

Color. Yellow above, inclining to brown, with very numerous small black spots; under parts of a brighter yellow throughout, without spots.

Dimensions. Length of head 4 lines; greatest breadth 3 lines; length of neck and body 1 inch $2\frac{1}{2}$ lines, (Fr.) of tail 1 inch 5 lines; total length 3 inches 2 lines.

Habitat. With the preceding in Georgia. One specimen in Mus. Acad. Nat. Sc., presented by Major Le Conte, U. S. A.

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Contributions to the Ichthyology of the Western Coast of the United States, from specimens in the museum of the Smithsonian Institution.

By CHARLES GIRARD, M. D.

Two years have scarcely elapsed since I communicated to the Academy descriptions of various fishes collected upon different points of the Pacific coast of North America. During that period the indefatigable researches of several officers of the U. S. Army, and naturalists attached to the surveys made under orders from the General Government, have brought to light many new and interesting members of that class of animals, and of which I propose now to give a brief account, extracted from final Reports, made to the officers in charge of these surveys.

It has also been deemed advisable to mention such changes as have been made in the generic position of several species previously described, either by me or others, in order to give a more correct idea of the Reports just alluded to.

It will be remembered that while I was engaged in those investigations of our Western fishes, two naturalists, Drs. W. O. Ayers and W. P. Gibbons, both residents of San Francisco, Cal., had (without any knowledge of what I was doing,) described a certain number of species, some of which we already know have proved identical with my own. The law of priority in their publication will decide upon the names to be finally adopted in the nomenclature. So far I have been unwilling to settle upon any identifications without the specimens to go by, in order to avoid confusion as well as complicate the synonymy. Drs. Ayres and Gibbons, both, have shown an earnest desire to furnish me with authentic specimens of the species which they have described, and I am happy to say that from the former I have been favored by a good many up to this day, as will be seen further on.

For reference to the species described by Prof. Agassiz, some of which have appeared in my papers, it is but just to say that such identifications as were attempted by me, were made from the accounts published at that time. As far as genera are concerned I feel confident that no error was committed; in regard to the species I entertain certain doubts which can not be removed by the documents at our command. I have sought to do justice to the subject from the very beginning, and rather than introduce any changes in their present nomenclature I send them before the world as they now stand.

With the above preliminaries I proceed into the subject.

The species formerly described by me under the genus *Labrax* were found, upon further examination, to constitute a genus by itself, the relationship of which being more those of *Serranus* than of *Labrax*, and it is in the vicinity of the former that it ought to be placed in the ichthyic method. From *Serranus* it may be distinguished by the outline of the spinous dorsal fin, and the relative development of the canine teeth, which are so small as to have suggested the idea that the species belonged to *Labrax*.

The new genus we will henceforth call

PARALABRAX,

and characterise as follow: "General physiognomy that of *Labrax*, but the first dorsal fin is contiguous to the second as in *Serranus*. The profil of the body is subfusiform the caudal fin subtruncated or slightly emarginated posteriorly.

The head is subconical, the lower jaw a little longer than the upper, the mouth rather large; card-like teeth upon the premaxillaries, dentaries, vomer and palatines, with a row of small canine teeth along the edges of the jaws. Tongue smooth. Small and homogenous spines upon the outer curve of the preopercle. Two small and inconspicuous spines upon the margin of the opercle. Edge of suborbital, entire; humerus denticulated; opercular apparatus and cheeks covered with scales, smaller on the cheeks than on the opercles. Gill openings continuous under the throat; branchiostegal rays, six in number. Scales minutely serrated posteriorly."

PARALABRAX NEBULIFER and P. CLATHRATUS

are the two species.

Dr. Ayres's *Centrarchus maculosus* is my *C. INTERRUPTUS*.

A new and interesting member of the group *Trachinidæ*, we inscribe into the method under the appellation of

HOMALOPOMUS,

"The general aspect of which is elongated, the mouth large, the lower jaw longest; upper and lower jaws provided with canine teeth; card-like teeth on the vomer. Palatines toothless; tongue smooth. Dorsal fins separated; anterior, small and subtriangular; posterior, extending mostly to rest of space towards the caudal. Anal fin longer than deep, situated far back. Opercular apparatus spineless and scaly; cheeks smooth and scaleless. Upper surface of head covered with minute scales. Scales covering the body of moderate development with posterior margin entire, and smooth. Gill openings continuous under the head; branchiostegals, six in number."

A single species is known, several specimens of which were examined, all of which were collected at Astoria, Oregon Territory, by Lt. W. P. Trowbridge, U. S. A., to whom I take pleasure in dedicating it.

