Key to the Juvenile Rockfishes of Central California

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ABSTRACT

This key, based on meristic data, provides help in the identification of 42 species of pelagic juvenile rockfish (genus Sebastes) occurring along the central California coast. It is designed primarily to identify fish over 25 mm standard length, but is helpful in identifying certain species as small as 15 mm. Meristic data are drawn from adult fish and are supplemented with extensive descriptions of the juvenile rockfish obtained during 1983-1991 rockfish recruitment surveys. In addition to a description of each species, appendices are included with additional information about identification of difficult groups of species.

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INTRODUCTION

This key was designed to facilitate the accurate identification of juvenile rockfish that are commonly found off the central California coast. Identification of every specimen may not be possible because, for some species, no juvenile forms are known. Additionally, some species cannot be completely separated by meristics and head spine patterns. If juveniles of these species are not known to have any unique characteristics, they cannot be differentiated. The Sebastomus group is the classic example of such a group.

It is important to note that the meristic data used here to identify juveniles are drawn from adults. If the juvenile population is more variable than the adult, this will result in some fishes being misidentified.

HOW TO USE THIS KEY

Scope

This key was designed for use in identifying juvenile *Sebastes* off the central California coast. It includes the following species:

S. alutus
S. atrovirens
S. auriculatus
S. aurora
S. babcocki
S. carnatus
S. caurinus
S. chlorostictus
S. chrysomelas
S. constellatus
S. crameri
S. diploproa
S. elongatus
S. entomelas
S. eos
S. flavidus
S. goodei
S. helvomaculatus
S. hopkinsi
S. jordani
S. levis
S. maliger
S. melanops
S. melanostomus
S. miniatus
S. mystinus
S. nebulosus
S. nigrocinctus
S. ovalis
S. paucispinis
S. pinniger
S. proriger
S. rastrelliger
S. rosaceus
S. ruberrimus
S. rubrivinctus
S. rufus
S. saxicola
S. semicinctus
S. serranoides
S. wilsoni
S. zacentrus

Organization of the Key

This key is appropriate for identifying fish greater than 15 mm in standard length or whenever meristics and head spines are completely developed. Juvenile pigment patterns are usually not well established until fish are greater than 25 mm and therefore are of limited value in identifying fish smaller than this.

This key is organized by fin ray counts. Accurate counts should be made of the dorsal soft rays, the anal soft rays, and the pectoral rays and then turn to the appropriate section (D = dorsal ray count; A = anal ray count; P = pectoral ray count). After each section, there is a list of the species that "typically" exhibit that combination of meristic characters. Species are included in this list if that particular count of all three meristic characters (D, A, and P) is found in at least 15% of the adults of that species. This meristic data was obtained from available literature which is individually cited for each species in the Appendix I. If you have a group of fish that you believe are all one species, find the mode of each count (D, A, and P) and consider only the species listed as "typical" when using the key. There is also a section that lists species that "may" exhibit this particular combination of meristic characters in some individuals. Species are included here if at least two of the fin ray counts are found in more than 15% of the adults of that species. If you have one specimen or are unsure a group is composed of a single species, consider these species as well as the "typical" species when using the key. A third section on each page lists "unlikely" species. If your identification is seriously in doubt, use this section for further investigation.

Several appendices are provided which give additional information for differentiating the members of difficult groups. References to these appendices are made in the key. Appendix I

provides a brief description of the adults of each species and any available information of the juveniles.

Examination of Specimens

Specimens should be kept under water at all times (brief drying for lateral line pore counts excepted). A good quality dissecting microscope with substage lighting as well as overhead lighting is essential. Probes, forceps, and calipers are the only tools generally needed.

First, look for any distinctive pigment pattern or color. Some of the keys will list a fish as being "distinctive." If "distinctive," refer to the Appendix I and see the pigment pattern description under "Juvenile Characteristics". Another important trait to observe is a black spot on the posterior section of the spinous dorsal fin.

Fin ray numbers should be counted next. Substage lighting helps in obtaining accurate counts of the dorsal and anal fin soft rays. Care must be taken with the last element of both fins. This last element may be branched all the way to the base. It is counted as one element. Count the bases if possible. Pectoral ray counts present less of a problem, but it is possible to overlook a small first ray unless the count is carefully done. Count the pectoral rays on both sides. If the pectoral soft ray count is different on each side of your specimen, use both counts in the key; it should key to the same species.

Once these counts have been obtained, locate the appropriate page(s) in the key (i.e., D = dorsal soft ray count; A = anal soft ray count; P = pectoral soft ray count). Included also are groupings by just dorsal counts and dorsal and anal counts in the event that anal and/or pectoral fin ray counts cannot be accurately obtained. If more than one species have the same meristics, then ideas for their differentiation are included. In instances where there are sections entitled "Key for ...," these refer to the species listed in the two most likely species groups, but not to the "Possible But Unlikely" group.

To identify your specimen, you may also have to obtain gill raker and lateral line pore counts. It is sometimes easiest to remove the first gill arch on the right side for a gill raker count, but this may produce an error since one or two rakers may be left in the opercular cavity or be destroyed by the removal. To avoid this error, hold the operculum up with a finger or a pin and count the rakers in situ. Easier gill raker counts are possible with the introduction of a grain of Alizarin Red S stain into the gill cavity. Lateral line pore counts are made by thoroughly drying the fish and examining under the scope. If pores are not easily visible, apply black washable ink to the lateral line on the right side with a fine water-color brush; then the pores should be easier to count.

Some key instructions refer to head spines, interorbital space and anal fin spines. Head spine configuration of a juvenile <u>Sebastes</u> may differ from that of the adults. In all

species in which the juveniles are known, however, the supraocular and coronal spines have consistent patterns of development from juvenile to adult. Therefore, this key uses these two spines, even in instances where the juvenile form is unknown. If a coronal or supraocular spine appears only on one side, key as "spine present."

Juvenile interorbital spaces are similar to adults. Examine and grade as concave, convex, or flat. This character becomes easier to grade with practice.

The length of the second anal spine changes somewhat with growth. The general pattern is for the second spine to decrease in length relative to the third spine as specimen length increases. If the key indicates ">," it means significantly longer. This character also becomes easier to grade with practice.

Once a specimen is keyed to one or several species, use Appendix I to further clarify your identification. For example, the key may lead you to two or more species with overlapping meristics. The gill raker count of your specimen (or some other character) may eliminate one of the listed species.

Lastly, realize that you will not be able to identify every specimen. Atypical individuals will be found. Until juveniles of every species are completely described, a key of this type cannot differentiate all specimens.

ACKNOWLEDGEMENTS

Much of the work included here relies on work by others. Special thanks must be extended to Tina Wyllie Echeverria. Her extensive unpublished work on Sebastes meristics was the foundation for this effort. Even more basic, however, was her continual support and enthusiasm for this project.

FIN RAY KEY

D=11

There are no species in which the dorsal soft ray count is commonly 11.

Some individuals of several species occasionally show a count of 11:

- S. caurinus
- S. chlorostictus
- S. diploproa
- S. eos
- S. rosaceus
- S. saxicola

D=11 A=5

This combination of meristics is not typical for any species.

Possible but unlikely are:

- S. caurinus
- S. chlorostictus
- S. diploproa
- S. rosaceus
- S. saxicola

D=11 A=6

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

- S. caurinus
- S. chlorostictus
- S. diploproa
- S. eos
- S. rosaceus

Possible but unlikely is:

- S. saxicola

D=11 A=6 P=15

This combination of meristics is not typical for any species.

Possible but unlikely is:

- S. saxicola

D=11 A=6 P=16

This combination of meristics is not typical of any species.

Some individuals of two species may exhibit this combination of characters:

S. chlorostictus *S. rosaceus*

These species are difficult to differentiate: see Appendix III.

Possible but unlikely are:

S. caurinus *S. eos*
S. diploproa *S. saxicola*

D=11 A=6 P=17

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. caurinus *S. eos*
S. chlorostictus *S. rosaceus*
S. diploproa

To differentiate *S. caurinus* from members of the *Sebastomus* group, see Appendices I and III.

Possible but unlikely is:

S. saxicola

D=11 A=6 P=18

This combination of meristics is not typical for any species.

Some individuals of three species may exhibit this combination of characters:

S. caurinus
S. diploproa
S. eos

Sebastes diploproa is distinctive: see Appendix I. Sebastes eos has deeply concave interorbital space and the second anal spine is >> third and much thicker. Sebastes caurinus has flat to slightly concave interorbital space.

Possible but unlikely are:

S. chlorostictus
S. rosaceus
S. saxicola

D=11 A=6 P=19

This is a very unlikely combination of meristics. If found consider:

S. diploproa

D=11 A=7

This combination of meristics is not typical for any species.

Some individuals of two species may exhibit this combination of characters:

S. diploproa
S. saxicola

Both of these species are distinctive: see Appendix I.

Possible but unlikely are:

S. caurinus
S. chlorostictus
S. eos
S. rosaceus

D=11 A=7 P=15

This is a very unlikely combination of meristics. If found, consider:

S. saxicola

D=11 A=7 P=16

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. saxicola

Possible but unlikely are:

S. caurinus
S. chlorostictus
S. diploproa
S. eos
S. rosaceus

D=11 A=7 P=17

This combination of meristics is not typical for any species.

Some individuals of two species may exhibit this combination of characters:

S. diploproa
S. saxicola

Both of these species are distinctive: see Appendix I.

Possible but unlikely are:

S. caurinus
S. chlorostictus
S. eos
S. rosaceus

D=11 A=7 P=18

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. diploproa

Possible but unlikely are:

S. caurinus
S. chlorostictus
S. eos
S. rosaceus
S. saxicola

D=11 A=7 P=19

This is a very unlikely combination of meristics for any species. If found, consider:

S. diploproa

D=11 A=8

No species is likely to exhibit this combination of meristics. Possible but unlikely are:

S. diploproa *S. saxicola*

D=12

Several species typically exhibit a dorsal soft ray count of 12:

S. carnatus
S. caurinus
S. chlorostictus
S. constellatus
S. diploproa
S. eos
S. helvomaculatus
S. levis
S. rosaceus
S. saxicola

Some individuals of several species may exhibit a count of 12:

S. atrovirens
S. auriculatus
S. aurora
S. babcocki
S. chrysomelas
S. crameri
S. elongatus
S. maliger
S. melanostomus
S. rastrelliger
S. semicinctus

D=12 A=5

This combination of meristics is not typical of any species.

Individuals of several species may exhibit this combination of characters:

S. caurinus
S. chlorostictus
S. constellatus
S. diploproa
S. helvomaculatus
S. rosaceus
S. saxicola

Possible but unlikely are:

S. aurora
S. crameri
S. elongatus

D=12 A=5 P=15

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. helvomaculatus
S. saxicola

D=12 A=5 P=16

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. chlorostictus	S. rosaceus
S. helvomaculatus	S. saxicola

Sebastes saxicola is distinctive: see Appendices I and III.

Possible but unlikely are:

S. aurora	S. constellatus
S. caurinus	S. elongatus

D= 12 A=5 P=17

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. caurinus	S. helvomaculatus
S. chlorostictus	S. rosaceus
S. constellatus	S. saxicola
S. diploproa	

To differentiate these species, use Key for D=12 A=5 P=17.

Possible but unlikely are:

S. aurora	S. elongatus

KEY FOR D=12 A=5 P=17

1a Two species are distinctive.....S. diploproa
S. saxicola
1b Not as above.....2

2a Supraocular spine present.....3
2b Supraocular spine absent.....S. caurinus

3a Interorbital flat to slightly concave....S. caurinus
3b Interorbital deeply concave; 2nd anal spine >> 3rd.....S. chlorostictus
S. constellatus
S. helvomaculatus
S. rosaceus

D=12 A=5 P=18

This combination of meristics is not typical for any species.

Some individuals of two species may exhibit this combination of characters:

S. caurinus
S. diploproa

Sebastes diploproa is distinctive: see Appendix I.

Possible but unlikely are:

S. aurora
S. chlorostictus
S. constellatus
S. crameri
S. elongatus
S. helvomaculatus
S. rosaceus
S. saxicola

D=12 A=5 P=19

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. crameri
S. diploproa

D=12 A=6

This combination of meristics is typical for several species:

S. carnatus
S. caurinus
S. chlorostictus
S. constellatus
S. diploproa
S. eos
S. helvomaculatus
S. levis
S. rosaceus

Some individuals of several other species may exhibit this combination of characters:

S. aurora
S. babcocki
S. chrysomelas
S. elongatus
S. maliger
S. rastrelliger
S. saxicola

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. crameri
S. melanostomus
S. semicinctus

D=12 A=6 P=15

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. helvomaculatus

Possible but unlikely are:

S. auriculatus
S. saxicola

D=12 A=6 P=16

This combination of meristics is typical for three species:

S. chlorostictus
S. helvomaculatus
S. rosaceus

Some individuals of several species may exhibit this combination of characters:

S. carnatus
S. caurinus
S. constellatus
S. elongatus
S. eos
S. saxicola

To differentiate these species, use Key for D=12 A=6 P=17.

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. aurora
S. maliger
S. semicinctus

D=12 A=6 P=17

This combination of meristics is typical for several species:

S. carnatus	S. eos
S. caurinus	S. helvomaculatus
S. chlorostictus	S. levis
S. constellatus	S. rosaceus
S. diploproa	

Some individuals of several species may exhibit this combination of characters:

S. aurora	S. maliger
S. chrysomelas	S. saxicola
S. elongatus	

To differentiate these species, use Key for D=12 A=6 P=17.

Possible but unlikely are:

S. atrovirens	S. babcocki
S. auriculatus	S. semicinctus

KEY FOR D=12 A=6 P=17

1a Several species have distinctive pigment patterns: see Appendix I ..... S. babcocki
S. diploproa
S. elongatus
S. levis
S. saxicola

1b Not as above.....2

2a Supraocular spines present.....3

2b Supraocular spines absent; gill rakers 25-36.....S. carnatus
S. caurinus
S. chrysomelas
S. maliger

3a Lateral line pores > 33; second anal spine >> third.....S. chlorostictus
S. constellatus
S. eos
S. helvomaculatus
S. rosaceus

3b Lateral line pores < 33; second anal spine about = third.....S. aurora
S. caurinus

D=12 A=6 P=18

This combination of meristics is typical for several species:

S. caurinus
S. diploproa
S. eos
S. levis

Some individuals of several species may exhibit this combination of characters:

S. aurora
S. babcocki
S. carnatus
S. chlorostictus
S. constellatus
S. helvomaculatus
S. maliger
S. rosaceus

To differentiate these species, use Key for D=12 A=6 P=17.

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. chrysomelas
S. crameri
S. elongatus
S. melanostomus
S. rastrelliger
S. saxicola
S. semicinctus

D=12 A=6 P=19

This combination of meristics is not typical for any species.

Some individuals of several species exhibit this combination of characters:

S. babcocki
S. diploproa
S. rastrelliger
S. levis

Sebastes babcocki, *S. diploproa*, and *S. levis* are distinctive: see Appendix I.

