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C. Richard Robins, Robert H. Robins, and Mary E. Brown

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A REVISION OF *LEPOPHIDIUM* (TELEOSTEI, OPHIDIIDAE), WITH DESCRIPTIONS OF EIGHT NEW SPECIES

C. RICHARD ROBINS[1], ROBERT H. ROBINS[2], and MARY E. BROWN[2]

ABSTRACT

A comprehensive revision of the cusk-eel genus *Lepophidium*, encompassing all 23 known species, is presented in a single work for the first time. A summary discussion of the status of *Lepophidium* and its position in the Lepophidiini is presented. Systematic accounts for each species of *Lepophidium* detail meristic, mensural, and pigment pattern variability, including features of the skeletal and internal anatomy. Eight species are described as new: ***Lepophidium collettei* n. sp.**, ***Lepophidium zophochir* n. sp.**, ***Lepophidium entomelan* n. sp.**, ***Lepophidium cultratum* n. sp.**, ***Lepophidium crossotum* n. sp.**, ***Lepophidium wileyi* n. sp.**, ***Lepophidium robustum* n. sp.**, and ***Lepophidium gilmorei* n. sp.** Two subspecies are elevated to full species. Individual species distribution maps based on 1,012 collections of *Lepophidium* examined by the authors are presented. A dichotomous key to the 23 species of *Lepophidium* is provided. Study material, examined over the course of six decades by the senior author, is archived in various natural history museums detailed herein.

Key words: *Lepophidium*, new species, cusk-eel, biodiversity, taxonomy, marine fishes.

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INTRODUCTION

Cusk-eels (Ophidiidae) are benthic marine fishes found primarily in temperate and tropical shelf waters. The genus *Lepophidium* is found only in the Americas. There has been no comprehensive review of *Lepophidium*. Except for the review of Pacific species by Robins (1962), publications have concerned the descriptions of new taxa (e.g., Robins 1959a, 1959b, 1960), nomenclatural considerations (e.g., Robins 1986), compilations (e.g., Nielsen et al. 1999), or inclusions of accounts of individual species in regional faunal works (e.g., Boschung 1992; McEachran & Fechhelm 1998; Nielsen & Robins 2003; Fahay & Hare 2006; Fahay 2007).

The focus of this study is to revise the genus *Lepophidium*, to provide descriptions of eight new species, present distribution maps and a dichotomous key to all species. One thousand and twelve collections of *Lepophidium* comprise the study material.

Included Taxa

This study includes all 23 recognized species of *Lepophidium*, eight of them described here for the first time. Two previously recognized at the subspecies level are here elevated to full species. Classification follows Nielsen et al. (1999). There appears to be little, if any, disagreement concerning the composition of the tribe, Lepophidiini, and we follow others in treating the group as *Lepophidium*, *Genypterus*, and *Cherublemma emmelas* (the sole member of the genus).

MATERIAL AND METHODS

In the material examined section the numbers of specimens and their range in standard length follow the museum catalog number. Cleared and stained, skeletal, and alcohol-preserved specimens examined are listed for each species. Symbolic codes for museums follow the recommendations of Fricke and Eschmeyer (2012). Material previously reported in the literature with the code UMML (= University of Miami) now bear UF numbers with 200,000 added. Thus, UMML 3506 = UF 203506. Stanford University specimens denoted by "SU" are at the California Academy of Sciences (CAS). All material examined is listed in Appendix 1.

Except as noted below, all counts and measurements are as defined by Robins (1962:487–488). Measurements are straight-line measures made with dial calipers. Counts of rays in the median fins were, with few exceptions, determined from examination of radiographs. Counts of vertebrae were also determined through the use of radiographs.

Standard Length (except for small specimens) straightening out the specimen against a board, marking the snout tip and the end of the vertebral column, and then measuring the intervening distance.

Pectoral Rays were counted in both fins. In most species the fin membrane is thin and transparent and these counts are easily determined with a microscope using transmitted light. In those

species with pigmented fins (and in a few other specimens) it often was necessary to strip the membrane from the medial surface of the fin and in some instances to put a drop of alizarin dye on the exposed fin rays.

Caudal Rays were always counted to determine if the caudal region had been damaged and then regenerated, a fairly common occurrence among these elongate fishes. Only undamaged specimens were used for counts of caudal vertebrae, counts of rays in the dorsal and anal fins, and measurements. A caudal ray count of nine (4 + 5) is a constant feature of the subfamily, and this feature is omitted from the following descriptions and tables.

Dorsal-fin Origin is determined from the position of the first dorsal pterygiophore (first interneural spine) relative to a neural spine. This determination was made from radiographs. In some instances the first interneural spine was directly above the neural spine and the assignment was somewhat arbitrary. The first vertebra is counted as having a neural spine. Therefore in the accounts that follow, the statement that the dorsal-fin origin is between neural spines 4–5 means that it is between the neural spines of the 4th and 5th vertebrae.

Pyloric Caeca vary in length and are usually arranged in two tiers. All projections, no matter how short, were counted. Because of individual variation and state of muscular contraction of the walls of the caeca at preservation, no effort was made to assess the length of the caeca as an independent variable. In those species where the entire gut is blackish, the caeca are also black.

Gill Rakers were counted only on the first arch. In recording data, not only numbers of elements but also the pattern of development was noted. The following is instructional in considering gill rakers of *Lepophidium*: Individual species typically show sharp modality for two, three, or four rudiments on the upper arm of the first arch, with extremes of one and six. Only four specimens (one each in *L. aporrhox, L. entomelan, L. kallion,* and *L. wileyi*) had a single developed raker on the upper arm (in each instance this was the lowermost element), and this condition was associated with a corresponding reduction in the number of rudiments. This condition is regarded as anomalous. The number of developed rakers on the lower arch varied from 4–10 and the range of variation from none to 5. Important differences arise in the nature of the development of the raker and the transition to the lower rudimentary rakers. In some, the developed rakers are progressively shorter, the longest and uppermost being at the angle of the arch, the lowermost almost rudimentary. In others, the developed rakers are nearly equal in length, with an abrupt shift to the rudiments. These characteristics are important and easily distinguish among species that have identical counts in number of gill rakers. This feature, not apparent from the tabulated data, is treated in each species' description. Rudimentary rakers anteriorly on the lower arm of the first arch vary from 0–14 in the genus. The range of variation for any species is from 2–10. A peculiar specialization occurs in *L. aporrhox* and *L. robustum,* in which a rudimentary gill raker typically occurs between most or all the developed rakers in addition to those anteriorly on the arch.

SYSTEMATIC ACCOUNTS

The synonymies provided below are not intended to be bibliographic. However, in addition to the primary citation, we have included those papers containing all name combinations, illustrations, commentary on the names, and important distributional records. Order of presentation largely reflects assumptions of phylogenetic affinity, however, no new cladistic analysis is presented here.

Genus *Lepophidium* Gill 1895

Leptophidium Gill 1863:210—type species: *L. profundorum* Gill 1863, by original designation. Preoccupied by *Leptophidium* Hallowell 1860 in Ophidia (snakes).

Lepophidium Gill 1895:167—replacement name for *Leptophidium* Gill 1863 with the same type species.

Comparative Diagnosis

Lepophidium shares the following features with all the Ophidiinae (except as noted below), and these plesiomorphic features are not mentioned further. There are nine caudal rays (four above on the upper section of the hypural plate and five below on the lower section). The pelvic fins each

have two rays, are jugular in position, unequal in length, and suspended anteriorly between long, slender, forward projections from the cleithrum (Cohen & Nielsen 1978:fig. 14). The first neural spine is reduced in length, notably shorter than the second and flattened, almost saddle-like. A supramaxilla is present, with a distinct ventral hook projecting posteriorly from the anterior end of the bone (this hook is absent in *Cherublemma*). Teeth are present on the premaxillae, vomer, palatines, pharyngeals, and dentaries. Basibranchial teeth are absent, except in *Cherublemma* (where they are present). The pored lateral line on the body is simple, incomplete, and ends considerably anterior to the caudal-fin base.

Lepophidium shares with other Lepophidiini (*Genypterus* and *Cherublemma*) the following features: small, cycloid scales arranged in regular rows cover most of the head and body. In *Lepophidium* the lower parts of the cheek and opercle, the basal part of the isthmus, and the area in front of the pectoral fin are naked; whereas in *Cherublemma* these areas are fully scaled. Pyloric caeca are present. The elongate, simple, and rather thin-walled swimbladder lacks a posterior opening, a membranous window, a sesamoid rocker bone, or a bony encapsulation of its anterior end. In *Lepophidium* and *Genypterus,* the pseudobranch consists of numerous short filaments; whereas in *Cherublemma* it is absent or there are only a few (2–6) rather long filaments.

The single most distinctive feature of *Lepophidium,* and a putative synapomorphy, is the long but simple rostral spine that extends anteriorly in a slight arc to the very tip of the snout. In preserved material this spine often has broken through the snout skin. A somewhat similar rostral spine is found elsewhere in a few species of *Ophidion* (*O. barbatum, O. rochei, O. lozanoi, O. nocomis,* and *O. selenops*). *Cherublemma* has a rostral spine that projects to the snout tip as a straight, rather than curved spine, and it has a vertical basal component that is lacking in *Lepophidium*. There is no lachrymal spine (as is observed in *Cherublemma*). *Genypterus* lacks both a rostral and lachrymal spine.

The body shape is characteristic for *Lepophidium*. The body is deepest usually under the dorsal-fin origin with both the dorsal and ventral profiles forming nearly straight convergent lines to the caudal tip. *Cherublemma* is similar in this regard.

The peritoneum is unpigmented, in contrast to *Cherublemma* in which it is always very darkly pigmented.

The sagittal otolith is distinctive (see Nolf 1980:pls. 3–4). The sulcus is long and wide, with the anterior part reaching the ostial border. The superior crista is without division into caudal and ostial portions, but the inferior crista has a small notch delimiting the caudal portion. The predorsal angle is usually well marked, with most species exhibiting an acuminate posterior projection.

The head-pore arrangement is as described by Robins (1960:87, fig. 2) for *L. pheromystax*. There are three pores in the supratemporal canal (four in *Cherublemma emmelas*).

Distribution

Lepophidium is endemic to the Americas. It occurs from the banks off southeastern Canada to southern Brazil in the western Atlantic and from the outer coast of Baja California, Mexico to Peru in the eastern Pacific. Two sources of records from Europe are erroneous. Stinton's (1965) new species of *Lepophidium* based on fossil otoliths and his identifications of other fossil species within this genus are misattributions of other ophidioid groups, principally bythytines, as shown by Nolf (1980). Nothing close to *Lepophidium* is represented by these otoliths. Bini obtained a fresh specimen of *L. profundorum* (reported by Nielsen & Bini 1972, as *L. cervinum*), from a fish market in a village on the Tyrrhennian Sea. They accepted the marketer's assurance that it had been caught locally. The species is commonly caught by cod fishermen in the bank area of the northwestern Atlantic and no doubt found its way to the Italian market frozen with blocks of cod. There is no evidence to support the occurrence of this common and easily identified species anywhere in Europe.

Three of the Pacific species are generally distributed from northwestern Mexico to Peru.

Lepophidium stigmatistium remains known only from northwestern Mexico. Also, each of the three north–south subspecies of *L. microlepis* recognized by Robins and Lea (1978), and here accorded full species rank, has a restricted geographic range. The genus is apparently absent from the Galapagos Islands. Many of the Atlantic species show latitudinal segregation. Only one occurs north of North Carolina, four from North Carolina to southeastern Florida, seven in the northern Gulf of Mexico, four in the southern Gulf of Mexico, seven in the western Caribbean Sea, eight in the southern Caribbean Sea, four in the Bahamas, six in the Greater Antilles, two in the Lesser Antilles, and six along the South American Coast outside of the Caribbean Basin.

No more than three species have been taken at a single station, because many species are segregated by depth. In the western Atlantic for example, juveniles and adults occur as follows: five occur above 100 m, eight between 100–200 m, six between 200–300 m and four deeper than 300 m, the deepest extending to at least 500 m.

Geographic restriction is the result of an interaction between surface and near surface conditions required from survival of early life history stages and the benthic conditions required by the juveniles and adults. In the western Atlantic there are three north–south species pairs, all deeper dwelling, and the break coming at about the Straits of Yucatan. Within the genus there are also trans-isthmian relationships (e.g., Pacific *L. pardale* vs. Atlantic *L. pheromystax* and *L. jeannae,* and Pacific *L. prorates* vs. Atlantic *L. brevibarbe*).

***Lepophidium brevibarbe* (Cuvier 1829)**
Blackedge Cusk-eel

Ophidium brevibarbe Cuvier 1829—original description; Brazil; type MNHM 5772; see Robins 1986 for discussion. Kaup 1856a:95; 1856b:154, pl. 16, fig. 4.

Ophidium graëllsi Poey 1861—original description; Havana, Cuba; type MCZ 12440; see Robins 1986 for discussion. Poey 1868:402; 1876: 137, compiled.

Ophidium graellsi. - Jordan & Evermann 1898:2788—redescription, name correctly emended. Robins 1986:385—synonymized with *Lepophidium brevibarbe*.

Lepophidium profundorum. - Robins 1959a:366, fig. 1c—misidentification, gill-raker development. Arai, in Uyeno et al., 1983:224—misidentification, records, colored photograph. Cervigón 1991:168–169, fig. 127—misidentification; occurrence in Venezuela.

Lepophidium graellsi. - Bailey et al. 1960:45—name only, blackedge cusk-eel. Bailey et al. 1970:28—name only. Robins et al. 1980:30—name only. Gordon et al. 1984:312—meristic data.

Lepophidium brevibarbe. - Robins 1986:384—synonymy. Retzer 1991:703—age and growth. Robins et al. 1991:31, 81—change of scientific name explained. Ramjohn 1999:55—occurrence in Trinidad. Lopes & Tomás 1998—range in Brazil. Nielsen and Robins 2003:968, 871—characters, distribution, illustrated.

Description

Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae usually 15 (14–16), caudal vertebrae usually 56–57 (53–58), total vertebrae 70–72 (69–74); dorsal-fin rays usually 126–132 (120–134), anal-fin rays usually 103–109 (99–110), pectoral-fin rays usually 21–22 (20–23), pyloric caeca usually 3–5 (2–6) (arranged in two longitudinal whorls, 2–5 in one and one in second). Typically there are three rudimentary gill rakers (rarely two or four) on the upper arm of the first arch, four developed rakers (rarely five) on the lower arm of the first arch, and 1–9 rudimentary rakers (usually 2–6) anteriorly on the first arch. The total number of gill rakers on the first arch varies from 8–16 (usually 9–12) with most of the variation accounted for by the anterior rudiments. The transition from developed raker to rudiment is abrupt. The pattern of gill-raker development is shown by Robins (1959a: fig. 1c under the name *L. profundorum*). The dorsal-fin origin between neural spines 3–4 (120 specimens) and rarely between 4–5 (seven specimens).

Measures of body parts expressed as a percentage of standard or head length are given in Tables 12–26.

The head and body are rather uniformly pigmented, varying from tan to a darker brown with the belly usually paler, sometimes whitish. The dorsal and anal fins are narrowly dark edged, the pigment continuing onto the caudal fin. The lateral line is unmarked as are the orobranchial chamber, esophagus, stomach, and hindgut.

The pseudobranch is well developed with about 10 filaments.

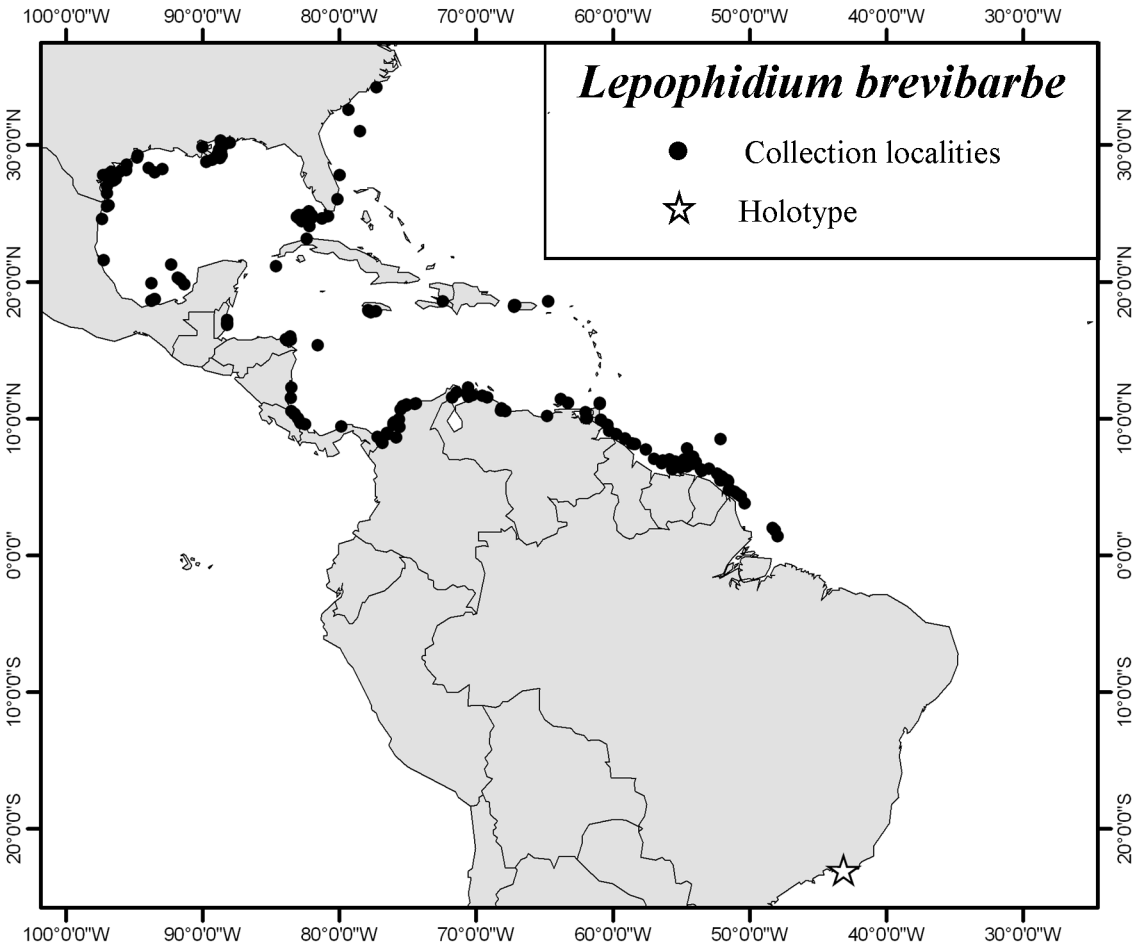

Figure 1. Distribution of *Lepophidium brevibarbe*.

The anterior rib is sexually dimorphic; in males its distal end is enlarged and spherical, resting against the anterior end of the swim bladder. The second rib although not enlarged is also tied into the anterior lateral wall of the swim bladder. We name the distal enlargement of the first rib a haltere, in reference to similarity with the rudimentary wing structure of dipterous insects. In the genus, this structure is shared with *L. prorates*, *L. negropinna,* and *L. stigmatistium*.

The opercular spine is strong and straight.

Distribution

Lepophidium brevibarbe occurs benthically from North Carolina to Uruguay, including the Gulf of Mexico, Caribbean Sea, and the Antilles (Fig. 1). Although it occurs on the northern coast of the Greater Antilles it appears to be absent from the Bahamas, perhaps because of the oolitic nature of the sediments of those islands. Its southern limit is unclear. Our records (see Appendix 1) extend to the equator, but this marks the southern limit of NOAA's exploratory fishing program and does not define any zoogeographic boundary. The provenance of the holotype of *L. brevibarbe,* often assumed to be Rio de Janeiro, is simply stated as Brazil. Lopes and Tomás (1998:129) report it from southern Brazil. We are aware of two specimens (MNRJ 8139, 8140) from the vicinity of Salvador in Bahia State. Farther south, Ruschi (1965) recorded it from the state of Espiritu Santo (well north of Rio de Janeiro) and Carrera et al. (1974) recorded it from Uruguay (Ilha dos Lobos, 35°47′ S). It is a shallow-water species occurring from 5–115 m, but avoiding bays and estuaries.

Geographic Variation

Because of its wide distribution, we have separated the meristic data in the tables as follows: Atlantic Coast of South America, the Caribbean

Sea, and the Atlantic and Gulf coasts of the United States. Except for a few lots northeast of the Gulf of Uraba, there are no meaningful differences or trends among these regions. These lots have low numbers of caudal vertebrae and dorsal and anal fin rays, but despite repeated examination, we are unable to correlate the low counts with other characters and we note that other lots in the same geographic area have expected counts.

Size

Lepophidium brevibarbe commonly exceeds 200 mm in standard length; the largest are (several specimens) 273 mm.

Importance

Lepophidium brevibarbe is included in the shrimp by-catch in Colombia but seems not to be sufficiently large or common to warrant marketing.

***Lepophidium prorates* (Jordan & Bollman 1890)**

Prowspine Cusk-eel
(Robins 1962:fig. 1a)

Leptophidium prorates Jordan & Bollman 1890:172–173—description; type locality 08°47′00″ N, 79°29′30″ W, in 25 m.

Lepophidium prorates. - Jordan & Evermann 1896:484—referred to genus *Lepophidium,* description compiled. Robins 1962:488—redescription, photograph, synonymy. Gordon et al. 1984;313—meristic data. Lea 1995:1346—characters, distribution.

Description

Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae usually 15 (14–16), caudal vertebrae usually 56–58 (55–59), total vertebrae usually 71–73 (70–74); dorsal-fin rays usually 127–133 (124–134), anal-fin rays usually 107–112 (105–113), pectoral-fin rays usually 21–24 (20–24); pyloric caeca usually four (3–5) arranged in a single whorl except the fifth, when present, in a second tier. Typically there are three rudimentary rakers (rarely four) on the upper limb of the first arch, and four developed rakers (rarely five), progressively shorter, on the lower limb of the first arch; anteriorly on the first arch there are 2–9 rudimentary rakers (usually 4–8). The total number of gill rakers on the first arch varies from 8–16 (usually 11–15) with most of the variation accounted for by the anterior rudiments. The transition from developed raker to rudiment is abrupt. The dorsal-fin origin is usually between neural spines 4–5 (85 specimens) and less often between neural spines 3–4 (six specimens) or 5–6 (eight specimens).

Measures of body parts expressed as a percentage of standard or head length are given in Tables 12–26.

The head and body are rather uniformly pigmented varying from tan to a darker brown with the belly usually paler. The dorsal fin has a very narrow and not very obvious dark edge but the anal fin has a broad dark edge. A distinctive feature of *L. prorates* is the dark-dashed lateral line. The orobranchial chamber is pale except that a cluster of melanophores may occur on the inner surface of the opercle. The gill bars, esophagus, stomach, and hindgut are all pale.

The pseudobranch is well developed with about 10 filaments.

The anterior rib and second rib are as described above for *L. brevibarbe*.

The opercular spine is strong and straight.

Distribution

Lepophidium prorates occurs benthically from the northern part of the Gulf of California to Paita, Peru and along the outer coast of Baja California (Fig. 2). It is a shallow-water species occurring from 3–87 m.

Size

Lepophidium prorates commonly exceeds 200 mm in standard length; the largest is 295 mm.

***Lepophidium negropinna* Hildebrand & Barton 1949**

Specklefin Cusk-eel
(Robins 1962:fig. 1d)

Leptophidium microlepis. - Gilbert 1890:109—in part: material from station 3016 only. Goode & Bean 1896:530—in part, station 3016 only. Böhlke 1953:102—as syntypes of *L. microlepis*.

Lepophidium microlepis. - Jordan & Evermann 1898:2486—in part: 2 specimens from Port Utria, Colombia; see Robins 1962:496, for comments.

Lepophidium negropinna Hildebrand & Barton 1949:28–31, fig. 8—description; type locality: off Talará, Peru.

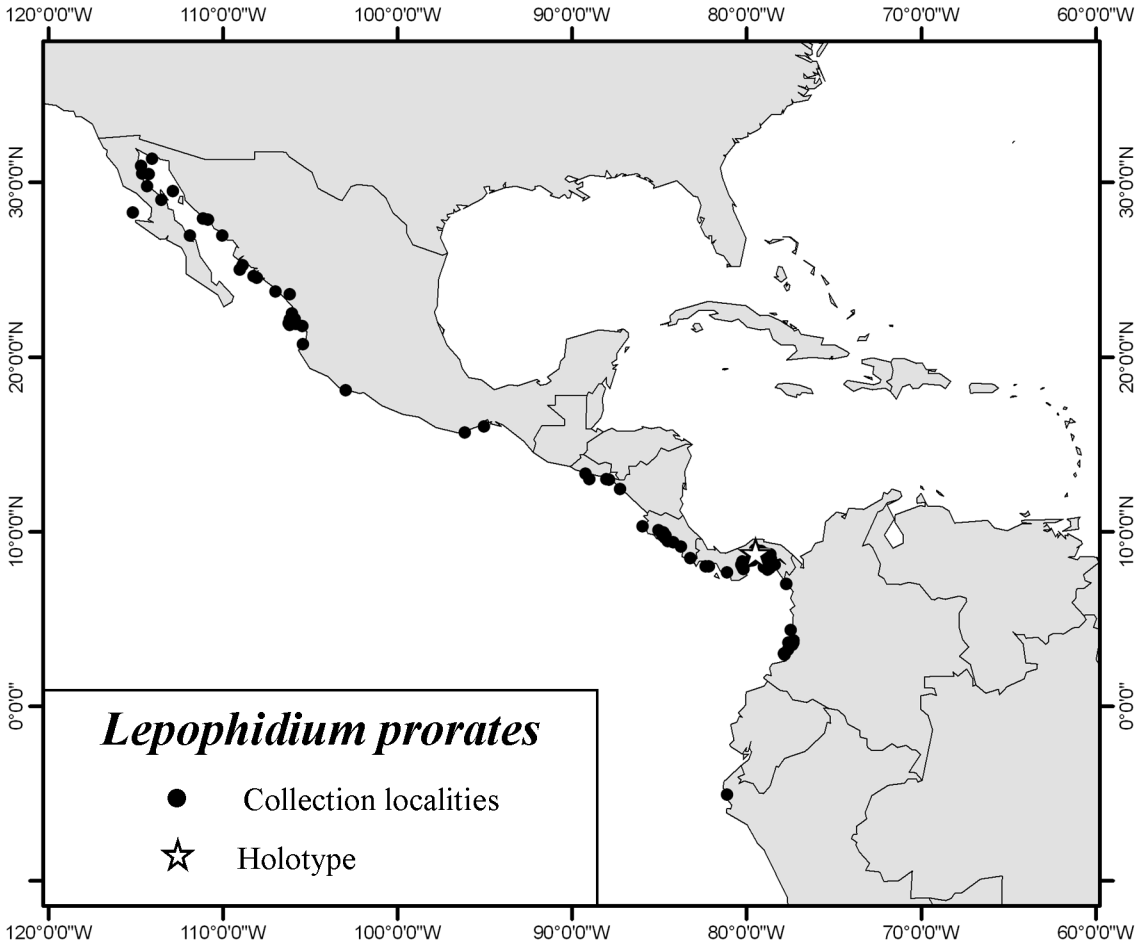

Figure 2. Distribution of *Lepophidium prorates.*

Robins 1962:495–497—redescription, photograph, synonymy, distribution. Lea, 1995:1345—characters, distribution.

Description

Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae usually 16 (14–17), caudal vertebrae usually 60–62 (59–64), total vertebrae usually 76–78 (75–80); dorsal-fin rays usually 138–146 (134–148), anal-fin rays usually 117–120 (111–123), pectoral-fin rays usually 23–24 (21–25); pyloric caeca usually 4–5 (3–6), usually 3–4 in one whorl, 1–2 in a second tier, and sometimes one in a third tier. Typically there are three rudimentary rakers (2–4) on the upper arm of the first gill arch and four (occasionally five) developed but rather short rakers on the lower arm. These are progressively shorter. Rudiments anteriorly on the first arch vary from 1–10 (usually 5–8). Total rakers on the first gill arch usually 12–16 (9–18) with most of the variation accounted for by the rudiments. Although the developed rakers are progressively shorter, the transition to rudiments is easily seen. In one specimen a rudiment is inserted before the last developed raker, an anomalous condition in this species. The dorsal-fin origin is between neural spines 4–5 (26 specimens) or 3–4 (17 specimens).

Measurements of body parts expressed as a percentage of standard or head length are given in Tables 12–26. Two measurements are noteworthy. The postorbital head length expressed as a percentage of head length (mean = 61.6) is greater than for any other species of *Lepophidium*. The orbit diameter, also expressed as a percentage of head length is smaller (mean= 22.0) than for any of its congeners.

The head and body are rather uniformly pigmented, tan to a darker brown, with the belly

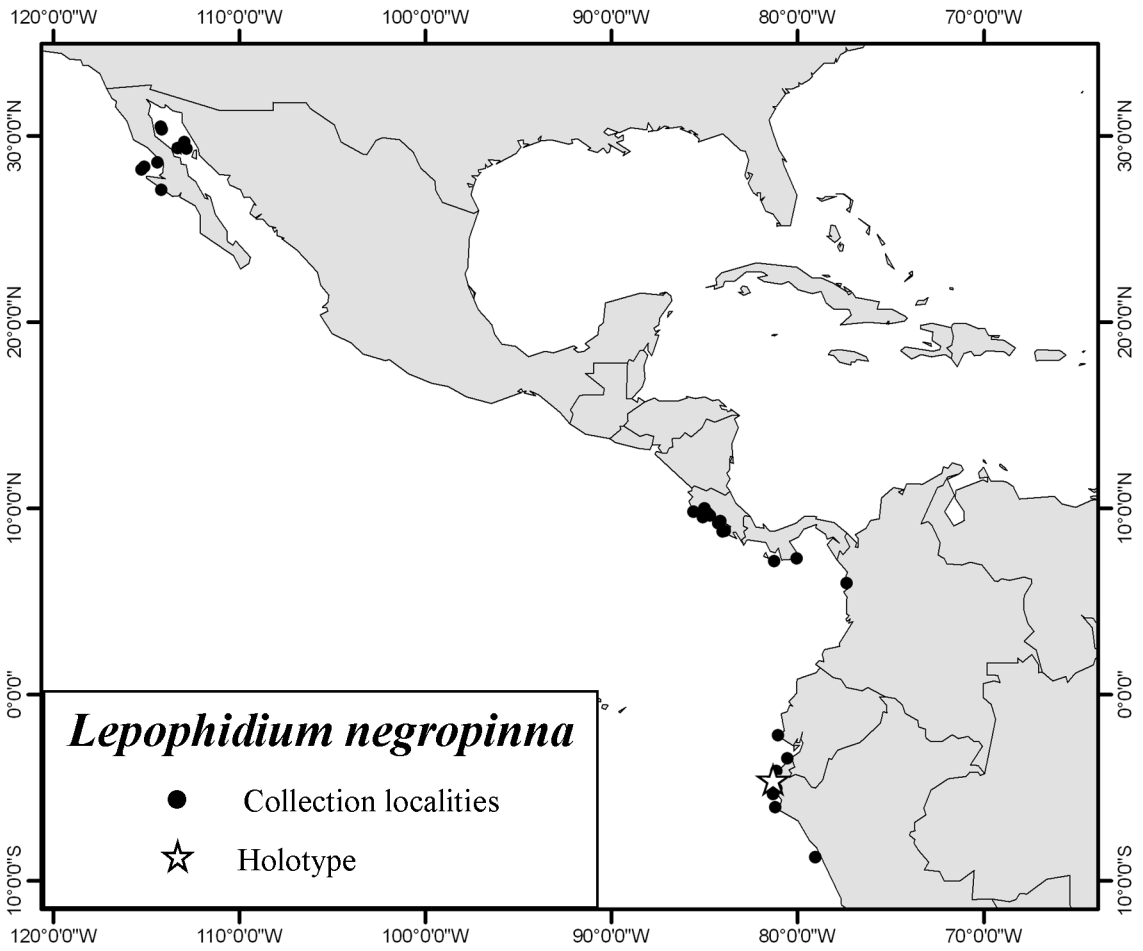

Figure 3. Distribution of *Lepophidium negropinna.*

paler. There is a narrow dark edge to the dorsal and anal fins. A distinguishing characteristic of *L. negropinna* is the dark pigment arranged in a marbled or wavy pattern throughout the dorsal fin. The orobranchial chamber and gill bars are pale as are the esophagus, stomach, and hindgut.

The pseudobranch is well developed with 10–12 short filaments.

The anterior rib and second rib are as described above for *L. brevibarbe* except that the haltere development is not apparent until a large size is reached and the first rib is generally very stout throughout.

The opercular spine is strong and straight.

Distribution

Lepophidium negropinna occurs benthically from the Pacific Coast of Baja California, Mexico (Cedros Island) and the northern Gulf of California to northern Peru (Fig. 3). The absence of records from most of Central America except for Costa Rica is no doubt an artifact of collection effort. It occurs benthically between 44–254 m.

Size

Lepophidium negropinna is the largest species of *Lepophidium* reaching 527 mm standard length.

Lepophidium profundorum **(Gill 1863)**

Fawn Cusk-eel

Leptophidium profundorum Gill 1863:209—description, type of genus *Leptophidium,* preoccupied; type locality: off east coast of Florida in 60 fms (277 m). Goode & Bean 1896:347–348, pl. 87, fig. 307—compiled. Robins 1986:386–387—synonymy discussed.

Leptophidium cervinum Goode & Bean 1885:422—description, type locality: Fish Hawk station 941, south of Nantucket Island, in 138 m. Goode & Bean 1896:346, pl. 87, fig. 307—compiled.

Lepophidium profundorum. - Gill 1895—type of replacement genus *Lepophidium*. Jordan & Evermann 1898:2484—compiled. Gordon et al. 1984:312—meristic data. Robins 1986:387—established as the correct name for the species. Boschung 1992:76—Alabama records. Collette & Klein-MacPhee 2002:208–209, fig. 113—distribution and habits. Nielsen & Robins 2003:968—distribution.

Lepophidium cervinum. - Jordan & Evermann 1898:2484–2485—compiled. McKenzie 1967:213—summary of records from Canadian waters. Robins 1959a:363, fig. 1e—gill-raker development. Scott & Scott 1988:305—occurrence in Canadian waters.

Comment on Synonymy—All references to *L. cervinum* apply to this species. Except for those compiled from Gill (1863,1895), most references to *L. profundorum* between 1950 and 1986 apply to *L. brevibarbe*.

Description

Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae usually 15 (14–16), caudal vertebrae usually 58–59 (57–61), total vertebrae usually 74–76 (73–78; dorsal-fin rays usually 131–137 (129–142), anal-fin rays usually 112–117 (109–121), pectoral-fin rays usually 21–23 (20–24); pyloric caeca three (2–4) in tiers of 2–3 caeca in the first and one in the second. Rudimentary rakers on upper arm of first gill arch 2–3, developed rakers on lower limb usually 5–7 (4–8), progressively shorter, rudimentary rakers anteriorly on lower arm 0–4, the division between rudiment and raker sharp. Total gill rakers on first arch 9–11 (8–13). The pattern of gill-raker development is shown by Robins (1959a: fig. 1e, labeled *L. cervinum*). The dorsal-fin origin is usually between neural spines 5–6 (49 specimens) and less frequently between 6–7 (16 specimens) or 7–8 (one). One specimen had the insertion directly over the 3rd neural spine but is otherwise typical of *L. profundorum*. The dorsal-fin insertion is farther back in this species that in any other of the genus.

