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Trachyscorpia osheri and *Idiastion hageyi*, Two New Species of Deepwater Scorpionfishes (Scorpaeniformes: Sebastidae, Scorpaenidae) from the Galápagos Islands

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Trachyscorpia osheri **species novum, is described from two specimens collected off Isla Fernandina and Isla Darwin, Galápagos Islands, using a manned submersible in 402-515 m. It is referred to the subgenus *Trachyscorpia* and differs from all known congeners in having 12 dorsal spines, 25 vertebrae, an arched dorsal profile, minute dorsal spines, and in lacking a swimbladder. *Idiastion hageyi* species novum, is described from a single specimen also collected off Isla Fernandina, in 522 m. It differs from its two congeners in having fewer pored lateral-line scales, five anal-soft rays, a deeper body, and a smaller orbit.**

More than 30 new species of fishes were collected from the Galápagos Archipelago using the manned submersible *Johnson Sea-Link* in 1995 (McCosker 1997). Various authors have already described many of those taxa and I herein take pleasure in describing two remarkable deepwater scorpionfishes that were collected in the archipelago. Additional new scorpionfishes remain to be discovered in deepwater in the eastern Pacific and manned submersible usage will certainly make that possible.

Research undertaken by California Academy of Sciences scientists would not be possible were it not for the generous support of federal agencies, corporations, and philanthropic individuals. It is with particular pride and pleasure that I describe these two remarkable new species in honor of two very generous individuals, Bernard A. Osher and Harry R. Hagey.

Materials and Methods

Counts and measurements follow Motomura (2004) and Motomura et al. (2007). Terminology of head spines follows that of Randall and Eschmeyer (2001). Measurements are straight-line and made with dial calipers or dividers and recorded to the nearest 0.1 mm. Proportions are expressed in terms of standard length (SL) or head length (HL). The last two soft rays of the median fins are counted as single rays, as each pair is associated with a single pterygiophore. Pectoral-fin ray counts begin with the uppermost ray. The interorbital width is the least bony width. Lengths of regenerated or broken spines were not measured. Gill arch description is based on the first right gill arch of each holotype, which was removed. Osteological characters were observed and fin ray counts were made from radiographs. Institutional abbreviations follow Leviton et al. (1985).

Family Sebastidae

***Trachyscorpia osheri* McCosker, sp. nov.** **Galápagos Thornyhead**
Figures 1–3

Material Examined.— Holotype: CAS 86509, 147 mm SL, sex undetermined, Islas Galápagos, Isla Darwin, 01°42.05′N, 92°00.02′W, suction-captured from the submersible *Johnson Sea-Link* (JSL Dive 3967) at 515 m by J.E. McCosker and party on 21 Nov. 1995. Paratype: CAS 86504, 135 mm SL, sex undetermined, Islas Galápagos, Isla Fernandina, Cabo Douglas, 00°17.53′N, 91°38.35′W, suction-captured from the submersible *Johnson Sea-Link* (JSL Dive 3957) at 402–451 m by J.E. McCosker and party on 16 Nov. 1995.

Diagnosis.— A species of *Trachyscorpia*, subgenus *Trachyscorpia*, with the following characteristics: dorsal-fin rays XII-9; vertebrae 25; tympanic spines present; upper-jaw lip well developed, covering most of premaxillary band laterally; no scales on lateral surface of maxilla; ~59–60 scale rows in longitudinal series; second pelvic fin ray the longest; pectoral fin deeply notched, length of 11th ray 65% of that of 17th ray; body deep (depth 37–39% SL); orbit diameter large (14–15% SL); head profile slightly convex; swimbladdder absent; coloration reddish, with white markings and black markings and smudges on portions of head, dorsal surface of flanks and fins.

