

**DESCRIPTION OF SEVEN NEW SPECIES OF SEBASTOID FISHES,  
FROM THE COAST OF CALIFORNIA.**

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The Sebastoid fishes of the coast of California have been referred by Professor Gill to four genera: *Sebastodes* (type *paucispinis*), *Sebastosomus* (type *melanops*), *Sebastomus* (type *rosaceus*), and *Sebasticthys* (type *nigrocinctus*), the first separated by the small size of the scales, the others mainly differentiated by the degree of development in the spines of the head. The genus *Sebastodes* we consider valid, referring to it only *paucispinis*, although the affinities between *paucispinis* and the group termed *Sebastosomus* are not remote, as is shown by the smooth head, protruding lower jaw, small scales, and longer anal fin in the latter group.

The discovery by us of numerous additional species not known to Professor Gill renders it evident to us that the groups *Sebastosomus* and *Sebastomus* cannot be maintained as genera distinct from *Sebasticthys*, and that, in order to recognize them as subgenera even, a different distribution of the species must be adopted.

The Californian species known to Professor Gill are distributed by him as follows:

Genus SEBASTODES.  
    *paucispinis*.

Genus SEBASTOSOMUS.  
    *melanops*.  
    *simulans*.  
    *flavidus*.  
    *ovalis*.  
    *pinniger*.

Genus SEBASTOMUS.  
    *elongatus*.  
    *rosaceus*.  
    *ruber*.  
    *auriculatus*.  
    *nebulosus*.

Genus SEBASTICHTHYS.  
    *nigrocinctus*.

The following arrangement expresses our present views as to the relations of the species known to us, so far as it can be shown in a linear series.

Genus SEBASTODES.  
    *paucispinis*.

Genus SEBASTICHTHYS.  
    Series (or subgenus) *Sebastosomus*.  
        *melanops*.

simulans.

flavidus.

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 ovalis.
Series (or subgenus) *Sebastichthys*.

atrovirens.

pinniger.

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 elongatus.

---

 rubrivinctus.

---

 auriculatus.

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 vexillaris.

chlorostictus.

rosaceus.

constellatus.

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 ruber.

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 rastrelliger.

nebulosus.

fasciolaris.

serriceps.

nigrocinctus.

Of the foregoing species we have examined a large series of all except *oralis*, *rubrivinctus*, and *nigrocinctus*. All the species except *nigrocinctus*, *oralis*, and *rubrivinctus* are of frequent occurrence in the San Francisco markets.

The characters drawn from the presence or absence of the different pairs of spinous ridges on the top of the head are among the most reliable in this group, although not hitherto accurately given by the describers of the species. Some individual irregularities may be observed, but these are usually readily detected.

For these spines we have adopted the following names: *Nasal*: those near the nostrils; present in all our species of *Sebastichthys*. *Preocular*: for those above the front of the eye; present in all except *flavidus* and *simulans*. In *melanops* the ridge is present, but it usually does not end in a spine. *Supraocular*: above the eye; present in all but *simulans*, *melanops*, and *flavidus*. *Postocular*: close behind these; present in most of the red species, usually wanting in others. *Tympanic*: behind the postocular, and generally present. *Occipital*: long ridges on the posterior part of the head on each side of the occipital crest. These ridges end in spines in all except *melanops*, *simulans*, and *flavidus*. *Coronal*:

a pair of distinct spinous ridges in front of the occipital ridge; present in one species only—*auriculatus*. *Nuchal*: close behind the occipital; in one species (*serriceps*) large and distinct, in the others either wanting or often coalescent with the preceding.

Two suprascapular spines are present in all the species except *auriculatus*, which has three on each side.

The following table gives the names of the spinigerous ridges on the top of the head usually present in each species, beginning with those in which the ridges are least elevated:

	Pairs.
<i>Paucispinis</i> , preocular, occipital .....	2
<i>Flavidus</i> , nasal .....	1
<i>Melanops</i> , nasal and preocular .....	1 or 2
<i>Simulans</i> , nasal .....	1
<i>Ovalis</i> , nasal, preocular, supraocular, postocular, tympanic, and occipital .....	6
<i>Pinniger</i> , nasal, preocular, supraocular, postocular, tympanic, occipital .....	6
<i>Atrovirens</i> , nasal, preocular, supraocular, occipital, and sometimes tympanic ...	4 or 5
<i>Elongatus</i> , nasal, preocular, supraocular, tympanic, occipital .....	5
<i>Rastrelliger</i> , nasal, preocular, supraocular, tympanic, occipital .....	5
<i>Auriculatus</i> , nasal, preocular, supraocular, tympanic, coronal, occipital, and often nuchal .....	7
<i>Vexillaris</i> , nasal, preocular, supraocular, occipital, and sometimes tympanic ...	4 or 5
<i>Chlorostictus</i> , nasal, preocular, supraocular, postocular, tympanic, occipital ....	6
<i>Rubrivinctus</i> , nasal, preocular, supraocular, tympanic, occipital .....	5
<i>Rosaceus</i> , nasal, preocular, supraocular, postocular, tympanic, occipital .....	6
<i>Constellatus</i> , nasal, preocular, supraocular, postocular, tympanic, occipital .....	6
<i>Nebulosus</i> , nasal, preocular, supraocular, tympanic, occipital .....	5
<i>Ruber</i> , nasal, preocular, supraocular, postocular, tympanic, occipital .....	6
<i>Fasciolaris</i> , nasal, preocular, supraocular, tympanic, occipital .....	5
<i>Serriceps</i> , nasal, preocular, supraocular, tympanic, occipital, nuchal .....	6
<i>Nigrocinctus</i> , nasal, preocular, supraocular, postocular, occipital .....	5

The character of the gill-rakers has been hitherto unnoticed. In this regard the species may be grouped as follows:

1. Long and slender: *flavidus*, *simulans*, *ovalis*, *pinniger*, *melanops*, *atrovirens*.
2. Long and rather strong: *vexillaris*, *elongatus*, *chlorostictus*, *rosaceus*.
3. Stout and rather short, usually not clavate, but constricted toward the tips: *rubrivinctus*, *auriculatus*, *constellatus*, *ruber*.
4. Stout, short, compressed, and clavate: *nebulosus*, *fasciolaris*, *serriceps*, *nigrocinctus*.
5. Very short, broader than high: *rastrelliger*.

SEBASTICHTHYS ATROVIRENS sp. nov.

Allied to *S. pinniger*. Body oblong, not very stout, not tapering rapidly backward. Head moderate, rather pointed, its upper outline with a slightly curved slope from the snout to the nuchal region.

Mouth moderate, not very oblique, the lower jaw little projecting, the rather slender maxillary extending to the posterior border of the pupil; the premaxillary below the horizon of the pupil. Maxillary largely scaly. Eye large, about three and a half times in length of head.

Ridges on top of head rather low, not ending in very prominent spines. The following pairs are present: *Nasal, preocular, supraocular,* and *occipital*, four in all. Occasionally the tympanic spine is also developed, although very small. The nasal spines are quite prominent. The preocular and superocular moderately so, but short. The occipital spines are comparatively short and low.

Preorbital bone with the neck very narrow, scarcely one-fifth the diameter of the eye, provided anteriorly with two stout spines, which project backward.

Preopercular spines short, but rather sharp, the second longer and slenderer than the others, all of them pointed. Subopercle and interopercle with spines. Opercular and suprascapular spines sharp.

Interorbital space rather broad and slightly convex, widened backward, a little depressed on each side next the supraocular spine, its width less than that of the eye and more than the length of the occipital spine.

Gill-rakers long and slender, but stouter, rougher, and shorter than in *S. pinniger*, 9 above the angle and about 22 below; the longest two-fifths the diameter of the eye, about half the interorbital space.

Scales on the head rather large, about 15 in a cross-series on the checks above the suborbital stay. Preorbital scaly.

Scales on body large and somewhat more regularly arranged than usual. Accessory scales present, but not numerous: 52 transverse series of scales.

Dorsal spines moderate, the fifth and sixth spines highest, the others regularly shortened each way, the twelfth about as long as the first, the membrane joining the thirteenth less than half way up; the highest spine rather less than half the length of the head and lower than the soft rays, which are rather high. Caudal slightly rounded.

Anal fin short and high, its spines slender, the second shorter than the third, and not much stronger. Pectorals long and narrow, reaching past the vent and nearly to the beginning of the anal, their length seven-eighths that of the head, *their base quite narrow*, less than the diameter of the eye. Ventrals long, reaching just past the vent.