Measures of body parts expressed as a percentage of standard or head length are given in Tables 12–26. This is a very slender species as may be seen by the three measurements of body depth (Tables 14-16). It is a short-headed species (mean head length 16.9% of standard length; mean occipital length 11.7% of standard length; Tables 17-18, respectively). Other noteworthy measurements are predorsal (Table 19) and preanal distance (Table 20) both of which are low.

The head and body are tan to brown, the belly whitish. There is a conspicuous and diagnostic series of 14–23 pale spots, slightly smaller than the eye but larger than the pupil, extending from just behind the opercle to the caudal-fin base. A second series of smaller pale spots runs along the anterior part of the body just below the dorsal-fin base. These spots largely disappear in old museum specimens. The dorsal and anal fins are dark edged posteriorly. The gill chamber, gill bars, esophagus and the roof of the mouth behind the vomer and between the palatines are blackish. The stomach and hindgut are unpigmented.

The pseudobranch is well developed with about 10 filaments.

The anterior two ribs are thickened in males and flare somewhat distally but are without halteres.

The opercular spine is long and straight though rather weakly developed.

Distribution

Lepophidium profundorum is the most northern of the species of *Lepophidium,* occurring from Georges Bank, Canada to the Florida Keys and the northern and eastern Gulf of Mexico (Fig. 4). Northeastern records are summarized by McKenzie (1967:213), Scott and Scott (1988:305), and Collette and Klein-MacPhee (2002:209; the inference that it occurs northeast to Sable Island is incorrect). As noted above in the discussion of the genus, the reported occurrence of this species in the Mediterranean Sea (Nielsen & Bini 1972:197) is based solely on a marketplace specimen and is regarded here as spurious. The reported occurrence in Trinidad (Ramjohn 1999:59) (Oregon station collection) is in error and likely is based on *L. brevibarbe*. It occurs benthically from 29 (usually 60) to 399 meters. The deepest records are from the Gulf of Mexico.

Size

Lepophidium profundorum commonly exceeds 200 mm in standard length, the largest being 257 mm.

***Lepophidium staurophor* Robins 1959**

Barred Cusk-eel

(Robins 1959a:fig 2)

Lepophidium staurophor Robins 1959a—original description; type locality: Oregon station 1878, 16°39′ N, 81°43′ W, in 125 fms (227 m). Bullis & Thompson 1975:59—Oregon station collections. McCaffrey 1981:304—recorded from Tursiops station 7016-06, north of Yucatan, Mexico. Gordon et al. 1984:312–313—meristic data, larvae identified. Robins & Ray 1986:98—characters, illustrated. McEachran & Fechhelm 1998:720—description, distribution. Nielsen & Robins 2003:968—distribution.

DESCRIPTION

This account is condensed from the extensive description provided by Robins (1959a) and augmented by additional meristic and morphometric data. Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae 14–15, caudal vertebrae 65–67, total vertebrae usually 81–82 (80–83); dorsal-fin rays usually 142–145 (140–147), anal-fin rays 120–125, pectoral-fin rays 22–23; pyloric caeca three (rarely four), two (rarely three) in one whorl, one in second tier. There are four (rarely three) rudimentary gill rakers on the upper limb of the first arch and eight developed (progressively shorter) rakers (rarely seven) on the lower limb of the first arch. Rudiments anteriorly on the first arch vary from 0 (the common condition) to three. Total gill rakers are usually 12 (11–14). The pattern of gill-raker development is shown by Robins (1959a:363, fig. 1a). The dorsal-fin origin is between neural spines 4–5 (11 specimens) or 5–6 (six specimens).

Measurements of body parts expressed as

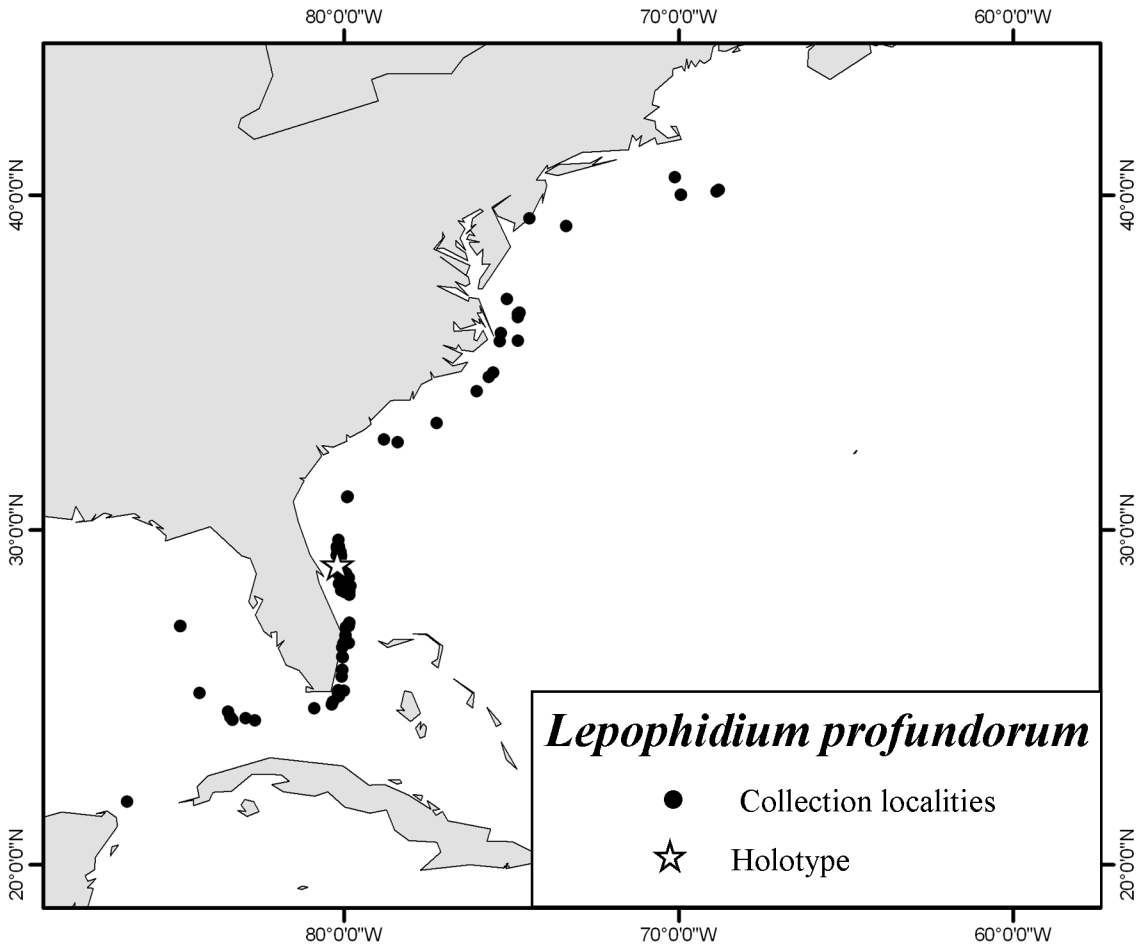

Figure 4. Distribution of *Lepophidium profundorum.*

a percentage of standard or head length are given in Tables 12–26. The pelvic rays are long in this species, the longer ray usually exceeding the length of the pectoral fin (Tables 21–22).

The head and body are generally tan with four or five blackish bands crossing the dorsum and extending variously onto the side. These are outlined in front and behind by a narrow pale area. The positions of the bands are described in detail by Robins (1959a:364). There are also 5–6 blackish areas in the dorsal fin. The first two coincide with the anterior two bands to form crosses when viewed from above. The dorsal and anal fins lack a black border, but a dark area at the rear end of the anal fin merges with the black on the lower part of the caudal fin. There may be a dark basal area in the anal fin below the dark body bands. The oral cavity is pale, although there may be some dark pigment medial to the palatine teeth. The gill chamber, gill bars, and esophagus (anteriorly) are dark, but the stomach and hindgut are pale.

The anterior two ribs are stout in males but lack haltere development.

The opercular spine is strong and straight.

Distribution

Lepophidium staurophor appears to be restricted to the deep bank area east and northeast of Nicaragua and Honduras in the western Caribbean Sea and north of the Yucatan Peninsula in the southern Gulf of Mexico (where it was recorded by McCaffrey 1981:29, 304) (Fig. 5). There is no apparent basis for the reported occurrence of this species in the eastern Gulf of Mexico. It occurs benthically between 182–485 m.

Size

The maximum recorded size is 273 mm in standard length.

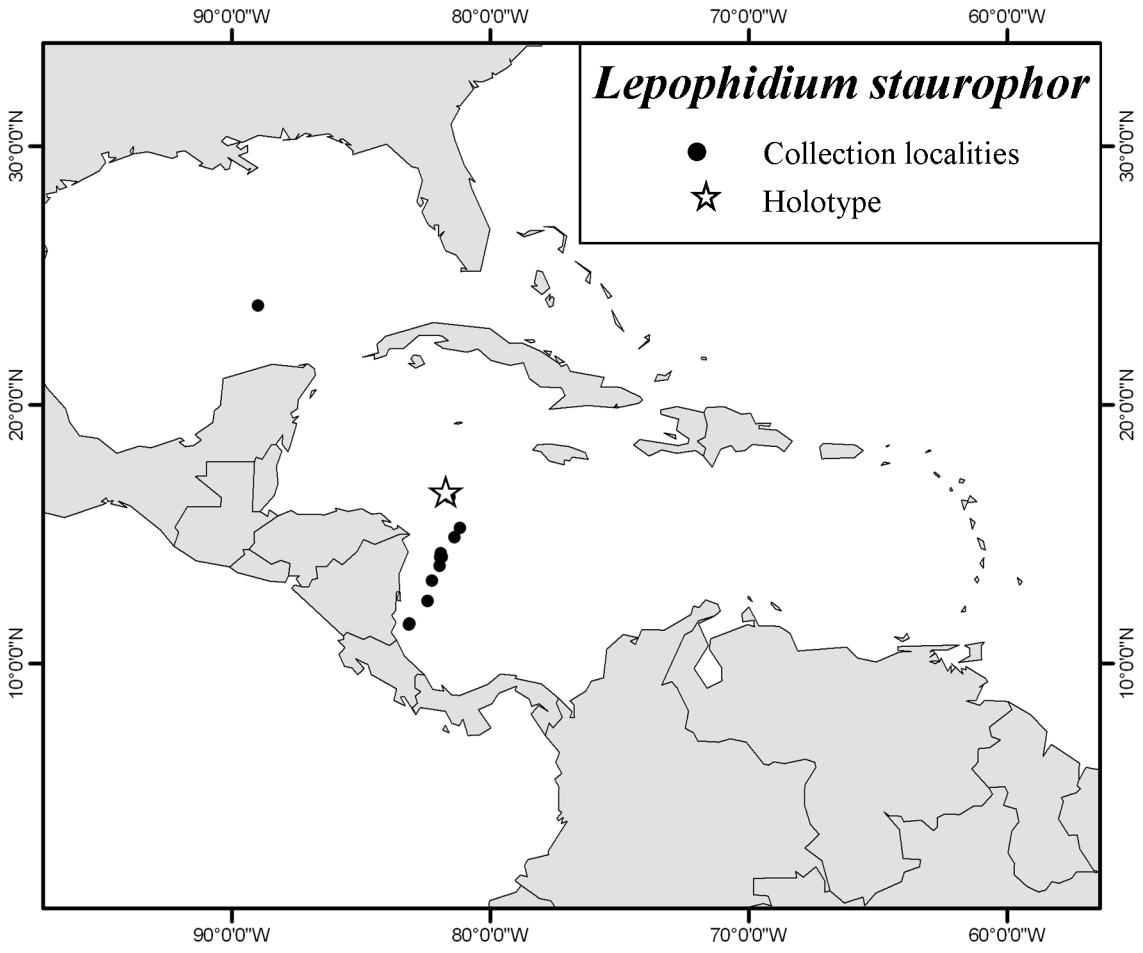

Figure 5. Distribution of *Lepophidium staurophor.*

***Lepophidium collettei* new species**
Brazilian Cusk-eel
Figure 6

No literature applies to this species.

Comparative Diagnosis

Lepophidium collettei can be distinguished from all but nine species of *Lepophidium* on the basis of vertebral counts. Only *Lepophidium aporrhox* has fewer vertebrae than *L. collettei* and there is no overlap in number of precaudal vertebrae between the two species (14-15 in *L. collettei*, 12-13 in *L. aporrhox*; Table 1). *L. collettei* is further distinguished from *L. aporrhox* by dorsal rays (116–122 vs. 106–115; Table 4), rudiments on the lower gill arch (2-7 vs. 8-12; Table 9) and length of the long (9-11% vs. 13-18%; Table 21) and short pelvic rays (5-7% vs. 8-12%; Table 22) as a percentage of standard length. *Lepophidium collettei* is distinguished from *Lepophidium brevibarbe* by typically fewer vertebrae (65-69 vs. 69-74; only one specimen of L. collettei has 69 total vertebrae; Table 3), the absence of a distally expanded anterior rib in males or haltere as seen in *L. brevibarbe*, and developed rakers on the lower gill arch (6-8 vs. 4-5; Table 9). Addittionally, *Lepophidium collettei* is deeper bodied than *L. brevibarbe*: in average body depth at origin of dorsal fin as a percentage of standard length (14.9% vs. 13.4-13.9% for three populations of L. brevibarbe; Table 15) and in average body depth at origin of anal fin as a percentage of standard length (13.4% vs. 11.8-12.4% for three populations of L. brevibarbe; Table 16). *Lepophidium crossotum*, though similar to *L. collettei* in number of vertebrae, is one of only three species with a fringed snout (see also *L. kallion* and *L. wileyi*) and need not be compared further. *Lepophidium collettei* is distinguished from *L. gilmorei* by many features; average number of caeca (5.4 vs. 3.2; Table 7) total gill raker elements (12-17 vs. 8-9; Table 10) dorsal fin origin (between neural spines 4-5 and 5-6 vs. between 3-4) as well as averages of orbit diameter, body depth at origin of anal fin, predorsal distance, and lateral line length (Tables 13, 16, 19, and 26). *Lepophidium collettei* is distinguished from *Lepophidium marmoratum* on the basis of caudal vertebrae (51-54 vs. 55-58; Table 2) short pelvic rays as a percentage of standard length (5-7% vs. 8-12%; Table 22) and a lack of dark spots on the head and body, in rows or otherwise. *Lepophidium collettei* is distinguished from the Pacific *L. microlepis* by average head length as a percentage of standard length (20.8% vs. 24.3%; Table 17) and long pelvic rays as a percentage of standard length (9-11% vs. 5-8%; Table 22). *Lepophidium collettei* is distinguished on the basis of dorsal rays (116-122) from *Lepophidium pheromystax* (125-133), *L. robustum* (123-126), and *L. stigmatistium* (123-131; for all, Table 4). *Lepophidium collettei* is further distinguished from *L. pheromystax* by dorsal fin origin (between neural spines 4-5 or 5-6 vs. between neural spines 2-3 or 3-4; Table 11) and anal rays (96-103 vs. 104-112; Table 5); from *L. robustum* by upper gill raker rudiments (3 vs. 4-5; Table 8) lower gill raker rudiments (2-7 vs. 8-14; Table 9) and total gill rakers (12-17 vs. 20-29; Table 10). *Lepophidium collettei* lacks the large blotch present in the dorsal fin of the Pacific species *L. stigmatistium* as well as the expanded rib or haltere found in male *L. stigmatistium*. *L. collettei* lacks head and body patterning as seen in *L. gilmorei*, *L. marmoratum*, and *L. pheromystax*.

Figure 6. Holotype of *Lepophidium collettei,* USNM 405909, 162 mm SL, 04°52′ N, 51°49′ W in 37 m, OREGON sta.17620-21, 5 May 1975.

Description

Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae 14–15, caudal vertebrae usually 52–53 (51–54), total vertebrae usually 66–68 (65–69); dorsal-fin rays usually 117–120 (116–122), anal-fin rays usually 98–100 (96–103), pectoral-fin rays usually 22–23 (21–25); pyloric caeca usually 5–6 (4–7) in one whorl. Rudimentary gill rakers on the upper limb of the first arch three, developed rakers (progressively becoming shorter) on the lower limb usually seven (6–8), rudimentary rakers anteriorly on the first arch usually 3–6 (2–7), total gill rakers usually 13–15 (14–17). The division between the shortest developed raker and the first rudiment is sharp. The dorsal-fin origin is between neural spines 5–6 (18 specimens) or 4–5 (four specimens, and in two of which the first dorsal pterygiophore is directly over neural spine 5).

Measurements of body parts expressed as a percentage of standard or head length are given in Tables 12–26. This is a rather short and stout species of *Lepophidium* (note the depth of body at dorsal and anal-fin origin; Tables 15-16).

The head and body are uniformly dark tan without pattern, although the upper part of the opercle is darker. The dorsal and anal fins are entirely dark-edged and caudally both fins are dark basally, this pattern merging to make the basal half or more of the caudal fin darkly pigmented. The oral cavity is dark posteriorly, and the gill chamber and gill bars are entirely dark. The esophagus is dark, but the stomach and hindgut are pale.

The anterior two ribs show little if any thickening, nor are they sexually dimorphic.

The opercular spine is strong and straight.

Distribution

Lepophidium collettei occurs in shelf waters off the mouth of the Amazon and along the Guianan coast to the Gulf of Paria between Trinidad and Venezuela (Fig. 7). It occurs benthically in 7–66 m.

Size

The maximum recorded size of *Lepophidium collettei* is 164 mm in standard length.

Name

We name this species for our friend and longtime colleague Bruce B. Collette who made special efforts to collect cusk-eels for the senior author and who collected most of the material of this species.

Type specimens

See Material Examined (Appendix 1).

Lepophidium jeannae **Fowler 1941**

Mottled Cusk-eel

(Robins 1960:fig. 1a)

Lepophidium jeannae Fowler 1941:103, figs. 16–17—original description; type locality: main channel south of Key West, Florida, in 53 m. Robins 1959a:366–367—discussion of holotype; meristic data corrected and supplemented. Robins 1960:92–94, fig. 1a—standard length is 296 mm, not 196 mm, as given in the legend; redescription, comparison with *L. pheromystax*. Gordon et al. 1984:316—meristic data. Robins & Ray 1986:98, pl. 16—characters, distribution. Retzer 1991:703—life history data. Boschung 1992:76—Alabama distribution. McEachran & Fechhelm 1998:717—characters, distribution. Nielsen & Robins 2003:968—distribution.

Description

This account is condensed from the extensive description provided by Robins (1960) and augmented by additional meristic and morphometric data. Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae usually 15 (14–16), caudal vertebrae usually 59–60 (58–61), total vertebrae usually 74–75 (73–77); dorsal-fin rays 133–140, anal-fin rays usually 112–115 (110–119), pectoral fin rays usually 21 (20–22); pyloric caeca rather stout, 3 (2–4), 2–3 in one tier, one in second tier. There are two (rarely three) rudimentary gill rakers on the upper limb of the first gill arch, four developed rakers on the lower limb, and two or three rudimentary gill rakers anteriorly on the first arch. The total number of gill rakers on the first arch is 8–9. The pattern of development of the rakers is shown by Robins (1959a:363, fig. 1f). The developed rakers are progressively shorter, but the division between the shortest developed raker and the rudiments is sharp. The dorsal-fin origin is between neural spines 2–3 (20 specimens), 3–4

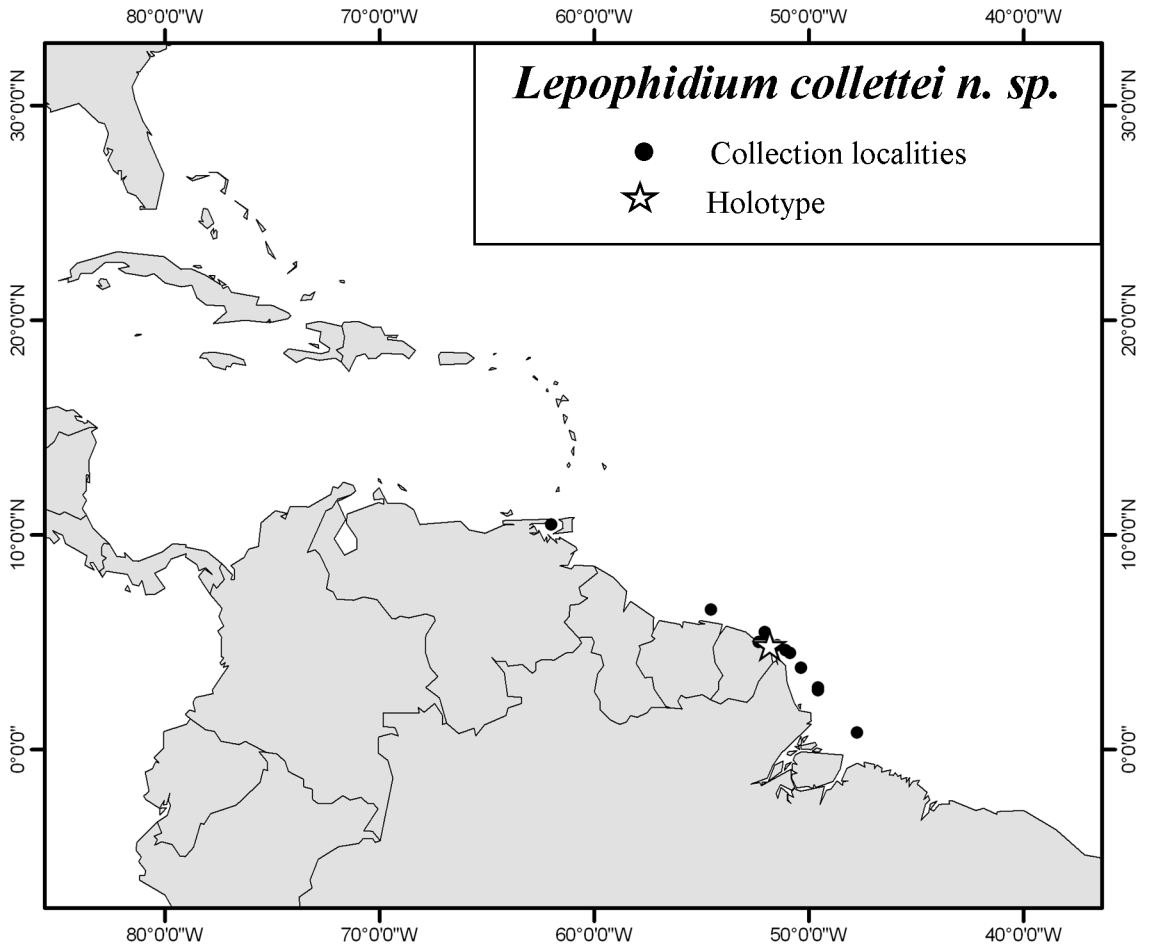

Figure 7. Distribution of *Lepophidium collettei* n. sp.

(12 specimens), or 5–6 (one specimen). In most specimens the origin is almost directly over the 3rd neural spine.

Measurements of body parts expressed as a percentage of standard or head length are given in Tables 12–26.

The head and body are tan with numerous, irregularly scattered dusky spots over the upper two-thirds of the body including the top of the head behind the interorbital region. The overall effect is of a freckled or mottled pattern. The exposed portion of the maxilla is nearly black and a dark "ear" spot shows through the opercle. The dorsal-fin margin is alternately black and pale, the black areas occupying a third or half of the height of the fin. The black areas are more extensive in larger specimens. The anal fin is dusky with a darker edge and the caudal fin is bicolored, black above and below and pale centrally. The orobranchial chamber and gill bars are pale except for a cluster of melanophores inside the opercle (the "ear" spot). The esophagus is blackish, the stomach and hindgut are pale.

The anterior two ribs are stouter in males but with no notable differentiation and no haltere development.

The opercular spine is strong and straight.

Distribution

Lepophidium jeannae occurs from southern North Carolina through the Florida Keys and around the Gulf of Mexico (Fig. 8). One record (UF 217621) is from the Cuban side of the Straits of Florida. The species occurs benthically primarily between 26–100 m. There are three deeper records from 180, 185, and 280 m respectively.

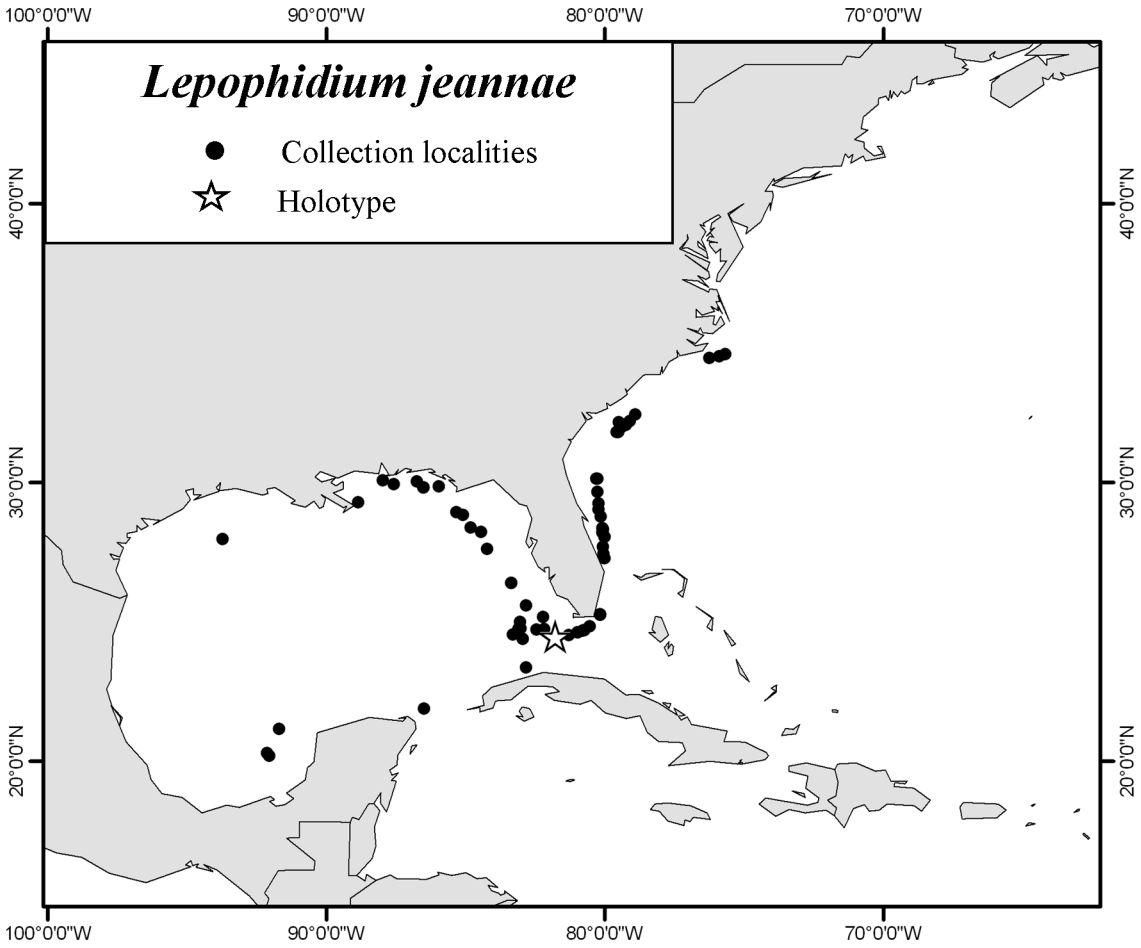

Figure 8. Distribution of *Lepophidium jeannae.*

Size

The maximum recorded size of *Lepophidium jeannae* is 296 mm in standard length.

Lepophidium pheromystax Robins 1960

Upsilon Cusk-eel

(Robins 1960:figs. 1b, 1c)

Lepophidium pheromystax Robins 1960:83–95—original description; type locality: 07°55′ N, 57°25′ W, in 91 m. Arai, 1983:225—color photograph, characters, compiled. Gordon et al. 1984:312—meristic data. Cervigón 1991:169–170, fig. 128—characters, distribution. McEachran & Fechhelm 1998:718—characters, distribution. Lopes & Tomás 1998:129—discussion, distribution. Ramjohn 1999:55—occurrence in Trinidad. Nielsen & Robins 2003:968—distribution.

Description

This account is condensed from the extensive description provided by Robins (1960) and augmented with additional meristic and morphometric data. Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae are usually 15 (14), caudal vertebrae usually 56–57 (54–58), total vertebrae usually 71–72 (69–72); dorsal-fin rays usually 127–130 (125–133), anal-fin rays usually 106–108 (104–112), pectoral-fin rays usually 20–21 (22); pyloric caeca usually three (1–4), most often with two in one tier and one in a second. When there are four caeca, they are 3 + 1. There are two rudimentary gill rakers on the upper limb of the first gill arch, four (rarely five) developed rakers on the lower limb, and usually two (1–3) rudimentary rakers anteriorly on the first arch. Total gill rakers 8–9. The pattern of development is as described above for *L. jeannae* (see Robins 1959a:363, fig. 1f). The dorsal-fin origin is between neural spines 2–3 (18

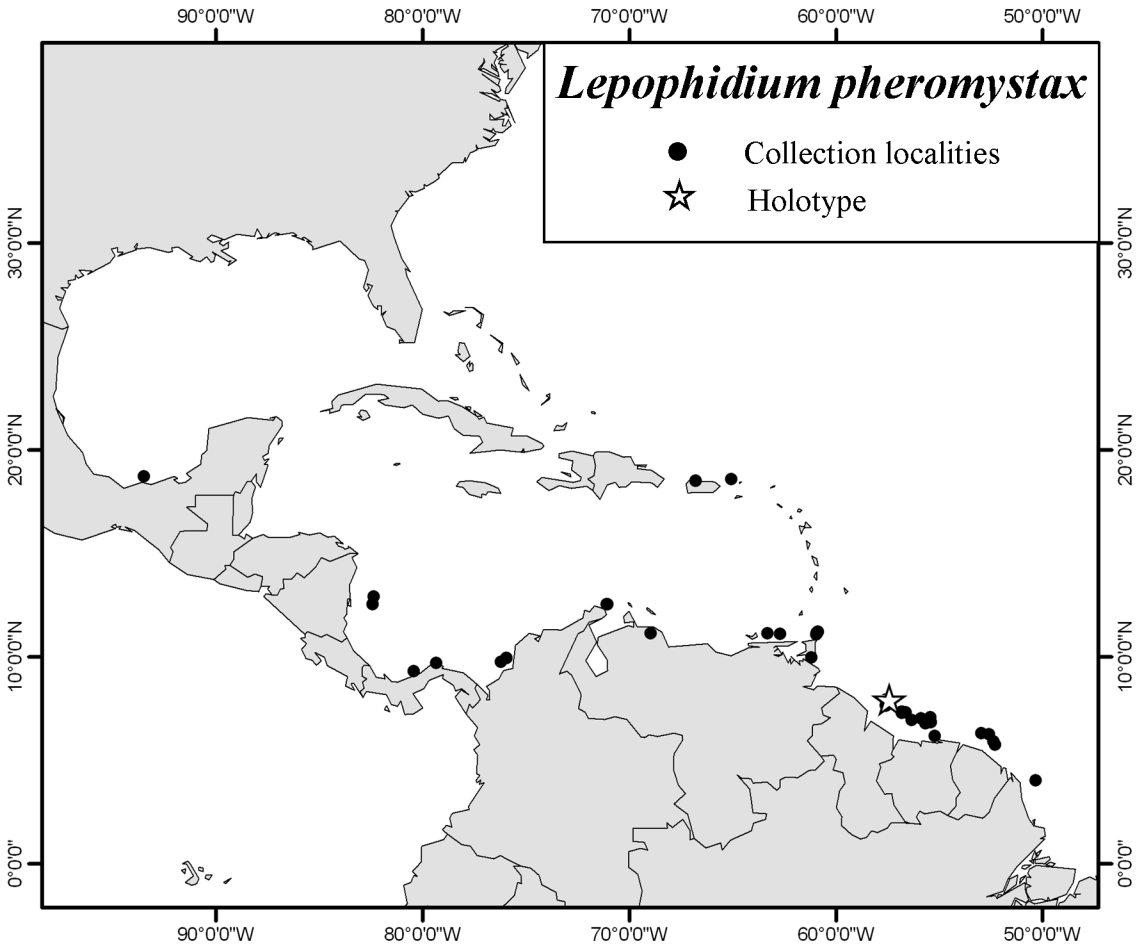

Figure 9. Distribution of *Lepophidium pheromystax.*

specimens) or 3–4 (11 specimens), and in most instances is almost directly over neural spine 3.

Measurements of body parts expressed as a percentage of standard or head length are given in Tables 12–26.

The head and body are tan, becoming whitish below with many large irregular spots on the body, usually bolder on rear half of body. The largest spots are as large as the eye. The margin of the dorsal fin has large black spots, shaped like the Greek letter Upsilon (ϋ), alternating with clear areas and there are irregular dark blotches basally in the fin. The anal fin is dark margined and the caudal fin is bicolored, black above and below and clear centrally. The lower half of the maxilla is streaked with melanophores forming a characteristic mustache and a black "ear" spot is present. The orobranchial chamber and the gill bars are pale except for the cluster of melanophores on the inner surface of the opercle (the source of the "ear" spot). The esophagus is blackish, the stomach and hindgut pale. Arai (1983:225) provides an excellent color photograph of this species.

The anterior two ribs are shorter, somewhat stouter in males but with no distal elaboration.

The opercular spine is strong and straight.

Distribution

Lepophidium pheromystax is distributed along the northern coast of South America from Colombia to Cabo Orange, Brazil (north of the mouth of the Amazon) (Fig. 9). There are seven records outside of this area, one from the Gulf of Campeche, Mexico, and two each from Nicaragua, Panama, and the shelf area from northern Puerto Rico to the US Virgin Islands. It occurs benthically between 27 and 165 m. The southern limit is likely an artifact of collection effort, because it marks the

southern limit of the NOAA exploratory fishing program.

Size

The largest recorded size of *Lepophidium pheromystax* is 270 mm in standard length.

Lepophidium pardale (Gilbert 1890)

Leopard Cusk-eel

(Robins 1962:fig. 1b)

Leptophidium pardale Gilbert 1890:108–109—original description; type locality: 28°28.0′ N, 112°04.5′ W, in 53 m.

Lepophidium pardale. - Jordan & Evermann 1896:485—referred to *Lepophidium,* compiled. Robins 1962:492–494, fig. 1b—redescription, distribution. Gordon et al. 1984:313—meristic data. Lea 1995:1346—characters, distribution.

Description

This account is modified from that given by Robins (1962) and augmented by additional meristic and morphometric data. Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae usually 15 (14), caudal vertebrae usually 57–58 (56–60), total vertebrae usually 72–73 (70–75); dorsal-fin rays usually 128–133 (125–137), anal-fin rays usually 108–111(106–116), pectoral-fin rays usually 22–23 (21–24); pyloric caeca usually four (3–5), usually three in one tier and one in second, occasionally 4 + 1 or 2 + 1 + 1 (three tiers). There are three (rarely two) rudimentary gill rakers on the upper limb of the first gill arch, four or five (7) developed rakers on the lower limb, and 1–3 rudimentary rakers (0–4) anteriorly on the lower limb. Total gill rakers usually nine (8–12). The pattern of gill-raker development is as described above for *L. jeannae*. The distinction between the last developed raker and first rudiment is sharp. The dorsal-fin origin is between neural spines 3–4 (27 specimens) or 4–5 (nine specimens). See comment below with regard to the geographic variation in this character.