HOMALOPOMUS TROWERIDGII

has the "snout pointed, the mouth deeply cleft, and the posterior extremity of the maxillaries extending to the vertical line of the posterior edge of the pupil. The eyes are large. The tips of the pectoral fins reach as far as the anterior margin of the anal fin. The color is greyish brown above, and silvery grey beneath."

In the Cottoid group there are glorious additions. In the first place I have had the great satisfaction of identifying, from actual specimens, the *Cottus asper* of Sir John Richardson, and to describe it comparatively with the other members of the same genus.

Amongst the truly marine representatives I will first introduce a type which seems to bear much closer affinities to the fresh water genera than was anticipated.

In naming it

OLIGOCOTTUS,

allusion is made chiefly to its diminutive size. We have full evidence that the specimens before us are adults, and consequently have not hesitated in the selection of that name. We are aware, however, that further search might bring to notice other species not quite so small and still of the same generic stamp. On the other hand, the etymology of a name is of but little avail towards elucidating the history of the object it designates. The natural characters of the genus will read as follows: "Head smooth, with the exception of a few spines upon the preopercle and snout. Upper jaw slightly the longest. Teeth upon the premaxillaries, dentaries, front of vomer and palatines. Gill openings continuous under the throat; branchiostegals six. Dorsal fins contiguous. Caudal posteriorly rounded. Insertion of ventrals backwards the base of pectorals. Origin of anal fin in advance of the anterior margin of second dorsal. Skin smooth, lateral line continuous for the whole length of the body."

OLIGOCOTTUS MACULOSUS.

being the only species known at present, we will characterize it by saying: "that the mouth is moderately cleft; the posterior extremity of the maxillary extending to a vertical line intersecting the pupil. A stoutish bicuspid processus on the convexity of the preopercle. Two acute nasal spines. Anterior dorsal lower than the second or posterior. Yellowish brown above, mottled or variegated with blackish; along the dorsal region a series of blotches of a deeper hue; lower half of the sides vermiculated. Abdomen of a bright saffron or yellow hue in the male. Inferior surface of head with traces of black markings; throat and abdomen unicolor, as also the ventrals and anal. Dorsals, caudal, and pectorals transversally barred."

It has been observed on several points of the coast between the bay of San Francisco, Cal., to Puget Sound, W. T. In 1854, a few dried up specimens were taken near Presidio by Lt. W. P. Trowbridge, but their precarious state of keeping did not permit us to classify them. The same was the case with those collected at Fort Steilacoom by Dr. Geo. Suekley. It is but very recently that well preserved specimens, collected by E. Samuels, in Tomales Bay, Cal., having reached us, we have been prepared to determine their position in the ichthyic method.

The fish mentioned by Dr. Ayres under the name of *Acanthocottus inermis* proves to be my *LEPTOCOTTUS ARMATUS*.

Next in order is another and entirely new genus, for which the name of

LEIOCOTTUS,

has been selected, more particularly in reference to its smooth aspect. Its characters are: "head perfectly smooth; spines upon the preopercle only. Mouth moderately cleft; jaws equal. Teeth upon the premaxillaries, dentaries and front of the vomer; none on the palatines. Barbules upon the maxillaries. Gill openings continuous under the throat; branchiostegal rays five. Dorsals nearly contiguous upon their bases. Ventrals inserted backwards of the base of the pectorals. Caudal posteriorly subtruncated. Skin perfectly smooth, bearing neither prickles nor scales. Lateral line well marked and continuous from head to tail."

The species which has come under my observation has so much of the aspect of *Trigla* that the specific name of

LEIOCOTTUS HIRUNDO

suggested itself for it." The snout is declivous and rather pointed; the posterior extremity of the maxillary is provided with two or three barbules and reaches a vertical line drawn a little beyond the anterior rim of the orbit. Superior regions blackish brown; abdomen whitish beneath; inferior part of tail yellow."

It was collected by Lt. W. P. Trowbridge, U. S. A. at the island of San Miguel, Cal.

Dr. Ayres' *Hemitripterus marmoratus*, is my *SCORPENICHTHYS MARMORATUS*,

Clypeocottus robustus of the same author, is my *ASPICOTTUS BISON*.

The species described by me as *Scorpenichthys lateralis* was subsequently referred by Dr. Ayres to a new genus of his under the denomination of *Calycilepidotus lateralis*, together with another species at that time unknown to me, under the name of *C. spinosus*. On a former occasion Dr. Ayres had announced the presence of two species of hemilepidoti in the Bay of San Francisco, for which he proposed the names of *H. nebulosus* and *H. spinosus*. My *Scorpenichthys lateralis* was subsequently identified by himself to his *H. nebulosus*, and it was then that the genus *Calycilepidotus* appeared with two species: *C. spinosus* and *C. lateralis*.

