

F I S H.

ACANTHOPTERYGII.

FAMILY—PERCIDÆ.

PERCA LÆVIS. *Jen.*

PLATE I.

P. nigricanti-fusco undique punctata; vertice, fronte, rostro usque ad nares, et infra-orbitalium parte posteriori, squamatis; squamis, in capite ciliatis scabris, in corpore sublævibus.

B. 7; D. 9—1/11; A. 3/9; C. 17; P. 15; V. 1/5.

LONG. unc. 11; lin. 5.

FORM.—Much more elongated than the *common Perch*, with the back less elevated. Depth, beneath the commencement of the first dorsal, not quite equalling one-fifth of the entire length. Thickness, in the region of the pectorals, about two-thirds of the depth. Head not quite one-fourth of the entire length. Profile falling gently from the nape in nearly a straight line at an angle of about 45° : at the nape the dorsal line rises so as to interrupt its continuity with the slope of the profile, but it is nearly horizontal along the base of the dorsal fins. The jaws are nearly equal, but when the mouth is closed, the upper one appears somewhat the longer. A band of velutine teeth in each jaw, as well as on the vomer and palatines. Maxillaries when at rest nearly concealed beneath the suborbital bones: these last with their lower margin distinctly denticulated; their surface presenting several small hollows. Eyes rather above the middle of the cheeks, and about equi-distant from the extremity of the snout and the posterior margin of the preopercle; their diameter is one-sixth of the length of the head; the distance from one to the other equals one diameter and a half. Nostrils double, a little in advance of the eyes; the first orifice oval, the second round. Preopercle rectangular, with the angle rounded;

the ascending margin finely denticulated, the teeth almost disappearing at the top; towards the angle the teeth become stronger and point downwards; they are also stronger and more scattered along the basal margin, inclining here a little forwards. Opercle with two flat sharp points, one a little below the upper angle, the other about the middle and terminating the gill cover. Both the subopercle and interopercle have their margins obscurely denticulated: the margin of the former is rather sinuous, and passes obliquely forwards and downwards to form a continuous curve with that of the latter. Crown, forehead, upper part of the snout as far as the connecting line of the nostrils, posterior half of the suborbitals, cheeks, and all the pieces of the gill cover, excepting the lower limb of the preopercle, covered with small scales, which are in most instances ciliated with a varying number of denticles, and feel rough to the touch: the extremity of the snout, anterior portion of the suborbitals, maxillaries, and lower jaw are naked. Above each orbit is a small semi-circular granulated plate, with the granulations disposed in striæ. The suprascapulars terminate in an obtuse projecting point. The humeral bone forms a large osseous triangular plate above the pectorals, the salient angle terminating in three small teeth. Course of the lateral line a little above one-third of the depth till it arrives beneath the second dorsal, where it bends down to half the depth. Scales on the body larger than those on the head, of an oblong form, rounded at their free edges, which are scarcely at all ciliated, and for the most part quite smooth to the touch; their concealed portion not wider than the free, with a fan of fourteen striæ; the rest of their surface more finely striated. The first dorsal commences a little beyond a vertical line from the termination of the humeral plate, and is almost continuous with the second, being only separated by a deep notch: the space occupied by the two dorsals together is exactly one-third of the entire length: spines strong; the first scarcely more than one-third the length of the second, which is very little shorter than the third; this last longest, equalling rather more than half the depth; rest of the spines gradually decreasing to the last, which is of the same length as the first. The second dorsal commences with a slender spine, not half the length of the first soft ray, which last is simple, the others being branched; third and fourth soft rays longest; the succeeding ones slowly decreasing to the last, which is rather more than half the longest. Anal preceded by three spines, the first of which is very short; second much longer and very stout; third of about the same length as the second, but much slenderer; the first and second separated by a wide membrane from the third, which is closely united to the first soft ray; these last longer than those of the second dorsal, but in other respects similar. The anal and second dorsal terminate in the same vertical line; and the last ray is double in both fins. Between them and the caudal is a space equalling one-fifth of the entire length. The caudal is slightly notched. The pectorals are rather pointed, their length equalling two-thirds that of the head. Ventrals immediately beneath them, and of about the same length; the first soft ray longest, and more than twice the length of the spine which precedes it.

COLOUR.—In spirits this fish appears yellowish brown, deepening on the back but becoming paler on the belly, and covered all over with small dusky spots, one occupying the base of each scale.

Habitat, Santa Cruz River, Patagonia.

No true perch had been obtained from South America until M. D'Orbigny discovered one in the Rio-Negro, in North Patagonia, which has been since described by Valenciennes, under the name of *P. trucha*.* The present species was found dead by Mr. Darwin, high up the river of Santa Cruz, in South Patagonia. It is evidently very closely allied to the *P. trucha*, and is spotted in a similar manner; but it appears to differ in the scales not advancing on the snout beyond the nostrils, or covering more than the posterior half of the suborbitals. Those on the body are also particularly characterized by being so smooth, as hardly to communicate any sensation of roughness when the hand is passed from the tail towards the head, though the head itself is rough. This circumstance has suggested the specific name. This species further disagrees with the one above alluded to in having the caudal slightly forked, not rounded; and in having two soft rays less in the second dorsal, and one less in the anal. Valenciennes's description, however, of the *P. trucha* is very brief; on which account I have been the more minute in that of the *P. lævis*.

This perch, with *P. trucha*, would almost seem to form a subordinate division in the genus, distinguished from that embracing all the other described species, by the character of the scales covering a large portion of the head which gives it a remarkable sciaenoid appearance. Both species may be known from all the North American perches, by their having the body spotted instead of banded, and by the smaller number of rays in the first dorsal. In this last character they agree with the *P. ciliata*, and *P. marginata* of Cuvier and Valenciennes.

1. SERRANUS ALBO-MACULATUS. *Jen.*

PLATE II.

S. lateribus maculis albis serie longitudinali dispositis; dentibus velutinis; paucis, hic et illic sparsis, fortioribus, aculeiformibus, vel sub-conicis; preoperculo margine ascendenti convexiusculo, denticulato; denticulis ad et infra angulum paulò majoribus; operculo mucronibus duobus parvis, et spinâ intermediâ forti, armato; rostro et maxillis nudis; squamis corporis leviter ciliatis; pinnâ caudali æquali.

B. 7; D. 10/13; A. 3/7; C. 17, &c.—P. 17; V. 1/5.

LONG. unc. 16; lin. 9.

FORM.—Of an oblong-oval form, with the greatest depth about one-fourth of the entire length.

The dorsal and ventral lines are of nearly equal curvature. The profile is nearly rectilineal,

* *Hist. des Poiss.* tom. ix. p. 317. I refer to the quarto edition throughout.

falling very gradually from the commencement of the dorsal to the end of the snout, without any elevation at the nape. The head is one-third of the entire length. The lower jaw projects beyond the upper. The maxillary, which is broad, and cut quite square at its extremity, reaches to beneath the middle of the orbit. The suborbital has the margin entire and nearly straight. The upper jaw has a band of velutine teeth, broadish in front, but narrowing (the teeth at the same time becoming smaller and finer) posteriorly; with an outer row of not much longer, but considerably stronger, subconic teeth, placed at rather wide intervals; besides these, there are three or four teeth on each side of the anterior portion of the jaw, equally strong as those last mentioned, but more curved, the points reclining backwards, and set within the velutine band. In the lower jaw, there is the same band as above, but narrower, and with the teeth more in fine card than velutine, with stronger ones anteriorly, and along the posterior half of each side, where there are six or eight, standing nearly in a single row, very stout and curved, though scarcely longer than the others; outside the band, and on each side of the symphysis, there are three or four moderately strong subconic teeth, at short distances from each other, which may be considered as small canines. On the vomer and palatines, the teeth are velutine. The eyes are rather large, and placed high in the cheeks; their diameter is about one-sixth the length of the head: the distance between them equals one diameter and a quarter. The nostrils consist of two orifices, placed one before the other, a little in advance of the eyes, roundish-oval, the posterior one largest. The preopercle has the ascending margin not quite rectilineal, being slightly convex, and the angle at bottom rounded; the denticulations on the former are fine, but very perceptible; they become rather stronger and more distant at the angle, and a few of this character are continued along the posterior half of the basal margin. The opercle is armed with three points; the upper one is triangular, small, and not very obvious; the middle one is a moderately strong spine, about a quarter of an inch in length; the third is a little below this last, and resembles it in form, but is much smaller. The membrane of the opercle terminates in a sharp angle, and is produced considerably beyond the middle spine. The line of separation between the opercle and subopercle is not visible. The gill-opening is large, and has seven rays. There are no scales on the snout or jaws, or between the eyes, or on the anterior portion of the suborbital; but they are present on the cranium behind the eyes, cheeks, (where they are numerous), and pieces of the gill-cover; the limb of the preopercle, and the lower margin of the interopercle, however, are nearly free from them. Those on the opercle are larger than those on the cheeks. All these scales, as well as those on the body, are finely ciliated, communicating a slight roughness to the touch. The supra-scapular is represented by a larger and harder scale than the rest, of a semi-elliptic form, striated on its surface, and obsoletely denticulated on the margin. The lateral line is parallel to the back, at between one-third and one-fourth of the depth. The pectorals are attached below the middle, of a rounded form, the middle rays being longest, and about half the length of the head. The dorsal commences exactly above them, and occupies a space equalling half the entire length, excluding the caudal. The spines are sharp, and moderately strong: the first is rather more than half the length of the second, but scarcely more than one-fifth of the length of the third, which is longest, equalling more than half the depth of the body: from the third they decrease very gradually to the ninth, which is of the same length as the second; the tenth is again a little higher; this is followed by the soft rays, which are nearly even, and about one-third higher than the last spine; the last two or three, however, are a little shorter than the others.

The anal commences in a line with the fifth soft ray of the dorsal, and ends a little before that fin: the second spine is strongest, and twice the length of the first: the soft rays are longer than those of the dorsal. There are a few minute scales between the soft rays of both dorsal and anal, to about one quarter of their height. The caudal is even, but may possibly have been worn so by use. The ventrals are directly under the pectorals, a little shorter than them, and pointed.

COLOUR.—“Varies much. Above pale blackish-green; belly white; fins, gill-covers, and part of the sides, dirty reddish orange: on the side of the back, six or seven good-sized snow-white spots, with not a very regular outline.—In some specimens, the blackish-green above becomes dark, and is separated by a straight line from the paler under parts.—Again, other specimens are coloured dirty ‘reddish-orange,’ and ‘gallstone yellow,’* the upper parts only rather darker. But in all, the white spots are clear; five or six in one row, and one placed above. Sometimes the fins are banded longitudinally with orange and black-green.”—D.

Habitat, Galapagos Archipelago.

This species, which is undoubtedly new, was obtained by Mr. Darwin at Charles Island, in the Galapagos Archipelago. As many specimens were seen, it is probably not uncommon there. It appears to be a *Serranus*, but its canines, if they can be so called, are very small and inconspicuous. Its naked jaws require it to be placed in Cuvier’s first section of that genus, though much larger than most of the species contained in it, and rather differing from them in general form. In some of its characters, it would seem to make a near approach to *Centropristes*, between which and *Serranus*, there is undoubtedly a very close affinity.

2. SERRANUS GOREENSIS. Val.?

Serranus Goreensis, Cuv. et Val. Hist. des Poiss. tom. vi. p. 384.

FORM.—The general form approaching very closely that of the *S. Gigas*. Greatest depth one-fourth of the entire length. Head rather less than one-third of the same. The diameter of the eye is one-fifth of the length of the head; and the distance from the eye to the extremity of the snout is about one diameter and a quarter. The lower jaw is covered with small scales, but not the maxillary. The nostrils consist of two round apertures, the anterior one rather larger than the posterior, and covered by a membranous flap. The teeth in the upper jaw form a velutine band, with the outer row in fine card, and two stronger and longer ones near the middle of the jaw on each side: below there is a narrow band of fine card, with stronger ones situated as above. The denticulations at the angle of the preopercle are well developed, especially two teeth which are much stronger than any on the ascending margin. The opercle has three flat spines, the middle one longest and projecting further than the others; but the terminating angle of the membrane projects beyond this spine to a distance equalling the length of

† In this and in all other cases, Mr. Darwin has used *Werner’s Nomenclature of Colours*, by Patrick Syme.

the spine itself. The dorsal has the fourth spine longest, and equalling just half the entire length of the spinous portion of the fin. Both the spinous and soft portions have minute scales between the rays, covering rather more than the basal half of the fin; they rise highest just at the commencement of the soft portion. The caudal is square at the extremity, or with rather more tendency to notched than rounded; the basal half scaly. The anal commences in a line with the third soft ray of the dorsal, and has the basal half of the soft portion finely scaled: the second spine is strongest, but the third somewhat the longest. The pectorals are rounded, with the seventh and eighth rays longest; finely scaled on the upper side for one-fourth of their length from the base, but without any scales beneath. The ventrals are a little shorter than the pectorals, with a spine of about the same length and stoutness as the third anal spine, and rather more than equalling half the length of the soft rays: they are obsoletely scaled on the upper side between the rays.

D. 11/16; A. 3/8; C. 15, &c.—P. 17; V. 1/5.

Length 7 inches.

COLOUR.—(*In spirits.*) Of a nearly uniform bister brown, stained and mottled here and there, particularly on the sides below the lateral line, with patches of a much paler tint.

Habitat, St. Jago, Cape Verde Islands.