Measurements of body parts expressed as a percentage of standard or head length are given in Tables 12–26. This species has shorter pelvic rays and a shorter head than *L. jeannae* and *L. pheromystax* (Tables 21–22; 17)

The head and body are tan or brownish, whitish on the belly with 1–3 series (usually two) of large dark brown spots along the side and on the posterior parts of head. The spots tend to be smaller and more numerous in large specimens. The entire head (including the throat) is dusky. The dorsal-fin margin has 10–11 blackish blotches. The anal-fin margin is blackish. The oral chamber is pale except for a scattering of melanophores dorsally and the gill bars are pale. The esophagus is blackish; the stomach and hindgut are pale.

The anterior two ribs are shortened, stouter in males but without any distal differentiation.

The opercular spine is strong and straight.

Distribution

Lepophidium pardale occurs from the Gulf of California, Mexico to northern Peru (off Chiclayo) and along the outer coast of Baja California (Fig. 10). It also occurs offshore at Isla del Coco, Costa Rica, in the Islas Perlas, Panama, and it is the only *Lepophidium* we record from the Galapagos, but only from a single collection.Confirmation of its occurrence in the Galapagos is needed. It occurs benthically from 6–100 m.

Geographic Variation

The three collections from Peru differ from all other materials of this species examined in having the dorsal-fin origin farther back, usually between neural spines 4–5 (seven specimens) rather than 3–4 (one specimen) versus usually between 3–4 (26 specimens) rather than 4–5 (one specimen). Also the Peruvian samples average higher in number of dorsal-fin rays (133–137 vs. 125–134) and anal-fin rays (111–116 vs. 106–113). Because we lack material from intervening areas we refrain from naming the Peruvian population at this time.

Size

The largest recorded specimen of *Lepophidium pardale* is 248 mm in standard length.

Comments

Lepophidium jeannae, L. pheromystax, and *L. pardale* form a trio of species united by similarity in color pattern especially with regard to the dorsal

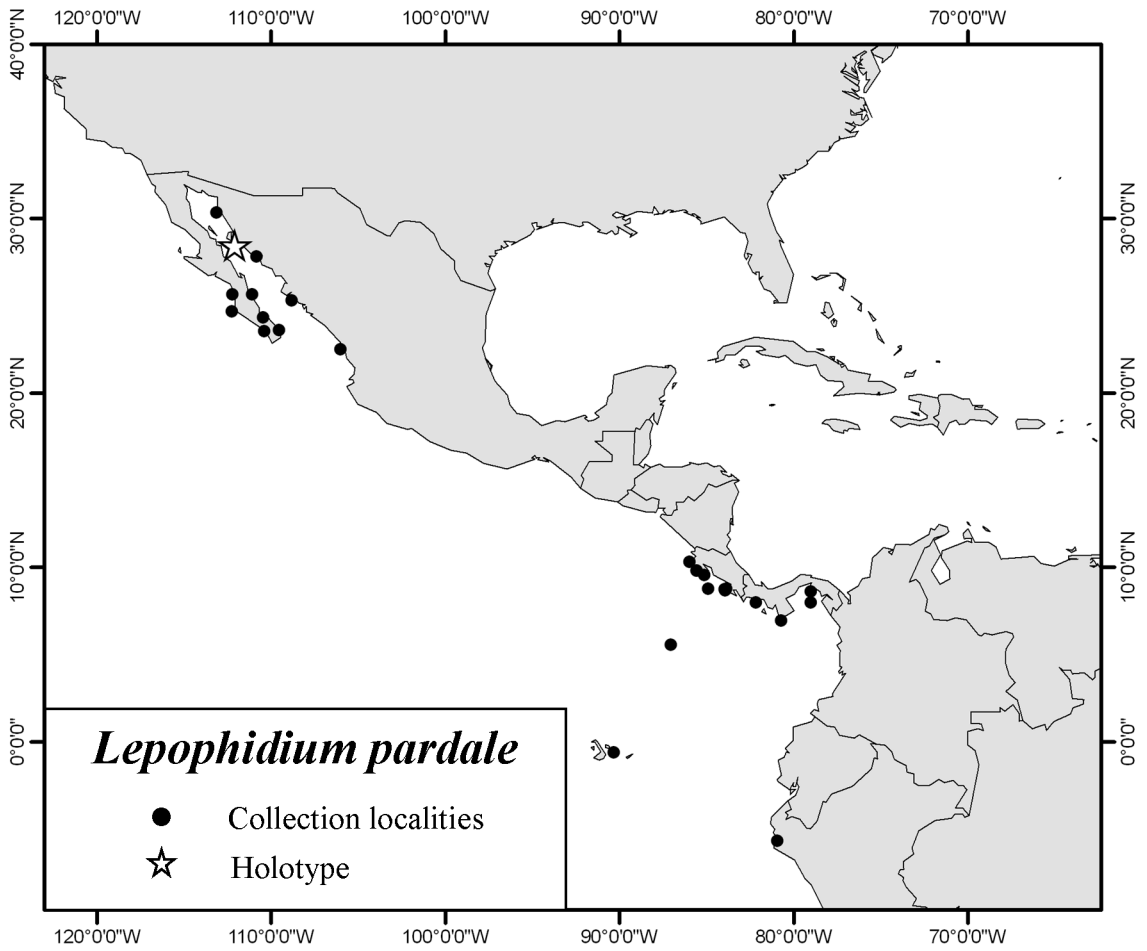

Figure 10. Distribution of *Lepophidium pardale.*

fin. Superficially, *L. pardale* and *L. pheromystax* are most similar in pattern but not in other features (see the Tables and the comments above).

Lepophidium kallion Robins 1959

Palenose Cusk-eel

(Robins 1959b:fig. 1)

Lepophidium kallion Robins 1959b—original description; type locality: Blake station 291, off Barbados, in 200 fms (366 m). Bullis & Thompson 1965:59—Oregon collection stations. Gordon et al. 1984:312—meristic data. Nielsen & Robins 2003:968—distribution.

Description

This account is modified from that given by Robins (1959b) and augmented by additional meristic and morphometric data. Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae are usually 15 (rarely 14 or 16), caudal vertebrae usually 58–59 (57–60), total vertebrae usually 72–74 (71–75); dorsal-fin rays usually 131–135 (129–137), anal-fin rays usually 110–113 (108–115), pectoral-fin rays usually 22–23 (21–24); pyloric caeca usually 4–5 (3–6), 3–4 in one tier, one in second. There are three (rarely two or four) rudimentary gill rakers on the upper arm of the first gill arch (one specimen with two rudiments had a developed raker on the upper arm, an anomalous condition in the genus). There are usually 6–7 developed rakers (rarely five or eight) on the lower arm of the first gill arch and 0 or one (rarely two) rudimentary rakers anteriorly. The total gill-raker count is usually 10 (9–11). The developed rakers diminish in length anteriorly. The distinction between the smallest developed raker and the rudimentary raker (when present) is sharp. The dorsal-fin origin is between neural spines 4–5 (41 specimens) and rarely between 3–4 (one specimen).

Measurements of body parts expressed as a percentage of standard or head length are given in Tables 12–26. The pelvic rays are short, the longer 5–6% of standard length, and the shorter 2–4% (Tables 21–22).

The dorsal fin is unmarked except for a blackish edge, this color extending to the tip of the caudal fin. The anal fin may similarly be black edged but this is lacking in some specimens and is never as conspicuous as the dark edge of the dorsal fin. The body is variably patterned. Usually there is a dark brown stripe above and below a conspicuous pale stripe that runs along the lateral line. In some specimens these are broken into a series of dark dashes. There may be some dark blotches on the side above the pectoral fin. The nape may be dark brown with few to many pale (perhaps yellowish) spots or it may be yellowish with a dark brown yoke anteriorly. The snout is unmarked and quite pale. This is conspicuous in an underwater photograph in our files. The top of the head is also unmarked. The oral chamber is dark posteriorly, the gill chamber is blackish, and the entire gut is blackish. The blackish hindgut is easily seen at the anus.

Lepophidium kallion is one of three species of *Lepophidium* with a fringed snout. The lower rim of the snout is incised anterior to the nostril with several series of fleshy tabs (Robins 1959b: fig. 2c). The fringing is more elaborate and appears quite unlike that seen in *L. crossotum* n. sp. or *L. wileyi* n. sp.

The lateralis system was also illustrated by Robins (1959b:fig. 2a).

The anterior two ribs are slightly thickened in males but lack a haltere.

Distribution

Lepophidium kallion occurs from the western edge of the Bahamas south to Cuba and along the

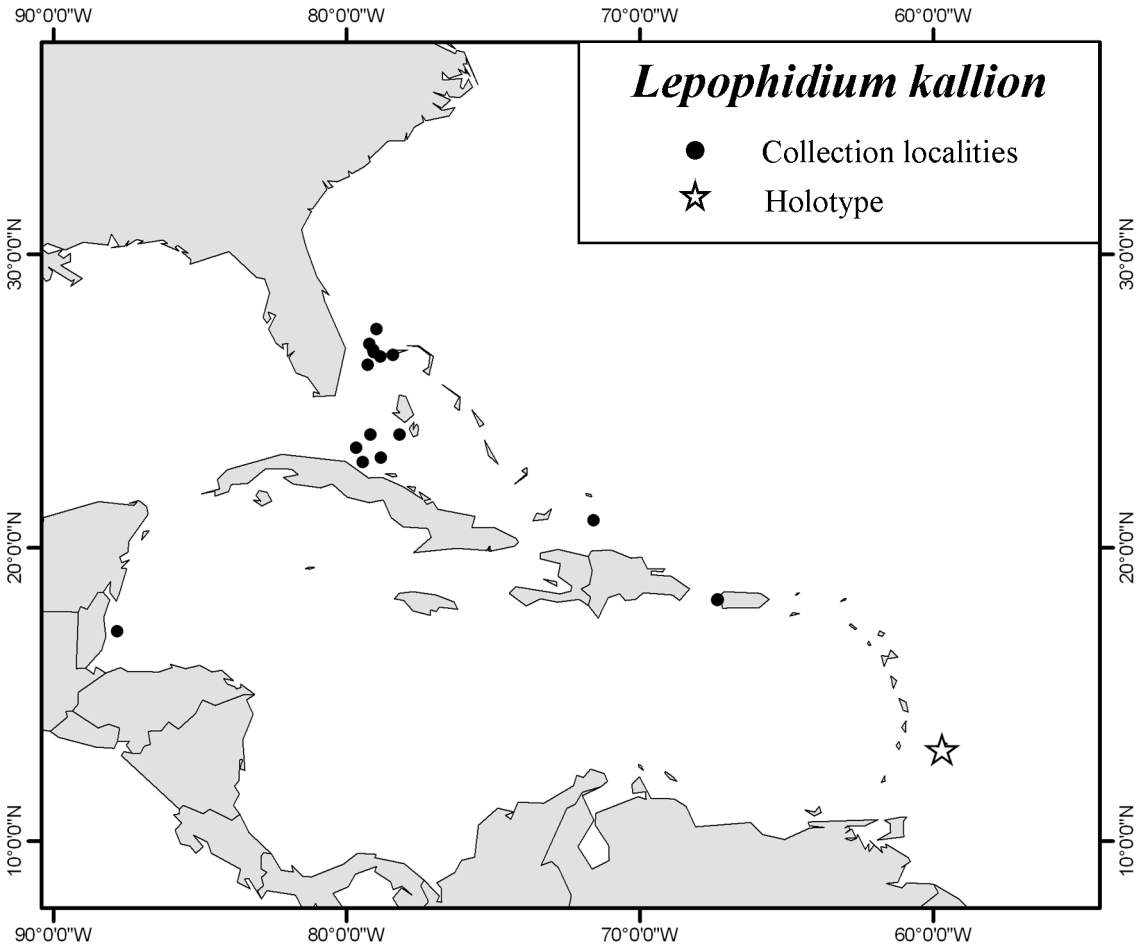

Figure 11. Distribution of *Lepophidium kallion.*

Antillean chain to Barbados. One collection from Belize indicates a potentially more widespread distribution (Fig. 11). It occurs benthically from 366–530 m, based on specimen records. We also have an excellent underwater photograph of an individual on the bottom off St. Croix. This was taken 29 January 1963 in about 600 fms (1097 m) and was sent to us from WC Schroeder via GW Mead. This is arguably the deepest dwelling species of *Lepophidium*.

Size

The largest specimen of *Lepophidium kallion* is 166 mm in standard length.

Lepophidium marmoratum (Goode & Bean 1885)

Marbled Cusk-eel

(Goode & Bean 1896: Fig 308)

Leptophidium marmoratum Goode & Bean 1885:423—original description; type locality: Albatross station 2350, 23°20′39″ N, 82°20′21″ W in 213 fms (390 m). Goode & Bean 1896:348, fig. 308—description largely repeated.

Lepophidium marmoratum. - Jordan & Evermann 1896:484—referred to *Lepophidium*; description compiled. Robins 1959a:363, fig. 1b—gill raker development illustrated. Robins 1959b:6—compared to *L. kallion*. Robins 1960:94—contrasted with *L. jeannae* and *L. pheromystax*. Bullis & Thompson 1975:59—Oregon collection stations. Gordon et al. 1984:312—meristic data. Nielsen & Robins 2003:968—distribution.

Description

Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae are usually 14 (15), caudal vertebrae 55–57 (58), total vertebrae usually 70–71 (69–72); dorsal-fin rays 120–130, anal-fin rays 103–110, pectoral-fin rays usually 22–23 (20–24); pyloric caeca usually 3–4 (5) in two tiers (2–4 + 1). There are three rudimentary gill rakers on the upper arm of the first gill arch, rarely one or four, usually seven or eight developed rakers on the lower arm (rarely nine), and usually no rudimentary rakers anteriorly on the arch (occasionally one and rarely three). The total gill-raker count is usually 10–12 (9–13). The pattern of gill-raker development has the developed rakers progressively shorter anteriorly as was illustrated by Robins (1959a:fig. 1b). Compared to *L. kallion, L. marmoratum* has lower vertebral counts, lower dorsal- and anal-fin ray counts and higher gill-raker counts. The dorsal-fin origin is between neural spines 4–5 (32 specimens) and rarely between 3–4 (six specimens) or 5–6 (one specimen).

Measurements of body parts expressed as a percentage of standard or head length are given in Tables 12–26.

The head and body are pale tan with dark brown spots on the dorsum from the interorbital area to the dorsal-fin origin. There are usually one or two rows of dark spots, somewhat smaller than the eye, along the upper side, one row above the lateral line, the second, if present, below the lateral line. The dorsal and anal fins have a blackish edge which may be interrupted posteriorly in the dorsal fin in some specimens. The roof of the mouth is dusky, especially posteriorly; the branchial cavity is generally dusky with some sprinkling of melanophores on the gill bars, but the area below and behind the gills is usually pale. The entire gut is blackish, although part or all of the stomach is pale in some specimens.

The snout is not fringed.

The first rib is thickened in males.

The opercular spine is long and straight.

Distribution

Lepophidium marmoratum occurs along the entire western edge of the Bahamas to Cuba and along the Antilles chain to the Virgin Islands (Fig. 12). It also occurs in the western Caribbean Sea from Yucatan to Nicaragua. It occurs benthically from 155–516 m, usually below 300 m. It has been taken with *L. kallion* at several stations.

Size

The largest specimen is 222 mm in standard length.

Lepophidium zophochir new species

Sooty Cusk-eel

(Fig. 13)

Lepophidium brevibarbe. - Arai 1983:226—color photograph, description, misidentification.

Comparative Diagnosis

Lepophidium zophochir is one of the few

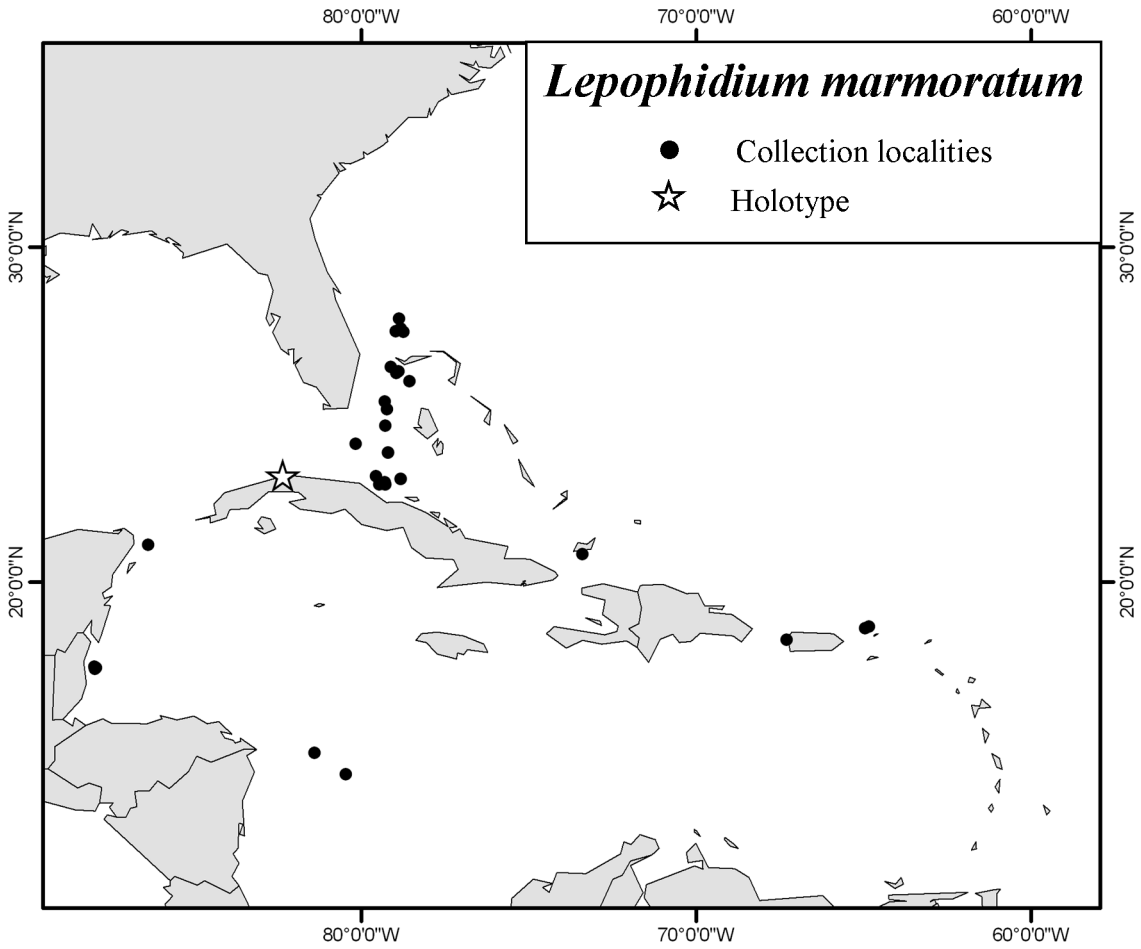

Figure 12. Distribution of *Lepophidium marmoratum.*

Figure 13. Holotype of *Lepophidium zophochir,* UF 182222, 176 mm SL, 09°39′ N, 59°47′ W in 182 m, OREGON sta. 1986, 4 Nov. 1957.

species of *Lepophidium* with a pigmented gut. The Pacific species *Lepophidium inca* and *L. hubbsi* possess a blackish esophagus, caeca, and anterior gut. Such pigment is more extensive in *L. kallion* and *L. marmoratum* – the entire gut is blackish in both species. *Lepophidium zophochir* is distinguished from *L. inca* by total vertebrae (74-77 vs. 71-73; Table 3) from both *L. inca* and *L. hubbsi* by averages of body depth as a percentage of standard length at occiput (10.6% vs. 12.0% and 13.4% respectively; Table 14) origin of dorsal fin (11.4% vs. 12.6% and 14.2% respectively; Table 15) origin of anal fin (10.5% vs. 11.5% and 11.7%; Table 16) average long pelvic ray length as a percentage of standard length (8.8% vs. 6.0% and 7.1% respectively; Table 21) and pectoral fin length as a percentage of standard length (8.8% vs. 10.8% and 11.9% respectively; Table 23). *Lepophidium zophochir* is distinguished from *L. kallion* and *L. marmoratum* by head and body without any pattern of spots, bars, or blotches (see descriptions for those species), from *L. marmoratum* by total number of vertebrae (74-77 vs. 69-72; Table 3) dorsal rays (130-139 vs. 121-130; Table 4) and from *L. kallion* and *L. marmoratum* by similar differences in body depth as outlined above for *L. hubbsi* and *L. inca* (Tables 14, 15, and 16). *L. zophochir* is a slender-bodied species. *Lepophidium zophochir* is most similar to the also slender-bodied *Lepophidium entomelan* (see comments section for that species account). *Lepophidium zophochir* is distinguished from *L. entomelan* in having more precaudal vertebrae (usually 16 vs. 15; Table 1), more total vertebrae (usually 75–76 vs. 72–74; Table 3), more dorsal- and anal-fin rays, and a somewhat lower total gill-raker count (Tables 4, 5, and 10). The longer pelvic ray is longer than in *L. entomelan* (no overlap, Table 21) and the pectoral fin is distinctly shorter (Table 23). The darker external pigmentation and especially the blackish pectoral fin also distinguish *L. zophochir* from *L. entomelan*.

Description

Frequency distributions of the meristic data are given in Tables 1–11. Precaudal vertebrae are usually 16 (14–17), caudal vertebrae usually 59–60 (58–61), total vertebrae usually 75–76 (74–77); dorsal-fin are rays usually 132–137 (130–139), anal-fin rays usually 111–114 (108–116), pectoral-fin rays 22–24 (21–27); pyloric caeca are usually 4–7 (3–8), in two rows, 3–7 in one row, one in second. There are three rudimentary gill rakers on the upper arm of the first gill arch, very rarely two or four, usually five developed rakers (4–7) on the lower arm, and 0–3 rudiments (rarely 4–5) forward on the lower arm. The total gill-raker count is usually 10 (9–14). The developed rakers are progressively shorter anteriorly, but the distinction between the shortest developed raker and the first rudiment is sharp. The dorsal-fin origin is between neural spines 4–5 (73 specimens) and rarely between 3–4 (one specimen) or 5–6 (5 specimens).

Measures of body parts expressed as a percentage of standard or head length are given in Tables 12–26. The snout is squared off in *L. zophochir,* with the front margin nearly vertical. The shorter pelvic ray is only about ⅓ the length of the longer pelvic ray and averages only 3% of the standard length (Tables 21–22).

The head and body are dark brown throughout; the pectoral fin, opercular region, and maxillary are blackish. The vertical fins are generally dark with a blacker edge and the anal fin tends to be blackish throughout. The orobranchial cavity and the entire gut are blackish. The color and general facies of this species are beautifully shown by Arai (1983:226).

Distribution

Lepophidium zophochir occurs along the Atlantic Coast of northern South America from the Guianas to Trinidad and along the Caribbean coast of Venezuela and northern Colombia (off Barranquilla) (Fig. 14). Benthically, it occurs between 173 and 293 m in the Atlantic and between 192 and 348 m in the Caribbean Sea.

Size

The largest specimen is 243 mm in standard length.

Name

From the Greek *zophos* (darkness) and *cheier* (hand; i.e., the pectoral fin) in reference to the blackish pectoral fin.

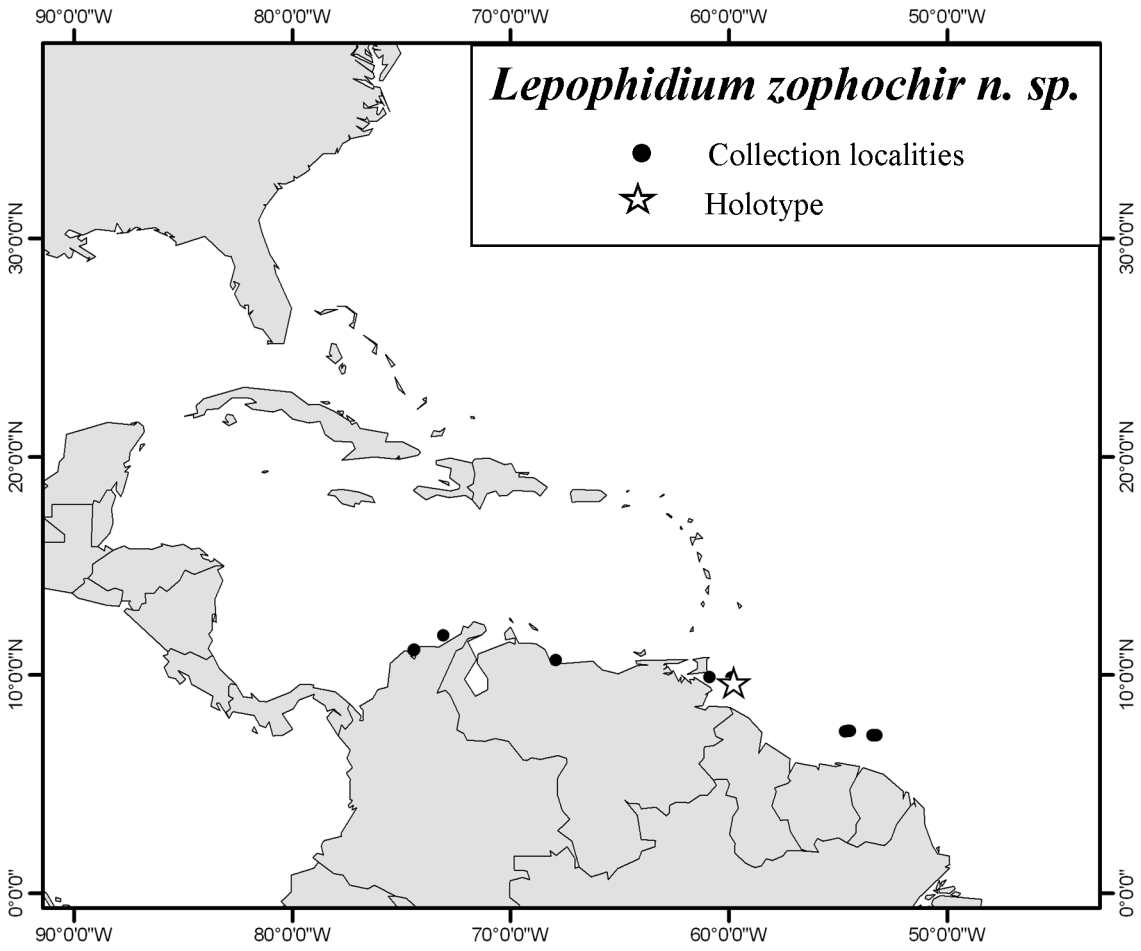

Figure 14. Distribution of *Lepophidium zophochir* n. sp.

Type Specimens

See material examined (Appendix 1).

Lepophidium entomelan **new species**

Blackthroat Cusk-eel

(Fig. 15)

Lepophidium brevibarbe. - Robins 1959a:363, fig. 1d—misidentification. McCaffrey 1981:96—in part; 318—one of two specimens from Tursiops station 7018-07; 321—specimen from Tursiops station 7018-08; 454—specimens from Tursiops station 7110-13; 515—specimen from Tursiops station 7120-14; 517—specimens from Tursiops station 7120-31; 564—specimens from Tursiops station 7127-16; misidentifications.

Lepophidium profundorum. - McCaffrey 1981:99—in part; 541—specimens from Tursiops station 7127-01; misidentifications.

Comparative Diagnosis

Lepophidium entomelan is one of a few species of *Lepophidium* with a pigmented gut. The Pacific species *Lepophidium inca* and *L. hubbsi* possess a blackish esophagus, caeca, and anterior gut. Such pigment is more extensive in *L. kallion* and *L. marmoratum* – the entire gut is blackish in both species. *Lepophidium entomelan* is distinguished from *L. inca* by anal rays (103-112 vs. 112-121; Table 5) and from *L. inca* and *L. hubbsi* by various measures of body depth (Tables 14 and 15), distance from snout tip to occiput as a percentage of standard length (Table 18), head length as a percentage of standard length (Table 17), and pectoral fin length as a percentage of standard length (Table 23). *Lepophidium entomelan* is distinguished from *L. kallion* and *L. marmoratum* by head and body without any pattern of spots, bars, or blotches (see descriptions for those species), from *L. marmoratum* by long pelvic ray length as a percentage of standard length (4-7% vs.

10-14%; Table 21) and short pelvic ray length as a percentage of standard length (3-6% vs. 8-12%; Table 22).

Lepophidium entomelan is most similar to the similarly slender-bodied *Lepophidium zophochir*. *Lepophidium entomelan* is distinguished from *L. zophochir* in having fewer precaudal vertebrae (usually 15 vs. 16; Table 1), fewer total vertebrae (usually 72-74 vs. 75–76; Table 3), fewer dorsal- and anal-fin rays, and a somewhat higher total gill-raker count (Tables 4, 5, and 10). The longer pelvic ray is shorter than in *L. zophochir* (no overlap, Table 21) and the pectoral fin is distinctly longer (Table 23). The lighter external pigmentation and especially the clearer pectoral fin also distinguish *L. entomelan* from *L. zophochir*.

Description

Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae are usually 15 (14–16), caudal vertebrae usually 57–59 (56–60), total vertebrae usually 72–74 (71–75); dorsal-fin rays are usually 128–132 (125–133), anal-fin rays usually 107–110 (103–114), pectoral-fin rays usually 22–24 (20–25); pyloric caeca are usually 4–6 (3–7) in two rows. There are three rudimentary rakers on the upper arm of the first arch (rarely two or four). One specimen has one developed raker on the upper arm; this being correlated with two rudiments. There are 5–7 developed rakers (very rarely eight) on the lower arm and usually 3–6 rudiments anteriorly (0–6). Total gill rakers are 10–15 (rarely to 18). The distinction between the shortest developed raker and the first rudiment is sharp. The dorsal-fin origin is usually between neural spines 4–5 (77 specimens) and rarely between 3–4 (eight specimens) or 5–6 (five specimens).

Measures of body parts expressed as a percentage of standard or head length are given in Tables 12–26. The snout is usually pointed in lateral view, with the front margin angled somewhat rearward toward the mouth. The longer pelvic ray is 4–6 (7) % of standard length, the shorter pelvic ray 3–6% (Tables 21–22).

The head and body are brown but the pectoral fin is usually clear or lightly pigmented. The vertical fins are dark edged. The orobranchial cavity is very dark and this shows through the skin, so that the opercle and the branchiostegal membranes appear very blackish, hence the common name. The entire gut is blackish.

Distribution

Lepophidium entomelan occurs around the Gulf of Mexico and in the western Caribbean Sea from Mexico to Nicaragua (Fig. 16). Benthically it occurs between 247 and 439 m in the western Caribbean and between 122 and 229 m in the Gulf of Mexico. One record from the Straits of Yucatan in the extreme southeastern Gulf of Mexico is from 55 meters (Oregon station 3640) and may involve an incorrect station number because corrected data sheets were issued for all Cruise 78 stations. We regard this shallow record as spurious.

Geographical Variation

We have separated in the tables meristic and morphometric data for the western Caribbean region and the Gulf of Mexico (including the one Atlantic coast record).

Size

The largest specimens of *Lepophidium entomelan* are 256 mm (Gulf of Mexico) and 193 mm (western Caribbean Sea) in standard length.

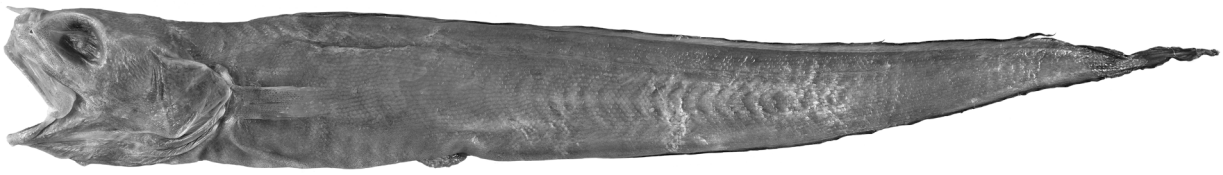

Figure 15. Holotype of *Lepophidium entomelan* n. sp., UF 214242, 230 mm SL, 29°13′ N, 88°11′ W in 183 m, OREGON sta. 4583, 12 Dec. 1963.

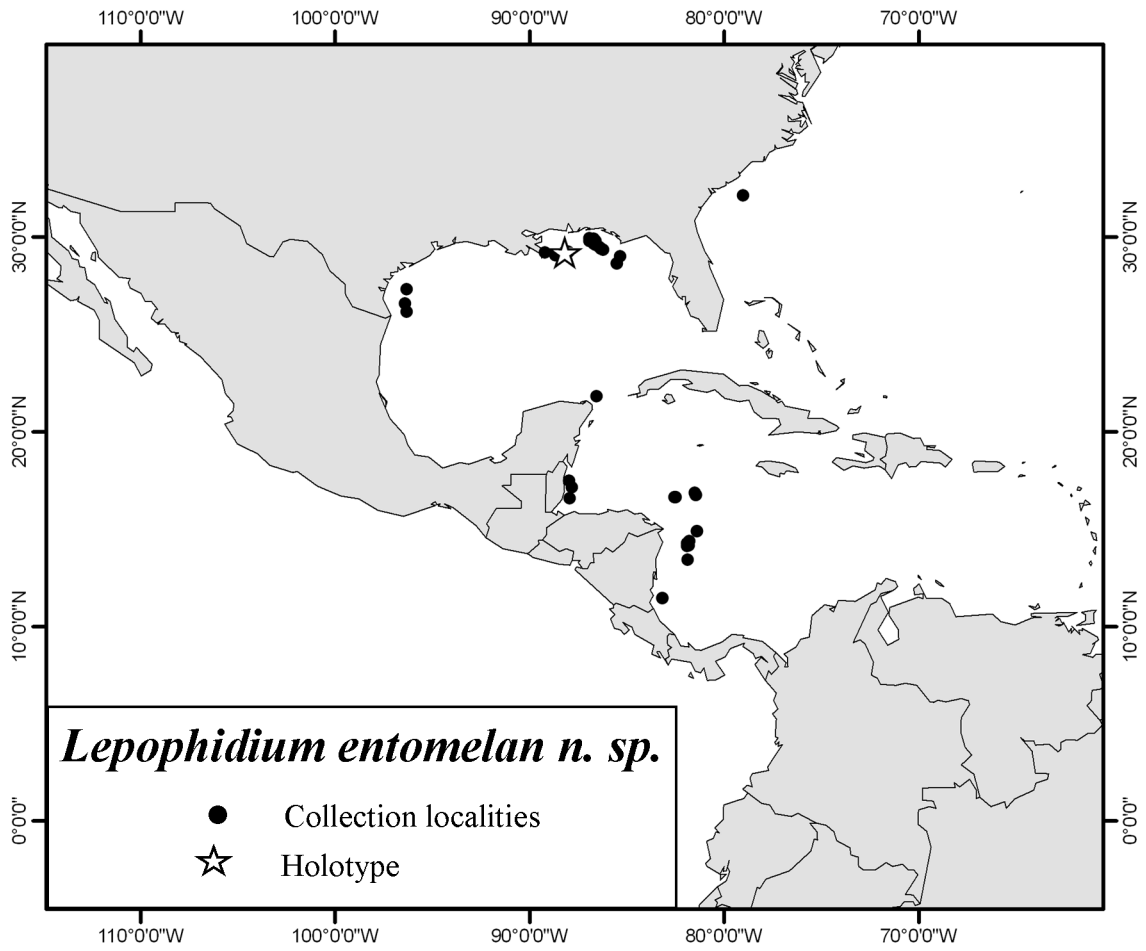

Figure 16. Distribution of *Lepophidium entomelan* n. sp.

