst. Nat. Linnaeus, vol. 1,
 p. 1201, 1789 (copied). — Walbaum,
Artedi Pisc., vol. 3, p. 198, 1792
 (copied). — Forster, Fauna Indica,
 p. 14, 1795 (reference). — Lacepede,
Hist. Nat. Poiss., vol. 2, pp. 538, 573,
 1800 (copied).

Muraenophis pardalis (Schlegel).

Muraena pardalis Schlegel, Fauna Japonica, Poiss., pts. 10 and 11, 1846, p. 268, pl. 119 (type locality, Japan).—Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 408 (Tahiti).

Muraenophis pardalis Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 51 (Honolulu; Society Is.; Waikiki); vol. 11, no. 6, 1934, p. 389 (reference).

Muraena kailuae Jordan and Evermann, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 165 (type locality, Kailua, Hawaii).—Snyder, op. cit., vol. 22, 1902 (1904), p. 518 (Napili Harbor, Maui; Honolulu).—Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 27, 1904, p. 941 (Honolulu).—Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 88, pl. 9, figs. 20 and 21 (types; Hawaiian material).—Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 196 (Honolulu).—Peitschmann, Bishop Mus. Bull., no. 73, 1930, p. 6 (Ewa, south coast of Oahu).

Muraena lampra Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 423, fig. 3 (type locality, Honolulu).

Muraena kauila Jenkins, op. cit., p. 424, fig. 4 (type locality, Honolulu).

Gobius schlosseri Pallas, Speurligia²²²⁹
Zool., pt. 8, p. 1, pl. 1, figs. 1-4, 1770
(type locality, Amboina).

Periophthalmus schlosseri Schneider,
Syst. Ichth. Bloch, p. 64, 1801 (copied).
Valenciennes, Hist. Nat. Poiss.,
vol. 12, p. (145) 192, 1837 (Amboina).
— Bleeker, Verhand. Batavia. Genoot.
(Blenn. Gob.), vol. 22, p. 39, 1849 (Batavia;
Samarang). — Cantor, Journ. Asiatic
Soc. Bengal, vol. 18, pt. 2, p. 1173, 1849
(1850) (Penang; Malay Peninsula;
Singapore). — Bleeker, Nat. Tijds.
ked. Indie, vol. 5, p. 544, 1853
(Meauwen Bay, Java); vol. 7, p. 313,
1854 (Djungkulon); Act. Soc. Sci.
Ind. Neerl., vol. 5, no. 7, p. 2, 1858-59
(Sinkawang, Borneo). — Günther,
Cat. Fish. Brit. Mus., vol. 3, p. 100,
1861 (reference).

— Bleeker, Ned. Tijds. Dierk., vol. 2, p. 175, 1865 (Siam); Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 2, p. 300, 1868 (Waigiu). — Peters, Monatsb. Akad. Wet. Berlin, p. 840, 1876 (1877) (New Guinea). — Day, Fishes of India, pt. 2, p. 304, pl. 66, fig. 4, 1876 (Bengal; Sumatra; Andaman; Irrawaddi).

— Günther, Rep. Voy. Challenger, vol. 1, pt. 6, p. 33, 1880 (Cardwell, Queensland).

— Károlyi, Termész. Füzetek, Budapest, vol. 1, p. 166, 1881 (1882) (Bambah; Sarawak).

— Ramsay and Ogilby, Proc. Linn. Soc. New South Wales, ser. 2, vol. 1, p. 8, 1886 (Strickland R., New Guinea).

— Day, Fauna British India, Fishes, vol. 2, p. 281, 1889.

— Garman, Bull. Mus. Comp. Zool., vol. 39, p. 235, 1903 (Suva; ^{Keppel Bay, Australia}). — Duncker, Mitteil. nat. Mus. Hamburg, vol. 21, p. 160, 1903 (1904) (Kuala Langat; Changi; Pulau Ubin at Singapore).

— Weber, Nova Guinea, vol. 9, pt. 4, p. 602, 1913 (Lorentz River; Bivak Island; Uturnbuwe River).

— Regan, Trans. Zool. Soc. London, vol. 20, pt. 6, p. 276, 1914 (Mimika River, New Guinea).

— Smedley, Journ. Fed. Mal. States Mus., Kuala Lumpur, vol. 13, p. 236, 1927 (Sungei Boyeria, Klang).

2231

Periophthalmodon schlosseri Fowler,
Proc. Acad. Nat. Sci. Philadelphia,
p. 513, Aug. 16, 1905 (Baram, Borneo).
— Jordan and Seale, Bull. Bur.
Fishes., vol. 25, p. 394, 1905 (1906)
(reference); vol. 26, p. 40, 1906 (1907)
(Cavite); — Jordan and Richardson,
Philippine Journ. Sci., p. 47, 1910
(reference). — Herre, Gobies of
Philippines, p. 320, 1907 (Perez;
Odiangan; Tanjay); Fishes Herre
1931 Philippine Exped., p. 93, 1934
(Dumaguete). — Fowler, Cat. Fish.
Malaya, p. 219, 1937 (reference).

Periophthalmus freycineti Valenciennes,
Hist. Nat. Poiss., vol. 12, p. (148) 197, 1837
type locality, River Saka, China
— Günther, Cat. Fish. Brit. Mus., vol.
3, p. 700, 1861 (Philippines; Siam).

2232

Gobius septemradiatus Buchanan
Hamilton, Fishes of Ganges, p. 46,
366, 1822 (type locality, Ganges
River).

Periophthalmus septemradiatus
Valenciennes, Hist. Nat. Poiss., vol. 12,
p. (147) 196, 1837 (copied).

Gobius novemradiatus Buchanan-
Hamilton, op. cit. pp. 46, 366, pl. 2, fig.
14, 1822 (type locality, Ganges River).

Periophthalmus novemradiatus Valenciennes,
op. cit. p. (148) 196 (copied).

Gobius tredecimradiatus Buchanan.
Hamilton, op. cit. pp. 48, 366, 1822 (type
locality, Ganges River).

