

## Family Polynoidae Malmgren, 1867

The family Polynoidae is the largest and most commonly encountered group of scaleworms, with currently well over 600 described species. Fortunately, only about two dozen of these occur in shelf waters off California. The group is characterized by dorsoventrally flattened bodies, simple setae in both notopodial and neuropodial fascicles, and scales alternating with the dorsal cirri down much of the length of the body. Although a few become quite large (up to 250 mm), the majority of the scaleworms are only a centimeter or two in length.

In most polynoid species the prostomium is bilobed, with a median furrow between the anterior lobes. The anterolateral corners are sometimes more or less developed into distinct cephalic peaks, or they extend anteriorly to form the ceratophores of the lateral antennae. There are typically two pairs of eyes arranged in a trapezoid pattern, although the eyes in deep-water species may be absent. Most species have a median and a pair of lateral antennae which are smooth or covered to a lesser or greater extent with papillae. A pair of tapering palps are attached ventrally to the prostomium, and are normally thicker and longer than the antennae; these structures usually have numerous longitudinal rows of minute sensory papillae. The eversible pharynx is large and muscular, with two pairs of curved, dark, keratinous jaws surrounded by a circlet of marginal papillae.

The tentacular segment (segment 1) has two pairs of tentacular cirri supported on large, forward-projecting basal lobes. These tentaculophores have an internal supporting aciculum, and sometimes on the anterior face there are additional projecting setae that are usually similar to the notosetae. The ventral portion of the peristomium forms the upper lip of the mouth. This is often produced into a ridge which sometimes bears a distinct conical facial tubercle.

The buccal segment (segment 2) bears the first pair of elytra and the first parapodia. Dorsally it may be developed into a nuchal fold that partly covers the prostomium, and ventrally it forms the lateral and lower portions of the mouth. The ventral buccal cirri on this segment are usually well-developed and inserted at the bases of the parapodia.

The paired elytra are flattened, scale-like structures that occur in place of the dorsal cirri, and are attached via the elytraphores to segments 2,4,5,7,9...21, 23; posterior to this point there are a number of different attachment arrangements, and the scales may be lacking in the posterior-most segments. The elytra may overlap and completely conceal the dorsum, or they may be reduced in size. The surface of the scales may be smooth, or they be covered with papillae, microtubercles, (sclerotized structures that are nodular, pointed, or multi pronged, and that are clearly visible only under high magnification) or macrotubercles (larger, soft structures that occur irregularly on the surface or near the posterior edges). The borders of the elytra may be smooth, or they may have sparse or dense fringes of clavate or filiform papillae.

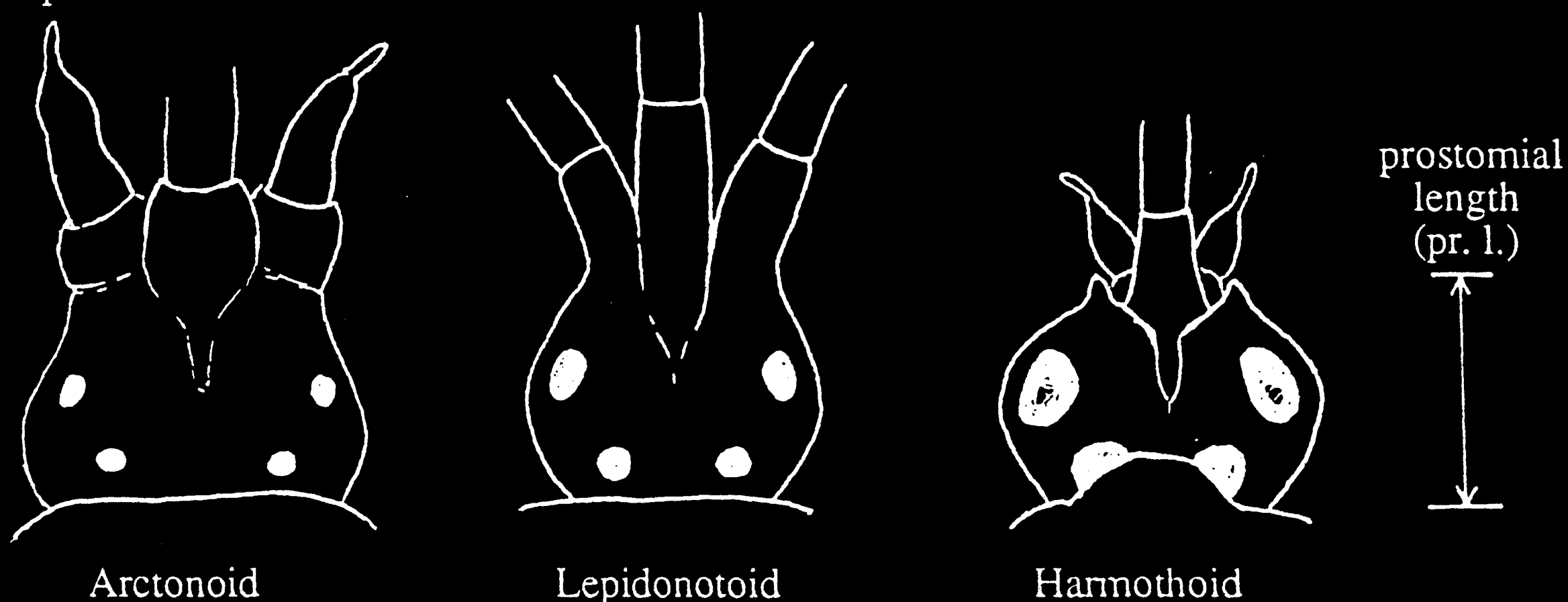
The elongated parapodia are biramous or, in some cases, subbiramous. The notopodia are usually located along the dorsal margin of the neuropodia; each has an interior supporting aciculum which may be distally emergent. The neuropodia are usually larger than the notopodia, and are distally cleft into a rounded post-setal lobe and a longer, narrower pre-setal lobe bearing the internal aciculum which may or may not emerge distally.

All polynoid setae are simple. Although lacking in a few species, the notosetae range from smooth and slender to stout with subdistal transverse spinous plates. The tips may be capillary, pointed, or blunt with or without a terminal cleft. The neurosetae have a long smooth shaft and a curved, subdistal inflated spinous region; the setal tips may be capillary, unidentate, or bidentate with a subequal or small secondary tooth. The shape of the superior neurosetae is often different from those lower in the fascicle, and both uni- and bidentate tips are sometimes found within the same setal bundle.