Description.— Proportional measurements are given as percentages of SL in Table 1. The following description is based on the holotype (Figs. 1–2), with the data for the paratype (Fig. 3), if different, in parentheses. Dorsal fin with 12 spines and 9 soft rays; all soft rays branched; length of first spine 1.6 (1.2) in second spine, 2.6 in third spine; length of third spine slightly more than orbit diameter; fourth to eleventh spines progressively shorter; length of twelfth spine 1.5 (1.7) that of eleventh; membrane of spinous portion of dorsal fin moderately notched; posterior branch of last dorsal soft ray joined by membrane to caudal-fin peduncle for less than one-fifth of its length. Anal fin with 3 spines and 5 (6) soft rays; all soft rays branched; second and third spines much longer than first; first soft ray longest, its length slightly longer than that of second anal-fin spine; posterior branch of last soft ray joined by membrane to caudal-fin peduncle for less than one-fourth of its length. Pectoral fins with 23 (22) rays on each side, the uppermost ray unbranched, remaining rays branched; second to fourth rays longest; posterior margin of fin bilobed, first to sixth rays progressively longer in length, then shorter to twelfth to fourteenth, then increasing in length; rays in lower lobe thickened, fleshy. Pelvic fin with 1 spine and 5 soft rays, all soft rays branched; entire first to third rays and base of fourth and fifth rays covered with thick fleshy skin; second soft ray longest, its length slightly shorter than upper-jaw length. Caudal fin with 18 segmented rays, 13 branched rays, the upper and lower 3 rays unbranched; dorsal procurrent rays 4 (5), ventral rays 5; posterior margin of fin nearly straight. Caudal-peduncle depth 1.7 (1.9) in caudal-peduncle length.

Scale rows in longitudinal series ~60 (~59). Pored lateral-line scales ~24 (22). Scales below lateral line 11 (12). Scale rows between base of sixth dorsal-fin spine and lateral line 10. Predorsal scale rows ~14 (12). Gill rakers on upper limb 5, on lower limb 11; total gill rakers 16. Gill rakers relatively short and spinous with numerous minute serrae, longest raker on first gill arch slightly shorter than gill filaments around angle of gill arch; a small slit behind the fourth gill arch. Approximately 25 pseudobranchial filaments. Swimbladder absent. Branchiostegal rays 6. Vertebrae 25.

Body moderately compressed anteriorly, progressively more compressed posteriorly. Nape and anterior body not strongly arched. Body relatively deep, its depth slightly less than head length. No distinct small papillae on head. Three short, slender tentacles on dorsal margin of eye membrane. No distinct tentacles on posterior ends of preocular, supraocular and postocular spine bases. A pair of short tentacles on posterodorsal edge of low membranous tube associated with anterior nostril; length of tentacle equal to anterior nostril height. No tentacles associated with posterior

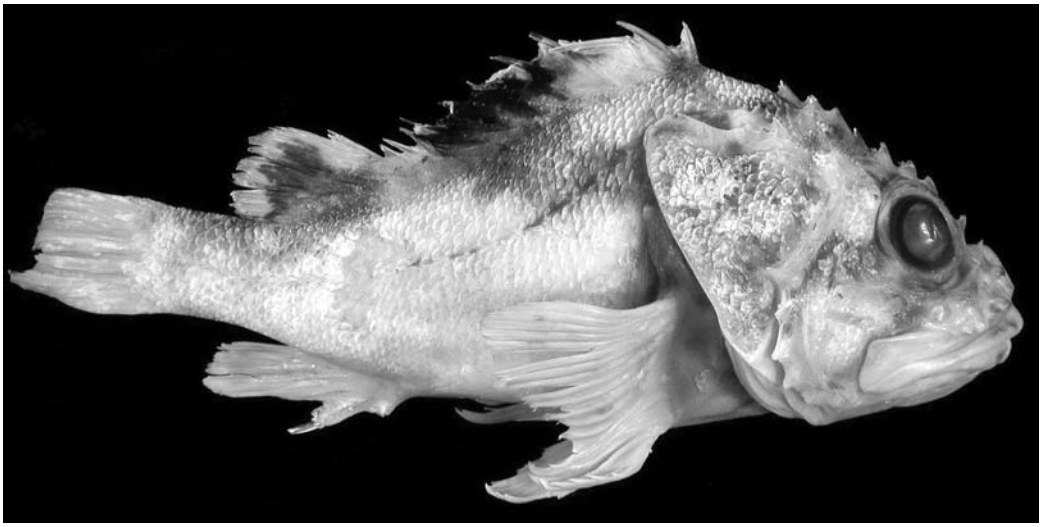

FIGURE 1. Holotype of *Trachyscorpia osheri* sp. nov., CAS 86509, 147 mm TL, right side (left pectoral fin is damaged), after extended preservation in ethanol.

nostril or on occiput, mid-interorbital space, snout, maxilla, lips, underside of lower jaw, preopercle, opercle, fins and lateral body surface. Pectoral-fin axil without skin flaps.