D. XII, 1, 14; A. III, 7.

Color similar to that of *S. rastrelliger*, but paler, usually olive-green, marbled with darker; belly pale yellowish green; fins olivaceous. Sometimes this species is quite dark, but it never shows red tints either on body or fins.

This species is closely related to *S. pinniger*, from which it differs in the absence of the postocular and tympanic spines and in the coloration, *S. pinniger* being always chiefly orange-red. Externally it resembles *S. rastrelliger* most, but it may be known at once from the latter species by the long gill rakers and narrow pectorals.

*S. atrovirens* is very abundant from Point Concepcion as far as San Diego. About Catilina Island it is the most abundant species of the

genus. It is frequently seen in the San Francisco markets. It reaches a length of about 15 inches, and is usually known as Garrupa or Grouper.

SEBASTICHTHYS RUBRIVINCTUS sp. nov.

Body robust, rather deep and compressed, tapering behind to a slender caudal peduncle.

Head long, acute in profile, there being a nearly straight slope from a bony prominence in front of the spinous dorsal to the tip of the lower jaw. Mouth rather large, oblique, the lower jaw strongly projecting. Maxillary broad, scaleless, extending to opposite the middle of the eye; anterior edge of premaxillary on the level of the lower border of the eye.

Ridges on top of head quite low, five pairs of them ending in spines, which are bluntish and depressed. *Nasal, preocular, supraocular, tympanic, and occipital* spines present. In one example the nasal spines are covered by the skin. Ocular ridges not much elevated.

Interorbital space flattish, narrow, not so broad as the eye, not widened behind, covered with rather sparse, almost cycloid, scales. Two long frontal ridges extend the length of the interorbital space. These are covered with bare skin. Behind and between these are two shorter ridges occupying the place of the coronal ridges found in *S. auriculatus*. These two are covered by naked skin, and do not end in spines. Tympanic spines well developed. Occipital ridges long, curved, diverging behind.

Suborbital stay very prominent, its tip nearly reaching the preopercle.

Preopercle with five very strong spines, the three uppermost very long and sharp, the second the longest. Subopercle and interopercle entire. Opercle above with two sharp, long spines. Suprascapular with two strong spines. Preorbital very wide, its neck two-fifths the diameter of the eye, with one sharp spine and a large prominence, which usually ends in a spine also.

Eye extremely large, its diameter  $3\frac{3}{4}$  in length of head.

Gill-rakers rather short, rather robust, much compressed, toothed on the inner margin, the longest about one-fourth the length of the eye. Gill-rakers  $8 + 20$  in number, about  $4 + 16$  of them being free.

Scales on head all small and thin, mostly cycloid, the minute accessory scales extremely numerous. Scales of body smoother than usual, the accessory scales numerous on the posterior part and on the nuchal region, where the scales generally are smaller and more crowded than on the flanks.

Dorsal spines robust, rather high, the fifth the highest, not quite half the length of the head; those behind rapidly shortened to the twelfth; the twelfth spine lower than the first and much less than half the height of the fifth, its membrane joining the thirteenth spine below its middle. Soft rays about equal in height to the spines. Caudal fin very slightly emarginate. Anal rather low, its second spine much longer and stronger than the third, both robust. Pectorals moderate, not reaching vent;

the base moderate, nearly equal to the diameter of the eye. Ventrals not reaching tips of pectorals.

D. XIII, 14; A. III, 7. Scales in about 48 transverse series.

Color very pale rose-red, almost white, with cross-bars of a deep, intense crimson-red, these bands broadest on the back. One of the bands runs across the eye, snout, suborbital, and maxillary, with indistinct boundaries; the next across the nuchal region and front of dorsal and opercle; the next across the middle of the spinous dorsal, including the ventrals and the posterior half of the pectorals; another across the soft dorsal and anal; another across the base of the caudal, the fin itself being deep rose color. The other fins share the color of that part of the body against which they lie.

This species is known from two examples, each about one foot long, taken on a reef in Santa Barbara Channel, by J. Weinmiller, February 14, 1880.

Afterwards about eight others, larger than the original types, were taken in deep water near Monterey. It is known to the fishermen as the "Spanish Flag," and is the most brilliantly colored large fish on the Pacific coast.

Its relations to the other red species are not intimate.