Possible but unlikely are:

S. auriculatus
S. crameri
S. levis
S. melanostomus

D=12 A=6 P=20

This is an unlikely combination of meristics for any species.

If found, consider:

S. babcocki
S. crameri
S. melanostomus
S. rastrelliger

D=12 A=7

This combination of meristics is typical for three species:

S. diploproa
S. levis
S. saxicola

Some individuals of several other species exhibit this combination of characters:

S. atrovirens
S. auriculatus
S. babcocki
S. carnatus
S. caurinus
S. chlorostictus
S. constellatus
S. crameri
S. eos
S. helvomaculatus
S. maliger
S. melanostomus
S. rosaceus
S. semicinctus

Possible but unlikely are:

S. chrysomelas
S. wilsoni

D=12 A=7 P=15

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. saxicola

Possible but unlikely are:

S. auriculatus
S. helvomaculatus

D=12 A=7 P=16

This combination of meristics is typical of one species:

S. saxicola

Some individuals of three species may exhibit this combination of characters:

S. chlorostictus
S. helvomaculatus
S. rosaceus

Sebastes saxicola is distinctive: see Appendices I and III.

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. carnatus
S. caurinus
S. constellatus
S. eos
S. maliger
S. semicinctus

D=12 A=7 P=17

This combination of meristics is typical for three species:

S. diploproa
S. levis
S. saxicola

Some individuals of several species may exhibit this combination of characters:

S. atrovirens
S. carnatus
S. caurinus
S. chlorostictus
S. constellatus
S. eos
S. helvomaculatus
S. maliger
S. rosaceus
S. semicinctus

To differentiate these species, use Key for D=12 A=7 P=17.

Possible but unlikely are:

S. auriculatus
S. babcocki
S. chrysomelas

KEY FOR D=12 A=7 P=17

1a Several species have distinctive pigment patterns: see Appendix I.....S. auriculatus
S. babcocki
S. diploproa
S. levis
S. melanostomus
S. saxicola
S. semicinctus

1b Not as above.....2

2a Supraocular spines present.....3

2b Supraocular spines absent.....S. atrovirens
S. carnatus
S. caurinus
S. maliger

3a Second anal spine >> third; inter-orbital space deeply concave.....S. chlorostictus
S. constellatus
S. eos
S. helvomaculatus
S. rosaceus

3b Second anal spine about equal to third; orbital space flat to slightly concave...S. caurinus
S. maliger

D=12 A=7 P=18

This combination of meristics is typical for two species:

S. diploproa
S. levis

Some individuals of other species may exhibit this combination of characters:

S. auriculatus
S. babcocki
S. caurinus
S. eos
S. helvomaculatus
S. saxicola

To differentiate these species, use Key for D=12 A=7 P=17.

Possible but unlikely are:

S. atrovirens
S. carnatus
S. chlorostictus
S. chrysomelas
S. constellatus
S. crameri
S. maliger
S. melanostomus
S. rosaceus
S. semicinctus

D=12 A=7 P=19

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. babcocki
S. crameri
S. diploproa
S. levis
S. melanostomus

To differentiate these species, use the Key for D=12 A=7 P=17.

Possible but unlikely is:

S. auriculatus

D=12 A=7 P=20

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. crameri

Possible but unlikely are:

S. babcocki
S. melanostomus

D=12 A=8

This combination of meristics is not typical for any species.

Some individuals of three species may exhibit this combination of characters:

S. diploproa
S. levis
S. saxicola

These species are distinctive: see Appendix I.

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. babcocki
S. maliger
S. melanostomus
S. semicinctus

D=12 A=8 P=15

This combination of meristics is not typical of any species.

Possible but unlikely are:

S. auriculatus
S. saxicola

D=12 A=8 P=16

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. saxicola

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. maliger
S. semicinctus

D=12 A=8 P=17

This combination of meristics is not typical for any species.

Some individuals of three species may exhibit this combination of characters:

S. diploproa
S. levis
S. saxicola

All of these species are distinctive: see Appendix I.

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. babcocki
S. maliger
S. semicinctus

D=12 A=8 P=18

This combination of meristics is not typical for any species.

Some individuals of two species may exhibit this combination of characters:

S. diploproa *S. levis*

Both of these species are distinctive: see Appendix I.

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. babcocki
S. maliger
S. melanostomus
S. saxicola
S. semicinctus

D=12 A=8 P=19

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. auriculatus
S. babcocki
S. diploproa
S. levis
S. melanostomus

D=12 A=8 P=20

No species is likely to exhibit this combination of characters.

If found, consider:

S. babcocki *S. melanostomus*

D=13

Many species typically have a dorsal soft ray count of 13:

S. atrovirens
S. auriculatus
S. aurora
S. babcocki
S. carnatus
S. caurinus
S. chlorostictus
S. chrysomelas
S. constellatus
S. crameri
S. diploproa
S. elongatus
S. eos
S. helvomaculatus
S. levis
S. maliger
S. melanostomus
S. miniatus
S. nebulosus
S. rastrelliger
S. rosaceus
S. rubrivinctus
S. semicinctus
S. wilsoni

Other species exhibit this count less frequently:

S. goodei
S. hopkinsi
S. jordani
S. melanops
S. nigrocinctus
S. ovalis
S. paucispinis
S. pinniger
S. proriger
S. ruberrimus
S. saxicola
S. zacentrus

D=13 A=5

This combination of meristics is not typical of any species.

Some individuals of several species may exhibit this combination of characters:

S. aurora
S. caurinus
S. chlorostictus
S. constellatus
S. crameri
S. diploproa
S. elongatus
S. helvomaculatus
S. rosaceus
S. wilsoni

Possible but unlikely are:

S. ruberrimus
S. saxicola

D=13 A=5 P=15

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. helvomaculatus
S. saxicola

D=13 A=5 P=16

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

- S. chlorostictus
- S. elongatus
- S. helvomaculatus
- S. rosaceus

Sebastes elongatus is distinctive; see Appendices I and III.

Possible but unlikely are:

- S. aurora
- S. caurinus
- S. constellatus
- S. saxicola
- S. wilsoni

D=13 A=5 P=17

This combination of meristics is not typical of any species.

Some individuals of several species may exhibit this combination of characters:

- S. aurora
- S. caurinus
- S. chlorostictus
- S. constellatus
- S. diploproa
- S. elongatus
- S. helvomaculatus
- S. rosaceus
- S. wilsoni

To differentiate these species, use Key for D=13 A=5 P=17.

Possible but unlikely are:

- S. ruberrimus
- S. saxicola

KEY FOR D=13 A=5 P=17

1a Two species have distinctive spines and pigment patterns: see Appendix I.....*S. diploproa*
S. elongatus
1b Not as above.....2

2a Supraocular spines present.....3
2b Supraocular spines absent.....5

3a Lateral line pores <31.....*S. aurora*
3b Lateral line pores > 32.....4

4a Second anal spine >> third.....*S. chlorostictus*
S. constellatus
S. helvomaculatus
S. rosaceus
4b Second anal spine about = third.....*S. caurinus*

5a Gill rakers > 36; second anal spine > third.....*S. wilsoni*
5b Gill rakers < 33.....*S. caurinus*

D=13 A=5 P=18

This combination of meristics is not typical for any species.

Some individuals of three species may exhibit this combination of characters:

S. aurora
S. caurinus
S. diploproa

Sebastes diploproa is distinctive: see Appendix I. *Sebastes aurora* has gill rakers 26-30, lateral line pores < 31. *Sebastes caurinus* has gill rakers 26-32, lateral line pores 37-45.

Possible but unlikely are:

S. chlorostictus
S. constellatus
S. crameri
S. elongatus
S. helvomaculatus
S. rosaceus
S. ruberrimus
S. saxicola
S. wilsoni

D=13 A=5 P=19

This combination of meristics is typical for one species:

S. crameri

Possible but unlikely are:

S. diploproa
S. ruberrimus

D=13 A=5 P=20

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. crameri

Possible but unlikely is:

S. ruberrimus

D=13 A=6

This combination of meristics is typical of several species:

S. aurora
S. babcocki
S. carnatus
S. caurinus
S. chlorostictus
S. chrysomelas
S. constellatus
S. diploproa
S. elongatus
S. eos
S. helvomaculatus
S. levis
S. maliger
S. nebulosus
S. rastrelliger
S. rosaceus
S. wilsoni

Some individuals of several other species may exhibit this combination of characters:

S. atrovirens
S. auriculatus
S. crameri
S. melanostomus
S. rubrivinctus
S. semicinctus
S. zacentrus

Possible but unlikely are:

S. hopkinsi
S. proriger
S. ruberrimus
S. saxicola

D=13 A=6 P=15

This combination of meristics is not typical of any species.

Some individuals of one species may exhibit this combination of characters:

S. helvomaculatus

Possible but unlikely are:

S. auriculatus
S. saxicola

D=13 A=6 P=16

This combination of meristics is typical for several species:

S. chlorostictus
S. elongatus
S. helvomaculatus
S. rosaceus

Some individuals of several species may exhibit this combination of characters:

S. aurora
S. carnatus
S. caurinus
S. constellatus
S. eos
S. maliger
S. wilsoni

To differentiate these species, use the Key for D=13 A=6 P=17.

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. hopkinsi
S. miniatus
S. pinniger
S. proriger
S. rubrivinctus
S. saxicola
S. semicinctus
S. zacentrus

D=13 A=6 P=17

This combination of meristics is typical for several species:

S. aurora
S. carnatus
S. caurinus
S. chlorostictus
S. chrysomelas
S. constellatus
S. diploproa
S. elongatus
S. eos
S. helvomaculatus
S. levis
S. maliger
S. nebulosus
S. rosaceus
S. wilsoni

Some individuals of several other species may exhibit this combination of characters:

S. atrovirens
S. babcocki
S. miniatus
S. rubrivinctus
S. semicinctus
S. zacentrus

To differentiate these species, use Key for D=13 A=6 P=17.

Possible but unlikely are:

S. auriculatus
S. hopkinsi
S. proriger
S. ruberrimus
S. saxicola

KEY FOR D=13 A=6 P=17

1a Several species have distinctive pigment and spine patterns: see Appendix I.....S. auriculatus
S. babcocki
S. crameri
S. diploproa
S. elongatus
S. levis
S. miniatus
S. rubrivinctus
S. semicinctus

1b Not as above.....2

2a Supraocular spines present.....3

2b Supraocular spines absent.....5

3a Interorbital space quite concave; second anal spine >> third.....S. chlorostictus
S. constellatus
S. eos
S. helvomaculatus
S. rosaceus

3b Interorbital space flat to slightly concave.....4

4a Lateral line pores < 31; gill rakers 24-30.....S. aurora

4b Lateral line pores > 34; gill rakers 25-35.....S. caurinus
S. crameri
S. maliger
S. nebulosus

5a Gill rakers > 36.....S. wilsoni

5b Gill rakers < 35.....6

6a Gill rakers 22-25; lateral line pores 42-47.....S. rastrelliger

6b Not as above.....S. atrovirens
S. carnatus
S. caurinus
S. chrysomelas
S. maliger
S. nebulosus
S. zacentrus

D=13 A=6 P=18

This combination of meristics is typical for several species:

S. aurora
S. babcocki
S. caurinus
S. diploproa
S. eos
S. levis
S. maliger
S. nebulosus

Some individuals of several species may exhibit this combination of characters:

S. auriculatus
S. carnatus
S. chlorostictus
S. chrysomelas
S. constellatus
S. elongatus
S. helvomaculatus
S. miniatus
S. rastrelliger
S. rosaceus
S. wilsoni

To differentiate these species, use Key for D=13 A=6 P=17.

Possible but unlikely are:

S. atrovirens
S. crameri
S. hopkinsi
S. melanostomus
S. proriger
S. ruberrimus
S. rubrivinctus
S. saxicola
S. semicinctus
S. zacentrus

D=13 A=6 P=19

This combination of meristics is typical for two species:

S. babcocki
S. rastrelliger

Some individuals of several species may exhibit this combination of characters:

S. crameri
S. diploproa
S. levis
S. melanostomus
S. nebulosus

To differentiate these species, use Key for D=13 A=6 P=17, considering only these species.

Possible but unlikely is:

S. auriculatus
S. ruberrimus

D=13 A=6 P=20

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. babcocki
S. crameri
S. rastrelliger

Sebastes babcocki is distinctive; Sebastes crameri is distinctive when > 50 mm (see Appendix I) and has gill rakers > 27. Sebastes rastrelliger has gill rakers < 27.

Possible but unlikely are:

S. ruberrimus
S. melanostomus

D=13 A=7

This combination of meristics is typical for several species:

S. atrovirens
S. auriculatus
S. babcocki
S. crameri
S. diploproa
S. levis
S. maliger
S. melanostomus
S. miniatus
S. nebulosus
S. rubrivinctus
S. semicinctus
S. zacentrus

Some individuals of several species may exhibit this combination of characters:

S. carnatus
S. caurinus
S. chlorostictus
S. chrysomelas
S. constellatus
S. eos
S. helvomaculatus
S. hopkinsi
S. nigrocinctus
S. pinniger
S. proriger
S. rosaceus
S. ruberrimus
S. saxicola
S. wilsoni

Possible but unlikely are:

S. goodei
S. melanops
S. ovalis

D=13 A=7 P=15

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. auriculatus

Possible but unlikely are:

S. helvomaculatus
S. saxicola

D=13 A=7 P=16

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. atrovirens
S. auriculatus
S. chlorostictus
S. helvomaculatus
S. maliger
S. miniatus
S. rosaceus
S. rubrivinctus
S. saxicola
S. semicinctus
S. zacentrus

To differentiate these species, use Key for D=13 A=7 P=17.

Possible but unlikely are:

S. carnatus
S. caurinus
S. constellatus
S. elongatus
S. eos
S. goodei
S. hopkinsi
S. pinniger
S. proriger
S. wilsoni

D=13 A=7 P=17

This combination of meristics is typical for several species:

S. atrovirens
S. diploproa
S. levis
S. maliger
S. miniatus
S. nebulosus
S. rubrivinctus
S. semicinctus
S. zacentrus

Some individuals of several species may exhibit this combination of characters:

S. auriculatus
S. babcocki
S. carnatus
S. caurinus
S. chlorostictus
S. chrysomelas
S. constellatus
S. eos
S. helvomaculatus
S. hopkinsi
S. levis
S. pinniger
S. proriger
S. rosaceus
S. saxicola
S. wilsoni

To differentiate these species, use Key for D=13 A=7 P=17.