The Serran above described, was procured by Mr. Darwin at Porto Praya. I am not sure that I am right in referring it to the *S. Goreensis* of Valenciennes, as in so extensive a genus, and one in which the species are so extremely similar, it is very difficult to identify any one in particular, without the opportunity of comparing it with a large number. But it seems to agree with that species better than with any other I can find noticed by authors; and the island of Goree is sufficiently near the Cape Verde Islands, to render it probable that the same species may occur in both localities. It has the same square tail, which, according to Valenciennes, so particularly characterizes the *S. Goreensis*; but it has one soft ray more in the dorsal. I see no appearance of the deep violet said to border the dorsal and anal fins, but possibly it may have been effaced by the action of the spirit.

3. SERRANUS ASPERSUS. *Jen.*

S. suprà viridi-niger, subtùs pallidior; lateribus smaragdino pallido aspersis; pinnis anali, caudali, dorsalique posticè, apicibus croceis; dentibus velutinis, caninis in maxillâ superiore utrinque versus apicem duobus sub-fortibus; preoperculo margine prope recto denticulato; denticulis ad angulum paulò majoribus; operculo mu-

cronibus tribus planis, intermedio maximo; rostro toto, et maxillâ inferiore, squamatis.

B. 7; D. 11/15; A. 3/8; C. 17, &c.; P. 17; V. 1/5.

LONG. unc. $4\frac{1}{4}$.

FORM.—Back very little elevated; the greatest depth rather less than one-fourth of the entire length.

Nape slightly depressed, with which exception, the dorsal line from the commencement of the dorsal fin to the crown of the head, is nearly horizontal: from between the eyes to the end of the snout, the profile is considerably convex. Head rather more than one-third of the entire length. Eyes large, their diameter about one-fourth the length of the head, high in the cheeks, and distant rather less than a diameter from the end of the snout. Lower jaw longer than the upper. The teeth above consist of a narrow velutine band, with a few, a little behind the anterior extremity, longer than the others, but slender and curving backwards; in front, and on each side of the extremity are two moderate canines: beneath there is a narrow band of velutine and fine card mixed, but no canines. The lower jaw, and the snout quite to the extremity, as well as the suborbitals, are covered with minute scales, but not the maxillary. The preopercle has the ascending margin nearly rectilineal, and finely denticulated; the angle at bottom rather sharp, and the denticles at this part, as well as immediately above it, rather more developed than the others. Opercle with three flat points; the upper and lower ones equal, the middle one larger, but not projecting so far as the membrane. Dorsal spines invested with membranous tags at their tips; of nearly equal lengths, with the exception of the first two; the third and fourth a little the longest: the soft portion of the fin higher than the spinous. Anal rounded, terminating sooner than the dorsal; the second spine a trifle longer than the third, as well as stouter. The caudal is injured, but appears to have been square, or perhaps slightly rounded. Rows of minute scales between the rays of all the vertical fins.

COLOUR.—“Dark greenish, black above, beneath lighter; sides marked with light emerald green: tips of the anal, caudal, and hinder part of the dorsal, saffron yellow; tips of the pectorals orpiment orange.”—D. These colours have been much altered by the action of the spirit. The general ground is now dusky lead, mottled and sprinkled on the sides with dirty white. There is an appearance of four oblong black spots on the upper part of the back beneath the base of the dorsal, not noticed by Mr. Darwin. The tips of the fins have entirely lost their bright colours.

Habitat, Porto Praya, St. Jago, Cape Verde Islands.

This species was also obtained at Porto Praya, off Quail Island. It belongs to that division of the genus which Cuvier has distinguished by the name of *Mérou*, and to his section of *Mérous piquetés*; but it will not accord with any of those described in the “Histoire des Poissons.” There is only one specimen of it in the collection, which is small, and probably not full-sized.

4. SERRANUS LABRIFORMIS. *Jen.*

PLATE III.

S. fusco-flavo, nigro, alboque variatus; dorsali rubro-marginatâ; spinis fortibus, sub-æqualibus, ad apices laciniis membranaceis investitis; dentibus aculeiformibus, valdè retroflexis, seriebus internis majoribus; caninis, in maxillâ superiore duobus, in inferiore quatuor, mediocribus; preoperculo margine arcuato, vix denticulato; operculo mucrone unico plano, modico, armato; squamis infra lineam lateralem ciliatis, supra et in ventre lævibus.*

B. 7; D. 11/17; A. 3/8; C. 15, &c.; P. 18; V. 1/5.

LONG. unc. 17.

FORM.—Oblong-oval, with very much the aspect of a *Labrus*. The greatest depth, which is beneath the commencement of the dorsal, is rather less than one-fourth of the entire length. The head is large, and nearly one-third of the same. The profile, from the dorsal to the end of the snout, curves gradually downwards in one continuous bend. The lower jaw projects a little beyond the upper. The teeth form a broadish band of fine card in both jaws, with the inner rows longer and more curved than the outer; in the upper jaw, a little behind the anterior extremity, are three or four longer than the others, and curving so much backwards as almost to be laid flat; at the posterior part of this jaw on each side they pass into velutine. The canines are strong, but not very long; in number two above and four below, not exactly in front, but a little on each side of the middle. The teeth on the vomer and palatines are velutine. The eyes are moderately large, high in the cheeks, equidistant from the upper angle of the preopercle and the end of the snout, with a diameter rather less than one-sixth the length of the head: the distance between them about equals their diameter. The margin of the suborbital is entire, but a little sinuous. The maxillary is large, and cut nearly square at its posterior extremity: it is nearly all exposed, and reaches to beneath the posterior part of the orbit. The nostrils are a little in advance of the eyes, and consist of two round openings, one before the other, the posterior one being the largest. The whole head, including the lower jaw, is covered with small scales, which become more minute towards the extremity of the snout, but are very visible even there: there are none, however, apparent on the maxillary. The preopercle has the basal angle rounded, and the ascending margin a little convex outwards, and denticulated, but the denticles are minute and not very obvious. The opercle and subopercle together (the line of separation between which is scarcely apparent) form a triangle. The former terminates posteriorly in one flat spine, moderately developed, not reaching to the extremity of the membranous angle by twice its own length. The lateral line, which is rather indistinct, is nearly parallel to the back at a little below one-fourth of the depth. The scales on the body below

* I have employed this term to designate the slender curved teeth, arranged in several rows, which Cuvier calls *en cardes*, or, when less numerous and rather more developed, *en crochets*. They much resemble the prickles found on some plants.

the lateral line are rough, but those above it, as well as those on the belly, nearly smooth: one taken from the middle of the side is of an oblong form, rounded at the free extremity, which is finely dotted and ciliated; its whole surface finely striated, with nine or ten deeper striæ at the base. The pectorals are attached low down, rounded at the extremity, and about half the length of the head. The dorsal commences immediately above them, and is tolerably even throughout its course, extending nearly to the caudal. The membrane is rather deeply notched between the spines, which are very stout and invested at their tips with membranaceous tags, as in the *Labridæ*. The first spine is only half the length of the second and third; the fourth is a little the longest, equalling two-fifths of the depth of the body; the fifth and succeeding ones decrease very gradually to the tenth, which is rather more than half the length of the fourth; the eleventh is a little longer, and is followed by the soft rays, the longest of which is about equal to the longest of the spinous. The anal commences about in a line with the second soft ray in the dorsal, and terminates before that fin, leaving double the distance between it and the caudal; first spine not half the length of the second and third, which are about equal, and much stouter; soft portion of the fin of a rounded form, with the middle rays nearly double the length of the second and third spines. Caudal even, or very slightly rounded, without any rows of scales between the rays. Ventrals a little shorter than the pectorals, immediately beneath them, pointed.

COLOUR.—“Mottled with brown-yellow, black and white: upper and lower edges of the caudal, edges of the dorsal and anal, ‘arterial’ and purplish red.”—D.

Habitat, Galapagos Archipelago.

Obtained off Chatham Island in the Galapagos Archipelago. There can be little doubt of its being an undescribed species, well characterized by its *labriform* appearance, as regards the fins, rounded and nearly entire margin of the preopercle, and scales smooth *above*, but rough *beneath* the lateral line.

5. SERRANUS OLFA. *Jen.*

PLATE IV.

S. fusco-variatus; spinis dorsalibus ad apices laciniis investitis; naribus orbiculatis, aperturâ unica magnâ, duas minores includenti; dentibus aculeiformibus, retroflexis, seriebus paucis; caninis, in maxillâ superiore duobus, in inferiore quatuor, cæteris vix fortioribus; preoperculo margine adscendenti prope recto, versum angulum paulum sinuato, vix denticulato; operculo mucronibus duobus, parvis, subæqualibus, armato; squamis ubique lævibus.

B. 7; D. 11/18; A. 3/11; C. 17, &c.; P. 17; V. 1/5.

LONG. unc. 23½.

FORM.—Rather elongated, with the dorsal and ventral lines equally curved, and neither departing much from a straight line. Depth, in the region of the pectorals, equalling rather more than one-

fifth of the entire length. Head contained three and a half times in the same. Profile sloping gradually from the commencement of the dorsal to the end of the snout in one continuous very gentle curve. The lower jaw a little the longest. The teeth are in strong card in both jaws, their points curving inwards and backwards: those above longest anteriorly, where they form about three rows; posteriorly they become velutine, as in the last species, and consist of not more than two rows: in the lower jaw the teeth are equally large at the sides as in front, and, excepting quite at the anterior extremity, in only two rows, the inner of which is stronger than the outer. The canines are small, and scarcely stronger than the other teeth; in number* and situation, the same as in the *S. labriformis*. The vomerine and palatine teeth are very fine velutine. Eyes rather large, and high in the cheeks, equidistant from the upper angle of the preopercle and the intermaxillary, with a diameter about one-seventh the length of the head: the distance between them equals one diameter and one-third. The margin of the suborbital is entire, and nearly straight. The maxillary, when the mouth is closed, reaches to beneath the middle of the orbit. The nostrils are a little in advance of the eyes, and consist of one large, nearly circular, aperture, enclosing two smaller ones, which are also circular and placed equally in advance. The crown, and space between the eyes, and entire cheeks, are covered with small scales; there are also some minute ones on the lower jaw, and on the extremity of the snout before the eyes; but they are scarcely obvious, if present, on the first suborbital, and not at all perceptible on the maxillary. The preopercle is rather more than rectangular; the basal margin nearly straight and horizontal; the angle rather sharp; the ascending margin with a slight sinuosity just above the angle, afterwards straight and nearly vertical, very obsoletely denticulated throughout its course. The osseous portion of the opercle terminates posteriorly in two flat points, nearly equal, but the lower one rather the more developed, between which it is emarginate. The angle of the membrane is considerably produced beyond the lower point. The line of separation between the opercle and subopercle is tolerably obvious. Gill-opening large. All the pieces of the gill-cover are covered with scales scarcely smaller than those on the body. The scales on the body are not large, of an oblong form, with their free edges scarcely at all ciliated, not enough to feel rough to the touch; their whole surface very finely striated, with twelve deeper striæ on the basal half, and the basal margin crenated. Lateral line not very conspicuous, parallel to the back at about one-fourth of the depth. The dorsal commences in a line with the posterior angle of the opercle, and occupies a space equaling half the entire length, caudal excluded: spines strong, and tagged at their extremities; the second longest, equalling not quite half the depth; third and succeeding ones gradually decreasing to the tenth, which is about half the length of the second; the eleventh again longer; then follow the soft rays, which are nearly even, but all higher than the last spinous. The anal commences in a line with the third soft ray in the dorsal, and terminates a little before that fin: first spine very short; the third longest, but the second stoutest: of the soft rays the third and fourth are longest, and nearly twice the length of the third spine, being longer than the soft rays in the dorsal; from the fourth they gradually decrease, giving this portion of the fin a rounded form. The caudal is nearly even, but the central rays are a little shorter than the outer ones. There are no rows of scales between the soft rays of the dorsal and anal, and

* There are actually only three below in this specimen, but there is little doubt of four being the normal number, one appearing to have been lost.

scarcely any trace of them between those of the caudal. The pectorals are rounded, attached low down, and about half the length of the head. Ventrals directly beneath them, shorter, and more pointed.

COLOUR.—“Mottled brown.”—D. The dried skin appears nearly of a uniform brown, simply a little paler beneath. There is some indication of a whitish band along the base of the anal and soft dorsal, which may be the remains of a brighter colour. The base of the pectorals and ventrals is also paler than the extremity of those fins.

Habitat, Galapagos Archipelago.

This species was also obtained at Chatham Island, in the Galapagos, where Mr. Darwin states that it is common. In some of its characters it approaches the *S. labriformis*, but in others it is essentially different. It rather departs from most of the *Serrani* in the teeth, and in the small development of the canines. The nostrils also are rather peculiar. Perhaps it may one day be found to constitute the type of a distinct genus.

PLECTROPOMA PATACHONICA. *Jen.*

P. operculo spinis tribus, intermediâ maximâ; preoperculo margine adscendenti denticulato; ad angulum dente unico, et ad marginem basalem dentibus duobus, fortibus; pinnâ dorsali spinis quartâ et quintâ longissimis; pectoralibus radiorum apicibus e membranâ paulo exeuntibus; caudali leviter rotundatâ.

B. 7; D. 13/15 vel 16; A. 3/8 vel 9; C. $17\frac{2}{3}$; P. 17; V. 1/5.

LONG. unc. 15.