#### SEBASTICHTHYS VEXILLARIS sp. nov.

Body stout and compressed; the back elevated; the form rather deeper and more elliptical than in the other red species. Head moderate; the profile moderately acute. Mouth rather large, moderately oblique, the broad maxillary usually extending to a point somewhat behind the orbit. Premaxillary anteriorly on the level of the lower edge of the pupil. Jaws subequal, the lower somewhat projecting, but without symphyseal knob; the upper jaw not emarginate.

Ridges on top of head long and low, rather broader and lower than in the other red species; their spines rather depressed. The following pairs of spines are present, four or five in all: *Nasal*, *preocular*, *supraocular*, *occipital*, and sometimes *tympanic*. The nasal spines are prominent; the preocular spines are quite conspicuous and extend well backward; the supraocular ridge is depressed and broad, its spine triangular; the occipital spines are rather long and diverge backward. In some specimens a tympanic spine is present, which is wanting in the others. The interorbital space is broad and flattish, broader than in related species, about equal to the diameter of the orbit. It is occupied by two raised ridges, which are covered by the scales. In large specimens these ridges are quite obscure.

Preopercular spines moderate; some of them usually divided into two, three, or four at tip, the middle one the largest. The degree of division of these spines is quite variable, but at least the middle spine is usually divided.

Posterior border of the interopercle with a strong spine, above which

are one to three conspicuous spines on the subopercle. Opercle with two diverging spines, above which are two suprascapular spines.

Eye moderate, high up, 4 to  $4\frac{1}{2}$  in head. Preorbital with the neck very broad, with two bluntnish downward-directed spines in front, its narrowest portion two-fifths the diameter of the eye. Suborbital stay short and rather weak. Maxillary and preorbital with fine scales.

Gill-rakers rather long and strong, compressed, toothed on the inner margin, shorter than in *atrovirens*, the longest slightly clavate, about half the length of the eye; the number about  $\frac{8}{19}$ , nearly all of them free.

Scales moderate, with few accessory smaller ones, in 55 transverse series.

Dorsal spines very strong and high, about as in *chlorostictus*, higher than in any other species; the first about half as long as the eye; the fourth the highest, more than half the length of the head, and much higher than the soft rays. The twelfth spine is a little higher than the first, and its membrane joins the thirteenth about half-way up. Membrane of spinous dorsal rather more deeply incised than in other species. Soft dorsal rather high, but lower than the spines.

Anal spines much smaller than in *rosaceus*, etc.; the second not longer than the third, and not much stronger; about two-thirds as high as the soft rays. Soft rays of anal high. Caudal truncate. Pectoral shorter than head, not reaching the vent; its base rather broad.

Ventrals moderate, not reaching vent.

D. XIII, 16; A. III, 6.

Color rather bright and pale, yellowish red, becoming lighter below, the reddish and yellowish forming large and irregular areas, sometimes one shade predominating, sometimes the other. A pink cross-blotch on the back at the base of the second and third dorsal spines. Upper parts of the head mostly pink, with broad olive shades running backward, one on the lower lip, one on the maxillary, one from preorbital region downward, one from the eye backward and downward across the cheeks, and another across the opercular spines. Fins all pinkish red; the membranes olive. Top of head usually with alternating cross-shades of pinkish and yellowish. In some specimens the yellowish shades are replaced by light olive. Others are quite red; others still are quite brownish. The spots on the back show a tendency to the rosy spots found in *constellatus* and *rosaceus*.

This species was first known to us from two specimens taken on a reef in Santa Barbara Channel. A single example was afterwards noticed in the museum of the California Academy of Sciences, and numerous others have been since obtained in the San Francisco markets, where it is very common. It reaches a larger size than its relatives, *chlorostictus* and *constellatus*, found in the same markets, and, like them, it has been confounded by previous observers with *rosaceus* and *auriculatus*. It may be known from its relatives by its high dorsal spines, low

anal spines, and the smaller number of ridges on the top of the head. Its relations are probably more near to *S. nebulosus* than to the other red species.

SEBASTICHTHYS CHLOROSTICTUS sp. nov.

Body oblong, tapering into a rather slender caudal peduncle, the back not much elevated. Head moderate, the profile rather steep, with a nearly even slope.

