Descriptions of *Sthenelais fusca* Johnson 1897 and *S. berkeleyi* n.sp. (Polychaeta: Sigalionidae) from the Eastern Pacific

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Two sigalionid polychaete species were found to have been confused under *Sthenelais fusca* Johnson. The second species is named *S. berkeleyi* in honor of Dr Cyril Berkeley.

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Deux espèces de polychètes sigalionides avaient été confondues et décrites sous le nom de *Sthenelais fusca* Johnson. Le nom de *S. berkeleyi* est donné à la seconde espèce en l'honneur de M. Cyril Berkeley.

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IN connection with a long range revision of the polychaete worms of the superfamily Aphroditoidea, including the Sigalionidae, it became apparent that two species had been confused under *Sthenelais fusca*. Johnson (1897) described *S. fusca* from four specimens found at low water in crevices under stones and among roots of *Phyllospadix* in the vicinity of Los Angeles (San Pedro) and San Francisco (Pillar Point, San Mateo County, and Bolinas, Marin County), California. The measurements for a full-grown specimen of about 140 segments was given as 95 mm in length and 7 mm in width. Later, Johnson (1901) identified as *S. fusca* a single anterior fragment of huge dimensions, 107 mm in length for 74 segments and a width of 12 mm, from Pleasant Beach, Seattle, Washington. Pettibone (1953) gave a more complete description of some large Puget Sound specimens under *S. fusca*. Johnson's material apparently no longer exists, but additional sigalionids, agreeing with Johnson's original description, and collected near the type-localities, were available for study in the Smithsonian Institution (USNM) and the Allan Hancock Foundation (AHF). A specimen from Naden Harbor, Queen Charlotte Islands, reported by Berkeley and Berkeley (1962) as *S. articulata* Kinberg, proved to belong rather to the Puget Sound species.

I take pleasure in naming this Puget Sound species *S. berkeleyi* in honor of Dr Cyril Berkeley, who, with his wife Edith, carried out pioneer studies on the polychaetes. Their publications still serve as the primary source for information on the polychaetes of western Canada and nearby areas. Their collections, now deposited in the Smithsonian Institution (Pettibone 1967), have been and are continuing to be utilized by other polychaete workers for checking and revisionary studies. Since my 1967 paper, in which the polychaete publications of Edith and Cyril Berkeley were listed, three additional papers have been published by Cyril Berkeley (1966, 1967, 1968). I count it a great privilege to have known both Cyril and Edith Berkeley through personal contacts, through their friendly and helpful correspondence, as well as through their scholarly publications.

Abbreviations Used in Figures

I–IV, segments; *acL*, acicular lobe; *au*, auricle; *a-vB*, anteroventral bract; *b*K, basal knob; *br*, branchia; *buC*, buccal cirrus; *ct*, ctenidia; *dR*, dorsal ridge; *dTc*, dorsal tentacular cirrus; *dTu*, dorsal tubercle; *IpaS*, inner palpal sheath; *ItL*, inner tentacular lobe; *lAn*, lateral antenna; *mAn*, median antenna; *nuO*, nuchal organ; *pa*, palp; *pB*, posterior bract; *st*, stylode; *vC*, ventral cirrus; *vTc*, ventral tentacular cirrus.

This issue of the Journal of the Fisheries Research Board of Canada is dedicated to Dr Cyril Berkeley and to the memory of the late Mrs Edith Berkeley.

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Sthenelais Kinberg 1855

Both *S. fusca* Johnson and *S. berkeleyi* n.sp. show the following generic characters: Body elongate, vermiform, with numerous segments; middorsal ridge on some anterior segments, bordered by few pairs of small ctenidia. Elytra numerous pairs, on segments 2, 4, 5, 7, alternate segments to 27, and continuing on all segments. Elytra large, covering dorsum, with microtubercles and lateral fringes of papillae. Dorsal tubercles on segments 3, 6, 8, and alternate segments to 26. Prostomium rounded, fused to first or tentacular segment; median antenna with stout cylindrical ceratophore furnished with lateral auricles and terminal style; lateral antennae fused to inner dorsal sides of tentacular parapodia; four eyes; palps emerging ventral to tentacular parapodia; paired oval nuchal organs. Tentacular parapodia extending anteroventrally to prostomium, each with pair of tentacular cirri, single aciculum, two bundles of capillary setae, L-shaped inner tentacular lobe with ciliated ridge and fused to inner palpal sheath; ciliated dorsal ctenidium. Parapodia of second or buccal segment extending anteriorly, with ventral buccal cirri longer than those following; small ctenidia on lateral lips and medial to ventral cirri on some anterior segments. Third segment with dorsal tubercles fused to posterior sides of elytrophores of segment II. Neurosetae of segments II and III compound falcigerous with articulated blades and bifid tips.