Dorsal cirri are inserted along the upper margin of the notopodia on segments not bearing elytra; in addition, these segments have a more or less developed dorsal tubercle corresponding in position to the elytraphore. Ventral cirri are normally inserted midway along the ventral edge of the neuropodia after segment 2. Small, cylindrical nephridial papillae occur ventrally at the base of

the neuropodia, usually from segment 6; these structures project posteriorly and upward between the parapodia. The pygidium surrounds a dorsally directed anus, and has a pair of terminal anal cirri that are similar in shape, but often are longer than the dorsal cirri.

The insertion of the lateral antennae is of primary importance in distinguishing some of the subfamilies of the polynoids. Three subfamilies are represented in the California material covered below. In the Arctonoinae the lateral antennae have large ceratophores that are inserted subterminally and are distinctly separated from the prostomium by a transverse groove. In the Lepidonotinae the lateral antennae are attached terminally to anterior prolongations of the prostomium, without distinct ceratophores. In the Harmothoinae the lateral antennae have small ceratophores that are attached ventrally beneath the anterior prostomial margins and/or to the large ceratophore of the median antenna.



Polynoids are found from the intertidal regions to the abyssal depths on a wide variety of sediment types, although a few are entirely pelagic. Most species are carnivorous or omnivorous, feeding on a large spectrum of smaller invertebrates, plant fragments, and detritus. These species normally creep along the bottom, hiding in crevices, under rocks, and in algal holdfasts. The dorsum and the elytra are often pigmented with a variety of patterns and colors to match the general background. In addition, the elytral surface is sometimes covered with detritus and epiphytes, making the specimens difficult to detect.

A number of polynoids are commensal with other organisms, predominately the echinoderms, molluscs, or other polychaetes. In many of these species, the elytra and notopodia are reduced in size, and the notosetae are fewer in number or absent altogether. Many of these commensals are pigmented to match the host organisms.

All polynoids are dioecious, with fertilization taking place externally. Many species brood their eggs under the elytra, but generally the early larval stages appear in the plankton. The nectochaetes settle to the bottom after a month or so, and continue to grow to adult size. In most free-living polynoids, the number of segments is determinant within a small range, and the worms do not grow beyond 30-40 mm in length. In a number of the commensal species, however, segments continue to be added throughout the life of the specimens, and much greater body lengths are attained.

The number and arrangement of the elytra are very important in distinguishing the polynoid genera. Even though the scales are often autonomous, their position can be assessed by counting the distinctive elytraphores along the body. Unfortunately, many species fragment during preservation, and the posterior portion of the body is not available for examination. Therefore, the following information on the California genera and species is based only upon features that can be observed in anterior fragments.

	<i>Arctonoe fragilis</i>	<i>Arctonoe pulchra</i>	<i>Arctonoe vittata</i>
<b>Prostomium</b>	Arctonoid Both pairs of eyes small Cephalic peaks absent	Arctonoid Anterior eyes moderate; posterior pair small Cephalic peaks absent	Arctonoid Both pairs of eyes small Cephalic peaks absent
<b>Antennae</b>	Median: 1.5 pr.l. Lateral: 1 pr.l. Styles smooth	Median: 1.5 pr.l. Lateral: 1 pr.l. Styles smooth	Median: 1.5 pr.l. Lateral: 1 pr.l. Styles smooth
<b>Tentacular cirri</b>	Basal lobes achaetous	Basal lobes achaetous	Basal lobes achaetous
<b>Dorsal cirri</b>	Length variable: some greatly exceeding the neurosetae; without papillae	Extending slightly beyond the neurosetae in the anterior setigers; without papillae	Greatly exceeding the neurosetae; without papillae
<b>Dorsal pigmentation</b>	Colorless or tending to match the coloration of the host	Colorless or mottled with brown	Ranging from colorless through reddish-brown to purple depending upon the host. Often with a band of dark pigment across setiger 7-8
<b>Setal diameter</b>	Nototsetae < Neurosetae	[Nototsetae] < Neurosetae	[Nototsetae] < Neurosetae
<b>Setal counts</b>	Few : Few (16-24) (7-16)	Few : Few (0-15) (3-13)	Few : Few (0-15) (10-20)
<b>Notosetae</b>	Short, slender, straight, with close-set transverse serrations; tapering to pointed or notched tips	Short, slender, slightly curved, with close-set transverse serrations; tapering to blunt, notched tips	Short, slender, slightly curved, with close-set transverse serrations; tapering to blunt, notched tips
<b>Neurosetae</b>	Longer, stout, with faint transverse serrations; tapering to sharp, strongly hooked unidentate tips	Longer, stout, with faint transverse serrations; tapering to sharp, strongly hooked unidentate tips	Longer, stout, with prominent rows of transverse serrations; tapering to blunt notched tips  Slightly thicker, with transverse serrations; tapering to sharp, hooked, unidentate tips  Slender, with obscure transverse serrations; tapering to straight, blunt, unidentate tips
<b>Elytra</b>	Large, soft, smooth, with a conspicuously convoluted (frilled) margin  Surface usually mottled with areas of white, reddish-brown, yellow, or green to match the host  Marginal fringing papillae absent	Large, soft, smooth, flat or slightly undulate  Surface colorless or with dark pigment tending to match the host coloration, often concentrated in a spot over the elytral scar  Marginal fringing papillae absent	Large, soft, smooth, flat  Surface usually mottled with black and white and varying considerably depending upon the host coloration  Marginal fringing papillae absent
<b>Other features</b>	Ventral cirri rudimentary after setiger 2  Neuropodia with blunt, rounded pre- and postsetal lobes separated by a deep dorsal cleft  Commensal with asteroids	Ventral cirri short, subulate  Neuropodia with blunt, rounded pre- and postsetal lobes separated by a deep dorsal cleft  Commensal mainly with echinoderms	Ventral cirri short, subulate  Neuropodia with blunt, rounded pre- and postsetal lobes separated by a deep dorsal cleft  Notosetae decrease in number posteriorly and are only present in the first few segments in adults  Commensal with asteroids and large molluscs