Exposed minute ctenoid scales covering occipital pit, opercle, and an area surrounded by tympanic, pterotic, parietal, nuchal and lower posttemporal spines. Interorbital space naked. Cycloid scales covering cheek and area surrounded by posterior margin of orbit, pterotic spine, preopercular margin and suborbital ridge (some scales weakly ctenoid). Other parts of head not covered with exposed or embedded scales. Well-exposed ctenoid scales on lateral surface of body, scales becoming cycloid beneath mid-chest continuing to ventral surface. Body scales extending onto basal rays and membranes of all fins except pelvic fins; scales on fins cycloid. Exposed cycloid scales covering pectoral-fin base and anteroventral surface of body; some scales embedded in thin skin. Lateral line sloping downward at tip of opercle.

FIGURE 2. Holotype of *Trachyscorpia osheri* sp. nov., CAS 86509, 147 mm SL, photographed approximately four hours after capture and prior to preservation.

FIGURE 3. Paratype of *Trachyscorpia osheri* sp. nov., CAS 86504, 135 mm SL, photographed approximately four hours after capture and prior to preservation.

TABLE 1. Proportional Measurements of Type Specimens of *Trachyscorpia osheri* and *Idiastion hageyi* Expressed as Percentages of the Standard Length. *** = broken fin spine.

	Trachyscorpia osheri		*Idiastion hageyi*
	Holotype CAS 86509	Paratype CAS 86504	Holotype CAS 87916
Standard length (mm)	147	135	95
Total length (mm)	181	166	~116
Body depth	389	369	442
Body width	252	200	249
Head length	516	472	507
Snout length	126	106	125
Orbit diameter	144	150	136
Interorbital distance	71	71	68
Upper jaw length	254	242	249
Maxillary depth	77	74	74
Postorbital distance	267	273	272
Predorsal distance	481	512	475
Preanal distance	636	776	673
Prepelvic distance	438	424	402
1st dorsal spine	61	57	63
2nd dorsal spine	99	67	145
3rd dorsal spine	159	***	180
4th dorsal spine	***	109	178
5th dorsal spine	117	113	137
6th dorsal spine	117	116	39
11th dorsal spine	84	78	74
12th dorsal spine	129	133	121
Longest dorsal fin ray	180	164	162
1st anal spine	***	74	95
2nd anal spine	154	166	159
3rd anal spine	131	128	128
Longest anal fin ray	187	178	200
Pectoral fin ray length	229	224	358
Pelvic fin spine length	170	170	180
Longest pelvic fin ray	227	230	245
Caudal fin length	233	203	~221
Caudal peduncle length	201	208	153
Caudal peduncle depth	118	107	107

Sensory pores of cephalic lateralis system prominent; 3 large pores on cheek just below suborbital ridge, first just below posterior end of lacrimal, second below posterior margin of orbit, third below end of suborbital ridge. Underside of dentary with 3 sensory pores on each side, first below and anterior to tip of anterior lacrimal spine, second below tip of posterior lacrimal spine, third located posteriorly and slightly lower on dentary; a small pore behind symphysial knob of lower jaw on each side; an indistinct pore on each side of symphysial knob.

Mouth large, slightly oblique, gape forms an angle of about 25° to horizontal axis of head and body. Jaws subequal. Posterior margin of maxilla nearly reaching a vertical through posterior margin or orbit. Upper edge of posterior maxilla slightly swollen laterally; central part of maxilla flat. Lower jaw with a symphysial knob. Width of symphysial gap separating premaxillary teeth bands slightly greater than width of each band. Tooth band of upper jaw wider than that of lower jaw.

Upper jaw with a band of filiform teeth; tooth band narrowing posteriorly. Lower jaw with a band of villiform teeth; length of most teeth equal to those of upper jaw. Vomer with a single irregular row of small teeth, becoming larger laterally. Palatines covered with teeth. Underside of lower jaw smooth, without ridges.