C. spinosus I have carefully examined, and I am satisfied that its proper place is in the genus *Hemilepidotus*, as characterized by Cuvier. In order, however, to furnish reliable data to go upon, I must be permitted to offer a diagnosis of that genus as it now stands.

HEMILEPIDOTUS.

Head rough and prickly, with membranous flaps on various parts; opercular apparatus spinous. Mouth moderately cleft; jaws equal. Teeth upon the premaxillaries, dentaries, front of vomer and palatines. Gill openings separated beneath by an isthmus; branchiostegals, six on either side. Dorsal fins contiguous. Caudal rounded posteriorly. Insertion of ventrals opposite the base of pectorals. Longitudinal bands of scales alternating with naked areas; scales themselves finely denticulated."

HEMILEPIDOTUS SPINOSUS

has membranous flaps on the upper surface and sides of the head. The eyes are quite large. The posterior free extremity of the maxillary extends to a vertical line drawn at the posterior rim of the pupil. Dorsal band of scales composed of six rows or series; lateral band of seven, five below and two above the lateral line. Ground color dark reddish brown, with darker transverse bands and blotches."

Specimens labelled by Dr. Ayres were collected in the Bay of San Francisco, Cal., by Dr. John S. Newberry; others in Humboldt Bay, by Lt. W. P. Trowbridge, U. S. A.

So much for *Calycepidotus spinosus*: it is a true Hemilepidotus.

As to *C. lateralis*, the second species of Dr. Ayres' genus, a careful study has convinced me that it is not specifically identical with my *Scorpenichthys lateralis*. Subsequent investigations of more perfect specimens have convinced me of the propriety of removing the latter from the genus Scorpenichthys, and since I had no specimens of *Hemilepidotus nebulosus*, Ayres, (*Calycepidotus lateralis*, Ayres, non mihi) by which to determine its generic affinities, I have been compelled to institute, under the name of

ARTEDIUS,

a new genus to receive two species, the one above referred to, and formerly described by me as *Scorpenichthys lateralis*, and another which so far had remained unnoticed. The following are its characters: "Head rough, with supra-orbital membranous flaps. Spines upon the preopercle only. Mouth moderately cleft; lower jaw slightly overlapped by the upper. Teeth upon the premaxillaries, dentaries, front of vomer, and palatines. Gill openings continuous under the throat; branchiostegals five on either side. Dorsal fins separated. Caudal subtruncated posteriorly. Insertion of ventrals opposite the base of the pectorals. A dorsal band of pectinated scales."

ARTEDIUS LATERALIS.

Scorpenichthys lateralis, Grd., has the "surface of the head smooth. Preopercle armed with a flat bicuspid spine. Band of dorsal scales narrow, originating at the thoracic arch and extending to near the terminus of the base of the second dorsal. Anterior margin of first dorsal situated in advance of the thoracic arch. Deep chestnut brown above, maculated with yellowish; beneath yellowish."

Specimens collected at San Luis Obispo, Cal., by Lt. W. P. Trowbridge, U. S. A.

ARTEDIUS NOTOSPILOTUS

is characterised by the "surface of the head being subtuberculous and scaly. Preopercle armed with a flat tricuspid spine. Anterior margin of first dorsal situated in advance of the beginning of the dorsal band of scales, which is broad and extends from the thoracic arch to near the terminus of the base of the second dorsal. Olivaceous, with a series of saddle-like black patches. Abdomen dull yellow or white."

Collected by E. Samuels in Tomales Bay, Cal.

Sebastes ruber, Ayres, is my *SEBASTES ROSACEUS*.

Sebastes nebulosus, Ayres, is my *SEBASTES FASCIATUS*.

Sebastes variabilis, Ayres (not Cuvier) is my *SEBASTES AURICULATUS*.

SEBASTES MELANOPS

is a species hitherto undescribed, and which we thus characterise: "Upper surface of head generally spineless. Posterior extremity of maxillary reaching a vertical line drawn interiorly to the posterior rim of the orbit. Origin of dorsal fin opposite or else slightly in advance of the base of the pectorals. Upper regions blackish brown; sides brownish, spotted with black; beneath greyish brown."

Specimens were collected at Cape Flattery, W. T., and at Astoria, O. T., by Lt. W. P. Trowbridge, U. S. A.