	<i>Bylgides macrolepidus</i>	<i>Eucranta anoculata</i>	<i>Gaudichaudius iphionelloides</i>
<b>Prostomium</b>	Harmothoid Anterior eyes very large and positioned near the anterior margin; posterior pair small Cephalic peaks small	Harmothoid Eyes absent Cephalic peaks prominent	Harmothoid Eyes large; anterior pair positioned on the anterolateral margin Cephalic peaks absent
<b>Antennae</b>	Median: 4 pr.l. Lateral: 1 pr.l. Styles with small scattered papillae	Median: 2 pr.l. Lateral: 0.5 pr.l. Styles with numerous small papillae	Median: 3 pr.l. Lateral: 2 pr.l. Styles with scattered papillae
<b>Tentacular cirri</b>	Basal lobes with 2-4 stout setae	Basal lobes with 0-3 stout setae	Basal lobes with several long setae
<b>Dorsal cirri</b>	Extending beyond the neurosetae; with scattered clavate papillae	Extending well beyond the neurosetae; with scattered clavate papillae	Extending to the tips of the neurosetae; with scattered long papillae on the distal half
<b>Dorsal pigmentation</b>	Tan, with 2 transverse ciliated bands per segment	Pale to dusky, with iridescent cuticle	Colorless
<b>Setal diameter</b>	Notosetae > Neurosetae	Notosetae > Neurosetae	Notosetae < Neurosetae
<b>Setal counts</b>	Moderate : Numerous (15-25) (~50)	Few : Moderate (10-20) (20-30)	Very numerous : Numerous (100+ ) (50-70)
<b>Notosetae</b>	Stout, curved, with transverse rows of spinules; tapering to short, blunt unidentate tips Longer, straight, with transverse rows of spinules; tapering to short, blunt tips	Stout, slightly curved, with inconspicuous transverse rows of spinules	Short, curved, with close-set rows of fine spinules; tapering to blunt tips Longer, straighter, more slender, tapering to fine tips
<b>Neurosetae</b>	Thin, with numerous transverse spinous rows; tips plumose, often with a terminal arista Thin, with numerous transverse spinous rows; tapering to slightly hooked, blunt unidentate tips Thin, with numerous transverse spinous rows; tips plumose, often with a terminal arista	Long, slender, with a long region of prominent spinules; tapering to thin, deeply incised tips. Long, thicker, with prominent spinules in transverse rows; tapering to elongated smooth, sharp, unidentate tips	Long, thick, with a long sub-distal region of spinules in transverse rows; tapering to slightly hooked bare unidentate tips Shorter, with a short region of spinules in transverse rows; tapering to bare hooked unidentate tips
<b>Elytra</b>	Thin, appearing smooth but covered with tiny conical microtubercles Marbled with pale brown pigment Marginal fringing papillae sparse	Sort, membranous, with inconspicuous microtubercles anterior to the attachment scar Colorless or with streaks of greenish-yellow pigment Marginal fringing papillae very short	Thick, mostly covered with polygonal cells, each with a central flattened or occasionally conical tubercle Amber to dark brown Marginal fringing papillae short
<b>Other features</b>	Nuchal fold absent, but posterior eyes sometimes covered by the anterior margin of the buccal segment	Prostomium very white	Mostly a boreal species; only one known occurrence in California



	<i>Eunoe depressa</i>	<i>Eunoe oerstedii</i>	<i>Eunoe senta</i>
<b>Prostomium</b>	Harmothoid Anterior eyes large; posterior pair moderate Cephalic peaks prominent	Harmothoid Anterior eyes large; posterior pair moderate Cephalic peaks weakly developed, blunt	Harmothoid Anterior eyes large; posterior pair moderate Cephalic peaks weakly developed, rounded
<b>Antennae</b>	Median: 3 pr.l. Lateral: 0.5 pr.l. Styles with scattered short papillae	Median: 4 pr.l. Lateral: 2 pr.l. Styles with numerous long papillae and olive brown pigment	Median: 3 pr.l. Lateral: 1.5 pr.l. Styles with numerous long papillae and brown pigment
<b>Tentacular cirri</b>	Basal lobes with 1-3 stout curved setae	Basal lobes with 1-3 stout, strongly curved setae	Basal lobes with bundle of 4-5 stout setae
<b>Dorsal cirri</b>	Not exceeding the neurosetae; with scattered minute papillae	Extending slightly beyond the neurosetae, with numerous long papillae	Extending well beyond the neurosetae; with numerous long filiform and short clavate papillae
<b>Dorsal pigmentation</b>	Pale	Light brown along middorsal line	Colorless to pale yellow
<b>Setal diameter</b>	Notosetae $\geq$ Neurosetae	Notosetae $\approx$ Neurosetae	Notosetae $\approx$ Neurosetae
<b>Setal counts</b>	Moderate : Moderate (30-50) (30-50)	Moderate : Moderate ( ) ( )	Numerous : Moderate (50-60) (~20)
<b>Notosetae</b>	Short, stout, with close-set transverse rows of spinules; tapering to short, smooth, pointed tips  Longer, nearly straight, with widely spaced transverse rows of spinules encircling shaft; tapering to smooth, pointed tips	Short, stout, with close-set transverse rows of spinules; tapering to blunt, rough tips  Longer, nearly straight, with widely spaced transverse rows of spinules encircling shaft; tapering to blunt, rough tips	Short, stout, with close-set transverse rows of spinules; tapering to short, smooth, pointed tips  Longer, nearly straight, with widely spaced transverse rows of spinules encircling shaft; tapering to smooth, pointed tips
<b>Neurosetae</b>	Slightly thinner and much longer than lower notosetae, with transverse rows of coarse spinules subdistally; tapering to slightly hooked, smooth unidentate tips	Similar to lower notosetae in length and thickness, with transverse rows of coarse spinules subdistally; tapering to slightly hooked, smooth unidentate tips	Similar to lower notosetae in length and thickness, with transverse rows of coarse spinules subdistally; tapering to slightly hooked, smooth unidentate tips
<b>Elytra</b>	Thick, leathery, covered with numerous tiny conical microtubercles and a few larger, rounded tubercles  Cream colored  Marginal fringing papillae essentially lacking	Thick, leathery, studded with clavate macrotubercles, each with a stellate apex  Mottled brown and gray  Marginal fringing papillae essentially lacking	Thick, soft, covered with dendritic macrotubercles with acutely pointed branches  Colorless or with irregular patches of pigment  Marginal fringing papillae essentially lacking
<b>Other features</b>	Body dorsoventrally flattened; buccal segment with a small nuchal fold covering the posterior margin of the prostomium  Apparently commensal with hermit crabs and other dacopod crustaceans	Body dorsally arched; buccal segment with a small nuchal fold covering the posterior margin of the prostomium	Body dorsally arched; buccal segment with a small nuchal fold covering the posterior margin of the prostomium  Emergent parapodial acicula very long