Periophthalmus tredecimradiatus
Valenciennes, op. cit. p. (142) 189 (copied).
Günther, Cat. Fish. Brit. Mus., vol. 3, p.
101, 1861 (Siam, India).

Evenchelys macrurus (Bleeker).

Muraena macrurus Bleeker, Nat. Tyds. Ned. Indie, vol. 7, 1854, p. 324

type locality, Anjer, Sunda Straits).

Muraena macrura Borodin, Bull. Vanderbilt Mar. Mus., vol. 1, art. 3,

1932, p. 71 (Uturoa, Raiatea I.).

Evenchelys macrurus Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 51

(compiled); vol. 11, no. 6, 1934, p. 389 (reference).

2233

Periophthalmus freycineti Valenciennes,
Hist. nat. Poiss., vol. 12, p. (148) 197,
1837 (type locality, River Babo,
Timor). — Günther, Cat. Fish.
Brit. Mus., vol. 3, p. 100, 1861
(Philippines; Siam).

Periophthalmus borneensis Bleeker,
Nat. Tijds. Ned. Indië, vol. 1, p. 11, 1850
(type locality, Banjarmassing, in rivers),
p. 261 (Borneo); vol. 2, p. 59, 1851 (Borneo);
vol. 2, p. 195, 1851 (Borneo); vol. 3, p. 412,
1852 (Borneo); Act. Soc. Sci. Ind. Nedl.
(Acht. Sumatra), vol. 8, p. 43, 1860 (Sumatra);
(^{Borneo} Ambona), vol. 8, p. 17, 1860 (Borneo);
Ned. Tijds. Dierk., vol. 2, p. 174, 1865
(Siam).

Periophthalmus novemradiatus Bleeker,
Verh. Batavia. Genoot. (Nal. Ichth.
Bengal.), vol. 25, p. ~~50~~⁴⁸, 1853.

Periophthalmus septemradiatus Bleeker,
of. cit., p. 50.47

Periophthalmus tredecimradiatus
Bleeker, of. cit., p. 50.46

Periophthalmus australis Castelnau,
 (Res. Fish. Australia) Rec. Philad.
 Exhib. Viet. Offic., p. 22, 1875
 (type locality, North Queensland).
 — Alleyne and Macleay, Proc. Linn.
 Soc. New South Wales, vol. 1, p. 334,
 pl. 11, fig. 3, 1876 (mouths of all
 streams flowing into Halls Sound,
 New Guinea). — Castelnau, Proc. Linn.
 Soc. New South Wales, vol. 3, p. 48,
 1878 (Norman River). — Macleay, Proc.
 Linn. Soc. New South Wales, vol. 5,
 p. 614, 1881 (Port Darwin); vol. 8, p. 206,
 1883 (Katow; Torres Straits); ~~vol. 15, p. 354,~~
~~1883 (Port Darwin)~~. — Kent, Proc.
 Roy. Soc. Queensland, vol. 6, p. 240,
 1889.

Periophthalmodon australis Jordan and
Seale, Bull. Bur. Fisher., vol. 25, p. 394,
 1905 (1906) (reference).

Depth: 4 to $4\frac{2}{3}$; head $3\frac{1}{5}$ to $3\frac{2}{5}$, width $1\frac{3}{5}$ to $1\frac{3}{4}$.
 Snout $2\frac{3}{4}$ to 3 in head; eye 6 to $6\frac{1}{4}$, $1\frac{1}{3}$ to $1\frac{1}{2}$ in snout, stalked, erectile; maxillary end concealed, reaches $\frac{1}{2}$ in eye, length $2\frac{3}{4}$ to 3 in head; mouth low, horizontal; upper teeth biserial, outer row enlarged, lower similar but smaller, 2 near symphysis below somewhat canine like.

Scales 50 to 53 in lateral line to caudal base and 4 or 5 more on latter; 14 to 18 transversely at second dorsal origin. Whole body covered with small scales, still smaller anteriorly where on head, as on predorsal, cheek and snout. Pectoral and caudal largely scaly basally.

D. none to ~~XV~~ I, 12, first spine 3 in fish to caudal base,

2236

second dorsal spine $1\frac{2}{3}$ to $1\frac{4}{5}$
in head, sixth dorsal ray $2\frac{7}{8}$
to 3; A, I, 12, tenth ray $3\frac{2}{5}$ to
5; caudal $1\frac{1}{3}$ to $1\frac{1}{2}$, rounded
behind; least depth of caudal
peduncle $2\frac{3}{5}$ to 3; pectoral
 $1\frac{1}{3}$ to $1\frac{2}{5}$; ventral 2 to $2\frac{1}{8}$.

Dark brown to blackish
brown above, below paler to
whitish. Spinous dorsal
blackish brown, with broad
white margin above. Second
dorsal with broad median
dusky or blackish brown
longitudinal band. Dusky
postocular band back to
suprascapula; Iris slaty, outer
lid white. Paired fins like
lower surface of body.

Andaman, India, Burma, Andaman,
Malaya, East Indies, Siam,
Philippines, China, Japan, North
Australia, Queensland, Micronesia,
Melanesia, Polynesia.

U. S. N. M., no. 41959. Singapore,
Malay Peninsula. W. J. Hornaday.
Length ~~200~~¹⁷⁴ to 258 mm. Five
examples.

U. S. N. M., no. 35728. North
Borneo. W. J. Hornaday. Length
91 to 144 mm. Fourteen examples.

U. S. N. M., no. 86408. China.
A. de C. Sowerby. Length 50 mm.

U. S. N. M., no. 102663. Iloilo,
Panay Island, Philippines.
May 25, 1929. Lieut. H. C. Kellers.
Length 95? to 109 mm. Two examples.

U. S. N. M., no. 103363. Haenam
Chao Phya at Paksnam, Siam.
May 29, 1930. Dr. H. M. Smith.
Length 197 mm.

A. N. S. P., four examples. Baram,
British North Borneo. 1898. Dr. William
H. Furness 3rd. Length to 205 mm.

2238

Genus Apocryptes Osbeck

Apocryptes Osbeck, Reise durch
China, p. 130, 1762. (Type
Apocryptes chinensis Osbeck =
Gobius pectinirostris Günther^{Linnaeus},
monotypic.)