FORM.—Greatest depth about one-third of the entire length, excluding caudal. Head rather exceeding one-third. Profile descending obliquely in nearly a straight line from the commencement of the dorsal to the end of the snout. Eyes large, high in the cheeks; their diameter nearly one-fourth of the length of the head. The lower jaw a little the longest: both it and the maxillary without scales. A band of velutine teeth in each jaw; the outer row in card, with some, stronger than the others, which may be considered canines: above, the principal canines are about six in number on each side near the extremity; below, there are three or four larger than the others similarly situated. The preopercle has the ascending margin distinctly denticulated; on the basal margin are two strong teeth directed forwards, and a third at the angle. The opercle has three strong flattened spines; the middle one most developed. At the lower angle of the subopercle is a small flat moderately sharp point. Fourth and fifth dorsal spines longest; the succeeding ones gradually diminishing to half the height of the soft portion of the fin which follows. Second anal spine very stout. Pectorals with the tips of the rays slightly projecting beyond the membrane, giving it a festooned appearance. Caudal slightly rounded.

COLOUR.—The specimen above described appears, in its present state, greyish brown, with zig-zag lines in different directions of a darker tint. A second individual is stated by Mr. Darwin to have been, when alive, “above salmon-coloured.” A third is described as “above aureous-coppery, with wave-like lines of dark brown, which often collect into four or five transverse bands; fins lead-colour; beneath obscure; pupil dark blue.” Both these last specimens appear now, like the first, greyish-brown. The wave-like lines extend over a portion of the dorsal and anal fins.

Habitat, coast of Northern Patagonia, and the mouth of the Plata.

This species is evidently very closely allied to the *P. Brasilianum* of Cuvier and Valenciennes, and possibly may not be distinct. It differs, however, in having only two, instead of three, teeth on the basal margin of the preopercle, which character prevails in all the specimens. It has also one or two more soft rays in the anal. It likewise approaches the *P. aculeatum* of the same authors, but this last species is said to be particularly characterized by three very sharp points on the subopercle towards the lower angle, in the room of which, in the species here described, there is only one small triangular flattened point, rather sharp in two individuals, but in the third blunt, with the margin slightly crenated. The colours too appear to be different.

Mr. Darwin's collection contains three specimens, which do not materially differ from each other. The largest, measuring fifteen inches in length, was taken in forty fathoms water off the mouth of the Rio Plata. The two others, smaller, and not exceeding nine, and seven and a half inches respectively, were got on the coast of Patagonia in lat. $38^{\circ} 20'$: where it is stated that great numbers were obtained, many exceeding a foot in length. In these smaller specimens the canines are not so numerous or well developed as in the larger one.

“One specimen when caught, vomited up small fish and a *Pilumnus*. Was tough for eating, but good.”—D.

DIACOPE MARGINATA. *Cuv.*

DiaCOPE marginata, *Cuv. et Val.* Hist. des Poiss. tom. ii. p. 320.

FORM.—Greatest depth of the body and length of the head equal, each being not quite one-third of the entire length. Nape somewhat elevated, whence the profile falls very regularly in a slightly convex line. The jaws appear equal when open, but when closed the upper one is a little the longest. Teeth velutine, with four well-marked canines in the upper jaw, two on each side of the anterior extremity, the outer one of which is longer than the inner. Opercle with two flat blunt points. Denticulations of the preopercle, particularly those at the angle below the notch, moderately well developed. Tubercle of the interopercle prominent. There are scales on the cheeks and pieces of the gill-cover, but none on the crown, snout, jaws, or suborbitals. The scales on the

body are moderately large. There are rows of small scales between the rays of the vertical fins, but they are more developed between the soft rays than between the spinous. The dorsal has the first spine half the length of the second, which itself is a little shorter than the third; fourth, fifth, and sixth equal and longest; there is very little difference in the lengths of the remaining rays, nor is there much between the spinous and soft portions of the fin, which, taken as a whole, appears nearly even throughout. Anal short, commencing in a line with the fourth soft ray of the dorsal, and terminating at the same distance from the caudal as that fin: second and third spines very stout. Pectorals narrow and pointed, a little shorter than the head. Ventrals a little shorter than the pectorals.

B. 7; D. 10/14, the last double; A. 3/8, the last double; C. 17, and some short ones; P. 16; V. 1/5.

Length 6 inches.

COLOUR.—“Upper part pale lead colour: pectorals yellow; ventrals and anal orange: sides very pale yellow.”—D. In spirits, the colour appears almost uniform greyish-white. The dorsal and anal fins have an edging of black, which is not noticed by Mr. Darwin, and which is characteristic of the species. The caudal is entirely dusky. There are no traces of spots on any part of the body.

Habitat, Keeling Island, Indian Ocean.

All the known species of *Diacope* are stated by Cuvier and Valenciennes, as coming from the Indian seas. The *D. marginata* was first brought from thence by Commerson. It was afterwards received by the authors above mentioned from Pondicherry. The expedition under Captain Duperrey, met with it at the Island of Oualan. Mr. Darwin's specimen was obtained at the Keeling or Cocos Islands: I believe it to be referrible to this species, as it possesses the characteristic black edging on the dorsal and anal fins; but as the description in the “*Histoire des Poissons*” is very brief, containing a mere notice of the colours, I have thought it advisable to annex that of the present individual.

GENUS—ARRIPIS. *Jen.*

Membrana branchialis septem-radiata; aperturâ amplâ. Pinna dorsalis unica; spinis gracilibus. Dentes aculeiformes, tenues; serie maxillari externâ cæteris fortiori. Operculum mucronibus duobus parvis posticè armatum. Preoperculum marginibus basali et adscendenti denticulatis; spinis nullis. Ossa infraorbitalia leviter denticulata. Os maxillare squamosum. Squamæ corporis levissimè ciliatis, posticè striis levissimis, transversis, parallelis, flabelli locum occupantibus.

I propose to establish this new genus for the reception of the *Centropristes Georgianus* of Valenciennes, which appears to offer sufficient peculiarities to

warrant such a step. Its herring-like form, denticulated suborbital, scaly maxillary, small pectorals, backward position of the ventrals, and deeply forked caudal, sufficiently distinguish it from *Centropristes*, with which it hardly agrees in any of its characters, beyond that of wanting canines, and having the preopercle denticulated, and the opercle armed with small sharp points. Its teeth, however, are not exactly velutine, as in the typical species of that genus, but rather in fine card, with the outer row in both jaws stronger than the others. But, perhaps, one of the most marked peculiarities in this proposed genus resides in the scales, which have, instead of the usual fan of diverging striæ on their basal portions, a triangular space filled up by a number of extremely fine, closely-approximating striæ, parallel to each other, and also parallel to the basal margin, which is cut quite square and entire.*

Although this genus is thus separated from *Centropristes*, there is no doubt of its having a near affinity with it; and also with *Grystes*, from which last, however, it is at once known by its denticulated preopercle. It is still more closely allied to *Apsilus*, which it very much resembles in its general form, as well as in some of its particular characters. Amongst other points of resemblance with this last genus, may be noticed the similarity of the teeth; the very large gill-opening; the small and inconspicuous points on the opercle; the weak spines of the dorsal and anal, both which fins also terminate in a point behind; the small pectorals, and the deeply forked caudal.

It is probable that the *Centropristes truttaceus* of Cuvier and Valenciennes also belongs to this new genus, which, as well as the *C. Georgianus*, comes from New Holland, and which those authors seem, not without much hesitation, to have placed provisionally in the group in which it now stands. It is not stated, however, whether the peculiar character of the scales in the *C. Georgianus*, above pointed out, exists also in this species.

ARRIPIS GEORGIANUS.

Centropristes Georgianus, Cuv. et Val. Hist. des Poiss. tom. vii. p. 338.

FORM.—As M. Valenciennes has given an accurate and detailed description of this fish, and as I have already stated above some of its leading characters, it is not necessary to say much further on this head in reference to the specimen in Mr. Darwin's collection. I need only point out wherein it differs from the description in the "Histoire des Poissons," the greater part of which applies exactly. M. Valenciennes states that the ventral profile is more curved than the dorsal, but there is not much difference in their respective degrees of curvature in this

* The absence of the usual fan has suggested the name of *Arripis*, from *a priv.* et *ρῆπις*, flabellum.

specimen. The thickness of the body, which he fixes at one-third of the depth, is here nearly half the depth. The following characters may be also given, in addition to his. Above each orbit are two short crests or ridges which meet at an angle anteriorly, and the interocular space between these pairs of ridges is rather depressed; beyond, or immediately above the upper lip, the snout is a little protuberant. The band of teeth in each jaw is narrow, with the outer row longer than the others; and at the sides of the jaw, this outer row is all that is obvious. The intermaxillary is slightly protractile. The eye is hardly removed so much as one diameter from the end of the snout. The limb of the preopercle is striated; the angle at bottom rounded, and much dilated, so that the ascending margin falls in advance of a vertical. The contour of the membrane of the opercle is rounded. The cheeks, and all the pieces of the gill-cover, with the exception of the broad limb of the preopercle, are scaly: there are also a few scales on the maxillary, but none on the crown between the eyes, or on the snout, or lower jaw. The dorsal and anal terminate nearly in the same vertical line, but the latter reaches a trifle the farthest. Both fins are invested at their base with a scaly membrane, the scales of which are of a long lanceolate form. The length of the caudal equals the depth of the body. That of the pectorals equals half the depth: these fins are attached a little behind the opercle, and a little below the middle. The point of attachment of the ventrals is in a vertical line which passes through the middle of the pectorals, and coincides with the commencement of the dorsal. They are longer than the pectorals; and in their axillæ is a lanceolate membranaceous scale half their own length. There is a similar, but shorter scale in the axilla of the pectorals also.

B. 7; D. 9/16; A. 3/10; C. 17 $\frac{6}{10}$; P. 15; V. 1/5

Length 9 inches 10 lines.

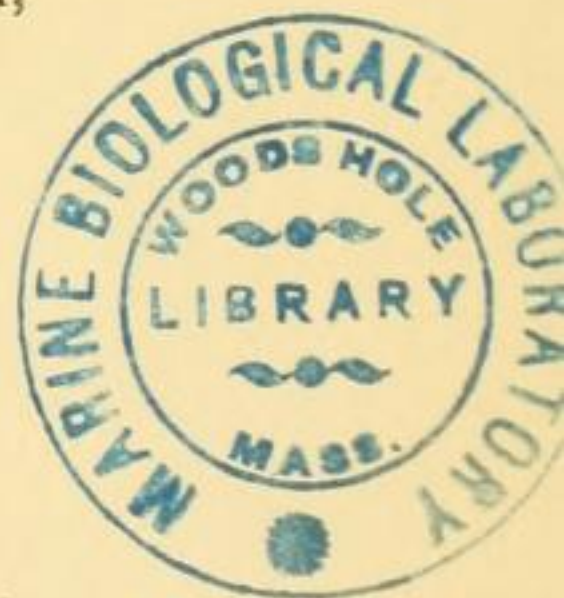
COLOUR.—Not noticed in the recent state. In spirits, the whole fish appears of a nearly uniform dull metallic yellowish-white, tinged with olive on the back and upper part of the sides.

Mr. Darwin obtained this species in King George's Sound, in New Holland, the same place in which it was discovered by MM. Quoy and Gaimard.

APLODACTYLUS PUNCTATUS. *Val.*

Aplodactylus punctatus, *Cuv. et Val.* Hist. des Poiss. tom. viii. p. 352. pl. 242.

This very remarkable fish was first sent from Valparaiso, by M. D'Orbigny, where it was also observed by M. Gay. Mr. Darwin's collection contains a specimen, which has unfortunately lost the number attached to it; but as he made a collection on that coast, it was probably obtained in the same locality. The description given of it in the "Histoire des Poissons," is so detailed as well as accurate, and the figure so exact, that it is quite unnecessary to annex that of the present individual. I may merely observe that the number of simple rays at the bottom



of the pectorals, which appears to be a character of some importance, and which has led to the generic name of *Aplodactylus*, amounts in this specimen to six, being two more than was observed by M. Valenciennes in his, though the total number of rays in this fin is the same. I may also allude to the circumstance of the dorsal being invested at the base with a thickened membrane on each side, closely covered with small scales, which extends over nearly its whole length, but is most conspicuous along the spinous portion. This character is not mentioned by M. Valenciennes. Neither does he mention the rows of minute scales, which occur between the rays of all the fins, except the ventrals.

Mr. Darwin's specimen of this fish is eleven inches in length. The following is the fin-ray formula :

B. 6 ; D. 15—1/21 ; A. 3/8 ; C. 17. &c. ; P. 9—vi ; V. 1/5.

1. DULES AURIGA. *Cuv. et Val.*

Dules Auriga, *Cuv. et Val.* Hist. des Poiss. tom. iii. p. 83. pl. 51.

FORM.—This species is remarkable for the prolongation of the third dorsal spine, which, in the present specimen, is not quite equal to half the entire length of the head and body ; a small portion, however, appears to have been broken off. The greatest depth is contained three and a half times in the entire length. The head, measured to the extremity of the opercular membrane, exactly equals the depth. The line of the profile is not quite straight, there being a slight depression at the nape, above which is a convexity in immediate advance of the dorsal fin. The lower jaw is a very little the longest. The eyes are large ; and the distance between them barely equals their diameter. The other characters are exactly as stated in the " Histoire des Poissons."

B. 6 ; D. 10/13 ; A. 3/7 ; C. 17 ; P. 17 ; V. 1/5.

Length 5 inches 3 lines.

COLOUR.—The recent colours are given by Mr. Darwin in his notes as follows : " Sides with numerous waving longitudinal lines of brownish red ; the intermediate spaces greenish-silvery, so figured as to look mottled. Head marked with lines of dull red and green. Ventral and anal fins dark greenish blue."—He does not notice the vertical bands alluded to by Cuvier and Valenciennes, which are sufficiently obvious, and which accord with the figure and description of the authors just mentioned.

