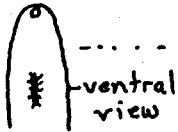

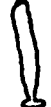


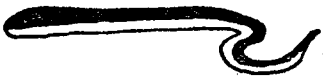




# Key to the Intertidal Nemertea of Southern California

- 1 a) Mouth posterior to brain ..... Proboscis unarmed.  ..... Anopla ... 31
- b) Mouth subterminal ..... Proboscis armed (except Bdellonemertea)  ..... Enopla ... 2
- 2 a) Sucking disc at posterior end of body... Proboscis unarmed  ..... Bdellonemertea.. 3
- b) Without any posterior appendage ..... Proboscis armed .....  ..... Hoplonemertea.. 4
- 3 a) Intestine convoluted, without lateral diverticula ..... Malacobdella grossa
- 4 a) Statocysts present on ganglia  ..... Ototyphlonemertidae <sup>5</sup>
- b) Statocysts absent ..... 6
- 5 a) Minute; white or translucent; interstitial in sand ..... Ototyphlonemertes spiralis
- 6 a) Parasitic on crabs.  
Red; proboscis rudimentary, no accessory stylets ..... Carcinonemertidae .. 7
- b) Free-living or commensal.  
Proboscis eversible, with accessory stylets ..... 8
- 7 a) On crab egg masses, or gill lamellae ..... Carcinonemertes epialti
- 8 a) Body color of two tones, dorsal color sharply contrasting with lighter ventral color  ..... 9
- b) Body color relatively uniform or with pattern of stripes, spots, reticulation or cephalic markings ..... 11
- 9 a) Body long, slender, often forming tangled masses .....  ..... Emplectonema spp. .. 10
- b) Body short, straight; purple dorsally, cream ventrally .....  ..... Paranemertes peregrina

10 a) Dorsally green; ventrally cream, white or pale yellow-green. . . . .  
Emplectonema gracile

b) Dorsally velvet-brown; ventrally cream or buff . . . . .  
Emplectonema bürgeri

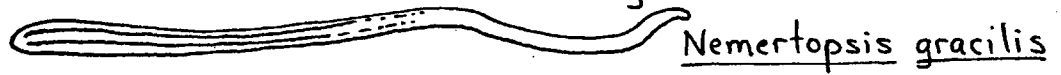
11 a) Body marked with distinct longitudinal stripes . . . . . 12

b) Body not striped or stripes accompanied by other markings . . . . . 15

12 a) Dorsal surface with 2 dark longitudinal stripes on pale ground color . . . . . 13

b) With more than 2 stripes . . . . . 14

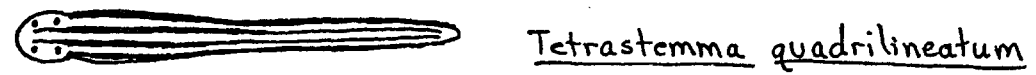
13 a) Stripes fade out posteriorly; body filiform, head smoothly continuous with body; intestinal region usually rosy or purplish; ocelli not visible without clearing . . . . .



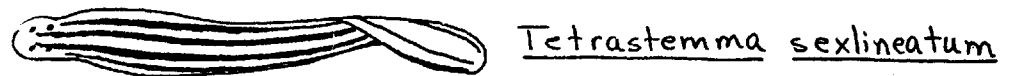
b) Stripes distinct throughout body length; head rounded, flattened, separated from body by slight constriction; 4 ocelli visible at corners of a rectangle on head . . . . .



14 a) Dorsal surface with 4 stripes: 2 dorsal and 2 lateral . . . . .



b) With 6 brown stripes: 1 mid-dorsal, 2 dorso-lateral, 2 ventro-lateral . . . . .



15 a) Head white, cream, or pale yellow; sharply separate from general body color, and bearing a distinct cephalic marking. Body color may uniform or patterned . . . . . 16

b) Body without cephalic marking . . . . . 17

(Note 3 choices)

- 16 a) Body reddish or reddish-brown; head white or cream with 2 triangular dark spots ..... Amphiporus bimaculatus

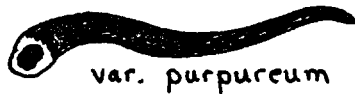


- b) Body reddish brown; head white with dark wreath on dorsal surface

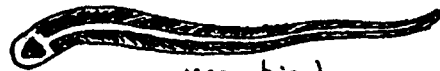


Tetrastemma signifer

- c) Body dark brown or buff, uniform, spotted, or striped; head white with a triangular or shield-shaped dark marking.....



var. purpureum



var. bicolor



var. pallidum



var. A

Tetrastemma nigrifrons

- 17 a) Dorsal surface with brown rectangular markings and stripes of dark brown on a cream ground color.....