	<i>Halosydna brevisetosa</i>	<i>Halosydna johnsoni</i>	<i>Halosydna latior</i>
<b>Prostomium</b>	Lepidonotoid Anterior eyes moderate; posterior pair slightly smaller Cephalic peaks absent	Lepidonotoid Anterior eyes moderate; posterior pair slightly smaller Cephalic peaks absent	Lepidonotoid Anterior eyes moderate; posterior pair slightly smaller Cephalic peaks absent
<b>Antennae</b>	Median: 2 pr.l. Lateral: 1 pr.l. Styles smooth; subterminally pigmented	Median: 1.5 pr.l. Lateral: 1 pr.l. Styles smooth; subterminally pigmented	Median: Lateral: Styles smooth; subterminally pigmented
<b>Tentacular cirri</b>	Basal lobes with 1-3 short, slender setae	Basal lobes with 1-3 short, slender setae	Basal lobes with 1-3 short, slender setae
<b>Dorsal cirri</b>	Extending well beyond the neurosetae and curving up between elytra; without papillae	Extending well beyond the neurosetae and curving up between the elytra; without papillae	Reaching only to tips of neurosetae; without papillae
<b>Dorsal pigmentation</b>	Highly variable, with dark transverse bands and light to dark base color	Variable, with dark transverse bands and light to dark base color	Transverse brown bands on colorless base
<b>Setal diameter</b>	Notosetae << Neurosetae	Notosetae << Neurosetae	Notosetae << Neurosetae
<b>Setal counts</b>	Few : Few (0-25) : (10-20)	Few : Few (0-25) : (10-20)	Few : Moderate (10-20) : (15-25)
<b>Notosetae</b>	Slender, short, colorless, with a few transverse serrations; tapering to blunt tips  Slender, slightly longer, with numerous transverse serrations; tapering to long, fine tips	Slender, short, colorless, with a few transverse serrations; tapering to blunt tips  Slender, slightly longer, with numerous transverse serrations; tapering to long, fine tips	Slender, short, colorless, with a few transverse serrations; tapering to blunt tips  Slender, much longer, with numerous transverse serrations; tapering to long, fine tips
<b>Neurosetae</b>	Stout, amber, with a few transverse rows of coarse spinules; tapering to pointed or blunt curved unidentate tips	Stout, amber, with a few transverse rows of coarse spinules; tapering to bidentate curved tips	Stout, dark amber, with a few transverse rows of coarse spinules; tapering to pointed curved unidentate tips
<b>Elytra</b>	Covered with small conical tubercles and occasional larger rounded tubercles  Highly variable mottled pigmentation  Marginal fringing papillae sparse, often absent.	Covered with small conical tubercles  Highly variable mottled pigmentation or uniformly dark  Marginal fringing papillae numerous, moderately long.	Covered with small conical tubercles and occasional larger rounded tubercles  Highly variable solid or mottled pigmentation  Marginal fringing papillae numerous, moderately long.
<b>Other features</b>	In commensal forms, 1-2 superior notosetae thickened and darker in color.		Body very broad and dorso-ventrally flattened.  Nephridial papillae three times longer than wide.

	<i>Harmothoe extenuata</i>	<i>Harmothoe fragilis</i>	<i>Harmothoe hirsuta</i>
<b>Prostomium</b>	Harmothoid Anterior eyes large; posterior pair slightly smaller Cephalic peaks prominent	Harmothoid Anterior eyes large; posterior pair slightly smaller Cephalic peaks prominent	Harmothoid Anterior eyes large; posterior pair slightly smaller Cephalic peaks prominent
<b>Antennae</b>	Median: 2 pr.l. Lateral: 1 pr.l. Styles with scattered short clavate papillae	Median: 2 pr.l. Lateral: 0.5 pr.l. Styles with scattered short clavate papillae	Median: 2 pr.l. Lateral: 1 pr.l. Styles with numerous long filiform papillae
<b>Tentacular cirri</b>	Basal lobes with 1-2 stout setae	Basal lobes with 1-3 stout setae	Basal lobes with 1-3 stout setae
<b>Dorsal cirri</b>	Extending slightly beyond the tips of the neurosetae; with numerous short papillae	Extending slightly beyond the tips of the neurosetae; with scattered short papillae	Extending well beyond the tips of the neurosetae; with numerous long filiform papillae
<b>Dorsal pigmentation</b>	Pale or with patches of brown pigment, especially around the cirrophores and elyrophores	Pale to dark brown with 2 thin transverse white stripes per setiger	Pale to dusky with patches of brown pigment around the cirrophores and elyrophores
<b>Setal diameter</b>	Notosetae $\approx$ Neurosetae	Notosetae $\geq$ Neurosetae	Notosetae $\geq$ Neurosetae
<b>Setal counts</b>	Moderate : Moderate (20-30) : (20-30)	Moderate : Moderate (20-30) : (20-30)	Moderate : Moderate (20-30) : (35-50)
<b>Notosetae</b>	Stout, curved, with numerous transverse rows of spinules; tapering to blunt points  Longer, slightly thinner and less curved, with transverse rows of spinules; tapering to pointed tips	Stout, curved, with numerous transverse rows of spinules; tapering to blunt, sculptured points  Longer, slightly thinner and less curved, with transverse rows of spinules; tapering to pointed tips	Stout, curved, with numerous transverse rows of spinules; tapering to blunt points  Longer, slightly thinner and less curved, with transverse rows of spinules; tapering to pointed tips
<b>Neurosetae</b>	Slender, with long subdistal spinous region; tapering to smooth, bare unidentate tips  Thicker, with short subdistally inflated spinous region; tapering to smooth, hooked tips with a small secondary tooth  Shorter; tapering to smooth, bare, unidentate points	Slender, with long subdistal spinous region; tapering to finely bidentate tips  Thicker, with short subdistally inflated spinous region; tapering to smooth, hooked tips with a slender secondary tooth  Shorter; tapering to smooth, bare, unidentate points	Slender, with long subdistal spinous region; tapering to smooth, bare, unidentate tips  Thicker, with short subdistally inflated spinous region; tapering to long, bare, slightly hooked tips with a remote incision forming a small secondary tooth  Shorter; tapering to smooth, bare, unidentate points
<b>Elytra</b>	Surface with numerous conical or bifid microtubercles and a few globular to elongated macro-tubercles that are constricted at the attachment point  Colorless, tan, or mottled with brown pigment; macro-tubercles usually dark brown  Marginal fringing papillae short	Surface with numerous conical or multibranched microtubercles, scattered filiform papillar, and a few large blister-like macro-tubercles near the posterior border  Pale, with darker tan on the large macro-tubercles  Marginal fringing papillae thick, long	Surface in part divided into polygonal cells, each with a multipronged macro-tubercle in the center  Pale or with patches of brown pigment  Marginal fringing papillae thick, long
<b>Other features</b>			