Name

Named from the Greek *entos* (within) and *melan* (black), in reference to the very dark orobranchial region and gut.

Type Specimens

See material examined (Appendix 1).

Comments

Lepophidium zophochir and *L. entomelan* are very similar disjunct species, separated by a gap between Colombia and Nicaragua in the southern Caribbean Sea, a gap that likely is an artifact of collection effort. We considered describing *L. entomelan* as a subspecies of *L. zophochir* but this implies a more detailed knowledge than we have. The preceding differences argue for species recognition at this time.

***Lepophidium cultratum* new species**
Blackear Cusk-eel
(Fig. 17)

Lepophidium cultratum. - Ramjohn 1999:89—*nomen nudum,* occurrence in Trinidad.

Comparative Diagnosis

Lepophidium cultratum resembles a number of congeners in meristic and mensural features and is distinguished largely by other means. *Lepophidium cultratum* is distinguished from *L. crossoutm, L. kallion*, and *L. wileyi* in lacking a fringed snout (see accounts for those species). *Lepophidium cultratum* shares certain aspects of a pigmented foregut with *L. entomelan*, *L. zophochir*, *L. kallion*, *L. marmoratum*, *L. inca* and *L. hubbsi*, but is distinguished by a pale hindgut. The head and body of *L. cultratum* are without pattern – distinguishing it further from *L. kallion*

and *L. marmoratum*, in addition to *L. gilmorei*, *L. jeannae*, *L. pheromystax*, *L. profundorum*, and *L. staurophor*. There is no large spot in the dorsal fin as seen in the Pacific species *L. stigmatistium* and *L. cultratum* lacks the distally expanded anterior rib or haltere seen in males of that species and *L. brevibarbe*, *L. prorates, and L. negropinna*. The presence of rudiments alternating between the developed rakers on the lower arm of the first gill arch in *L. aporrhox* and *L. robustum* is sufficient to distinguish these species from *L. cultratum*, but further distinction can be made in number of caudal vertebrae, total vertebrae, and anal rays (Tables 2, 3, and 5 for *L. aporrhox*) and dorsal rays (Table 4 for *L. aporrhox* and *L. robustum*). Similarly, *Lepophidium cultratum* is distinguished from *L. collettei* and the Pacific species, *L. microlepis*, by number of caudal vertebrae (both species; Table 2) total vertebrae (*L. collettei* only; Table 3) dorsal and anal rays (*L. collettei* only; Tables 4 and 5). In all of the preceding comparisons of meristic features there is no overlap between *L. cultratum* and comparative species. Slight overlap exists in comparison of *L. cultratum* to *L. microlepis* in total vertebrae and dorsal rays (Tables 3 and 4). The most distinctive feature of *Lepophidium cultratum* is the blackish opercle. See description below.

Description

Frequency distributions of meristic data are given in Tables 1–11. There are 15 (rarely 14) precaudal vertebrae, caudal vertebrae are usually 57–58 (56–59), total vertebrae usually 72–73 (70–74); dorsal-fin rays are usually 130–135 (128–137), anal-fin rays usually 108–112 (105–114), pectoral-fin rays 23–25 (21–26) with a sharp mode at 24. There are 3–4 (rarely two) pyloric caeca in two rows (most often 2 + 1). There are 3–4 (rarely two or five) rudimentary gill rakers on the upper arm of the first gill arch, 6–7 (5–8) developed rakers on the lower arm, and usually 0–3 (5) rudimentary rakers forward on the lower arm. Total gill rakers usually 10–13 (9–15), with the developed rakers progressively shorter but the distinction between the shortest developed raker and the first rudiment is sharp. The dorsal-fin origin is usually between neural spines 4–5 (65 specimens) and less frequently between 3–4 (25 specimens).

Frequency distributions of measures of body parts as a percentage of standard or head length are given in Tables 12–26. The head and body are brown with the chest and belly whitish. The fins are unmarked except for a dark edge to the dorsal and anal fins and a dusky central part of the caudal fin. The opercle appears distinctly blackish because the pigment shows through from the gill chamber, hence the common name. The orobranchial chamber, including the gill bars, is blackish, as is the esophagus. The stomach (or at least its posterior part) and the entire hindgut are pale.

Distribution

Lepophidium cultratum occurs along the southern Caribbean Sea from eastern Honduras and southern Nicaragua to French Guiana (Fig. 18). Benthically it ranges from 91–329 m.

Size

The largest specimen of *Lepophidium cultratum* is 308 mm in standard length. This is the largest Atlantic species of the genus.

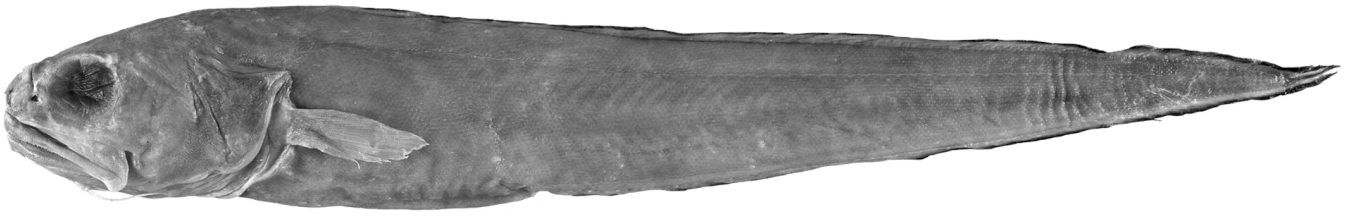

Figure 17. Holotype of *Lepophidium cultratum* n. sp., UF 211765, 308 mm SL, 09°18′ N, 80°22′ W in 229 m, Oregon sta. 3590, 29 May 1962.

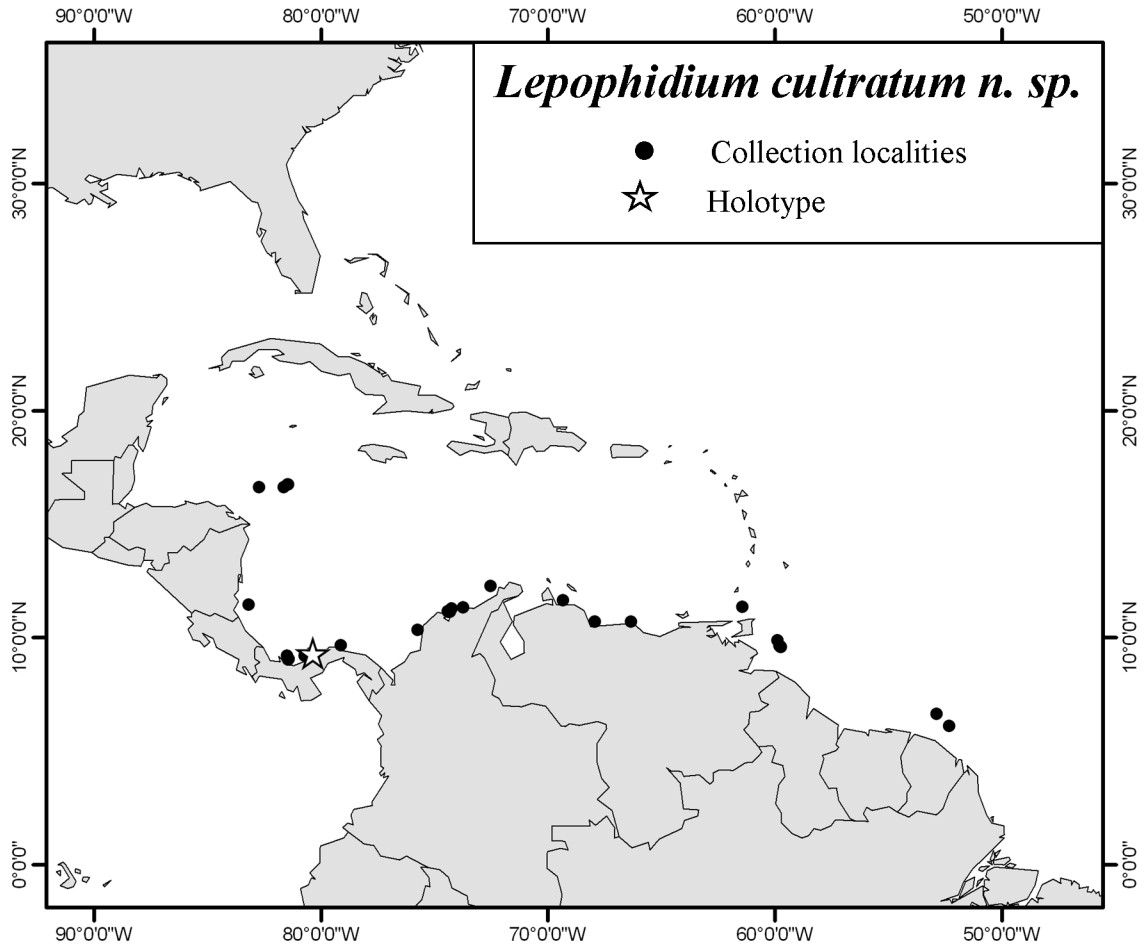

Figure 18. Distribution of *Lepophidium cultratum* n. sp.

Name

The name is derived from the Latin *cultratus,* meaning knife-shaped.

Type Specimens

See material examined (Appendix 1).

***Lepophidium crossotum* new species**
Whitespot Cusk-eel
(Fig. 19)

Lepophidium brevibarbe. - McCaffrey 1981:300—specimen from Tursiops station 7012-18; 356—specimen from Tursiops station 7020-40; 372—specimens from Tursiops station 7023-07; 409—specimens from Tursiops station 7102-19; 422—specimens from Tursiops station 7104-09; 512—specimens from Tursiops station 7120-13; misidentifications.

Lepophidium sp. - McCaffrey 1981:422—specimen from Tursiops station 7120-32.

Lepophidium cervinum. - McCaffrey 1981:340—specimen from Tursiops station 7016-06, misidentification.

Comparative Diagnosis

Among *Lepophidium* only *L. crossotum*, *L. kallion*, and *L. wileyi* have a fringed snout. *Lepophidium crossotum* is distinguished from both *L. kallion* and *L. wileyi* by fewer total vertebrae (67-69 vs. 71-75 and 70-75, respectively; Table 3) and average lateral line length as a percentage of standard length (87.8% vs. 88.8% and 91.5%, respectively; Table 26). *Lepophidium crossotum* may be further distinguished from *L. kallion* on the basis of dorsal rays (117-125 vs. 129-137; Table 4), anal rays (99-106 vs. 108-114; Table 5) average post orbital length as a percentage of head length (48.6% vs. 56%; Table 12) average orbit diameter as a percentage of head length (30.9% vs. 25.4%; Table 13) average body depth at occiput as a percentage of standard length (10.7% vs. 13.3%; Table 14) at origin of dorsal fin (11.5% vs. 14.5%; Table 15) and at origin of anal fin (10.1% vs. 11.9%; Table

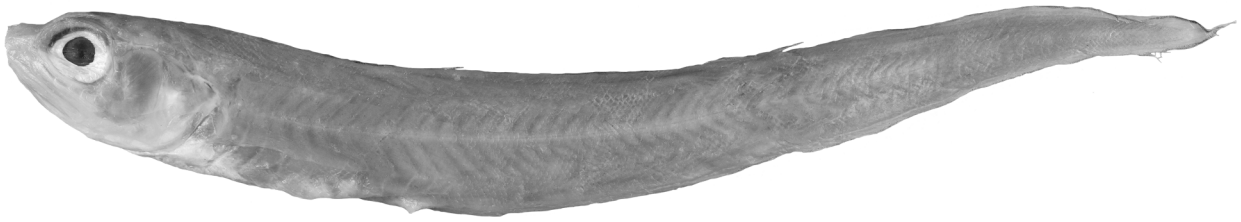

Figure 19. Holotype of *Lepophidium crossotum,* UF 217430, 138 mm SL, 24°23′-24′ N, 82°56′-57′ W in 82-97 m, GERDA sta. 572, 13 Apr. 1965.

16); average predorsal distance as a percentage of standard length (22.1% vs. 23.9%; Table 19) and average preanal distance as a percentage of standard length (35.6% vs. 39.6%; Table 20). The head and body color of *L. crossotum* is pale brown and without pattern vs. variably patterned in *L. kallion*. *Lepophidium crossotum* may be further distinguished from *L. wileyi* by typically fewer dorsal (117-125 vs. 124-135; Table 4) and anal rays (99-106 vs. 105-117; Table 5) average snout length as a percentage of head length (19.0% vs. 20.9%; Table 24), and average bony interorbit distance as a percentage of head length (14.5% vs. 18.6%; Table 25). The white spot present on the snout of *L. crossotum* (see description below) is lacking in *L. wileyi*.

Description

Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae are 14 (rarely 13), caudal vertebrae usually 54–55 (53–56), total vertebrae usually 68–69 (67); dorsal-fin rays are usually 119–120 (117–125), anal-fin rays usually 101–105 (99–106), pectoral-fin rays usually 20–21 (19–22); pyloric caeca are long, usually three (2–4) in two rows (usually 2 + 1). There are three (rarely two) rudimentary gill rakers on the upper arm of the first gill arch and 6–7 developed rakers (progressively shorter) on the lower arm. Most specimens lack rudimentary rakers on the lower arm but a few have one and one specimen had two. Total gill rakers on the first arch are usually 10 (9–11). The dorsal-fin origin is between neural spines 3–4 (20 specimens) or 4–5 (40 specimens).

Measures of body parts expressed as a percentage of standard or head length are given in Tables 12–26.

The head and body are pale brown without pattern. The belly and chest are pale, even whitish. The fins are clear except for a blackish edge to the dorsal and anal fins; this pigment extends to the tip of the caudal fin. In life there is a bright white spot in the symphyseal groove where the upper jaws meet, and this pigment extends slightly into the mouth. This spot persists in many preserved specimens and is the basis for the common name. The roof of the mouth, the pharynx, and the gill bars are blackish, but the opercular lining, branchiostegal membranes, and region of the isthmus are whitish. The esophagus and the front ½ of the stomach are blackish; the hindgut is pale.

The symphyseal notch is very well developed and nearly circular and the nasal rim above it is fringed.

Distribution

Lepophidium crossotum occurs along the Atlantic coast of the US from North Carolina (south of Cape Hatteras) to southern Florida and in the eastern Gulf of Mexico from western Florida to Yucatan (Fig. 20). In the western Gulf, it is known from a single collection taken approximately 120 miles SSE of the Texas/Louisiana border. Benthically it occurs from 91–192 m with one collection from 280 and another at 384 m. This is a common species of the deep section of the continental shelf and upper slope.

Size

The largest specimen of *Lepophidium crossotum* is 168 mm in standard length.

Name

Name derived from the Greek *krossotos,*

meaning fringed, in reference to the condition of the snout tip.

Type Specimens

See material examined (Appendix 1).

***Lepophidium wileyi* new species**
Fringed Cusk-eel
(Fig. 21)

No literature applies to this species.

Comparative Diagnosis

Among *Lepophidium*, only *L. wileyi*, *L. crossotum*, and *L. kallion* have a fringed snout. *Lepophidium wileyi* is distinguished from *L. crossotum* and *L. kallion* by average snout length as a percentage of head length (20.9% vs. 19.0% and 19.2%, respectively; Table 24), average bony interorbit distance as a percentage of head length (18.6% vs. 14.5% and 14.8%, respectively; Table 25) and average lateral line length as a percentage of standard length (91.5% vs. 87.8% and 88.8%, respectively; Table 26). *Lepophidium wileyi* is further distinguished from *L. crossotum* by total vertebrae (70-75 vs. 67-69; Table 3) and typically more dorsal (124-135 vs. 117-125; Table 4) and anal rays (105-117 vs. 99-106; Table 5). *Lepophidium wileyi* lacks the white spot present on symphyseal region of the snout of *L. crossotum*. *Lepophidium wileyi* is further distinguished from *L. kallion* by average post orbital head length as a percentage of head length (50.7% vs. 56.0%; Table 12) average orbit diameter as a percentage of head length (29.5% vs. 25.4%; Table 13) and average preanal distance as a percentage of standard length (36.7% vs. 39.6%; Table 20). The head and body color of *L. wileyi* is tan and without pattern vs. variably patterned in *L. kallion*.

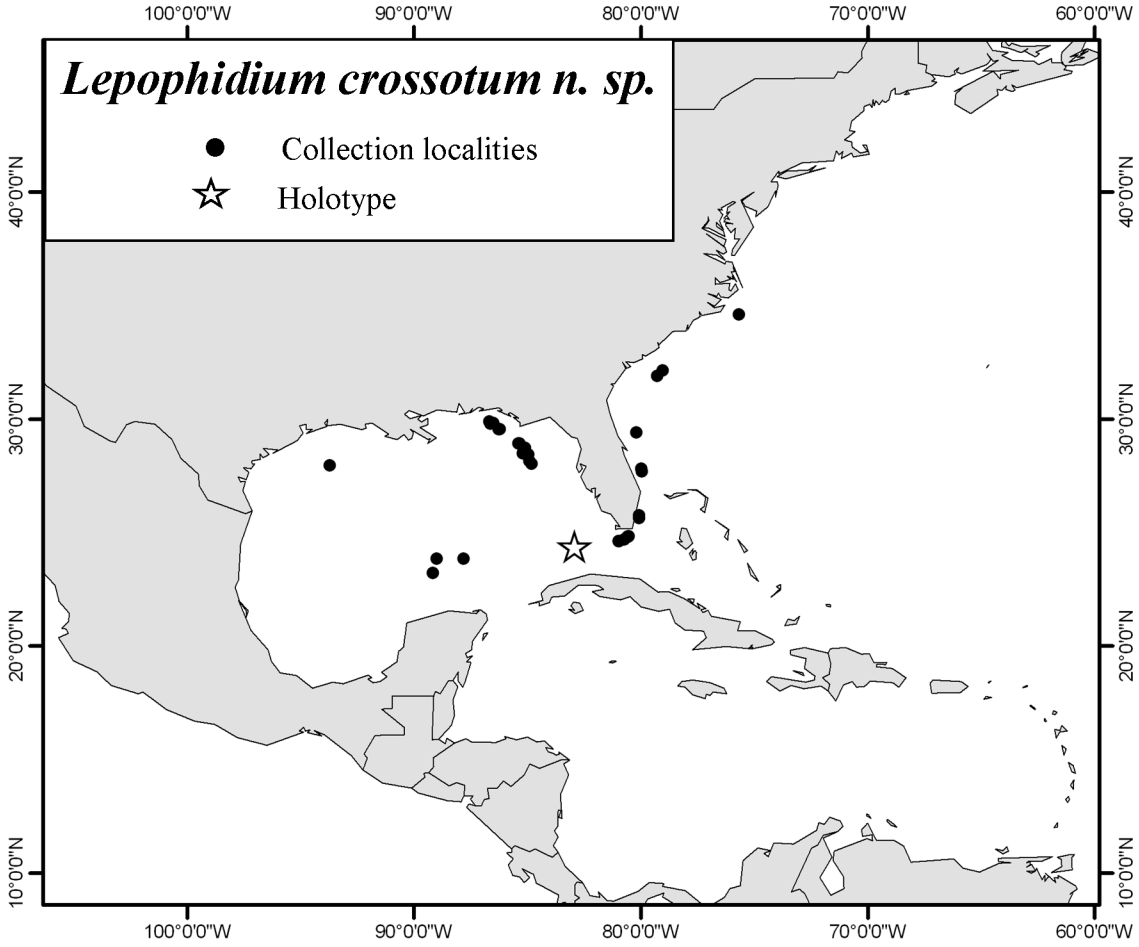

Figure 20. Distribution of *Lepophidium crossotum* n. sp.

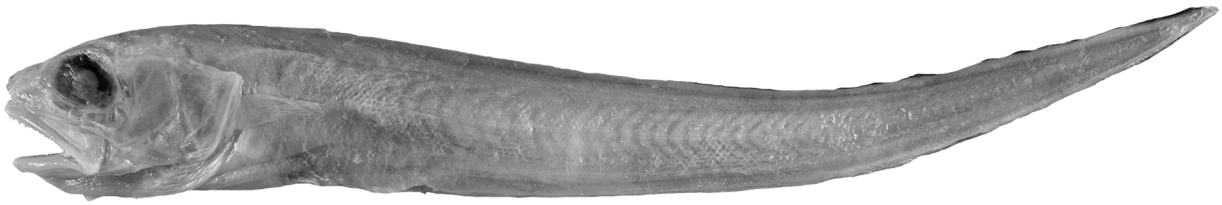

Figure 21. Holotype of *Lepophidium wileyi* n. sp., UF 229501, 164 mm SL, 20°52′ N, 73°20′ W in 329 m, OREGON sta. 10852, 14 Dec. 1969.

Description

Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae are 14–15, caudal vertebrae usually 57–59 (56–60), total vertebrae usually 71–74 (70–75); dorsal-fin rays are usually 127–133 (124–135), anal-fin rays usually 107–113 (105–117), pectoral-fin rays usually 21–23 (20–25); pyloric caeca are usually 4–5 (3–6) in one or two whorls. There are three rudimentary rakers (rarely two or four) on the upper arm of the first gill arch and one specimen had one developed raker on the upper arm. There are usually eight (7–9) developed rakers on the lower arm. Most specimens lack rudimentary rakers anteriorly on the lower arm (rarely one or two). Total gill rakers 10–12 (13). The dorsal-fin origin is usually between neural spines 4–5 (113 specimens) and rarely between 3–4 (10 specimens) or 5–6 (two specimens).

Measures of body parts expressed as a percentage of standard or head length are given in

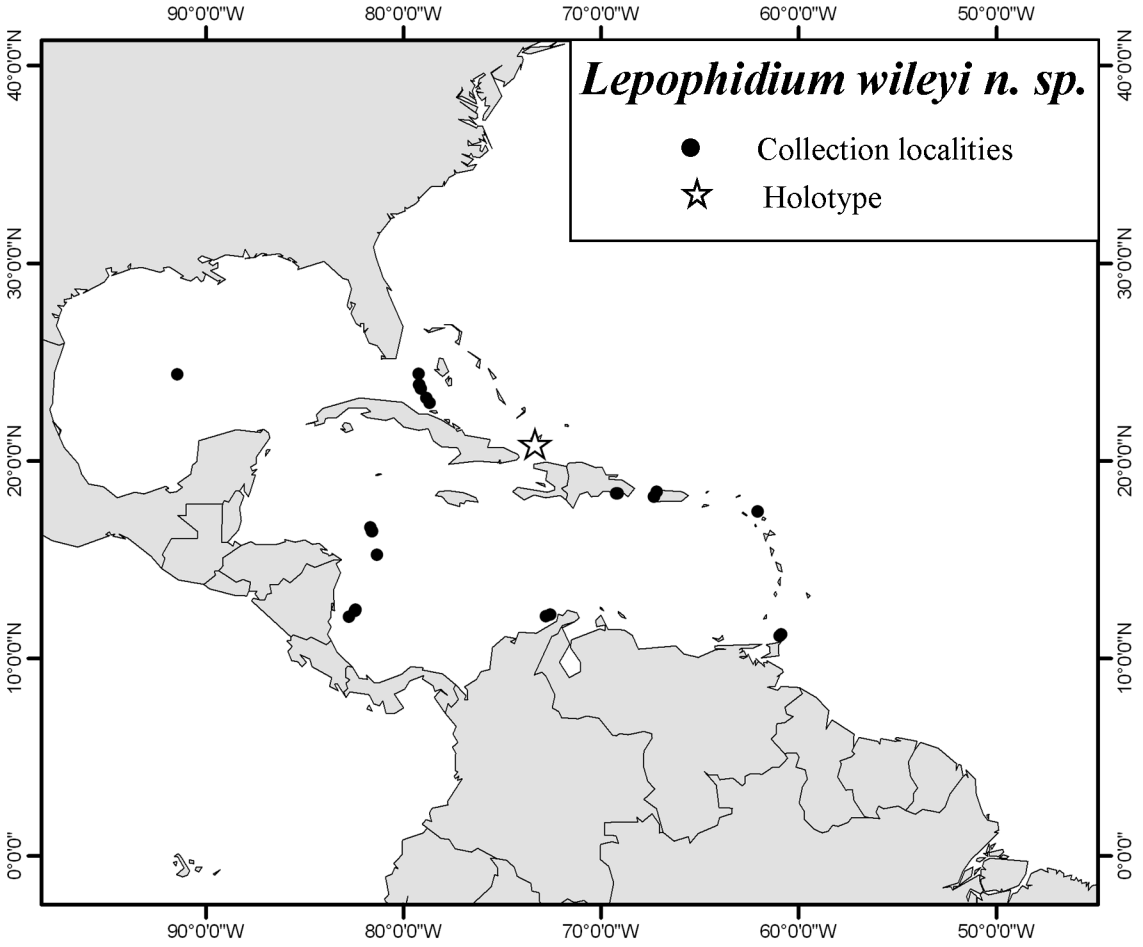

Figure 22. Distribution of *Lepophidium wileyi* n. sp.

Tables 12–26.

The head and body are tan without distinctive markings. The belly and chest and underside of the head are paler, somewhat whitish. The fins are unmarked except for blackish edge to the dorsal and anal fins, and this pigment continues onto the caudal fin. The dark edge is frequently poorly developed in the anal fin. The roof of the mouth, the gill bars, and anterior and lower parts of the gill chamber are blackish, but the inside of the opercle is clear so that the branchial chamber is distinctly bicolored. The esophagus is blackish; the stomach and hindgut are pale. The symphyseal region of the upper jaw is distinctly grooved as in *L. crossotum,* but without white pigment.

The nasal rim is fringed.

Distribution

Lepophidium wileyi occurs from the western edge of the Bahamas and Cuba along the Antillean chain to Trinidad and in the southern, eastern, and western Caribbean Sea (Fig. 22). One collection is known from the Gulf of Mexico northwest of the Yucatan Peninsula. Benthically it occurs between 60 and 402 m, usually between 200–300 m.

Size

The largest specimen is 209 mm in standard length.

Name

This species is named for our esteemed colleague, Edward O. Wiley, who welcomed the first author into the KU Natural History Museum's Ichthyology Division following his retirement from academe.

Type Specimens

See material examined (Appendix 1).

Comments

Lepophidium crossotum and *L. wileyi* form a distinctive sister species pair, *L. crossotum* occurring along the coast of the southeastern United States and in the Gulf of Mexico, *L. wileyi* with a Caribbean and Antillean distribution. This follows the continental versus insular distributional pattern discussed by Robins (1971, 2003).

Lepophidium stigmatistium **(Gilbert 1890)**

Mexican Cusk-eel

Leptophidium stigmatistium Gilbert 1890:109–110—description; type locality: 24°30.5′ N, 110°29.0′ W, in 205 m).

Lepophidium stigmatistium. - Jordan & Evermann 1896:485—referred to genus *Lepophidium,* compiled. Robins 1962:494—characters, synonymy. Robins & Lea 1978:717, 726—compared to *L. microlepis*. Gordon et al. 1984:313—meristic data. Lea 1995:1346—characters, distribution.

Description

This account is modified from that given by Robins (1962) and augmented by additional meristic and morphometric data. Frequency distributions of meristic data are given in Tables 1–11. There are 14 (rarely 13) precaudal vertebrae, caudal vertebrae are usually 53–54 (55), total vertebrae usually 81–82 (80–84); dorsal-fin rays are 123–131, anal-fin rays 103–109, pectoral-fin rays usually 20–21 (19–24); pyloric caeca are usually six (5–7) in two whorls, usually 5–6 + 1. There are usually four rudimentary gill rakers (3–6) on the upper arm of the first arch and eight (7–10) developed rakers on the lower arm, with 5–9 rudimentary rakers anteriorly on the lower arm. Total gill rakers are 16–19. The dorsal-fin origin is usually between neural spines 4–5 (11 specimens) and rarely between 2–3 or 3–4 (one specimen each).

Frequency distributions of measures of body parts as a percentage of standard or head length are given in Tables 12–26.

The head and body are uniformly dusky brown with the belly, chest, and lower side of the head and opercle paler, almost silvery. The upper part of the opercle may appear dark because the dark pigment shows through from the gill chamber. A large dark blotch occupies the distal ⅘ of the dorsal fin between rays 4–14. The dorsal fin is clear anterior to this blotch, but posteriorly the distal ½ of the fin becomes progressively darker. The anal fin has a dark edge posteriorly. The roof of the mouth is blackish, but the oral chamber is otherwise pale. The branchial chamber is dark except for the gill bars. The esophagus is blackish, but the stomach and hindgut are pale.

Males have the anterior rib enormously

expanded distally into a nearly circular haltere that is larger than the eye. This is much larger than the haltere development described for *L. brevibarbe, L. prorates,* and *L. negropinna*.

Distribution

Lepophidium stigmatistium is known only from the Gulf of California (Bahía de Los Angeles in the northern Gulf to Bahía de La Paz in the south) and from the outer coast of Baja California (Cedros Island) to near the southern tip of the peninsula (Fig. 23). Benthically it occurs from 55–238 m in the Gulf and 73–104 m off the outer coast.

Size

The largest specimen of *Lepophidium stigmatistium* is 246 mm in standard length.

***Lepophidium microlepis* (Gilbert 1890)**

Finescale Cusk-eel

Leptophidium microlepis Gilbert 1890:109—in part, one specimen from Albatross station 3015, the lectotype; type locality 29°19′ N, 112°50′ W, in 265 m.

Lepophidium microlepis. - Jordan & Evermann 1896:485—referred to genus *Lepophidium,* compiled. Robins 1962:494–495—description, lectotype designated. Robins & Lea 1978:716—characters, synonymy. Gordon et al. 1984:313—meristic data. Lea 1995:1345—characters, distribution, in part.

Lepophidium microlepis microlepis. - Robins & Lea 1978: 717–721—characters, distribution.

Description

This account is modified from the detailed descriptions by Robins (1962) and Robins and Lea (1978) and augmented with additional meristic data. Frequency distributions of meristic data are given

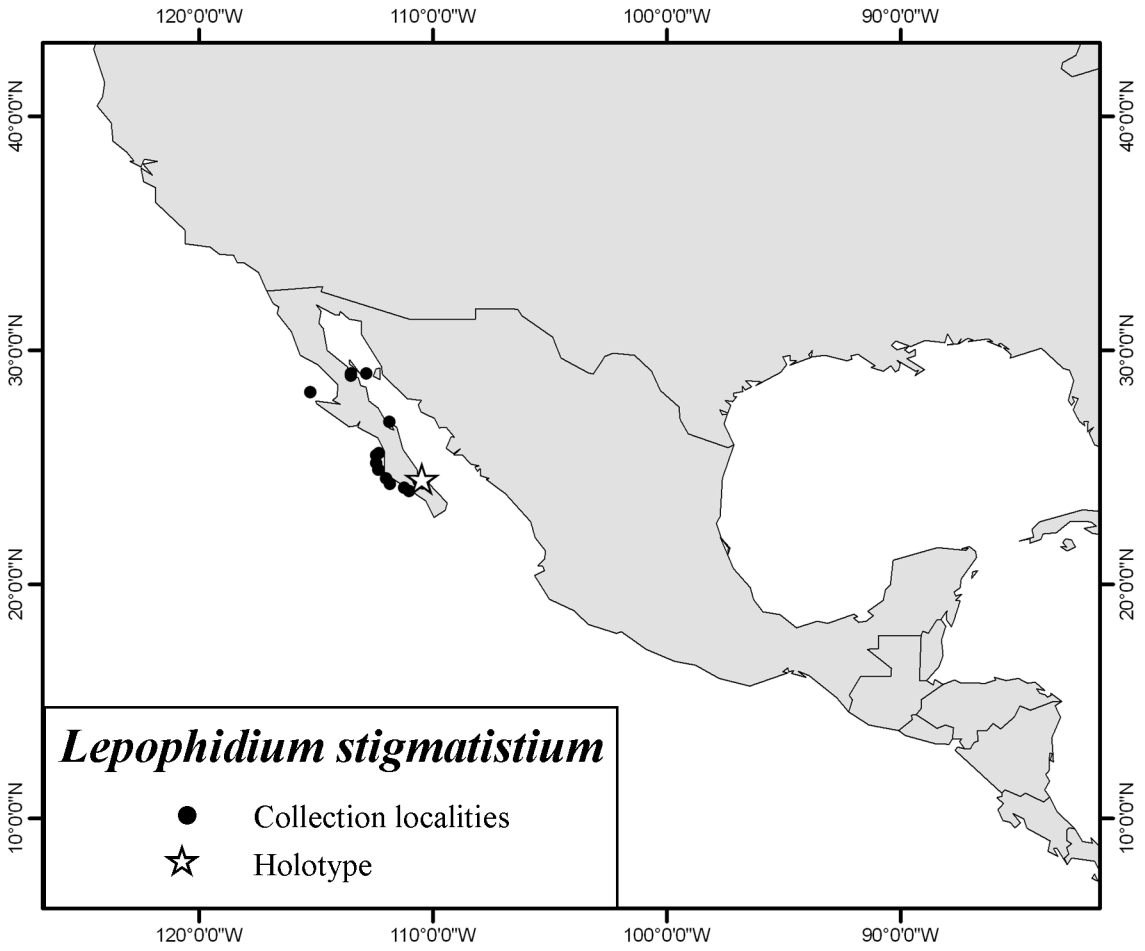

Figure 23. Distribution of *Lepophidium stigmatistium*.

in Tables 1–11. Precaudal vertebrae are usually 15 (14), caudal vertebrae usually 52–54 (51–55), total vertebrae usually 68–69 (66–70); dorsal-fin rays are usually 121–126 (117–128), anal-fin rays usually 101–105 (97–108), pectoral-fin rays usually 22–24 (21); pyloric caeca are usually 5–6 (8), typically 5 + 1. There are usually three (4) rudimentary gill rakers on the upper arm of the first arch and 4–5 (6) developed rakers on the lower arm with 2–5 rudimentary rakers anteriorly. Total gill rakers are usually 11–12 (10–15). We generally have not counted scale rows in *Lepophidium,* a tedious task at best, but Robins (1962:494) noted that there are almost 30 scale rows between the occipital line and the dorsal-fin origin, 14–15 rows between the dorsal-fin origin and the lateral line, and about 255 lateral scale rows. This is a fine-scaled species. The dorsal-fin origin is between neural spines 4–5 (36 specimens) and rarely between 3–4 (six specimens).

Frequency distributions of measures of body parts as a percentage of standard or head length are given in Tables 12–26. Sampled comparison diagrams of a series of these measures were given by Robins and Lea (1978:fig. 1).

The head and body are rather uniformly dusky, silvery, or whitish along the belly. The dorsal fin most often lacks a dark edge, and when present it is poorly developed. The anal fin has an inconspicuous and narrow dark edge. The orobranchial cavity is usually pale, but the rear of the roof of the mouth may be dusky. The esophagus is blackish; the stomach and hindgut pale.

The anterior rib of males is slightly thickened.