Tetrastemma reticulatum

- b) Dorsal surface not reticulated .....18

- 18 a) Body with pattern of conspicuous spots .....19

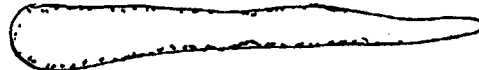
- b) Body without conspicuous markings .....20

- 19 a) Brown mottling extends over ventral surface, less thickly than dorsal surface



Amphiporus punctatulus

- b) Brown mottling on dorsal surface only, may condense into lines



Derstedia dorsalis

20 a) Ocelli form a row along lateral nerve cords extending behind brain - can be seen without clearing in all but juveniles. Body green, often with purple caste. Juveniles may be cream or pale. Sickle-shaped rhabdites present in epithelium.....



Zygonemertes virescens

b) Ocelli anterior to brain ..... 21

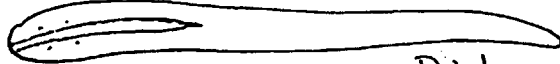
Steps 21 → 31, specimens should be closely examined for color, then cleared overnight in cedar or clove oil.

21 a) 4 ocelli form rectangle on dorsal surface of head ..... 22

b) Ocelli number more or less than 4, do not form a rectangle ..... 23

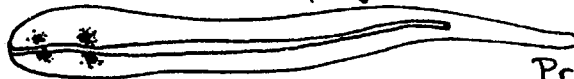
(note 3 choices)

22 a) Proboscis sheath limited to anterior 1/3 of body; ocelli minute; yellowish



Dichonemertes hartmanae

b) Proboscis sheath extends to posterior 1/3 of body; ocelli large, irregular, with rootlike processes of pigment extending on all sides; opaque white.....



Prosorhochmus albidus

c) Proboscis sheath extends to posterior end of body; ocelli large, well-developed; gray-green.....



Tetrastemma candidum

23 a) 2 ocelli, large, well-developed, at anterior tip of head; body white or translucent with green tinge; intestinal region green because of sexual products - - - - -

Genus A, species A

b) More than 4 ocelli present ..... 24

24 a) Ocelli small: 2-3 on each side of proboscis, and clusters of 2-3 anterior to each brain lobe; body white, intestinal caecae deep green...



Paranemertes californica

b) Ocelli pattern otherwise ..... Amphiporus spp...25

25 a) Ocelli form a single row on each side of head, the anteriormost being largest; body yellow .....



5-10 on each side

Amphiporus cruentatus

b) Ocelli form irregular clusters ..... 26

26 a) Body red ..... 27

b) Body white or dark ..... 28

27 a) 6-10 large ocelli on each side of head in 2 groups (20-40 total).....



Amphiporus rubellus

b) 4-8 large ocelli on each side of head.....



Amphiporus californicus

28 a) Body brown ..... 29

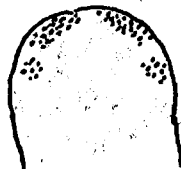
b) Body white ..... 30

29 a) Body color due to minute brown dots thickly scattered over flesh ground color. ~50 ocelli in irregular clusters on each side of head



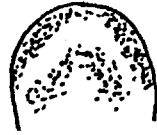
Amphiporus fulvus

b) Body dark brown, reddish-brown or purplish-brown; a narrow whitish V-shaped marking across head may be visible; an angular whitish spot on each side of head; ocelli: ~20 in elongated cluster on anterior margin; 8-15 in white spot on each side



Amphiporus angulatus

30a) Ocelli number 60-250 depending on size.....



Amphiporus formidabilis

b) Ocelli number 50 or less.....31

31a) Body opaque white ; 3 pouches of accessory stylets ;  
epithelium with yellowish rod-shaped rhabdites.....



ocelli  
pattern



rhabdite

Amphiporus imparispinosus

b) Body yellowish ; 2 pouches of accessory stylets ;  
epithelium without rhabdites.....



Amphiporus flavescens

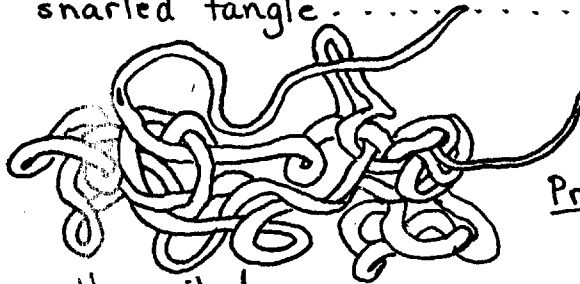
31a) Mouth far behind brain.....Procephalothrix spp..32