	<i>Harmothoe imbricata</i>	<i>Harmothoe multisetosa</i>	
<b>Prostomium</b>	Harmothoid Eyes large; anterior pair displaced forward beneath cephalic peaks Cephalic peaks prominent	Harmothoid Anterior eyes large; posterior pair slightly smaller Cephalic peaks prominent	
<b>Antennae</b>	Median: 3 pr.l. Lateral: 1 pr.l. Styles with scattered short clavate papillae	Median: 3 pr.l. Lateral: 1 pr.l. Styles with numerous filiform papillae	
<b>Tentacular cirri</b>	Basal lobes with 1-3 stout setae	Basal lobes with 1-3 stout setae	
<b>Dorsal cirri</b>	Extending slightly beyond the tips of the neurosetae; with scattered short papillae	Extending well beyond the tips of the neurosetae; with scattered filiform papillae	
<b>Dorsal pigmentation</b>	Mottled, with darker areas around the cirrophores and elyrophores	Dark brown, with 2 thin transverse white stripes per setiger	
<b>Setal diameter</b>	Notosetae $\geq$ Neurosetae	Notosetae $\approx$ Neurosetae	
<b>Setal counts</b>	Moderate : Moderate (20-30) : (30-40)	Moderate : Moderate (20-40) : (20-40)	
<b>Notosetae</b>	Stout, curved, with transverse rows of spinules; tapering to blunt points  Longer, slightly thinner and less curved, with transverse rows of spinules; tapering to pointed tips	Stout, curved, with transverse rows of spinules; tapering to blunt points  Longer, slightly thinner and less curved, with transverse rows of spinules; tapering to pointed tips	
<b>Neurosetae</b>	Slender, with long subdistal spinous region; tapering to smooth, bare, unidentate tips  Thicker, with short subdistally inflated spinous region; tapering to smooth, hooked tips with a small secondary tooth  Shorter, more slender; tapering to smooth, bare, unidentate points	Slender, with long subdistal spinous region; tapering to smooth, bare, unidentate tips  Thicker, with short subdistally inflated spinous region; tapering to smooth, hooked tips with a small secondary tooth  Shorter, more slender; tapering to smooth, bare, unidentate points	
<b>Elytra</b>	Thick, with numerous blunt microtubercles, scattered papillae, and globular macrotubercles (larger specimens only)  Great variability in both pigment pattern and color, with solid or mottled designs occurring in white, light tan, red, green, brown, gray, and black  Marginal fringing papillae short, sparse	Thin, with blunt or bifid microtubercles, thornlike curved spines, and occasional large, blister-like macrotubercles  Uniformly tan to gray, or mottled with brown pigment  Marginal fringing papillae short	
<b>Other features</b>			



	<i>Hesperonoe adventor</i>	<i>Hesperonoe complanata</i>	<i>Hesperonoe laevis</i>
<b>Prostomium</b>	Harmothoid Eyes moderate; posterior pair slightly smaller Cephalic peaks small	Harmothoid Eyes fairly small Cephalic peaks prominent	Harmothoid Eyes moderate; posterior pair slightly smaller Cephalic peaks prominent
<b>Antennae</b>	Median: 2 pr.l. Lateral: 1 pr.l. Styles with minute scattered papillae	Median: 2 pr.l. Lateral: 0.5 pr.l. Styles with minute scattered papillae	Median: 2 pr.l. Lateral: 1 pr.l. Styles with minute scattered papillae
<b>Tentacular cirri</b>	Basal lobes without setae, but with a digitiform acicular lobe	Basal lobes without setae, but with a digitiform acicular lobe	Basal lobes without setae, but with a digitiform acicular lobe
<b>Dorsal cirri</b>	Extending far beyond neurosetae; with scattered minute clavate papillae	Extending far beyond neurosetae; with scattered minute clavate papillae	Extending far beyond neurosetae; with scattered minute clavate papillae
<b>Dorsal pigmentation</b>	Broad gray-green transverse bands	Pale, with small amounts of brown pigment at bases of the parapodia	Pale
<b>Setal diameter</b>	Notosetae $\geq$ Neurosetae	Notosetae $\geq$ Neurosetae	Notosetae $\geq$ Neurosetae
<b>Setal counts</b>	Numerous : Numerous (70- 80) : (70- 80)	Moderate : Moderate (15-25) : (20-30)	Moderate : Moderate (15-25) : (20-30)
<b>Notosetae</b>	Stout, with scarcely discernable transverse striations; tapering to blunt tips  Thinner, longer, tapering to fine capillary tips	Stout, with scarcely discernable transverse striations; tapering to blunt tips  Thinner, longer, tapering to fine capillary tips	Stout, with scarcely discernable transverse striations; tapering to blunt tips  Thinner, longer, tapering to fine capillary tips
<b>Neurosetae</b>	Slender, with long, coarsely serrated region tapering to very fine unidentate tips  Thicker, with short subdistal swollen region having numerous transverse rows of coarse spinules; tapering to fine smooth unidentate tips	Slender, with long, coarsely serrated region tapering to very fine unidentate tips  Thicker, with short subdistal swollen region having numerous transverse rows of coarse spinules; tapering to fine smooth unidentate tips	Slender, with long, coarsely serrated region tapering to very fine unidentate tips  Thicker, with short subdistal swollen region having few or no transverse rows of coarse spinules; tapering to fine smooth unidentate tips
<b>Elytra</b>	Thin, with a few scattered microtubercles  Crescent of gray pigment on posterior half  Marginal fringing papillae sparse	Thin, translucent, with small conical microtubercles scattered across the surface  Pale and without pigment  Marginal fringing papillae sparse	Thin, smooth except for a few inconspicuous microtubercles anterior to the attachment scar  Crescent of gray pigment on posterior half  Marginal fringing papillae sparse
<b>Other features</b>	Grayish-green in life  Commensal with the echiuroid <i>Urechis caupo</i>	Bright yellowish-orange in life  Commensal with the ghost shrimp	Notopodial lobe nearly as large as the neuropodial lobe in the first setiger; thereafter much smaller  Commensal with the echiuroid <i>Listriolobus pelodes</i>