Habitat, Maldonado Bay, Rio Plata.

FISH.

2. DULES LEUCISCUS. *Jen.*

Dules malo, *Val.*? Hist. des Poiss. tom. vii. p. 360.

D. pinnis caudali, anali, dorsalique molli, nigro-marginatis; dorsali profundè emarginatâ, spinâ ultimâ radiis articulatis brevioribus; operculo mucronibus duobus, inferiore maximo, armato; preoperculo margine adscendenti levissimè denticulato, basali denticulis fortioribus.

B. 6; D. 10/11; A. 3/12; C. 16, &c.; P. 13; V. 1/5.

LONG. unc. 4. lin. 5.

FORM.—General form resembling that of a small *Dace*. Greatest depth about one-third of the entire length, caudal excluded. Length of the head rather less. Dorsal line falling with the profile in one continuous gentle curve. Eyes large; their diameter contained two and a half times in the length of the head: the distance between them less than one diameter. Suborbitals finely but very conspicuously denticulated. Jaws nearly equal; the lower one a little the longest. In each, a band of velutine teeth, with the outer row rather longer than the others. Opercle with two points, the lower one most developed. Preopercle with the limb striated: the ascending margin with the denticulations so fine as to be hardly sensible to the naked eye; those on the basal margin larger and more obvious. Scales of a moderate size; about forty-three in a longitudinal row; their free portions finely striated. Cheeks and opercle scaly; crown naked, with a shallow groove above each eye. Lateral line at first slightly descending, but afterwards straight; its course, until past the dorsal and anal fins, a little above the middle of the depth. Dorsal deeply notched: the anterior portion consisting of nine spines; the first very short, and scarcely more than half the length of the second; third and fourth longer, increasing gradually; fifth and sixth equal and longest, equalling half the depth of the body; seventh, eighth, and ninth, shorter, and gradually decreasing; the tenth spine, with which the second portion of the fin commences, is of the same length as the fifth, but not quite so long as the soft rays which follow; these soft rays, however, gradually become shorter, the last two not more than equalling the second spinous. The whole space occupied by the dorsal is more than one-third of the entire length. Anal commencing in a line with the ninth dorsal spine; its own three spines gradually increasing in length, but the second the strongest; soft portion of this fin longer than the corresponding portion of the dorsal, and terminating a little nearer the caudal. Vent in a line with the seventh dorsal spine. Pectorals small, reaching to the vent. Ventrals attached a little further back, and reaching a very little beyond it. Caudal forked.

COLOUR.—(*In spirits.*) Silvery, tinged on the back, and above the lateral line, with bluish grey, and somewhat mottled in places with darker spots. Fins yellowish-grey, tinged with dusky. The caudal, anal, and soft portion of the dorsal, are a little mottled with dusky, besides having a black edging; there is also a conspicuous black spot at the anterior angle of this last fin.

A second specimen is only three inches and a quarter in length; but differs in no respect from the above, except in having one soft ray less in the anal fin.

Habitat, River Matavai, Tahiti.

Several of the species in this genus are extremely similar as well in form as in colours. Possibly that which I have here characterized as new may not be distinct from the *D. malo* of Valenciennes, which comes from the same country; but the description in the "Histoire des Poissons" is so brief, that it is hardly possible to determine this point with certainty. It has, however, two, and one specimen three, soft rays less in the anal fin. It is also closely allied to the *D. marginatus*, from which it hardly differs, excepting in having the denticulations of the preopercle rather stronger, and the tenth dorsal spine shorter in relation to the soft rays which follow. The *D. marginatus*, however, comes from Java. The species here described was found by Mr. Darwin in Tahiti, in the river of Matavai.

HELOTES OCTOLINEATUS. *Jen.*

H. corpore lineis longitudinalibus nigricantibus octo; pinnis dorsali, anali, caudali-que, maculis fuscis; vertice striis elevatis duobus subparallelis; preoperculo distinctè denticulato, et ad marginem limbi internum subcristato; operculo mucronibus duobus, superiore minimo; squamis ubique lævissimis.

B. 6; D. 12/9; A. 3/7; C. 17, &c.; P. 15; V. 1/5.

LONG. unc. 9. lin. 9.

FORM.—Body oblong. Greatest depth exactly four and a half times in the entire length. Length of the head rather less than the depth of the body. Snout short and obtuse. Jaws exactly equal: each with a broadish band of velutine teeth, which are all, apparently even the most minute, three-pointed, although this character is not very obvious except in the outer row, which are longer than the others. No vomerine teeth appear externally, but they may be felt through the skin of the palate, and on dissecting this off, there is brought to view a small hard disk rough with minute asperities. Mouth very little cleft, the commissure not extending more than half way between the end of the snout and the anterior margin of the orbit. Eyes rather large; their diameter one-fourth the length of the head. Maxillary, when the mouth is closed, concealed in part beneath the suborbital, the lower margin of which is somewhat sinuous and obscurely denticulated, the denticulations being concealed by the membrane and more easily felt than seen. The denticulations on the preopercle very manifest. The principal spine on the opercle slender and very sharp, not exactly straight, but slightly curved, the convexity of the bend being downwards; above is a second spine, but very small and easily overlooked.

The crown of the head has two nearly parallel elevated lines, which take their origin between the nostrils, and terminate at the occiput, but do not meet as in the *H. sexlineatus*; * a third line commences there exactly between them, and runs singly in a backward direction down the middle of the nape; this last is scarcely more than half the length of the two former. The cheeks and pieces of the gill-cover are scaly; but not the cranium, snout, jaws, or limb of the preopercle, which last is margined internally by a slightly elevated ridge. The scales on the body are thin and small, and without any trace of denticulations on their free edges, even under a magnifier, and the body of the fish is quite smooth to the touch rubbed either way. Lateral line as in *H. sexlineatus*. Dorsal also nearly similar, but more deeply notched, the membrane beyond the eleventh spine falling nearly to the base of the twelfth, which precedes the soft portion: sixth spine longest, equalling very nearly, but not quite, half the depth; the eleventh equals the second; the twelfth is about one-third longer than the eleventh, but is itself scarcely half the first soft ray. The anal has three soft rays less than the *H. sexlineatus*, and there are apparently but two spines, the first being (at least in this specimen, where, however, there may have been a portion broken off) quite short and rudimentary; the second and third spines are both slender, the former being rather more than half the length of the latter, and this last rather more than half the first soft ray. All the fins take their origin as in *H. sexlineatus*. The pectorals are about two-thirds the length of the head. The ventrals, which are very near together, are longer than the pectorals, but do not equal the head: they have no elongated scale between them, or in their axillæ.

COLOUR.—For the most part similar to that of the *H. sexlineatus*; but the longitudinal dark lines are more numerous, amounting to eight, with faint traces of a ninth: the additional ones are on the upper half of the sides, or above the lateral line, there being four (instead of two) above that one which passes through the eyes; the sixth extends the whole length of the fish from the end of the maxillary to the base of the caudal; the seventh passes immediately below the pectoral, and terminates in advance of it, without quite reaching to the edge of the gill-cover; the eighth is exactly equi-distant from the pectoral and ventral; this last is a very narrow pale line, but the others, with the exception of the first two, are broader and well marked. The soft portion of the dorsal, as well as the anal and caudal are spotted; the spots on this last unite to form transverse fasciæ; those on the anal are not very well-defined. The pectorals and ventrals are without spots, and pale.

Habitat, S. W. coast of Australia.

This species was procured in King George's Sound, New Holland. It closely approaches the *H. sexlineatus* of Cuvier and Valenciennes, the only species of the genus hitherto described, and obtained in the same seas by MM. Quoy and Gaimard. I have little hesitation, however, in pronouncing it to be distinct. Independently of the additional longitudinal lines on the body, and the spots on the fins, which, it is expressly stated by the above authors, are not present in the *H. sexlineatus*, it is distinguished by the striæ on the crown not meeting behind, the dorsal being rather more deeply notched, and the fin-ray formula different.

* Or at least as represented in the figure in the *Histoire des Poissons*, tom. iii. pl. 56.

There is one soft ray less in the dorsal, and three less in the anal; also the first spine in this last fin, if it be not broken off in this specimen, is quite rudimentary. The scales present no trace of cilia on their free edges.

1. PINGUIPES FASCIATUS. *Jen.*

PLATE V.

P. corpore fasciis transversis duodecim castaneo-fuscis, alternis latioribus; dentibus palatinis paucis, conicis, subaggregatis, vix seriem formantibus; pharyngealibus aculeiformibus; membranâ branchiali mediocriter emarginatâ; operculo spinâ unicâ forti, alterâ superiore obsoletâ; pinnis ventralibus accuratè thoracicis.

B. 6; D. 7/27; A. 1/24; C. 15, &c.; P. 18; V. 1/5.

LONG. unc. 12. lin. 9.

FORM.—Body thickest, as well as deepest, in the region of the pectorals, compressed behind, and becoming more so as it approaches the tail; depth also gradually diminishing from that point. The greatest depth is rather less than five and a half times in the entire length: head contained four times and a quarter in the same. The thickness at the pectorals is at least three-fourths of the depth: and the thickness of the head is quite equal to it. Dorsal line nearly straight from behind the eyes, in front of which the profile descends obliquely. Eyes high, nearly reaching to the line of the profile; a little behind the middle point of the length of the head; their diameter rather less than one-fifth of this last; the distance between them one diameter and a half. The commissure of the lips does not reach to the eyes by a space equalling half the diameter of the eye. Jaws equal. Lips very thick and fleshy, and partially reflexed, like those of a *Labrus*. Teeth very similar to those of that genus. In the upper jaw, an outer row (extending all round) of strong, sharp, slightly curved teeth, regularly set, and nearly even, but with the anterior ones a little the longest; in all about forty, twenty on each side; behind these a velutine band, broadest in front, but also extending the whole way round. In the lower jaw, a row of curved strong teeth, similar to those above, but extending only half way along the sides of the jaws (about nine on each side), and followed by about seven or eight short blunt conical ones; a broad velutine band behind the longer curved teeth, but not behind the others. On the front of the vomer are four or five large blunt conical teeth, mixed with smaller ones of the same form: there is also a small group of these little conical teeth at the commencement of each palatine, but they are not carried on further in a single row.* Tongue small and inconspicuous, fastened down except just at the tip, smooth. Pharyngeal teeth in strong card; but no conical ones behind that are visible. Branchial membrane united to its fellow, and free all round at the margin, with a moderately deep notch underneath. Preopercle rounded at the angle; the ascending margin oblique. Opercle with a strong sharp spine at its upper angle, but not ex-

* As described by Cuvier and Valenciennes to be the case in the *P. Brasilianus*.

tending beyond the membrane; a second rudimentary one above it obtusely rounded. Small scales on the cheeks, preopercle, and opercle, but not on the snout, or between the eyes, or on the suborbital, or jaws, or branchial membrane, or interopercle. The scales on the body are rather small, finely ciliated on their edges, thin, and of an oblong form, cut square at the basal margin, with a fan of twelve or fifteen striae. Lateral line not very strongly marked, taking nearly a straight course from the upper part of the scapular to the caudal. No particular lines, markings, or pores, about the head, jaws, or between the eyes. Pectorals rounded; two-thirds the length of the head. Ventrals exactly beneath them, a very little shorter, thick and fleshy, so that the rays can hardly be distinguished. Dorsal and anal similar to those of the *P. Brasilianus*; the former has the spinous rays at first low, but the rest of the fin is of one uniform height, equalling a little less than half the depth: the latter commences under the sixth soft ray of the dorsal, and terminates in the same line. Caudal square, with rows of small scales between the rays for half their length: also a few minute scales at the base of the pectoral rays, but none on the other fins.

COLOUR.—“Above pale ‘chestnut brown,’ so arranged as to form transverse bands on the sides; sides, head, fins, with a black tinge; beneath irregularly white: under lip pink: eyes with pupil black, and iris yellow.”—D. *In spirits*; the back and upper half of the sides are brown, the lower half of the sides and belly pale, with twelve transverse dark fasciæ, the alternate ones broader than the others. The dorsal and anal appear to have been bluish, the tint increasing in intensity from the base upwards; but the former is edged above with a narrow white line just beneath the tips of the rays, which extends the whole length of the soft portion of the fin. The inside of the ventrals appears also to have been bluish; but the pectorals are pale, or yellowish. Caudal brown like the back.

Habitat, coast of Northern Patagonia.

From the east coast of Patagonia, in Lat. $37^{\circ} 26'$. There can be no doubt of its belonging to the genus *Pinguipes*, with which it agrees in its very strong resemblance to the *Labridæ*, as regards the head, lips, and teeth, and in its fleshy ventrals; but there are very few teeth on the palatines, seeming to show that there is not much ground for separating this genus from *Percis*. In many of its characters, it resembles the *P. Brasilianus* of Cuvier, but it is decidedly distinct in others. It differs slightly in its proportions; in the palatine and pharyngeal teeth; in the position of the ventrals, which are not at all jugular, but immediately beneath the pectorals; in the branchial membrane being more notched; and in having two soft rays less in the anal. The colours also are different.

This fish is so like a *Labrus*, that at first sight it might easily deceive a student. Nevertheless its vomerine teeth, spines on the opercle, and ciliated scales, point out its right family. At the same time no system can be considered natural, which does not admit *Pinguipes* as one of the connecting links between the *Percidæ* and *Labridæ*.

2. PINGUIPES CHILENSIS. Val.

Pinguipes Chilensis, Cuv. et Val. Hist. des Poiss. tom. ix. p. 338.