Branchiae cirriform, ciliated, on external borders of all elytrophores and dorsal tubercles except for few anterior ones. Parapodial ctenidia cup-shaped, ciliated, three per parapodium, beginning on segment II. Parapodia with accessory bracts and stylodes. Notopodia clavate, with bracts nearly encircling acicular lobes. Notosetae numerous, arranged in semicircular row and directed posterodorsally, finely spinous, and tapering to capillary tips. Neuropodia with conical acicular lobes; bilobed C-shaped posterior bracts directed anteriorly on upper and lower margins; crescent-shaped anteroventral and anterior upper bracts. Neurosetae arranged in three groups: upper group within anterior upper bracts, C-shaped group of stouter neurosetae within posterior bracts, and lower arched group of more slender neurosetae within anteroventral bracts. Neurosetae simple spinous (in upper group) and compound falcigerous with some blades articulated and tips bifid; distal parts of stems smooth or spinous. Ventral cirri subulate, with outer basal knobs. Pharynx with 11 pairs of papillae and two pairs of jaws.

Sthenelais fusca Johnson

Fig. 1–3

Sthenelais fusca Johnson 1897 p. 185, p. 19: fig 60, 61, 61a, b; pl. 10: fig. 64, 64a–g. Monro 1933 p. 16. Berkeley and Berkeley 1935 p. 767; 1941 p. 26. MacGinitie 1935 p. 690. Hartman 1939 p. 61, pl. 13: fig. 153–162 (part; not fig. 160).

Not *Sthenelais fusca* Johnson 1901 p. 397. Pettibone 1953 p. 73. (=*S. berkeleyi* n.sp.).

Sthenelais variabilis var. *colorata* Monro 1933 p. 14, fig. 7. Not Monro 1924.

Material examined — *Central California*: Dillon Beach, May 28, 1941, under rocks, M. Pettibone collector, 1 specimen (new record; USNM 32386). *Southern California*: Elkhorn Slough, Monterey Bay, G. E. MacGinitie collector, 1 specimen (USNM 35024). San Pedro, Los Angeles, June 14, 1950, W. E. B. collector, 1 specimen (AHF). *Ecuador*: Salinas, September 12, 1926, W. L. Schmitt collector, 1 specimen (new record; USNM 24175). *Peru*: Paita, October 8, 1926, W. L. Schmitt collector, 1 specimen (new record; USNM 24173).

Description — Length up to 130 mm, width 5–7 mm, including setae, segments numerous (about 200). Wide middorsal ridge on segments 2–6, with 3–4 pairs of small ctenidia alongside (Fig. 1*a*). Ventral surface smooth, not papillate. Elytra suborbicular, subrectangular to subreniform, rusty brown, mottled with dark pigment, and sometimes with darker crescent-shaped areas medial to elytrophores. Elytra with uniformly distributed microtubercles except for lateral bare areas and some anterior bare areas in more posterior elytra; microtubercles low, rounded to slightly larger, subconical. Lateral borders with row of papillae and about 3 (3–6) irregular submarginal rows (Fig. 3*a*, *b*).

Prostomium with large lateral auricles on ceratophore of median antennae, ciliated on ventral side, and moderately long tapered style; lateral antennae short, subulate; 4 eyes arranged in square, moderate in size, anterior pair larger than posterior pair, partly concealed by auricles; palps extending to about segment 8 (7–10); nuchal organs large, partly hidden by first pair of cetnidia along middorsal ridge (Fig. 1*a*). Tentacular parapodia with dorsal tentacular cirrus subequal to median antenna; ventral tentacular cirri about half as long as dorsal cirri; inner tentacular lobe about same length as ventral tentacular cirrus, fused to shorter, rounded inner palpal sheath; dorsal ctenidium elongate-oval (Fig. 1*a*).

Parapodia of segments II and III directed anteriorly, slightly modified from following segments, with pair of small ctenidia on lateral lips (Fig. 1*a–d*). Blades of compound falcigerous neurosetae with 3–10 articles, with bifid tips; upper ones more slender, their tips sometimes appearing nearly entire; stems with numerous spinous rows (7–20); upper and lower neurosetae more slender than middle ones (Fig. 1*c*). Additional small ctenidia located medial to elytrophores of segment II and medial to ventral cirri of segments 3–7 (3–13 on specimen from Ecuador) (Fig. 1*a*, *d*).

Parapodia of anterior (Fig. 2*a*, *b*) and middle regions similar. Cirriform branchiae beginning on segment IV. Notopodial bracts fimbriated, lower anterior papillae or stylodes longer than dorsoposterior ones. Neuropodial acicular lobes without stylodes (except in more anterior parapodia). Upper lobes of bilobed posterior bracts with several stylodes on upper anterior part, lower lobes without stylodes. Anterior upper bracts indistinct, anteroventral bracts low, not fimbriated. C-shaped group of stout neurosetae with blades short to slightly longer, with stems smooth (Fig. 2*e*, *g*). Upper anterior group of neurosetae simple spinous (Fig. 2*c*) and compound falcigerous with blades of 3–5 articles