Distribution

Lepophidium microlepis occurs in the Gulf of California and along the outer coast of Baja California as far north as Bahía Sebastían Viscaíno

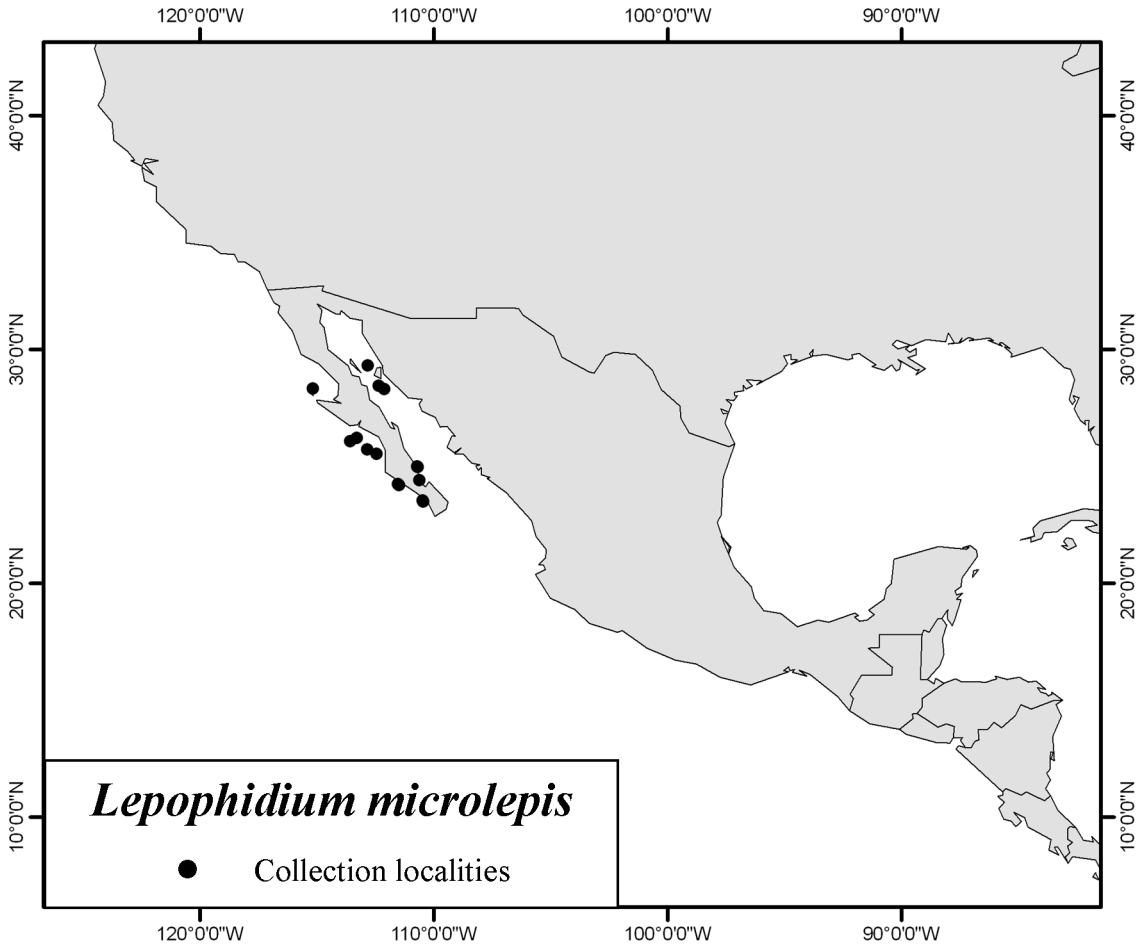

Figure 24. Distribution of *Lepophidium microlepis*.

(Fig. 24). Benthically it occurs from 210–307 m in the Gulf of California and 73–293 m on the outer coast. This distribution was discussed in detail by Robins and Lea (1978:717, 721).

Size

The largest specimen of *Lepophidium microlepis* is 246 mm in standard length.

Lepophidium hubbsi Robins & Lea 1978 new rank
Panamic Cusk-eel

Lepophidium microlepis hubbsi Robins & Lea 1978:721–722—original description; type locality: Costa Rica, 10 mi SW of Isla del Caño, in 142 m.

Lepophidium microlepis. - Lea 1995:1345—in part, distribution.

Description

This account is modified from that by Robins and Lea (1978:721–722) and augmented by additional meristic and morphometric data. Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae are usually 15 (14), caudal vertebrae usually 57–58 (56–59), total vertebrae 72–73 (71); dorsal-fin rays are 128–134, anal-fin rays 108–113, pectoral-fin rays usually 24 (23–26); pyloric caeca are 4–8, in two whorls, typically 2–3 in first two whorls and one in third. There are usually three (4) rudimentary gill rakers on the upper arm of the first arch, 5–7 developed rakers on the lower arm, and 1–6 rudimentary gill rakers anteriorly on the lower arm. There are 9–14 total gill rakers. The dorsal-fin origin is between neural spines 3–4 in 16 of 17 specimens examined. In one specimen it was directly over the 4th neural spine.

Frequency distributions of measures of body parts as a percentage of standard or head length are given in Tables 12–26. Also, some of these data were presented by Robins and Lea (1978:fig. 1) in the form of sample comparison diagrams.

The roof of the mouth posterior to the palatine and vomerine tooth patches is blackish, as are the gill bars, the upper pharyngeal region, esophagus, caeca, and anterior part of the intestine. The pectoral fins are dusky. The dorsal and anal fins have a dark edge.

Males have the anterior rib thickened.

Distribution

Lepophidium hubbsi occurs from the Pacific Coast of northern Colombia to Costa Rica in 73–209 m (Fig. 25).

Size

The largest specimen of *Lepophidium hubbsi* is 217 mm in standard length.

Lepophidium inca Robins & Lea 1978 new rank
Incan Cusk-eel

Lepophidium microlepis. - Chirichigno 1968:445–448, fig. 22—first record for Peru; meristic and morphometric data for two specimens from Paita. Chirichigno 1974:185—in key to species of the genus *Lepophidium* from Peru, distribution in Peru. Lea 1995:1345—in part, distribution.

Lepophidium microlepis inca Robins & Lea 1978:722—original description, type locality: 05°02′ S, 81° 24′ W, in 195–316 m.

Description

This account is modified from that by Robins and Lea (1978:722) and augmented by additional meristic and morphometric data. Frequency distributions of meristic data are given in Tables 1–11. Precaudal vertebrae are usually 15 (14–16), caudal vertebrae 56–59, total vertebrae 74–77; dorsal-fin rays are 133–141, anal-fin rays 112–121, pectoral-fin rays 19–22 (modally 21); pyloric caeca are usually 7–8 (6–9) in one or two whorls, usually 6 + 2. There are usually three (4) rudimentary gill rakers on the upper arm of the first gill arch, 4–5 developed rakers on the lower arm, and usually 2–3 (1–5) rudimentary rakers anteriorly on the lower arm. There are 9–13 total gill rakers. The dorsal-fin origin is between neural spines 3–4 (16 specimens) and less often between 4–5 (five specimens).

Frequency distributions of measures of body parts as a percentage of standard or head length are given in Tables 12–26. Some of these data were presented by Robins and Lea (1978:fig. 1) in the form of sample comparison diagrams.

The head and body are uniformly dusky. The pectoral fins are clear. The dorsal and anal fins are clear with a dark edge; this is most developed in the anal fin. The posterior part of the roof of the mouth, upper pharyngeal region, and gill bars are

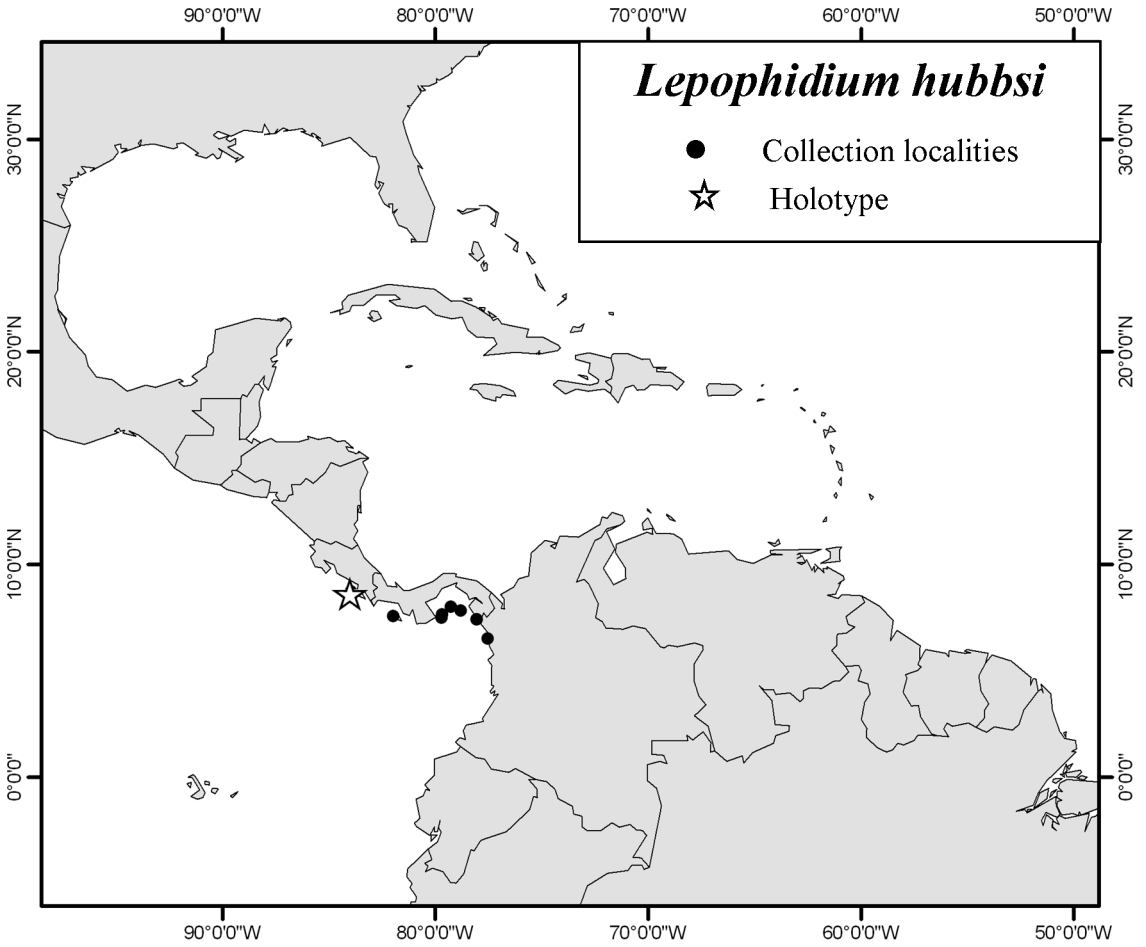

Figure 25. Distribution of *Lepophidium hubbsi.*

blackish. The esophagus, caeca, and anterior part of the intestine are blackish.

Distribution

Lepophidium inca is known only from the ocean off northern Peru (Piura Province) in 118–320 m (Fig. 26). Shallower records (to 16 m) involve composite tows coming from deep to shallow waters. There is no reason to believe that *L. inca* occurs in such shallow water.

Size

The largest specimen of *Lepophidium inca* is 196 mm in standard length.

Comments

Robins and Lea (1978) treated *L. microlepis, L. hubbsi,* and *L. inca* as subspecies and discussed in detail the differences in meristic data, morphometric data, and pigmentation. In reviewing these data in light of the differences between other species of the genus we feel that full specific status is more descriptive of the level of differentiation. For example, there is little or no overlap in caudal and total vertebral counts or in numbers of dorsal and anal- fin rays, and there are large average differences in other characters and details of pigmentation. Also the dorsal-fin origin is between neural spines 4–5 (rarely 3–4) in *L. microlepis* but between neural spines 3–4 in *L. hubbsi* and *L. inca* (rarely 4–5 in *L. inca*). It is instructive that *L. stigmatistium,* which coexists with *L. microlepis,* does not differ in these same characters. The suggestion by Robins and Lea (1978) that *L. stigmatistium* was closely related to this complex is not supported here.

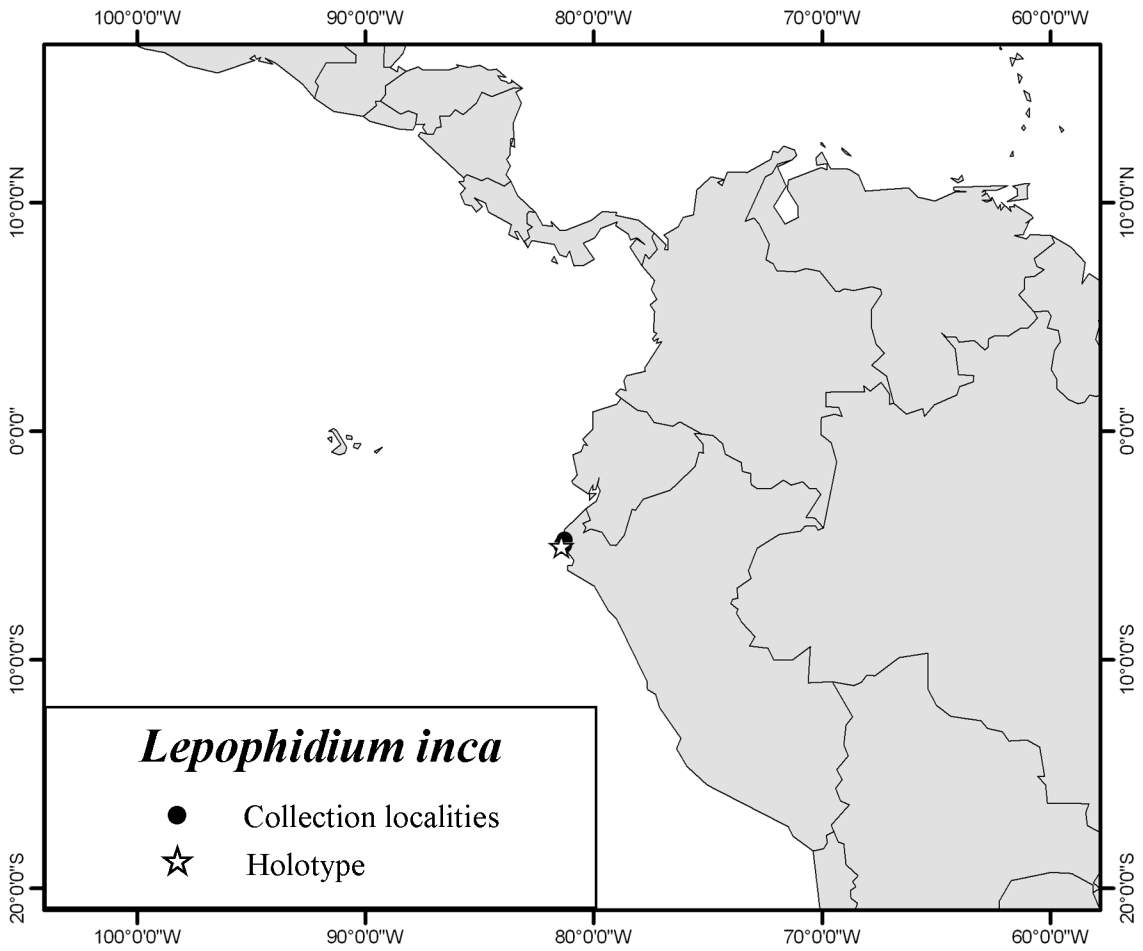

Figure 26. Distribution of *Lepophidium inca.*

Lepophidium aporrhox **Robins 1961**

Dusky Cusk-eel

Lepophidium aporrhox Robins 1961:218, fig. 5b—original description, type locality: 07°18′ N, 54°08′ W, in 91 m. Bullis and Thompson 1975:59—Oregon station records. Cervigón 1991:171—characters, distribution. Ramjohn 1999:55—occurrence in Trinidad. Nielsen and Robins 2003:968—distribution.

Description

This account is condensed from the extensive description provided by Robins (1961) and augmented by additional meristic and morphometric data. Frequency distributions of meristic data are given in Tables 1–11. There are 12–13 precaudal vertebrae, caudal vertebrae are 49–53, total vertebrae usually 62–66 (61); dorsal-fin rays are 106–115, anal-fin rays 92–100, pectoral-fin rays usually 21–23 (20); pyloric caeca 4–7 (modally 4), in one or two whorls (3 + 1). There are usually three rudimentary rakers (2–5) on the upper arm of the first gill arch and usually 6–7 (5) developed rakers on the lower arm. There are 8–12 rudimentary rakers on the lower arm, the anterior ones alternating with the developed rakers. There are 17–22 total gill rakers. The dorsal-fin origin is most often between neural spines 5–6 (17 specimens) and less often between 4–5 (seven specimens). In three of the latter, the insertion is directly over the 5th spine and in one of the former it is directly over the 6th spine.

Frequency distributions of measures of body parts as a percentage of standard or head length are given in Tables 12–26. The head and body are rather uniformly pale brown, somewhat paler below. The dorsal and anal fins have a blackish edge; this is wider in the anal fin. The pharyngeal region, gill chamber, gill bars, and esophagus are

dark. The anterior part of the oral cavity and the hindgut are pale.

The anterior rib is thickened in males but lacks a haltere.

Distribution

Lepophidium aporrhox occurs along the entire length of the coast of the southwestern and southern Caribbean Sea from Honduras to Trinidad and along the Atlantic Coast of northern South America from Trinidad at least as far as French Guiana (Fig. 27). Benthically it occurs from 46–186 m.

Size

The largest specimen of *Lepophidium aporrhox* is 189 mm in standard length.

***Lepophidium robustum* new species**

Robust Cusk-eel

(Fig. 28)

Lepophidium robustum. - Ramjohn 1999:89—*nomen nudum,* occurrence in Trinidad.

Comparative Diagnosis

The presence of rudimentary rakers alternating with developed rakers on the lower gill arch separate *Lepophidium robustum* and *Lepophidium aporrhox* from all congeners. The total number of gill raker elements seen in *L. robustum* (20-29; Table 10) is greater than for any other species of *Lepophidium* excepting *L. aporrhox*. *Lepophidium robustum* is distinguished from *L. apporhox* by number of precaudal vertebrae (14 vs. 12-13; Table 1), caudal vertebrae (54-56 vs. 49-53; Table 2),

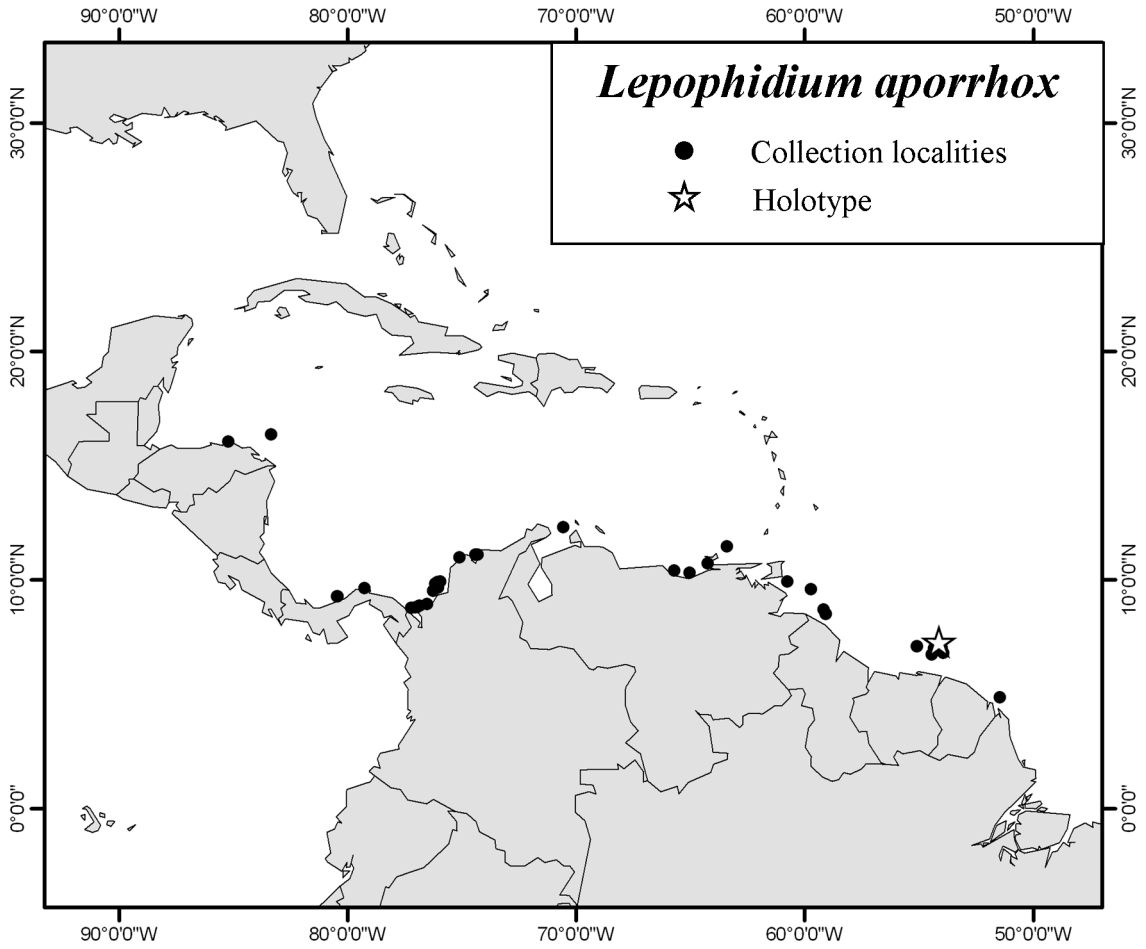

Figure 27. Distribution of *Lepophidium aporrhox.*

Figure 28. Holotype of *Lepophidium robustum* n. sp., UF 234453, 230 mm SL, 09°02′ N, 81°26′ W in 186 m, OREGON sta. 3595, 30 May 1962.

total vertebrae (68-70 vs. 61-66; Table 3), dorsal rays (123-126 vs. 106-115; Table 4), and anal rays (102-107 vs. 92-100; Table 5), and by long pelvic ray length as a percentage of standard length (9-10% vs. 13-18%; Table 21).

Description

Frequency distributions of meristic data are given in Tables 1–11. There are 14 precaudal vertebrae, caudal vertebrae are 54–57 (modally 56), total vertebrae 68–71 (modally 70); dorsal-fin rays 123–126, anal-fin rays 102–107, pectoral-fin rays usually 22–23 (24); pyloric caeca 5–7, long, and in one whorl. There are 4–5 rudimentary gill rakers on the upper arm of the first gill arch and 7–10 developed rakers on the lower arm. There are 8–14 rudimentary rakers on the lower arm, the anterior ones alternating with the developed rakers. The anterior 2–3 developed rakers may lack a rudimentary raker between them. The dorsal-fin origin is between neural spines 4–5 in six specimens (in two of which it is almost directly over spine 5) or between 5–6 (two specimens).

Frequency distributions of measures of body parts as a percentage of standard or head length are given in Tables 12–26.

The head and body are rather uniform pale brown. The fins are usually clear although in the larger specimens the outer ½ of the dorsal and anal fins are dusky, but without a distinctive blackish edge. The branchial chamber, gill bars, esophagus, and posterior portion of the palate are blackish. The stomach and hindgut are pale.

The anterior rib is thickened in males but without a haltere.

Distribution

Lepophidium robustum occurs along the southern Caribbean Sea from western Panama to north of Trinidad (Fig. 29). Benthically it occurs from 101–261 m.

Size

The largest specimen of *Lepophidium robustum* is 230 mm in standard length.

Name

This name is derived from the Latin *robustus,* meaning robust, in reference to its stout body.

Type Specimens

See material examined (Appendix 1).

Lepophidium gilmorei **new species**

Pepperfin Cusk-eel

(Fig. 30)

No literature applies to this species.

Comparative Diagnosis

Lepophidium gilmorei can be distinguished from all but four species of *Lepophidium* on the basis of vertebral counts. *Lepophidium gilmorei* is distinguished from *Lepophidium aporrhox* by dorsal rays (117-122 vs. 106-115; see Table 4) from *L. aporrhox* and the Pacific *L. microlepis* by total gill arch elements (8-9 vs. 17-22 and 10-15, respectively; see Table 10) and from *L. microlepis* by average orbit diameter as a percentage of head length (30.4% vs. 23.7%; see Table 13). *Lepophidium gilmorei* is distinguished from *L. collettei* by many features: average number of caeca (3.2 vs. 5.4; see Table 7), total gill raker elements (8-9 vs. 12-17; see Table 10), dorsal fin origin (between neural spines 3-4 vs. between 4-5 and 5-6), as well as averages of orbit diameter, body depth at origin of anal fin, predorsal distance, and lateral line length (Tables 13, 16, 19, and 26). *Lepophidium crossotum*, though similar to *L. gilmorei* in number of vertebrae, is one of only three

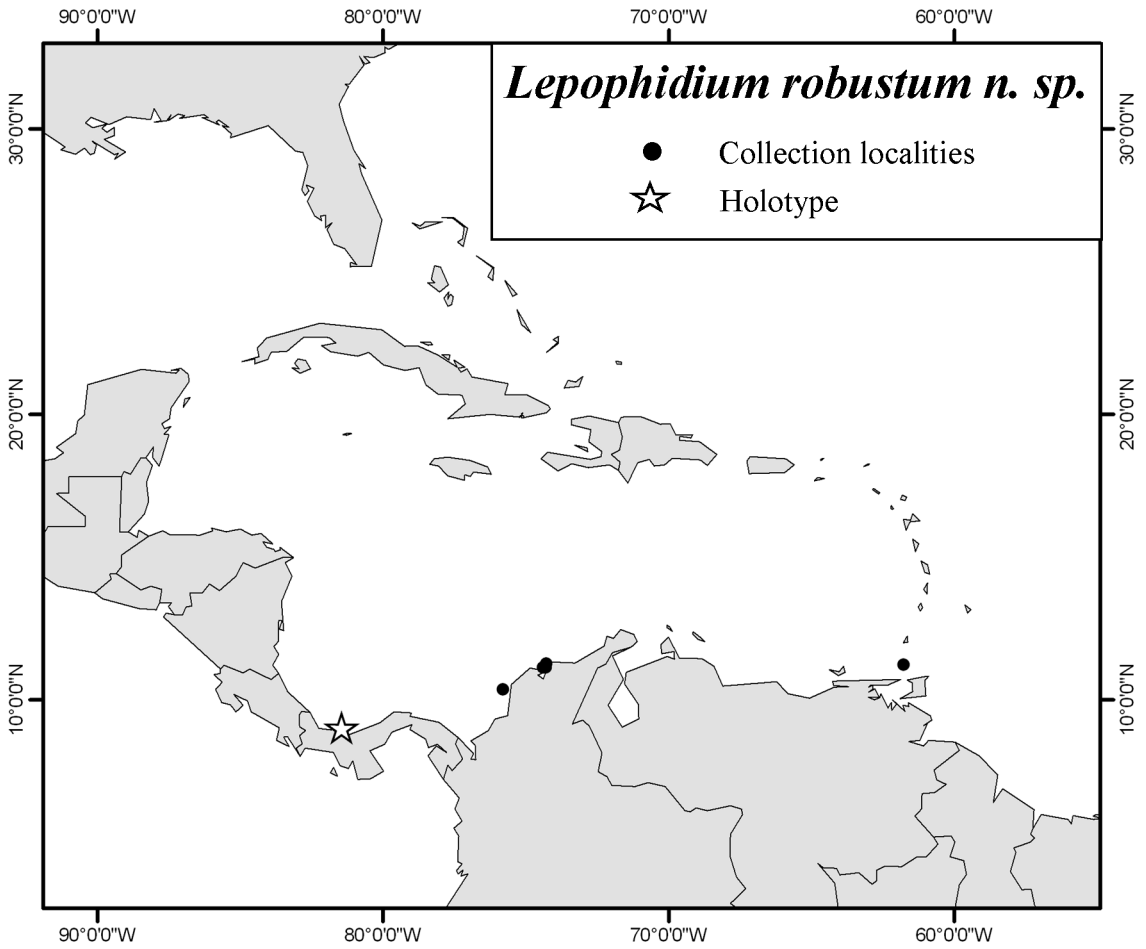

Figure 29. Distribution of *Lepophidium robustum* n. sp.

species with a fringed snout (see also *L. kallion* and *L. wileyi*) and need not be compared further. All of the preceding species lack patterning on the head or body (see description below of head and body pattern in *L. gilmorei*).

Description

Frequency distributions of meristic data are presented in Tables 1–11. There are 14 precaudal vertebrae, caudal vertebrae are 51–53, and total vertebrae 65–67; dorsal-fin rays are 117–122, anal-fin rays 95–101, and pectoral fin rays usually 21–22 (20–23); pyloric caeca are usually three (4), in one whorl. There are two or three rudimentary gill rakers on the upper arm of the first gill arch, four (rarely five), developed but short rakers on the lower limb, and 1–3 rudimentary rakers anteriorly on the lower arm. There are 8–9 total gill rakers.

Figure 30. Holotype of *Lepophidium gilmorei* n. sp., UF 182220, 115 mm SL, 12°06.61′ N 61°45.91′ W Grenada, off Halifax Harbor in 125 m, Harbor Branch Dive 1782, 14 May 1989.

The dorsal-fin origin is between neural spines 3–4 in the six specimens examined.

Frequency distributions of measures of body parts as a percentage of standard or head length are given in Tables 12–26.

The head and body are brownish with a mottling of paler spots and blotches on the upper sides and dorsum. The pectoral fin has concentrations of melanophores on its upper and lower rays and basally; the dark upper edge of this fin is especially noticeable. The dorsal and anal fins are covered with melanophores over their distal halves and these lead to a broad blackish edge which extends around the caudal fin. The inner surfaces of the opercle and branchiostegal membranes are unmarked but the remainder of the gill chamber, including the gill bars, and the rear part of the mouth are blackish. The esophagus is blackish; but the stomach and hindgut are pale.

The interorbital area, snout, suborbital region, lower jaws, and isthmus are naked.

The anterior rib is slightly thickened in males.

Distribution

Lepophidium gilmorei is known from the northeastern Gulf of Mexico (off Florida), the southeastern coast of the US (off South Carolina), the Bahamas (New Providence Island), Venezuela, and Grenada (Fig. 31). Benthically it occurs from 60–124 m.

Size

The largest known specimen of *Lepophidium gilmorei* is 172 mm in standard length.

Name

It is a pleasure to name this species for R.

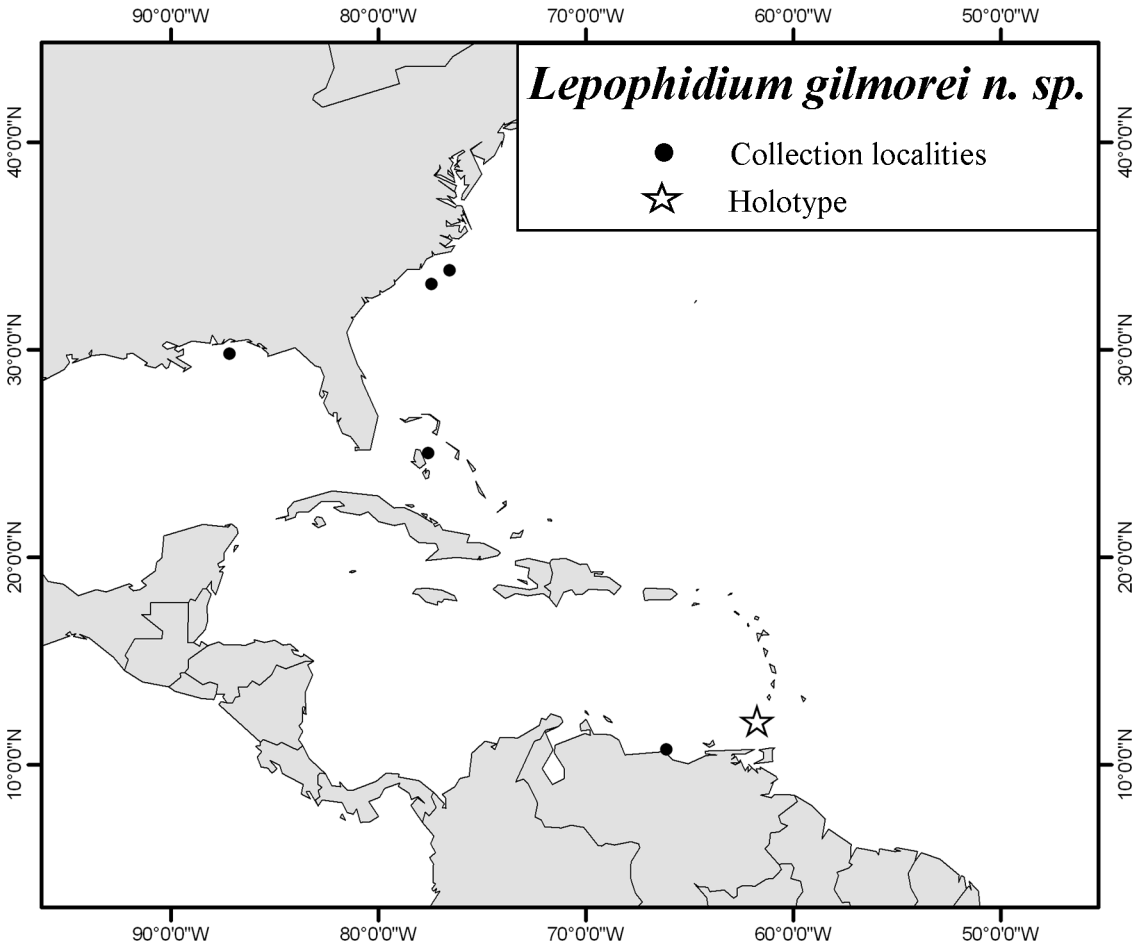

Figure 31. Distribution of *Lepophidium gilmorei* n. sp.

Grant Gilmore, who has helped the first author in so many ways. Two of the specimens including the holotype, were collected from the Harbor Branch Oceanographic Institution's submersibles, dives participated in by both Gilmore and the first author.

Type Specimens

See material examined (Appendix 1).

