

**DESCRIPTION OF A NEW AGONOID (AGONUS VULSUS), FROM
THE COAST OF CALIFORNIA.**

By **DAVID S. JORDAN** and **CHARLES H. GILBERT.**

Body elongate, tapering rapidly to the long tail, everywhere broader than high. It is highest and broadest at the shoulders, but is lower and narrower than the head.

Head acutely triangular as viewed from above, the profile irregularly sigmoid; lower surface of head and body plane from the head to the tail. Mouth U-shaped, entirely inferior, the maxillary reaching to opposite the front of the pupil, the premaxillary in front to the base of the posterior pair of rostral spines. The distance from the anterior margin of the premaxillaries forward to the tip of the rostral spines equals more than half the length of the snout, more than half the diameter of the eye, less than one-fifth the length of the head. Lips thickish. Upper jaw protractile. Teeth small, in a villiform band, none evident on the vomer or palatines. Maxillary mandible and branchiostegal region with some small scattered cirri; under side of snout with few barbels or none. Eyes large, nearly as long as snout, $3\frac{2}{3}$ in length of head, the orbital bones forming a raised ridge around them. Interorbital space transversely concave, nearly straight longitudinally, with a lengthwise groove and two slight ridges. Profile depressed at the front of the eyes, thence nearly straight to the tip of the rostral spines.

Spines on head highly developed. On each side a stout straight rostral spine projecting horizontally forwards; at its base a stout spine curved backwards, upwards, and outwards; behind this a smaller one projecting upwards. Orbital ridge above serrated, and with two prominent recurved spines, one in front, the other behind; behind these a ridge on each side confluent with the dorsal ridges and each with four spines; between these the top of the head is roughish and somewhat concave, with traces of a median keel. At the occiput is a conspicuous pit between the above-mentioned ridges, broader than long and longer than deep. Just below these ridges, on each side, is another and more prominent ridge, also ending in four spines, the last very strong; this is continuous with the upper lateral keel of the body; below this, on the opercle, is a strong keel ending behind in a spine; still lower is an irregular ridge, armed from the preorbital along the suborbital and preopercle, ending in a stout preopercular spine; behind the pectorals this ridge again appears as the long lateral keel of the body.

Along the lower margin of the preopercle are three or four more bluntish spines. There are on the head between seventy and eighty more or less developed spinous processes.

Isthmus rather wide.

Body with four ridges on each side, formed by the series of scales. Each scale ending in a strong recurved spine, its roots forming striæ on

the scales. Between the two lateral keels are traces of another keel; traces also exist between the two dorsal keels in front.

The spines are developed on all the keels except in front and behind on the two abdominal ones. The two dorsal keels, at about the eighth scale in front of the caudal fin, coalesce, after which the median furrow is obliterated and the spines continue double.

Just below the point of junction the abdominal keels also unite. The two lateral ridges remain distinct throughout. At the base of the tail, on each side, is a median spine between the lateral ridges.

The abdominal ridges are farthest apart behind the base of the ventrals, in front of which and behind which they converge, but anteriorly they do not meet. Breast with six or eight polygonal plates. Belly transversely convex, with traces of a furrow, into which the ventrals are depressible. Vent just behind the middle of the length of ventrals. Lateral line about forty.

Dorsal beginning behind the seventh dorsal scale, and extending over eight scales, four scales intervening between it and the soft dorsal, which covers seven scales. The anal begins under the end of the first dorsal, and extends over eleven scales. Dorsal spines very delicate and flexible. Pectorals reaching the eleventh scale in the upper lateral series. Ventrals beginning opposite the fifth scale and extending to the tenth.

Color nearly obliterated—dark brown, with blackish cross-bars, involving the fins. One bar across caudal, one across posterior part of soft dorsal and anal, one across posterior part of spinous dorsal and front of anal, and one across front of spinous dorsal. Pectorals black, with whitish edging. Caudal and ventrals blackish. Belly white.

Dimensions, in hundredths, of length to base of caudal fin.

Total length	4.1 inches	
To base of caudal.....	3.6 inches=	100
Height of body.....		12
Height of tail		4
Width of body		14
Length of head.....		25
Width of head.....		19
Depth of head.....		12
Diameter of orbit.....		7
Length of snout		9
Length of rostral spine		2.3
Cleft of mouth		6.5
Width of mouth.....		6.5
Width of occipital pit		6
Space between dorsals.....		8
From front of mandible to tip of rostral spine		6
Isthmus.....		6
Length of spinous dorsal		12.5
Length of soft dorsal		12.5
Length of anal		18
Length of pectoral		18
Length of ventral		8
Length of caudal.....		13.5

This species is known to us from about ten specimens picked out of piles of prawns in the San Francisco market. They are taken in the sweep-nets of the "Paranzelle" off Point Reyes.

It belongs to the group or genus termed *Podotheucus* by Professor Gill (typified by *Agonus acipenserinus*), which is distinguished from *Agonus cataphractus* by the longer spinous dorsal and by the greater number of plates on the breast. *Agonus vulsus* differs from *Agonus acipenserinus* in the much rougher head, the narrow suborbital, and in the slight development of the barbels, as well as in many minor respects.

Agonus acipenserinus is rather stouter, the head broader and smoother above, the turbinal bones more widely separated. The nasal spines are similar in the two species, as well as the position of the mouth. The preocular spine is obsolete, the interorbital space is broader and not corrugated, with two longitudinal ridges. Posterior part of head comparatively smooth, without pit at the occiput. Ridges and spines on posterior part of head continuous with those on the body, as in *A. vulsus*, but higher than those on the body, instead of smaller, as in the latter. Opercular ridge small, the bones feebly striate.

Suborbital region quite broad and smooth, with a strong ridge beneath, on which are three strong retrorse spines, below which is a groove. Preopercle with two radiating ridges, each ending in a spine. About 28 spinous projections on the head in all, the number on the suborbital region much less than in *vulsus*. Eye much smaller than in *A. vulsus*, much shorter than snout, nearly 4 in head. Ocular ring not serrated, developed only above the eye. Body similarly armed, but the spines rather blunter and the back and belly less concave. There are no series of spines along the bases of pectorals and caudal. The abdominal series join behind close to the end of the ventrals, as the dorsal series close behind the second dorsal. The dorsal fins are separated by about two scales. The ventral fins are short, the fin scarcely half the length of the snout, the vent close behind its base; no visible groove ("Podotheucus") at their base. Pectorals reaching about to front of anal. Breast with about nine large plates. Isthmus present.

D. IX, 7; A. 8. Lat. l. 37.

Barbels greatly developed, as long as the diameter of the eye, arranged in three tufts, one at each angle of the mouth and one under the snout. None on the branchiostegal region. The type of the present description of *Agonus acipenserinus* is in the museum of the California Academy of Sciences, and came from Vancouver's Island. It does not agree well with the account of *Podotheucus peristethus* of Gill, although Professor Gill considers the two identical.*

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* See also Steindachner (Ichthyol. Beiträge, ix, p. 18), where the same opinion is expressed. In this article ("Ueber zwei neue Agonus-Arten aus California") *Brachyopsis verrucosus* Lockington is described as *Agonus (Brachyopsis) Barkani*, and *Brachyopsis xyosternus* Jor. & Gill, as *Agonus (Brachyopsis) Anna*. The date of publication of *B. verrucosus* is May 24, of *B. xyosternus*, July 2, while *A. Barkani* and *A. Anna* were "Vorgelegt in der Sitzung am 15 Juli 1880." It is certain, therefore, that the American names are entitled to the right of priority.—D. S. J.