Dorsal profile of snout steep, forming an angle of about 50° to horizontal axis of head and body. Nasal spine simple, small, embedded in skin; nasal spine tip directed posterodorsally, its length equal to posterior nostril diameter. Ascending process of premaxilla intrudes slightly into interorbital space, its posterior margin extending to level of posterior margin of posterior nostril and reaching level of middle of preopercular spine base in dorsal view. Median interorbital ridge absent. Interorbital ridges separated by a shallow channel, beginning posterior to nasal spines and joining at origin of tympanic spines; interorbital ridges unbranched, diverging anteriorly and posteriorly in dorsal view, distance between interorbital ridges narrowest at a vertical through anterior one-third of pupil. Interorbital space moderately shallow, about one-fourth of orbit extending above dorsal profile of head. Preopercular spine simple, directed posteriorly. Supraocular spine simple, its length equal to that of preocular and postocular spines and shorter than tympanic spine. Postocular spines simple, canted laterally. Tympanic spine simple, strongly pointed, directed dorsally. Interorbital, coronal and pretympanic spines absent. Occiput nearly flat, lacking pit; longitudinal length of occipital area greater than width; occiput surrounded laterally by tympanic spines, parietal spines and indistinct low ridges between tympanic and parietal spines. Parietal spine simple, equal to nuchal spine. Nuchal spine simple; nuchal and parietal spines joined at base. Pterotic spine simple, located below parietal and nuchal spines. No ridges in an area surrounded by parietal, nuchal, pterotic and lower posttemporal spines. Upper posttemporal spine absent. Lower posttemporal spine simple, its base less than that of pterotic spine. Supracleithral spine simple, pointed. Cleithral spine flattened, pointed. Lateral lacrimal spine simple, pointed. Anterior lacrimal spine not pointed, directed ventroposteriorly, its tip not reaching dorsal margin of upper lip; no additional spine occurring at base of anterior lacrimal spine. Posterior lacrimal spine simple, directed ventroposteriorly, its tip reaching upper lip; posterior lacrimal spine greater than anterior lacrimal spine. Suborbital ridge with 5 (6) spines, first and second spines below pupil, third spine below posterior margin of orbit, fourth and fifth spines between posterior margin of orbit and preopercular margin. Space between ventral margin of eye and suborbital ridge narrow. Suborbital pit absent. Preopercle with 5 spines; uppermost spine largest with a supplemental preopercular spine on its base; second to fifth spines without a distinct median ridge. Preopercle, between uppermost preopercular spine and upper end of preopercle, smooth without serrae or spines. Upper and lower opercular spines simple, minute, each with a shallow median ridge. Space between upper and lower opercular spines without ridges. Posterior tips of upper and lower opercular spines not reaching opercular margin.

Origin of first dorsal-fin spine above supracleithral spine. Posterior margin of opercular membrane extends to a vertical between third and fourth dorsal-fin spine bases. Posterior tip of pectoral fin reaching a vertical through origin of eleventh dorsal-fin spine and nearly reaches anal-fin origin. Origin of pelvic-fin spine in line with origin of pectoral fin. Posterior end of depressed pelvic fin extending slightly beyond anus and extending to a vertical through posterior tip of pectoral fin. Origin of first anal-fin spine slightly posterior to origin of last dorsal-fin spine.

Coloration of preserved specimens in ethanol: Head and body yellowish-white dorsally, whitish ventrally (Fig. 1). Two blackish broad bands on head; one running from middle of ventral margin of eye to fifth preopercular spine through dorsal angle of posterior margin of maxilla; the other running from posterior margin of eye to dorsal end of opercle. Poorly defined blotches on maxilla and lips. Anterior nostril tentacle dark distally. Inside of opercle black. Four blackish sad-

dles; first above opercle, including membranes between first and third dorsal-fin spines; second broadest, extending from basal half of membranes between fifth and twelfth dorsal-fin spines to below lateral line; third extending from basal membranes of dorsal-fin soft rays to above lateral line; fourth on posterior caudal-fin peduncle, reaching ventral surface of caudal-fin peduncle. Distal half of membranes between fourth and eleventh dorsal-fin spines black, forming an elongate black blotch. A poorly defined blackish blotch on middle of soft rayed portion of dorsal fin. Two poorly defined blackish blotches on base and middle of pectoral fin. Pelvic fin yellowish with poorly defined blackish blotches. Anal fin yellowish with a few melanophores. Caudal fin yellowish with a few scattered melanophores. Abdominal-cavity lining dusky.

Coloration soon after capture: Head and body reddish (Figs. 2–3), with blackish markings on posterior half of head, dorsal half of trunk, and fins, especially central pectoral fin.

Size: The type specimens are 135–147 mm (SL) and 166–181 mm in Total Length. Neither appear to be sexually mature. Maximum lengths (SL) of other species of *Trachyscorpia* are: *T. (M.) carnomagula* 369 mm (Motomura et al. 2007); *T. (T.) cristulata cristulata* 50 cm (Robins and Ray 1986); *T. (T.) cristulata echinata* 50 cm (Eschmeyer and Dempster 1990); *T. (M.) eschmeyeri* (as *T. capensis*) 35 cm (Eschmeyer 1986); and *T. (M.) longipedicula* 219 mm (Motomura et al. 2007).