	<i>Hololepida magna</i>	<i>Lepidonopsis humilis</i>	<i>Thormora johnstoni</i>
<b>Prostomium</b>	Arctonoid Both pairs very large, with distinct lenses Cephalic peaks absent	Lepidonotoid Anterior eyes moderate; posterior pair small Cephalic peaks absent	Lepidonotoid Anterior eyes large; posterior pair moderate Cephalic peaks absent
<b>Antennae</b>	Median: 4.5 pr.l. Lateral: 3.5 pr.l. Styles without papillae	Median: 1.5 pr.l. Lateral: 1 pr.l. Styles without papillae	Median: 3 pr.l. Lateral: 1 pr.l. Styles without papillae
<b>Tentacular cirri</b>	Basal lobes without setae	Basal lobes with 1-2 delicate setae	Basal lobes with 1-2 long setae
<b>Dorsal cirri</b>	Extending to the tips of the neurosetae; without papillae	Extending slightly beyond the neurosetae; without papillae	Not extending beyond the neurosetae; without papillae
<b>Dorsal pigmentation</b>	Reddish-brown	Colorless	Chestnut brown
<b>Setal diameter</b>	Notosetae < Neurosetae	Notosetae < Neurosetae	Notosetae < Neurosetae
<b>Setal counts</b>	Few : Moderate (10-15) (40-50)	Moderate : Moderate ( ) (~ 24)	Numerous : Moderate ( ) (~ 20)
<b>Notosetae</b>	Long, straight, with barely discernable marginal serrations; tapering to capillary tips	Stout, slender, with numerous transverse rows of fine spinules; tapering to blunt tips Longer, slender, with numerous transverse rows of fine spinules; tapering to capillary tips	Long, slender, smooth, hastate; tapering to pointed tips Shorter, thicker, curved, with close-set transverse rows of spinules; tapering to bare tips
<b>Neurosetae</b>	Slender, long, with marginal serrations; tapering to fine unidentate tips Shorter, coarser, with spinules in transverse rows; tapering to hooked, bifid tips	Stout, with coarse spinules in a few subdistal rows; tapering to slightly hooked tips with a small secondary tooth	Stout, with coarse spinules in a few subdistal rows; tapering to bare, slightly hooked unidentate tips
<b>Elytra</b>	Large, soft, gelatinous, with inconspicuous microtubercles scattered across the surface Tinged with reddish brown Marginal fringing papillae absent	Large, firmly attached, with scattered smooth to roughened rounded microtubercles of various sizes Tan, with mottled brown pigment patches Marginal fringing papillae long	Large, covered with numerous rounded microtubercles and scattered larger, acutely conical tubercles Mottled with brown and black pigment Marginal fringing papillae absent
<b>Other features</b>	Buccal segment with a broad nuchal fold extending over the posterior margin of the prostomium Notosetae absent in the first few setigers Elytra with a small notch on the anterior margin	Buccal segment with two sub-triangular nuchal folds extending over the posterior margin of the prostomium Distal margins of notopodia and neuropodia with fringes of filiform papillae	

	<i>Lepidonotus leius</i>	<i>Lepidonotus setosior</i>	<i>Lepidonotus squamatus</i>
<b>Prostomium</b>	Lepidonotoid Both pairs of eyes large Cephalic peaks absent	Lepidonotoid Anterior pair of eyes displaced onto lateral margins of the prostomium Cephalic peaks absent	Lepidonotoid Anterior eyes moderate; posterior pair smaller Cephalic peaks absent
<b>Antennae</b> <b>Tentacular cirri</b>	Median:            Lateral: Basal lobes with 2 prominent setae	Median: 1 pr.l    Lateral: 0.75 pr.l	Median: 2 pr.l.    Lateral: 1.5 pr.l. Styles without papillae Basal lobes with 2-3 spinose setae
<b>Dorsal cirri</b>			Extending well beyond the neurosetae; without papillae
<b>Dorsal pigmentation</b>			Colorless
<b>Setal diameter</b> <b>Setal counts</b>	Notosetae < Neurosetae Moderate : (    )            (    )	Notosetae < Neurosetae Numerous : (    )            (    )	Notosetae < Neurosetae Moderate :    Moderate (20-30)        (15-25)
<b>Notosetae</b>	Thin, with numerous spinous rows; tapering to very fine tips	Long, thin, with numerous spinous rows; tapering to sharp tips	Short, curved, with numerous transverse rows of spinules; tapering to bare, blunt tips  Longer, slightly thinner, with numerous spinous rows; tapering to very fine tips
<b>Neurosetae</b>	Stout, with coarse subdistal spinules arranged in a few transverse rows; tapering to long, smooth, slightly hooked unidentate tips		Stout, with coarse subdistal spinules arranged in a few transverse rows; tapering to long, smooth, slightly hooked unidentate tips
<b>Elytra</b>	Thin, dehiscent, smooth or with a few scattered microtubercles Light brown Marginal fringing papillae absent	Surface with numerous low rounded tubercles, and scattered high, smooth, conical tubercles Mottled with gray and black Marginal fringing papillae absent	Large, firmly attached, surface studded with numerous crowded round to pointed tubercles of various sizes; larger tubercles with sculpted surface  Color variable, from reddish yellow through brown to black Marginal fringing papillae thick, long
<b>Other features</b>	Tips of notosetae reaching to about the middle of the neurosetae; setae light amber in color.	Notosetae very long, with the tips reaching nearly to the ends of the neurosetae; setae dark amber in color.	Tips of notosetae barely surpassing the ends of the neuropodia; setae light amber in color.