FORM.—More slender and elongated than the last species. Depth nearly six and a half times in the entire length. Head four times and a quarter in the same. Eyes high, a little before the middle, or with the distance in front to the end of the snout not equalling that behind measured to the posterior part of the opercle; their diameter nearly six times in the length of the head; the interval between them nearly two diameters. When the mouth is closed, a vertical from the posterior part of the maxillary forms a tangent to the anterior part of the orbit. Lips not so thick and fleshy as in the *P. fasciatus*; but the teeth almost exactly similar. Tongue much larger, occupying nearly the entire platform of the mouth. Branchial membrane much more deeply notched, the notch reaching as far as the anterior extremity of the interopercle. Preopercle with the ascending margin nearly vertical. Opercle with two small flat spines, the lower one rather more developed than the upper. Scales and lateral line as in the *P. fasciatus*. Pectorals similar. Ventrals attached entirely in front of the pectorals, though not much in advance; fleshy, but perhaps rather less so than in the *P. fasciatus*: in neither species do they pass beyond the pectorals, or indeed reach quite so far. The other fins exactly similar. The dorsal, however, has one spine less, and one soft ray more. The anal, also, has one soft ray more.

B. 6; D. 6/28; A. 1/25; C. 17, &c.; P. 19; V. 1/5.

Length 11 inches.

COLOUR.—(*In spirits.*) Back and sides deep brown, with the exception of two rows of pale spots along the sides, very faint and ill-defined. Underneath altogether paler. The dorsal and anal appear to have been bluish, with the basal portion of each fin pale, but without any edging of white above. Inside of the ventrals blue; pectorals the same, but paler. The caudal shows some trace of a dark round spot on the base of the upper lobe. Mr. Darwin's notes, with respect to the colour in the living fish, only state "fins dark."

Habitat, Valparaiso, Chile.

This species, which was procured by Mr. Darwin at Valparaiso, is probably the same as the *P. Chilensis* of Valenciennes, obtained by M. Gay on the same coast. But the description in the "Histoire des Poissons" is brief, and notices very little besides the colours, which accord tolerably well. Mention, however, is made of a second spine in the anal fin, which certainly does not exist in the above specimen, though a very careful examination was made in search of it. There is also one soft ray more in this fin, as well as in the dorsal, in the fin-ray formula in that work.

This species is very distinct from the *P. fasciatus* last described, and does

not show so strong a resemblance to the *Labridæ*; but it approaches very closely the *P. Brasilianus*.

PERCOPHIS BRASILIANUS. Cuv.

Percophis Brasilianus, Cuv. et Val. Hist. des Poiss. tom. iii. p. 209. pl. 64.

——— *Brasiliensis*, Freycinet, (Voyage) Zoologie, p. 351, pl. 53. fig. 1.

FORM.—Depth and breadth in the region of the pectorals about equal, each being contained ten and a half, or nearly eleven times in the entire length. Head not quite four and a half times in the same. In the upper jaw, three strong, curved, sharp-pointed canine teeth on each side; besides a velutine band extending the whole way, with the outer row longer and more developed than the others: in the lower jaw a velutine band, with long sharp canines, similar to those above, arising amongst them at nearly regular intervals, to the number of ten or eleven on each side; none exactly in front, and not all of the same size, but passing here and there into card. Membranous margin of the preopercle very finely, almost obsoletely denticulated. Branchial membrane with seven rays, the seventh being not much smaller than the sixth.* The whole head covered with scales, including the lower jaw, and the upper half of the maxillary. Lateral line nearly straight, a little above the middle. First dorsal commencing at about one-third of the entire length, excluding caudal; of a triangular form, with its length a little exceeding its height; second spine longest, about equalling the depth of the body. Distance between the two dorsals equalling half the length of the first. Second dorsal with the first ray longest, equalling the longest of the spines in the first dorsal; second and succeeding rays slightly decreasing to the sixth, beyond which they are nearly even, with the exception of the last three or four, which are shorter; all these rays very much branched, with the intervening membrane deeply notched. Anal commencing a little before the end of the first dorsal, and terminating nearly in a line with, but in strictness a very little beyond, the second dorsal; rays and membrane much as in that fin, to which it answers in general height. Distance between the second dorsal and caudal, only one-twenty-eighth of the entire length. Caudal appears obliquely square, the upper rays being slightly longer than the lower, but perhaps worn so. Pectorals one-eighth of the entire length. Ventrals about three-fourths of their length, attached in front of them, as described by Cuvier. In the axillæ of the pectorals is a falcated membranaceous appendage covered with scales (not noticed by Cuvier), a very little less than one-fourth the length of the fins themselves.

B. 7; D. 10—32; A. 41; C. 15. &c.; P. 18; V. 1/5.

Length 21 inches.

COLOUR.—"Above pale, regularly and symmetrically marked with brownish red, the tip of each scale being so coloured. Beneath silvery white. Sides with a faint coppery tinge. Ventral fins yellowish. Pupil of the eye intense black."—D.

* Cuvier in his description, says, of the seventh ray, "fort petit," but it is very obvious in this specimen, and scarcely smaller than the sixth, as above stated.

Second Specimen.—Breadth or thickness at the pectorals about ten and a half times in the entire length. Depth at that point less than the breadth. Canine teeth in the lower jaw smaller than those above, and not set at such regular intervals as in the first specimen.* Scarcely any appearance of denticulations on the membranous border of the preopercle. Distance between the two dorsals a little less than the length of the first. Pectorals contained eight and a half times in the entire length. Fin-ray formula as follows:—

D. 9—32; A. 42; C. 15, &c.; P. 17; V. 1/5.

Length 14 inches.

In all other respects exactly similar to the specimen first described.

Habitat, coast of Northern Patagonia, and Maldonado.

Mr. Darwin's collection contains two specimens of this fish, which was first discovered by MM. Quoy and Gaimard at Rio Janeiro. The larger one was caught by hook and line in fourteen fathoms water on the coast of Patagonia, in lat. 38° 20'. The second was taken at Maldonado, where he states it to be common. They differ in several respects from the description and figure in the "*Histoire des Poissons*," of Cuvier and Valenciennes; but as they also differ a little from each other, the species is perhaps subject to variation. Amongst other points, I may mention the scales on the jaws, which are expressly stated by Cuvier to be *without* scales; and also the emargination of the membrane between the rays of the second dorsal and anal, which is not represented in his figure, nor alluded to in his description, though very striking. This last character appears, however, in the figure given in the Zoological Atlas of Freycinet's voyage, which is on the whole a more correct representation. "When cooked, was good eating."—D.

FAMILY.—MULLIDÆ.

1. UPENEUS FLAVOLINEATUS. *Cuv. et Val.*

Upeneus flavolineatus, *Cuv. et Val.* Hist. des Poiss. tom. iii. p. 336.

FORM.—Considerably elongated. Greatest depth contained five times in the entire length, caudal excluded. Head three and a half times in the same. Dorsal line nearly straight. Profile very convex. Crown between the eyes broad and somewhat depressed, forming a slight hollow.

* Probably these teeth are liable to be lost or broken off, so as seldom to occur in exactly the same number and mode of arrangement in two individuals.

Eyes large; their diameter more than one-fourth that of the head. Suborbitals marked on their surface near the lower margin with six or eight diverging salient lines, each terminating at bottom in a mucous pore. Teeth forming a narrow velutine band, hardly visible to the naked eye, but sensible to the touch: none on the vomer or palatines. Opercle with one short flat spine projecting beyond the posterior margin rather more than half a line. Barbules reaching to a little beyond the angle of the preopercle. Mucous tubes of the lateral line with five or six branches; the branches not always simple,* but consisting sometimes of two or three main ones which are subdivided. First dorsal of a triangular form, with the spines rather slender; the first two equalling more than three-fourths of the depth of the body. Space between the dorsals about equalling the length of the first. Second dorsal with the first ray (or spine) scarcely more than half the length of the second, which is longest; the third and succeeding rays gradually decreasing to the last, which is shortest. Length of the second dorsal just equalling its greatest height. Anal answering to this last fin. Caudal deeply forked; the central rays not being one-fourth the length of the outermost ones. Ventrals and pectorals exactly of the same length; both reaching to a vertical line from the extremity of the first dorsal. Vent in a line with the commencement of the second dorsal.

D. $7\frac{1}{8}$; A. $\frac{1}{6}$; C. 15, &c.; P. 16; V. $\frac{1}{5}$.

Length 6 inches 9 lines.

COLOUR.—“Dull silvery, with a yellow stripe on the side.”—D.

There can be but little doubt of this species being the *U. flavolineatus*, which appears to have a wide range over the Indian Ocean, and also to occur in the South Pacific. Mr. Darwin's specimen was taken at the Keeling Islands.

2. UPENEUS TRIFASCIATUS. *Cuv. et Val.*

Upeneus trifasciatus, *Cuv. et Val.* Hist. des Poiss. tom. iii. p. 344.

FORM.—General form resembling that of the *Mullus Surmuletus*, but the snout more elongated. Greatest depth contained about four times and a half in the entire length. Head exactly one-fourth of the same. Eyes small, distant three diameters from the end of the snout. Suborbitals with a moderate number of pores on their disk, but without any salient lines. Posterior extremity of the maxillary broad. A single row of conical teeth in each jaw, very uniform in size, not very large or very close; about twenty-two above and twenty below. Spine of the opercle about a line in length. Barbules reaching to, or a little beyond, the posterior margin of the opercle. Lateral line not much ramified. Height of the first dorsal equalling more than half the depth. Space between the two dorsals equalling one-third the length of the second dorsal.

* As stated by Cuvier and Valenciennes.

Both this last fin and the anal terminating in a considerable point behind. Ventrals large, reaching very nearly to the anal.

D. 8—9; A. 7; C. 15, &c.; P. 16; V. 1/5.

Length 7 inches 9 lines.

COLOUR.—(*In spirits.*) Dark brownish yellow, with faint indications of three dusky patches or abbreviated transverse fasciæ, one beneath each dorsal, and the third on each side of the upper part of the tail. Second dorsal and anal crossed by several whitish longitudinal lines; the posterior point of each fin nearly black.

This species was obtained by Mr. Darwin at Tahiti. It is probably the *U. trifasciatus* of Cuvier and Valenciennes, who received their specimens from the Carolinas and Sandwich Islands. But it does not so well accord with the *Mulle multibande* of Quoy and Gaimard, which is supposed by the authors of the "Histoire des Poissons," to be the same as their species. If the figure in the Zoology of "Freycinet's Voyage" be correct, the *Mulle multibande* has the nostrils much smaller, and the spines of the first dorsal much stronger; the ventrals also are relatively much shorter, so as to reach very little more than half way to the anal. Future observation must determine whether the two fish are distinct or not.

3. UPENEUS PRAYENSIS. *Cuv. et Val.?*

Upeneus Prayensis, *Cuv. et Val.* Hist. des Poiss. tom. iii. p. 357.

FORM.—Very much resembling that of the *U. trifasciatus*, but with the following differences. The eyes rather larger, distant from the end of the snout rather more than two diameters and a half. Suborbitals traversed towards their lower margins by a number of lines, each terminating in a pore, and with their whole disks studded besides with pores without lines: the lower margin itself presents four distinct deeply-cut notches, the first of which receives the end of the maxillary when the mouth is closed. A single row of small conical teeth in each jaw; in addition to which, in the upper, there are some stronger ones in front, exterior to the others, amounting to eight in number, the central pair of which bends inwards or towards each other, and the three on each side, which are the strongest of all, backwards and outwards. No teeth on the vomer or palatines. The posterior extremity of the maxillary is much narrower than in the last species. Spine of the opercle sharp and well developed, about two lines and a quarter in length. Barbules reaching very nearly to the posterior margin of the opercle. Ramifications of the mucous tubes on the lateral line very numerous. Height of the first dorsal equalling rather more than half the depth. Space between the two dorsals equalling half the length of the second dorsal. This last fin pointed behind, as well as the anal, but not so much so as in the *U. trifasciatus*. Pectorals when laid back reaching to a vertical line from the extremity of

the first dorsal. Ventrals reaching a little beyond the pectorals, but falling short of the anal by a space equalling half their own length.

D. 8—9; A. 7; C. 15, &c.; P. 16; V. 1/5.

Length 8 inches.

COLOUR.—“Vermilion, with streaks of iridescent blue.”—D. In spirits, the colour appears of a uniform dull reddish yellow, without any indication of spots or other markings on the fins or body.

Habitat, Porto Praya, Cape Verde Islands.

I suppose this to be the *U. Prayensis* of Cuvier and Valenciennes, the description of which, so far as given in the “*Histoire des Poissons*,” is tolerably applicable. Those authors, however, mention a spot in the middle of each scale of a deeper red than the ground colour, which is not alluded to by Mr. Darwin in his notes, and of which I see no trace on the fish in its present state. On the other hand they are silent with regard to the blue streaks. In some of its characters, especially as regards the teeth, this species seems to approach the *U. maculatus*; but the colours are different in this last also, which is moreover found on the opposite side of the Atlantic.

FAMILY.—TRIGLIDÆ.