Distribution.— Known only from the type specimens, from the Galápagos Islands at depths between 402–515 m. The new species was observed from the submersible to inhabit boulder and sediment-laden bottoms, sitting on the bottom along 30°–45° slopes.

Etymology.— I am pleased to name this lovely creature in honor of Bernard A. Osher, a keen fisherman, amateur ichthyologist, and supporter of research and education.

Remarks.— *Trachyscorpia* contains two subgenera, *Trachyscorpia* (type species *T. cristulata*) and *Mesoscorpia* (type species *T. capensis*), and five species. The subgenus *Mesoscorpia* was described by Eschmeyer (1969) who differentiated it from *Trachyscorpia* by its having 13 dorsal spines (vs. 12 in the latter), 26 vertebrae (vs. 25), and a swimbladder (absent in *Trachyscorpia*). *Mesoscorpia* contains three species: *T.* (*M.*) *eschmeyeri* Whitley 1970 (=*Scorpaena capensis* Gilchrist and von Bonde 1924, preoccupied) from the southeastern Atlantic and the southern Indo-West Pacific; *T.* (*M.*) *carnomagula* Motomura et al. 2007 from Australasia; and *T.* (*M.*) *longipedicula* Motomura et al. 2007 from the southwesten Indian Ocean.

The new species is within the subgenus *Trachyscorpia* and is most closely related to the North Atlantic *Trachyscorpia* (*T.*) *cristulata*, the only other species within the subgenus. Two subspecies of *T. cristulata* are currently recognized, *T. c. cristulata* Goode and Bean 1896 and *T. c. echinata* Koehler 1896, however Motomura et al. (2007:33) suggest that the subspecies of *cristulata* are perhaps distinct species and a direct comparison of specimens must be made. *Trachyscorpia osheri* differs from *T. cristulata* in several characters that are readily apparent: the dorsal profile of the body of *T. osheri* is arched (vs. nearly straight in *T. cristulata*); the nasal spines of *T. osheri* are minute (vs. elongate); and the occipital pit, maxillary, and internasal band are naked (vs. scaled). As well, the pectoral fin of *T. osheri* is deeply notched, such that the 11th ray is 65% of the 17th; the pectoral fin of *T. cristulata* is barely notched, the 11th ray being 90% of the 17th.

Comparative Material Examined.— *Trachyscorpia cristulata*: CAS 31783, 155 mm SL, Atlantic Ocean (28°50′N, 79°54′W), 393 m; CAS 32472, 205 mm SL, Florida, off Atlantic coast (29°58′N 80°08′W), 379 m.

Family Scorpaenidae

***Idiastion hageyi* McCosker, sp. nov.** **Galapagos humpback scorpionfish**
Figures 4–5.

Material Examined.— Holotype: CAS 87916, 95 mm SL, female with developing ova, Islas Galápagos, Isla Fernandina, Cabo Douglas, 00°17.53´S, 91°38.35´W, suction-captured from the submersible *Johnson Sea-Link* (JSL Dive 3957) at 522 m by J.E. McCosker and party on 16 Nov. 1995.

Diagnosis.— A species of *Idiastion* with the following characteristics: dorsal-fin rays XII-9; anal-fin rays III-6; pectoral fin rays 18; vertebrae 25; 52 scale rows in longitudinal series; 15–16 pored lateral-line scales; body deep (depth 44% SL), humpbacked; orbit diameter large (15% SL); head spines strong, well developed; swimbladdder present; coloration reddish-orange, with irregular white blotches on head, body, and pectoral fin bases.

Description of the holotype.— Proportional measurements are given as percentages of SL in Table 1. Dorsal fin with 12 spines and 9 soft rays; all soft rays branched; length of first spine 2.3 in second spine, 2.8 in third spine; seventh to tenth spines progressively shorter; length of twelfth spine 1.6 that of eleventh; membrane of spinous portion of dorsal fin deeply notched between spines 1–4, moderately notched between spines 4–12; posterior branch of last dorsal soft ray joined by membrane to caudal-fin peduncle for less than one-fourth of its length. Anal fin with 3 spines and 6 soft rays; all soft rays branched; second and third spines much longer than first; first through third soft rays the longest, their length slightly longer than that of second anal-fin spine; posterior branch of last soft ray joined by membrane to caudal-fin peduncle for less than one-seventh of its length. Pectoral fins with 18 rays on each side, the uppermost and lowest 3 rays unbranched, remaining rays branched; ninth to thirteenth rays longest; rays in lower lobe thickened, fleshy. Pelvic fin with 1 spine and 5 (5 left, 4 right) soft rays, all soft rays branched; base of first to fifth rays covered with fleshy skin; second soft ray longest, its length slightly less than upper-jaw length. Caudal fin with 16 segmented rays and 12 branched rays, the upper 2 and lower 3 rays unbranched; dorsal procurrent rays 5, ventral rays 4; posterior margin of fin appears straight (damaged during capture). Caudal-peduncle depth 1.4 in caudal-peduncle length.