Boleophthalmus Valenciennes, Hist.
Nat. Poiss., vol. 12, p. (149) 198,
1837. (Type Gobius boddaerti
Pallas, designated by Bleeker,
Arch. Néerl. Sci. Nat. Harlem,
vol. 4, p. 324, 1874.)

Body very elongate, compressed. Head partly cylindrical. Snout blunt, about equals eye. Eye in first third of head, very close set, movable to above dorsal profile of head, with lower eyelid well developed. Mouth little oblique, jaws subequal. Teeth uniserial in both jaws; upper conic, front ones canine like; lower subhorizontal, flattened, obliquely notched; each side of symphysis curved canine. Tongue truncate, nearly entirely attached to mouth floor. Gill openings obliquely placed, about long as pectoral basal width. Isthmus moderately wide. Inner edge of shoulder girdle without fleshy flaps. Scales 60 to over 100, cycloid, become

Echidna amblyodon (Bleeker).

Muraena amblyodon Bleeker, Act. Soc. Sci. Ind. Neerl. (Manado),

pl. 1, 1856, p. 72 (type locality, Manado, Celebes).—Günther, Journ. Mus.

odeffroy, vol. 9, pt. 17, 1910, p. 420 (Marquesas Is.).

Echidna amblyodon Seale, Occas. Pap. Bishop Mus., vol. 4, no. 1,

1906, p. 12 (Nukuhiva).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 50

(Society Is.; Nukuhiva). —Herre, Field Mus. Publ., no. 353, vol. 21, April

1936, p. 40 (Atuona, Hivaoa I., Marquesas).

larger posteriorly on body. Head covered with bony skin, totally or nearly entirely scaled. Dorsal fins separated, first with 5 spines, second with 24 to 28 rays. Anal rays 24 to 26. Caudal asymmetrical, upper half little longer, oblong. Ventrals united, oblong. Pectoral base under pectoral. Pectoral base muscular, scaled, fin without detached rays.

Muraenopsis lentiginosum (Jenyns)

Muraena lentiginosa Jenyns, Voy. Beagle, Zool., 1842, p. 143 (type locality, Galapagos Islands).—Günther, Cat. Fish. Brit. Mus., vol. 8, 1870, p. 99 ().—Jordan and Davis, Rep. U. S. Fish Comm., pt. 16, 1888 (1882), p. 610 (compiled).—Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 402 (compiled).—Snodgrass and Heller, Proc. Wash. Acad. Sci., vol. 6, Jan. 31, 1905, p. 348 (Turtle Point Reef near Tagus Cove, Albemarle I.)

Apocryptes
Boleophthalmus boddarta (Pallas) 2241

Gobius boddarta Pallas, Spicelegia,
Zool., vol. 8, p. 11, pl., figs. 4-5, 1770
(type locality, Indian Ocean). —
Bonnaterre, Tabl. Ichth., ~~1788~~ p.
64, pl. 36, fig. 140, ¹⁷⁸⁸ (copied). —
Walbaum, Artedi Pisc., vol. 3, p.
203, 1792 (copied).

Gobius boddarta Gmelin, Syst.
Nat. Linnaeus, vol. 1, p. 1201, 1789 (copied).
— Forster, Fauna Indica, p. 14, 1795
(reference). — Shaw, General
Zool., vol. 4, p. 238, 18 (copied).

Gobius boddart Lacepede, Hist. Nat.
Pois., vol. 2, pp. 535, 543, 1800 (copied).

Eleotris boddarta Schneider, Syst.
Ichth. Bloch, p. 66, 1801 (copied).

Valenciennes, Hist. Nat. Poiss., vol. 12, p. 1150, 199, 1837 ⁽²⁶⁴²⁾
(*Indoues; Pondichery; Bombay; Malacca*)

Boleophthalmus boddaerti Richardson,

Ichth. China and Japan, p. 208,
1846 (China Seas; Macao; Canton).

— Bleeker, Verh. Batavia. Genoot.
(Madura), vol. 22, p. 5, 1849

(Kammal; Sumanap). — Cantor,
Journ. Asiatic Soc. Bengal, vol.

18, pt. 2, p. 1174, 1849 (1850)
(Penang; Malay Peninsula).

— Bleeker, op. Cit. (Blenn. Gob.),
vol. 22, p. 40, 1849 (1850) (Surabaya;

Batavia, ^{Jerdon, Madras Journ. Nat. Hist. 1851, p. 144. — Bleeker, l.c.} Jamurang); (hal. Ichth.
Japan), vol. 25, p. 16, 1853 (reference);

(hal. Ichth. Bengal), vol. 25, p. 50,
1853 (reference); Nat. Tijds. Ned.

Indie, vol. 5, p. 154, 1853 (Macassar);
vol. 16, p. 434, 1858 (Sinhawang and

Pamanghat, Borneo); Act. Soc.
Sci. Ind. Neerl., vol. 1, no. 3, p. 8,

1856 (Macassar); vol. 5, no. 7, p. 2,
1858-59 (Sinhawang); vol. 5, no. 9,

p. 2, 1858-59 (Nagasaki); Nat. Tijds.
Ned. Indie, vol. 20, pp. 238, 450,
1859-60 (Singapore); vol. 22, p.

vol. 4, p. 129, 1872 (1874) (reference).

2243

108, 1860 (Muntok, Banka); Ned.

Tijds. Dierk., vol. 2, p. 58, 1865

(Martens, Preuss. Exped. Ost Ind., vol. 15, p. 392, 1876 (Sambor and Semini, Borneo).

(Amoy) ^{3, v} — Johnstone, Asia

Malayenses, British India, Fishes, vol. 2, p. 295, 1889.
(Fishes of India, pt. 2, p. 307, pl. 65, fig. 2, 1876 (west of Bombay);

Zool., pt. 2, p. 301, 1903 (Patani;

Ghering). — Duncker, Naturh. Mus.

Hamburg, vol. 21, p. 161, 1903 (1904)

(Muer River at Bandar Maharani).