TRIGLA KUMU. *Less. et Garn.*

Trigla kumu, *Less. et Garn. Zoologie de la Coquille, (Poissons) Pl. 19.*

——— *Cuv. et Val. Hist. des Poiss. tom. iv. p. 36.*

FORM.—In general appearance very much resembling the *T. Hirundo*, but more elongated. Depth contained about five times and a half in the entire length. Head rather more than four times and a quarter in the same. The obliquity of the profile about the same as that of the *T. Hirundo*, but the concavity of the interocular space less. The granulations on the head not so coarse, or so strongly marked, the lines in which they are arranged being closer and more numerous: those on the suborbitals radiate from a point nearer the extremity of the snout: no crest or ridge at the bottom of the suborbital, and only a very indistinct one at the bottom of the preopercle: as Cuvier has well noted, the grains on the border of the preopercle are divided into little isles, or collected in clusters, by irregular lines which undulate amongst them; and in this specimen, the same character presents itself on the posterior and upper portion of the suborbital: some of the first lines on the opercle are plain, or without granulations. Snout emarginated, with three or four denticulations on each side rather sharper and more developed

than in the *T. Hirundo*. Two spines at the anterior angle of the eye; but none at the posterior angle, or on the temples. Suprascapular, opercular, and clavicular spines much as in the *T. Hirundo*. Lateral line and whole body smooth, excepting the dorsal ridges, which are strongly serrated. Dorsal spines as in the *T. Hirundo*; second longest; the first with a series of obsolete granulations on its anterior edge. Pectorals not quite one-third of the entire length: free rays incrassated in the middle, tapering towards the ends, but with the extreme tips slightly dilated.

D. 10—16; A. 16; C. 11, &c.; P. 11, and 3 free; V. 1/5.

Length 16 inches 6 lines.

COLOUR.—“Whole body bright red.”—D. The pectorals, of which no note was taken in the recent state, appear, in the dried skin, externally, of a dusky colour, approaching to black, with white rays; the lower margin, however, is paler, and was probably originally red like the body: inside, the colour is much the same, but variegated with a few white spots; there are also portions of a paler tint, probably the remains of a fine blue. I see no distinct trace of the large deep black spot, said by Cuvier to occupy the seventh and eighth rays on the posterior face of the fin.

Taken in the Bay of Islands, New Zealand. The only respect in which it differs from the description of the *T. kumu* by Cuvier and Valenciennes, is its having one more spine in the first dorsal.

1. PRIONOTUS PUNCTATUS. *Cuv. et Val.*

Prionotus punctatus, *Cuv. et Val.* Hist. des Poiss. tom. iv. p. 68.

FORM.—Well characterized by the form of the snout, which is very obtuse, and as it were truncated, with scarcely any notch in the middle; the margins of the lobes are crenated with minute denticles, immediately beyond which is a small sharp spine directed backwards; further on, almost immediately above the corners of the mouth, is a second similar, but somewhat larger spine. There are also some minute spines on the temples, as well as on the ridge of the preopercle, besides the ordinary spines, common to other species, which in this are all well developed and very sharp. Dorsal spines smooth, or only the first with a faintly marked line of granulations; third longest. Pectorals long, contained exactly two and a half times in the entire length; when laid back, they reach to within two rays of the extremity of the second dorsal. Free rays rather slender and tapering, with the extreme tips pointed; not above half the length of the pectorals. Ventrals rather longer than the free rays.

D. 10—12; A. 11; C. 11, &c.; P. 13 and 3; V. 1/5.

Length 8 inches 9 lines.

COLOUR.—“Above and sides olive brown, with red spots and marks; beneath silvery white; edges of the pectoral fins Prussian blue.”—D.

This species is said by Cuvier and Valenciennes to be common all along the Brazilian coast as far as the mouth of the Plata. Mr. Darwin's specimen was taken swimming on the surface in the Bay of Rio de Janeiro, and agrees well with the description by those authors. "When first taken made a croaking noise."—D.

2. PRIONOTUS MILES. *Jen.*

PLATE VI.

P. splendide rubro variatus; rostro emarginato, utrinque distinctè denticulato; buccis levissimè granulosis; fossulâ dorsali lateribus inermibus; squamis corporis parvis, ubique ciliatis; pinnis pectoralibus modicis, corpore certè triplò brevioribus; radiis liberis subincrassatis, apicibus dilatatis.

B. 7; D. 10—12; A. 11; C. 12, &c.; P. 13 et 3; V. 1/5.

Long. unc. 10. lin. 3.

FORM.—In general form, that of the head especially, very similar to the *Trigla Hirundo* of the British seas. Compared with the *P. punctatus* last described, it is rather more elongated, the depth and thickness being less. Profile falling less obliquely. Space between the eyes broader, but equally concave. Snout not so obtuse, and more deeply notched; with six short but well developed teeth on each side, followed by some minuter denticles. The lines of granulations on the snout and cheeks are very fine, and not so strongly marked, or spread over so large a portion of the face. One principal spine, preceded by two or three small denticles, at the anterior angle of each orbit; at the posterior angle, a well marked notch with a small denticle, (in this specimen the denticle on the left side of the head only,) but no regular spine: these notches are connected by a transverse line on the cranium, but not by a groove (as in *P. Carolinus*, Cuv. et Val.). No spines on the temples, or on the crest at the bottom of the preopercle; but the ordinary spine of the preopercle, as well as the opercular, suprascapular, and clavicular spines, appear as usual, though not quite so long as in the *P. punctatus*; the clavicular spine has one line of points along its ridge, but the granulations are not very obvious. Band of palatine teeth much as in *P. punctatus*. First dorsal spine with a row of granulated points in front; the second spine with a row on the left side of the fin; the third spine with a very rudimentary row on the right side; but none of these granulations very obvious: third spine longest, equalling about three-fourths of the depth of the body; the fourth and succeeding spines gradually decreasing to the tenth, which is barely visible, and so reclined as to be easily overlooked. Dorsal groove shallow, with the sides unarmed. Scales on the body small, broader than long; their free edges finely ciliated, communicating a decided roughness to the touch; their concealed portions crenated at the hinder margin, and marked with a fan of five or six striæ. Lateral line not distinguished by any particular scales, but forming a whitish streak from the upper part of the gill-opening to the caudal. Pectorals relatively shorter than in *P. punctatus*, contained a little more than three times in the entire length; when laid back they reach to a vertical line from the fourth

ray of the second dorsal. Free rays rather stout, with their tips somewhat dilated and approaching to spatuliform; in length about two-thirds that of the pectorals. Ventrals a trifle longer than the first or longest of the free rays.

COLOUR.—“Above mottled brilliant tile red; beneath silvery white.”—D. Mr. Darwin is rather doubtful whether by the above description, he meant that the entire fish was brilliant red, or only mottled with red upon some obscure ground.

Habitat, Galapagos Archipelago.

Taken at Chatham Island, in the Galapagos Archipelago, and decidedly distinct from all the species described by Cuvier and Valenciennes. From *P. strigatus* it differs in the finer granulations of the cheeks, less obtuse and more deeply notched snout, smooth scales, and absence of a second lateral line; from *P. Carolinus* in the want of a transverse groove on the cranium, and in the fin-ray formula, but it resembles this species in the dilated tips of the free rays; from *P. punctatus* as pointed out in the description; from *P. tribulus* in the want of the spine on the suborbital, and in its much shorter pectorals. These fins indeed are shorter than in any of the above-mentioned.

As all the species described in the “Histoire des Poissons,” are found on the Atlantic side of America, the geographical range of this genus is extended to the Pacific by the discovery of the present one.

FAMILY—COTTIDÆ.

ASPIDOPHORUS CHILOENSIS. *Jen.*

PLATE VII. FIG. 1. Lateral view twice nat. size.

Fig. 1a. Dorsal view nat. size.

Fig. 1b. Lateral view nat. size.

A. corpore elongato, anticè octagono, posticè hexagono; vomere et ossibus palatinis dentibus distinctis instructis; maxillis subæqualibus; rostro ultrà fauces haud producto; mento et membranâ branchiali cirratis; pinnis dorsalibus discretis; primâ radiis gracilibus.

B. 6; D. 8—7; A. 8; C. $11\frac{2}{3}$; P. 14; V. $1\frac{1}{2}$.

Long. unc. 2. lin. 7.

FORM.—More elongated than the *A. cataphractus*, which it somewhat resembles in general appearance. Anterior portion of the body octagonal, and the posterior, or all beyond the second dorsal and anal, hexagonal. Head equally depressed as in that species; but its breadth less, being only one-fifth of the entire length, caudal excluded. Length of the head rather less than

one-fourth of the entire length. Depth at the nape rather less than one-seventh of the same. Eyes relatively a little larger than in *A. cataphractus*; their diameter one-fourth the length of the head; placed high in the cheeks, and distant one diameter from the end of the snout. Upper part of the orbit elevated into an osseous ridge on each side of the crown of the head, with a spine at its anterior angle, and the ridge itself terminating in a sharp, rather stronger, spine at the posterior angle; both spines directed backwards. Space between the eyes concave, equaling in breadth not quite one diameter of the eye, with two longitudinal sharp ridges running respectively parallel to the ridges of the orbits, but not nearly so much elevated as these last; these ridges terminate posteriorly at a groove, which runs transversely behind the eyes, separating the vertex from the occiput. The snout presents the same four spines, which are to be seen in the *A. cataphractus*, but it does not project beyond the mouth. The lower margin of the suborbital presents a somewhat irregular ridge formed by a series of bluntish tubercles, the last of which terminates in a very minute spine directed backwards. Limb of the preopercle with three diverging smooth ridges, dilating at their extremities into three flattened blunt points, which project a little beyond the membrane, but can scarcely be called spines. Opercle with one ridge not so strongly marked as those of the preopercle, and not terminating in any distinct point, nor even reaching quite to the edge of the membrane. Jaws nearly equal; but the upper one a very little the longest; each with a narrow band of minute velutine teeth: a distinct chevron of similar teeth on the front of the vomer, and a short imperfect row on each palatine. Tongue smooth. Gill opening large: the branchial membrane not notched, but passing transversely over the isthmus, to the edge of which it is nevertheless attached on each side. Chin clothed with short fleshy cirri; also a few on the lower jaw and branchial membrane; but they are much shorter, and less conspicuous than in the *A. cataphractus*, especially on the branchial membrane, where they are very sparingly scattered. The occiput presents the four usual ridges formed of granulated tubercles; and between the innermost pair there is also a much less conspicuous, but slightly raised line running longitudinally down the middle: the two innermost of the above ridges are nearly in a line respectively with the two ridges of the orbit, behind which they commence, and they would pass on to unite with the two dorsal carinae were they not separated from the latter by a deep transverse depression at the nape: the two outermost of the occipital ridges commence behind the eyes themselves, and terminate at the suprascapulars, each in a sharp point directed backwards, but not prolonged into a spine. The carinated scales which arm the body of this species, are more sharply serrated than those of the *A. cataphractus*, the keels terminating behind in hooked points; and the elevated lines which form the striae on each side of the keel are fewer in number and more raised. The ridges which they form are also more marked, and the second ridge on each side commences immediately behind the angle of the opercle, instead of opposite the vent as in that species; so that the whole body is perfectly octagonal from the gills to the termination of the dorsal and anal fins:* at that point, the two dorsal ridges and the two ventral unite respectively to form one, or rather approximate so closely as to form but one in appearance; for, if closely examined, there will still be found two parallel rows of serratures. In each of the two uppermost or dorsal ridges, there are twenty-seven scales, reckoning from the hollow at the nape to the point where the ridges unite. In the second ridge (which extends, as before observed, from the gills to the caudal) there are thirty-

* In the *A. cataphractus*, the body is hexagonal from the gills to a little beyond the vent; octagonal from this last point to the termination of the dorsal and anal fins; then hexagonal again to the end of the tail.

eight. In the third, which commences behind the pectoral, and extends in like manner to the caudal, there are thirty-five. In the fourth, which commences on the breast, immediately behind the point of attachment of the branchial membrane to the isthmus, there are thirty, reckoning to behind the anal, where it unites with its fellow to form one; between this point and the caudal there are ten, the serratures of which are rather obsolete. The fourth pair of ridges are throughout their course less sharply serrated than the second and third pairs, and these last again rather less so than the first or dorsal pair. Between the two ventral ridges, near their commencement in front of the ventral fins, are six slightly serrated scales (similar to those in the ridges) forming on the breast a somewhat triangular patch, two single ones standing first, then four others in pairs. The lateral line, which is catenulated as in *A. cataphractus*, commences at the upper angle of the opercle, then bends downwards to take a middle course between the second and third ridges, which it preserves to the caudal. The first dorsal commences behind the seventh scale in the dorsal ridges, or at about one-third of the entire length; it is of the same form as in the *A. cataphractus*, but contains more rays; its membrane terminates at the fifteenth scale, and there are rather more than two scales between it and the second dorsal, which last is rather shorter and higher than the first. The rays of the first dorsal are not stouter than those of the second, nor relatively stouter than those of the *A. cataphractus*. The rays of the second dorsal are simple, with the second and third rather longer than the first. The anal answers to the second dorsal. The pectorals are rounded, and one-fifth of the entire length. Ventrals very narrow, and scarcely more than half the length of the pectorals. Position of the vent a little anterior to a line connecting the extremities of the ventrals.