	<i>Lepidasthenia berkeleyae</i>	<i>Lepidasthenia gigas</i>	<i>Lepidasthenia longicirrata</i>
<b>Prostomium</b>	Lepidonotoid Anterior eyes large; posterior pair moderate	Lepidonotoid Anterior eyes moderate; posterior pair small	Lepidonotoid Anterior eyes large; posterior pair moderate
<b>Antennae</b>	Median: 3 pr.l. Lateral: 1.5 pr.l. Styles without papillae	Median: Lateral: Styles without papillae	Median: 4.5 pr.l Lateral: 2.5 pr.l Styles without papillae
<b>Tentacular cirri</b>	Basal lobes achaetous, but with a digitiform acicular lobe	Basal lobes achaetous, but with a digitiform acicular lobe	Basal lobes achaetous, but with a digitiform acicular lobe
<b>Dorsal cirri</b>	Extending slightly beyond the neurosetae; without papillae	Not exceeding the neurosetae; without papillae	Extending slightly beyond the neurosetae; without papillae
<b>Dorsal pigmentation</b>	Colorless or with wide transverse bands of brown pigment	Light yellow to dark reddish	Wide bands of light brown pigment
<b>Setal diameter</b>			
<b>Setal counts</b>	Lacking : Moderate (0) (15-25)	Lacking : Few (0) (10-15)	Lacking : Moderate (0) (20-30)
<b>Notosetae</b>	Notosetae absent	Notosetae absent	Notosetae absent
<b>Neurosetae</b>	Long, slender, with long region of transverse rows of spinules; tapering to fine knobbed tips  Shorter, slightly stouter, with short subdistal region of transverse spinous rows extending nearly to end; tapering to blunt bifid tips	Long, thick, dark, with short region of fine transverse spinous rows; tapering to bare, blunt unidentate or bifid tips  More slender, lighter colored, with short region of coarse transverse spinous rows; tapering to bare bifid tips	Long, slender, with long region of transverse rows of spinules; tapering to fine knobbed tips  Shorter, slightly stouter, with short subdistal region of transverse spinous rows; tapering to bare bifid tips  Short, slender, with short spinous region; tapering to minutely bifid or unidentate tips
<b>Elytra</b>	Thin, translucent, smooth, leaving middorsum uncovered  Dark pigment concentrated around the elytraphore and extending toward the middorsum  Marginal fringing papillae essentially lacking	Thin, translucent, smooth, leaving middorsum uncovered  Mottled with gray pigment  Marginal fringing papillae essentially lacking	Thin, translucent, smooth, nearly covering the dorsum  Dark pigment concentrated around the elytraphore and extending toward the middorsum  Marginal fringing papillae essentially lacking
<b>Other features</b>	Notopodia short. Neuropodia with rounded pre- and postsetal lobes separated by a deep dorsal cleft  Secondary tooth on the median and inferior neurosetae is sometimes screened by the subterminal spinules  Reported in association with large maldanid tubes	Notopodia short. Neuropodia with rounded pre- and postsetal lobes separated by a deep dorsal cleft  Reported in association with large terebellid tubes	Notopodia elongate. Neuropodia with rounded pre- and postsetal lobes separated by a deep dorsal cleft  Proximal ventral margins of the neuropodia with a fringe of short globular papillae  Free-living



	<i>Malmgreniella baschi</i>	<i>Malmgreniella macginitiei</i>	<i>Malmgreniella nigralba</i>
<b>Prostomium</b>	Harmothoid Anterior eyes moderate, located ventrolaterally; posterior pair smaller Anterior lobes produced into indistinct cephalic peaks	Harmothoid Anterior eyes moderate, located dorsolaterally; posterior pair smaller Anterior lobes produced into distinct, acute cephalic peaks	Harmothoid Anterior eyes moderate, located ventrolaterally; posterior pair smaller Anterior lobes truncate; cephalic peaks absent
<b>Antennae</b>	Median: 2 pr.l. Lateral: 0.5 pr.l. Styles with occasional minute clavate papillae	Median: 1.5 pr.l. Lateral: 0.5 pr.l. Styles with occasional minute clavate papillae	Median: 1.5 pr.l. Lateral: 0.5 pr.l. Styles with occasional minute clavate papillae
<b>Tentacular cirri</b>	Basal lobes with 0-2 stout, curved setae	Basal lobes with 1-2 stout, curved setae	Basal lobes with 0-2 stout, curved setae
<b>Dorsal cirri</b>	Extending to tips of neurosetae; with scattered clavate papillae	Extending to tips of neurosetae; with scattered clavate papillae	Extending to tips of neurosetae; with scattered clavate papillae
<b>Dorsal pigmentation</b>	Without pigment in anterior setigers	Colorless to dusky with dark transverse bands	Dusky with dark transverse bands in median and posterior setigers
<b>Setal diameter</b>	Notosetae $\approx$ Neurosetae	Notosetae $\geq$ Neurosetae	Notosetae $\approx$ Neurosetae
<b>Setal counts</b>	Moderate : Moderate (35-50) (25-35)	Moderate : Moderate (30-40) (30-40)	Moderate : Moderate (15-25) (30-45)
<b>Notosetae</b>	Curved, with longitudinal striations and 2 longitudinal rows of minute spinules; tapering to pointed tips	Curved, with longitudinal striations and 2 longitudinal rows of minute spinules; tapering to pointed tips	Curved, with longitudinal striations and 2 longitudinal rows of minute spinules; tapering to pointed tips
<b>Neurosetae</b>	Long, with moderate distal region of prominent spinules; tapering to pointed, unidentate tips  Long, with short inflated spinous region; tapering to bare hooked tips with only occasional indistinct indications of a secondary tooth	Long, slightly more slender, with moderate distal region of prominent spinules; tapering to pointed or minutely bifid tips  Long, with short inflated spinous region; tapering to hooked bifid tips with a short secondary tooth  Shorter; tapering to slightly hooked, unidentate tips	Long, with moderate distal region of prominent spinules; tapering to round, blunt unidentate or minutely bifid tips  Long, with short inflated spinous region; tapering to hooked bifid tips with a distinct secondary tooth  Shorter; tapering to slightly hooked, unidentate or bifid tips
<b>Elytra</b>	Thin, smooth except for a patch of rounded microtubercles anterior to the attachment scar  Mottled dark pigment over the attachment scar and in a C-shaped band  Border with scattered micro-papillae	Thin, smooth except for a patch of rounded microtubercles anterior to the attachment scar  Mottled dark pigment over the attachment scar and in a C-shaped band  Border with scattered micro-papillae	Thin, smooth except for a patch of rounded microtubercles anterior to the attachment scar  Black pigment over attachment scar and in a complete or nearly complete ring  Border with scattered micro-papillae
<b>Other features</b>	Reported from the shallow shelf, 8-30 meters, as a commensal with ophiuroids	Elytra often with both dark surface pigment and internal granules of reddish-brown pigment. Surface pigment often distributed in compartments  Reported from the shallow shelf, 0-60 meters, as a commensal with ophiuroids and an inhabitant of polychaete and shrimp burrows	Elytral surface with distinct reticular areas  Neuropodial supraacicular lobe distinctly demarcated from neuropodium  Reported from the shallow shelf, 0-40 meters, as a commensal with holothouroids