Scale rows in longitudinal series ~52. Pored lateral-line scales 16 (15 right); posteriormost scale beneath eighth (ninth, right) dorsal ray. (All lateral-line scales appear to be present and undamaged.) Scales below lateral line 13. Scale rows between base of sixth dorsal-fin spine and lateral line 7. Predorsal scale rows ~12. Gill rakers 8 on upper limb, 12 on lower limb. Gill rakers relatively short and slightly spinous with numerous minute serrae, longest raker on first gill arch 1.4 times that of longest gill filaments around angle of gill arch; a small slit behind the fourth arch. 12 pseudobranchial filaments. Swimbladder small. Branchiostegal rays 6 (covered with thick membrane and difficult to ascertain). Vertebrae 25.

Body compressed posteriorly. Nape steep, anterior body not strongly arched. Body relatively deep, hump-backed in appearance, its depth about equal to head length. No distinct small papillae on head; a distinct row of papillae nearly surrounds outer edge of pupil. Slender tentacles absent from dorsal margin of eye membrane. No distinct tentacles on posterior ends of preocular, supraocular and postocular spine bases. A slender tentacle on posterodorsal edge of low membranous tube associated with anterior nostril; length of tentacle slightly longer than anterior nostril height. A simple slender tentacle at end of each preopercular, supraocular, posterior lacrimal, and paired nuchal spines. No tentacles associated with posterior nostril or on occiput, mid-interorbital space, snout, maxilla, lips, underside of lower jaw, preopercle, opercle, fins and lateral body surface. Pectoral-fin axil without skin flaps.

Exposed minute ctenoid scales covering occipital pit and an area surrounded by tympanic,

pterotic, parietal, nuchal and lower posttemporal spines, extending to base of first dorsal spine. Interorbital space scaleless, but with minute papillae. Cycloid scales overlay opercle, less abundant along ventral edge. Other parts of head not covered with exposed or embedded scales. Ctenoid scales on lateral surface of body, becoming cycloid beneath mid-chest, continuing to ventral surface. Body scales extending onto basal rays; membranes of all fins scaleless. Exposed cycloid scales covering pectoral-fin base; anteroventral surface of body scaleless. Lateral line sloping slightly downward at tip of opercle.

Sensory pores of cephalic lateralis system prominent; 3 pores on cheek just below suborbital ridge, first minute and just below posterior lacrimal spine, second large and below anterior margin of pupil, third large and below middle of suborbital ridge. Underside of dentary with 3 sensory pores on each side, first below tip of anterior lacrimal spine, second reduced and below tip of posterior lacrimal spine, third located posteriorly and slightly lower on posterior edge of dentary; a small pore on each side behind symphysial knob of lower jaw.

Mouth large, slightly oblique, gape forming an angle of about 15° to horizontal axis of head and body. Lower jaw slightly protruding. Posterior margin of maxilla nearly reaching a vertical through posterior margin or orbit. Upper edge of posterior maxilla slightly swollen laterally; central portion of maxilla flat. Lower jaw with a symphysial knob. Width of symphysial gap separating premaxillary teeth bands slightly greater than width of each band. Tooth band of upper jaw wider than that of lower jaw. Upper jaw with a band of filiform teeth; tooth band narrowing posteriorly. Lower jaw with a band of villiform teeth; length of most teeth subequal to those of upper jaw. Vomer with an irregular row of small teeth. Palatines covered with a patch of small teeth. Underside of lower jaw smooth, without ridges.