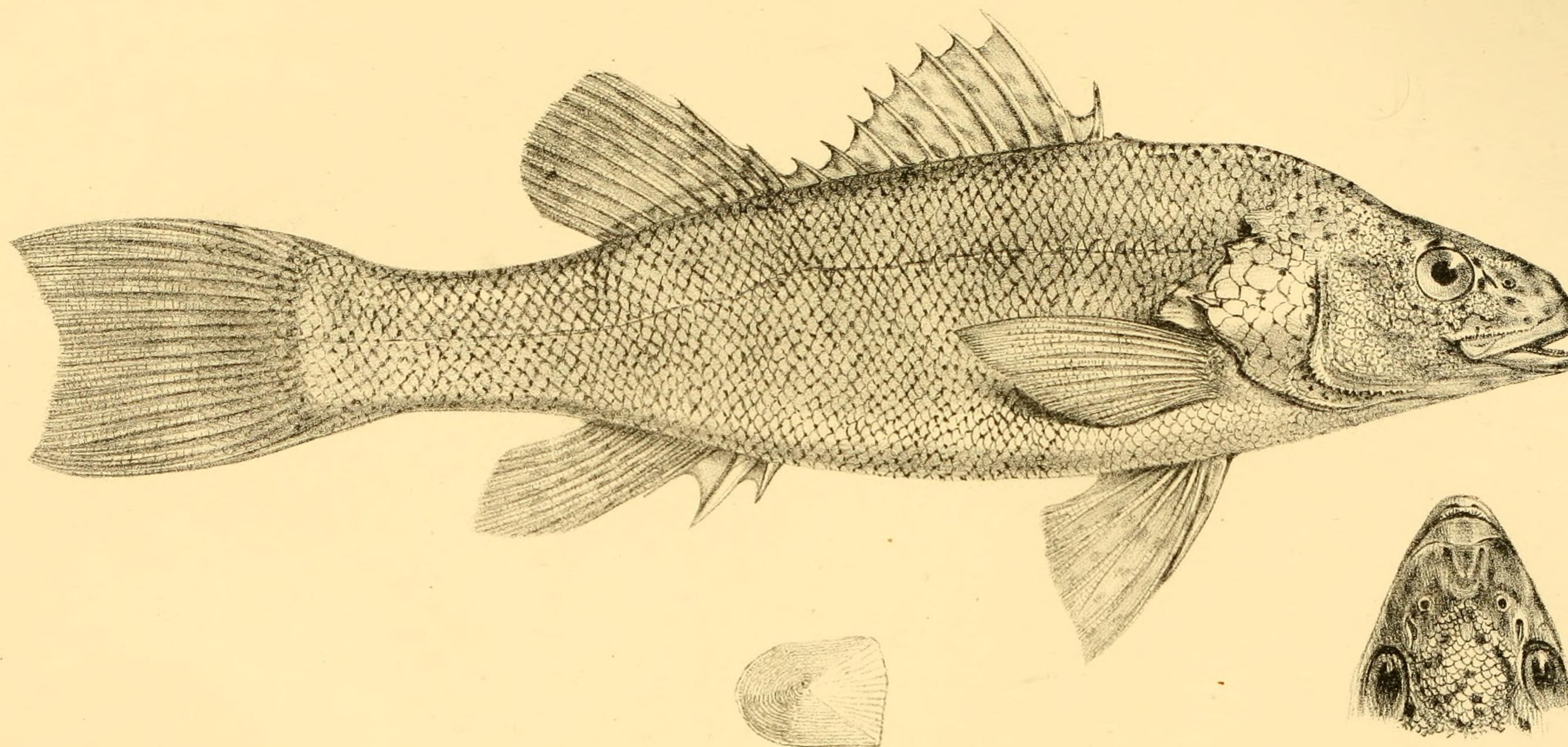
COLOUR.—(*In spirits.*) Dusky grey above and on the sides, paler beneath; with four broad transverse blackish fasciæ passing across the back and down the sides as far as the third longitudinal ridge of scales. The first fascia is in the region of the first half of the first dorsal; the second at the commencement of the second dorsal; the third near the end of the second dorsal; the fourth half way between the end of the second dorsal and the caudal; and a little beyond this there is a faint trace of a fifth fascia. The body is a little mottled in places with spots of the same dark colour as the fasciæ, and the fins, with the exception of the ventrals, are of the same hue.

Habitat, Chiloe, (West coast of S. America).

The absence of vomerine teeth has been considered by Cuvier as one of the characters serving to distinguish *Aspidophorus* from *Cottus*; but as these teeth are very distinctly developed in the present species, we must rather dwell upon the large keeled sharp-pointed scales, which envelope the body in a kind of mail, and, as Dr. Richardson observes,* “give the *Aspidophori* a totally different aspect from the *Cotti*.” Indeed on equally strong grounds as those on which Cuvier has separated *Pinguipes* from *Percis* and *Prionotus* from *Trigla*, the present species, which possesses both vomerine and palatine teeth,† might be made a distinct

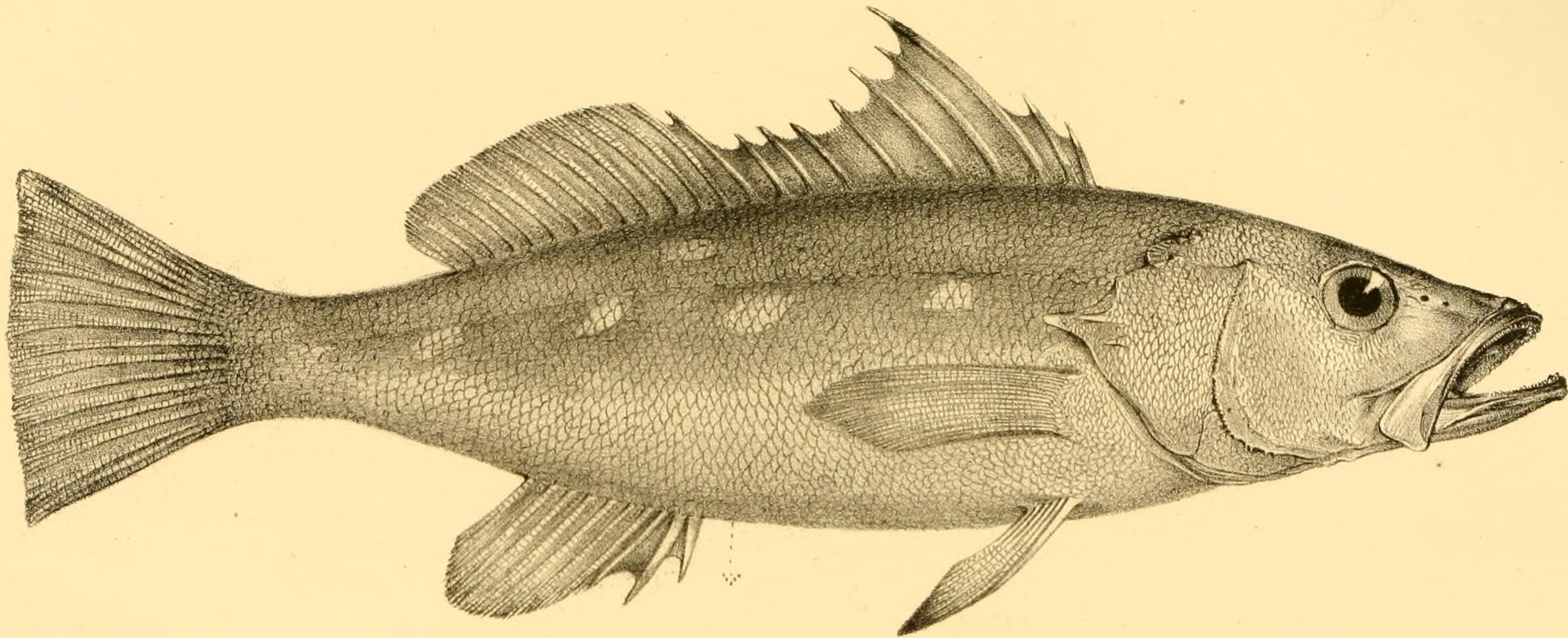
* Faun. Bor. Amer. Part Third, p. 49.

† Is it not possible that this may be found to be also the case with several of the foreign species described by Cuvier, in which the absence of these teeth has been rather presumed than ascertained from actual examination?



W. Hawkins del.

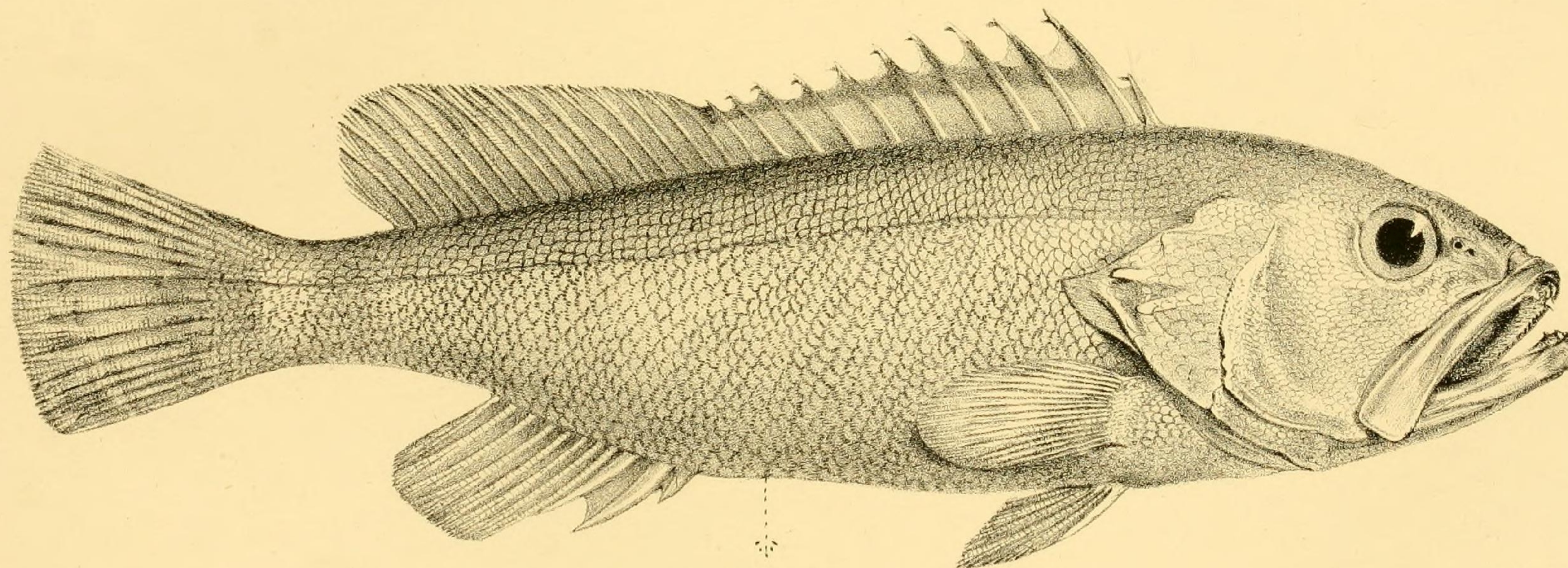
Perca laevis. 3/4 Nat. Size.



Drawn from Nature on stone by Waterhouse Hawkins.

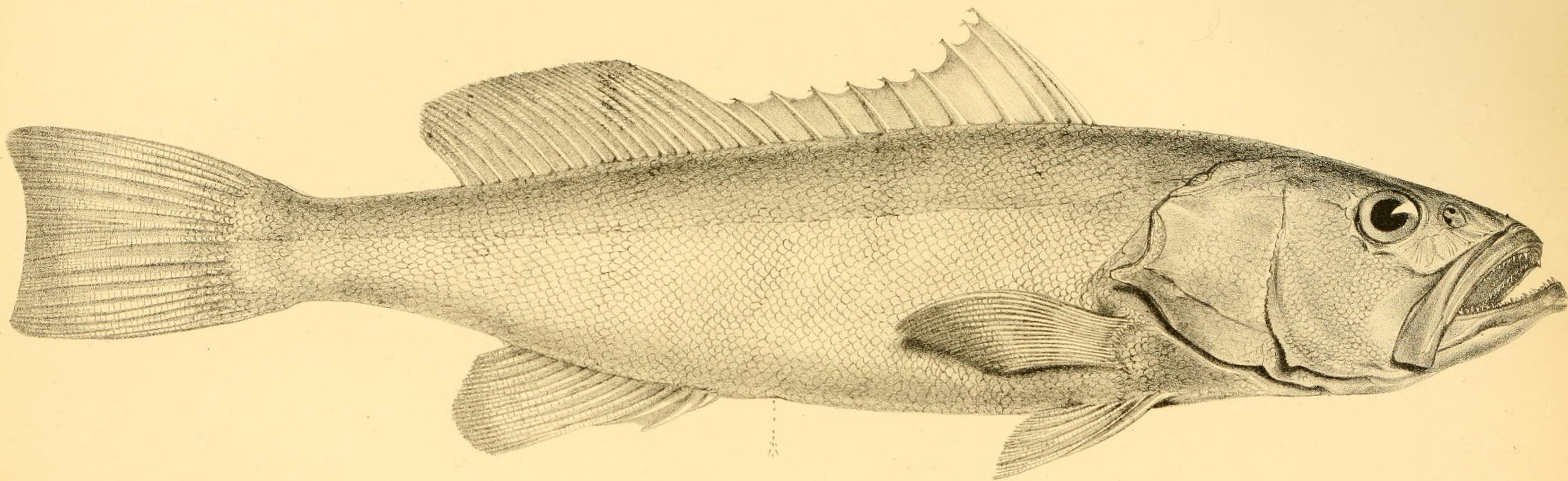
Serranus albomaculatus. 1/2 Nat. Size.

Fish. Pl. 3.