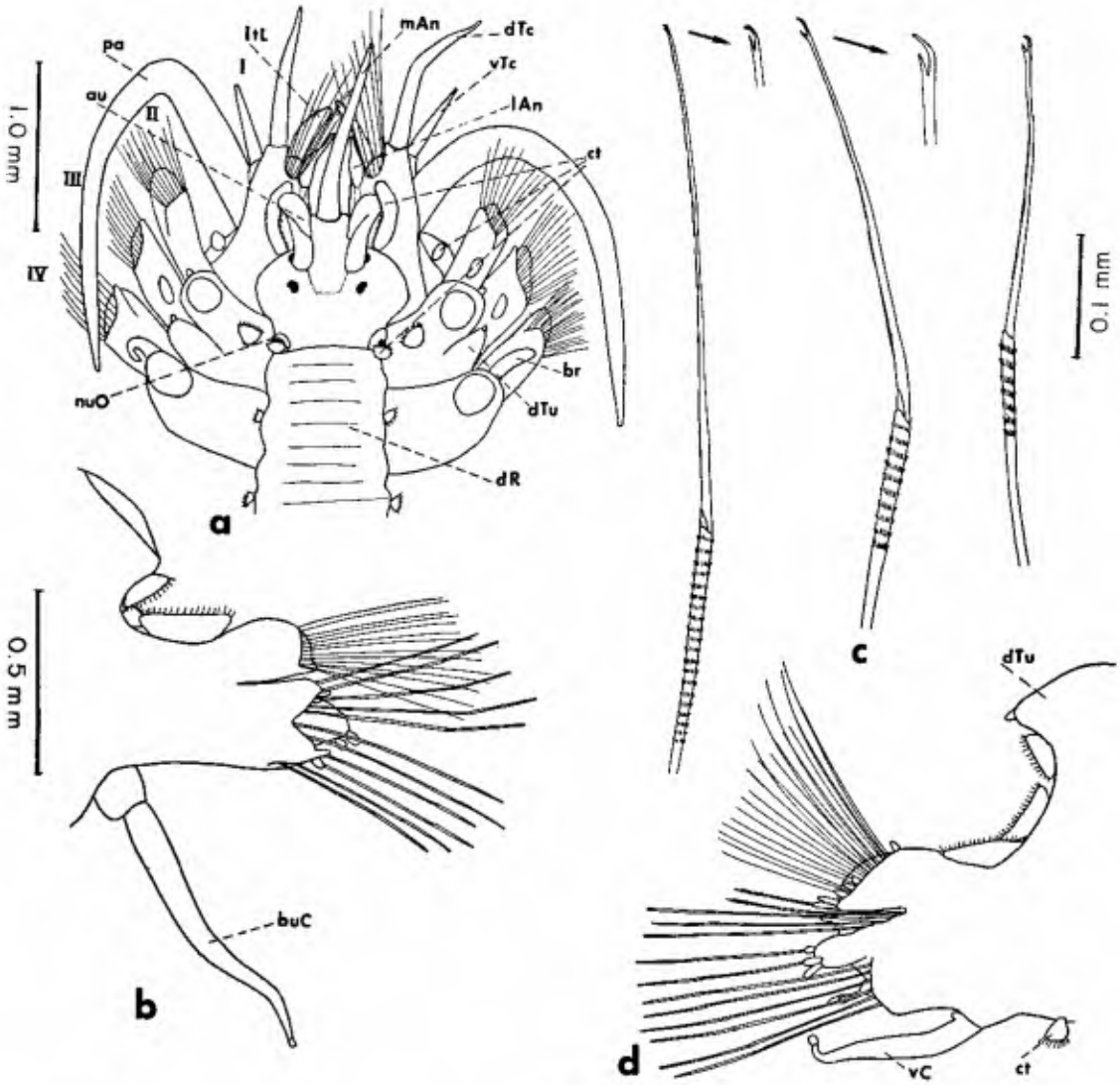

FIG. 1. *Sthenelais fusca* (USNM 35024): *a*, anterior end, dorsal view; *b*, second parapodium, posterior view; *c*, upper, middle, and lower neurosetae from same; *d*, third parapodium, anterior view.

and stems with 4–6 spinous rows (Fig. 2*d*). Anteroventral slender neurosetae with blades of 1–4 articles and stems with 3–5 spinous rows (Fig. 2*f*). Ventral cirri with distinct basal knobs.

Distribution — Central California to Peru. Low water.

Sthenelais berkeleyi n.sp.

Fig. 4–7

Sthenelais fusca Johnson 1901 p. 397. Pettibone 1953 p. 73, pl. 36: fig. 325–332; pl. 37: fig. 333–343. Not Johnson 1897.

Sthenelais tertiaglabra — Berkeley and Berkeley 1941 p. 26 (part). Not Moore 1910.

Sthenelais articulata — Berkeley and Berkeley 1962 p. 571. Not Kinberg 1855.

Material examined — *British Columbia*: Naden Harbor, Queen Charlotte Islands, 13 m, July 4–10, 1960, D. Quayle collector, 1 specimen (USNM 35029). *Washington, Puget Sound*: Shilshole Bay, south of entrance to Ballard Canal, tidal mud flat near low tide line, August 1934, J. E. Lynch collector, holotype (USNM 32365). South side of Salmon Bay near Government Locks, Ballard, mud and shingle exposed at low tide, May 11, 1937, J. E. Lynch collector, 2 paratypes (USNM 25457).

