

Dorsal (<i>spinous</i>):	
Distance from snout.....	94
Length of longest ray	20
Length of last ray	7
Anal:	
Distance from snout.....	350
Length of longest ray.....	9
Caudal:	
Length of middle rays.....	8
Length of external rays.....	17 +
Pectoral:	
Distance from snout.....	110
Length	42
Ventral:	
Distance from snout.....	111
Length	3½
Branchiostegals	VII
Dorsal	154
Anal, about.....	100
Pectoral	12
Ventral	I, I
Number of caecal appendages	8 (?)

U. S. NATIONAL MUSEUM, Washington, D. C., Dec. 30, 1881.

DESCRIPTION OF A NEW SPECIES OF POMADASYS FROM MAZATLAN, WITH A KEY TO THE SPECIES KNOWN TO INHABIT THE PACIFIC COASTS OF TROPICAL AMERICA.

By DAVID S. JORDAN and CHARLES H. GILBERT.

Pomadasys cæsius sp. nov.

Allied to *P. pacifici* (Gthr.).

Head, 3½ in length (3⅔ with caudal); depth, 2½ (2¾ with caudal).

Length (28158), 9⅕ inches; D. XII, 16; A. III, 9; scales, 6-52-13.

Body ovate, compressed, the back rather strongly arched; anterior profile rather steep and straightish, gibbous between eyes and also behind them, slightly depressed above eyes and at the nape. Ventral outline considerably arched. Caudal peduncle moderate, about half as long as head, and somewhat longer than deep.

Head short and deep; deeper than long. Snout very short, blunt and thick, about one-third length of head. Mouth very small, the maxillary not quite reaching to the front of the eye, its length (from tip of snout) 3¼ in head. Teeth cardiform, in broad bands, the outer series enlarged, but smaller than in *P. pacifici*. Eye large, 3½ in head, shorter than snout, about one-fourth wider than the broad preorbital. Lips thick. Chin with a median furrow and two pores; lower jaw included. Anterior nostril much larger than posterior. Preopercle rather weakly serrate, its upright limb somewhat concave. Gill-rakers short and weak, about 10 on lower limb of arch.

Scales rather large, arranged as in related species, those above the

lateral line forming series parallel with the back, but placed so that the cross rows are very oblique. Soft parts of vertical fins almost entirely covered with small scales; series of scales also on membrane of pectorals and ventrals. Scaly sheath of vertical fins well developed.

Dorsal fin low, rather deeply emarginate, its spines very strong, the second spine slightly longer than the eye, and two-thirds the height of the third, which is but little shorter than the fourth or longest, and about two-fifths length of head; soft rays more than two-thirds height of longest spines. Caudal rather large, moderately forked, the upper lobe somewhat the longest, about four-fifths length of head. Anal rather low, its distal margin perfectly straight, vertical; second anal spine very robust, half length of head, half longer than the third spine, which is much lower than the soft rays. Ventral fins $1\frac{1}{3}$ in head, about reaching vent. Pectoral fins long, subfalcate, a little longer than head, nearly or quite reaching anal.

Color in life, grayish-silvery above, with yellowish tinge; lower part of sides with indistinct darker streaks, formed by clusters of dark points on the margins of the scales. A faint dark bar, most distinct in the youngest specimens, extending from the region in front of the dorsal to, or a little below, the base of pectorals. In young specimens this bar is as wide as the eye, growing narrower below, but in the adult it is scarcely wider than the pupil. No trace of the black cross-bars seen in *P. dovi* and in *P. pacifici*, nor of the dark spots seen in *P. furthii*, nor of the lengthwise stripes of *P. bilineatus* and *P. virginicus*. Vertical fins and pectorals dusky yellowish; distal half of ventrals and base of anal blackish. Upper part of head dusky, especially between eyes. Lining of opercle pale, with yellow patches in life. Peritoneum white.

This species is known from three specimens (28158, 29632, and 28333), obtained in the harbor of Mazatlan. It was not seen at Panama.

The species of *Pomadasy*s thus far known from the Pacific coast of tropical America may be readily distinguished by the characters given in the following table:

ANALYSIS OF SPECIES OF POMADASY S FOUND ON THE PACIFIC COASTS OF MEXICO AND CENTRAL AMERICA.