Dorsal profile of snout moderately steep, forming an angle of about 50° to horizontal axis of head and body. Head spines strong, developed. Nasal spine simple, small, embedded in skin, except for spine tip, directed dorsally, its length less than posterior nostril diameter. Ascending process of premaxilla lies slightly below interorbital space. Median interorbital ridge absent. Interorbital ridges separated by a shallow channel, beginning at posterior margin of posterior nostril and joining at origin of tympanic spines; interorbital ridges unbranched, diverging anteriorly and posteriorly in dorsal view; distance between interorbital ridges narrowest at a vertical through anterior margin of pupil. Interorbital space moderately shallow, about one-fourth of orbit extending above dorsal profile of head. Preopercular spine simple, directed posteriorly. Supraocular spine simple, its length greater than preocular and less than tympanic spines. Postocular spines simple, canted laterally. Tympanic spine simple, strongly pointed, canted laterodorsally. Interorbital, coronal and pretympanic spines absent. Occiput nearly flat, lacking a deep pit; longitudinal length of occipital area greater than width; occiput surrounded laterally and posteriorly by tympanic spines, parietal spines, and indistinct low ridges between tympanic and parietal spines. Parietal spine simple, equal to nuchal spine. Nuchal spine simple; nuchal and parietal spines joined at base. Pterotic spine simple, located below parietal and nuchal spines. No ridges in an area surrounded by parietal, nuchal, pterotic and lower posttemporal spines. Upper posttemporal spine absent. Lower posttemporal spine simple, its base less than that of pterotic spine. Supracleithral spine small, simple, pointed. Cleithral spine larger, pointed. Lateral lacrimal spine simple, pointed. Anterior lacrimal spine not pointed, directed ventroposteriorly, its tip not reaching dorsal margin of upper lip; no additional spine occurring at base of anterior lacrimal spine. Posterior lacrimal spine simple, directed ventrally, its tip not reaching upper lip; posterior lacrimal spine and anterior spine subequal. Suborbital ridge with 5 spines, the third bicuspid; first, second and third spines below pupil, fourth spine below posterior margin of orbit, fifth and sixth spines between posterior margin of orbit and preopercular margin. Space between ventral margin of eye and suborbital ridge narrow. Suborbital pit

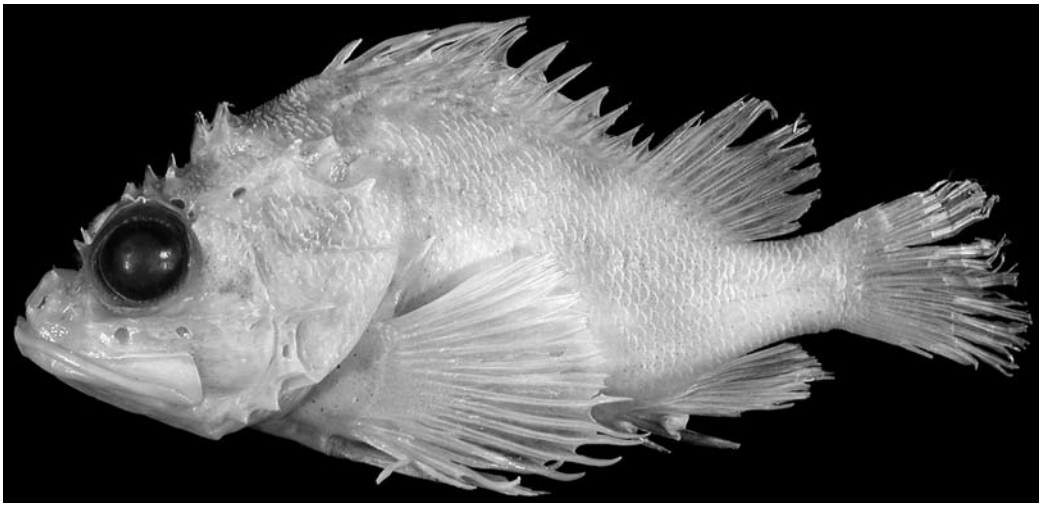

FIGURE 4. Holotype of *Idiastion hageyi* sp. nov., CAS 87916, 95 mm SL, female, after extended preservation in ethanol.

absent. Preopercle with 4 spines; uppermost spine largest with a supplemental preopercular spine on its base; second to fourth spines flattened, without a distinct median ridge. Preopercle, between uppermost preopercular spine and upper end of preopercle, smooth, without serrae or spines. Upper and lower opercular spines simple, minute, each with a shallow median ridge. Space between upper and lower opercular spines without ridges. Posterior tip of upper opercular spine not reaching opercular margin; posterior tip of lower opercular spine just reaches opercular margin.