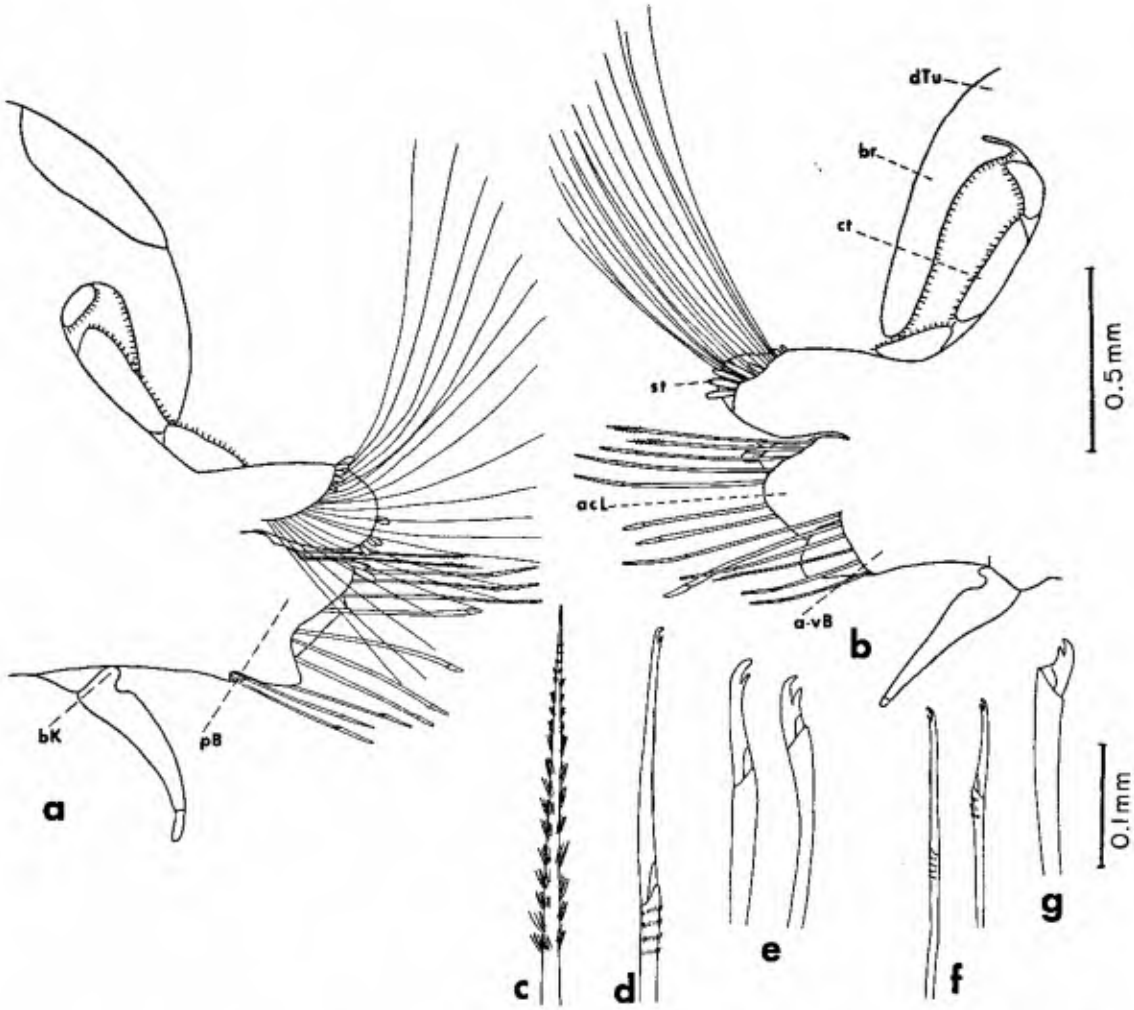

FIG. 2. *Sthenelais fusca* (USNM 35024): *a*, parapodium from anterior region, posterior view; *b*, same, anterior view; *c*, simple neuroseta; *d*, compound falcigerous neuroseta from upper anterior group; *e*, same, from middle group; *f*, same, from anterior ventral group; *g*, same, from middle group of parapodium from middle region.

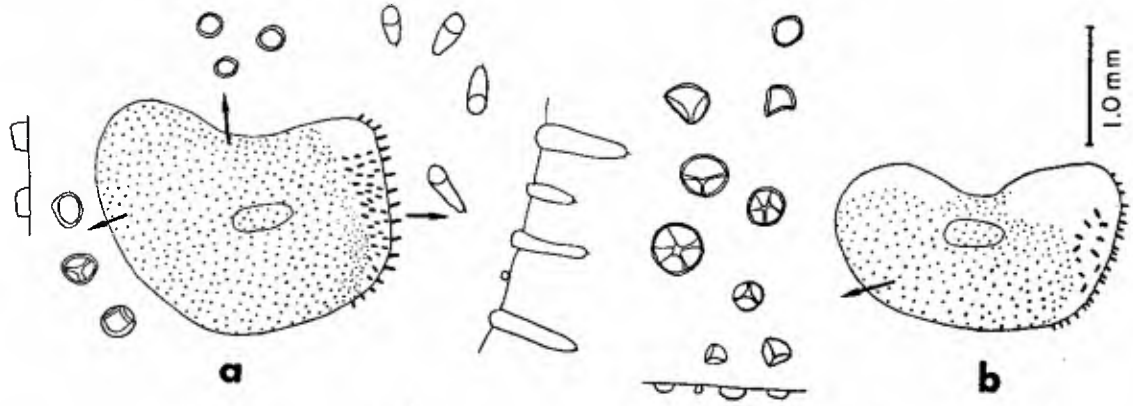

FIG. 3. *Sthenelais fusca* (USNM 35024): *a*, elytron from anterior region; *b*, elytron from middle region.