Possible but unlikely are:

S. goodei
S. ovalis
S. ruberrimus

KEY FOR D=13 A=7 P=17

1a Several species have distinctive pigment and spine patterns: see Appendix I.....S. auriculatus
S. babcocki
S. crameri
S. diploproa
S. elongatus
S. goodei
S. levis
S. melanostomus
S. miniatus
S. pinniger
S. ruberrimus
S. rubrivinctus
S. saxicola
S. semicinctus

1b Not as above.....3

2a Supraocular spines present.....3
2b Supraocular spines absent.....6

3a Interorbital space quite concave, second anal spine >> third.....S. chlorostictus
S. constellatus
S. eos
S. helvomaculatus
S. rosaceus

3b Interorbital space flat to somewhat concave, second anal spine > or = to third..4

4a Gill rakers < 35.....S. caurinus
S. crameri
S. maliger

4b Gill rakers > 34.....5

5a Gill rakers usually 35-40.....S. hopkinsi
5b Gill rakers usually 40-44.....S. pinniger

6a Gill rakers 36-43.....S. proriger
S. wilsoni

6b Gill rakers usually < 36.....7

7a Gill rakers 32-37; second anal spine > third, thicker.....S. zacentrus
7b Gill rakers 24-33.....S. atrovirens
S. carnatus
S. caurinus
S. chrysomelas
S. maliger
S. nebulosus

D=13 A=7 P=18

This combination of meristics is typical for several species:

S. auriculatus
S. babcocki
S. diploproa
S. levis
S. maliger
S. miniatus
S. nebulosus

Some individual of several species may exhibit this combination of characters:

S. atrovirens
S. caurinus
S. crameri
S. eos
S. melanostomus
S. ruberrimus
S. rubrivinctus
S. semicinctus
S. zacentrus

To differentiate these species, see Key for D=13 A=7 P=17.

Possible but unlikely are:

S. carnatus
S. chlorostictus
S. chrysomelas
S. constellatus
S. goodei
S. helvomaculatus
S. hopkinsi
S. melanops
S. nigrocinctus
S. ovalis
S. pinniger
S. proriger
S. rosaceus
S. saxicola
S. wilsoni

D=13 A=7 P=19

This combination of meristics is typical for three species:

S. babcocki
S. crameri
S. melanostomus

Some individuals of several species may exhibit this combination of characters:

S. auriculatus
S. diploproa
S. levis
S. nebulosus
S. nigrocinctus
S. ruberrimus

All of these species except S. crameri and S. nebulosus are distinctive. Sebastes crameri usually has supraocular spines. Sebastes nebulosus usually does not. See Appendix I.

Possible but unlikely are:

S. melanops
S. ovalis
S. pinniger

D=13 A=7 P=20

This combination of meristics is typical for one species:

S. crameri

Some individuals of two species may exhibit this combination of characters:

S. babcocki
S. melanostomus

Sebastes babcocki and S. melanostomus are distinctive; Sebastes crameri is distinctive when > 30 mm: see Appendix I.

Possible but unlikely are:
S. melanops
S. ruberrimus
S. nigrocinctus

D=13 A=8

This combination of meristics is typical for one species:

S. miniatus

Some individuals of several species may exhibit this combination of characters:

S. atrovirens
S. auriculatus
S. babcocki
S. diploproa
S. goodei
S. levis
S. maliger
S. melanops
S. melanostomus
S. nebulosus
S. ovalis
S. rubrivinctus
S. semicinctus
S. zacentrus

Possible but unlikely are:

S. hopkinsi
S. jordani
S. paucispinis
S. pinniger
S. ruberrimus
S. saxicola

D=13 A=8 P=15

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. auriculatus
S. paucispinis
S. saxicola

D=13 A=8 P=16

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. miniatus

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. goodei
S. hopkinsi
S. maliger
S. paucispinis
S. pinniger
S. rubrivinctus
S. saxicola
S. semicinctus
S. zacentrus

D=13 A=8 P=17

This combination of meristics is typical for one species:

S. miniatus

Some individuals of several species may exhibit this combination of characters:

S. atrovirens
S. diploproa
S. goodei
S. levis
S. maliger
S. nebulosus
S. rubrivinctus
S. semicinctus
S. zacentrus

To differentiate these species use Key for D=13 A=8 P=17.

Possible but unlikely are:

S. auriculatus
S. babcocki
S. hopkinsi
S. ovalis
S. pinniger
S. ruberrimus
S. saxicola

KEY FOR D=13 A=8 P=17

1a Six species are distinctive: see Appendix I.....*S. diploproa*
S. goodei
S. levis
S. miniatus
S. rubrivinctus
S. semicinctus

1b Not as above.....2

2a Supraocular spines present.....*S. nebulosus*
2b Supraocular spines absent.....3

3a Second anal spine > third: 2x thick.....*S. zacentrus*
S. maliger

3b Second anal spine about = third.....*S. atrovirens*
S. nebulosus

D=13 A=8 P=18

This combination of meristics is typical for one species:

S. miniatus

Some individuals of several species may exhibit this combination of characters:

S. auriculatus
S. babcocki
S. diploproa
S. levis
S. maliger
S. melanops
S. nebulosus
S. ovalis

If specimen > 35 mm and has a black spot on its spinous dorsal fin, it is *S. melanops*. If it is not > 35 mm or lacks a black spot, use Key for D=13 A=8 P=18, but discount *S. melanops*.

Possible but unlikely are:

S. atrovirens
S. goodei
S. hopkinsi
S. jordani
S. melanostomus
S. pinniger
S. ruberrimus
S. rubrivinctus
S. saxicola
S. semicinctus
S. zacentrus

KEY FOR D=13 A=8 P=18

1a Several species have distinctive spines and pigment patterns: see Appendix I.....*S. auriculatus*
S. babcocki
S. diploproa
S. levis
S. miniatus

1b Not as above.....2

2a Supraocular spines present.....3

2b Supraocular spines absent.....*S. maliger*
S. nebulosus

3a Interorbital space slightly concave; gill rakers usually < 31.....*S. nebulosus*

3b Interorbital space flat to slightly convex; gill rakers usually > 30.....4

4a Lateral line pores 35-43.....*S. maliger*

4b Lateral line pores 45-55.....*S. ovalis*

D=13 A=8 P=19

This combination of meristics is not typical for any species.

Some individuals of three species may exhibit this combination of characters:

S. babcocki
S. melanops
S. melanostomus

Sebastes babcocki and *S. melanostomus* are distinctive: see Appendix I.

Possible but unlikely are:

S. auriculatus
S. diploproa
S. jordani
S. levis
S. nebulosus
S. ovalis
S. pinniger
S. ruberrimus

D=13 A=8 P=20, 21

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. babcocki
S. jordani
S. melanops
S. melanostomus
S. ruberrimus

D=13 A=9

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. babcocki
S. jordani
S. melanops
S. ovalis
S. paucispinis

Possible but unlikely are:

S. goodei
S. pinniger

D=13 A=9 P=15

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. paucispinis

D=13 A=9 P=16

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. goodei
S. paucispinis
S. pinniger

D=13 A=9 P=17

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. babcocki
S. goodei
S. ovalis
S. pinniger

D=13 A=9 P=18

This combination of meristics is not typical for any species.

Some individuals of three species may exhibit this combination of characters:

S. babcocki *S. ovalis*
S. melanops

Sebastes babcocki is distinctive: see Appendix I. *Sebastes ovalis* has gill rakers usually < 34, and usually has supraocular spines. *Sebastes melanops* has gill rakers usually > 33, and usually lacks supraocular spines.

Possible but unlikely are:

S. goodei *S. pinniger*
S. jordani

D=13 A=9 P=19

This combination of meristics is not typical for any species.

Some individuals of two species may exhibit this combination of characters:

S. babcocki *S. melanops*

Sebastes babcocki is distinctive: see Appendix I.

Possible but unlikely are:

S. jordani *S. pinniger*
S. ovalis

D=13 A=9 P=20, 21

These combinations of meristics is not typical for any species.

Some individuals of one species may exhibit these combinations of characters:

S. jordani

Possible but unlikely are:

S. babcocki *S. melanops*

D=13 A=10

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. jordani

Possible but unlikely are:

S. melanops *S. paucispinis*

D=13 A=11

This combination of meristics is not typical for any species.

Possible but unlikely is:

S. jordani

D = 14

Several species typically have a dorsal soft ray count of 14:

S. alutus
S. atrovirens
S. babcocki
S. crameri
S. flavidus
S. goodei
S. helvomaculatus
S. hopkinsi
S. jordani
S. maliger
S. melanops
S. miniatus
S. nebulosus
S. nigrocinctus
S. ovalis
S. paucispinis
S. pinniger
S. proriger
S. ruberrimus
S. rubrivinctus
S. semicinctus
S. wilsoni
S. zacentrus

Some individuals of several species may exhibit a count of 14:

S. auriculatus
S. aurora
S. carnatus
S. caurinus
S. chlorostictus
S. chrysomelas
S. constellatus
S. diploproa
S. elongatus
S. entomelas
S. levis
S. melanostomus
S. rastrelliger
S. rosaceus
S. rufus

D=14 A=5

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. constellatus
S. crameri
S. helvomaculatus
S. ruberrimus
S. wilsoni

To differentiate these species, use Key for D=14 A=5.

Possible but unlikely are:

S. aurora
S. caurinus
S. chlorostictus
S. diploproa
S. elongatus
S. rosaceus

KEY FOR D=14 A=5

1a Two species are distinctive: see Appendix I.....S. crameri
S. ruberrimus
1b Not as above.....2

2a Supraocular spines present.....3
2b Supraocular spines usually absent.....S. wilsoni

3a Second anal spine >> third, thicker; interorbital space deeply concave.....S. constellatus
S. helvomaculatus
3b Second anal spine = or slightly longer than third; interorbital space flat to convex.....S. crameri

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D=14 A=6

This combination of meristics is typical for several species:

S. babcocki
S. constellatus
S. helvomaculatus
S. maliger
S. nebulosus
S. wilsoni

Some individuals of several species may exhibit this combination of characters:

S. alutus
S. atrovirens
S. aurora
S. carnatus
S. caurinus
S. chlorostictus
S. chrysomelas
S. crameri
S. diploproa
S. elongatus
S. hopkinsi
S. levis
S. proriger
S. rastrelliger
S. rosaceus
S. ruberrimus
S. rubrivinctus
S. semicinctus
S. zacentrus

Possible but unlikely are:

S. auriculatus
S. melanostomus

D=14 A=6 P=15

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. helvomaculatus

Possible but unlikely is:

S. auriculatus

D=14 A=6 P=16

This combination of meristics is typical for one species:

S. helvomaculatus

Some individuals of several species may exhibit this combination of characters:

S. chlorostictus
S. constellatus
S. elongatus
S. maliger
S. rosaceus
S. wilsoni

To differentiate these species, use Key for D=14 A=6 P=16.

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. aurora
S. carnatus
S. caurinus
S. hopkinsi
S. miniatus
S. proriger
S. rubrivinctus
S. semicinctus
S. zacentrus

KEY FOR D=14 A=6 P=16

1a One species is distinctive: see Appendix I.....S. elongatus
1b Not as above.....2

2a Supraocular spines present.....3
2b Supraocular spines absent.....4

3a Second anal spine >> third; interorbital space deeply concave.....S. chlorostictus
S. constellatus
S. helvomaculatus
S. rosaceus
3b Second anal spine = third; interorbital space flat to slightly concave.....S. maliger

4a Gill rakers 28-34.....S. maliger
4b Gill rakers 37-43.....S. wilsoni

D=14 A=6 P=17

This combination of meristics is typical for several species:

S. constellatus
S. helvomaculatus
S. maliger
S. nebulosus
S. wilsoni

Some individuals of several species may exhibit this combination of characters:

S. atrovirens
S. aurora
S. babcocki
S. carnatus
S. caurinus
S. chlorostictus
S. chrysomelas
S. diploproa
S. elongatus
S. hopkinsi
S. levis
S. miniatus
S. proriger
S. rosaceus
S. rubrivinctus
S. semicinctus
S. zacentrus

To differentiate these species, see Key for D=14 A=6 P=17.

Possible but unlikely are:

S. alutus
S. auriculatus
S. ruberrimus

KEY FOR D=14 D=6 P=17

1a Several species have distinctive pigment patterns: see Appendix I.....S. babcocki
S. diploproa
S. elongatus
S. levis
S. miniatus
S. rubrivinctus
S. semicinctus

1b Not as above.....2

2a Supraocular spine present.....3
2b Supraocular spine absent.....6

3a Second anal spine > third, thicker; interorbital space deeply concave.....S. chlorostictus
S. constellatus
S. helvomaculatus
S. rosaceus

3b Second anal not as above; interorbital space flat to slightly concave...4

4a Gill rakers < 32.....5
4b Gill rakers > 33.....S. hopkinsi

5a Lateral line pores 24-30.....S. aurora
5b Lateral line pores 37-48.....S. caurinus
S. nebulosus

6a Second anal spine > third.....7
6b Second anal spine = or < third.....8

7a Gill rakers usually 34-37.....S. zacentrus
7b Gill rakers usually 33-42.....S. wilsoni

8a Gill rakers 36-42; lateral line pores 46-53.....S. proriger
8b Gill rakers 24-36.....S. atrovirens
S. carnatus
S. caurinus
S. chrysomelas
S. maliger
S. nebulosus

D=14 A=6 P=18

This combination of meristics is typical for three species:

S. babcocki
S. maliger
S. nebulosus

Some individuals of several species may exhibit this combination of characters:

S. alutus
S. aurora
S. caurinus
S. constellatus
S. diploproa
S. helvomaculatus
S. levis
S. miniatus
S. ruberrimus
S. wilsoni

To differentiate these species, use Key for D=16 A=6 P=18.

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. carnatus
S. chlorostictus
S. chrysomelas
S. crameri
S. elongatus
S. hopkinsi
S. melanostomus
S. proriger
S. rastrelliger
S. rosaceus
S. rubrivinctus
S. semicinctus
S. zacentrus

KEY FOR D=14 A=6 P=18

1a Several species have distinctive pigment and spine patterns: see Appendix I.....S. babcocki
S. diploproa
S. levis
S. miniatus
S. ruberrimus

1b Not as above.....2

2a Supraocular spines present.....3
2b Supraocular spines absent.....6

3a Second anal spine >> third; gill rakers 24-33.....S. constellatus
S. helvomaculatus

3b Not as above.....4

4a Gill rakers usually > 32.....S. alutus
4b Gill rakers usually < 32.....5

5a Lateral line pores 24-30.....S. aurora
5b Lateral line pores 37-45.....S. caurinus

6a Gill rakers 25-32.....S. caurinus
S. maliger
S. nebulosus

6b Gill rakers 37-43.....S. wilsoni

D=14 A=6 P=19

This combination of meristics is typical for one species.

S. babcocki

Some individuals of four species may exhibit this combination of characters:

S. crameri
S. nebulosus
S. rastrelliger
S. ruberrimus

Sebastes babcocki and S. ruberrimus are distinctive; Sebastes rastrelliger has no supraocular spines and gill rakers number 22-23; Sebastes nebulosus lacks supraocular spines and gill rakers number 23-31; Sebastes crameri has supraocular spines and gill rakers number 28-32.

Possible but unlikely are:

S. auriculatus
S. diploproa
S. levis
S. melanostomus

D=14 A=6 P=20

This combination of meristics is not typical for any species.

Some individuals of two species may exhibit this combination of characters:

S. babcocki	S. crameri

Sebastes babcocki is distinctive; Sebastes crameri is distinctive when > 30 mm: see Appendix I.