Mouth large, oblique, the maxillary reaching to behind the pupil, the premaxillary in front below the level of the large eye. Jaws equal in the closed mouth, the tip of the lower fitting into the emarginate upper jaw; a rather conspicuous symphyseal knob. Preorbital sinuate, usually with two or three flat spines.

Ridges on top of head rather sharp and high, ending in sharp spines. These ridges are longer than in *nebulosus* and *serriceps*, and much less elevated. These ridges are much higher than in *rexillaris*; about as in *constellatus*.

The following pairs of spines are present: *Nasal*, *preocular*, *supraocular*, *postocular*, *tympanic*, and *occipital*—6 pairs.

Interorbital space concave, with two rather prominent ridges.

Preopercular spines rather sharp, the second longest and slenderest; the lower bluntish, but well developed. Opercular spines sharp; suprascapular spines well developed. A spine on interopercle and on subopercle.

Gill-rakers long and rather strong, not clavate, the longest about two-fifths the diameter of the eye. They are longer than in any other of the red group, rather longer than in *rexillaris*. Scales on head less developed than in *S. constellatus*; the snout wholly free from scales. Mandible nearly or quite naked. Scales on body moderate, in about 55 transverse series.

Dorsal spines very high, nearly as high as in *rexillaris*; the fourth highest, one-third higher than the soft rays, which are also considerably elevated.

Dorsal fin rather deeply emarginate; caudal fin emarginate; anal fin not very high, its second spine much higher and stronger than the third, about as high as the soft rays. Pectorals with moderate base reaching beyond tips of ventrals, about to vent.

D. XII, 14; A. III, 6.

Color rather light olivaceous above, and pinkish overlaid with golden on the sides. Head light red and golden. Three roundish light spots placed as in *constellatus* and *rosaceus*, but much less distinct. There are no small light spots on the body. The upper parts of the body, from just below the lateral line, are closely covered with small round spots of a clear olive-green. These spots are most distinct on the back and the top of the head. On the sides of the body, just above and below the lateral line, these spots form two continuous series, following the course

of the lateral line. Eyes above with green spots. Fins nearly plain red; the dorsal spotted with olive.

This species is known to us from numerous specimens obtained in the San Francisco market, taken in deep water at Monterey. It is not rare, but it has been hitherto confounded with *rosaceus*, from which it may be known at once by the green spots and the great height of the dorsal.

SEBASTICHTHYS CONSTELLATUS sp. nov.

Body rather robust, heavy forwards, tapering into a rather slender caudal peduncle. Head rather pointed in profile, the slope nearly straight from the tip of the snout to the base of the dorsal.

Mouth large, oblique, the lower jaw slightly projecting beyond the emarginated tip of the upper jaw. A conspicuous knob just beyond the symphysis of the lower jaw.

Maxillary very broad, extending to beyond the line of the pupil, its middle part with many small scales; premaxillary in front just below the level of the eye.

Ridges on top of the head well developed, rather high and narrow, ending in moderate spines. The following pairs are present: *Nasal*, *preocular*, *supraocular*, *postocular*, *tympanic*, and *occipital*. The interorbital area has two prominent ridges covered by the scales, and not ending in spines. Behind these is a deep concavity. The nasal spines are bluntish, the preocular sharp, the supraocular ridge rather short, the postocular and tympanic similar to each other. The occipital ridge is long, curved, ending in a sharp spine. Two suprascapular spines. Preopercle with its first and third spines triangular, bluntish, the second long and sharp, the fourth and fifth reduced to bluntish prominences. Opercle with two strong spines above. Slight spines on the subopercle and interopercle.

Preorbital wide, its neck about one-third the diameter of the orbit, its edge lobed, without spines.

Eye large,  $4\frac{1}{2}$  in head.

Muzzle and preorbital scaled to the tip of the snout more completely than in other species, mandible scaly.

Gill-rakers short, very thick, compressed, clavate, with a tuft of spine-like teeth at tip, the longest of them about one-fifth the diameter of the eye, their number  $3 + 24$  free ones, besides rudiments. Scales strongly ctenoid, the accessory scales largely developed; 53 transverse series.

Dorsal spines rather strong, rather low, the fourth the longest, a little more than one-third the length of the head. Twelfth spine rather short, shorter than the first, its membrane joining the thirteenth spine about half-way up.

Soft dorsal rather low, about equal to the spines.

Anal with the second spine robust, curved, considerably longer than the third, higher than the soft rays. Caudal very slightly emarginate.