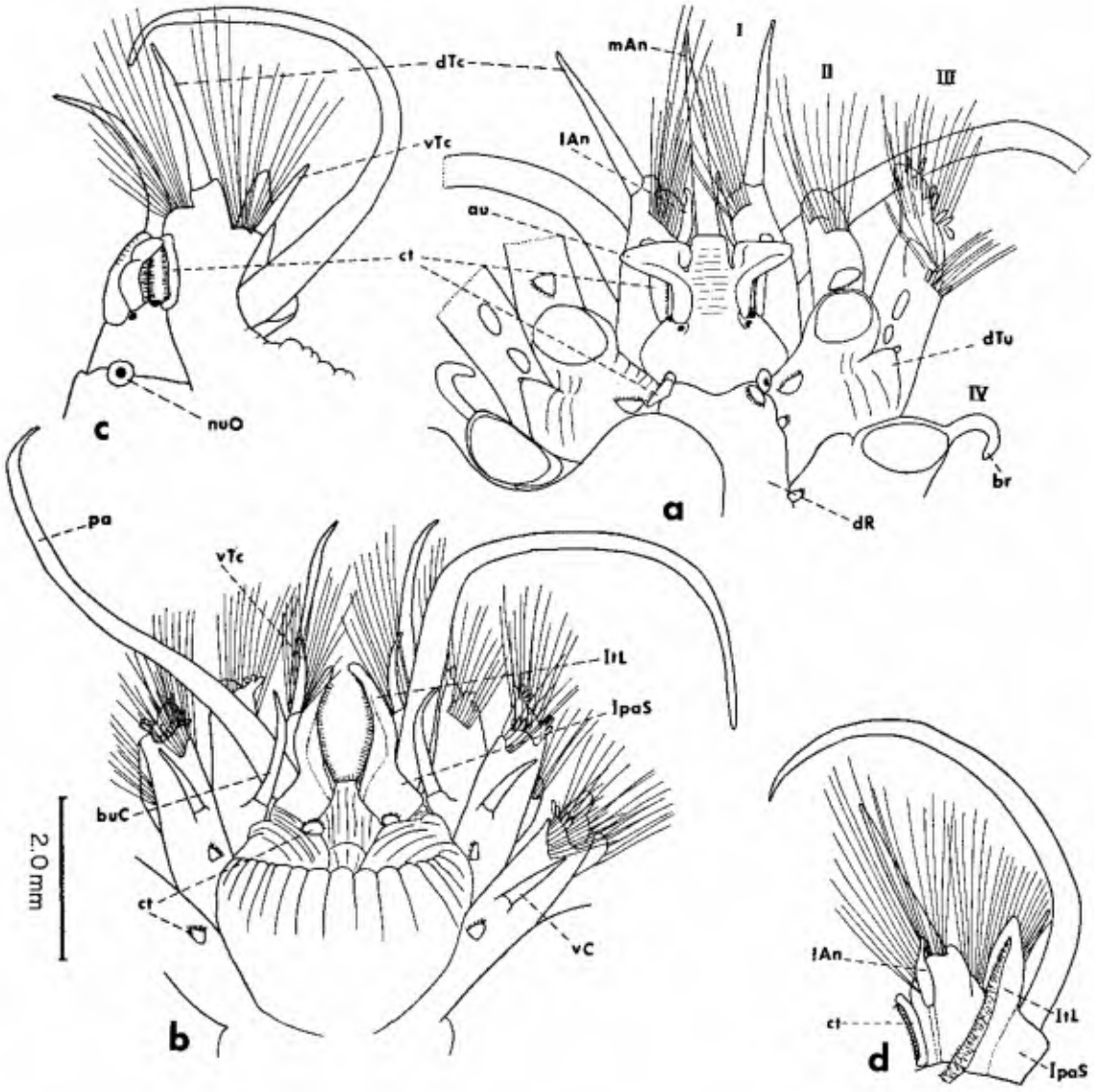

FIG. 4. *Sthenelais berkeleyi* n.sp. (paratypes, USNM 25457): *a*, anterior end, dorsal view; *b*, anterior end, ventral view; *c*, right tentacular parapodium, outer or lateral view; *d*, left tentacular parapodium, inner or medial view.

Browns Point, Tacoma, low tide, July 1946, M. H. Pettibone collector, paratype (USNM 25461). End of Colvos Passage, 110 m, gravel, August 2, 1938, M. H. Pettibone collector, paratype (USNM 25458). Off Foulweather Bluff and Point No Point, Admiralty Inlet, 70 m, shelly mud, July 8, 1940, M. H. Pettibone collector, paratype (USNM 25460). Off Cutts Island, Case Inlet, 30 m, August 2, 1938, M. H. Pettibone collector, 1 specimen (USNM 25465). *Southern California*: Off Balboa, 22–60 m, November 25, 1932, G. E. MacGinitie collector, 1 specimen (mixed with *S. tertiaglabra*, USNM 44517).