A fine addition to the group of Heterolepids instituted in 1854 with two genera, *Chirus* and *Ophiodon*, is the new genus

OPLOPOMA,

characterised by an "elongated body, membranous flaps above the orbits, and spines on the preopercle. The snout is conical; the mouth large, and the lower jaw the longest. Canine teeth upon the premaxillaries, dentaries, front of vomer and the palatines. Gill openings continuous; branchiostegals six on either side. Dorsal fins contiguous. Caudal posteriorly subrescenscent or else concave. Insertion of ventrals a little posterior to the pectorals. Body covered by small cycloid scales."

OPLOPOMA PANTHERINA,

the only species hitherto known, has the "upper surface and sides of the head granular. The preopercular spines are few, small and blunt. Posterior extremity of maxillary extending beyond the orbit. Origin of anterior dorsal situated in advance of the convexity of the preopercle. Scales extending over the base of both the caudal and pectoral fins. Blackish brown above, reddish brown beneath. Dorsal and lateral regions spotted with black."

Specimens of this species were collected by Lt. W. P. Trowbridge, at Cape Flattery, W. T.

GASTEROSTEUS SERRATUS, Ayres, I have investigated carefully, and found specifically distinct from its congeners.

I describe another species akin to it and *G. plebeius*.

GASTEROSTEUS INTERMEDIUS

having the "body plated all over; the peduncle of the tail keeled. Dorsal spines three, moderate in development and inconspicuously serrated upon their edges; anterior one inserted immediately behind the base of the pectorals. Insertion of ventrals under the second dorsal spine; their own spine being serrated upon both edges, more conspicuously above than below, and their extremities not extending as far as the tips of the *ossa innominata*. Posterior margin of caudal concave."

Inhabits Cape Flattery, W. T., where it was collected by Lt. W. P. Trowbridge, U. S. A.

Finally, under the name of

GASTEROSTEUS PUGETTI,

I introduce a new species in which the "body is only plated in part. Dorsal spines three, slender, not serrated upon their edges; anterior inserted immediately behind the base of pectorals. Insertion of ventrals in advance of the second dorsal spine; their own spine being slender, crenated upon its edges and extending beyond the tips of the *ossa innominata*. Posterior margin of caudal slightly emarginated."

Fort Steilacoom, Puget Sound, W. T.; collected by Dr. Geo. Suckley, U. S. A.

LEIOSTOMUS LINEATUS, Ayres, has come within my observation. The species is characteristic. Specimens of it were brought home by Dr. J. S. Newberry.

LEPTOGUNELLUS GRACILIS, Ayres, I have likewise examined on specimens collected by Dr. Newberry and labelled by Dr. Ayres.

GObIUS NEWBERRYI

is a small and very graceful species of Goby, hitherto undescribed. The average size of many specimens observed is about two inches or less, the head forming the fourth of the total length. The first dorsal is contiguous to the second at its base, and is considerably lower than the latter. The mouth is deeply cleft, the posterior extremity of the maxillary extending to a vertical line passing posteriorly to the orbit. The origin of the anal is situated a little behind the anterior margin of the second dorsal: both fins terminate evenly, as far as concerns the tips of the posterior rays. The caudal forms the fifth of the total length. The ground color is olivaceous, but the upper regions appear blackish with isolated spots of the ground color; the inferior regions are unicolor.

Atherina storeri, Ayres, is my *ATHERINOPSIS CALIFORNIENSIS*.

RHACOCHEILUS TOXOTES, Agass., was identified on a specimen collected by E. Samnells in Tomales Bay.

HYSTERICARPUS TRASKII, Gibbons, could be recognized on a specimen collected at Fort Reading by Drs. J. F. Hammond and John S. Newberry. Another specimen from the same locality had no irregular transverse bands of black, but was almost *unicolor*.

Another species of viviparous fish,

EMBIOTOCA ARGYROSOMA,

is easily distinguished from its congener by the brilliant argentine tint of its entire body, though made a little darker along the dorsal region by a greyish or pinkish hue. The general form is elongated; the head rather small, subconical, rounded anteriorly, and contained four times and a half in the total length. The caudal is deeply forked. The posterior extremity of the anal extends a little more posteriorly than the dorsal. The tips of the pectorals reach a vertical line passing beyond the origin of the anal. Specimens were collected at San Francisco, Cal., by Lt. W. P. Trowbridge, U. S. A.

OSMERUS ELONGATUS, Ayres, has been collected at San Francisco, Cal., by Dr. John S. Newberry. The specimens were identified by Dr. Ayres.