Possible but unlikely are:

S. melanostomus	S. ruberrimus
S. rastrelliger	

D=14 A=7

This combination of meristics is typical for several species:

S. atrovirens	S. nebulosus
S. babcocki	S. nigrocinctus
S. constellatus	S. pinniger
S. crameri	S. proriger
S. flavidus	S. ruberrimus
S. hopkinsi	S. rubrivinctus
S. maliger	S. semicinctus
S. miniatus	S. zacentrus

Some individuals of several species may exhibit this combination of characters:

S. alutus	S. melanops
S. auriculatus	S. melanostomus
S. diploproa	S. ovalis
S. goodei	S. rufus
S. helvomaculatus	S. wilsoni
S. levis	

Possible but unlikely are:

S. carnatus	S. chrysomelas
S. caurinus	S. entomelas
S. chlorostictus	S. rosaceus

D=14 A=7 P=15

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. auriculatus
S. helvomaculatus

D=14 A=7 P=16

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. atrovirens
S. helvomaculatus
S. hopkinsi
S. maliger
S. miniatus
S. pinniger
S. proriger
S. rubrivinctus
S. semicinctus
S. zacentrus

To differentiate these species, see Key for D=14 A=7 P=17.

Possible but unlikely are:

S. auriculatus
S. carnatus
S. caurinus
S. chlorostictus
S. constellatus
S. goodei
S. rosaceus
S. wilsoni

D=14 A=7 P=17

This combination of meristics is typical for several species:

S. atrovirens
S. hopkinsi
S. maliger
S. miniatus
S. nebulosus
S. pinniger
S. proriger
S. rubrivinctus
S. semicinctus
S. zacentrus

Some individuals of several species may exhibit this combination of characters:

S. babcocki
S. constellatus
S. diploproa
S. flavidus
S. goodei
S. helvomaculatus
S. levis
S. ruberrimus
S. wilsoni

If specimen > 35 mm, lacks a distinctive pigment pattern, and has a black spot on its spinous dorsal fin, it is S. flavidus. If not, use Key for D=14 A=7 P=17. If specimen > 45 mm and lacks the dorsal spot, discount S. flavidus and S. pinniger.

Possible but unlikely are:

S. alutus
S. auriculatus
S. carnatus
S. caurinus
S. chlorostictus
S. chrysomelas
S. entomelas
S. ovalis
S. rosaceus

KEY FOR D=14 A=7 P=17

1a Several species have distinctive pigment and spine patterns: see Appendix I.....*S. babcocki*
S. diploproa
S. goodei
S. levis
S. miniatus
S. pinniger
S. ruberrimus
S. rubrivinctus
S. semicinctus

1b Not as above.....2

2a Supraocular spines present.....3
2b Supraocular spines absent.....4

3a Gill rakers usually < 33.....*S. constellatus*
S. helvomaculatus
S. nebulosus
3b Gill rakers > 33.....*S. hopkinsi*
S. pinniger

4a Second anal spine > third; thicker.....5
4b Second anal spine ≤ third.....6

5a Gill rakers 37-43.....*S. wilsoni*
5b Gill rakers 32-38.....*S. zacentrus*

6a Preocular spines weak or absent.....*S. flavidus*
6b Preocular spines present.....7

7a Gill rakers usually > 36.....*S. proriger*
7b Gill rakers usually < 36.....*S. atrovirens*
S. maliger
S. nebulosus

D=14 A=7 P=18

This combination of meristics is typical for several species:

S. babcocki
S. flavidus
S. maliger
S. miniatus
S. nebulosus
S. ruberrimus

Some individuals of several species may exhibit this combination of characters:

S. alutus
S. atrovirens
S. auriculatus
S. crameri
S. diploproa
S. hopkinsi
S. levis
S. melanops
S. nigrocinctus
S. ovalis
S. pinniger
S. proriger
S. rubrivinctus
S. rufus
S. semicinctus
S. zacentrus

If specimen > 35 mm, shows a black spot on the spinous dorsal fin, and lacks a distinctive pigment pattern, use Appendix II. If not, use Key for D=14 A=7 P=18. If specimen > 45 mm and lacks a dorsal spot, discount S. flavidus, S. melanops, and S. pinniger.

Possible but unlikely are:

S. carnatus
S. caurinus
S. chlorostictus
S. chrysomelas
S. constellatus
S. entomelas
S. goodei
S. helvomaculatus
S. melanostomus
S. rosaceus
S. wilsoni

KEY FOR D=14 A=7 P=18

1a Several species have distinctive pigment and spine patterns: see Appendix I.....S. auriculatus
S. babcocki
S. diploproa
S. levis
S. miniatus
S. nigrocinctus
S. pinniger
S. ruberrimus
S. rubrivinctus
S. semicinctus

1b Not as above.....2

2a Supraocular spines absent.....3

2b Supraocular spines present.....5

3a Second anal spine > third, thicker.....S. zacentrus

3b Second anal spine < or = third.....4

4a Lateral line pores ≥ 45.....S. flavidus
S. melanops
S. proriger

4b Lateral line pores < 45.....S. alutus
S. atrovirens
S. maliger
S. nebulosus

5a Gill rakers usually ≤ 30.....S. nebulosus

5b Gill rakers usually > 30.....S. alutus
S. crameri
S. hopkinsi
S. ovalis
S. pinniger
S. rufus

D=14 A=7 P=19

This combination of meristics is typical for three species:

S. babcocki	S. nigrocinctus
S. crameri	S. ruberrimus

Some individuals of several species may exhibit this combination of characters:

S. flavidus	S. nebulosus
S. melanops	S. pinniger
S. melanostomus	

If specimen > 35 mm, has a black spot on its spinous dorsal fin and lacks a distinctive pigment pattern, it is S. flavidus or S. melanops. See Appendix II. If not, use Key for D=16 A=7 P=19. If specimen > 35 mm and lacks a dorsal spot, discount S. flavidus, S. melanops, and S. pinniger.

Possible but unlikely are,

S. auriculatus	S. levis
S. diploproa	S. ovalis
S. entomelas	S. rufus

KEY FOR D=14 A=7 P=19

1a Five species have distinctive pigment patterns: see Appendix I.....S. babcocki
S. melanostomus
S. nigrocinctus
S. pinniger
S. ruberrimus

1b Not as above.....2

2a Supraocular spines present.....3
2b Supraocular spines absent.....4

3a Gill rakers usually > 39.....S. pinniger
3b Gill rakers usually < 40.....S. crameri
S. melanops

4a Gill rakers < 32.....S. nebulosus
4b Gill rakers > 31.....S. flavidus
S. melanops

D=14 A=7 P=20

This combination of meristics is typical for one species:

S. crameri

Some individuals of two species may exhibit this combination of characters:

S. babcocki
S. nigrocinctus

Possible but unlikely are:

S. melanops
S. melanostomus
S. ruberrimus

D=14 A=8

This combination of meristics is typical for several species:

S. alutus
S. flavidus
S. goodei
S. melanops
S. miniatus
S. ovalis

Some individuals of several species may exhibit this combination of characters:

S. atrovirens
S. babcocki
S. entomelas
S. hopkinsi
S. jordani
S. maliger
S. nebulosus
S. paucispinis
S. pinniger
S. ruberrimus
S. rubrivinctus
S. rufus
S. semicinctus
S. zacentrus

Possible but unlikely are:

S. auriculatus
S. diploproa
S. levis
S. melanostomus

D=14 A=8 P=15

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. paucispinis

Possible but unlikely is:

S. auriculatus

D=14 A=8 P=16

This combination of meristics is not typical for any species.

Some individuals of three species may exhibit this combination of characters:

S. alutus	S. miniatus
S. goodei	S. paucispinis

Sebastes miniatus, S. goodei, and S. paucispinis are distinctive: see Appendix I.

Possible but unlikely are:

S. atrovirens	S. pinniger
S. auriculatus	S. rubrivinctus
S. hopkinsi	S. semicinctus
S. maliger	S. zacentrus

D=14 A=8 P=17

This combination of meristics is typical for two species:

S. goodei	S. miniatus

Some individuals of several species may exhibit this combination of characters:

S. alutus	S. ovalis
S. atrovirens	S. pinniger
S. flavidus	S. rubrivinctus
S. hopkinsi	S. semicinctus
S. maliger	S. zacentrus

If specimen > 35 mm, has a black spot on its spinous dorsal fin, and lacks a distinctive pigment pattern, it is S. flavidus. If > 35 mm, has a dorsal fin spot, and has a distinctive pattern, it is S. pinniger. If not as above, use Key for D=14 A=8 P=17 and discount S. flavidus and S. pinniger.

Possible but unlikely are:

S. auriculatus	S. entomelas
S. babcocki	S. levis
S. diploproa	S. nebulosus

KEY FOR D=14 A=8 P=17

1a Five species are distinctive: Appendix I. S. goodei
S. miniatus
S. pinniger
S. rubrivinctus
S. semicinctus

1b Not as above.....3

2a Supraocular spines present.....3
2b Supraocular spines absent.....4

3a Lateral line pores 24-30.....S. alutus
3b Lateral line pores > 44.....S. hopkinsi
S. ovalis

4a Second anal spine thicker, longer than third.....S. zacentrus
4b Not as above.....5

5a Gill rakers usually > 39.....S. pinniger
5b Gill rakers usually < 39.....S. atrovirens
S. flavidus
S. maliger
S. nebulosus
S. ovalis

D=14 A=8 P=18

This combination of meristics is typical for several species:

S. alutus
S. flavidus
S. melanops
S. miniatus
S. ovalis

Some individuals of these species may have these meristics:

S. babcocki
S. entomelas
S. goodei
S. maliger
S. nebulosus
S. ruberrimus
S. rufus

If specimen > 35 mm (45 mm in S. entomelas) and has a black dot on the spinous dorsal fin, see Appendix II. If not, use Key for D=14 A=8 P=18. If the specimen > 45 mm and lacks a dorsal spot, discount S. entomelas, S. flavidus, and S. melanops.

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. diploproa
S. hopkinsi
S. jordani
S. levis
S. melanostomus
S. pinniger
S. rubrivinctus
S. semicinctus
S. zacentrus

KEY FOR D=14 A=8 P=18

1a Four species have distinctive pigment patterns: see Appendix I.....*S. babcocki*
S. goodei
S. miniatus
S. ruberrimus

1a Not as above.....2

2a Supraocular spines present.....3
2b Supraocular spines absent.....4

3a Gill rakers usually 26-30.....*S. nebulosus*
3b Gill rakers usually > 30.....*S. alutus*
S. entomelas
S. ovalis
S. rufus

4a Gill rakers usually < 34.....*S. alutus*
S. maliger
S. nebulosus
4b Gill rakers usually > 33.....*S. alutus*
S. flavidus
S. melanops

D=14 A=8 P=19

This combination of meristics is typical for one species:

S. melanops

Some individuals of several species may exhibit this combination of characters:

S. babcocki
S. flavidus
S. ovalis
S. ruberrimus

If specimen > 35 mm and has a black spot on it's spinous dorsal fin: see Appendix II, and consider *S. flavidus* and *S. melanops*. If not, use Key for D=14 A=8 P=18. If specimen > 35 mm and lacks a dorsal spot, discount *S. flavidus* and *S. melanops*.

Possible but unlikely are:

S. auriculatus
S. diploproa
S. entomelas
S. jordani
S. levis
S. melanostomus
S. nebulosus
S. pinniger
S. rufus

D=14 A=8 P=20

This combination of meristics is not typical for any species.

Some individuals of two species may exhibit this combination of characters:

S. jordani *S. melanops*

Sebastes jordani is distinctive: see Appendix I.

Possible but unlikely are:

S. babcocki *S. ruberrimus*
S. melanostomus

D=14 A=9

This combination of meristics is typical for several species:

S. alutus *S. ovalis*
S. jordani *S. paucispinis*
S. melanops

Some individuals of several species may exhibit this combination of characters:

S. babcocki *S. goodei*
S. flavidus *S. pinniger*

Possible but unlikely are:

S. entomelas *S. rufus*

D=14 A=9 P=15

This combination of meristics is typical for one species:

S. paucispinis

D=14 A=9 P=16

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. paucispinis

Possible but unlikely are:

S. goodei *S. pinniger*

D=14 A=9 P=17

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. alutus	S. ovalis
S. goodei	S. pinniger

Sebastes goodei has distinctive pigmentation. Sebastes pinniger is distinctive > 40 mm; gill rakers are usually > 39. Sebastes alutus and S. ovalis have gill rakers < 39: see Appendix IV.

Possible but unlikely are:

S. babcocki	S. flavidus
S. entomelas	

D=14 A=9 P=18

This combination of meristics is typical for two species:

S. alutus	S. melanops

Some individuals of several species may exhibit this combination of characters:

S. babcocki	S. jordani
S. flavidus	

If specimen > 35 mm and has a black spot on it spinous dorsal fin: see Appendix II, and consider S. flavidus and S. melanops. If not, use Key for D=14 A=9 P=18. If the specimen > 35 mm and lacks a black dorsal spot, discount S. flavidus and S. melanops.

Possible but unlikely are:

S. entomelas	S. pinniger
S. goodei	S. rufus

KEY FOR D=14 A=9 P=18

1a Two species are distinctive: Appendix I..S. babcocki
S. jordani
1b Not as above.....2

2a Supraocular spines present.....S. alutus
2b Supraocular spines absent.....3

3a Lateral line pores usually < 50.....S. melanops
3b Lateral line pores usually > 50.....S. flavidus

D=14 A=9 P=19

This combination of meristics is typical for one species:

S. melanops

Some individuals of three species may exhibit this combination of characters:

S. babcocki
S. jordani
S. ovalis

Sebastes babcocki and S. jordani are distinctive. Sebastes melanops has gill rakers usually > 33. Sebastes ovalis has gill rakers usually < 34.

Possible but unlikely are:

S. entomelas
S. flavidus
S. pinniger
S. rufus

D=14 A=9 P=20, 21

This combination of meristics is typical for one species:

S. jordani

Some individuals of one species may show these merisitics:

S. melanops

Possible but unlikely is:

S. babcocki

D=14 A=10

Individuals of three species may exhibit this combination of characters:

S. jordani
S. melanops
S. paucispinis

Sebastes jordani is distinctive. Sebastes melanops has gill rakers 32-39. Sebastes paucispinis has gill rakers < 32.

D=14 A=11

This combination of meristics is found in only one species:

S. jordani

D=15

Several species typically exhibit a dorsal soft ray count of 15:

S. alutus
S. babcocki
S. entomelas
S. flavidus
S. hopkinsi
S. jordani
S. melanops
S. mystinus
S. nigrocinctus
S. ovalis
S. pinniger
S. proriger
S. ruberrimus
S. rufus
S. serranoides

Some individuals of several species may exhibit these meristics:

S. atrovirens
S. auriculatus
S. chlorostictus
S. crameri
S. goodei
S. melanostomus
S. miniatus
S. paucispinis
S. rubrivinctus
S. wilsoni
S. zacentrus

D=15 A=5

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit these meristics:

S. ruberrimus

Possible but unlikely are:

S. chlorostictus
S. crameri
S. wilsoni

D=15 A=6

This combination of meristics is typical for one species:

S. babcocki

Some individuals of several species may exhibit these meristics:

S. alutus
S. chlorostictus
S. hopkinsi
S. proriger
S. ruberrimus
S. wilsoni

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. crameri
S. melanostomus
S. rubrivinctus
S. zacentrus

D=15 A=6 P=15

This combination of meristics is not typical for any species.