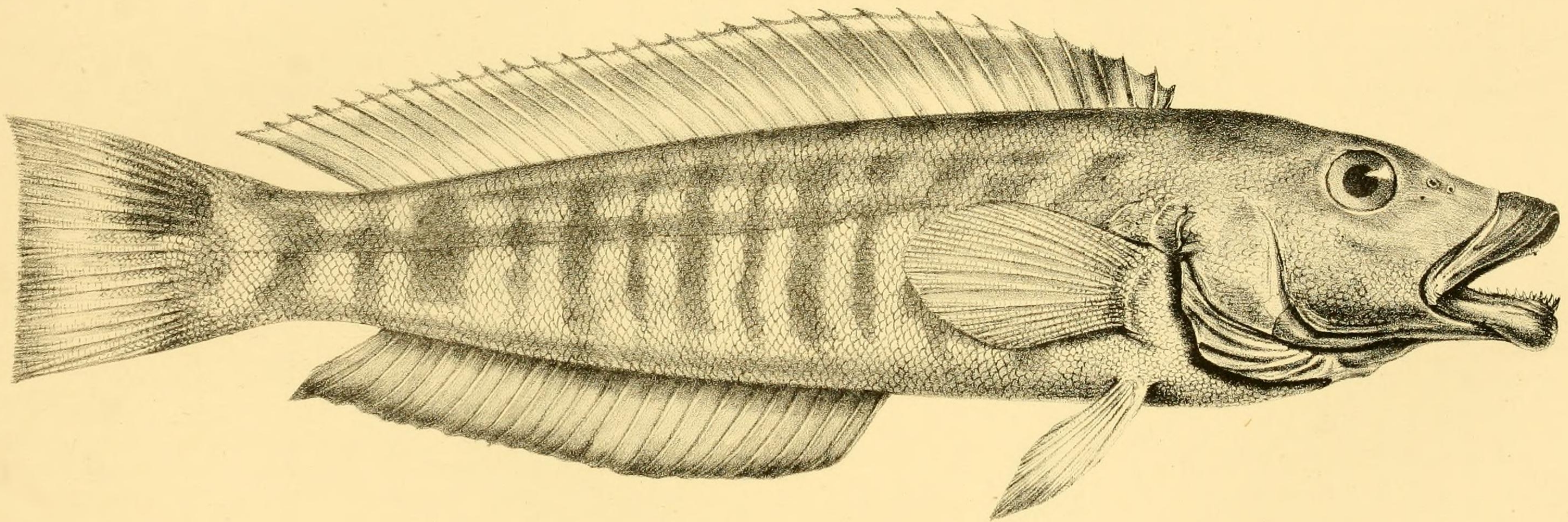
Drawn from Nature on stone by Waterhouse Hawkins.

Serranus labriiformis. 1/2 Nat. Size.



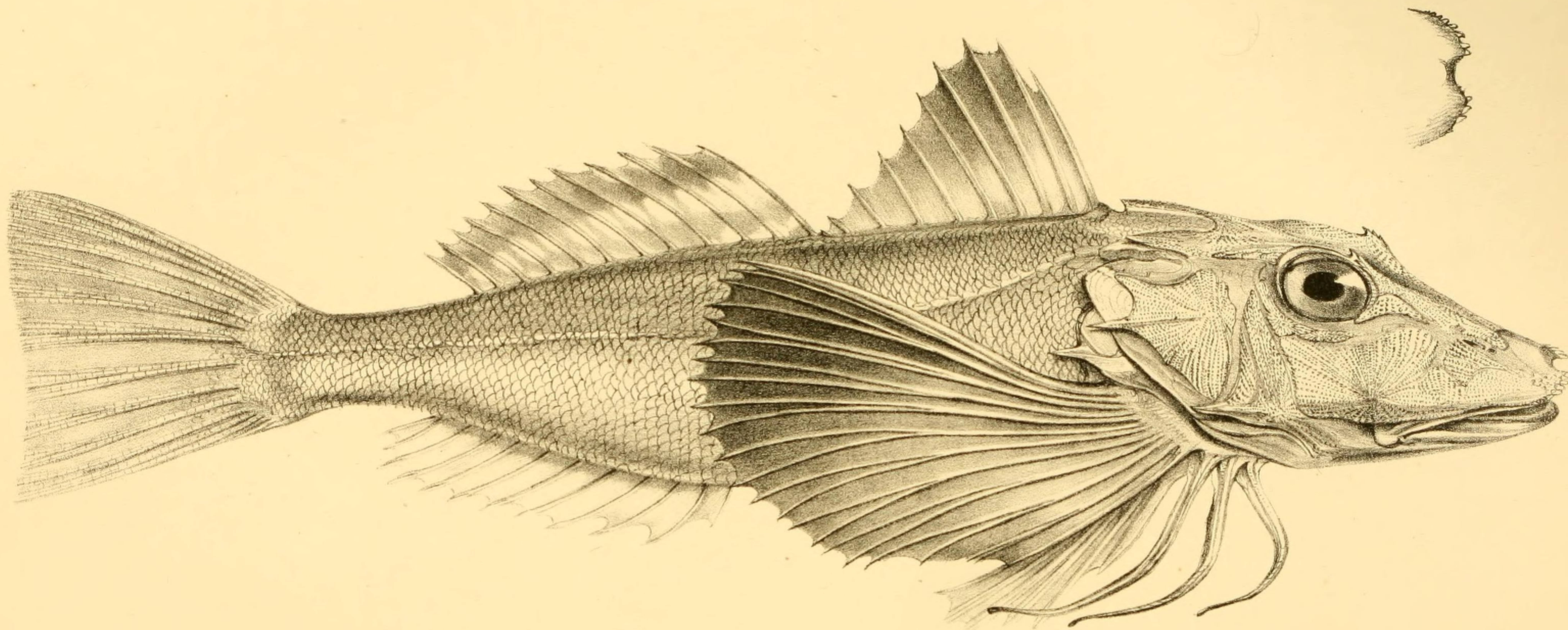
W. Howkins del.

Serranus clypeatus. 7/8 Nat. Size.



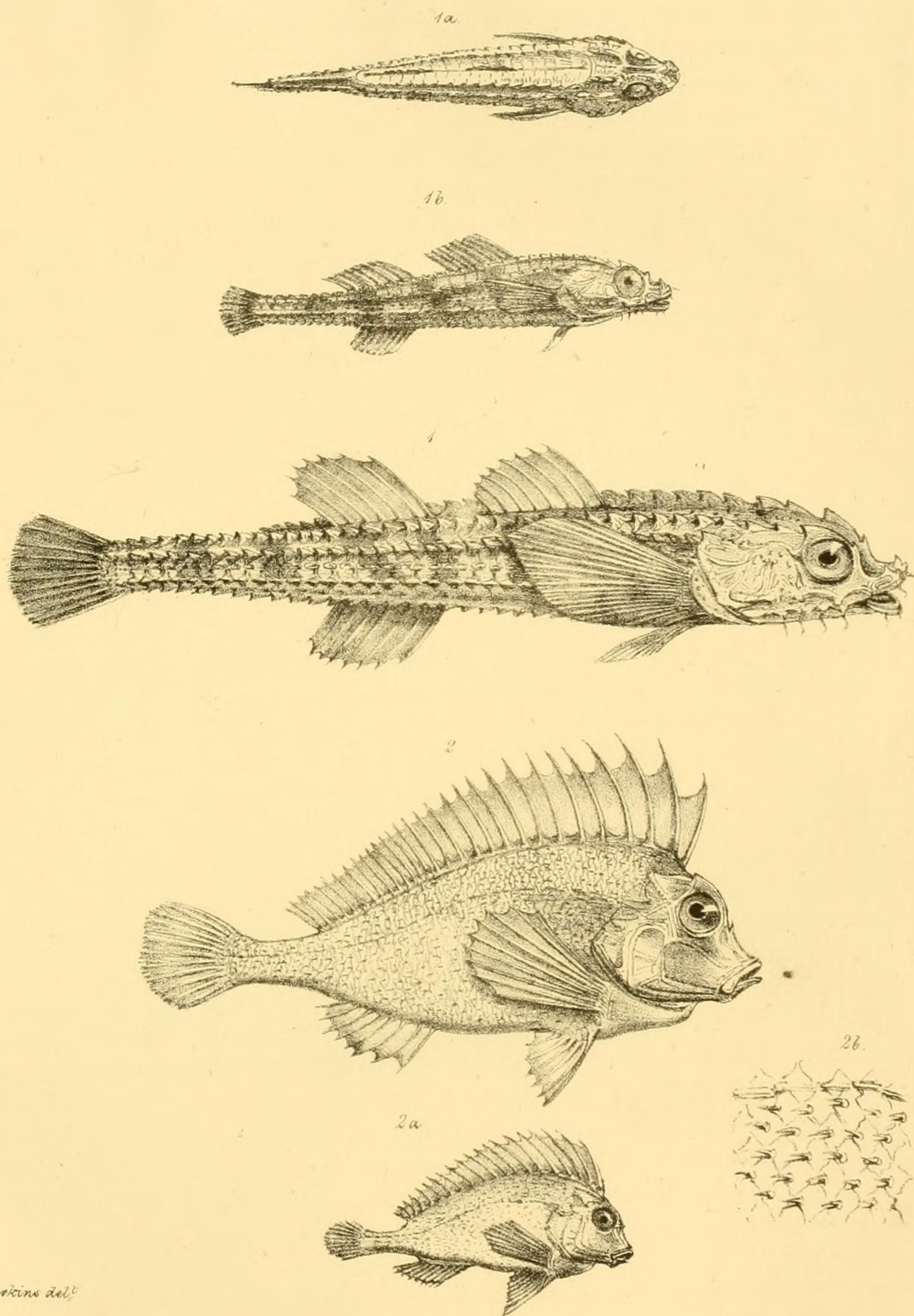
W. Howkins del.

Pinguipes fasciatus. 3/4 Nat. Size.



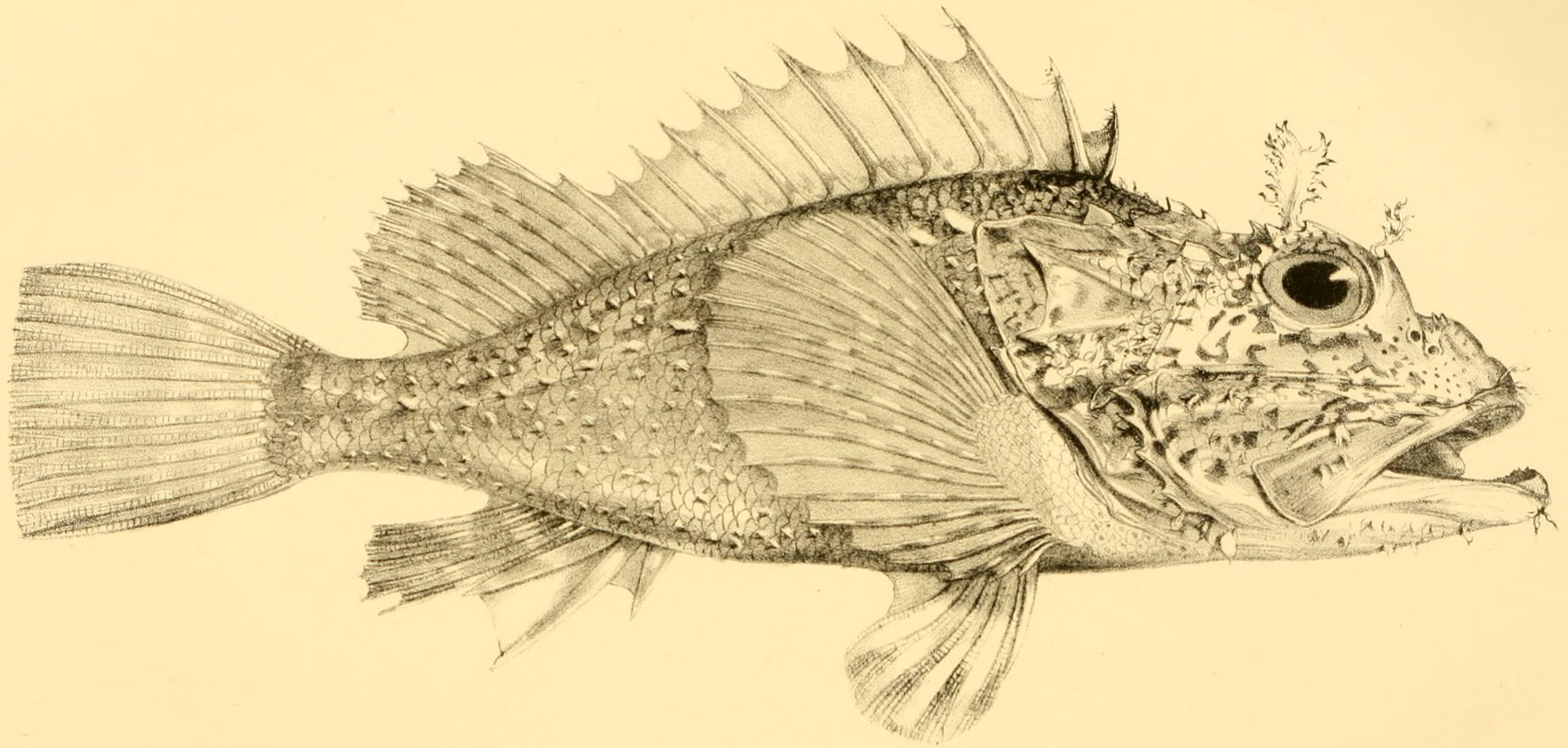
W. Hawkins del.

Prionotus Miles. Nat. Size.



W. Henskins del.

- | | |
|------------------------------------|-------------------|
| 1. <i>Aspidothorax chilensis</i> . | Twice Nat. Size. |
| 1a. 1b. | Nat. Size. |
| 2. <i>Agriopus hispidus</i> . | Twice Nat. Size. |
| 2a. | Nat. Size. |
| 2b. | Magnified Scales. |



Scorpaena Histrio. Nat size.