b) Mouth immediately behind brain.....33

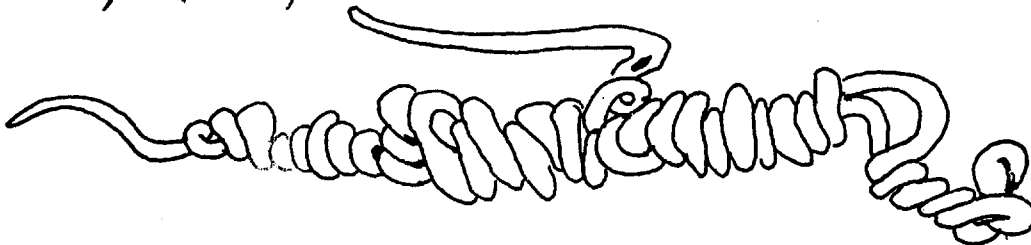


32a) Body a snarled tangle.....



Procephalothrix major

b) Body spirally coiled.....



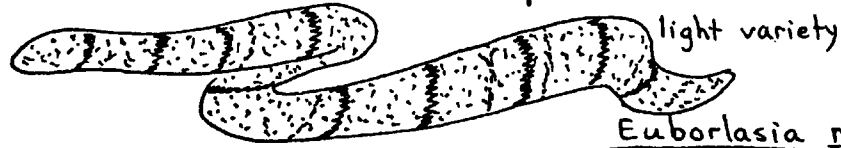
Procephalothrix minor

33 a) With longitudinal cephalic grooves .....43



b) Without cephalic grooves .....34

34 a) Body remarkably thick and massive. 2 color varieties:  
(1) buff speckled with brown and with narrow dark rings; and  
(2) purplish-brown speckled with white and with narrow dark rings. For both, head white and speckled .....



Euborlasia nigrocincta

b) Body slender or ribbonlike .....35

35 a) Body deep red; head with sharp white border and broad dark cephalic marking .....



Baseodiscus punnetti

b) Cephalic marking absent .....36

36 a) Body with rings, stripes, or both .....37

b) Body without rings or stripes .....42

37 a) Body with only a single dark band near head .....38

b) Body with several rings .....39

(note 3 choices)

38 a) Band is brown or brick red; lateral sense organs visible near posterior edge of band; body much flattened posteriorly; body white .....



Carinomella lactea

b) Band is black or brown; lateral sense organs absent; body only slightly flattened posteriorly or rounded throughout; body white, minute - Tubulanus pellucidus

c) Band is black or brown; lateral sense organs absent; body rounded throughout; body red, to 2m .....

Tubulanus polymorphus

39 a) Body with black markings - 3 longitudinal lines and a series of narrow rings. Ground color yellow, rosy, or greenish



Tubulanus frenatus

b) Body with white markings .....40

40 a) Body red with white rings throughout.....

Tubulanus albocinctus

b) Body with white longitudinal lines as well as rings .....41

(note 3 choices)

41 a) With 3 longitudinal white lines: 1 dorsomedial, and 2 lateral. Body brown..... Tubulanus capistratus



b) With 4 longitudinal white lines: 2 lateral and 2 dorsal; Body brown.....



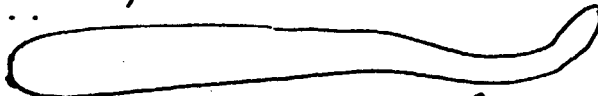
Tubulanus cingulatus

c) With 5 or 6 longitudinal lines: 1 mediiodorsal, 2 dorso-lateral, 2 ventrolateral and a medioventral which may be indistinct.....



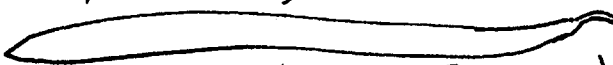
Tubulanus sexlineatus

42 a) Body white anteriorly; head rounded; caudal cirrus absent.....



Carinoma mutabilis

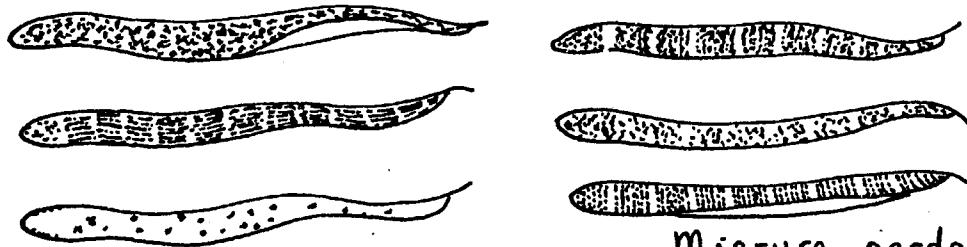
b) Body red or rosy; head long, pointed; caudal cirrus present (may be easily lost).....