Possible but unlikely is:

S. auriculatus

D=15 A=6 P=16

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. chlorostictus

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. hopkinsi
S. miniatus
S. proriger
S. rubrivinctus
S. wilsoni
S. zacentrus

D=15 A=6 P=17

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. babcocki
S. chlorostictus
S. hopkinsi
S. proriger
S. wilsoni

To differentiate these species, use Key for D=15 A=6 P=17.

Possible but unlikely are:

S. alutus
S. atrovirens
S. auriculatus
S. miniatus
S. ruberrimus
S. rubrivinctus
S. zacentrus

KEY FOR D=15 A=6 P=17

1a One species is distinctive: see Appendix I.....*S. babcocki*
1b Not as above.....2

2a Supraocular spines present.....3
2b Supraocular spines absent.....*S. proriger*
S. wilsoni

3a Interorbital space concave; gill rakers usually < 35; lateral line pores 35-43.....*S. chlorostictus*
3b Interorbital space flat to slightly concave: gill rakers usually > 34; lateral line pores 49-55.....4

4a Lateral line pores 49-55.....*S. hopkinsi*
4b Lateral line pores < 47.....*S. proriger*
S. wilsoni

D=15 A=6 P=18

This combination of meristics is typical for one species:

S. babcocki

Some individuals of two species may exhibit this combination of characters:

S. alutus *S. ruberrimus*

Sebastes babcocki and *S. ruberrimus* are distinctive: see Appendix I.

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. chlorostictus
S. crameri
S. hopkinsi
S. melanostomus
S. miniatus
S. proriger
S. rubrivinctus
S. wilsoni
S. zacentrus

D=15 A=6 P=19

This combination of meristics is typical for one species:

S. babcocki

Some individuals of one species may exhibit these meristics:

S. ruberrimus

Possible but unlikely are:

S. auriculatus
S. crameri
S. melanostomus

D=15 A=6 P=20

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. babcocki

Possible but unlikely are:

S. crameri
S. melanostomus
S. ruberrimus

D=15 A=7

This combination of meristics is typical for several species:

S. babcocki
S. flavidus
S. hopkinsi
S. nigrocinctus
S. pinniger
S. proriger
S. ruberrimus
S. rufus

Some individuals of several species may exhibit this combination of characters:

S. alutus
S. atrovirens
S. auriculatus
S. crameri
S. entomelas
S. melanops
S. melanostomus
S. miniatus
S. ovalis
S. rubrivinctus
S. zacentrus

Possible but unlikely are:

S. chlorostictus
S. goodei
S. wilsoni

D=15 A=7 P=15

This combination of meristics is not typical for any species.

Possible but unlikely is:

S. auriculatus

D=15 A=7 P=16

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. hopkinsi
S. pinniger
S. proriger

Sebastes hopkinsi and *S. pinniger* usually have supraoculars; *S. hopkinsi* has lateral line pores > 46. *Sebastes pinniger* is distinctive if > 35 mm; lateral line pores 39-43. *Sebastes proriger* usually lacks supraocular spines.

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. chlorostictus
S. goodei
S. miniatus
S. rubrivinctus
S. wilsoni
S. zacentrus

D=15 A=7 P=17

This combination of meristics is typical for several species:

S. hopkinsi
S. pinniger
S. proriger

Some individuals of several species may exhibit this combination of characters:

S. atrovirens
S. babcocki
S. flavidus
S. miniatus
S. ruberrimus
S. rubrivinctus
S. zacentrus

If specimen >35 mm and has a dark dorsal spot, it is *S. flavidus*. If not, use Key for D=15 A=7 P=17 and don't consider *S. flavidus*.

Possible but unlikely are:

S. alutus
S. auriculatus
S. chlorostictus
S. entomelas
S. goodei
S. ovalis
S. wilsoni

KEY FOR D=15 A=7 P=17

1a Several species have distinctive patterns
See Appendix I.....S. babcocki
S. miniatus
S. pinniger
S. ruberrimus
S. rubrivinctus
1b Not as above.....2

2a Supraocular spines present.....3
2b Supraocular spines absent.....4

3a Gill rakers usually < 40.....S. hopkinsi
3b Gill rakers usually > 40.....S. pinniger

4a Lateral line pores < 46.....S. atrovirens
S. zacentrus
4b Lateral line pores > 45.....S. flavidus
S. hopkinsi
S. proriger

D=15 A=7 P=18

This combination of meristics is typical for four species:

S. babcocki
S. flavidus
S. ruberrimus
S. rufus

Some individuals of several species may exhibit this combination of characters:

S. alutus
S. auriculatus
S. entomelas
S. hopkinsi
S. melanostomus
S. melanops
S. miniatus
S. nigrocinctus
S. ovalis
S. pinniger
S. proriger

If specimen > 35 mm (45 mm for S. entomelas), has a black spot on the spinous dorsal fin, and lacks a distinctive pigment pattern, use Appendix II to distinguish S. entomelas, S. flavidus, and S. melanops. If not, use Key for D=15 A=7 P=18. If specimen > 45 mm and lacks a black dorsal fin spot, discount S. entomelas, S. flavidus, S. melanops and S. pinniger.

Possible but unlikely are:

S. atrovirens
S. chlorostictus
S. crameri
S. goodei
S. rubrivinctus
S. wilsoni
S. zacentrus

KEY FOR D=15 A=7 P=18

1a Five species have distinctive pigment or head spine patterns: see Appendix I.....S. auriculatus
S. babcocki
S. melanostomus
S. miniatus
S. nigrocinctus
S. pinniger
S. ruberrimus

1b Not as above.....2

2a Supraocular spines present.....S. alutus
S. entomelas
S. hopkinsi
S. ovalis
S. pinniger
S. rufus

2b Supraocular spines absent.....S. alutus
S. entomelas
S. flavidus
S. melanops
S. proriger

These species are difficult to differentiate if small. If > 35 mm, they will still be quite difficult. See Appendices I, II, and IV.

D=15 A=7 P=19

This combination of meristics is typical for three species:

S. babcocki
S. nigrocinctus
S. ruberrimus

Some individuals of several species may exhibit this combination of characters:

S. crameri
S. flavidus
S. melanops
S. melanostomus
S. pinniger
S. rufus

If specimen > 35 mm and has a black spot on its spinous dorsal fin, it is S. flavidus, S. melanops, or S. pinniger: see Appendix II. If not, use Key for D=15 A=7 P=19 and discount S. flavidus, S. melanops, and S.pinniger.

Possible but unlikely are:

S. auriculatus
S. entomelas
S. ovalis

KEY FOR D=15 A=7 P=19

1a Several species are distinctive:
see Appendix I.....S. babcocki
S. crameri
S. nigrocinctus
S. ruberrimus
S. melanostomus
S. pinniger

1b Not as above.....2

2a Supraocular spine absent.....3
2b Supraocular spine present.....4

3a Lateral line pores usually > 50.....S. flavidus
3b Lateral line pores usually < 50.....S. melanops

4a Gill rakers 38-45.....S. pinniger
4b Gill rakers 28-35.....5

5a Lateral line pores usually > 49.....S. rufus
5b Lateral line pores usually < 49.....S. crameri

D=15 A=7 P=20

This combination of meristics is not typical for any species:

Some individuals of several species may exhibit this combination of characters:

S. babcocki
S. crameri
S. nigrocinctus
S. ruberrimus

All have distinctive pigment patterns: see Appendix I.

Possible but unlikely are:

S. melanops
S. melanostomus

D=15 A=8

This combination of meristics is typical for several species:

S. alutus
S. entomelas
S. flavidus
S. melanops
S. ovalis
S. rufus

Some individuals of several species may exhibit this combination of characters:

S. babcocki
S. goodei
S. hopkinsi
S. jordani
S. miniatus
S. mystinus
S. pinniger
S. ruberrimus
S. serranoides

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. melanostomus
S. paucispinis
S. rubrivinctus
S. zacentrus

D=15 A=8 P=15

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. auriculatus
S. paucispinis

D=15 A=8 P=16

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. atrovirens
S. auriculatus
S. goodei
S. hopkinsi
S. miniatus
S. mystinus
S. paucispinis
S. pinniger
S. rubrivinctus
S. zacentrus

D=15 A=8 P=17

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. alutus	S. miniatus
S. entomelas	S. mystinus
S. flavidus	S. ovalis
S. goodei	S. pinniger
S. hopkinsi	S. serranoides

If specimen > 35 mm (45 mm for S. entomelas), has a black spot on its spinous dorsal fin, and lacks distinct patterns: see Appendix II and consider S. entomelas, S. flavidus, S. mystinus and S. serranoides. If not, use Key for D=15 A=8 P=17. If specimen > 45 mm and lacks a black dorsal spot, discount S. entomelas, S. flavidus, S. mystinus, S. pinniger, and S. serranoides.

Possible but unlikely are:

S. atrovirens	S. ruberrimus
S. auriculatus	S. rubrivinctus
S. babcocki	S. zacentrus

KEY FOR D=15 A=8 P=17

1a Three species have distinctive pigment patterns: see Appendix I.....S. goodei
S. miniatus
S. pinniger

1b Not as above.....2

2a Supraocular spines present.....S. alutus
S. entomelas
S. hopkinsi
S. ovalis
S. mystinus
S. pinniger
S. serranoides

2b Supraocular spines absent.....S. alutus
S. flavidus
S. ovalis
S. serranoides

These species will be very difficult to differentiate if small. If > 35 mm, it will still be quite difficult. See Appendices I, II, and IV.

D=15 A=8 P=18

This combination of meristics is typical for several species:

S. alutus	S. melanops
S. entomelas	S. ovalis
S. flavidus	S. rufus

Some individuals of several species may exhibit this combination of characters:

S. babcocki	S. ruberrimus
S. miniatus	S. serranoides
S. mystinus	

If specimen > 35 mm (45 mm for S. entomelas) and has a black spot on its spinous dorsal fin, use Appendix II. If not, use Key for D=15 A=8 P=18. If specimen > 45 mm and lacks a black dorsal spot, discount S. entomelas, S. flavidus, S. melanops, S. mystinus, and S. serranoides.

Possible but unlikely are:

S. atrovirens	S. melanostomus
S. auriculatus	S. pinniger
S. goodei	S. rubrivinctus
S. hopkinsi	S. zacentrus
S. jordani	

KEY FOR D=15 A=8 P=18

1a Three species have distinctive pigment patterns: see Appendix I.....S. babcocki
S. miniatus
S. ruberrimus

1b Not as above.....2

2a Supraocular spines present.....S. alutus
S. entomelas
S. ovalis
S. mystinus
S. rufus

2b Supraocular spines absent.....S. alutus
S. flavidus
S. melanops
S. ovalis
S. serranoides

These species will be very difficult to differentiate if small. If > 35 mm, it will still be quite difficult. See Appendices I, II, and IV.

D=15 A=8 P=19

This combination of meristics is typical for one species:

S. melanops

Some individuals of several species may exhibit this combination of characters:

S. babcocki
S. entomelas
S. flavidus
S. ovalis
S. ruberrimus
S. rufus

If specimen > 35 mm and has a dark spot on its spinous dorsal fin, see Appendix II and consider S. entomelas, S. flavidus, and S. melanops. If not, use Key for D=15 A=8 P=18 and do not consider S. entomelas, S. flavidus, or S. melanops.

Possible but unlikely are:

S. auriculatus
S. jordani
S. melanostomus
S. mystinus
S. pinniger
S. serranoides

D=15 A=8 P=20

This combination of meristics is not typical for any species.

Some individuals of two species may exhibit this combination of characters:

S. jordani
S. melanops

Sebastes jordani is distinguishable at all sizes by the position of the anus.

Possible but unlikely are:

S. babcocki
S. melanostomus
S. ruberrimus

D=15 A=8 P=21

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. jordani

D=15 A=9

This combination of meristics is typical for several species:

S. alutus
S. jordani
S. melanops
S. mystinus
S. ovalis
S. serranoides

Some individuals of several species may exhibit this combination of characters:

S. babcocki
S. entomelas
S. flavidus
S. paucispinis
S. pinniger
S. rufus

Possible but unlikely is:

S. goodei

D=15 A=9 P=15

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. paucispinis

D=15 A=9 P=16

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. mystinus

Possible but unlikely are:

S. goodei
S. paucispinis
S. pinniger

D=15 A=9 P=17

This combination of meristics is typical for two species:

S. mystinus *S. serranoides*

Some individuals of three species may exhibit these meristics:

S. alutus *S. pinniger*
S. ovalis

If specimen > 35 mm, lacks distinctive patterns, and has a black dorsal spot, see Appendix II (consider *S. mystinus* and *S. serranoides*). If specimen > 35 mm and lacks a black dorsal spot, it is *S. alutus* or *S. ovalis*: see Appendix IV.

Possible but unlikely are:

S. babcocki *S. flavidus*
S. entomelas *S. goodei*

KEY FOR D=15 A=9 P=17

1a Supraocular spines usually present.....*S. alutus*
S. mystinus
S. ovalis
S. pinniger
1b Supraocular spines usually absent.....*S. serranoides*

D=15 A=9 P=18

This combination of meristics is typical for several species:

S. alutus *S. ovalis*
S. melanops *S. serranoides*
S. mystinus

Some individuals of several species may exhibit these meristics:

S. babcocki *S. jordani*
S. entomelas *S. rufus*
S. flavidus

If specimen >35 mm (45 mm for *S. entomelas*) and has a dark dorsal fin spot, use Appendix II. If not, use Key for D=15 A=9 P=18. If specimen > 35 mm and lacks a dorsal spot, discount *S. entomelas*, *S. flavidus*, *S. melanops*, *S. mystinus*, and *S. serranoides*.

Possible but unlikely is:

S. goodei

KEY FOR D=15 A=9 P=18

1a Two species are distinctive: see Appendix I.....S. babcocki
S. jordani
1b Not as above.....2

2a Supraocular spines present.....S. alutus
S. entomelas
S. mystinus
S. ovalis
S. rufus
2b Supraocular spines absent.....S. alutus
S. flavidus
S. melanops
S. serranoides

D=15 A=9 P=19

This combination of meristics is typical for one species:

S. melanops

Some individuals of several species may exhibit these meristics:

S. babcocki
S. jordani
S. mystinus
S. ovalis
S. serranoides

Sebastes babcocki and S. jordani are distinctive. Sebastes ovalis usually has supraocular spines. If not, see Appendix II to differentiate S. melanops, S. mystinus, and S. serranoides.

