

DESCRIPTION OF A NEW SPECIES OF AGONIDÆ (BRACHYOPSIS VERRUCOSUS), FROM THE COAST OF CALIFORNIA.

By W. N. LOCKINGTON.

Brachyopsis verrucosus.

D. VII-IX, 7-8. A. 10-11. P. 14-15. V. 1-3. C. 2-10, 2. Lateral scutes, 34-36.

Form elongated, slender, lateral dorsal outline rising very gradually from the snout to above the base of the pectoral; central part of the upper orbital margin elevated above the line of the forehead and occiput, as is also the tip of the lower jaw and front portion of the snout, so that there is a not very conspicuous depression in front of the eye.

From the highest point the dorsal outline descends gradually to the elongated and narrow caudal peduncle.

Abdominal outline from posterior extremity of mandible to caudal peduncle straight.

Greatest height about 11; greatest width $7-7\frac{1}{2}$; length of head $4\frac{1}{2}-4\frac{1}{4}$ times in total length to tip of caudal (mouth closed); greatest depth about $1\frac{1}{2}$ in greatest width; depth of caudal peduncle about $3\frac{3}{4}$ times in the greatest depth.

Mouth oblique, the lower jaw projecting considerably beyond the upper, its tip entering into the dorsal outline, and its posterior extremity reaching to a vertical from the anterior margin of the pupil.

Mandible half or nearly half the length of the head.

Maxillary short, broad posteriorly, and set at a more oblique angle than the mandible, below which the lower angle of its posterior margin projects when the mouth is closed, while the entire length of its upper margin is hidden beneath the preorbital in the closed mouth; a short and slender barbel at its posterior extremity.

Entire length of upper jaw less than $\frac{1}{3}$ that of head.

Teeth uniform in both jaws, villiform, very small, in a band which is widest in front, but divided in the center.

A patch of similar but even finer teeth (perceptible to the touch, but scarcely to the eye) on vomer, and another on each palatine.

Eyes directed laterally and somewhat upwards, oval, their longitudinal diameter a little less than the length of the snout, and about $4\frac{1}{6}-4\frac{1}{3}$ in the length of the side of the head; interorbital area sunken, its width about 5 times in the length of the head.

Snout a little longer than the longitudinal diameter of the eye; two short backward-directed spines on its summit, slightly posterior to the line of the tubes of the nostrils.

Preorbital large, with several small spines on its lower margin.

Supraorbital margin set with small spines, and rising in its posterior portion to a spinulose crest.

Lower orbital margin prominent, a pair of spines at its posterior extremity, the hinder the larger.

Preoperculum with a spinulose longitudinal ridge, ending in a backward-directed spine; a second smaller spine below this, at angle; lower limb with two flat angular projections.

Operculum striate, with a ridge, ending in a spine, on its upper part.

Occipital and lateral ridges of upper surface of head prominent, spinulose or denticulated above, but without spines; lateral ridges each formed of three shorter ridges; no pit on occiput.

Gill-membranes continuous below, without isthmus; branchiostegals five, large.

Pectoral very long, boldly rounded on its posterior and lower margins, broad; the upper rays slightly increasing to about the sixth, the five lowest decreasing rapidly. Tips of the longest rays reaching nearly to or beyond the sixth dorsal ray, or to the back of the thirteenth or fourteenth dorsal scute. Longest rays about equal in length to the head. Rays simple, base slightly oblique.

Ventrals inserted on the plane of the upper pectoral axil, longer than the pectorals, their greatest length about 4 times in the total length, and consisting of a spine and two rays, the spine attached to the first ray, which is of considerable length, but shorter than the second, the tip of which extends beyond the second anal ray. Membrane between the two rays broad; the second ray fringed with a membrane along its internal margin.

First dorsal commencing at about the eighth dorsal scute and terminating at the sixteenth. First spine shorter than the second, the next five about equal in length, the remainder diminishing rapidly. Height of the longest spines somewhat exceeding the depth of the body below the fin.

Second dorsal about equal in height and similar in form to the first, arising at about the nineteenth dorsal scute, and terminating at or near the twenty-seventh. First ray shorter than the second, the next four nearly equal, the remainder falling rapidly.

Anal commencing directly below the last ray of the first dorsal, and coterminous with the second dorsal, its lower margin nearly straight, and its depth rather less than the height of the second dorsals.

The last rays of the dorsals and anal are joined to the body by membrane.

Posterior margin of caudal convex; accessory rays few.

Dorsal scutes 35-36, the two series approaching and uniting a little behind the second dorsal; about seven scutes between the point of junction and the caudal.