	<i>Malmgreniella sanpedroensis</i>	<i>Malmgreniella scriptoria</i>	
<b>Prostomium</b>	Harmothoid Anterior eyes moderate, located ventrolaterally; posterior pair smaller Anterior lobes truncate; cephalic peaks absent	Harmothoid Anterior eyes small, located dorsolaterally; posterior pair small Anterior lobes truncate; cephalic peaks absent	
<b>Antennae</b>	Median: 1 pr.l. Lateral: 0.5 pr.l. Styles with occasional minute clavate papillae	Median: 1.5 pr.l. Lateral: 0.5 pr.l. Styles with occasional minute clavate papillae	
<b>Tentacular cirri</b>	Basal lobes with 2-10 stout, curved setae	Basal lobes with 0-2 stout, curved setae	
<b>Dorsal cirri</b>	Extending to tips of neurosetae; with scattered clavate papillae	Extending well beyond tips of neurosetae; with scattered clavate papillae	
<b>Dorsal pigmentation</b>	Colorless	Colorless to dusky	
<b>Setal diameter</b>	Notosetae > Neurosetae	Notosetae ≥ Neurosetae	
<b>Setal counts</b>	Moderate : Moderate (25-40) (25-40)	Few : Moderate (10-25) (15-30)	
<b>Notosetae</b>	Curved, with longitudinal striations and 2 longitudinal rows of minute spinules; tapering to pointed tips	Curved, with longitudinal striations and 2 longitudinal rows of minute spinules; tapering to pointed tips	
<b>Neurosetae</b>	Long, with moderate distal region of prominent spinules; tapering to sharply pointed unidentate tips Long, with short inflated spinous region; tapering to hooked bifid tips with a distinct secondary tooth Shorter; tapering to slightly hooked, unidentate tips	Long, with moderate distal region of prominent spinules; tapering to unidentate or bifid tips Long, with short inflated spinous region; tapering to hooked bifid tips with a short, prominent secondary tooth Shorter; tapering to slightly hooked, unidentate or bifid tips	
<b>Elytra</b>	Thin, smooth except for a patch of rounded microtubercles anterior to the attachment scar Dark brown pigment over the attachment scar and in a C-shaped band Border with scattered micro-papillae	Thin, smooth except for a patch of rounded microtubercles anterior to the attachment scar Dark brown pigment over the attachment scar and in a C-shaped band Border with scattered micro-papillae	
<b>Other features</b>	Reported from upper slope depths, at 400 meters	Reported from the middle and outer shelf, 40+ meters, as a commensal with the heart urchin <i>Brisaster latifrons</i>	

	<i>Subadyte mexicana</i>	<i>Tenonia priops</i>	
<b>Prostomium</b>	Harmothoid Eyes large, reddish Cephalic peaks prominent	Harmothoid Both pairs very large; anterior pair on anteroventral margin Cephalic peaks weakly developed	
<b>Antennae</b>	Median: 3 pr.l. Lateral: 1 pr.l. Styles with scattered long papillae	Median: 2 pr.l. Lateral: 0.5 pr.l. Styles without papillae	
<b>Tentacular cirri</b>	Basal lobes occasionally with 1-2 curved setae	Basal lobes without setae	
<b>Dorsal cirri</b>	Extending beyond the tips of the neurosetae, with scattered papillae	Extending well beyond the tips of the neurosetae, without papillae	
<b>Dorsal pigmentation</b>	Dusky, tending to concentrate in 2 longitudinal bands above the cirrophores and elytraphores	Distinctive wide and narrow transverse bars of dark pigment; pigment bars often interrupted	
<b>Setal diameter</b>	Notosetae > Neurosetae	Notosetae ≤ Neurosetae	
<b>Setal counts</b>	Few : Numerous (10-25) (40-60)	Moderate : Numerous (30-40) (40-60)	
<b>Notosetae</b>	Thick, curved, distally with spinose transverse bracts becoming progressively smaller toward the blunt, notched tips	Slender, curved, with fine serrations; tapering to capillary tips  Slender, longer, straight, with fine serrations; tapering to capillary tips	
<b>Neurosetae</b>	Long, coarsely serrated above a large basal cusp; tapering to notched tips  Longer, with indistinct serrations above a large basal cusp; tapering to pointed unidentate tips  Shorter, more slender, with small distinct serrations above a large basal cusp; tapering to pointed unidentate tips	Slender, long, straight, with fine serrations; tapering to capillary tips  Slightly thicker, with coarse transverse serrations; tapering to bare bifid tips	
<b>Elytra</b>	Thin, translucent, with scattered papillae on the surface Pigment absent Marginal fringing papillae short, sparse	Thin, translucent, nearly smooth except for occasional inconspicuous microtubercles Brown pigment around the attachment scar Marginal fringing papillae absent	
<b>Other features</b>	Buccal segment with small nuchal fold covering the posterior margin of the prostomium  Eye pigments are subject to fading, and are inconspicuous at times	Buccal segment with small nuchal fold covering the posterior margin of the prostomium  Elytra do not cover the middorsum in the anterior setigers	