Pectorals reaching beyond tips of ventrals, about to vent, their length two-thirds that of the head.

D. XIII, 13; A. III, 6.

Head densely covered with small scales; a series across the cheeks along the upper edge of the suborbital stay usually numbering 30 to 40, the increased number being due to the greater development of the accessory scales.

Color rather light, bright orange-red, the back olive shaded, the belly yellowish. Cheeks with red and yellowish shades. Head and body everywhere closely covered with small roundish pale spots. The spots above are light rose color; below are nearly white and larger. Four or five roundish rose-colored spots on the back, besides some mottlings of a similar shade. The first spot, often obscure, under the fourth dorsal spine; the next near the lateral line under the eighth dorsal spine; the next close to the junction of the two parts of the dorsal; the fourth under the end of the soft dorsal; a fifth sometimes near the base of eighth dorsal spine. Opercular flap with a rosy spot. Fins light reddish, shaded with olive, or nearly uniform. Dorsal speckled at base with light and dark.

This beautiful species was first noticed by us in Santa Barbara Channel, where a single example was obtained. It is abundant in the markets of San Francisco, where it has been confounded with *rosaceus* on account of the similarity of the pink spots. The numerous stellate light spots, however, distinguish it at sight. It is very closely related to *rosaceus*, however.

The discovery of three species in the waters of California having the light spots supposed to distinguish *S. rosaceus*, invalidates the identification of that species with the similarly spotted *S. oculatus* of Chili.

#### SEBASTICHTHYS RASTRELLIGER sp. nov.

Body rather oblong, deepest at the shoulders, slowly tapering backward to a rather deep caudal peduncle; head short, rather blunt and deep, the upper profile straight; mouth moderate, little oblique, the maxillary reaching to the posterior margin of the eye, the premaxillary rather below the level of the eye; jaws equal, the lower convex, not produced at tip, and without symphyseal knob.

Preorbital bone moderate, the width of its neck about two-fifths the diameter of the eye, its free margin sinuate, without spines.

Eye moderate, anterior, its diameter about  $4\frac{1}{2}$  in head.

Ridges on head strong, but broad and depressed, ending in small spines. The following pairs present: *Nasal*, *preocular*, *supraocular*, *tympanic*, and *occipital*, five in all. The occipital ridges are very long, equaling the diameter of the orbit; preopercular spines short and stout, the two upper subequal; opercular spines usually very broad and flat, their posterior edge sometimes serrated or bifid; suprascapular spines strong; spines on interopercle and subopercle small, sometimes obsolete; inter-

orbital space moderate, less than the diameter of the eye, flattish, with two low ridges; spines of head little divergent backwards.

Gill-rakers *very short*, wide, compressed, the longest as wide as high, the shortest much wider and not free, all strongly toothed on anterior margin and side; the number about  $\frac{7}{14}$ , only 6 to 9 of them being movable.

Scales on body large, the accessory scales almost wanting; about 45 transverse series, and about 50 in the course of the lateral line.

Dorsal spines low, the fifth highest, about two-fifths the length of the head; the last spines not much shortened; the fin comparatively little emarginate; soft rays considerably higher than the spines. Caudal fin slightly rounded. Anal fin short and high, its spines low, the second as high as the third and much stouter. Pectorals rather short, reaching vent, *their base extremely broad*, its width greater than the length of the eye and about one-third the length of the head; the lower rays much thickened. Ventrals moderate, not quite reaching the tips of the pectorals.

D. XIII, 13; A. III, 6.

Color blackish green, with paler mottlings, the sides spotted with darker; belly pale greenish, often many scales on the side, each with a darker spot; paired fins dark, often tinged with reddish; other fins chiefly olivaceous, mottled with darker; anal fin often spotted with black. The brightness of the olive and greenish shades is quite variable, but the species is always without bands or distinct markings and without distinct red.

This species is extremely abundant from Point Concepcion to Santa Catalina Island, and large numbers come into the San Francisco market. It may be known at once from all the others by the small gill-rakers ("rastra") and by the breadth of its pectoral fins. It grows to the length of about 15 inches.

*S. rastrelliger* is intermediate, in regard to the development of the spines, between the groups termed *Sebastes* and *Sebastosomus* by Professor Gill. Its relations with *S. nebulosus* are most intimate, and it forms the base of a series ascending in degree of roughness of head, terminating in the extreme of *S. nigrocinctus*.