Possible but unlikely are:

S. entomelas
S. flavidus
S. goodei
S. pinniger
S. rufus

D=15 A=9 P=20, 21

This combination of meristics is typical for one species:

S. jordani

Some individuals of one other species exhibit these meristics:

S. melanops

Possible but unlikely is:

S. babcocki

D=15 A=10

This combination of meristics is typical for one species:

S. jordani

Some individuals of three species may exhibit this combination of characters:

S. melanops *S. serranoides*
S. mystinus

Sebastes jordani can be differentiated from the other species by the position of the anus. Otherwise, see Appendix II and consider *S. melanops*, *S. mystinus* and *S. serranoides*.

Possible but unlikely is:

S. paucispinis

D=15 A=11

This combination of meristics can be found in two species:

S. jordani *S. serranoides*

Sebastes jordani is distinctive: see Appendix I.

D=16

Several species typically exhibit a dorsal soft ray count of 16:

S. entomelas
S. hopkinsi
S. jordani
S. mystinus
S. rufus
S. serranoides

Some individuals of several species may exhibit this character:

S. alutus
S. babcocki
S. flavidus
S. melanops
S. ovalis
S. pinniger
S. proriger
S. ruberrimus
S. zacentrus

D=16 A=5

This combination of meristics is not typical for any species. Possible but unlikely is:

S. ruberrimus

D=16 A=6

This combination of meristics is not typical for any species.

Some individuals of two species may exhibit these meristics:

S. hopkinsi

Possible but unlikely are:

S. alutus
S. proriger
S. ruberrimus
S. zacentrus

D=16 A=7

This combination of meristics is typical for two species,

S. hopkinsi
S. rufus

Some individuals of several species may exhibit these meristics:

S. babcocki
S. entomelas
S. flavidus
S. pinniger
S. proriger
S. ruberrimus
S. zacentrus

Possible but unlikely are:

S. alutus
S. melanops
S. ovalis

D=16 A=7 P=16

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. hopkinsi

Possible but unlikely are:

S. pinniger
S. proriger
S. zacentrus

D=16 A=7 P=17

This combination of meristics is typical for one species:

S. hopkinsi

Some individuals of three species may exhibit this combination of characters:

S. pinniger
S. proriger
S. zacentrus

To differentiate these species, use Key for D=16 A=7 P=17.

Possible but unlikely are:

S. alutus
S. babcocki
S. entomelas
S. flavidus
S. ovalis
S. ruberrimus

KEY FOR D=16 A=7 P=17

1a Supraocular spines present.....2
1b Supraocular spines absent.....3

2a Lateral line pores 49-55.....*S. hopkinsi*
2b Lateral line pores 39-43.....*S. pinniger*

3a Lateral line pores usually > 46.....*S. proriger*
3b Lateral line pores usually < 46.....*S. zacentrus*

D=16 A=7 P=18

This combination of meristics is typical for one species:

S. rufus

Some individuals of several species may exhibit these meristics:

S. babcocki
S. entomelas
S. flavidus
S. hopkinsi
S. ruberrimus

If specimen > 45 mm and has a black dorsal spot, it is either *S. entomelas* or *S. flavidus*: see Appendix II. If not, use Key for D=16 A=7 P=18 and do not consider *S. entomelas* or *S. flavidus*.

Possible but unlikely are:

S. alutus
S. melanops
S. ovalis
S. pinniger
S. proriger
S. zacentrus

KEY FOR D=16 A=7 P=18

1a Two species are distinctive: see Appendix I.....*S. babcocki*, *S. ruberrimus*
1b Not as above.....2

2a Supraocular spine present.....3
2b Supraocular spine absent.....*S. flavidus*

3a Gill rakers usually 31-34.....*S. rufus*
3b Gill rakers usually > 33.....*S. entomelas*, *S. hopkinsi*

D=16 A=7 P=19

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit these meristics:

S. babcocki
S. ruberrimus
S. rufus

All of these species except *S. rufus* are distinctive: see Appendix I.

Possible but unlikely are:

S. entomelas
S. flavidus
S. melanops
S. ovalis
S. pinniger

D=16 A=7 P=20

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. babcocki
S. melanops
S. ruberrimus

D=16 A=8

This combination of meristics is typical for two species:

S. entomelas
S. rufus

Some individuals of several species may exhibit this combination of characters:

S. alutus
S. flavidus
S. hopkinsi
S. jordani
S. melanops
S. mystinus
S. ovalis
S. serranoides

Possible but unlikely are:

S. babcocki
S. pinniger
S. ruberrimus
S. zacentrus

D=16 A=8 P=16

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. hopkinsi
S. mystinus
S. pinniger
S. zacentrus

D=16 A=8 P=17

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. entomelas
S. hopkinsi
S. mystinus
S. serranoides

To differentiate these species: see Appendix II.

Possible but unlikely are:

S. alutus
S. babcocki
S. flavidus
S. ovalis
S. pinniger
S. ruberrimus
S. zacentrus

D=16 A=8 P=18

This combination of meristics is typical for two species:

S. entomelas
S. *rufus*

Some individuals of several species may exhibit this combination of characters:

S. alutus
S. flavidus
S. hopkinsi
S. melanops
S. mystinus
S. ovalis
S. serranoides

If specimen > 35 mm (45 mm for *S. entomelas*) and has a black spot on its spinous dorsal fin, use Appendix II and consider *S. entomelas*, *S. flavidus*, *S. melanops*, *S. mystinus*, and *S. serranoides*. If not, use Key for D=16 A=8 P=18. If the specimen > 45 mm and lacks the black spot, do not consider the black spot group.

Possible but unlikely are:

S. babcocki
S. jordani
S. pinniger
S. ruberrimus
S. zacentrus

KEY FOR D=16 A=8 P=18

1a Supraocular spines present.....S. alutus
S. entomelas
S. hopkinsi
S. mystinus
S. ovalis
S. rufus

1b Supraocular spines absent.....S. alutus
S. flavidus
S. melanops
S. serranoides

If specimen is small, it is very difficult to differentiate these species. If specimen > 45 mm and clearly not of the black dorsal spot group, it will still be somewhat difficult. S. alutus should be less deep-bodied than S. ovalis and S. rufus; see Appendices II and IV.

D=16 A=8 P=19

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. entomelas
S. melanops
S. rufus

If specimen > 35 mm (45 mm for S. entomelas) and has a black spot on its spinous dorsal fin, see Appendix II and consider S. entomelas and S. melanops. If < 35 mm, use Key for D=16 A=8 P=18. If specimen > 45 mm and does not have a black dorsal fin spot, it is S. rufus.

Possible but unlikely are:

S. babcocki
S. flavidus
S. hopkinsi
S. jordani
S. mystinus
S. ovalis
S. pinniger
S. ruberrimus
S. serranoides

D=16 A=8 P=20,21

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. jordani

Possible but unlikely are:

S. babcocki
S. melanops
S. ruberrimus

D=16 A=9

This combination of meristics is typical for several species:

S. jordani
S. mystinus
S. serranoides

Some individuals of several species may exhibit this combination of characters:

S. alutus
S. entomelas
S. melanops
S. ovalis
S. rufus

Possible but unlikely are:

S. babcocki
S. flavidus
S. pinniger

D=16 A=9 P=16

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. mystinus

Possible but unlikely is:

S. pinniger

D=16 A=9 P=17

This combination of meristics is typical for two species:

S. mystinus *S. serranoides*

Possible but unlikely are:

S. alutus *S. flavidus*
S. babcocki *S. ovalis*
S. entomelas *S. pinniger*

D=16 A=9 P=18

This combination of meristics is typical for two species:

S. mystinus *S. serranoides*

Some individuals of several species may exhibit these meristics:

S. alutus *S. melanops*
S. entomelas *S. ovalis*
S. jordani *S. rufus*

If specimen > 35 mm (45 mm for *S. entomelas*) and has a black dorsal fin spot, see Appendix II and consider *S. entomelas*, *S. mystinus* and *S. serranoides*. If not, use Key for D=16 A=9 P=18 and discount *S. entomelas*, *S. mystinus* and *S. serranoides*.

Possible but unlikely are:

S. babcocki *S. pinniger*
S. flavidus

KEY FOR D=16 A=9 P=18

1a One species is distinctive: see Appendix I.....*S. jordani*
1b Not as above.....2

2a Supraocular spines present.....*S. alutus*
S. entomelas
S. mystinus
S. ovalis
S. rufus
2b Supraocular spines absent.....*S. alutus*
S. melanops
S. serranoides

These species will be very difficult to differentiate if < 45 mm. *Sebastes alutus* should be less deep-bodied than *S. ovalis* and *S. rufus*: see Appendix IV.

D=16 A=9 P=19

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. jordani
S. melanops
S. mystinus
S. serranoides

Sebastes jordani is distinctive; see Appendices I and II.

Possible but unlikely are:

S. babcocki
S. entomelas
S. flavidus
S. ovalis
S. pinniger
S. rufus

D=16 A=9 P=20,21

This combination of meristics is typical for one species:

S. jordani

Possible but unlikely are:

S. babcocki
S. melanops

D=16 A=10

This combination of meristics is typical for one species:

S. jordani

Some individuals of two species may exhibit this combination of characters:

S. mystinus
S. serranoides

Sebastes jordani is distinctive in the position of the anus. For the remaining species, use Appendix II.

Possible but unlikely is:

S. melanops

D=16 A=11

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. jordani *S. serranoides*

Sebastes jordani is distinctive: see Appendix I.

D=17

This combination of meristics is not typical for any species.

Some individuals of five species may exhibit this character:

S. alutus
S. mystinus
S. ovalis
S. rufus
S. serranoides

D=17 A=6

This combination of meristics is not typical for any species.

Possible but unlikely is:

S. alutus

D=17 A=7

This combination of meristics is not typical for any species.

Some individuals of one species may exhibit this combination of characters:

S. rufus

Possible but unlikely are:

S. alutus
S. ovalis

D=17 A=8

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. alutus
S. ovalis
S. rufus

To differentiate these species: see Appendix IV.

Possible but unlikely are:

S. mystinus
S. serranoides

D=17 A=9

This combination of meristics is not typical for any species.

Some individuals of several species may exhibit this combination of characters:

S. alutus	S. ovalis
S. mystinus	S. serranoides

If specimen > 35 mm and has a black spot on its spinous dorsal fin, see Appendix II and consider S. mystinus and S. serranoides. If it > 35 mm and lacks a black dorsal spot, it is S. alutus or S. ovalis: see Appendix IV. If < 35 mm, use Key for D=17 A=9.

Possible but unlikely are:

S. rufus

KEY FOR D=17 A=9

1a Supraocular spines present.....2
1b Supraocular spines absent.....3

2a Interorbital space convex.....S. mystinus
2b Interorbital space flat, concave.....S. ovalis

3a Lateral line pores usually > 50.....S. ovalis
S. serranoides
3b Lateral line pores usually < 30.....S. alutus
S. mystinus

D=17 A=10

This combination of meristics is not typical for any species.

Possible but unlikely are:

S. mystinus	S. serranoides

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APPENDIX I
DESCRIPTION OF SPECIES

SEBASTES ALUTUS - PACIFIC OCEAN PERCH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range: 14-17		typical: 14-15
Anal Soft Rays, range: 6-9		typical: 6-9
Pectoral Rays, range: 17-18		typical: 18
Gill rakers, range: 30-38		typical: 33-35
Lateral line pores, range: 44-51		
Interorbital space: flat to convex		
Head spines, supraocular: +, -		coronal: -
Second anal spine, re third:	2x thick, <	
Vertebrae: 26,27	Parturition: April	

Juvenile Characteristics:

Not seen from Tiburon Laboratory studies.

References: 1, 5, 10, 16, 21, 24, 25, 28

SEBASTES ATROVIRENS - KELP ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range: 12-15		typical: 13-14
Anal Soft Rays, range: 6-8		typical: 7
Pectoral Rays, range: 16-18		typical: 17
Gill rakers, range: 28-36		typical: 31-33
Lateral line pores, range: 37-44		
Interorbital space: strongly convex		
Head spines, supraocular: -		coronal: -
Second anal spine, re third:	2x thick, -	
Vertebrae: 26	Parturition:	

Juvenile Characteristics:

Small Juveniles have 5 narrow brown bars, 40-50 mm fish become an even tan or brown. Not seen from Tiburon Laboratory studies.

References: 4, 21, 28

SEBASTES AURICULATUS - BROWN ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-15	typical:	13
Anal Soft Rays, range:	6-8	typical:	7
Pectoral Rays, range:	15-19	typical:	18
Gill rakers, range:	21-30	typical:	25-28

Lateral line pores, range: 42-49
Interorbital space: flat to convex
Head spines, supraocular: - coronal: +
Second anal spine, re third: 2x thick, =
Vertebrae: 26 Parturition: May and June

Juvenile Characteristics:

A blotch of dark pigment is visible on the operculum of all but the smallest juveniles. It is a very subtle feature in small fish: it is readily noticeable by 50 mm. Small fish have a noticeable greenish cast and a distinct line of darker pigment just under the dorsal fins (both spinous and soft). Coronal spines will separate this species from others with the same meristics in California.

References: 10, 11, 16, 21, 28

SEBASTES AURORA - AURORA ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-14	typical:	13
Anal Soft Rays, range:	5-6	typical:	6
Pectoral Rays, range:	16-18	typical:	17-18
Gill rakers, range:	24-30	typical:	25-28

Lateral line pores, range: 27-31
Interorbital space: slight convex to slight concave
Head spines, supraocular: + coronal: +,-
Second anal spine, re third: 1x thick, ≥
Vertebrae: Parturition: August

Juvenile Characteristics:

Reportedly barred as juveniles. Not seen from Tiburon Laboratory studies.

References: 10, 16, 19, 21, 25, 28

SEBASTES BABCOCKI - REDBANDED ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-16	typical:	13-14
Anal Soft Rays, range:	6-9	typical:	7
Pectoral Rays, range:	17-20	typical:	19
Gill rakers, range:	25-33	typical:	30-31
Interorbital space:	flat to concave		
Head spines, supraocular:	+, -	coronal:	-
Second anal spine, re third:	2x thick, >		
Vertebrae:		Parturition:	May

Juvenile Characteristics:

A red-banded pigment pattern, is clearly present on specimens > 35mm. Not seen from Tiburon Laboratory studies.

References: 3, 8, 10, 16, 21, 23, 25, 28

SEBASTES CARNATUS - GOPHER ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-14	typical:	13
Anal Soft Rays, range:	6-7	typical:	6
Pectoral rays, range:	16-18	typical:	17
Gill rakers, range:	27-32	typical:	28-31
Lateral line pores, range:	36-42		
Interorbital space:	convex, mid concave		
Head spines, supraocular:	-	coronal:	-
Second anal spine, re third:	2x thick, -		
Vertebrae:	26	Parturition:	March

Juvenile Characteristics:

25 mm fish have dark brown bars with bridge between 2nd and 3rd bars just under dorsal fin. Fins become orange with growth. Not seen from Tiburon Laboratory studies.