- a. Anal fin short, its rays III, 7 to III, 10; dorsal fin deeply emarginate, its spines more or less robust.
- b. Anal spines strong, the second longer and much stronger than third.
- c. Soft dorsal and anal with series of scales extending on the rays; outer teeth in upper jaw enlarged.
- d. Body ovate; back elevated; depth greater than length of head; outer teeth moderately enlarged, pointed; lips thick.
(ANISOTREMUS* Gill.)
- e. Scales above lateral line in oblique series, not parallel with the lateral line.
- f. Scales rather small, 50 to 70 in a horizontal series.

* = *Genytremus* Gill = *Paraconodon* Bleeker.

- g.* Color golden, with about seven light blue horizontal stripes, each edged above and below with paler; a dark band downward, and one forward and downward from nape; pectoral longer than head; second anal and third dorsal spines subequal, half head.....VIRGINICUS.*
- gg.* Color olivaceous; a jet black bar from anterior part of dorsal to below middle of side; base of pectoral, and membrane of opercle black; pectoral longer than head; second anal and fourth dorsal spines about equal, shorter than head DAVIDSONI.†
- ggg.* Color olivaceous, the adult nearly plain, the young with two black longitudinal stripes; fins blackish; second anal spine longer than fourth dorsal, about half head.....BILINEATUS.‡
- ff.* Scales large, about 7-34-12. Color grayish, each scale on upper anterior part of body with a blackish spot; fins more or less dusky; pectoral a little shorter than head; second anal spine robust, half length of head, longer than fourth dorsal spine.

FÜRTHI.§

ee. Scales above lateral line in series parallel with the lateral line.

h. Dorsal spines rather low, the longest about half length of head; second anal spine half length of head.

i. Color plain grayish-silvery; a faint bar downward from nape; pectoral longer than head, about reaching anal; dorsal spines stout and short, two-fifths length of head; eye but half wider than the broad preorbital; dorsal rays, XII, 16.....CÆSIUS.

ii. Color dusky grayish, with four irregular blackish cross-bands, which grow faint with age; pectorals much shorter than head, not reaching tips of ventrals; dorsal spines comparatively slender, half length of head; eye more than twice as wide as the narrow preorbital; dorsal rays, XI, 14.

PACIFICI.||

* *Sparus virginicus* L. Syst. Nat. x, 1, 281, 1758 = *Anisotremus taniatus* Gill, Proc. Ac. Nat. Sci. Phila. 1861, 107, etc. *Habitat*: West Indies; Caribbean Sea; Brazil; both coasts of Mexico and Central America; Magdalena Bay (*Steind.*); Mazatlan (*Gilb.*); Panama (*Gill*; *Gilb.*).

† *Pristipoma davidsoni* Steind. Ichthyol. Beitr. iii, 6, 1875. *Habitat*: Southern California; Santa Catalina Island (*Jordan & Gilbert*); San Diego (*Steind.*; *Jor. & Gilb.*).

‡ *Pristipoma bilineatum* Cuv. & Val. v, 271, 1830 = *Pristipoma melanopteron* C. & V. v, 1830, 273 = *Genytremus interruptus* Gill, Proc. Ac. Nat. Sci. Phila. 1861, 256. *Habitat*: Both coasts of Mexico and Central America; West Indies; Peru; Brazil; San Diego (*Steind.*); Magdalena Bay (*Steind.*); Cape San Lucas (*Gill*); Gulf of California (*Lockington*); Panama (*Steind.*); Galapagos Islands (*Steind.*). Not obtained by Mr. Gilbert.

§ *Pristipoma fürthi* Steindachner, Ichthyol. Beitr. v, 4, 1876. *Habitat*: Mazatlan (*Gilbert*); Panama (*Steind.*; *Gilb.*).

|| *Conodon pacifici* Günther, Proc. Zool. Soc. Lond. 1864, 147. *Habitat*: Chiapam (*Gthr.*); Panama (*Steind.*; *Gilb.*).

hh. Dorsal spines very high, the longest two-thirds length of head; second anal spine nearly two-thirds length of head; color grayish-silvery, with five jet black cross-bands; pectorals much shorter than head.