FIGURE 5. *Idiastion hageyi* photographed at Isla Fernandina, Cabo Douglas, at 522 m, 16 November 1995.

Origin of first dorsal-fin spine above supracleithral spine. Posterior margin of opercular membrane extends to a vertical between third and fourth dorsal-fin spine bases. Posterior tip of pectoral fin reaching a vertical through origin of fourth dorsal-fin ray and nearly reaches base of first anal-fin ray. Origin of pelvic-fin spine in line with origin of pectoral fin. Posterior end of depressed pelvic fin extending slightly beyond anus and falls short of a vertical through posterior tip of pectoral fin. Origin of first anal-fin spine in line with origin of first dorsal-fin ray.

Coloration of preserved specimen in ethanol: Specimen (Fig. 4) entirely pale. Fine specks of dark pigment exist at the pectoral base and beneath many body scales.

Coloration when alive: (Based on photograph, Fig. 5.) Head, body, and fins uniformly reddish-orange, overlain on head, body, and pectoral-fin bases with distinct irregular white blotches all smaller than orbit. Skin along all dorsal spines white; membrane of dorsal spines 1–3 white, membrane of dorsal spines 4–12 colored like body. Posterior margin of caudal, pectoral, soft-dorsal and anal fins white-edged. Faint blackish smudges along opercle, around orbit, along base of dorsal fin, and on nape and interorbital region. Abdominal cavity lining with a few fine dark speckles.

Size: Known only from the type specimen, 95 mm SL (~116 mm TL). Maximum lengths (SL) of other species of *Idiastion* are: *I. kyphos* 105.4 mm (Anderson et al. 1975) and *I. pacificum* 128.4 mm (Ishida and Amaoka 1992).

Distribution.— Known only from the holotype, collected off Isla Fernandina, Galápagos Islands, at a depth of 522 m. The new species was observed from the submersible to occupy steep boulder and sediment-laden bottoms, sitting on the bottom along a 60° slope.

Etymology.— I am pleased to name this interesting scorpionfish in honor of Harry R. Hagey, an avid fisherman, naturalist, trustee and supporter of the California Academy of Sciences.

Remarks.— *Idiastion* is now known from three species, including *I. kyphos* Eschmeyer 1965, trawled at 585–622 m from the southeastern Caribbean, and *I. pacificum* Ishida and Amaoka 1992, from 355–375 m along the Kyushu-Palau Ridge of the western Pacific Ocean.

Eschmeyer (1969) and Anderson et al. (1975) reported upon six subsequent specimens of *I. kyphos* from off Venezuela, off northeastern Florida, and off Angola, between depths of 229–622 m. On the basis of the original and those subsequent descriptions of *I. kyphos*, I am able to differentiate it from the new species which has fewer pored lateral-line scales (15–16 vs. 23–24), six vs. five anal-soft rays, a deeper body (42% of SL vs. 36–39%), and a slightly smaller orbit (horizontal diameter 12.9% of SL vs. 14–16%). The new species appears to have six branchiostegal rays (*I. kyphos* has 7), however the fleshy tissue overlaying those rays makes their counts uncertain. Nothing is known of the coloration of *I. kyphos* prior to preservation (Eschmeyer 1965; Anderson et al. 1975), however specimens in preservative possess faint bars of brown pigment on the head and body; such pigmentation was absent in *I. hageyi* whether alive or in preservative.

The new species differs from *I. pacificum* in having fewer pored lateral-line scales (15–16 vs. ~26), six vs. five anal-soft rays, a deeper body (42.0% of SL vs. 38.6%), and a slightly smaller orbit (12.9% of SL vs. 15.8%). The longest dorsal spine of *I. hageyi* is the third, whereas the fourth dorsal spine of *I. pacificum* is considerably longer than the third. Ishida and Amaoka (1992: 359) described the coloration in alcohol of *I. pacificum* to be "uniformly pale, without any markings," but suggested that the 63 mm SL specimen collected concurrently with their type specimen and identified as "Scorpaeninae sp." by Kanayama (1982) might be conspecific. The color photograph of Kanayama's specimen (orange with a few large pale areas) looks nothing like *I. hageyi* in its coloration, however it appears similar to *I. pacificum* in its morphometry.

Comparative Material Examined.— *Idiastion kyphos* CAS 24401, 99 mm SL, Angola (17°18′S, 11°24′E), 229–274 m; CAS 31886, 85 mm SL, Caribbean Sea, (12°11′N 72°52′W), 550 m.

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