— Fowler, Proc. Acad. Nat. Sci.

Philadelphia, p. 513, 1905 (no locality).

— Weber, Nova Guinea, vol. 9, pt. 4,

p. 603, 1913 (Lorentz River). —

Fowler, Mem. Bishop Mus., vol. 10,

p. 418, 1928 (compiled); Proc. Acad.

Nat. Sci. Philadelphia, vol. 86,

p. 159, ¹⁹³⁴ (Bangkok); vol. 87, p. 162,

1935 (Bangkok; Paknam); Cat.

Malaya Fish., p. 213, 1937 (Malaya reference).

Bolcophthalmus boddaerti Bleeker,
 Nat. Tijds. Ned. Indie, vol. 16, p. 196,
 1858 (Sinhawang). — Günther,
 Cat. Fish. Brit. Mus., vol. 3, p. 102,
 1861 (Penang). — Jordan and Snyder,
 Annot. Zool. Japon., vol. 3, p. 114, 1901
 (Kagasaki). India

(Kner, Reise Novara, Fische,
 p. 182, 1865 (Shanghai and
 open sea (?) 50 miles from Ceylon).

Bolcophthalmus boddaerte Károlyi, Termesz.
 Füzetek, Budapest, vol. 5, p. 166, 1881
 (1882) (Change; Santabug; Sadang) (error).

~~Gobius striatus Pellegri, Bull. Mus.
 Hist. Nat. Paris, vol. 4, p. 229, 1898
 (Guam).~~

Gobius striatus Schneider, Syst.
Ichth. Bloch, p. 71, pl. 16, 1801 (type
locality, Tranquebar). — Pellegrin,
Bull. Mus. Hist. Nat. Paris, vol. 4,
p. 229, 1898 (Guam).

Gobius plinianus Buchanan-Hamilton,
Fishes of Ganges, pp. 45, 366, pl. 35,
fig. 13, 1822 (type locality, Ganges
River).

Boleophthalmus plinianus Valenciennes,
Hist. Nat. Poiss., vol. 12, p. (154) 205,
1837 (copied).

Apocryptes punctatus Day, Proc. Zool.
Soc. London, 1867, p. 941 (type locality,
Madras).

Muraenophis insularum (Jordan and Davis).

Muraena insularum Jordan and Davis, Rep. U. S. Fish Comm., pt. 16,
88 (1892), p. 609 (type locality, Chatham Island, one of the Galapagos).—
Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 400
(copied).—Snodgrass and Heller, Proc. Wash. Acad. Sci., vol. 6, Jan. 31, 1905
348 (Iguana Cove, Albemarle I.).

2246

Depth 5 to 6; head $4\frac{1}{2}$ to $5\frac{1}{4}$, width $1\frac{1}{2}$ to $1\frac{2}{3}$. Snout 3 to $3\frac{1}{5}$ in head; eye 6 to 7, 1 to $1\frac{2}{5}$ in snout, greater than interorbital; maxillary reaches opposite hind eye edge to diameter beyond, length $2\frac{1}{3}$ to $2\frac{2}{5}$ in head; mouth low, little inclined, jaws subequal; 6 front canines above directed down and row of smaller each side more numerous; lower teeth horizontal, 30 each side and ends obtuse and behind symphysis pair of canines; interorbital narrow, $\frac{1}{4}$ of eye.

Scales 68 to 70 in lateral series; 19 or 20 transversely, at front of second dorsal. Head and predorsal finely scaled. Scales cycloid, little or not imbricate.

D. V — 24 or 25, first dorsal height $2\frac{2}{5}$ to $2\frac{4}{7}$ in head, second

dorsal height $1\frac{3}{4}$ to $1\frac{4}{5}$; 1A.
 24, fin height $1\frac{7}{8}$ to 2; least
 depth of caudal peduncle $2\frac{4}{5}$ to
 $2\frac{7}{8}$; pectoral $1\frac{1}{2}$ to $1\frac{4}{7}$; ventral
 $1\frac{1}{2}$ to $1\frac{3}{5}$; caudal $3\frac{3}{4}$ to $3\frac{4}{5}$ in
 rest of fish, pointed.
 Brown, paler below to whitish.
 Six to 8 dark to blackish trans-
 verse bands on back. Fins brown,
 darker marginally. Pectoral
 with brown to black margin or
 submargin.

India, Burma, Malaya, East
 Indies, Siam, China, Japan.

A. N. S. P., five examples. Bangkok,
 Siam. 1932-33. Length R. M. de
 Schauensee. Length 147 to 166 mm.

A. N. S. P., twelve examples. Bangkok,
 Siam. May 1934. R. M. de Schauensee.
 Length 133 to 165 mm.

2248

A. N. S. P., three examples. Bangkok,
Siam. July 1934. R. M. de Schauensee.
July 2 to 4, 1934. Length 88 to
100 mm.

A. N. S. P., two examples. Paknam,
Siam. August 28, 1934. R. M. de
Schauensee. Length 137 to 150 mm.

Apocryptes caeruleomaculatus (McCulloch
and Waite)

Boleophthalmus caeruleomaculatus
McCulloch and Waite, Records South
Austral. Mus., vol. 1, pt. 1, p. 79, pl.
8, fig. 1, May 24, 1918 (type locality,
Adelaide River, Northern Territory).
— McCulloch, Austral. Mus. Mem.,
no. 5, pt. 3, p. 381, Nov. 28, 1929 (reference).

2250

Apocryptes dentatus (Valenciennes)

Boleophthalmus dentatus Valenciennes,

Hist. Nat. Poiss., vol. 12, p. (157)²⁰⁸~~157~~,
pl. 355, 1837 (type locality, Bombay).

— Weber, Nova Guinea, vol. 5, pt. 2,
p. 263, 1908 (Merauke River). —

Fowler, Mem. Bishop Mus., vol. 10,

p. 418, 1928 (copied).

— Bleeker, Verh. Batavia. Genoot.