DOVII.*

dd. Body oblong, the depth less than the length of the head; outer teeth much enlarged, blunt; preopercle very sharply serrate.....(CONODON Cuvier.)

j. Color silvery, with eight dark cross-bands; snout not obtuse; second anal and fourth dorsal spines strong, half length of head; pectoral shorter than head; caudal lunateNOBILIS.†

cc. Soft dorsal and anal destitute of scales or very nearly so; form oblong; scales above lateral line in series parallel with the back.

k. Outer teeth in upper jaw slightly enlarged, acute.

(POMADASYD.‡ Lac.)

l. Dorsal spines 12; vertex convex; preorbital broad.

m. "Scales rather small (8-56-20); fourth dorsal spine 2½ in head; second anal spine more than half head; pectorals not reaching vent; snout produced; coloration uniform".....HUMILIS.§

mm. Scales larger (6-48-14); longest dorsal spine nearly half length of head, about equal to second anal spine; pectorals long, about reaching vent; snout sharp, protruding; color grayish, with four faint dark cross-bands..MACRACANTHUS.¶

ll. Dorsal spines 13; vertex with a small but evident concave depression; head low; preorbital narrow.

n. Dorsal spines very high, the highest more than half length of head; color grayish-silvery, nearly plainBRANICKI.¶¶

kk. Outer teeth in upper jaw not enlarged.

(PSEUDOPRISTIPOMA Sauvage.)

o. Third dorsal spine produced, much longer than the others, and about half length of head; second anal spine somewhat shorter; profile convex; scales nearly smooth; pectoral very long, nearly

* *Pristipoma dovii* Günther, Proc. Zool. Soc. Lond. 1864, 23. *Habitat*: Mazatlan (*Gilb.*); Panama (*Gthr.*; *Gilb.*).

† *Perca nobilis* Linn. Syst. Nat. x, 1, 291 = *Conodon plumieri* Gthr. i, 304, 1859 = *Conodon plumieri* Streets Bull. U. S. Nat. Mus. vii, 50, 1877 = *Conodon antillanus* C. & V. v, 156, 1830. *Habitat*: Coast of Texas, West Indies, to Brazil. Recorded by Streets from Boca Soledad, Pacific coast of Lower California; not observed by other collectors.

‡ = *Pristipoma* Cuv. & Val.

§ *Pristipoma humile* Kner & Steindachner, Sitzsber. Akad. Wiss. Münch. 1863, 222. *Habitat*: Rio Bayano, Panama (*Kner* & *Steind.*); not seen by other collectors.

¶ *Pristipoma macracanthum* Günther, Proc. Zool. Soc. Lond. 1864, 146. *Habitat*: Mazatlan (*Steind.*; *Gilb.*); Punta Arenas (*Gilb.*); Chiapam (*Günther*); Panama (*Gilb.*).

¶¶ *Pristipoma branickii* Steindachner, Denkschr. Kaiserl. Akad. Wissen. Wein. xli, 28, 1879. *Habitat*: Tumbes (*Steind.*); Panama (*Gilbert*); Mazatlan (*Gilbert*).

as long as head; preopercle weakly serrate; color silvery; lower fins white; a distinct dark blotch on opercle, and a fainter one on sides below spinous dorsal PANAMENSIS.*

bb. Anal spines weak, the second little

(HEMULOPSIS Steind.)

p. Pectoral fin long, nearly as long as head; a black blotch below in the axil, encroaching on the lower rays of the fin; preorbital broad, about as wide as eye..... AXILLARIS.†

pp. Pectoral fin short, much shorter than head; axillary spot, if present, not encroaching on the fin.

q. Preorbital narrow, not so wide as eye; a round dark humeral blotch; anal spines very small, graduated NITIDUS.‡

qq. Preorbital very deep, wider than eye; anal spines not graduated LEUCISCUS.§

aa. Anal fin long and low, its rays III, 11 to III, 13; dorsal fin low, scarcely emarginate, its spines slender; anal spines small, graduated; scales small, those above lateral line in oblique series ... (ORTHOPRISTIS Gill.||)

r. Dorsal spines 12; soft parts of dorsal and anal naked; preorbital very deep, as deep as eye; scales small, about 8-60-15.

s. Body oblong-ovate, the depth considerably more than one-third length; profile from nape, straight or slightly concave; pectorals long, $3\frac{3}{4}$ in body; body brownish above, with faint dark cross-bands and oblique pale streaks.