Key to the Species of *Lepophidium* (* indicates a Pacific species)

1a. Body without any pattern of spots, bars, or blotches 2
1b. Body with pattern of spots, bars, or blotches 16
2a. Snout with numerous small fringes below tip 3
2b. Snout without fringes 4
3a. Dorsal rays usually 119–123 (117–125), anal rays usually 101–105 (99–106), developed gill rakers on lower arch modally seven (total gill rakers modally 10), total vertebrae 67–69, subrostral area bright white ..... *L. crossotum*
3b. Dorsal rays usually 127–133 (124–135), anal rays usually 107–113 (105–117), developed gill rakers on lower arch modally eight (total gill rakers modally 11), total vertebrae 70–75, subrostral area seldom white ..... *L. wileyi*
4a. Rudimentary rakers inserted between at least two (usually most) of the developed rakers on the lower part of the first arch 5
4b. No rudimentary rakers (or at most one) inserted between the developed rakers on the lower part of the first arch 6
5a. Dorsal rays 106–115, anal rays 92–100, rudimentary rakers on upper part of first gill arch usually three (2–5), precaudal vertebrae 12–13, caudal vertebrae 49–53 ..... *L. aporrhox*
5b. Dorsal rays 123–126, anal rays 102–107, rudimentary rakers on upper part of first gill arch usually 4 (4–5), precaudal vertebrae 14, caudal vertebrae 54–57 ..... *L. robustum*
6a. Esophagus pallid 7
6b. Esophagus darkly pigmented throughout 9
7a. Dorsal fin membranes unmarked except for dark pigment along border 8
7b. Dorsal fin membranes with dark marbling between the edge and base ..... *L. negropinna**
8a. Lateral line marked by a series of alternating dark and pale dashes ..... *L. prorates**
8b. Lateral line unmarked ..... *L. brevibarbe*
9a. Hindgut pallid 10
9b. Hindgut darkly pigmented, at least anteriorly 13
10a. Dorsal fin with long dark mark distally between rays 4–14 ..... *L. stigmatistium**
10b. Dorsal fin lacking long dark mark distally between rays 4–14 11
11a. Gill chamber dark throughout ..... *L. microlepis**
11b. Gill chamber pale or at most slightly dusky 12
12a. Rudimentary rakers on lower arm of first gill arch 2–7 (usually 3–6), total rakers on first arch 12–17; anal-fin rays 96–103, dorsal-fin rays 116–122; pyloric caeca usually 5–6 (4–7) ..... *L. collettei*
12b. Rudimentary rakers on lower arm of first gill arch usually 0, occasionally one, very rarely two, total rakers on first arch 9–15; anal-fin rays 105–114, dorsal-fin rays 128–137; pyloric caeca usually 3–4 (2–5) ..... *L. cultratum*

13a. Hindgut entirely dark (Atlantic) 14
13b. Hindgut dark only anteriorly (Pacific) 15
14a. Snout rather blunt; pectoral fins and head very dusky; total vertebrae usually 75–76 (74–77) ..... *L. zophochir*
14b. Snout strongly pointed; pectoral fins often clear; total vertebrae usually 72–74 (71–75) ..... *L. entomelan*
15a. Anal-fin rays 108–113, dorsal-fin rays 128–134, total vertebrae 71–73 ..... *L. hubbsi**
15b. Anal-fin rays 112–121, dorsal-fin rays 133–141; total vertebrae 74–77 ..... *L. inca**
16a. Body with pale markings on darker background 17
16b. Body with dark markings on paler background 18
17a. Body with a single row of pale spots along the entire length (may be difficult to see in older preserved material); pectoral fin without dark dorsal margin; dorsal-fin rays 129–142, anal-fin rays 109–121 ..... *L. profundorum*
17b. Upper half of body with pale mottling; pectoral fin with dark upper edge, at least basally; dorsal-fin rays 117–122, anal-fin rays 95–101 ..... *L. gilmorei*
18a. Upper portion of body crossed by broad dark bands with pale outlines ..... *L. staurophor*
18b. Upper portion of body with dark spots or stripes, lacking dark bands or bars 19
19a. Oral chamber darkly pigmented at least posteriorly, gill chamber darkly pigmented; esophagus, stomach, and hindgut dark; dark margin of dorsal fin with few interruptions and these usually posteriorly 20
19b. Oral chamber pallid, gill chamber pale but sometimes with dusky pigment above; esophagus dark but stomach and hindgut pale; dark margin of dorsal fin interrupted throughout its length at regular intervals 21
20a. Dark stripe along lateral line anteriorly; nape and sides with irregular dark spots; snout fringed ..... *L. kallion*
20b. Body with many dark spots but without stripe along lateral line; snout without fringes ..... *L. marmoratum*
21a. Upper part of body with dark freckling, the spots smaller than pupil and in many irregular rows ..... *L. jeannae*
21b. Upper part of body with bold pattern of large dark spots, in two rows, the spots larger than pupil 22
22a. Rudimentary gill rakers on upper arm of first arch two; pattern of spots very regular; opercle unspotted ..... *L. pheromystax*
22b. Rudimentary gill rakers on upper arm of first arch three (very rarely two); pattern of spots more irregular, those in upper row larger; several dark spots on opercle ..... *L. pardale**

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LITERATURE CITED

Arai, T. 1983. Ophidiidae. Pp. 223–234 *in* Uyeno, T., K. Matsubara, & E. Fujii, eds. Fishes trawled off Suriname and French Guiana. Japan Marine Fishery Resource Center, Tokyo, Japan, 519 p.

Bailey, R. M., E. A. Lachner, C. C. Lindsey, C. R. Robins, P. M. Roedel, W. B. Scott, & L. P. Woods. 1960. A List of the Common and Scientific Names of Fishes from the United States and Canada (2nd ed.). American Fisheries Society, Special Publication 2:1–102.

Bailey, R. M., J. E. Fitch, E. S. Herald, E. A. Lachner, C. C. Lindsey, C. R. Robins, & W. B. Scott. 1970. A List of the Common and Scientific Names of Fishes from the United States and Canada (3rd ed.). American Fisheries Society, Special Publication 6:1–149.

Böhlke, J. E. 1953. A catalogue of the type specimens of recent fishes in the Natural History Museum of Stanford University. Stanford Ichthyological Bulletin 5(1):1–168.

Boschung, H. T. 1992. Catalog of Freshwater and Marine Fishes of Alabama. Bulletin of the Alabama Museum of Natural History 14:1–266.

Bullis Jr., H., & J. R. Thompson. 1975. Collections by the Exploratory Fishing Vessels Oregon, Silver Bay, Combat, and Pelican Made during 1956–1960 in the Southwestern North Atlantic. United States Department of the Interior, Special Scientific Report—Fisheries, 510:1–130.

Carrera, R., H. R. Leta & J. Amaro Padilla. 1974. Primer hallazgo de *Lepophidium brevibarbe* (Cuvier, 1829) en aguas uruguayas (Pisces, Ophididae). Apartadode la Revista del Instituto de Investigaciones Pesqueras, Montevideo 2 (3):314–318.

Cervigón, F. 1991. Los peces marinos de Venezuela. Fundación Científica Los Roques. 1:1–425.

Cohen, D. M. & J. G. Nielsen. 1978. Guide to the Identification of Genera of the Fish Order Ophidiiformes with a Tentative Classification of the Order. NOAA Technical Reports, NMFS Circular 417:1–72.

Collette, B. B. & G. Klein-MacPhee. 2002. Cusk-eels. Family Ophidiidae. Pp. 208–211 *in* B. B. Collette & G. Klein-Macphee, eds. Bigelow

and Schroeder's Fishes of the Gulf of Maine, Smithsonian Institution Press, Washington.

Chirichigno, F. N. 1968. Nuevos registros para la ictiofauna marina del Peru. Instituto del Mar del Perú. Peru Boletin 1:379–503.

Chirichigno F. N. 1974. Clave para identificar los peces marinos del Peru. Informes Especiales, Instituto del Mar del Perú. Callao 44:1–387.

Fahay, M. P., & J. A. Hare. 2006. Family Ophidiidae, Subfamily Ophiinae. Pp. 713–747 *in* W. J. Richards, ed. Early Stages of Atlantic Fishes. Vol. 1, Taylor & Francis, Boca Raton.

Fahay, M. P. 2007. Early Stages of Fishes in the Western North Atlantic Ocean (Davis Strait, Southern Greenland, and Flemish Cap to Cape Hatteras). Northwestern Atlantic Fisheries Organization, Dartmouth, Nova Scotia, 1696 p.

Fowler, H. W. 1941. Notes on Florida fishes with descriptions of seven new species. Proceedings of the Academy of Natural Sciences of Philadelphia 93:81–106.

Fricke, R. & W. N. Eschmeyer 2012, A guide to fish collections in the catalog of fishes database. http://research.calacademy.org/research/ichthyology/catalog/fishcatmain.asp. Accessed 05/04/2012.

Gilbert, C. H. 1890. Scientific results of explorations by the US Fish Commission steamer Albatross. No. XII.—A preliminary report on the fishes collected by the steamer Albatross on the Pacific Coast of North America during the year 1889, with descriptions of twelve new genera and ninety-two new species. Proceedings of the United States National Museum, 13(797):49–126.

Gill, T. N. 1863. Description of a new generic type of ophidioids. Proceedings of the Academy of Natural Sciences, Philadelphia 15:209–211.

Gill, T. N. 1895. The genus *Leptophidium*. American Naturalist 29(338):167–168.

Goode, G. B. & T. H. Bean. 1885. Description of *Leptophidium cervinum* and *L. marmoratum,* new fishes from deep water off the Atlantic and Gulf coasts. Proceedings of the United States National Museum 8(533):422–424.

Goode, G. B. & T. H. Bean. 1896. Oceanic ichthyology, a treatise on the deep-sea and pelagic fishes of the world, based chiefly upon the collections made by the steamers Blake, Albatross, and Fish Hawk in the northwestern Atlantic, with an atlas containing 417 figures. Special Bulletin U. S. National Museum No. 2: Text:1–26 + 1–553, Atlas:1–26.

Gordon, D. J., D. F. Markle, & J. E. Olney. 1984. Ophidiiformes: development and relationships. Pp. 308–319 *in* H. G. Moser, ed. Ontogeny and Systematics of Fishes. Special Publication No. 1, American Society of Ichthyologists and Herpetologists, Allen Press Inc., Lawrence, Kansas.

Hallowell, E. 1860. Report upon the Reptilia of the North Pacific Exploring Expedition, under command of Capt. John Rogers, U.S.N. Proceedings of the Academy of Natural Sciences. Philadelphia 1860:480–510 (1861).

Hildebrand, S. F., & O. Barton. 1949. A collection of fishes from Talara, Peru. Smithsonian Miscellaneous Collections 111(10):1–39.

Jordan, D. S., & C. H. Bollman. 1890. Descriptions of new species of fishes collected at the Galapagos Islands and along the coast of the United States of Colombia, 1887–'88. *in* Scientific results of explorations by the U. S. Fish Commission steamer Albatross. Proceedings of the United States National Museum 12 (770):149–183.

Jordan, D. S., & B. W. Evermann. 1896. A checklist of the fishes and fish-like vertebrates of North and Middle America. Report of the United States Fish Commission v. 21 [1895] Append. 5:207–584.

Jordan, D. S., & B. W. Evermann. 1898. The fishes of North and Middle America: a descriptive catalogue of the species of fish-like vertebrates found in the waters of North America north of the Isthmus of Panama. Part III. Bulletin of the United States National Museum No. 47:2183a–3136.

Kaup, J. J. 1856a. Einiges über die Unterfamilie Ophidinae. Archiv für Naturgeschichte 22(1):93–100.

Kaup, J. J. 1856b. Catalogue of the apodal fish in the collection of the British Museum. Published By Order Of The Trustees, London, 163 p.

Lea, R. N. 1995. Ophidiidae. Pp. 1342–1348 *in* F. Krupp, W. Schneider, C. Sommer, K. E. Carpenter, & V. H. Niem, eds. Guía FAO para la Identificación de Especies para los Fines de la Pesca. Pacifico centro-oriental. Vol. 3. Vertebrados—Parte 2. Food and Agriculture Organization of the United Nations, Rome.

Lopes, P. R. D. & A. R. G. Tomás. 1998. Contribuição ao conhecimento das espécies de peixes da ordem Ophidiiformes (Teleostei) citadas para o Brasil: uma revisão bibliográfica. Acta Biologica Leopoldensia 20(1):123–136.

McCaffrey, P. A. 1981. Studies on the composition and organization of the demersal ichthyofauna of the Continental Shelf Zone in the northeastern Gulf of Mexico. State of Florida Department of Environmental Regulation Technical Series, 6(1):1–576.

McEachran, J. D. & J. D. Fechhelm. 1998. Fishes of the Gulf of Mexico. Vol. 1. Myxiniformes to Gasterosteiformes. University of Texas Press, Austin, 1112 p.

McKenzie, R. A. 1967. Fawn cusk-eel, *Lepophidium cervinum,* in the northwest Atlantic. Journal of the Fisheries Research Board of Canada 24(1):213–214.

Nielsen, J. G. & G. Bini. 1972. A Mediterranean record of the west Atlantic fish *Lepophidium cervinum* (Ophidiidae). Copeia 1972(3):597–599.

Nielsen, J. G., D. M. Cohen, D. F. Markle, & C. R. Robins. 1999. FAO species catalog. Vol. 18. Ophidiiform Fishes of the World (Order Ophidiiformes): an annotated and illustrated catalogue of pearlfishes, cusk-eels, brotulas, and other ophidiiform fishes known to date. FAO Fisheries Synopsis, 125(18), 178 p.

Nielsen, J. G. & C. R. Robins. 2003. Ophidiidae. Pp. 965–972 *in* K. E. Carpenter, ed. The Living Marine Resources of the Western Central Atlantic. Vol. 2. Bony Fishes part 1 (Acipenseridae to Grammatidae). FAO Fisheries Guide for Fisheries Purposes and American Society of Ichthylogists and Herpetologists, Special Publication No. 5.

Nolf, D. 1980. Etude monographique des otolithes des Ophidiiformes actuels et revision des especes fossiles (Pisces, Teleostei). Mededelingen van de Wergrop voor Tertiare en Kwartaire Geologie 17(2):71–195.

Poey, F. 1858–61. Memorias sobra la historia natural de la Isla de Cuba, acompañadas de sumarios Latinos y extractos en Francés. Tomo 2. La Habana. [Sections have subtitles.]. Memorias sobre la historia natural de la Isla de Cuba 2: 1–96 (1858), 97–336 (1860), 337–442, (1861).

Poey, F. 1868. Synopsis piscium cubensium. Catalogo Razonado de los peces de la isla de Cuba. Repertorio Fisico-Natural de la Isla de Cuba 2:279–484.

Ramjohn, D. D. 1999. Checklist of Coastal and Marine Fishes of Trinidad and Tobago. Marine Fisheries Analysis Unit, Fisheries Division, Ministry of Agriculture, Land, and Marine Resources. Fisheries Information Series 8:1–154.

Retzer, M. E. 1991. Life-history aspects of four species of cusk-eels (Ophidiidae: Ophidiiformes) from the northern Gulf of Mexico. Copeia 1991(3):703–710.

Robins, C. R. 1959a. Studies on fishes of the family Ophidiidae—I. A new species of *Lepophidium* from the Caribbean Sea. Bulletin of Marine Science of the Gulf and Caribbean 8(4):360–368.

Robins, C. R. 1959b. Studies on fishes of the family Ophidiidae—II. A new species of *Lepophidium* from Barbados. Breviora 104:1–7.

Robins, C. R. 1960. Studies on fishes of the family Ophidiidae—V. *Lepophidium pheromystax,* a new Atlantic species allied to *Lepophidium jeannae* Fowler. Bulletin of Marine Science of the Gulf and Caribbean 10(1):83–95.

Robins, C. R. 1961. Studies on fishes of the Family Ophidiidae.—VI. Two new genera and a new species from American waters. Copeia 1961(2):212–22.

Robins, C. R. 1962. Studies on fishes of the family Ophidiidae—VII. The Pacific species of *Lepophidium*. Copeia 1962(3):487–498.

Robins, C. R. 1971. Distributional patterns of fishes from coastal and shelf waters of the tropical western Atlantic. Pp. 249–255 *in* Symposium

on Investigations and Resources of the Caribbean Sea and Adjacent Regions. Papers on Fisheries Resources, Food and Agriculture Organization of the United Nations, Rome.

Robins, C. R. 1986. The status of the ophidiid fishes *Ophidium brevibarbe* Cuvier, *Ophidium graellsi* Poey, and *Leptophidium profundorum* Gill. Proceedings of the Biological Society of Washington 99(3):384–387.

Robins, C. R. 2003. Regional diversity among Caribbean fish species. Pp. 212 *in* Ray, G.C. & J. McCormick-Ray, eds. Coastal-Marine Conservation: Science and Policy. Blackwell Publishing Co., Oxford.

Robins, C. R., R. M. Bailey, C. E. Bond, J. R. Brooker, E. A. Lachner, R. N. Lea, & W. B. Scott. 1980. A List of Common and Scientific Names of Fishes from the United States and Canada (4th ed.). American Fisheries Society, Special Publication 12:1–174.

Robins, C. R., R. M. Bailey, C. E. Bond, J. R. Brooker, E. A. Lachner, R. N. Lea, & W. B. Scott. 1991. A List of Common and Scientific Names of Fishes from the United States and Canada (5th ed.). American Fisheries Society, Special Publication 20:1–183.

Robins, C. R., & R. N. Lea. 1978. Fishes of the family Ophidiidae IX. Analysis of the variation in *Lepophidium microlepis* with description of two new subspecies. Bulletin of Marine Science 28(4):716–727.

Robins, C. R., & G. C. Ray, 1986. A Field Guide to Atlantic Coast Fishes of North America. Houghton Mifflin Co., Boston, 354 p.

Ruschi, A. 1965. Lista dos tubarões, raias e peixes de água doce e salgada do estado do Espírito Santo e uma observação sobre a introdução do dourado no rio Doce. Boletim do Museu de Biologia Mello Leitão 25A:1–23.

Scott, W. B., & M. G. Scott. 1988. Atlantic Fishes of Canada. Canadian Bulletin of Fisheries and Aquatic Sciences 219: 1–731 pp.

Stinton, F. C. 1965. Teleost otoliths from the Lower London Tertiaries. Senckenbergiana Lethaea 46:389–425.

APPENDIX

Material Examined

See text under Methods for explanation of abbreviations and procedures. Vessel names are in capital letters. Oregon station numbers of 10000 or higher are of the Oregon II. Species listed in alphabetical order.

Lepophidium aporrhox

Holotype—**Atlantic Ocean:** USNM 195853 (1, 161) 07°18′ N, 54°08′ W in 91 m, OREGON sta. 2016, 8 Nov. 1957.

Atlantic Ocean: FMNH 64503 (1, 132) 07°18′ N, 54°08′ W in 91 m, OREGON sta. 2016, 8 Nov. 1957. UF 202302 (1, 113) 07°18′ N, 54°08′ W in 91 m, OREGON sta. 2016, 8 Nov. 1957. FMNH 64510 (3, 98-148) 8°32′ N, 59°05′ W in 51-60 m, OREGON 2226, 28-Aug. 1958. FMNH 64504 (1, 146) 07°12′ N, 54°08′ W in 73 m, OREGON sta. 2017, 8 Nov. 1957. UF 211524 (1, 189) 07°02′ N, 54°00′ W in 73 m, OREGON sta. 4182, 21 Feb. 1963. UF 211526 (138) 07°02′ N, 54°00′ W in 73 m, OREGON sta. 4182, 21 Feb. 1963. UF 229539 (8, 49-167) 07°07′ N, 55°05′-08′ W in 64 m, PILLSBURY sta. 671, 11 July 1968. UF 229540 (18, 72-173) 07°07′ N, 55°05′-08′ W in 64 m, PILLSBURY sta. 671, 11 July 1968. UF 229542 (2, 107-114) 09°56.5′-59′ N, 60°46′ W in 55-59 m, PILLSBURY sta. 836, 30 June 1969. UF 234531 (34, 137-178) 06°45′-50′ N, 54°26′-27′ W in 46-55 m, OREGON sta. 14454-55, 3 Feb. 1974. UF 234535 (1, 180) 08°32′ N, 59 °05′ W in 51-60 m, OREGON sta. 2226, 28 Aug. 1958. UF 234640 (6, 113-162) 06°49′ N, 53°56′ W in 55 m, OREGON sta. 14452, 3 Feb. 1974. UF 234641 (1, 146) 07°01′ N, 54°21′ W in 64 m, OREGON sta. 4181, 21 Feb. 1963. USNM 298575 (2, 111-145) 09°36′ N. 59°44′ W in 146 m, OREGON sta. 1987, 4 Nov. 1957. USNM 298576 (1, 128) 08°43′ N, 59°10′ W in 73 m, OREGON sta. 10500, 26 Apr. 1969. USNM Uncat. (1, 133) 04°52′ N, 51°28′ W in 55 m, OREGON 17624-25. 6 May 1975.

Caribbean Sea: USNM 195852 (1, 96) 16°23′ N, 83°20′ W in 100 m, OREGON sta. 1864, 21-Aug. 1957. KU 33118 (9, 107-175) 09°51′ N, 76°09′ W in 99 m, OREGON sta. 10211, 24 Nov. 1968. UF 212289 (3, 139-157)

09°18′ N, 80°25′ W in 137 m, OREGON sta. 3587, 29 May 1962. UF 216281 (3, 124-148) 12°19′ N, 70°34′ W in 73 m, OREGON sta. 4402, 27 Sept. 1963. UF 217070 (1, 177) 10°25′ N, 65°42′ W in 92 m, OREGON sta. 4467, 17 Oct. 1963. UF 222298 (2, 40-79) 08°47.6′-48.7′ N, 77°12.7′-14.2′ W in 98 m, PILLSBURY sta. 403, 17 July 1966. UF 226493 (1, 68) 09°40.0′-41′ N, 76°01.5′-05.4′ W in 46-55 m, PILLSBURY sta. 371, 13 July 1966. UF 226734 (1, 82) 09°38.9′ N, 79°15.3′ W in 64-70 m, PILLSBURY sta. 425, 19 July 1966. UF 226793 (2, 48-52) 09°31.3′-32.5′ N, 76°15.4′-17′ W in 57 m, PILLSBURY sta. 365, 13 July 1966. UF 229158 (13, 52-107) 08°57.5′-09°00.3′ N, 76°30.5′-33.6′ W in 55-64 m, PILLSBURY sta. 362, 12 July 1966. UF 229301 (4, 120-188) 11°29′-30′ N, 63°23.9′-24.3′ W in 58 m, PILLSBURY sta. 714, 19 July 1968. UF 229537 (1, 67) 08°52.4′ N, 76°50.4′-51′ W in 91-99 m, PILLSBURY sta. 400, 17 July 1966. UF 229538 (3, 53-110) 08°49.1′-51.2′ N, 77°01.6′-04.1′ W in 73 m, PILLSBURY sta. 402, 17 July 1966. UF 229541 (3, 104-114) 10°43.5′-45.5′ N, 64°15′-16′ W in 60-71 m, PILLSBURY sta. 723, 21 July 1968. UF 229610 (4, 93-142) 16°03.2′ N, 85°12′ W in 117-124 m, PILLSBURY sta. 1368, 1 Feb. 1971. UF 230179 (1, 161) 11°07.6′-08.5′ N, 74°18.1′-19.3′ W in 101-165 m, PILLSBURY sta. 786, 31 July 1968. UF 232230 (3, 44-110) 10°20′ N, 65°02′ W in 64 m, PILLSBURY sta. 727, 21 July 1968. UF 234454 (4, 128-158) 09°56′ N, 75°56′ W in 126 m, OREGON sta. 10213, 25 Nov. 1968. UF 234503 (1, 94) 10°59.3′ N, 75°05.3′ W in 55 m, OREGON sta. 4864, 22 May 1964. UF 234504 (1, 158) 11°06.8′ N, 74°23.6′ W in 91 m, OREGON sta. 4896, 17 May 1961. USNM 193591 (1, 128) 09°18′ N, 80°27′ W in 186 m, OREGON sta. 3588, 29 May 1962. USNM 298578 (1, 158) 09°55′ N, 76°03′ W in 128 m, OREGON sta. 10212, 24 Nov. 1968. USNM 298577 (6, 107-184) 09°51′ N, 76°09′ W in 99 m, 10211, 24 Nov. 1968.

Lepophidium brevibarbe

Holotype.—**Atlantic Ocean**: MNHM 5772 (1, 202, holotype of *Ophidium brevibarbe*) 23.0° N, 43.119° W, Brazil (coordinates reflect assumption of Rio de Janeiro).

Atlantic Ocean: ANSP 97603 (1, 104) 27°49′ N, 79°58′ W in 91 m, SILVER BAY sta. 1959, 20 Apr. 1960. UF 24488 (2, 196-209) 24.906° N, 82.550° W, Florida, 30 mi. NE of Loggerhead Key, Monroe Co. UF 206049 (40, 123-208) 24°37′9″ N, 81°14′48″ W in 12 m, Florida, Hawk Channel off Bahia Honda bridge, Monroe Co., 1 Feb. 1960. UF 206989 (1, 174) 24.793° N, 80.792° W, in 12 m, Florida, Monroe Co., Hawk Channel, 26 July 1960. UF 207933 (2, 200-211) 24°37′9″ N, 81°14′48″ W in 12 m, Florida, Hawk Channel off Bahia Honda bridge, Monroe Co., 1 Feb. 1960. UF 234465 (2) 34°14.5′ N, 77°16.5′ W in 24 m, OREGON sta. 6517, 23 Mar. 1967. UMMZ 139322 (2, 28-48) 26.018° N, 80.114° W, Florida, Broward Co., just N of Hollywood in surf, 17 Aug. 1936. ANSP 142859 (2, 192-214) 10.043° N, 61.861° W, Trinidad, Icacoas Bay, 4 May 1964. FMNH 64507 (2, 181-190) 05°46′ N, 52°02′ W, in 70 m, OREGON sta. 2045, 12 Nov. 1957. FMNH 64508 (1, 199) 02°00′ N, 48°19′ W in 46 m, OREGON sta. 2074, 16 Nov. 1957. FMNH 64509 (3, 185-247) 09°55′ N, 60°53′ W in 62 m. FMNH 64512 (2, 130-155) 07°45′ N, 57°34′ W in 55-64 m, OREGON sta. 2248, 31 Aug. 1958. FMNH 64516 (1, 89) 06°42′ N, 55°37′ W in 42 m, OREGON sta. 2276, 3 Sept. 1958. FMNH 64517 (1, 226) 06°37′ N, 55°13′ W in 41 m, OREGON sta. 2281, 7 Sept. 1958. FMNH 64518 (2, 107-126) 05°56′ N, 52°20′ W in 57 m, OREGON sta. 2308a, 12 Sept. 1958. FMNH 64520 (4, 130-187) 6.408° N, 55.05 W, Suriname, COQUETTE sta. 6, 1957. FMNH 79678 (1, 106) 6.7° N, 54.208 W, COQUETTE sta. 219. FMNH 82677 (1, 181) 6.31° N, 55.66° W, Suriname, Saramacca, 20 mi. offshore in 27 m, COQUETTE , 15-20 Apr. 1957. FMNH 120686 (ex FMNH 64510) (1,) 08°32′ N, 59°05′ W in 51-60 m, OREGON sta. 2226, 28 Aug. 1958. UF 35534 (5, 110-230) 04°46′- 05°31′ N, 51°31′ W-52°04′ W in 46-55 m, CAYENNE sta. 10, 12, 12 Dec. 1977. UF 214094 (5, 176-239) 08°09′ N, 58°23′ W in 42 m, OREGON sta. 2236, 29 Aug. 1958. UF 204313 (6, 190-250) 08°32′ N, 59°05′ W in 51-60 m, OREGON sta. 2226, 28 Aug. 1958. UF 204725 (2, 224-227) 09°32′ N, 60°24′ W in 60 m, OREGON sta. 2348, 20 Sept. 1958. UF 204967 (3, 180-270) 09°55′ N, 60°53′ W in 62 m, OREGON sta. 2208, 26 Aug. 1958. UF 204975 (14, 91-116) 05°58′ N, 52°21′ W in 57-68 m, OREGON sta. 2298, 10 Sept. 1958. UF 205007 (6, 146-207) 6.529° N, 55.532° W, off Suriname in 36-73 m, OREGON, 26 Aug.-25 Sept. 1958. UF 211483 (15) 05°29′ N, 52°07′ W in 55 m, OREGON sta. 4204, 24 Feb. 1963. UF 211508 (3, 170-198) 04°20′ N, 50°37′ W in 70 m, OREGON sta. 4210, 27 Feb. 1963. UF 211529 (27) 04°30′ N, 50°52′ W in 66 m, OREGON 4209, 27 Feb. 1963. UF 211552 (6, 144-190) 06°17′ N, 53°35′ W in 40 m, OREGON sta. 4186, 21 Feb. 1963. UF 211556 (1, 222) 06°10′ N, 53°28′ W in 37 m, OREGON sta. 4187, 21 Feb. 1963. UF 211559 (16) 05°29′ N, 52°07′ W in 55 m, OREGON sta. 4204, 24 Feb. 1963. UF 221568 (3) 05°29′-56′ N, 52°07′-16′ W in 46-55 m, OREGON sta. 4194 or 4204, 22-24 Feb. 1963. UF 212256 (19, 94-274) 06°44′N, 54°29′ W in 55 m, OREGON sta. 4180, 20 Feb. 1963. UF 212257 (43, 129-263) 05°29′ N, 52°02′ W in 59 m, OREGON sta. 4203, 23 Feb. 1963.

UF 212258 826, 112-213) 08°29′ N, 52°07′ W in 55 m, OREGON sta. 4204, 24 Feb. 1963. UF 212261 (1, 186) 05°24′ N, 51°34′ W in 64 m, OREGON sta. 4201, 23 Feb. 1963. UF 212501 (11, 175-256) 07°01′ N, 54°21′ W in 64 m, OREGON sta. 4181, 21 Feb. 1963. UF 213308 (5, 130-231) 05°29′ N, 51°37′ W in 64 m, OREGON sta. 4202, 23 Feb. 1963. UF 213496 (1, 187) 07°03′ N, 56°58′ W in 48 m, OREGON sta. 4167, 19 Feb. 1963. UF 213524 (1, 203) 06°46′ N, 54°44′ W in 46 m, OREGON sta. 4179, 20 Feb. 1963. UF 232568 (1, 164) 06°56′ N, 56°19′ W in 55 m, OREGON sta. 14411, 29 Jan. 1974. UF 232571 (6, 142-186) 07°02′ N, 55°52′ W in 64 m, OREGON sta. 14413, 29 Jan. 1974. UF 232572 (1, 171) 06°19′ N, 52°58′ W in 64 m, OREGON sta. 14466-67, 5 Feb. 1974. UF 232574 (9, 104-188) 06°44′ N, 56°26′ W in 46 m, OREGON sta. 14410, 29 Jan. 1974. UF 232576 (3, 180-207) 06°31′ N, 54°33′ W in 37 m, OREGON sta. 14446, 2 Feb. 1974. UF 232579 (2, 196-205) 06°45′ N, 54°27′ W in 46 m, OREGON sta. 14445, 2 Feb. 1974. UF 232616 (5, 92-162) 06°49′ N, 54°57′ W in 46 m, OREGON sta. 14436-37, 31 Jan. 1974. UF 233105 (18, 92-221) 06°49′ N, 53°56′ W in 55 m, OREGON sta. 14452, 3 Feb. 1974. UF 233170 (2, 104-127) 06°30′-43′ N, 55°15′-20′ W in 33 m, PILLSBURY sta. 669, 20 June 1968. UF 234481 (1, 184) 07°02′ N, 54°45′ W in 62 m, OREGON sta. 10588, 7 May 1969. UF 234482 (1, 174) 07°50′ N, 54°35′ W in 55 m, OREGON sta. 10543, 1 May 1969. UF 234483 (2, 220-231) 08°52′ N, 59°44′ W in 68 m, OREGON sta. 10496, 26 Apr. 1969. UF 234487 (2, 222-231) 05°39′ N, 51°56′ W in 68 m, OREGON sta. 2046, 12 Nov. 1957. UF 234489 (ex FMNH 64511) (27) 08°9′ N, 58°28′ W in 42 m, OREGON sta. 2236, 29 Aug. 1958. UF 234491 (1, 219) 03°48′ N, 50°22′ W in 59 m, OREGON sta. 176454, 8 May 1975. UF 234492 (16, 117-243) 04°52′ N, 51°28′ W in 55 m, OREGON sta. 17624-25, 6 May 1975. UF 234493 (16, 170-256) 04°38′ N, 51°04′ W in 62 m, OREGON sta. 17634-35, 6 May 1975. UF 234500 (1, 178) 07°12′ N, 54°08′ W in 73 m, OREGON sta. 2017, 8 Nov. 1957. UF 234501 (2, 159-177) 06°56′ N, 54°05′ W in 58 m, OREGON sta. 10553, 2 May 1969. UF 234505 (3) 08°10′ N, 58°36′ W in 37 m, OREGON sta. 10508, 27 Apr. 1969. UF 234506 (1, 242) 08°10′ N, 58°36′ W in 37 m, OREGON sta. 10507, 27 Apr. 1969. UF 234507 (1, 216) 11°08′ N, 60°56′ W in 66-82 m, OREGON sta. 5024, 21 Sept.1964. UF 180266 (6, 139-241) 06°42′ N, 54°12.5′ W in 44 m, COQUETTE sta. 219, 14 June 1957. UF 180135 (2, 118-141) 06°42.5′ N, 54°10′ W in 42 m, COQUETTE sta. 221, 14 June 1957. KU 38558 (1, 109) 06°51′ N, 55°25′ W in 53 m, COQUETTE sta. 331, 20 July 1957. USNM 405913 (1, 233) 06°50′ N, 55°24′ W in 53 m, COQUETTE sta. 332, 20 July 1957. USNM 405917 (3) 01°51′ N, 48°08′ W in 55 m, OREGON sta. 17692-93, 11 May 1975. USNM 405912 (1, 224) 01°25′ N, 47°58′ W in 48 m, OREGON sta. 17696-97, 12 May 1975. USNM 405915 (6, 149-198) 05°39′ N, 51°56′ W in 68 m, OREGON sta. 2046, 12 Nov. 1957. USNM 405916 (2, 159-211) 05°35′ N, 51°50′ W in 66 m, OREGON sta. 2047 12 Nov. 1957.