References: 4, 8, 16, 21, 28

SEBASTES CAURINUS - COPPER ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	11-14	typical:	12-13
Anal Soft Rays, range:	5-7	typical:	6
Pectoral Rays, range:	16-18	typical:	17-18
Gill rakers, range:	26-32	typical:	28-30
Lateral line pores, range:	39-45		
Interorbital space:	concave to convex		
Head spines, supraocular:	+,-	coronal:	-
Second anal spine, re third:	2x thick, =		
Vertebrae:		Parturition:	July

Juvenile Characteristics:

At 25 mm, five red-brown bars, fins become orange with growth. Posterior third of lateral line becomes "clear" about 50 mm. Orange chromatophores visible on body with fresh or frozen specimens.

References: 3, 8, 10, 11, 16, 21, 28

SEBASTES CHLOROSTICTUS - GREENSPOTTED ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	11-15	typical:	12-13
Anal Soft Rays, range:	5-7	typical:	6
Pectoral Rays, range:	16-18	typical:	17
Gill rakers, range:	29-36	typical:	31-34
Lateral line pores, range:	35-40		
Interorbital space:	deeply concave		
Head spines, supraocular:	+	coronal:	-
Second anal spine, re third:	2, 3x thick, ≥		
Vertebrae:	26, 27	Parturition:	June

Juvenile Characteristics:

Not seen from Tiburon Laboratory studies.

References: 8, 21, 28

SEBASTES CHRYSOMELAS - BLACK AND YELLOW ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-14	typical:	13
Anal Soft Rays, range:	6-7	typical:	6
Pectoral Rays, range:	17-18	typical:	17
Gill rakers, range:	24-31	typical:	26-30
Lateral line pores, range:	35-40		
Interorbital space:	deeply concave		
Head spines, supraocular:	-	coronal:	-
Second anal spine, re third:	2x thick, =		
Vertebrae:		Parturition:	February-March

Juvenile Characteristics:

25 mm with five brown bars; develops to black bars with yellow fins.

References: 4, 21, 28

SEBASTES CONSTELLATUS - STARRY ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-14	typical:	12-14
Anal Soft Rays, range:	5-7	typical:	6
Pectoral Rays, range:	16-18	typical:	17
Gill rakers, range:	24-30	typical:	27-29
Lateral line pores, range:	37-43		
Interorbital space:	deeply concave		
Head spines, supraocular:	+	coronal:	-
Second anal spine, re third:	2x thick, ≥		
Vertebrae:	25,26	Parturition:	April

Juvenile Characteristics:

Not seen from Tiburon Laboratory studies.

References: 8, 21, 28

SEBASTES CRAMERI - DARKBLOTCHED ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-15	typical:	13-14
Anal Soft Rays, range:	5-7	typical:	7
Pectoral Rays, range:	18-20	typical:	18-20
Gill rakers, range:	28-35	typical:	30-33
Lateral line pores, range:	40-50		
Interorbital space:	flat to convex		
Head spines, supraocular:	+	coronal:	-
Second anal spine, re third:	2x thick, ≤		
Vertebrae:		Parturition:	January

Juvenile Characteristics:

20 mm fish have 2 pigment "saddles," 25mm fish show 5 "saddles," 40 mm dorsal fin show heavy black spot. Benthic juveniles > 60 mm show a decrease in pigment intensity, especially a decrease in yellow chromatophore. Small fish have black and yellow pigment on pectoral fins. The presence of nuchal spines will distinguish this species from S. levis.

References: 3, 10, 16, 21, 22, 27, 28

SEBASTES DIPLOPROA - SPLITNOSE ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	11-14	typical:	12-13
Anal Soft Rays, range:	5-8	typical:	6-7
Pectoral Rays, range:	17-19	typical:	17-18
Gill rakers, range:	32-37	typical:	33-36
Lateral line pores, range:	33-43		
Interorbital space:	flat to concave		
Head spines, supraocular:	-	coronal:	-
Second anal spine, re third:	2x thick, =		
Vertebrae:	26	Parturition:	June

Juvenile Characteristics:

Juveniles are distinctively pigmented even at very small sizes, they are evenly dark grey-pink. Spinous dorsal is pigmented: soft dorsal,anal and pelvics are pigmented with clear edges.

References: 3, 6, 7, 8, 10, 16, 17, 21, 28

SEBASTES ELONGATUS - GREENSTRIPED ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-14	typical:	13
Anal Soft Rays, range:	5-6	typical:	6
Pectoral Rays, range:	16-18	typical:	16-17
Gill rakers, range:	28-34	typical:	30-33
Lateral line pores, range:	40-45		
Interorbital space:	slightly concave		
Head spines, supraocular:	-	coronal:	-
Second anal spine, re third:	2x thick, >		
Vertebrae:	26	Parturition:	May

Juvenile Characteristics:

Juveniles have a distinctive pigment pattern of elongate blotches. Yellow pigment present on the head and operculum; black pigment on head, operculum, and on dorsal ridge below dorsal fins and spines. Black pigment also on lateral line but only on the posterior quarter of body length. This pigment begins past the anal fin and extends to the caudal fin. They are not at all deep bodied.

References: 3, 10, 16, 21, 27, 28

SEBASTES ENTOMELAS - WIDOW ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	14-16	typical:	15-16
Anal Soft Rays, range:	7-10	typical:	8
Pectoral Rays, range:	17-19	typical:	18
Gill rakers, range:	33-40	typical:	34-37
Lateral line pores, range:	51-58		
Interorbital space:	convex to concave		
Head spines, supraocular:	+, -	coronal:	-
Second anal spine, re third:	1x, =		
Vertebrae:		Parturition:	February

Juvenile Characteristics:

Slender-bodied at all sizes. Small fish only lightly pigmented; they have large melanophores on the dorsal ridge under the dorsal fin, and they have about four tiny melanophores on the ventral surface near the caudal fin. By 40 mm most of body is pigmented. By 56 mm 2 eye bars are present and body pigment has blotched pattern. By 45 mm black spot on posterior part of spinous dorsal fin is clear; becomes a fringe of pigment in large individuals.

References: 4, 8, 10, 14, 16, 21, 28

SEBASTES EOS - PINK ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	11-13	typical:	12-13
Anal Soft Rays, range:	6-7	typical:	6
Pectoral Rays, range:	16-18	typical:	17-18
Gill rakers, range:	26-33	typical:	27-30
Lateral line pores, range:	34-40		
Interorbital space:	concave		
Head spines, supraocular:	+	coronal:	-, +
Second anal spine, re third:	2,3x thick, ≥		
Vertebrae:		Parturition:	

Juvenile Characteristics:

Not seen from Tiburon Laboratory studies.

References: 8, 21, 28

SEBASTES FLAVIDUS - YELLOWTAIL ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	14-16	typical:	14-15
Anal Soft Rays, range:	7-9	typical:	7-8
Pectoral Rays, range:	17-19	typical:	18
Gill rakers, range:	31-39	typical:	35-38
Lateral line pores, range:	49-56		
Interorbital space:	convex		
Head spines, supraocular:	-	coronal:	-
Second anal spine, re third:	1x thick, <		
Vertebrae:	26	Parturition:	January-February

Juvenile Characteristics:

No preocular spines. In small fish, pectoral and pelvic fins are moderately pigmented; body gradually becomes evenly pigmented with growth. Black spot on posterior of spinous dorsal fins clear at 35 mm. One cheek bar present at 60 mm. Fresh specimens have many yellow chromatophores. The presence of orange pigment spots along the anal fin base (when viewed ventrally) will distinguish this species from *S. serranoides*.

References: 4, 8, 10, 13, 16, 17, 21, 27, 28

SEBASTES GOODEI - CHILIPEPPER

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-15	typical:	13-14
Anal Soft Rays, range:	7-10	typical:	8
Pectoral Rays, range:	16-19	typical:	17
Gill rakers, range:	31-39	typical:	34-37
Lateral line pores, range:	50-57		
Interorbital space:	flat to convex		
Head spines, supraocular:	-	coronal:	-
Second anal spine, re third:	1x thick, <		
Vertebrae:	26	Parturition:	January

Juvenile Characteristics:

Juveniles are distinctively marked with three bars that start under the dorsal fin and tend toward the head. All sizes of juveniles are very slender bodied. Juveniles < 30 mm have some black pigment on pelvic and pectoral fins. Yellow pigment on small (15 mm) fish on pectoral fin base.

References: 3, 4, 10, 18, 21, 28

SEBASTES HELVOMACULATUS - ROSETHORN ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-14	typical:	12-13
Anal Soft Rays, range:	5-7	typical:	6
Pectoral Rays, range:	15-17	typical:	16-17
Gill rakers, range:	27-33	typical:	28-31
Lateral line pores, range:	35-41		
Interorbital space:	deeply concave		
Head spines, supraocular:	+	coronal:	-
Second anal spine, re third:	2x thick, >		
Vertebrae:	26	Parturition:	

Juvenile Characteristics:

By 25 mm, juveniles show a distinct patch of pigment on the caudal peduncle and a faint pigment saddle under the spinous dorsal fin. Pelvic fins extend to 1st spine of anal fin. Never develops striking bars as do the rest of this group. Not seen from Tiburon Laboratory studies.

References: 8, 10, 16, 21, 22, 28

SEBASTES HOPKINSI - SQUARESPOT ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-16	typical:	14-16
Anal Soft Rays, range:	6-8	typical:	7
Pectoral Rays, range:	16-18	typical:	17
Gill rakers, range:	34-41	typical:	37-40
Lateral line pores, range:	49-55		
Interorbital space:	strongly convex		
Head spines, supraocular:	+, -	coronal:	-
Second anal spine, re third:	2x thick, ≥		
Vertebrae:		Parturition:	March

Juvenile Characteristics:

Slender-bodied juveniles. Pre-, supra-, and postoculars spines present. Spinous dorsal dark with light edge, never develops dark spot; otherwise pigment much like S. flavidus. Some yellow-orange melanophores on body of fresh specimens. Large juveniles (45 mm) have red-orange hue and dark pigment on the membranes between the pectoral, dorsal and anal fins. Second anal spine is distinct: very spear-shaped and curved. Head spines are very "thorn-like."

References: 3, 21, 28

SEBASTES JORDANI - SHORTBELLY ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-16	typical:	14-16
Anal Soft Rays, range:	8-11	typical:	8-10
Pectoral Rays, range:	18-22	typical:	20-21
Gill rakers, range:	40-49	typical:	43-46
Lateral line pores, range:	52-59		
Interorbital space:	flat to convex		
Head spines, supraocular:	-, +	coronal:	-
Second anal spine, re third:	1x thick, <		
Vertebrae:	26, 27	Parturition:	February

Juvenile Characteristics:

Juveniles of this species are quite distinctive. They are very slender bodied. The anus is located more anteriorly than in any other rockfish; there is a definite space between the anus and the 1st spine of the anal fin. The caudal fin is distinctly pink in fresh specimens. Small fresh specimens have many orange chromatophores on the body.

References: 3, 4, 10, 16, 18, 20, 21, 28

SEBASTES LEVIS - COWCOD

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-14	typical:	12-13
Anal Soft Rays, range:	6-8	typical:	6-7
Pectoral Rays, range:	17-19	typical:	17-18
Gill rakers, range:	29-32	typical:	30-32
Lateral line pores, range:	45-52		
Interorbital space:	flat to convex		
Head spines, supraocular:	+,-	coronal:	-
Second anal spine, re third:	1,2x thick, =		
Vertebrae:	26	Parturition:	December

Juvenile Characteristics:

Juveniles are distinctive. They have quite large yellow pectoral fins; at 33 mm these fins are about 50% body length; at 60 mm about 30%. Five faint pigment bars develop by 30 mm and are retained on larger juveniles and adults. Nuchal spines absent; this will distinguish this species from S. crameri.

References: 3, 20, 21, 28

SEBASTES MALIGER - QUILLBACK ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-14	typical:	13-14
Anal Soft Rays, range:	6-8	typical:	7
Pectoral Rays, range:	16-18	typical:	17
Gill rakers, range:	28-34	typical:	30-33
Lateral line pores, range:	35-43		
Interorbital space:	varies		
Head spines, supraocular:	-,+	coronal:	-
Second anal spine, re third:	2x thick, =		
Vertebrae:		Parturition:	April

Juvenile Characteristics:

Rather evenly pigmented with line of more intense pigment under soft dorsal fin. Spinous dorsal is very "quill-like."

References: 10, 21, 28

SEBASTES MELANOPS - BLACK ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-16	typical:	14-15
Anal Soft Rays, range:	7-10	typical:	8-9
Pectoral Rays, range:	18-20	typical:	18-19
Gill rakers, range:	32-39	typical:	35-38
Lateral line pores, range:	46-53		
Interorbital space:	convex to flat		
Head spines, supraocular:	-, +	coronal:	-
Second anal spine, re third:	1x, thick =		
Vertebrae:	26	Parturition:	February

Juvenile Characteristics:

Slightly more intense pigment than others of the group but lacks any distinct pattern on the body. Black dorsal spot apparent by 35 mm. Two cheek bars by 76 mm or smaller. Faint yellow chromatophores on fins of fresh specimens. Flesh has distinct "green" cast as opposed to a "white" cast for S. flavidus. Head is more pointed than S. flavidus. Sometimes a supraocular spine is found only over one eye. Larger juveniles are quite reddish-black.

References: 4, 9, 10, 13, 16, 20, 21, 26, 28

SEBASTES MELANOSTOMUS - BLACKGILL ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-15	typical:	13
Anal Soft Rays, range:	6-8	typical:	7
Pectoral Rays, range:	18-20	typical:	19
Gill rakers, range:	29-35	typical:	31-33
Lateral line pores, range:	29-317		
Interorbital space:	flat to slight concave		
Head spines, supraocular:	+	coronal:	-
Second anal spine, re third:	2x thick, ≤		
Vertebrae:	26-27	Parturition:	February

Juvenile Characteristics:

Juveniles are distinctively pigmented. 25 mm fish have 2 bars under the spinous dorsal and 1 under the soft dorsal. Pigment fills in between the bars gradually; by 45 mm completely pigmented but bars still visible as darker pigment. Not seen from Tiburon Laboratory studies.

References: 16, 19, 21, 28

SEBASTES MINIATUS - VERMILLION ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-15	typical:	13-14
Anal Soft Pays, range:	6-8	typical:	7-8
Pectoral Rays, range:	16-18	typical:	17-18
Gill rakers, range:	35-43	typical:	37-41
Lateral line pores, range:	40-47		
Interorbital space:	flat to convex		
Head spines, supraocular:	+	coronal:	-
Second anal spine, re third:	1x, thick =		
Vertebrae:	26	Parturition:	November

Juvenile Characteristics:

Intensely pigmented body and fins, except caudal fin in very small fish. Splotches of pigment on pectoral fins near the base. Deep bodied. Becomes less intensely pigmented with age; grey-black becomes red with increased size.

References: 3, 10, 16, 21, 28

SEBASTES MYSTINUS - BLUE ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	15-17	typical:	15-16
Anal Soft Rays, range:	8-10	typical:	8-9
Pectoral Rays, range:	16-19	typical:	17-18
Gill rakers, range:	31-38	typical:	33-36
Lateral line pores, range:	49-56		
Interorbital space:	strong convex		
Head spines, supraocular:	-, +	coronal:	-
Second anal spine, re third:	1x thick, <		
Vertebrae:	26	Parturition:	January

Juvenile Characteristics:

Dark spot is very intense in color. Dark pigment "cheek" lines present on large specimens. Pigment present on membranes of the anal fin in medium to large fish.