(Nat. Ichth. Bengal), vol. 25, p. 50,
1853 (reference). — Day, Fishes of

India, pt. 2, p. 306, pl. 164, fig. 10,

1876 (Bombay; Kurrachee); Fauna
British India, Fishes, vol. 2, p. 283,

fig. 96, 1889.

2251

Boleophthalmus dussumieri Valenciennes
Hist. nat. Poiss., vol. 12, p. (156) 207 ^{pl. 354} 1837
(type locality, Bombay). ~~Illustration~~

— Bleeker, Verh. Batavia. Genoot.
(Nal. Ichth. Bengal), vol. 25, p. 50,
1853 (referenced). — Günther, Cat.
Fish. Brit. Mus., vol. 3, p. 104, 1861
(copied). — Day, Fishes of India,
pt. 2, p. 305, pl. 64, fig. 9, 1876
(Bombay; Hind). Fauna British
India, Fishes, vol. 2, p. 283, 1889.

2252

Depth ^{to 6³/₄} 6; head 4¹/₈, width 2¹/₄.
Snout ^{to 5} 4¹/₂ in head; eye ^{to 7} 6, 1¹/₂ in
snout, greater than interorbital;
maxillary reaches beyond eye ¹/₂ to 1
eye diameter, length 2¹/₈ to 2¹/₅ in
head; teeth with 3 long canines each
side of upper jaw, directed down
and slightly forward, besides 25
shorter along each side; lower
jaw with 35 to 40 nearly horizontal
teeth each side, ends tricuspidate
or bicuspidate, and pair of large
inner recurved canines behind
symphysis; interorbital ¹/₃ to ¹/₂ eye
diameter.

Scales about 125 in lateral series,
irregular, less distinct on head, either
side of dorsal fin and on median
band on belly, or may appear as
minute rough points.

D. V 27 or 28, second spine 1²/₅
to 1¹/₂ in head, second dorsal height
2; A. 26 or 27, fin height 3¹/₂ to
3³/₅; least depth of caudal peduncle

2⁴/₅ to 2⁷/₈; pectoral 1¹/₃ to 1¹/₂; ²²⁵³
ventral 1²/₃ to 1⁴/₅; ~~ventral~~ caudal
3 to 3¹/₅ in rest of fish.

Olive gray, with dull vertical
bands on body, 6 to 8 extending up
on lower half of dorsal fin.
First dorsal purplish, covered with
black spots with ~~white~~ white edges,
upper edge of fin yellowish.
Second dorsal with 5 oblong rows
of white spots and some black
ones with white edges along first
half of base. Upper edge of
caudal with white band and
yellow spots between black rays.

Length 188 mm. (Day.)

India, New Guinea.

2254

Apocryptes glaucus (Day)

Boleophthalmus glaucus Day, Fishes
of India, pt. 2, p. ~~284~~ 306, Pl. 65, fig. 3,
1876 (type locality, Andaman);
Fauna British India, Fishes, vol. 2,
p. 284, 1889.

— Seale, Philippine Journ. Sci., vol. 9,
pt. 1, p. 74, 1914 (Hong Kong). — Chew,
Biol. Bull. St. John's Univ., no. 1, p.
166, Jan. 1931 (reference).

2255

Depth $6\frac{4}{5}$; head $4\frac{1}{5}$, width $1\frac{2}{3}$. Snout $3\frac{1}{2}$ in head, front profile well inclined; eye $5\frac{3}{5}$, $1\frac{3}{4}$ in snout, close together; mouth cleft low, scarcely inclined from horizontal, jaws equal; maxillary extends back opposite hind eye edge, length $2\frac{7}{8}$ in head; upper teeth 13, large, pointed, canine like in front, outer on either side a little enlarged and recurved, laterally 13 more teeth large as those in mandibles; 25 sub-horizontal pointed teeth in lower jaw, all about same size and pair of canines behind symphysis; prominent eyes enter upper profile of head.

Scales minute, but visible on last half of body.

D. V - 27, fourth spine equals head, second dorsal height 3; A. 25, fin height $3\frac{2}{5}$; caudal

2256

peduncle depth $3\frac{1}{2}$; pectoral $1\frac{2}{3}$,
rays 19; ventral rays I, 5, fin
 $1\frac{4}{5}$ in head; caudal $3\frac{2}{3}$ in
rest of fish, pointed behind.
lanceolate.

Color greenish, tinged with
violet along abdomen, cloudy
bands on head, a few widely
scattered black spots on cheeks
and upper fourth of body.
Second dorsal with dark
horizontal lines, most distinct
posteriorly. Anal yellowish. Caudal
with lower third light, above
dotted or covered with white
spots surrounded by black ring.
Pectoral gray, with yellowish
outer edge.

Length 156 mm. (Day.)

Andamans, Hong Kong.

2257

Apocryptes maculatus Oshima

Apocryptes maculatus Oshima,
Annot. Zool. Japon., vol. 11, no. 1,
p. 21, March 31, 1926 (type locality,
Hainan). Hainan

Boleophthalmus maculatus Reeves,
Journ. Pan-Pac. Res. Inst., vol. 2, no.
3, p. 13, July - Sep. 1927 (reference).
— Chu, Biol. Bull. St. John's
Univ., no. 1, p. 166, Jan. 1931 (reference).

2258

Apocryptes pectinirostris (Linnaeus)

Gobius pectinirostris Linnaeus, Syst. Nat., ed. 10, pt. 1, p. 264, 1758 (type locality, China). — Osbeck, Reise Ost Indien China, 1765, pp. 170, 291 (China). — Linnaeus, Syst. Nat., ed. 12, pt. 1, p. 766, p. 450 (copied). — Bonnaterre, Tabl. Ichth., 1788, p. 66 (China). — Gmelin, Syst. Nat. Linnaeus, vol. 1, 1789, p. 1200 (China). — Walbaum, Artedi Pisc., vol. 3, 1792, p. 202 (copied). — Forster, Fauna Indica, 1795, p. 14. — Lacepède, Hist. Nat. Poiss., vol. 2, 1800, pp. 535, 539 (China). — Schneider, Syst. Ichth. Bloch, 1801, p. 70 (China). — Shaw, General Zool., vol. 4, 1801, p. 245.