Gulf of Mexico: ANSP 55920 (1, 176) 27.783° N, 97.257° W, Texas, Corpus Christi, 1931. FSBC 305 (1, 115) 24.629° N, 82.921° W, Tortugas, 28-29 Dec. 1957. FSBC 3640 (3, 142-173) 24°41′-52′ N, 82°00′-35′ W, MAYAN, 14-15 Jan. 1958. FMNH 45250 (1, 200) 27°30′ N, 96°28′ W in 73 m, 28 Nov. 1950. FMNH 45251 (1, 222) 27°32′ N, 96°21′ W in 101 m, 27 Nov. 1950. FMNH 45252 (3, 161-227) 27°48′ N, 96°33′ W in 40 m, 14 Dec. 1950. FMNH 45253 (2, 165-198) 27°37′ N, 96°39′ W in 46 m, 27 Nov. 1950. FMNH 45254 (2, 135-172) 27°21′ N, 96°47′ W in 55 m. FMNH 45255 (2, 232-252) 27°23′ N, 96°30′ W in 90 m, 10 May 1951. FMNH 45256 (1, 182) 27°37′ N, 96°46′ W in 37 m, 21 Feb. 1951. FMNH 45257 (3, 189-211) 27°43′ N, 96°51′ W in 27 m, 26 Nov. 1950. FMNH 45259 2, 167-208) 27°38′ N, 96°45′ W in 37 m, 26 Nov. 1950. FMNH 45260 (1, 220) 28°02′ N, 96°03′ W in 40 m, 7 Mar. 1951. FMNH 45261 (2, 165-234) 27°41′ N, 96°23′ W in 55 m, 28 Nov. 1950. FMNH 45262 (1, 215) 27°34′ N, 96°43′ W in 42 m, 18 Jan. 1951. FMNH 46669 (5, 180-229) 29°11.5′ N, 88°37′ W in 75 m, OREGON sta. 283, 26 Feb. 1951. FMNH 46670 (2, 218-226) 29°17′ N, 88°40.5′ W in 62 m, OREGON sta. 285, 26 Feb. 1951. FMNH 46671 (1, 194) 19°48′ N, 91°20′W, in 26 m, OREGON sta. 440-445, 25 Aug. 1951. FMNH 46672 (3, 130-171) 21°15′ N, 92°16′ W in 64 m, OREGON sta. 412, 17 Aug. 1951. FMNH 59944 (1, 213) 27°31′ N, 96°24.5′ W in 82 m, OREGON sta. 5, 25 May 1950. FMNH 59947 (1, 192) 29°14′ N, 88°35′ W in 73 m, OREGON 49, 13 July 1950. FMNH 69291 (3, 139-156) 24°45′ N, 83°06′ W, OREGON sta. 1554, 18 June 1956. FMNH 69297 (8, 186-214) 20°18′ N, 91°48′ W in 37 m, OREGON 710, 7 Dec. 1952. FMNH 88730 (1, 162) 30.073° N, 88.529° W, Mississippi, 10 mi. S of Horn Island Pass, 2 July 1952. GCRL 36544 (1, 145) 30.038° N, 88.649° W, Mississippi, 15 mi. SSE of Dog Keys Pass sea Buoy in 21 m, 25 Mar. 1956. LACM 57398-1 (2, 204-206) 29°29′ N, 88°37′ W in 46 m, OREGON sta. 10866, 12 Jan. 1970. TU 2647 (1, 233) 29°06′ N, 88°47′ W in 91 m, OREGON sta. 73, 8 Aug. 1950. TU 5387 (14, 131-223) 29°19.4′ N, 88°52.4′ W in 33 m, OREGON sta. 617, 11 Aug. 1952. TU 5403 (2, 201-234) 29°15.5′ N, 88°55.8′ W in 33m, OREGON sta. 615, 10 Aug. 1952. TU 5423 (3, 235-252) 29°10′ N, 88°52′ W in 66 m, OREGON sta. 614, 10 Aug. 1952. TU 5434 (3, 144-160) 29°15.5′ N, 88°55.8′ W in 33 m. TU 6792 (4, 198-230)

27°32.5′ N, 96°28′ W in 82 m, OREGON sta. 4, 25 May 1950. TU 7721 (2, 211-243) 28°48.7′ N, 89°40.5′ W in 73 m, OREGON sta. 523, 8 Apr. 1953. TU 12877 (6, 137-202) 29°22′ N, 88°48′ W in 33 m, OREGON sta. 1109, 15 June 1954. TU 16229 (1, 141) 29°04′ N, 88°43′ W in 77-80 m, SILVER BAY sta. 12, 1 July 1957. TU 179878 (2, 113-145) 24°48′-52′ N, 82°00′-35′ W, MAYAN, 18-24 Feb. 1958. TU 58007 (6, 126-206) 29.637° N, 88.795° W, Louisiana, S of Bayou Lafourche to S of Grande Isle, GARY DEAN, 19-27 Feb. 1969. UF 179430 (6, 110-212) 18°43′ N, 93°30′ W in 64 m, OREGON sta. 1060, 16 May 1954. UF 7092 (1, 206) 21.589° N, 97.211° W, off Pta. Frontera, Mexico in 24-37 m, TEXAS CLIPPER, 29 July-6 Aug. 1951. UF 7093 (1, 201) 29.385° N, 88.732° W, Louisiana, off Green's Bayou in 46 m, 19 Dec. 1950. UF 7094 (3, 148-165) 20.127° N, 91.601° W, Mexico, Campeche, in 24-29 m, TEXAS CLIPPER, 27-29 July, 1951. UF 7095 (3, 150-185) 26.990° N, 96.964° W, 50-70 mi. S of Port Aransas, Texas, in 33-42 m, 13-16 May 1951. UF 7096 (3, 79-160) 26.469° N, 96.993° W, 30 mi. N of Port Isabel, Texas in 31-37 m 16-18 Nov. 1950. UF 7097 (3, 190-223) 27.945° N, 96.662° W, Texas, Cavallo Pass to Aransas Pass, in 22-27 m, 20-22 Oct. 1950. UF 7098 (3, 152-130) 24.577° N, 97.335° W, 100 mi. S. of Port Isabel, Texas in 57-68 m, 7 March 1951. UF 71467 (1, 84) 21°09′ N, 84°38.5′ W in 37 m, TURSIOPS Cr. 7109 sta. 02, 2 Apr. 1971. UF 79700 (3, 163-196) 24°46.06′ N, 82°04.88′ W, 22 Apr. 1958. UF 79723 (1, 105) 24°04.2′ N, 82°10′ W, 21 Apr. 1988. UF 79675 (2, 114-138) 24°46.35′ N, 82°06.55′ W in 20 m, 22 Apr. 1988. UF 79778 (4, 102-176) 24°45.45′ N, 82°07.6′ W, 21 Apr. 1988. UF 71779 (5, 120-169) 24°41.82′ N, 82°17.85′ W in 17 m, 23 May 1989. UF 81525 (2, 176-185) 29°23.0′ N, 88°40.8′ W in 51 m, OREGON sta. 44874, 7 Jan 1987. UF 81671 (4, 122-162) 24°42.03′ N, 82°08.12′ W in 16 m, 21 May 1989. UF 109680 (4) 24°25.4′ N, 82°43.38′ W in 18 m, 4 May 1989. UF 200008 (1, 151) 30° 13′ N, 89° 29′ W in 13 m, Mississippi, S. Horn Island Pass, 24 Sept 1956. UF 200581 (3, 130-174) 24° 54′ 54″ N, 82° 26′ 42″ W 28 m, Florida, Dry Tortugas Shrimp Grounds in 26 m, 19-20 July 1956.UF 200842 (1, 166) 24°45′-50′ N, 82°10′-30′ W in 25 m, 6-7 July 1957. UF 202069 (24) 24°45-50′ N, 82°10-30′ W in 25 m,, 18-20 Feb. 1958. UF 202354 (3, 154-184) 24°45′-50′ N, 82°10′-30′ W in 24 m, 8 Dec. 1957. UF 202686 (43, 98-196) 24°45′-50′ N, 82°10′-30′ W in 25 m, 7-10 Apr. 1958. UF 203669 (1, 151) 24°45′-50′ N, 82°10′-30′ W in 25 m, 4-7 Aug. 1958. UF 204547 (9, 116-182) 24°45′-50′ N, 82°10′-30′ W in 18 m, 10-12 Mar. 1958. UF 204783 (2, 227-229) 24°46′ N, 82°58′ W in 44 m, 8 May 1958. UF 205096 (1, 128) 24° 43′ 42″ N, 82° 26′ 48″ W, in 24 m, Florida, Dry Tortugas Shrimp Grounds in 22 m, 26 Mar. 1959. UF 206743 (10, 73-205) 24°50′ N, 82°30′ W, 3-4 Aug. 1959. UF 207576 (13) 25°10′-49′ N, 82°12′-13′ W in 25 m, 15-17 Jan. 1960. UF 207748 (2, 160-171) 28°33′ N, 95°33′ W in 20 m, OREGON sta. 2899, 12 Aug. 1960. UF 207780 (2, 103-127) 24° 43′ 42″ N, 82° 26′ 48″ W, in 24 m, Florida, Dry Tortugas Shrimp Grounds, 23 May 1958. UF 208288 (1, 163) 24°53′-58′ N, 82°00′-10′ W in 22 m, 16 July 1959. UF 211001 (1, 155) 28°09′ N, 95°35.5′ W in 42 m, OREGON sta. 3873, 20 Sept. 1962. UF 211004 (2, 171-205) 25°32′ N, 96°58.5′ W in 35 m, OREGON sta. 3912, 24 Sept. 1962. UF 211008 (1, 181) 25°35′ N, 96°52′ W in 44 m, OREGON sta. 3923, 26 Sept. 1962. UF 211045 (5, 182-224) 28°13.5′ N, 92°56′ W in 68 m, 14 Sept. 1962. UF 213265 (13, 159-192) 30°19′ N, 88°41′ W in 16 m, SILVER BAY sta. 5004, 22 June 1963. UF 229544 (6, 85-188) 24°46.8′-47.7′ N, 82°57.6′-57.7′ W in 24 m, GERDA sta. 1237, 7 Mar. 1970. UF 229546 (13, 74-189) and UF 233165 (3, 140-175) 24°52.7′-53.2′ N, 82°56.0′ W in 44 m, GERDA sta. 1239, 7 Mar. 1970. UF 233178 (1, 213) 28°00′ N, 93°30′ W in 91 m, OREGON sta. 4603, 17 Jan. 1964. UF 233915 (1, 174) 30.163° N, 87.975° W, Mississippi, shallow gulf off Mobile, 13 Aug. 1963. UF 234466 (12, 73-220) 30.038° N, 88.383° W, Louisiana, off Bayou Fourche in 25 m, 12 Apr. 1971. UF 234467 (12, 143-244) 30.038° N, 88.383° W, Louisiana, off Bayou Fourche in 25 m, 14 Apr. 1971. UF 234490 (6, 197-225) 29.987° N, 88.556° W, Mississippi, 16 miles S of Horn Island Pass in 22 m, 17 Mar. 1959. UF 234494 (7, 164-244) 28°20′ N, 93°55′ W in 55 m, OREGON sta. 10411, 12 Mar. 1969. UF 234502 (2, 132-211) 29.869° N, 89.986° W, Louisiana, 25 miles S of Grand Isle, May 1961. UF 234508 (4, 191-200) 20°12′ N, 91°40′ W in 37 m, OREGON sta. 720, 11 Dec. 1952. UF 234513 (1, 178) 24°51′ N, 82°25′ W in 29 m, SILVER BAY sta. 2441, 31 Oct. 1960. UF 234514 (2, 170-203) 19°54.1′ N, 93°43′ W in 42 m, OREGON sta. 719, 10 Dec. 1952. UMMZ 135645 (1, 198) 27.828° N, 96.997° W, Texas, 1-5 miles off Aransas Pass, 12 Jan. 1942. USNM 155501 (1, 188) 28.917° N, 89.287° W, Louisiana, 6 mi. ESE of SW Pass in 56 m, 16 Feb. 1934. USNM 155505 (1, 137) 29.083° N, 94.775° W, SW of Galveston, Texas, PELICAN sta. 128-3, 13 Feb. 1939. USNM 155591 (2, 97-120) 28°02.5′ N, 96°39.5′ W in 18 m, PELICAN sta. 53-5, 2 May 1938. USNM 155672 (1, 155) 32°34.5′ N, 79°19.5′ W in 31 m, PELICAN sta. 194-11, 9 Mar. 1940. USNM 155676 (1, 140) 27°45.5′ N, 96°57.5′ W in 20 m, PELICAN sta. 47-5, 26 Apr. 1938. USNM 325303 (2, 177-192) 29.974° N, 88.581° W, Mississippi, South Horn Island, in 26 m, 14 Oct. 1959. USNM 216436 (3, 151-173) 24°45′-50′ N, 82°10′-30′ W, 26 May 1957. USNM 279522 (1, 53) 31.03° N, 78.05° W, 12 Aug. 1980. USNM Uncat. (2, 150-169) Mexico, 10 mi. N of Huts Bayou, 17 Mar. 1947

(unknown locale, not mapped). USNM Uncat. (2, 141-177) 29.238° N, 94.727° W, Texas, off Galveston in 11 m and off Aransas, GRAMPUS sta. 10469, 10476, 29 Feb., 5 Mar. 1917. USNM 405914 (4, 192-273) 28°45′ N, 89°43′ W in 91 m, OREGON sta. 10, 28 May 1950. USNM 405911 (3, 152-181) 24°45.5′ N, 82°30′ W in 27 m, OREGON sta. 562, 28 May 1952. UF 234480 (5, 215-235) 18°43′ N, 93°30; W in 64 m, OREGON sta. 1060, 16 May 1964.

Caribbean Sea: ANSP 192559 (13, 205-260) 10.558° N, 67.836° W, Venezuela, W.A. Lund 24. ANSP 142860 (3, 186-197) 11.714° N, 70.241° W, Venezuela, Punta Fijo, 29 Jan. 1965. ANSP 142861 (3, 206-267) 18.205° N, 67.188° W, Puerto Rico, Mayaguez, in 7-14 m, 29 April 1965. ANSP 142864 (1, 169) 18.205° N, 67.188° W, Puerto Rico, West Coast, June 1942. FMNH 69294 (1, 96) 18°35′ N, 64°43′ W in 49 m, OREGON sta. 2611, 27 Sept. 1959. GCRL 36545 (ex UP 806) (2, 167-218) 9.417° N, 79.832° W, Panama, Laguna de Chiriqui to Bahia de Las Mines, Mar. 1970. LACM 6212 (37, 75-210) 17°47′ N, 77°40′ W in 40 m, OREGON sta. 3541, 15 May 1962. LACM 6213 (94, 98-213) 17°55′ N, 77°53′ W in 40 m, OREGON sta. 3545, 15 May 1962. LACM 6768-4 (18, 90-259) 18.283° N, 67.133° W, Puerto Rico, off Añasco in 4-12 m, 29 May 1965. LACM 30726-2 (1, 241) 9.741° N, 82.844° W, Costa Rica, Cahuita Bay. LACM 30727-8 (4, 198-223) 9.675° N, 82.833° W, Costa Rica, Cahuita Bay, date? LACM 30730-4 (7, 123-180) 10.333° N, 83.25° W, Costa Rica, Limón Prov., Puerto Limón to Tortuguero, in 37- 44 m, 30 May 1968. LACM 30749-1 (3, 210-250) 9.583° N, 82.5° W, Costa Rica, Bocas del Drago to Punta Mona. MCZ 12440 (1, 216, holotype of *L. graellsi*) 23.153° N, 82.392° W, Cuba, Havana. UF 182949 (1, 167) 11°32.6′ N, 71°44′ W, Nov. 1958. UCR 205-1 (7, 131-193) 11.507° N, 83.555° W, Nicaragua, Zelaya Prov., Monkey Point in 31-49 m, 26-28 Apr. 1967. UCR 237-46 (1, 187) 10.025° N, 83.035° W, Costa Rica, Puerto Limón to San Juan de Norte in 18 m, 26 Mar.-2 Apr. 1968. UCR 254-20 (3, 150-156) 10.545° N, 83.480° W, Costa Rica, Puerto Limón to Tortuguero, 4-12 July 1968. UCR 524-10 (11,132-208) 10.358° N, 83.318° W, Costa Rica, Limón Prov., E of Río Tortuguero south to about 5 mi. N of Río Parismina in 11-76 m, 12-13 Oct. 1969. UF 207326 (2, 129-136) 18°35′N, 64°42.5′ W in 51 m, OREGON sta. 2612, 27 Sept. 1959. UF 213963 (1, 200) 11°41′ N, 69°32′ W in 55 m, OREGON sta. 4422, 5 Oct. 1963. UF 215080 (1, 186) 12°17′ N, 70°34′ W in 73 m, OREGON sta. 4403, 27 Sept. 1963. UF 215361 (2, 108-212) 10°29′ N, 62°00′ W in 33 m, OREGON sta. 4492, 24 Oct. 1963. UF 215411 (4, 157-219) 11°05′ N, 74°28′ W in 23-27 m, OREGON sta. 4848, 17 May 1964. UF 215417 (5, 136-245) 10°59.3′ N, 75°05.5′ W in 55 m, OREGON sta. 4864, 22 May 1964. UF 215422 (7, 158-245) 10°55′ N, 75°20′ W in 44 m, OREGON sta. 4874, 23 May 1964. UF 215598 (4, 210-236) 11°06.8′ N, 74°23.6′ W in 91 m, OREGON sta. 4846, 17 May 1964. UF 215716 (5, 88-273) 10°11′ N, 64°48′ W in 35 m, OREGON sta. 4473, 19 Oct. 1963. UF 220637 (5, 136-236) 18.277° N, 67.201° W, Puerto Rico, off Añasco in 5-15 m, 29 May 1965. UF 221793 (14, 99-205) 17°51′ N, 77°19.5′ W in 50 m, OREGON sta. 5399, 18 May 1965. UF 221815 (9, 260-162) 11°50′ N, 70°40′ W in 58 m, OREGON sta. 5866, 5 Oct. 1965. UF 226494 (1, 59) 09°40.0′-41′N, 76°01.5′-05.4′ W in 46-55 m, PILLSBURY sta. 371, 13 July 1966. UF 226647 (1, 64) 08°37.6′-37.9′ N, 75°50.4′-51.5′ W in 37 m, PILLSBURY sta. 370, 13 July 1966. UF 229159 (3, 114-205) 08°13.2′-15.0′ N, 76°49.4′-50′W in 30 m, PILLSBURY sta. 353, 11 July 1966. UF 229160 (8, 109-243) 11°36.1′-37.0′ N, 70°33.1′-34.1′ W in 34 m, PILLSBURY sta. 762, 27 July 1968. UF 229161 (1, 273) 11°01′ N, 75°05′ W in 38 m, PILLSBURY sta. 790, 31 July 1968. UF 229543 (2, 72-196) 08°51.9′-53,9′ N, 76°27.2′ W in 37 m, PILLSBURY sta. 361, 12 July 1966. UF 229545 (3, 223-248) 18°38′ N, 93°43′ W in 71 m, OREGON 10974, 7 Jan 1970. UF 232208 (1, 212) 10.031° N, 61.936° W, Trinidad, SW, Icacos, 4 May 1964. UF 232209 (6, 185-273) 11°25′ N, 63°49′ W in 49 m, OREGON sta. 5620, 24 Sept. 1965. UF 233110 (19, 74-262) 11°33.1′-34.5′ N, 69°11.0′-12.6′ W in 16-38m, PILLSBURY sta. 756, 27 July 1968. UF 233167 (23, 49-153) 11°08′-11′ N, 63°17′-18′ W in 58 m, PILLSBURY sta. 712, 19 July 1968. UF 233177 (3, 201-225) 18°36′-37′ N, 93°44′ W in 59 m, OREGON sta.10965-67, 6 June 1970 (This collection has the station label OREGON 10962, made 5 June 1970 in 711 m, much too deep for this species. We presume there was a mix up in station numbers and that the correct station data are as indicated). UF 233171 (9, 83-160) 12°15.8′ N, 83°31.1′ W in 12 m, PILLSBURY sta. 1333, 28 Jan. 1971. UF 233174 (5, 42-93) 10°36.′-37.3′ N, 68°11.4′-12.3′ W in 24 m, PILLSBURY sta. 750, 25 July 1968. UF 234484 (1, 203) 9.122° N, 60.250° W, Venezuela, off mouth of Orinoco R. in 46 m. UF 234436 (3, 100-172, 08°57.5′-09°00.3′ N, 76°30.5′-33.6′ W in 55-64 m, PILLSBURY sta. 362, 12 July 1966. UF 234485 (11, 86-183) 10°45.3′-46.1 N, 68°08.3′-07.7′ W in 45 m, PILLSBURY sta. 751, 26 July 1968. UF 234486 (5) 09°33′ N, 76°02′ W in 49 m, OREGON sta. 10230, 28 Nov. 1968. UF 234512 (32, 140-202) 15°56′ N,83°35′ W in 47 m, OREGON sta. 6417, 2 Feb. 1967. UF 234517 (2, 106-133) 15°21′ N, 81°34′ W, 10 Apr. 1967. UF 234518 (1, 90) 15°49.5′ N, 83°44′ W, 10 Apr. 1967. UF 234519 (8, 88-117) 15°49.5′ N, 83°44′ W, 7 Apr. 1967. UF 234520 (6, 92-

115) 15°43′ N, 83°45′ W, 11 Apr. 1967. UF 234521 (6, 124-199) 15°54′ N, 83°40′ W, 9 Apr. 1967. UF 234522 (30, 117-182) 15°48′ N, 83°54′ W, 7 Apr. 1967. UF 234523 (32, 105-200) 15°49.5′ N, 83°44′ W, 7 Apr. 1967. UF 234524 (11, 100-187) 15°54′ N, 83°40′ W, 8 Apr. 1967. UF 234525 (12, 101-222) 16°56′ N, 88°10.6′ W, UNDAUNTED 6703, sta. 69, 17 May 1967. UF 234526 (37, 139-226) 17°01.5′ N, 88°10.7′ W, UNDAUNTED 6703, sta. 71, 18 May 1967. UF 234529 (4, 70-205) 15°45′ N, 83°32′ W, 9 Apr. 1967. UF 234530 (20-146-227) 16°49.8′ N, 88°12.7′ W, UNDAUNTED 6703 sta. 70, 17 May 1961. UF 234532 (2, 174-210) 06°45′-50′ N, 54°56′-27′ W in 45-54 m, OREGON sta. 14454-55, 3 Feb. 1974. UF 234544 (1, 111) 10°36.1′-37.3′ N, 68°11.4′-12.2′ W, PILLSBURY sta. 750, 25 July 1968. UF 234589 (1, 89) 11°08′-11′ N, 63°17′-18′ W in 29 m, PILLSBURY sta. 712, 19 July 1968. UF 234598 (2, 200-221) 11°05′ N, 60°56; W in 115 m, OREGON sta. 5032, 23 Sept. 1964. UF 234639 (4, 256-258) 08°41′ N, 77°12′ W in 62 m, OREGON sta. 5728, 17 Oct. 1965. UF 101697 (5, 116-183) 17°53′ N, 77°50′ W in 40-48 m, OREGON sta. 5398, 18 May 1965. UF 101699 (6, 172-213) 17°51′ N, 77°49.5′ W in 50 m, OREGON sta. 5399, 18 May 1965. UF 182904 (6, -) 16°01′ N, 83°35.5′ W in 56 m, OREGON sta. 6416, 2 Feb. 1967. UF Uncat. (2, 230-236) 09°58′-10°05′ N, 75°38′-40′ W in 37-44 m, OREGON sta. 10215-17, 27-28 Nov. 1968. UF 101684 (107, 126-234) 17°12′ N, 88°11′ W in 18 m, 9 May 1967. UF 183122 (1,) 09°22.1′ N, 75°36.4′ W, SOSC 127, 6 Sept. 1969. USNM 144561 (1, 232) 18.163° N, 67.205° W, Puerto Rico, west coast, 1942. USNM 178568 (1, 200) 18.575° N, 72.423° W, Haiti, 1927. USNM 235302 (2, 138-181) 11°32.6′ N, 71°44′ W, 12 Nov. 1958.

Lepophidium collettei

Holotype.—**Atlantic Ocean:** USNM 405909 (1, 162) 04°52′ N, 51°49′ W in 37 m, OREGON sta.17620-21, 5 May 1975.

Paratypes.—**Atlantic Ocean:** CAS 48099 (3, 120-152) 02°53′ N, 49°33′ W in 54 m, OREGON sta. 19956, 25 May 1976. CAS 48100 (3, 120-136) 02°45′ N, 49°33′ W in 54 m, OREGON sta. 19954, 25 May 1976. KU 32025 (ex UF 213298) (1, 156, cleared and stained) 04°38′ N, 51°05′ W in 50 m, OREGON sta. 4208, 26 Feb. 1963. KU 33026 (2, 132-153) collected with the holotype. UF 35541 (1, 117) 05°01′ N, 52°19′ W in 7-9 m, CAYENNE sta. 02, 11 Dec. 1977. UF 232577 (1, 152) 06°31′ N, 54°33′ W in 37 m, OREGON sta. 14446, 2 Feb. 1974. UF 232578 (1, 143) 05°06′ N, 51°55′ W in 46 m, OREGON sta. 24478, 6 Feb. 1974. UF 234461 (1, 134) 10°29′ N, 62°00′ W in 33 m, OREGON sta. 4492, 24 Oct. 1963. UF 232536 (2, 135-139) 05°29′ N, 52°07′ W in 54 m, OREGON sta. 4204, 24 Feb. 1963. UF 234537 (8, 135-164) 04°30′ N, 50°52′ W in 66 m, OREGON sta. 4209, 27 Feb. 1963. UF 234538 (2, 143-144) 05°29′ N, 52°02′ W in 58 m, OREGON sta. 4203, 23 Feb. 1963. USNM 405921 (1, 120) 00°48′ N, 47°45′ W in 47 m, OREGON sta. 17712-13, 14 May 1975. USNM Uncat. (1, 152) 03°48′ N, 50°22′ W in 59-60 m, OREGON sta. 17654-55, 8 May 1975. USNM Uncat. (3, 132-162) 04°52′ N, 51°49′ W in 37 m, OREGON 17620-21, 5 May 1975. USNM 405922 (1, 133) 04°52′ N, 51°28′ W in 55 m, OREGON 17624-25, 6 May 1975.

Lepophidium crossotum

Holotype.—**Gulf of Mexico:** UF 217430 (1, 138) 24°23′-24′ N, 82°56′-57′ W in 82-97 m, GERDA sta. 572, 13 Apr. 1965.

Paratypes.—**Gulf of Mexico:** FMNH 59950 (2, 92-128) 28°09′ N, 84°54′ W in 146 m, OREGON sta. 920, 11 Mar. 1954. FMNH 59951 (1, 157) 29°48′ N, 86°37′ W in 122 m, OREGON sta. 945, 21 Mar. 1954. KU 33119 (4, 96-133) collected with the holotype. MCZ 28146 (1, 122) 23°13′ N, 89°10′ W in 154 m, sta. 36. TU 13213 (5, 132-139) and UF 3632 (2, 138-141) 29°50′ N, 86°30′ W in 92 m, OREGON sta. 944, 21 Mar. 1954. UF 70886 (4, 110-129) 28°56′ N, 85°20′ W in 87 m, TURSIOPS cr. 7020, sta. 40, 1 Dec. 1970. UF 70911 (11, 97-147) 29°33′ N, 86°15′ W in 119 m, TURSIOPS cr. 7102, sta. 19, 25 Jan. 1971. UF 71374 (3, 92-103) 28°44′ N, 85°06′ W in 84 m, TURSIOPS cr. 7012, sta. 18, 10 Apr. 1970. UF 71381 (2, 123-124) 23°51′ N, 88°59′ W in 192 m, TURSIOPS cr. 7016, sta. 6, 31 May 1970. UF 71427 (18, 94-136) 28°56′ N, 85°23′ W in 92 m, TURSIOPS cr. 7023, sta. 7, 1 Dec. 1970. UF 71462 (1, 69) 28°27′ N, 84°57′ W in 93 m, TURSIOPS cr. 7104, sta. 9, 20 Feb. 1971. UF 71507 (6, 96-168) 29°54.5′ N, 86°41′ W in 125 m, TURSIOPS cr. 7120, sta. 32, 20 July 1971. UF 72286 (36, 60-163) 29°33′ N, 86°13′ W in 107 m, TURSIOPS cr. 7120, sta. 13, 19 July 1971. UF 81433 (3, 100-165) 28°02.2′ N, 84°49.0′ W in 154 m, OREGON sta. 44952, 15 Jan. 1987. UF 81445 (1, 99) 28° 30′ 30″ N, 85° 11′ 13″ W in 40 m, Florida, S of Cape San Blas, OREGON sta. 44925, Mar. 1990. UF 213967 (3, 86-121) 23°51′ N, 87°49′ W in 186 m, OREGON sta. 4575, 9 Dec. 1963. UF 220526 (6, 100- 138) 24°23′-24′ N, 82°54′-57′ W in 82-97 m, GERDA sta. 573, 13 Apr. 1965. UF 234451 (2, 122-124 (24°22′-23′ N, 82°50′-53′ W in 90 m, GERDA sta. 568,

12 Apr. 1965. UF 135181 (10, 67-133) collected with the holotype). USNM 405923 (3, 110-141) 29°50′ N, 86°30′ W in 92 m, OREGON sta. 944, 21 Mar. 1954.

Atlantic Ocean: GMBL 01714 (2, 94-122) 32°09.1′ N, 79°02.0′ W in 140 m, ALBATROSS IV, 9 Feb. 1980. GMBL 01715 (1, 128) 31°54.0′ N, 79°17′ W in 141 m, DOLPHIN sta. DP 76-01, 5 Feb. 1976. GMBL 01717 (2, 89-118) 29°25′ N, 80°12′ W in 97-110 m, DOLPHIN, 30 Oct. 1973. UF 206048 (1, 49) 24° 49′ 0″ N, 80° 35′ 27″ W in 20 m, Florida, off Alligator Reef, Monroe Co. in 71-75 m, 26 July 1948. UF 209976 (1, 56) 24° 50′ 39″ N, 80° 31′ 57″ W in 25 m, Florida, 5 mi. off Islamorada, Monroe, Co. in 91 m, 20 Aug. 1961. UF 211641 (2, 128-129) 24°38′ N, 80°58′ W in 64 m, SILVER BAY sta. 2398, 27 Oct. 1960. UF 213327 (1, 113) 25°46′ N, 80°04.5′ W in 91 m, GERDA sta. 6, 25 May 1962. UF 215591 (1, 93) 25°38′-47′ N, 80°05′ W in 70-88 m, GERDA sta. 282, 1 Apr. 1964. UF 231797 (2, 112-133) 24°49.1′ N, 80°32.8′ W in 88-93 m, GERDA sta. 1040, 21 Mar. 1969 (originally labeled GERDA sta. 1039 but this was a deepwater plankton tow in which the gear was lost and no collection made). UF 234509 (2) 24°38′ N, 80°58′ W in 64 m, SILVER BAY sta. 2398, 27 Oct. 1960. UF 135182 (1, 139) 27°42.2′-42.9′ N, 79°56.8′-57.4′ W in 98-108 m, GOSNOLD Cr. 210, sta. 63, 28 Nov. 1973. VIMS 1378 (16) 34°36.6′ N, 75°40.6′ W in 280 m, 18 Apr. 1971).

Non-types.—**Atlantic Ocean:** ANSP 97603 (1, 104) 27°49′ N, 79°58′ W in 91 m, SILVER BAY sta. 1959, 20 Apr. 1960. UF 211648 (3, 116-141) 24°42′ N, 80°44′ W in 91 m, SILVER BAY sta. 2390, 26 Oct. 1960. UF 234515 (1, 134) 24°38′ N, 80°58′ W in 64 m, SILVER BAY sta. 2398, 27 Oct. 1960.

Gulf of Mexico: FMNH 59946 (1, 103) 27°58′ N, 93°43′ W in 100 m, OREGON sta. 9, 27 May 1950.

Lepophidium cultratum

Holotype.—**Caribbean Sea:** UF 211765 (1, 308) 09°18′ N, 80°22′ W in 229 m, Oregon sta. 3590, 29 May 1962.

Paratypes.—**Atlantic Ocean:** FMNH 64498 (4, 200-245) 09°36′ N, 59°44′ W in 146 m, OREGON sta. 1987, 4 Nov. 1957. FMNH 64500 (1, 203) 09°39′ N, 59°47′ W in 183 m, OREGON sta. 1986, 4 Nov. 1967. FMNH 64506 (1, 180) 06°39′ N, 52°53′ W in 91 m, OREGON sta. 2032, 10 Nov. 1957. UF 180292 (6, 130-241) 09°36′ N, 59°44′ W in 146 m, OREGON sta. 1987, 4 Nov. 1957. UF 233175 (1, 260) 11°22.0′-23.8′ N, 61°25.8′-26.4′ W in 267 m, PILLSBURY sta. 848, 2 July 1969. UF 234591 (1, 180) 6°7′ N, 52°19′ W in 84-91 m, PILLSBURY sta. 650, 8 July 1968. UF 180027 (1, 206) 09°53′ N, 59°53′ W in 230 m, OREGON sta. 1983, 3 Nov. 1967. UF 180241 (6, 175-272) and USNM 405910 (18, 140-260) 09°39′ N, 59°47′ W in 183 m, OREGON sta. 1986, 4 Nov. 1957. UF 180117 (1, 124) 09°36′ N, 59°44′ W in 146 m, OREGON sta. 1987, 4 Nov. 1957.

Caribbean Sea: FMNH 69288 (1, 205) 16°38′ N, 82°43′ W in 256 m, OREGON sta. 1867, 21 Aug. 1957. FMNH 69296 (1, 235) 16°45′ N, 81°28′ W in 293 m, OREGON sta. 1882, 23 Aug. 1957. KU 33120 (5, 130-296) collected with the holotype. UF 135183 (29, 108-276) collected with the holotype. UF 202621 (1, 196) 11°27′ N, 83°11′ W in 247 m, OREGON sta. 1902, 9 Sept. 1957. UF 202711 (4, 217-235) 16°38′ N, 81°39′ W in 274 m, OREGON sta. 1879, 22 Aug. 1957. UF 211049 (1, 234) 09°02′ N, 81°26′ W in 180 m, OREGON sta. 3595, 30 May 1962. UF 211067 9, 200-294) 09°18′ N, 80°27′ W in 183 m, OREGON sta. 3588, 29 May 1962. UF 211507 (1, 255) 09°12′ N, 81°30′ W in 247-256 m, OREGON sta. 3585, 25 May 1962. UF 211764 (15, 161-269) 09°04′ N, 81°25′ W in 274-293 m, OREGON sta. 3597, 31 May 1962. UF 211766 (7, 185-276) 16°45′ N, 81°27′ W in 279 m, OREGON sta. 3626, 7 June 1962. UF 215378 (2, 301-301) 12°17′ N, 72°31′ W in 279 m, OREGON sta. 4921, 1 June 1964. UF 215420 (4, 189-289) 11°09.5′ N, 74°24.5′ W in 311-329 m, OREGON sta. 4838, 16 May 1964. UF 215421 (2, 222-224) 11°08′ N, 74°23.8′ W in 183 m, OREGON sta. 4856, 19 May 1964. UF 221794 (8, 235-307) 10°42′ N, 67°56′ W in 210 m, OREGON sta. 5628, 28 Sept. 1965. UF 229155 (3, 173-238) 10°20.2′-21.9′ N, 75°44.0′-47.3′ W in 150-170 m, PILLSBURY sta. 797, 1 Aug. 1968. UF 229156 (3, 177-274) 11°20′-22′ N, 73°44′-48.5′ W in 143-174 m, PILLSBURY sta. 783, 3 July 1968. UF 229157 (1, 155) 11°08.5′ N, 74°18.1′-19.3′ W in 101-165 m, PILLSBURY sta. 786, 31 July 1968. UF 229528 (5, 153-289) 09°40′ N, 79°07′ W in 223 m, OREGON sta. 5738, 19 Oct. 1965. UF 233166 (2, 236-248) 11°39.6′-42.0′ N, 69°20.0′-22.1′ W in 161-186 m, PILLS BURY sta. 757, 27 July 1968. UF 233168 (1, 267) 10°42.5′-44′ N, 66°20.4′-21′ W in 137-192 m, PILLSBURY sta. 738, 22 July 1968. UF 233176 (3, 118-246) 11°16.9′-19.7′ N, 74°14.4′-17.0′ W in 164-176 m, PILLSBURY sta. 785, 31 July 1968. UF 179384 (1, 193) 10°42′ N, 67°56′ W in 210 m, OREGON sta. 5628, 28 Sept. 1965. UF 180029 (1, 194) 09°13′ N, 80°43′ W in 274 m, OREGON sta. 3591, 30 May 1962.

Lepophidium entomelan

Holotype.—**Gulf of Mexico:** UF 214242 (1, 230) 29°13′ N, 88°11′ W in 183 m, OREGON sta. 4583, 12 Dec. 1963.