CHALCEUS.¶

* *Pristipoma panamense* Steindachner, Ichthyol. Beitr. iii, 8, 1875. *Habitat*: Mazatlan (Gilb.); Panama (Steind.; Gilb.).

† *Pristipoma axillare* Steindachner, Ichth. Notiz. viii, 7, 1869. *Habitat*: Mazatlan (Steind.; Gilbert).

‡ *Pristipoma nitidum* Steindachner, Ichthyol. Notiz. viii, 5, 1869. *Habitat*: Mazatlan (Steind.; Gilb.); Panama (Gilb.).

§ *Pristipoma leuciscus* Günther, Proc. Zool. Soc. Lond. 1864, 147. *Habitat*: Lower California (Streets); Mazatlan (Gilbert); San José (Gthr.), Chiapam (Gthr.), Panama (Gthr.). Two of our Mazatlan specimens of this species agree with Dr. Günther's description and figure, in having the anal spines rather large, the second larger than third, $2\frac{1}{4}$ in length of head; the remaining specimens from Mazatlan and Panama are slenderer, with more pointed snout and deeper suborbital, the anal spines being quite small, the second $3\frac{1}{4}$ to 4 in head. These perhaps represent a different species or variety, but we are not prepared to give it a separate name.

|| = *Microlepidotus* Gill = *Pristocantharus* Gill.

¶ *Pristipoma chalcum* Gthr. Proc. Zool. Soc. Lond. 1864, 146 = *Pristipoma kneri* Steind. Ichth. Notiz. viii, 1869, 3. *Habitat*: Mazatlan (Steind.; Gilb.); Panama (Gthr.; Gilb.).

- ss. Form oblong-elliptical, the depth less than one-third length; profile slightly convex; pectoral short, $4\frac{1}{2}$ in body; sides with longitudinal dark streaks CANTHARINUS.*
- rr. Dorsal spines 13 (or 14); soft parts of dorsal and anal scaly; preorbital very narrow, its width much less than diameter of eye; pectoral long, as long as head, $3\frac{1}{2}$ in body; scales very small; color grayish, with narrow oblique dark streaks..... INORNATUS.†

INDIANA UNIVERSITY, January 3, 1882.

THE RAPID PREPARATION OF LARGE ZOOLOGICAL SPECIMENS.

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(Read before the "Association Française pour l'avancement des Sciences," Congrès de Reims, 1880. Séance du 13 Août, 1880.)

[Translated by H. C. Yarrow, M. D., for the Smithsonian Institution, Washington.]

The laboratory of comparative anatomy of the University of Gand is of restricted dimensions. Its surroundings, sufficient for elementary practical teaching, are very modest, but, happily, material for study is not wanting, thanks, above all, to the administration of the Zoological Garden of Antwerp, one of the richest of the continent, which generously donates to us its losses and carries the obligation still farther in sending to us the bodies of animals by express. It is thus that during the academical years of 1879 and 1880 we have had at our disposal a series of very rare monkeys, a kangaroo, a cheetah or hunting leopard, a young American ostrich, the principal viscera of an adult African elephant, and other interesting specimens.

With the assistance of a single helper I have been able to utilize all these objects and rapidly prepare, during the few hours which my other duties leave me, a great number of permanent anatomical preparations to enrich our museum, which is already comparatively complete.‡ Our

* *Pristipoma cantharinum* Jenyns, Zool. Voy. Beagle, Fishes, 49, 1842. *Habitat*: Graymas (*Lieut. Nichols*); Galapagos Islands (*Jenyns*; *Gthr.*).

† *Microlepidotus inornatus* Gill, Proc. Ac. Nat. Sci. Phila. 1862, 256 = *Pristipoma brevipinne* Steind. Ichthyol. Notiz. viii, 1869, 10 = ? *Pristipoma notatum* Peters, Berlin. Monatsber. 1869, 706. *Habitat*: Cape San Lucas (*Gill*); Mazatlan (*Steind.*; *Peters*). Not obtained by Mr. Gilbert.

‡ The collections at Gand actually contain more than 3,000 preparations belonging properly to comparative anatomy, and more than 1,600 specimens are preserved in alcohol.