A most important (I was almost going to say unexpected) discovery of a white fish was made by the party on the R. R. Survey of California and Oregon, commanded by Lt. R. S. Williamson. And since it is different from its hitherto known congener, we will call it

COREGONUS WILLIAMSONI,

as commemorative of that Survey. Its head is rather small, being contained about five times in the total length, which measures eleven inches. The mouth is very small and the posterior extremity of the maxillary does not extend as far back as the anterior rim of the orbit. The scales are large; eighteen rows of them may be counted between the anterior margin of the dorsal and the insertion of the ventrals: nine above the lateral line, and eight below it. The lateral line, itself, is perfectly straight. The caudal fin forked as usual. The pectorals are rather small. I have alluded to the color in saying it was a white fish; add to it a bluish grey hue along the back. It was collected by Dr. Newberry in the Des Chutes river, a tributary of the Columbia.

In adding a second species to the genus *Platichthys*, the diagnose of this genus must be modified so as to read: "eyes on either the right or left side,"

PLATICTHYS UMBROSUS,

which is the new species referred to, has its eyes on the right, whilst in the species formerly described, they are on the left. It can also readily be distinguished from its congener in having the body completely covered with scales, on the surface of some of which prickles or asperities are observed. The specimen before us measures seven inches and a half, is of a uniform blackish brown hue on the right side and light brown on the left. It was collected by Lt. W. P. Trowbridge, U. S. A., at Cape Flattery, W. T.

I have likewise a second species to add to my genus *Pleuronichthys*, taking this opportunity of correcting a *lapsus linguae* which occurred in the diagnosis of its generic characters: "teeth very inconspicuous, occupying the colorless side of the jaws," instead of both sides of the jaw. That this was a mere accident will appear obvious by reading the characters given to *Parophrys*, in which an allusion is made to the true state of things in *Pleuronichthys*.

PLEURONICHTHYS GUTTULATUS,

appears to be a smaller species than its congener; it is also deeper, less elongated, hence more of a subcylindrical general form. The eyes are situated on the right side. The origin of the dorsal fin is not quite even with the anterior margin of the orbit, and in that respect the generic diagnosis will undergo a slight modification. The largest specimens observed measure a little over three inches. The ground color appears greyish black, over which are scattered light spots appearing like as many drops irregularly dispersed. Specimens were collected in Tomales Bay by E. Samuels.

A specimen of *Ophidium*, in a too precarious state of preservation to be determined specifically, was found by Lt. W. P. Trowbridge, at S. Farallones, near San Francisco. Another was collected by Dr. Suckley at Shoalwater Bay, W. T., apparently of the same species.

We have also to mention a *Sandlaunee*, under the name of

AMMODYTES PERSONATUS,

the general aspect of which is shorter than its congeners, although the form and outline of the body are not materially different. We perceive no teeth on the palat. The posterior extremity of the maxillary extends to a vertical line which intersects the anterior rim of the orbit. The origin of the dorsal fin is situated anteriorly to the tips of the pectorals. The base of the caudal fin is black. Specimens were collected at Cape Flattery, W. T., by Lt. W. P. Trowbridge. U. S. A.

SYNGNATHUS CALIFORNIENSIS, Storer,

was received from Monterey, Cal., through the care of A. S. Taylor. The specimen is somewhat imperfect; it is the largest of those which we have examined from the Pacific coast.

ACCIPENSER ACUTIROSTRIS, Ayres,

was brought home by Dr. Newberry, the specimen having been labelled by Dr. Ayres in San Francisco, where the specimen was procured.

ACCIPENSER MEDIROSTRIS, Ayres, was received in the same manner as the preceding.

ACCIPENSER TRANSMONTANUS, Rich., from the Columbia river, has been collected by Dr. Suckley.

We conclude by referring to a ray of a remarkable genus,

RHINOPTERA VESPERTILIO,

which was caught in Tomales Bay, by E. Samuels. The specimen before us measures nineteen inches and a half from the extremity of the mouth to the tip of the tail, six inches and three quarters being the length of the body and head together. The width from the tip of one pectoral fin to the other is twelve inches. There is a small dorsal fin situated upon the anterior portion of the tail, followed by a flattened spear shaped spine, serrated upon its edge. The tail is very attenuated, flagelliform, tapering into a filiform extremity. The cephalic region is as long as the rest of the body. Its anterior outline is rounded. The eyes are very prominent and somewhat raised above the surface of the head. The respiratory apertures, five in number are transversally elongated and arranged upon an open curve. The lips are fringed. The color is of an uniform bluish slate above; dull whitish beneath.