Description — Length of complete holotype 400 mm, width 12 mm, including setae, segments about 270. Length of incomplete paratypes 90–250 mm, width 8–13 mm, including setae. Wide middorsal ridge on segments 2–7, with 4 pairs of small ctenidia alongside (Fig. 4*a*). Ventral surface thickly papillate, with close-set short papillae and extending on ventral sides of parapodia, beginning anteriorly on body (not on lower lip; Fig. 6*a*, *b*). Elytra suborbicular, subrectangular to subreniform, pale to rusty brown. Elytra with uniformly distributed microtubercles, except for lateral partially bare areas and some anterior bare areas on more posterior

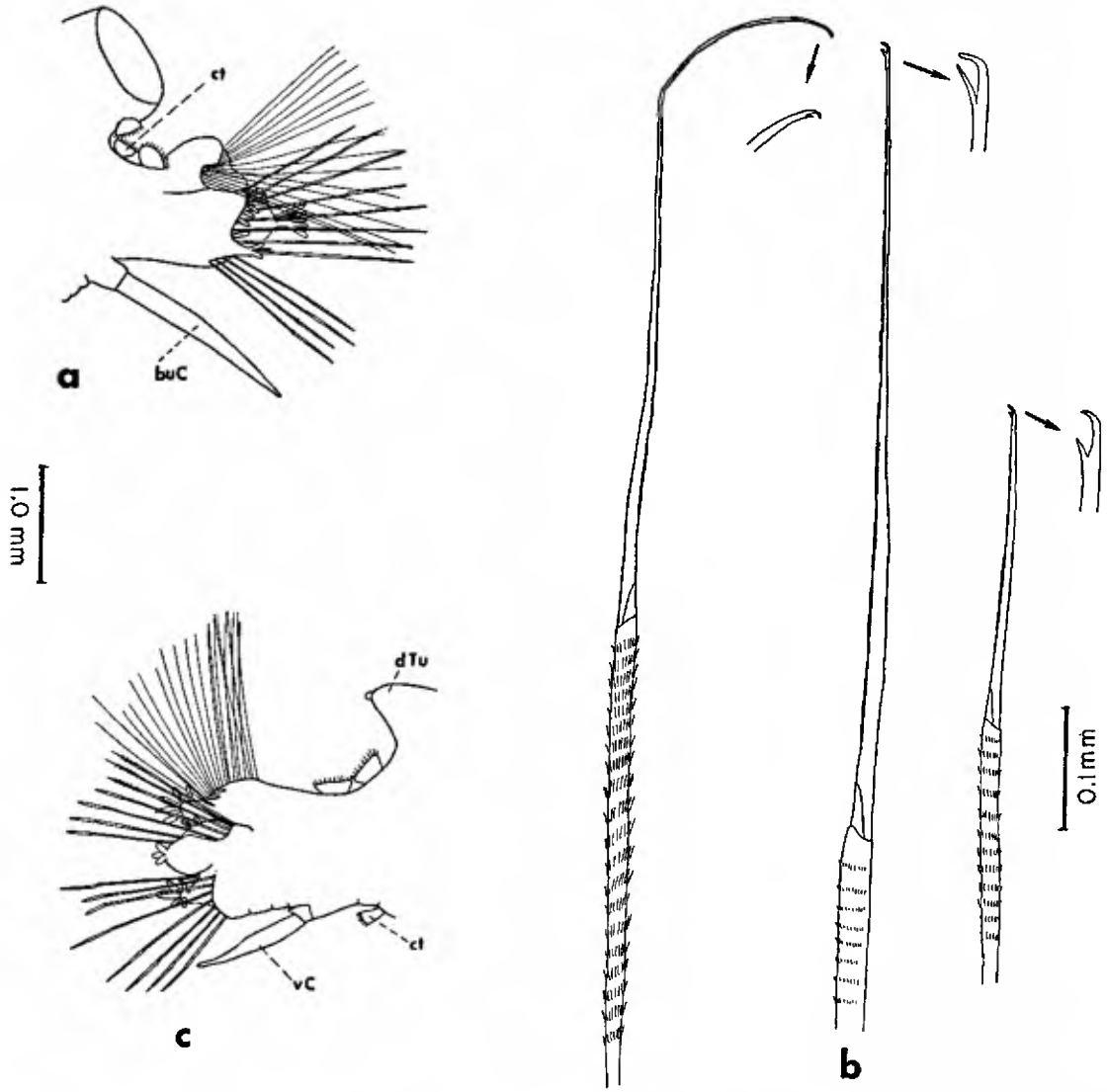

FIG. 5. *Sthenelais berkeleyi* n.sp. (paratypes, USNM 25457): *a*, second parapodium, posterior view; *b*, upper, middle, and lower neurosetae from same; *c*, third parapodium, anterior view.

elytra; microtubercles low, rounded to slightly larger, conical. Lateral borders of elytra with row of papillae, sometimes with additional minute sensory papillae, and few (4–7) irregular submarginal rows of papillae (Fig. 7*a*, *b*).

Prostomium with large lateral auricles on ceratophore of median antenna, ciliated on ventral side, and moderately long tapered style; lateral antennae short, subulate; 4 eyes in trapezoidal arrangement, moderate in size, anterior pair larger than posterior pair and partly concealed by auricles; palps extending to about segment 7–8; nuchal organs large, sometimes partly hidden by first pair of ctenidia along middorsal ridge (Fig. 4*a*). Tentacular parapodium with dorsal tentacular cirrus subequal to median antenna; ventral tentacular cirri about half as long as dorsal cirrus; inner tentacular lobe about same length as ventral cirrus, fused to shorter, rounded inner palpal sheath; dorsal ctenidium elongate-oval (Fig. 4*a–d*).