Zygeupolia rubens



43a) Body pale yellow; dorsal surface nearly covered with brown spots and dots; sometimes elongated arranged in irregular longitudinal lines or rectangles.....



Micrura pardalis

b) Body not spotted.....44

44a) Tip of head white, sharply marked off from body color.....45

b) Tip of head same general color as body.....51

45a) Body with series of narrow rings of contrasting color.....46

b) Body without rings.....47

(note 3 choices)

46a) Body deep brown, chestnut or slaty with narrow yellow rings. 7-15 inconspicuous yellow lines of which the mid-dorsal is most distinct, connecting diamonds on the rings. Tip of head white, usually with 2 orange spots.....



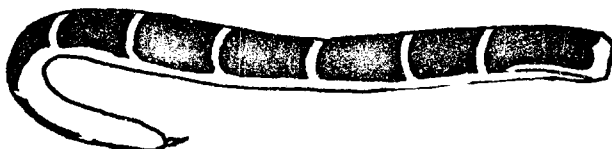
Lineus pictifrons

b) Body brown or blackish with narrow whitish bands throughout body; tip of head white (rings may disappear after preservation).....



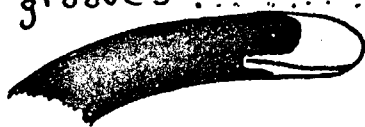
Micrura wilsoni

c) Body reddish brown or deep purple; ventral surface white; dorsal side of head red, deep orange or vermillion; narrow white rings encircle body throughout length.....



Micrura verrilli

47a) Tip of head white, extending back appr.  $\frac{3}{4}$  length of cephalic grooves .....



Cerebratulus albifrons

b) Tip of head white, extending back  $\frac{1}{4}$  or less length of cephalic grooves .....



.....48

48a) Body deep red .....

.....49

b) Body black, brown, brownish-green or reddish-brown .....

.....50

49a) Body small - 10-15 mm; slender, rounded anteriorly, flattened posteriorly; caudal cirrus absent .....

Lineus rubescens

b) Body large, to 2m; long and ribbonlike; caudal cirrus present .....

Cerebratulus montgomeryi

50a) Body brown or black; slender, rounded throughout; caudal cirrus present .....

Micrura wilsoni

b) Body dusky or brownish-green, dark brown or reddish-brown; caudal cirrus absent; rounded anteriorly, flattened posteriorly with rounded margins; margins of head and cephalic grooves pale rather than strikingly white .....

Lineus ruber

51a) Body deep red with narrow sharp white band just behind tip; tip with small dark spot .....

Micrura nigrirostris



b) Body without single white band .....

.....52

52a) Body with longitudinal markings .....

.....53

b) Body without longitudinal markings .....

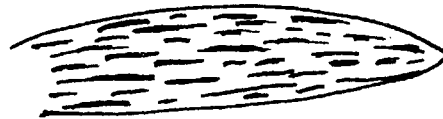
.....54

53 a) Body dark brown with mediodorsal stripe of white or yellow, widening on head to form broad white marking.....



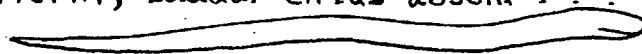
Lineus bilineatus

b) Body pale grey with numerous fine, irregular, interrupted dark brown longitudinal lines.....



Cerebratulus lineolatus

54 a) Body filiform; caudal cirrus absent..... 55



b) Body thick, becoming flattened or ribbonlike posteriorly; caudal cirrus present..... 56



55 a) Body olive or reddish-brown, darker dorsally; with 20 or more fine inconspicuous lighter rings; contracts into coil in preservation..... Lineus vegetus

b) Body yellow; tip of head distinctly paler; ocelli visible..... Lineus flavescens

56 a) Body with sharp margins, ribbonlike..... 57



Xsection



b) Body with rounded margins..... 58

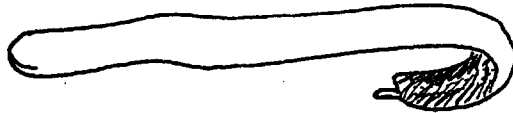


57 a) With white or strikingly pale lateral margins; body large: 50-100 cm ..... Cerebratulus marginatus

b) With pale lateral margins; body small: 10-15 cm.....  
Cerebratulus californiensis

For last two steps, closely observe body color of specimens, then clear in cedar or clove oil

58 a) Body salmon, grey, fleshy or light brown; a cream-colored stripe in medioventral line, best seen posteriorly; ocelli absent ..... Micrura alaskensis



b) Body olive-brown, grey-ocher or buff, with a paler medio-dorsal stripe in esophageal region; 6-12 or more small ocelli in an irregular row on each side of head .....  
Micrura olivaris