Apocryptes pectinirostris Valenciennes,
Hist. Nat. Poiss., vol. 12, p. 150, 1837
(on Osbeck).

Boleophthalmus pectinirostris Richardson, Ichth. China and Japana, p. 208, 1846 (Canton). — Cantor, Journ. Asiatic Soc. Bengal, vol. 18, pt. 2, p. 1175, 1849 (1850) (Penang). — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 102, 1861 (Penang; Moluccas; Ningpo; Amoy). — Bleeker, ^{Verh. Kon. Akad. Wet.} ~~Verh. Kon. Akad. Wet.~~, vol. 4, p. 129, 1874 (1875) (reference). — Bleeker, Verh. Kon. Akad. Wet. Amsterdam, vol. 18, no. 5, p. 3, 1879 (China). — Peters, Monatsb. Akad. Wiss. Berlin, p. 922, 1880 (Ningpo). — Day, Fauna British India, Fishes, vol. 2, p. 2876, 1889. — Kutter, Proc. Acad. Nat. Sci. Philadelphia, p. 87, 1897 (Swatow). — Ishikawa and Matsunura, Prelim. Cat. Fish. Mus. Tokyo, p. 38, 1897. — Jordan and Snyder, Annot. Zool. Japon., vol. 3, p. 114, 1901 (Nagasaki). — Day, Fishes of India, pt. 2, ~~1876~~, p. 308, 1876.

— Johnstone, Faun. Malayensis,
 Amundale and Robinson, Zool.,
 pt. 2, p. 300, 1903 (Petani; Ihering).
 — Herre, Gobies of Philippines,
 p. 323, pl. 25, fig. 1, 1927 (Amoy;
 Hong Kong). — Reeves, Journ. Tan-
 Pac. Res. Inst., vol. 2, no. 3, p. 13,
 Jan. - Sep. 1927 (reference). —
Tomiyama, Jap. Journ. Zool., vol. 7,
 no. 1, p. 100, 1936 (Ariake Sound;
 Formosa). — Fowler, ^{list} ~~Fishes of~~
 Malaya, p. 213, 1937 (reference)
 Malaya). — Anonymous, Illustrat. Jap. Aquat. Pl. Animals,
 vol. 1, pl. 47, fig. 7, 1934.

Bolcophthalmus pectinirostris Károli,
 Termesz. Füzetek, Budapest, vol. 5,
 p. 167, 1881 (1882) (Canton; Ningpo)
 (error). Sarawak; Santabug

Amoen. Ster. Chinesis, p. 29, fig. 23, 1754

Apocryptes chinensis Asbeck, Voy.
China Ost Ind., p. 200, 1757 (type
locality, Canton); ed. 2, p. 200, 1771
(copied). — Jordan, Tanaka, Snyder,
Journ. College Sci. Tokyo, vol. 33, art. 1,
p. 339, 1913 (reference).

Boleophthalmus chinensis Valenciennes,
Hist. Nat. Poiss., vol. 12, p. (162) 215,
1837 (on Chinese painting). — Rich-
ardson, Ichth. China and Japan,
p. 209, 1846 (Canton). — Jordan and
Snyder, Proc. U. S. Nat. Mus., vol.
24, p. 47, 1901 (Tokyo; Nagasaki). —
Fowler, Proc. Acad. Nat. Sci. Phila-
delphia, p. 513, 1905 (no locality).
— Franz, Abhandl. Kon. Bayer.
Abad. Wiss., vol. 4, Suppl. Band 1,
p. 66, pl. 9, fig. 71, 1910 (Fukuoka;
Yokohama). — Seale, Philippine
Journ. Sci., vol. 9, pt. 1, p. 74, 1914
(Hong Kong).

2263

— Chu, Biol. Bull. St. John's Univ.,
no. 1, p. 166, Jan. 1931 (reference). —
Herre, Hong Kong Nat., Suppl., no. 3,
p. 34, Feb. 1934 (Hong Kong).

Boleophthalmus boddaerti (not Pallas)
Schlegel, Fauna Japonica, Poiss., pt.
7-9, p. 145, pl. 76, fig. 3, 1845
(Nagasaki Bay).

Boleophthalmus inornatus Blyth,
Journ. Asiatic Soc. Bengal, 1860, p. 148
(type locality, Tenasserim).

U. S. N. M., no. 12567. East Indies.
British Museum. Length 151 to 152
mm. Two examples.

U. S. N. M., no. 44797. Rangoon,
Burma. L. Fea. 1885-89.
Length 116 mm.

U. S. N. M., no. 86952. Foochow,
China. A. de C. Sowerby. Length
91 to 114 mm. Four examples.
D. V - 24; A. 24.

U. S. N. M., no. 103352. Paknam,
Central Siam. August 10, 1923.
Dr. H. M. Smith. Length 146 mm.

U. S. N. M., no. 103353. Menam
Chao Phya at Paknam, Central
Siam. May 29, 1930. Dr. H. M.
Smith. Length 160 mm.

U. S. N. M., no. 45344. Fusan, Korea.
P. L. Jouy. Length 36 to 40 mm. Two
examples.

U. S. N. M., no. 49887. Naga, Kiusiu,
Japan. D. S. Jordan and J. O.
Snyder. Length 144 mm.

U. S. N. M., no. 51511. Korea.
P. L. Jouy. Length 55 mm.

U. S. N. M., no. 76263. Japan.
E. S. Morse, 1878. Length 160 to
166 mm. Two examples.

U. S. N. M., no. 86026. China.
A. de C. Sowerby. Length 138 to
142 mm. Two examples. D. V—
26; A. 25. depth 6 to $7\frac{2}{5}$; head
 $3\frac{4}{5}$ to $4\frac{1}{2}$.

U. S. N. M., no. 86377. China.
A. de C. Sowerby. Length 61 to 98
mm. Five examples. D. VI—26;
A. 25. depth $5\frac{3}{4}$; head $\frac{5}{4}$.