Parapodia of segments II and III directed anteriorly, slightly modified from following segments (Fig. 4*a*, *b*; 5*a–c*). Blades of compound falcigerous neurosetae with 3–11 articles, with bifid tips; upper ones more slender, their tips sometimes appearing nearly entire; stems with numerous spinous rows (9–22); upper and lower neurosetae more slender than middle ones (Fig.

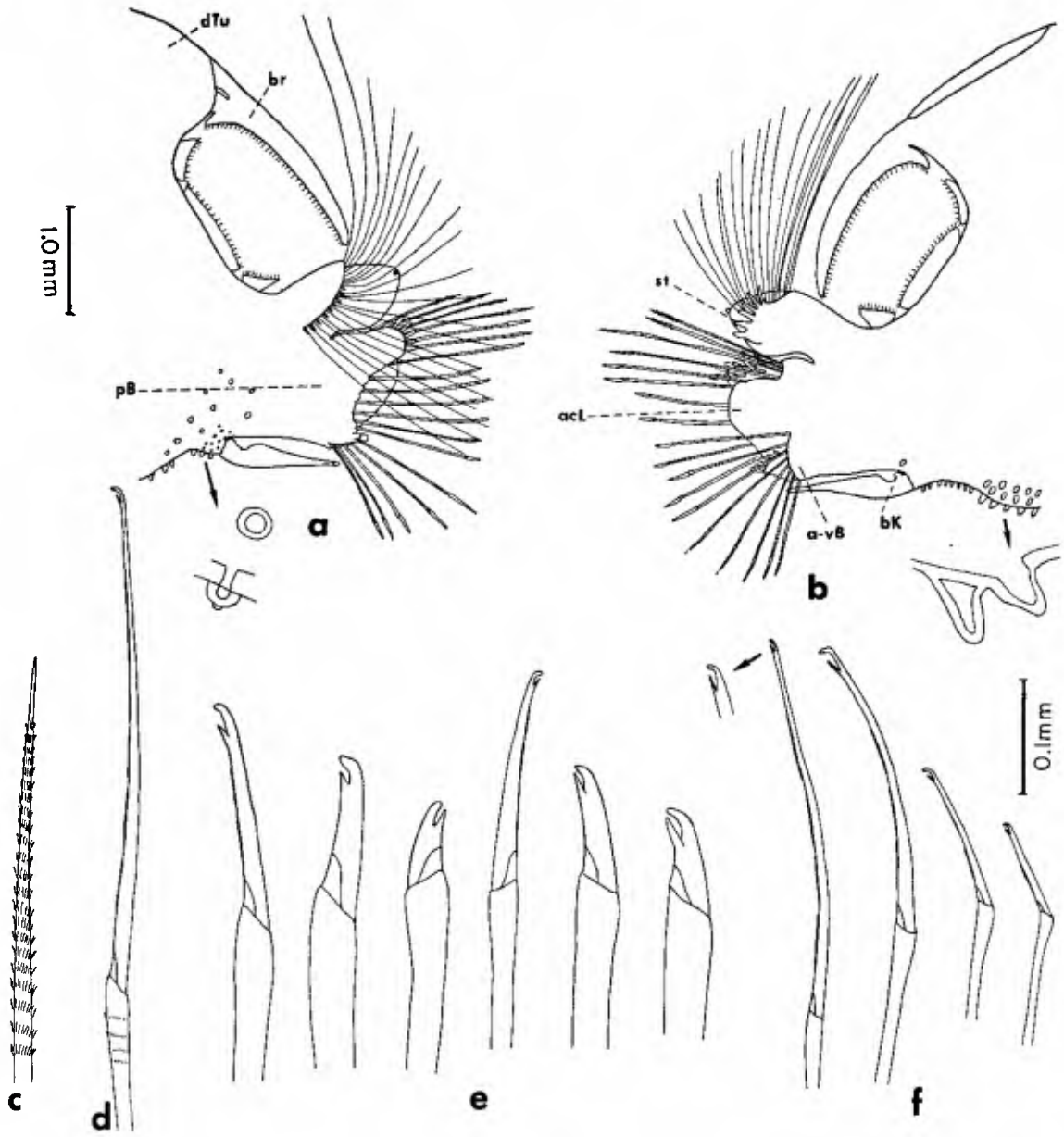

FIG. 6. *Sthenelais berkeleyi* n.sp. (paratypes, USNM 25457): *a*, parapodium from anterior region (about segment 25), posterior view; *b*, same, anterior view; *c*, upper simple neuroseta; *d*, compound falcigerous neuroseta from upper anterior group; *e*, same, from middle group; *f*, same, from anterior ventral group.

5*b*). Additional small ctenidia medial to elytrophores of segment II and medial to ventral cirri of segments 3–5 (Fig. 4*a*, *b*; 5*c*).