References: 3, 4, 8, 10, 14, 16, 21, 28

SEBASTES NEBULOSUS - CHINA ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-14	typical:	13-14
Anal Soft Rays, range:	6-8	typical:	7
Pectoral Rays, range:	17-19	typical:	18
Gill rakers, range:	25-31	typical:	27-30
Lateral line pores, range:	37-48?	typical:	38-41?
Interorbital space:	flat to concave?		
Head spines, supraocular:	-, +	coronal:	-
Second anal spine, re third:	2x thick, ≥		
Vertebrae:	26	Parturition:	January

Juvenile Characteristics:

Not seen from Tiburon Laboratory studies.

References: 10, 28

SEBASTES NIGROCINCTUS - TIGER ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-15	typical:	14-15
Anal Soft Rays, range:	7	typical:	7
Pectoral Rays, range:	18-20	typical:	19
Gill rakers, range:	27-32	typical:	28-31
Lateral line pores, range:	41-50		
Interorbital space:	concave		
Head spines, supraocular:	+, -	coronal:	-, +
Second anal spine, re third:	2x thick, ≤		
Vertebrae:		Parturition:	

Juvenile Characteristics:

Coronal spines often present. Distinct black bands over yellow-gold found by 33 mm.

References: 10, 11, 21, 28

SEBASTES OVALIS - SPECKLED ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-17	typical:	14-15
Anal Soft Rays, range:	7-9	typical:	8-9
Pectoral Rays, range:	17-19	typical:	18
Gill rakers, range:	30-37	typical:	31-33
Lateral line pores, range:	47-55		
Interorbital space:	convex		
Head spines, supraocular:	+, -	coronal:	-
Second anal spine, re third:	2x thick, ≤		
Vertebrae:		Parturition:	February

Juvenile Characteristics:

Not seen from Tiburon Laboratory studies.

References: 21, 28

SEBASTES PAUCISPINIS - BOCACCIO

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-15	typical:	14
Anal Soft Rays, range:	8-10	typical:	9
Pectoral Rays, range:	14-16	typical:	15
Gill rakers, range:	26-31	typical:	28-30
Lateral line pores, range:	54-58		
Interorbital space:	convex		
Head spines, supraocular:	-	coronal:	-
Second anal spine, re third:	1x, thick <		
Vertebrae:	26	Parturition:	February

Juvenile Characteristics:

Dark pigment on posterior portion of pectoral and pelvic fins is noticeable in juveniles up to 70 mm. Pectorals are very long in fish about 25 mm, reaching to 1st anal spine. Large mouth obvious at all sizes.

References: 3, 4, 10, 16, 18, 21, 28

SEBASTES PINNIGER - CANARY ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-16	typical:	14-15
Anal Soft Rays, range:	7-8	typical:	7
Pectoral Rays, range:	16-19	typical:	17
Gill rakers, range:	38-46	typical:	41-44
Lateral line pores, range:	39-44		
Interorbital space:	flat to convex		
Head spines, supraocular:	+	coronal:	-
Second anal spine, re third:	1x thick, <		
Vertebrae:	26	Parturition:	February

Juvenile Characteristics:

Small fish (< 20 mm) have black pigment on the pelvic and/or pectoral fins and yellow pigment on base of pectoral fins. 25 mm fish show developing saddles of pigment under dorsal fins. 30 mm fish show black spot on spinous dorsal fin; appearance of very white fish with bright black spot; deeper bodied than other black dorsal spot fish. 40 mm fish show very distinct pigment pattern.

References: 4, 10, 16, 21, 22, 28

SEBASTES PRORIGER - REDSTRIPE ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-16	typical:	14-15
Anal Soft Rays, range:	6-7	typical:	7
Pectoral Rays, range:	16-18	typical:	17
Gill rakers, range:	36-43	typical:	37-39
Lateral line pores, range:	46-53		
Interorbital space:	concave to convex		
Head spines, supraocular:	-	coronal:	-
Second anal spine, re third:	2x thick, =		
Vertebrae:	27	Parturition:	

Juvenile Characteristics:

Not seen from Tiburon Laboratory studies.

References: 5, 8, 10, 16, 21, 28

SEBASTES RASTRELLIGER - GRASS ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-14	typical:	13
Anal Soft Rays, range:	6	typical:	6
Pectoral Rays, range:	18-20	typical:	19
Gill rakers, range:	22-25	typical:	25
Lateral line pores, range:	42-47		
Interorbital space:	strong convex		
Head spines, supraocular:	-	coronal:	-
Head spines,			
Second anal spine, re third:	1-2x thick, =		
Vertebrae:		Parturition:	

Juvenile Characteristics:

Small fish have a silvery appearance with a thick, dark line along dorsal margin below dorsal fins. Larger fish (25-30mm) have dark pigment on anal, pectoral, and dorsal fins with several uneven vertical bars on posterior portion of body.

References: 21, 28

SEBASTES ROSACEUS - ROSE ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	11-14	typical:	12-13
Anal Soft Rays, range:	5-7	typical:	6
Pectoral Rays, range:	16-18	typical:	17
Gill rakers, range:	29-34	typical:	30-33
Lateral line pores, range:	36-42		
Interorbital space:	strong concave		
Head spines, supraocular:	+	coronal:	-
Second anal spine, re third:	2x thick, >		
Vertebrae:	26-27	Parturition:	April

Juvenile Characteristics:

Not seen from Tiburon Laboratory studies.

References: 8, 21, 28

SEBASTES RUBERRIMUS - YELLOWEYE ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-16	typical:	14-15
Anal Soft Rays, range:	5-8	typical:	7
Pectoral Rays, range:	16-20	typical:	18-19
Gill rakers, range:	24-31	typical:	26-29
Lateral line pores, range:	39-46		
Interorbital space:	concave		
Head spines, supraocular:	+	coronal:	-, +
Second anal spine, re third:	2x thick, =		
Vertebrae:	26	Parturition:	June

Juvenile Characteristics:

Bright yellow eye is obvious at all sizes. 175 mm fish are red to brown-black with 2 pink stripes-one on lateral line and one below snout and eye, and over base of pectoral fin.

References: 1, 10, 21, 28

SEBASTES RUBRIVINCTUS - FLAG ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-15	typical:	13-14
Anal Soft Rays, range:	6-8	typical:	7
Pectoral Rays, range:	16-18	typical:	17
Gill rakers, range:	26-30	typical:	28-29
Lateral line pores, range:			
Interorbital space:			
Head spines, supraocular:	-	coronal:	-
Second anal spine, re third:			
Vertebrae:		Parturition:	July

Juvenile Characteristics:

Adult pattern completely formed by 40 mm. Not seen from Tiburon Laboratory studies.

References: 3, 8, 28

SEBASTES RUFUS - BANK ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	14-17	typical:	15-16
Anal Soft Rays, range:	5-9	typical:	7
Pectoral Rays, range:	18-19	typical:	18
Gill rakers, range:	31-35	typical:	32-35
Lateral line pores, range:	49-56		
Interorbital space:			
Head spines, supraocular:	+	coronal:	-
Second anal spine, re third:	2x thick, >		
Vertebrae:		Parturition:	December-January

Juvenile Characteristics:

Dark pigment on caudal fin edge and entire dorsal fin. Very speckled body pigment, more yellowish than S. entomelas.

References: 16

SEBASTES SAXICOLA - STRIPETAIL ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	11-13	typical:	12
Anal Soft Rays, range:	5-8	typical:	7
Pectoral Rays, range:	15-18	typical:	16-17
Gill rakers, range:	29-35	typical:	31-34
Lateral line pores, range:	36-42		
Interorbital space:	flat to slight concave		
Head spines, supraocular:	-	coronal:	-
Second anal spine, re third:	2x thick, >		
Vertebrae:		Parturition:	July

Juvenile Characteristics:

Five bars on body and caudal peduncle. Bar under soft-rayed dorsal fin is an inverted triangle and is darkest of the five. Pigment continuous from body into the dorsal fins.

References: 3, 8, 16, 21, 28

SEBASTES SEMICINCTUS - HALFBANDED ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	12-14	typical:	13-14
Anal Soft Rays, range:	6-8	typical:	7
Pectoral Rays, range:	16-18	typical:	17
Gill rakers, range:	37-41		
Lateral line pores, range:	42-47		
Interorbital space:			
Head spines, supraocular:	-, +	coronal:	-
Second anal spine, re third:			
Vertebrae:		Parturition:	

Juvenile Characteristics:

Five saddles-bars on body and caudal peduncle. Bar under posterior of spinous dorsal fin is diamond-shaped and darkest. Body more slender than S. saxicola.

References: 3, 8

SEBASTES SERRANOIDES - OLIVE ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	15-17	typical:	15-16
Anal Soft Rays, range:	8-10	typical:	9
Pectoral Rays, range:	17-19	typical:	17-18
Gill rakers, range:	31-36	typical:	32-35
Lateral line pores, range:	50-56		
Interorbital space:	convex		
Head spines, supraocular:	-, +	coronal:	-
Second anal spine, re third:	1x thick, <		
Vertebrae:	26	Parturition:	February

Juvenile Characteristics:

Usually one supraocular spine above left eye. Subtle dark pigment on lateral line. Pectoral fins pigmented at 48 mm.

References: 3, 4, 8, 21, 28

SEBASTES WILSONI - PYGMY ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-15	typical:	13-14
Anal Soft Rays, range:	5-7	typical:	6
Pectoral Rays, range:	16-18	typical:	17
Gill rakers, range:	37-43	typical:	38-42
Lateral line pores, range:	37-45		
Interorbital space:	flat		
Head spines, supraocular:	-	coronal:	-
Second anal spine, re third:	2x thick, >		
Vertebrae:		Parturition:	

Juvenile Characteristics:

35 mm fish have broken pigment pattern on the side of the body under the spinous dorsal fin and a broad deep bar of pigment under the soft dorsal fin.

References: 8, 10, 21, 28

SEBASTES ZACENTRUS - SHARPCHIN ROCKFISH

Meristics and Morphometrics of the adult:

Dorsal Soft Rays, range:	13-16	typical:	13-14
Anal Soft Rays, range:	6-8	typical:	7
Pectoral Rays, range:	16-18	typical:	17
Gill rakers, range:	32-37	typical:	34-37
Lateral line pores, range:	38-47	typical:	40-44
Interorbital space:	flat to slight convex		
Head spines, supraocular:	-	coronal:	-
Second anal spine, re third:	1-2x thick, ≥		
Vertebrae:	27-28	Parturition:	

Juvenile Characteristics:

Rather deep-bodied; moderately long pectorals and pelvics. Develops five indistinct saddles of pigment on dorsal surface in benthic individuals.

References: 8, 10, 14, 16, 21, 28

APPENDIX II
BLACK DORSAL SPOT GROUP

Several species of juvenile Sebastes (> 35 mm; 45 mm for S. entomelas) have a black spot on the posterio-distal edge of their spinous dorsal fin. These species are:

S. entomelas
S. flavidus
S. melanops
S. mystinus
S. pinniger
S. serranoides

Sebastes pinniger differs from the others in having a deeper body shape and a distinctive pigment pattern (see Appendix I). The other five species are difficult to differentiate as juveniles.

Sebastes hopkinsi may be confused with the five remaining species. It lacks a black dorsal spot, but is otherwise quite similar to the five species in this group in body proportion and pigment pattern. Meristics will differentiate this species in most cases.

The table below will help differentiate most individuals. The value reported is the percent of adult fish showing the character. This table shows meristic frequencies for California. Frequencies may differ in other areas.

SPECIES	DORSAL RAYS					ANAL RAYS					PECTORAL RAYS				
	13	14	15	16	17	6	7	8	9	10	16	17	18	19	20
S. entomelas			89	11			5	90	5			1	98	1	
S. flavidus		60	40				11	88	1			1	98	1	
S. melanops	1	22	63	14			6	26	66	2			29	71	
S. mystinus			18	73	9			2	97	1		2	93	5	
S. serranoides			38	61	1			6	91	3		64	34	2	
S. pinniger	7	76	15	2				98	2		1	87	11	1	
S. hopkinsi	4	15	60	21			8	88	4		4	93	3		

The chart below is based on Richardson and LaRoche (1979), LaRoche and Richardson (1980, 1981), and data from our studies. It emphasizes modal meristics and head spination. Most specimens can be identified, but atypical individuals may not be correctly identified. Supraoculars = supraocular spines, A = anal fin ray count, P = pectoral fin ray count.

SUPRAOCULARS PRESENT		SUPRAOCULARS ABSENT		
A=8	A=9	A=8		A=9
P=18		P=18	P=19	P=17
S. entomelas	S. mystinus	S. flavidus	S. melanops	S. serranoides

APPENDIX III
SEBASTOMUS GROUP

The Sebastomus group is a group of very closely related Sebastes species that are somewhat difficult to differentiate, even as adults. They are almost completely unknown as juveniles. The central California members of this group are:

S. chlorostictus
S. constellatus
S. eos
S. helvomaculatus
S. rosaceus

The Sebastomus group has been most thoroughly studied by L. C. Chen, and his published meristic frequencies provide the only practical way to differentiate some of the juveniles (Chen 1971).

Some of the members of this group are strongly barred as juveniles (Moser and Ahlstrom 1978). One member of the group, S. helvomaculatus, has been described (Richardson and LaRoche 1979) and is not barred, but rather evenly pigmented. The table below may help differentiate juveniles.

Meristics of five members of the Sebastomus group reported as percent of adult fish showing the character

SPECIES	DORSAL RAYS				ANAL RAYS			PECTORAL RAYS			
	11	12	13	14	5	6	7	15	16	17	18
S. chlorostictus	1	72	25	1	4	95	1		8	91	1
S. eos	3	76	21			95	5		1	30	69
S. helvomaculatus		13	81	6	1	96	3	2	81	17	
S. constellatus		10	79	11	2	97	1	5	93	2	
S. rosaceus	1	31	67	1	2	97	1		10	87	3

APPENDIX IV
AOR (ALUTUS-OVALIS-RUFUS)

Sebastes alutus, *S. ovalis*, and *S. rufus* are not well known as juveniles. Only *S. rufus* has been seen from our studies (see Appendix I). Fin ray counts of these three species overlap to a great extent. Therefore, differentiating these species will be very difficult. *Sebastes alutus* will likely have a more slender body shape that the other two species. The following chart may help differentiate some individuals.

SPECIES	DORSAL RAYS					ANAL RAYS				PECTORAL RAYS		
	13	14	15	16	17	6	7	8	9	17	18	19
S. alutus		X	X	O	O	O	O	X	X	O	X	O
S. ovalis	O	X	X	O	O		O	X	X	X	X	O
S. rufus		O	X	X	O		X	X	X	O	X	O

X = typical; O = occasional

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METHODS USED TO IDENTIFY PELAGIC JUVENILE ROCKFISH (GENUS *SEBASTES*) OCCURRING ALONG THE COAST OF CENTRAL CALIFORNIA

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