U. S. N. M., no. 86448. China. A.
de C. Sowerby. Length 131 to 170 mm.
Six examples.

(2268)

Apocryptes polyophthalmus Günther

Apocryptes polyophthalmus Günther,
Ann. Mag. Nat. Hist. London, ser. 3,
vol. 20, p. 117, 1867 (type locality, China);

Rep. Voy. Challenger, vol. 1, pt. 6, p. 55,
1880 (Hong Kong).

Boleophthalmus polyophthalmus Bleeker,
Ned. Tijds. Dierk., vol. 4, p. 129, 1872
(1874) (reference).

— Reeves, Journ. Pan-Pac. Res. Inst.,
vol. 2, no. 3, p. 13, July-Sep. 1927 (reference).

— Chu, Biol. Bull. St. John's Univ., no. 1,
p. 166, Jan. 1931 (reference).

2267

Depth 6 to 7; Snout rather high, twice long as eye. Eye retractile as in Periophthalmus. Teeth small, 2 anterior pairs enlarged in each jaw; upper jaw somewhat longer than lower, gape extending below hind edge of eye; Mandibular teeth nearly horizontal. Scales minute anteriorly, becoming somewhat larger posteriorly.

D. V for VI - I, 24, not continuous spines of first dorsal prolonged into filaments. A. 25. Caudal shorter than head.

Olive colored. Head with some minute whitish dots. First dorsal with numerous small (in spirits white) ocelli; they are elongate and arranged in 4 regular series. A few ocelli on caudal.

Length 125 mm.
China...

²²⁶⁸
(Günther.)

2269
Apocryptes sculptus (Günther)

Boleophthalmus sculptus Günther,
Cat. Fish. Brit. Mus., vol. 3, p. 104,
1861 (type locality, India). —

Day, Fishes of India, pt. 2, p. 308,
1876 (copied); Fauna of British
India, Fishes, vol. 2, p. 286, 1889
(Bombay).

— Weber, Nova Guinea, vol. 5, pt. 2, p.
262, 1908 (Merauke; south New Guinea).

— Fowler, Mem. Bishop Mus., vol. 10,
p. 418, 1928 (copied).

2270

Depth $6\frac{1}{2}$; head $4\frac{1}{2}$. Front upper teeth slightly enlarged, in lower jaw very small and horizontal.

Head and anterior part of body without imbricate scales, but with flat round tubercles, which on upper part of head and on nape have slight impression in center, while those on sides quite flat, with appearance of mosaic-work. Scales become more distinct on tail, and 8 longitudinal series between ends of dorsal and anal fins.

D. V, 25, base of first dorsal = moderately long, third spine filiform. Anal ²² much lower than opposite dorsal fin. Caudal rhomboid, moderate. More than half of pectoral enveloped in scales. Body greenish olive, yellowish on belly. Six rather indistinct

2271
darker bands descend obliquely
from back towards belly. First
dorsal grayish, other fins
reddish.

Length 108 mm.

India.

(Günther.)

2272

Genus Scartelaos Swainson

Scartelaos Swainson, Nat. Hist. Animals, vol. 2, p. 279, 1839.

(Type Gobius viridis Buchanan-Hamilton, designated by Swain, Proc. Acad. Nat. Sci. Philadelphia, 1882, p. 279.)

Boleops Gill, Proc. Acad. Nat. Sci. Philadelphia, p. 271, 1863. (Type Boleophthalmus aeneus Richardson, monotypic.)

Scartelaus ~~Swainson~~ (Swainson) Swain, op. cit. (Type Gobius viridis Buchanan-Hamilton. Although credited to Swainson by Swain I have not found this spelling in Swainson's works.)

2273

Body very elongate, subcylindrical anteriorly, compressed posteriorly. Head a little depressed. Snout blunt, long as eye. Eye in first third of head, close set, movable ^{to} above, ~~dorsal~~ ^{upper} dorsal profile of head, lower eyelid well developed. Mouth little oblique, upper jaw little prominent. Along lower side of head on each side, parallel to edge of mandible row of short barbels. Teeth uniserial in both jaws, ^{pointed} upper teeth caninoid; lower teeth anteriorly subhorizontal, posteriorly more erect; canine each side of symphysis of lower jaw. Tongue broadened, nearly entirely attached to mouth floor. Gill openings narrow, little obliquely placed between bases of paired fins. Isthmus

2274

moderately broad. Inner
edge of shoulder girdle without
fleshy flaps. Body covered
with numerous minute rudimentary
scales, becoming little larger
posteriorly. Head covered with
wartlike skin. Dorsal fins
separated, first with 5 or 6
spines, second with 25 to 29
rays. Anal rays 24 to 26. Caudal
asymmetrical, rays of upper
half longer, pointed. Pectoral
base muscular, fin without
detached rays. Ventrals united,
oblong; below pectorals.

Swainson, Nat. Hist. Animals, Fish, vol. 2, p. 280, 1839 ^{reference} ²²⁷⁶
Scartelaos viridis ~~Blanchard~~, ~~Arch.~~
~~Journ. Sci. Nat. Harlem~~, vol. 9, p. 328,
1874 (reference).

— Jordan and Seale, Proc. U. S. Nat. Mus., vol. 28,
p. 794, fig. 12, 1905 (negros).

— Jordan and Richardson, Philippine
Journ. Sci., p. 47, 1910 (reference).

— Reeves, Journ. Pan-Pac. Res. Inst.,

vol. 2, no. 3, p. 13, July-Sep. 1927 (reference).
Mc Culloch, Austral. Mus. Mem., no. 5, pt. 6, p. 381, vol. 18, 1929 (reference).
(reference). — Chu, Biol. Bull. St.

John's Univ., no. 1, p. 166, Jan. 1931
(reference). — Herre, Gobies of

Philippines, p. 325, pl. 25, fig. 2,
1927 (Nabalas; Zarraga; Amoy, China).

— Tomiyama, Jap. Journ. Zool., vol. 7,
no. 1, p. 100, 1936 (Hainan; South China).