Parapodia of anterior (Fig. 6*a*, *b*) and middle regions similar. Cirriform branchiae beginning on segment IV. Notopodial bracts fimbriated, series of short papillae posteriorly and longer papillae on lower anterior part. Neuropodial acicular lobes without stylodes (except in more anterior parapodia). Bilobed posterior bracts with numerous stylodes on both upper and lower anterior parts. Anterior upper bracts indistinct, anteroventral bracts low, not fimbriated. C-shaped group of stout neurosetae with blades short to longer, formed of 1–4 articles, with stems smooth (Fig. 6*e*). Upper anterior

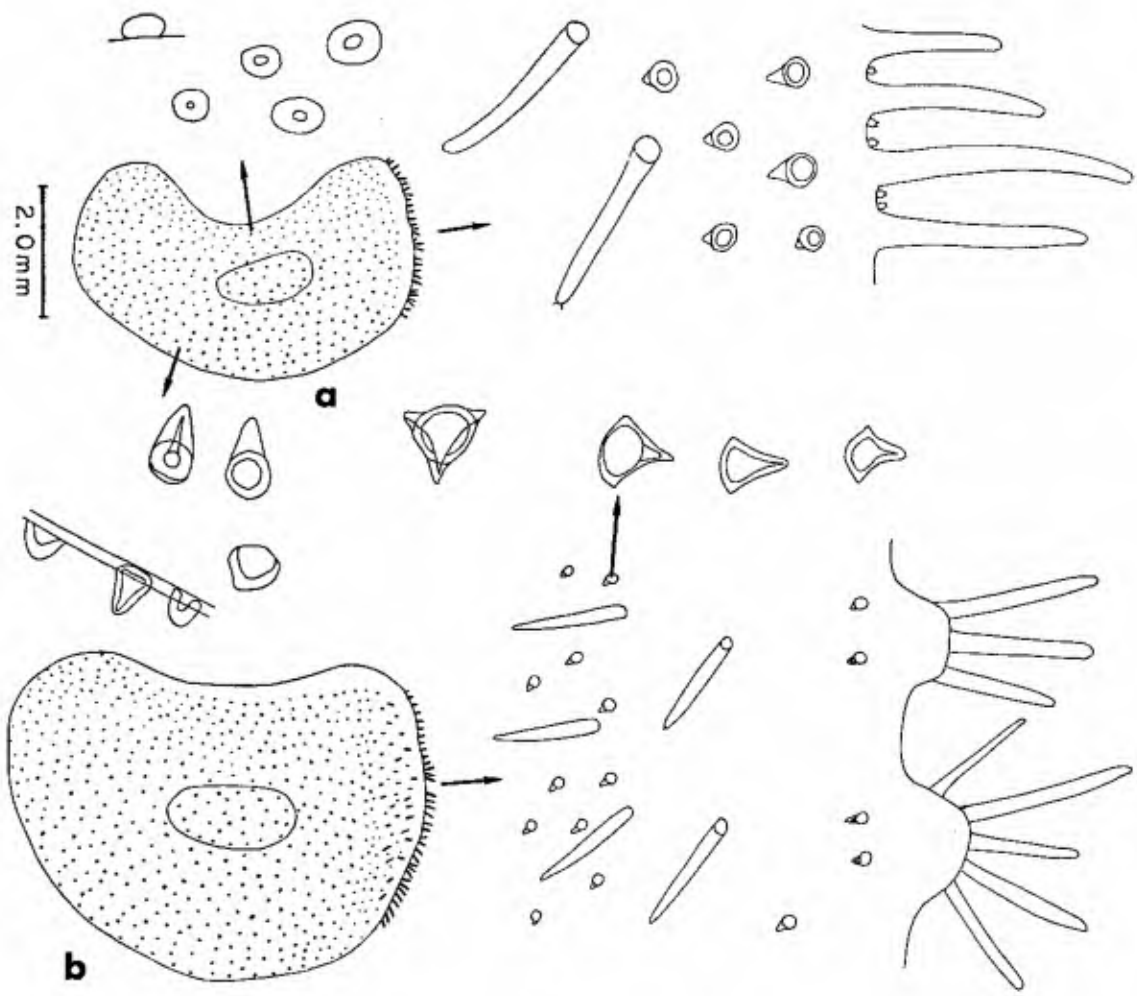

FIG. 7. *Sthenelais berkeleyi* n.sp. (paratypes, USNM 25457): *a*, third right elytron; *b*, 13th right elytron.

group of neurosetae simple spinous (Fig. 6*c*) and compound falcigerous with blades formed of about 7 articles and stems with about 4 spinous rows (Fig. 6*d*). Anteroventral slender neurosetae with blades of 1–4 articles and stems smooth (Fig. 6*f*). Ventral cirri with distinct basal knobs.

Distribution — British Columbia to Southern California. Low water to 110 m.

Remarks — *Sthenelais berkeleyi* may be distinguished from *S. fusca* by the following characters:

	S. fusca	*S. berkeleyi*
Ventral surface	Smooth, not papillate (Fig. 2*a*, *b*)	Thickly papillate (Fig. 6*a*, *b*)
Bilobed posterior bracts of neuropodia	Provided with few stylodes on upper anterior part; without stylodes on lower anterior part (Fig. 2*a*, *b*)	Provided with numerous stylodes on both upper and lower anterior parts (Fig. 6*a*, *b*)

Acknowledgments

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