#### SEBASTICHTHYS FASCIOLARIS Lockington, *nom. sp. nov.*

(*Sebastes fasciatus* Girard, not of Storer.)

The form described and figured by Girard as *Sebastes fasciatus* is, in our opinion, specifically distinct from *Sebastes nebulosus* of Ayres, with which it has usually been identified.

The name *fasciatus* is preoccupied in this group. We have therefore adopted the above name, proposed by Mr. Lockington in MSS.

*Sebastichthys fasciolaris* is very closely related to *S. nebulosus*. It is rather stouter, and the slope of the profile is steeper. The ridges on

the top of the head are much higher and stronger, especially the occipital ridge, which forms a wall-like elevation, much as in *S. serriceps*. The sides of this ridge are vertical, or even directed upward.

The color of this species is very constant and quite distinct from that of *nebulosus*. It is nearly black, everywhere speckled with whitish. There are coarse yellowish blotches on the sides of the head and body, and a broad, yellowish, lateral band. This band begins on the membrane of the third and fourth dorsal spines, and extends downward to the lateral line, which it follows to the tail. The edges of this band are very uneven, and it is of varying width, but it is always distinct and continuous. The body is mottled with light and dark, and the fins are all blackish, with pale spots.

In the bluntish spines of the sides of the head, the horizontal mouth, with shortish subequal jaws, the short, thickish gill-rakers, the high dorsal spines, and moderate, subequal anal spines, this species agrees with *S. nebulosus*. Both species are common in the San Francisco market, in about equal abundance.

*Measurements in hundredths of length to base of caudal.*

	<i>Serriceps</i> .	<i>Rastrrelliger</i> .	<i>Atrorivinus</i> .	<i>Rubrivinctus</i> .	<i>Vexillaris</i> .	<i>Chlorostictus</i> .	<i>Constellatus</i> .
Body:							
Greatest height .....	38	36	35.5	40	36	34.5	41
Least height of tail .....	11	12	12	10	12.5	9.5	9
Head:							
Greatest length .....	35	41	37.5	38	37.2	40	42
Snout .....	10	9	9.2	11	8.5	10	11.3
Orbit .....	8.5	8.5	11	9.5	8	-----	11.5
Interorbital space .....	5	6	8	5.7	7	6.8	6
Least width of preorbital .....	3	2.5	1.5	3	2	-----	2.5
Maxillary .....	18	20	17	16	17.5	18.5	20.6
Longest gill-raker .....	2.5	1.5	3.5	2.3	3	3.8	4
Occipital ridge .....	6	8	6	9.3	6.5	7.5	8
Supraocular ridge .....	5	6	6	6	5	5.2	6
Dorsal:							
Snout to dorsal .....	32.5	35	37	38	33	36.2	40
Longest spine .....	13	13	16	16	21	21.5	15
Longest ray .....	15.5	16	19	15	15.2	16.7	14
Anal:							
Base .....	13.5	15	15	12.5	15	13	-----
Second spine .....	14	12	14.5	15	14.6	16.6	16
Third spine .....	14	9	15	13.5	12.2	14.5	13
Longest ray .....	22	19	20	20	20	18	15
Caudal, length .....	20.5	20	21	15.3	17.5	18	18.5
Pectoral, length .....	27	27	32	24	27	-----	24
Width of base .....	11	11	8.8	9.5	11	9.5	10
Ventral, length .....	26.5	22	24.5	19.5	22	21	18
Dorsal .....	XIII, 13	XIII, 13	XIII, 14	XIII, 14	XIII, 13	XIII, 13	XIII, 14
Anal .....	111.5	111.6	111.7	111.7	111.6	111.6	111.6
Transverse rows of scales, ..	53	47	47	50	56	42	48
Length to base of caudal, in inches .....	8.7	9.25	7.25	9.7	11.3	9.3	6.23
Extreme length, in inches .....	10.4	11.3	8.75	11.3	14.25	11.2	8.55

SAN FRANCISCO, CAL., February 28, 1880.

NOTE.—The publication of this paper has been accidentally delayed for some time. Meanwhile the writers have discovered a number of additional species of *Sebastichthys* descriptions of which precede those of the present species, although of course no allusion is made to them in this earlier paper.