Each scute produced posteriorly into a large spine bent backwards, and frequently denticulated upon its anterior or outer edge. Behind the point of junction of the two dorsal rows the spines are in closely coupled pairs.

Lateral series of scutes each consisting of 34-36 plates, each armed with a spine similar to those above described.

Ventral series containing 29-31 plates, the last three or four single, the remainder forming a double series similar to the dorsal series, but with less conspicuous spines.

The ventral series commences at the axils of the ventral fins, and the lower surface between these fins and the gill-openings is occupied by several large, separate, subcircular, strongly striated scales or plates, those running along the margin of the gill-openings placed closer together, and forming a series of about seven.

About seven pairs of subcircular scales, not striated, or only slightly striated, are scattered along the acutely triangular space behind the ventrals, between the two ventral series of scutes, which do not fairly meet each other anterior to the anal fin. An elongate naked area behind the pectorals, separating the lower lateral from the ventral series.

Some small scales in the space between the mandibles, and a series of small, elevated, and sharp-pointed scales along the curve of the pectoral base.

Vent not far behind the base of the ventrals.

The center of the interocular space, the area between the occipital ridges, some spaces on the lateral aspect of the head between the more prominent parts of the bones, and the areas between the large scales in front of the ventral are set with numerous prickles, a few of which also occur in the intermandibular area.

Similar prickles are numerous on the anterior portion of the trunk, occupying the spaces between the parallel dorsal and upper lateral series of scutes; those of the upper surface end at the first dorsal, those of the upper lateral surfaces at the posterior extremity of the same fin. Behind these points the scuta of these surfaces closely interlock.

Lateral line continuous; a pore between each pair of scutes; pores simple.

Color.—After exposure to alcohol, the upper and lateral surfaces of the body are banded alternately with dull yellowish and olivaceous brown; pectorals whitish on their basal portion, a dark spot on the upper and another on the lower edge excepted, and dark on their terminal part, the margin of the dark color running obliquely from the center of the first to the tip of the eleventh ray.

Ventrals with a large black spot on the membrane inside the first ray, and two small spots near the tip of the membrane. Abdomen yellowish white.

When somewhat fresher, the dirty yellowish tint of the ventrals was bright orange yellow, and the black of that fin was more positive, so that it is probable that in life the colors of the whole body were much brighter than they are now.

The total length of the specimens examined, from tip of lower jaw (mouth closed) to tip of caudal, varied from 5.68 inches to 6.65 inches.

Actual measurements of the parts are not given, as the proportions vary but little.

Several examples were collected November 26, 1879, at a depth of ten fathoms, in Drake's Bay, 35 miles north of San Francisco, by Mr. Voy, who has presented them to the State University, Berkeley, Cal.

One of the types is in the United States National Museum, numbered —.

This species is referred to the genus *Brachyopsis*, proposed by Dr. Gill for the reception of *Agonus rostratus*.

This genus is distinguished from *Agonus* by the projecting lower jaw and consequent comparatively large terminal mouth, and by the absence of an isthmus.

DESCRIPTION OF A NEW GENUS AND SOME NEW SPECIES OF CALIFORNIA FISHES (ICOSTEUS ÆNIGMATICUS AND OSMERUS ATTENUATUS).

By W. N. LOCKINGTON.

Fam. BLENNIDÆ (?).

ICOSTEUS.

Body much compressed. Teeth in a single row in both jaws, close-set, sharp. No teeth on vomer, palatines, or pharyngeals. Gill-openings continuous under the throat, composed of flexible rays, the anterior simple.

A single long dorsal fin; anal similar. Base of pectorals fleshy. Ventrals thoracic in position. Lateral line with groups of spines. Pseudo branchiæ.

Body scaleless throughout; fins beset with spinules along the rays.

Etymology: *εἰζω*, to yield; *οστρεον*, bone.

Icosteus ænigmaticus.

Body much compressed throughout; head thicker than any portion of the body. Dorsal outline rising rapidly to the origin of the dorsal; thence more slowly in a regular curve to about the center of the length of the body; thence curving gradually downward to the caudal peduncle. Abdominal outline regularly curved.

Upper and lower outlines of caudal peduncle concave, the peduncle widening posteriorly to support the fin-shaped caudal.

Greatest depth about $3\frac{1}{2}$ times in total length; length of head about 5 times in total length; eye 6; snout more than 3; interorbital width about $2\frac{1}{2}$ times in the length of the head; caudal peduncle about $5\frac{1}{2}$ times in the greatest depth.

Nostrils simple, elongate-elliptical; eyes lateral; their diameter less than the length of the snout; mouth-opening rather large, horizontal, or nearly so; tip of the intermaxillary below the lower margin of the eye; margin of upper jaw formed of the intermaxillaries only; maxilla-