— Mc Culloch and Ogilby, Rec. Austral. Mus.,
vol. 12, no. 10, p. 200, July 14, 1919 (Deception
pl. 32, fig. 1,

Bay and Burnett R. Heads; Brisbane R.;
Pioneer R.; Barron R.; Townsville; Types
of Gobiosoma guttulatum and Apocryptes
macrophthalmus).

— Mc Culloch and
Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p.
773, July 7, 1925 (reference).

- Waite, Rec. Austral. Mus., vol. 4, no. , p. 194, 1902 (Broome; Lennard R., North W. Australia).
- Johnstone, Fascic. Malayenses, Annandale and Robinson, Zool., pt. 2, p. 300, 1903 (Patani, Jhering).
- Weber, Nova Guinea, vol. 5, pt. 2, p. 262, 1908 (Merauke R. mouth).
- Fowler, Mem. Bishop Mus., vol. 10, p. 418, 1928 (compiled); vol. 11, no. 5, p. 363, 1931 (types of Gobiosoma punctularum), ^{list} Fishes of Malaya, p. 213, 1937 (~~Malaya~~ reference).

2278

Boleophthalmus histiophorus Valenciennes,
Hist. Nat. Poiss., vol. 12, p. (158) 210,
1837 (type locality, Bombay).
? Boleophthalmus lachus Valenciennes,

Boleophthalmus sinicus Valenciennes,
op. cit., p. (162) 215 (type locality,
on Chinese drawing).

Boleophthalmus chinensis Valenciennes,
op. cit. (type locality, Canton).
— Frank, Abhandl. Bayer. Akad. Wiss.,
vol. Suppl. Band, p. 66, pl. 9, fig. 7,
1910 (Fukuura; Yokohama).

Boleophthalmus aeneus Richardson,
Voy. Sulphur, Ichth., p. 148, pl. 62, figs.
1-4, 1844 (type locality, Woosung; Canton);
Ichth. China and Japan, p. 268, 1846
(China Seas; Macao; Whampoa; Woosung).

Scartelaos aeneus Fowler, Proc.
Acad. Nat. Sci. Philadelphia, p. 513,
1905 (China).

2279

Apocryptes macrophthalmus Castelnau,
Proc. Zool. Soc. Victoria, vol. 2, p. 87,
1873 (type locality, Port Darwin).

Gobiosoma guttulatum Macleay, Proc.
Linn. Soc. New South Wales, vol. 2,
p. 357, pl. 9, fig. 6, 1878 (type locality,
Port Darwin).

Pseudapocryptes guttulatum Jordan
and Seale, Bull. Bur. Fisher., vol.
25, p. 408, 1905 (1906) (reference).

Gobiosoma punctularum De Vis, Proc.
Linn. Soc. New South Wales, vol. 8, p.
449, 1883 (type locality, South Sea
Islands).

Pseudapocryptes punctularum Jordan
and Seale, op. cit. (reference).

Boleophthalmus novae guineae Hase,
Jena. Zeitschr. Nat., vol. 51, p. 534, figs.
7-9, 1914 (type locality, Tami, Kaiser-
Wilhelms Land, New Guinea).

2280.

Depth $8\frac{3}{4}$ to 10; head $4\frac{1}{3}$ to $4\frac{4}{7}$,
width $1\frac{7}{8}$ to 2. Snout $3\frac{1}{5}$ to 4
in head; eye $5\frac{3}{4}$ to $6\frac{3}{4}$, $1\frac{2}{5}$
to $1\frac{2}{3}$ in snout, close set with
upper lid like skin of head;
maxillary reaches opposite hind
eye edge for half an eye diameter
beyond, length $2\frac{3}{4}$ to $2\frac{4}{5}$ in
head; 12 to 14 pointed down-
ward directed teeth in upper
jaw, besides few smaller
posteriorly; below 24 to 30
small pointed horizontal teeth;
curved canines behind symphysis
of lower jaw much larger than
other teeth; chin with small
barbel and along each mandibu-
lar ramus row of much smaller
barbels.

Scales minute, more distinct
on body posteriorly, much smaller
and widely spaced anteriorly,
and usually disappear forward

of second dorsal.

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D. V - I, 25 or I, 26, third spine $3\frac{3}{4}$ to 4 in fish without caudal fin, second dorsal height $1\frac{4}{5}$ to $1\frac{7}{8}$; A. I, 25, fin height 2 to $2\frac{1}{8}$; caudal peduncle depth 3; pectoral $1\frac{1}{3}$ to $1\frac{2}{5}$; ventral $1\frac{3}{4}$; caudal $3\frac{3}{4}$ in rest of fish.

Gray or slate brown, paler to whitish below. On upper surfaces and soft dorsal small scattered blackish spots. Five or six short dark gray bars on side of abdomen. Dark bar below eye.

India, Malaya, East Indies, Philippines, China, Japan, Northern Territory Australia, Queensland.

Scartelaos viridis (Buchanan-Hamilton)

Gobius viridis Buchanan-Hamilton,
Fishes of Ganges, pp. 42, 366, pl. 32,
fig. 12, 1822 (type locality, Ganges
estuaries).

Boleophthalmus viridis Valenciennes, Hist.
Nat. Poiss., vol. 12, p. (160) 213, 1837 (copied).

— Cantor, Journ. Asiatic Soc. Bengal,
vol. 18, pt. 2, p. 1177, 1849 (1850) (Penang).

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(Nat. Dicht. Bengal), vol. 25, p. 50, 1853
(reference).

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Mus., vol. 3, p. 104, 1861 (types of

Boleophthalmus ancupatorius; Penang);
Ann. Mag. Nat. Hist. London, ser. 4, vol.
12, p. 2402, 1873 (Shanghai).

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Fishes of India, pt. 2, p. 307, pl. 66, fig.
5, 1876; Fauna British India, vol. 2, Fishes,
p. 285, 1889.

Boleophthalmus viridis Károli, Termész. Füzetek,
Budapest, vol. 1, p. 167, 1881 (1882) (Sarawak; Hantabug) (error).

U. S. N. M., no. 51992. Negros,
Philippines. Dr. Bashford Dean.
Length 103 mm.

U. S. N. M., no. 45060. Philippines.
H. Veitch. Length 101 mm.