Paratypes.—**Gulf of Mexico:** FMNH 59953 (2, 166-170) 29°48′ N, 86°37′ W in 125 m, OREGON sta. 945, 21 Mar. 1954. FMNH 74813 (4, 169-195) 27°20′ N, 96°18′ W in 183 m, June 1952. GMBL Uncat. (1, 201) 29°13.5′ N, 88°12′ W in 229 m, OREGON sta. 2203, 26 June 1958. KU 33123 (2, 194-201) 29°07′ N, 88°34′ W in 229 m, OREGON sta. 3646, 14 June 1962. TU 11760 (1, 192) 29°41′ N, 86°44′W in 183 m, OREGON sta. 946, 22 Mar. 1954. UF 29731 (1, 194) 29°50′ N, 86°42′ W in 157-176 m, 7 Feb. 1978. UF 40272 (4, 218-239) 26°10.8′ N, 96°19.5′ W in 229 m, OREGON sta. 39575, 23 Aug. 1983. UF 70608 (1, 140) 29°01′ N, 85°21′ W in 183 m, TURSIOPS cr. 7018, sta. 7, 3 Oct. 1970. UF 70723 (2, 142-162) 29°52.5′ N, 86°44.5′ W in 137 m, TURSIOPS cr. 7110, sta. 13, 10 Apr. 1971. UF 70952 (1, 119) 29°14′ N, 88°00′ W in 183 m, TURSIOPS cr. 7127, sta. 16, 18 Oct. 1971. UF 70804 (3, 150-174) 29°40′ N, 86°41.5′ W in 195 m, TURSIOPS cr. 7120, sta. 31, 20 July 1971. UF 70836 (12, 80-196) 29°22′ N, 86°13′ W in 183 m, TURSIOPS cr. 7127, sta. 1, 16 Oct. 1971. UF 70880 (8, 64-205) 28°40′ N, 85°30′ W in 186 m, TURSIOPS cr. 7018, sta. 8, 3 Oct. 1970. UF 70883 (3, 93-150) 29°48′ N, 86°55′ W in 186 m, TURSIOPS cr. 7019, sta. 6, 4 Oct. 1970. UF 71262 (2, 122-155) 29°12′ N, 88°16′ W in 183 m, TURSIOPS cr. 7019, sta. 9, 11 Oct. 1970. UF 71269 (1, 152) 29°04.5′ N, 88°40′ W in 186 m, TURSIOPS cr. 7019, sta. 10, 12 Oct. 1970. UF 71275 (3, 165-201) 29°57′ N, 86°55′ W in 144 m, TURSIOPS cr. 7019, sta. 27, 15 Oct. 1970. UF 71319 (9, 135-174) 29°25.5′ N, 86°19.5′ W in 175 m, TURSIOPS cr. 7120, sta. 14, 20 July 1971. UF 71390 (1, 72) 28°40′ N, 85°30′ W in 186 m, TURSIOPS cr. 7018, sta. 8, 3 Oct. 1970. UF 71398 (1, 175) 29°37′ N, 86°37′ W in 187 m, TURSIOPS cr. 7019, sta. 7, 10 Oct. 1970. UF 71501 (1, 77) 29°25.5′ N, 86°19.5′ W in 175 m, TURSIOPS cr. 7120, sta. 14, 20 July 1971. UF 71508 (9, 80-186) 29°54.5′ N, 86°41′ W in 125 m, TURSIOPS cr. 7120, sta. 32, 20 July 1971. UF 81503 (1, 193) 29° 30′ 42″ N, 86° 24′ 34″ W in 45 m, Florida, SW of Panama City, OREGON sta. 44901, Fall 1988. UF 206887 (2, 164-238) 29 °16.5′ N, 88°04.5′ W in 146-165 m, OREGON sta. 2827, 17 July 1960. UF 207132 (1, 222) 29°13.5′ N, 88°13′ W in 124 m, OREGON sta. 2803, 1 June 1960. UF 211062 (26, 135-172) 21°50′ N, 86°34′ W in 55 m (see note in text), OREGON sta. 3640, 12 June 1962. UF 211068 (1, 204) 26°35.5′ N, 96°24.5′ W in 137-165 m, OREGON sta. 3953, 27 Sept. 1962. UF 214106 (6, 202-222) 29 °13′ N, 88°11′ W in 183 m, OREGON sta. 4583, 12 Dec. 1963. UF 182954 (4, 116-256) 29°13.5′ N, 89°12′ W in 229 m, OREGON sta. 2203, 26 June 1958. UF 182955 (2, 161-209) 29°48′ N, 86°37′ W in 122 m, OREGON sta. 945, 21 Mar. 1954.

Atlantic Ocean: GMBL 1718 (1, 192) 32°09.1′ N, 79°02.0′ W in 139-143 m, ALBATROSS IV, 9 Feb. 1980.

Non paratypes.—**Caribbean Sea:** FMNH 69289 (2, 115-122) 16°45′ N, 81°28′ W in 293 m, OREGON sta. 1882, 23 Aug. 1957. FMNH 69293 (4, 120-128) 11°27′ N, 83°11′ W in 247 m, OREGON sta. 1902, 9 Sept. 1957. FMNH 69298 (9) 16°38′ N, 82°34′ W in 375-384 m, OREGON sta. 1869, 21 Aug. 1957. FMNH 69299 (3, 145-165) 16°39′ N, 82°29′ W in 411 m, OREGON sta. 1870, 21 Aug. 1957. FMNH 69387 (1, 153) 16°52′ N, 81°30′ W in 366 m, OREGON sta. 1883, 23 Aug. 1957. FMNH 99132 (ex FMNH 69296) (1, 142) 16°45′ N, 81°28′ W in 293 m, OREGON sta. 1882, 23 Aug. 1957. KU 33124 (4, 128-136) 14°53.9′ N, 81°23.2′ W in 296-375 m, PILLSBURY sta. 1356, 31 Jan. 1971. UF 202323 (1, 144) 16°39′ N, 82°29′ W in 412 m, OREGON sta. 1870, 21 Aug. 1957. UF 211406 (2, 138-157) 14°10′ N, 81°50′ W in 549-603 m, OREGON sta. 3571, 21 May 1962. UF 211501 (9, 145-156) 14°08′ N, 81°55′ W in 366-439 m, OREGON sta. 3570, 21 May 1962. UF 229240 (23) 14°53.9′ N, 81°23.2′ W in 296-375 m, PILLSBURY sta. 1356, 31 Jan. 1971. UF 234452 (16, 136-163) 16°45′ N, 81°27′ W in 279 m, OREGON sta. 3626, 7 June 1962. UF 234599 (2, 185-193) 16°35′ N, 87°56′ W, UNDAUNTED cr. 6703, sta. 76, 19 May 1967. UF 182956 (4, 142-158) 13°26′ N, 81°52′ W in 384 m, OREGON sta. 10201, 21 Nov. 1968. UF 182957 (1, 143) 14°24′ N, 81°48′ W in 393 m, OREGON sta. 10196, 20 Nov. 1968. UF Uncat. (3, 108-126) (ex UF 202621) 11°27′ N, 83°11′ W in 247 m, OREGON sta. 1902, 9 Sept. 1957. UF Uncat. (1, 193) 17.160° N, 87.820° W in 363-371 m, JSL Dive 2802, Belize. UF 183125 (16) 17°28.5′ N, 87°57.5′ W in 274-329 m, OREGON sta. 6404, 23 Jan. 1967. USNM Uncat. (4, 136-150) 14°17′ N, 81°55′ W in 329 m, OREGON sta. 10195, 18 Nov. 1968.

Lepophidium gilmorei

Holotype.—**Caribbean Sea:** UF 182220 (1, 115) 12° 06.61′ N 61° 45.91′ W Grenada, off Halifax Harbor in 125 m, Harbor Branch Dive 1782, 14 May 1989.

Paratypes.—**Gulf of Mexico:** UAIC 10889.50 (1, 77) 29°48.95′-50.18′ N, 87° 10′ 03′- 87° 16.33′ W, in 78-107 m, BELLOWS BK 92-40, 23 May 1992.

Atlantic Ocean: KU 34001 (1, 172) 33°10.5′ N, 77°26.5′ W in 82-106 m, SILVER BAY sta. 5653, 12 Apr. 1964. UF Uncat. (1, 142) 25.008° N, 77.592° W, Bahamas, West end of New Providence I. in 181 m, Harbor Branch Dive 1710, 16 Nov. 1985. UF 38459 (1, 114) 33°49′ N, 76°33′ W in 88 m, DELAWARE II 83-5, sta. 330, 16 May 1983.

Caribbean Sea: UF 233173 (2, 96-113) 10°44′-45′ N, 66°07′-08′ W in 60-73 m, PILLSBURY sta. 737, 22 July 1968.

Lepophidium hubbsi

Holotype.—**Pacific Ocean, Costa Rica:** LACM 35772-1 (1, 209) Costa Rica, 10 miles SW of Isla del Caño in 142 m, R/V Tauro sta. T-3, 15 July 1969.

Paratypes.—**Pacific Ocean, Costa Rica:** UCR 328-3 (4, 167-195) collected with the holotype. UCR 682-3 (1, 142) 08° 43′ 55″ N, 83° 57′ 52″ W in 73-82 m, R/V Searcher sta. 480, 16 March 1975.

Panama: UF 232882 (1, 212) "4°, 7°, 15°," no precise data, but probably taken on same cruise as next collection, 11-13 Dec. 1969, assigned 8° N, 79.25° W. GCRL 13965 (6, 169-217) and UP 807 (2, 169-189) 7.415° N, 78.052° W, Darien, between Pta. Ana Maria and Ensenada de Guayabo, M/V Canopus, 15 Dec. 1969.

Colombia, UF 232229 (1, 232) 06° 31.2′ N, 77° 32.2′ W in 205 m, R/V Gilliss sta. 15, 16 January 1972.

Non paratypes.—**Pacific Ocean, Panama:** GCRL 13972 (1, 189, poorly preserved) 07° 33′ 45″ N, 81° 57′ 20″ W in 182-209 m, M/V Canopus, 6 June 1973. UF 228248 (1, 210) 07°30.5′-31.0′ N, 79°41.5′-43.3′ W in 210 m, PILLSBURY sta. 512, 4 May 1967. UF 234543 (1, 61) 07°39.5′-40.9′ N, 79°40.7′-42.7′ W in 117 m, PILLSBURY sta. 513, 4 May 1967. UF 234599 (1, 76) 07°50.5′-50.8′ N, 78°48′-49′ W in 58 m, PILLSBURY sta. 556, 8 May 1967.

Lepophidium inca

Holotype.—**Peru:** USNM 216345 (1, 193) 05°02′ S, 81°24′ W in 195-316 m, Anton Bruun Cr. 16, sta. 627A, SOSC 289, 3 June 1966.

Paratypes.—**Pacific Ocean, Peru:** USNM 216346 (22, 132-191), UF 232871 (5, 165-178), LACM 35562-1 (10, 161-182), CAS 33808 (10, 139-185) all collected with the holotype. IMARPE 1199 (1, 171) 4.968° S, 81.299° W, Paita, Peru, in 20-300 m, March 1965 and April 1966; IMARPE 843 (2, 161-166) 04°48′ S, 81°17′ W in 16 m, Anton Bruun Cr. 16, sta. 624b, 2 June 1966.

Non paratypes.—**Pacific Ocean, Peru:** IMARPE 135A (2, 161-166) 04°46′ S, 81°17′ W in 16 m, ANTON BRUUN Cr. 16, sta. 624B, 2 July 1966. KU 34100 (1, 117) ANTON BRUUN sta. 631. KU 34101 (34, 156-183) and UF 234593 (39, 150-198) 04°57′ S, 81°23′ W in 118-133 m, ANTON BRUUN cr. 16, sta. 625A, 2 June 1966. MCZ 163742 (15, 155-158) and UF 141797 (46, 162-196) 05° S, 81°18′ W in 120 m, ANTON BRUUN cr. 18B, sta. 761, 7 Sept. 1966.

Lepophidium jeannae

Holotype.—**Gulf of Mexico:** ANSP 69724 (1, 41) 24.465°N, 81.782°W, Main Channel South of Key West, in 35 m, 10-Apr-1940.

Gulf of Mexico: UF 201198 (1, 76) 24°45-50′ N, 82°10-30′ W in 29 m, CRR-F-74, 26 May 1957. UF 5728 (2, 192-1950) 21°09′ N, 91°41′ W in 51 m, M/V Oregon Sta. 1050, 13 May 1954. FMNH 59945 (2, 216-232) 27°58′ N, 93°43′ W in 101 m, OREGON sta. 9, 27 May 1950. FMNH 59948 (2, 169-227) 28°50′ N, 85°06′ W in 64 m, OREGON sta. 896, 7 Mar. 1954. FMNH 59949 (1, 274) 28°23′ N, 84°49′ W in 68 m, OREGON sta. 916, 10 Mar. 1954. FMNH 59952 (1, 144) 29°50′ N, 86°30′ W in 92 m, OREGON sta. 944, 21 Mar. 1954. FMNH 59954 (1, 245) 25°35′ N, 82°49′ W in 27 m, OREGON sta. 998, 8 Apr. 1954. FMNH 69302 (1, 103) 24°45′ N, 83°06′ W in 51 m, OREGON sta. 1554, 18 June 1956. FMNH 69304 (1, 271) 30°02′ N, 86°45′ W in 185 m, OREGON sta. 701, 15 Nov. 1952. FMNH 69305 (2, 232-261) 30°04.3′ N, 87°57.5′ W in 92 m, OREGON sta. 697, 14 Nov. 1952. MCZ 52711 (2, 194-230) 24°32.5′-29.5′ N, 83°17.5′-21′ W in 60 m, ANTON BRUUN Cr. XIX, sta. 834, 18 Oct. 1966. MCZ 52712 (15, 103-243) 24°36′-40′ N, 83°10′-11′ W in 55 m, ANTON BRUUN Cr. XIX, sta. 835, 18 Oct. 1966. UF 3642 (1, 238) 29°50′ N, 86°30′ W in 92 m, 21 Mar. 1954. UF 70671 (5, 137-242) 28°56′ N, 85°20′ W in 87 m, TURSIOPS Cr. 7020, sta. 40, 1 Dec. 1970. UF 75344 (1, 58) 29°52′ N, 85°57′ W in 36 m, TURSIOPS Cr. 6911, sta. 2. UF 205416 (1, 109) 24.728° N, 82.446° W, Florida, Dry Tortugas shrimp grounds, Fall, 1958. UF 206877 (1, 245) 25°10′ N, 82°13′ W in 26 m, 28-30 Mar. 1960. UF 217621 (1, 230) 23°22′-23′ N, 82°50′-53′ W in 90 m, GERDA sta.

568, 12 Apr. 1965. UF 229496 (1, 196) 20°12′ N, 92°03′ W in 58 m, OREGON sta. 11044, 16 June 1970. UF 229500 (5, 156-227) 20°17′ N, 92°07′ W in 66 m, OREGON sta. 11005, 16 June 1970. UF 229548 (1, 219) 28°14′ N, 84°26′ W in 55 m, HERNAN CORTEZ sta. 10, 1 May 1965. UF 232214 (1, 62) 29°56′ N, 87°34′ W in 31 m, OREGON sta. 2838, 18 June 1960. UF 234462 (2, 180-183) 24.758° N, 83.023 W, Florida, 10 mi. off Dry Tortugas, 19 Nov. 1968. UF 234498 (1, 266) 21°53′ N, 86°29′ W in 180 m, OREGON sta. 6399, 22 Jan. 1967. UF 234586 (1, 216) 25°00′ N, 83°02′ W in 51 m, OREGON sta. 34, 25 June 1950. UF 234587 (1, 181) 24°23′-24′ N, 82°56′-57′ W in 90 m, GERDA sta. 572, 13 Apr. 1965. USNM 163503 (1, 250) 29°50′ N, 86°30′ W in 73 m, OREGON sta. 944, 21 Mar. 1954. USNM 325305 (2, 188-182) 26°24′ N, 83°22′ W in 55. HERNAN CORTEZ sta. L, 22 Mar. 1966. USNM 325306 (1, 150) 26°24′ N, 83°22′ W in 55 m, HERNAN CORTEZ, 15 Feb. 1966. USNM 325307 (1, 208) 27°37′ N, 84°13′ W in 73 m, HERNAN CORTEZ sta. E, 7 Apr. 1966. USNM Uncat. (1, 158) 29°17′ N, 88°51′ W in 54 m, OREGON sta. 11210, 2 Sept. 1970. UF 110735 (2, 100-121) 25°17′ N, 80°09.5′ W in 49 m, SILVER BAY sta. 2354, 24 Oct. 1960.

Atlantic Ocean: UF 202225 (1, 196) 31°49′ N, 79°31′ W in 82 m, M/V Combat Sta. 519, 8 Oct. 1957. UF 202370 (1, 235) 29°15′ N, 80°13′ W in 55 m, M/V Combat Sta. 334, 1 June 1957. FMNH 69290 (1, 216) 32°27′ N, 78°54′ W in 44-59 m, COMBAT sta. 426, 2 June 1957. GMBL 67-33 (1, 251) 32°10′ N, 79°30′ W in 55 m, 12 Jan. 1976. GMBL 74-9 (2, 240-275) 32°05.0′ N, 79°21.0′ W in 77 m, 2 Mar. 1974. KU 33720 (2, 233-239) 28°03′ N, 80°01′ W in 64 m, OREGON sta. 5357, 15 Mar. 1965. UF 210246 (2, 68-98) 24.848° N, 80.548° W, Florida, Monroe Co., 4 mi. SE of Islamorada in 73 m, 20 Aug. 1961. UF 210808 (3, 189-209) 25°15′ N, 80°10′ W in 73-82 m, SILVER BAY sta. 3521, 9 Nov. 1961. UF 211088 (1, 238) 31°59′ N, 79°24′ W in 68-92 m, SILVER BAY sta. 3658, 14 Dec. 1961. UF 211640 (3, 220-254) 24°38′ N, 80°58′ W, in 64 m, SILVER BAY sta. 2398, 27 Oct. 1950. UF 211646 (2, 240-247) 24°42′ N, 80°44′ W in 92 m, SILVER BAY sta. 2390, 26 Oct. 1960. UF 221800 (1, 244) 28°19.5′ N, 80°04.5′ W in 68 m, OREGON sta. 5358, 16 Mar. 1965. UF 221810 (3, 189-265) 28°03′ N, 80°01′ W in 64 m, OREGON sta. 5357, 15 Mar. 1965. UF 221813 (7, 201-233) 27°16.5′ N, 80°01′ W in 55 m, OREGON sta. 5354, 15 Mar. 1965. UF 221837 (12, 182-269) 28°12′ N, 80°05′W in 60 m, OREGON sta. 5344, 14 Mar. 1965. UF 221844 (2, 223-274) 28°19.5′ N, 80°04.5′ W in 68 m, OREGON sta. 5358, 16 Mar. 1965. UF 221848 (2, 217-254) 28°22′ N, 80°05′ W in 60 m, OREGON sta. 5346, 14 Mar. 1965. UF 232153 (14, 96-202) 29°02′ N, 80°13′W in 56 m , DOLPHIN sta. 32, 31 Oct. 1973. UF 223154 (4, 142-255) 30°08′ N, 80°18′ W in 86 m, DOLPHIN sta. 41, 3 Nov. 1973. UF 232155 (4, 214-264) 32°04′ N, 79°14′ W in 80 m, DOLPHIN sta. 59, 8 Nov. 1973. UF 232156 (1, 240) 32°12′ N, 79°06′ W in 85 m, DOLPHIN sta. 60, 8 Nov. 1973. UF 232215 (2, 232-258) 27°41.5′ N, 80°03.5′ W in 48 m, OREGON sta. 5351, 14 Mar. 1965. UF 234464 (2, 194-240) 30°08.5′ N, 80°15.5′ W in 80 m, SILVER BAY sta. 5704, 6 May 1964. UF 234528 (1, 113) 25°15.5′ N, 80°10′ W in 27 m, SILVER BAY sta. 2355, 24 Oct. 1960. UF 234549 (3, 256-275) 31°49′ N, 79°35′ W in68 m, SILVER BAY sta. 5720, 12 May 1964. UF 234550 (4, 237-248) 24°38′ N, 80°58′ W in 64 m, SILVER BAY sta. 2398, 24 Mar. 1961. UF 234551 (2, 124-130) 27°27′ N, 80°03′ W in 33 m, SILVER BAY sta. 2710, 27 Jan. 1961. UF 234552 (5, 224-256) 24°32′ N, 81°17′ W in 73 m, SILVER BAY sta. 2407, 24 Mar. 1961. UF 234577 (, 263) 29°40′ N, 80°15.5′ W in 94 m, 2 May 1964. UF 234578 (1, 251) 28°18′ N, 80°04′ W in 59 m, OREGON sta. 5826, 14 Jan. 1966. UF 234579 (1, 180) 24°41′ N, 80°48′ W in 46 m, SILVER BAY sta. 2394, 27 Oct. 1960. UF 234583 (1, 224) 24°42.5′ N, 80°44′ W in 92 m, SILVER BAY sta. 2390, 26 Oct. 1960. UF 234584 (2, 134-230) 28°47′ N, 80°09′ W in 55 m. UF 234585 (1, 250) 34°32′ N, 75°53′ W in 57 m, SILVER BAY sta. 1268, 11 Sept. 1959. VIMS 1383 (1, 206) 34°36.6′ N, 75°40.6′ W in 280 m, EASTWARD sta. 16797. 18 Apr. 1971. VIMS 1384 (1, 185) 34°28′ N, 76°15.3′ W in 35 m, EASTWARD sta. 16847, 21 Apr. 1971.

Lepophidium kallion

Holotype.—**Atlantic Ocean:** MCZ 28057 (1, 117) 13.134° N, 59.696° W, off Barbados in 366 m, BLAKE sta. 291, Feb., Mar. 1879.

Atlantic Ocean: FMNH 65604 (1, 132) 22°55′ N, 79°27′ W in 439 m, OREGON sta. 1340, 17 July 1955. KU 32926 (2,145-149) 23°52′ N, 79°11′ W, in 366-384 m, SILVER BAY sta. 2468, 6 Nov. 1960. MCZ 100762 (1, 162, paratype, originally listed as MCZ 28057B) 13.191° N, 59.668° W, Off Barbados, 1879. UF 206998 (4, 126-141) 18°14′ N 67°20′ W in 384 m, OREGON sta. 2646, 5 Oct. 1959. UF 211637 (18, 102-141) 23°52′ N, 78°11′ W in 366-384 m, SILVER BAY sta. 2468, 6 Nov. 1960. UF 213851 (1, 128) 26°14′-17.5′ N, 79°16′ W in 421-430 m, GERDA sta. 155, 25 June 1963. UF 213855 (1, 114) 26°57′ - 27°00′ N, 79°12.5′W in 512 m, GERDA sta. 246, 5 Feb. 1964. UF 216819 (1, 136) 26°31′-28′N, 78°51′-48′W in 366 m, GERDA sta. 503, 4 Feb. 1965. UF

220917 (1, 119) 26°35′-34′ N, 78°25′-26′ W, in 329-421 m, GERDA sta. 692, 21 July 1965. UF 227114 (2, 66-160) 26°45′ N, 79°05′ W in 494-530 m, GERDA sta. 1125, 13 June 1969. UF 229498 (2, 115-124) 26°40.5′-38.4′ N, 79°04.3′-02.5′ W in 512 m, GERDA sta. 1312, 31 March 1971. UF 229504 (2, 131-164) 23°25′ N, 79°40′ W, in 457 m, OREGON sta. 10862, 16 Dec. 1969. UF 230527 (19, 100-155), 20°56.5′ N, 71°34.0′W in 393-435 m, PILLSBURY sta. 1425, 19-20 July 1971. UF 234456 (5, 108-145) 23°05′ N, 78°49′ W in 412-457 m, SILVER BAY sta. 3512, 7 Nov. 1961. UF 234542 (1, 110) 27°27′ N, 78°58′W in 329 m, COMBAT sta. 235, 2 Feb. 1957.

Caribbean Sea: FMNH 65609 (3, 121-166) 18°13′ N, 67°21′ W in 366 m, OREGON sta. 2647, 6 Oct. 1959. USNM 196150 (1, 137) 18°13′ N, 67°20′ W in 384 m, OREGON sta. 2645, 5 Oct. 1959. UF 182958 (1, 144) 17.160° N, 87.820° W in 363-371 m, JSL Dive 2802, Belize.

Lepophidium marmoratum

Holotype.—**Gulf of Mexico:** USNM 37237 (1, 183) 23°10.65′ N, 82°20.35′ W in 390 m, ALBATROSS sta. 2350, 20 Jan. 1885

Atlantic Ocean: ANSP 97604 (1, 188) 23°05′ N, 78°49′ W, in 411-457 m, SILVER BAY sta. 3512, 7 Nov. 1961. FMNH 65603 (2, 186-218) 22°55′ N, 79°27′ W, in 439 m, OREGON sta. 1340, 15 July 1955. FMNH 65605 (2, 209-218) 23°10′ N, 79°33′ W in 512 m, OREGON sta. 1342, 16 July 1955. FMNH 65606 (2, 190-191) 22°59′ N, 79°17′ W in 457 m, OREGON sta. 1343, 16 July 1955. TU 16971 (1, 222) 22°55′ N, 79°16′W in 439 m, OREGON sta. 1341, 16 July 1955. UF 200843 (1, 110) 27°29′ N, 78°58′ W, in 366 m, COMBAT sta. 236, 2 Feb. 1957. UF 201163 (2, 152-157) 27°52′ N, 78°52′ W in 421 m, COMBAT sta. 238, 3 Feb. 1957. UF 212017 (1, 200) 22°55′ N,79°16′W in 439 m, OREGON sta. 1341, 16 July 1955. UF 202023 (2, 162-181) 25°10′ N, 79°13′ W in 457 m, COMBAT sta. 446, 23 July 1957. UF 206995 (3, 136-180) 18°37.5′ N, 64°57′ W in 402 m, OREGON sta. 2606, 26 Sept. 1969. UF 210192 (1, 142) 24°08′ N, 80°09′ W in 329-366 m, SILVER BAY sta. 2443, 2 Nov. 1960. UF 210882 (3, 162-202) 23°05′ N, 78°49′ W in 412-457 m, SILVER BAY sta. 3512, 7 Nov. 1961. UF 211638 (4, 159-188) 23°52′ N, 79°11′ W in 366-384 m, SILVER BAY sta. 2468, 6 Nov. 1960. UF 213862 (1, 155) 27°34.5′-33.5′ N, 78°49′-55.5′ W, in 488-516 m, GERDA sta. 254, 6 Feb. 1954. UF 217690 (1, 29) 25°23′ N, 79°17′ W in 329 m, GERDA sta. 276, 31 Mar. 1964. UF 220942 (1, 162) 26°15′-13′ N, 78°57′-54′ W in 391-393 m, GERDA sta. 722, 3 Aug. 1965. UF 231730 (1,163) 25°59.5′ N, 78°33′ W in 421-426 m, GERDA sta. 1327, 11 Dec. 1971. UF 232009 (1, 143) 26°17.25′-18′ N, 78°52.45′-55.7′ W in 466-488 m, COLUMBUS ISELIN sta. 138, 28 Sept. 1973. UF 232250 (1, 147) 26°25′ N, 79°07′ W in 412-484 m, 1 Oct. 1967. . UF 234458 (3, 167-211) 23°52′ N, 79°11′ W in 366-384 m, SILVER BAY sta. 2468, 6 Nov. 1960. UF 234459 (1, 178) 24°40′ N, 79°16′ W in 366 m, SILVER BAY sta. 2472, 7 Nov. 1960. UF 179771 (2, 164-185) 20°50′ N, 73°23′ W in 311 m, OREGON sta. 10849, 13 Dec. 1960. USNM 108401 (1, 161) 18°40.25′ N, 64°50.25′ W in 000 m, 4 Mar. 1933. USNM 325310 (1, 159) 27°28′ N, 78°44′ W, in 393 m, COMBAT sta. 237, 3 Feb. 1957.

Caribbean Sea: UF 207000 (1, 189) 18°16.5′ N, 67°17′W in 458 m, OREGON sta. 2650, 6 Oct. 1959. UF 216114 (1, 135) 14°15.5′ N, 80°27′ W in 220-238 m, OREGON sta. 4832, 12 May 1964. UF 223736 (1, 180) 17°26.5′ N, 87°55′ W in 243-256 m, OREGON sta. 6402, 23 Jan 1967. UF 229552 (2, 97-100) 21°07′ N, 86°21′ W in 155-203 m, PILLSBURY sta. 598, 15 Mar. 1968. UF 229553 (1, 181) 17°28.5′ N, 87°57.5′ W in 274-329 m, OREGON sta. 6404, 23 Jan. 1967. UF 229609 (1, 124) 14°53.9′ N, 81°23.2′ W in 296-325 m, PILLSBURY sta. 1356, 31 Jan. 1971. UF 234457 (4, 148-185) 17°24′ N, 87°56.5′ W in 262 m, OREGON sta. 6403, 23 Jan 1967

Lepophidium microlepis

Gulf of California, Baja California: USNM 73409 (2, 162-234) 29°19′ N, 112°50′ W, R/V Albatross, 24 Mar. 1889. SIO 65-268-61A (1, 160) 24°59.8-58.2′ N, 110°42.7-42.0′W in 210 m, 8 July 1965. SIO 65-275-61B (4, 229 – 246) 24°58.2′ N, 110°42.0′ W in 210 m, 8 July 1965. SIO 68-103-61 (7, 109-164) 28°18.3-20.1′ N, 112°08-10.5′ W in 293-307 m, 21 Jan. 1968. SIO 73-2 (1, 186) 28°27′ N, 112°22′ W in 270 m, 12 Nov. 1972. SIO 84-70 (1, 205) 24°24.45′ N, 110°36.75′ W in 238 m, TOADHOP I, sta. 4, 14 July 1984.

Pacific Ocean, Baja California: SIO 60-465-61 (1, 156) 26°12.5-13.8′ N, 113°18.2-22.7′ W in 91 m, 2 Dec. 1960. SIO 60-466-61A (160-164) 26°04.5-05.9′ N, 113°34.0-35.5′ W in 228-293 m, 2 Dec. 1960. SIO 61-171-61A (12, 134-163) 25°43-34.5′ N, 112°51.4-53′ W in 115-221 m, 2 May 1961. SIO 65-227-61A (16, 104-220) 24°12.3-09.5′ N, 111°29.7-25.0′ W in 102-106 m, 27 June 1965. LACM 31769-6 (1, 154) 24°14′ N, 111°32′ W in 106 m, R/V Searcher sta. 28, 1 Feb. 1971. LACM 32043-10 (1, 193) 28°19′ 25″ N, 115°09′ 45″ W in 73 m, R/V Searcher

sta. 243, 19 Oct. 1971. SIO 69-236 (1, 187) 25°31.8′-30.4′ N, 112°27.2-26.5′ W in 100 m, 20 Apr. 1969. SIO 84-80 (27, 85-200) 23°32.0′ N, 110°29.0′ W in 132-150 m. SIO 84-81 (61, 96-214) 23°29.95′ N, 110°27.1″ W in 192-196 m, 17 July 1984.

Lepophidium negropinna

Holotype.—**Pacific Ocean, Peru:** USNM 144256 (1, 272) 4.568 S, 81.302° W, Peru, off Talará, January-April 1946.

Gulf of California, Baja California: SU 219 (5, 133-220) 29°40′ N, 112°57′ W in 138 m, Albatross Sta. 3016. SU 68370 (2, 91-127) 29°21′ N, 113°19′ W in 106-113 m, Mexico, Gulf of California, large bay on east side of Angel de la Guardia Island, 8 May 1952. Pacific Ocean. USNM 197144 (5, 179-333) 29°19′ N, 112°50′ W, Albatross, 24 Mar. 1889. SIO 68-92 (1, 322) 30°28.7′ N, 114°13.5′-13.9′ W, 19 Jan. 1968. SIO 68-93 (1, 321) 30°20.0′ N, 114°10.0′-11.0′ W in 148-225 m, 19 Jan. 1968.

Pacific Ocean, Baja California: SIO-H50-225 (1, 441) 27°6′ N, 114°11′ W, 25 July 1950. SIO-H49-14 (3, 249-475) 28°12′ N, 115°15′ W in 62- 73 m, 8 Mar. 1949. LACM 32038-2 (3, 166-362) 28°19.5′ N, 115°06.0′ W in 118-136 m, SEARCHER sta. 238, 18 Oct. 1971. SIO 60-394-61 (3, 164-282) 28°34.5′ N, 114°24′ W in 89 m, 19 Aug. 1960.

Costa Rica: LACM 32534-7 (1, 324) 09°37.5′ N, 84°43.0′ W in 73 m, SEARCHER sta. 459, 10 Mar. 1972. LACM 33827-3 (5, 197-277) 10° N, 85° W, Costa Rica, Gulfo de Nicoya in 246-391 m, 29 June 1973. LACM 33818-2 (1, 204) 9.533° N, 85.1° W, Costa Rica, Golfo de Nicoya, near Cabo Blanco in 273 m, 16 June 1973. LACM 33827-5 (1, 268) 10° N, 85° W, Costa Rica, off Punta Arenas in 248 m, 29 June 1973. UCR 332-3 (1, 329) 9.316° N, 84.148° W, Costa Rica, 1/2 mi. SE of Punta Quepos in 166-192 m, 16 July 1969. UCR 337-6 (1) 9.823° N, 85.577° W, Costa Rica, 8 mi. SE of Punta Coyote in 91 m, 18 July 1969. UCR 337-9 (4, 117-360) 9.823° N, 85.577° W, Costa Rica, 8 mi. SE of Punta Coyote in 91 m, 18 July 1969. UCR 493-6 (1, 415) 9°11.58′ N, 84°15.0′ W in 218 m, 28 Oct. 1970. UCR 683-2 (1, 148) 08°46.08′ N, 84°00.75′ W in 80 m SEARCHER sta. 481, 16 Mar. 1975. UCR 687-3 (2, 161-217) 08°46.58′ N, 83°54.00′ W in 55-73 m, 17 Mar. 1972. UF Uncat. (1, 221) 9.731° N, 84.808 W, Costa Rica, Golfo de Nicoya in 44 m, 14 Mar. 1974.

Panama: GCRL 13970 (1) 07°10.46′ N, 81°15.45′ W, 18 May 1973. KU 34104 (1, 201) Pacific Coast of Panama, 11-13 Dec. 1969. Univ. Panama 680 (1) 07°19′ N, 80°03.25′ W in 127 m, 19 May 1973.

Colombia: CAS 6899 (2, 58-76) 6°0′ N, 77°22′ W, 15 Feb. 1934. UF 182950 (8, 294-471) 02.179° S, 80.044° W in 93 m, ANTON BRUUN cr. 18B, sta. 774, 11 Sept. 1966.

Peru: GCRL 12521 (1, 482) 3.412° S, 80.552° W, Peru, Tumbes market, 23-24 Feb. 1974. IMARPE Uncat. (1, 527) 5.039° S, 81.141° N, Peru, Paita. IMARPE 135b-854 (1) 06°02′ S, 81°12′W in 160 m, ANTON BRUUN Cr. 16, sta. 630A. MCZ 163744 (7, 280-418) and UF 182951 (7, 325-435) 04°57′ S, 81°23′ W in 118-133 m, ANTON BRUUN Cr. 16, sta. 625A, 2 June 1966. UF Uncat. (17, 180-420) 04°53′ S, 81°23′ W in 74-91 m, ANTON BRUUN cr. 16, sta. 624E, 2 June 1966. UA 68-54 (2, 264-285) 5.075° S, 81.116° W, Peru (Coordinates in error, not mapped). KU 34112 (10, 325-429) and USNM 200354 (2, 201-322) Peru, Continental Shelf edge between 04°43′ S and 13°56′ S, 7 Mar. 1965, assigned 8.73° S, 79.04° W. UF 182953 (10, 335-372) and USNM 405918 (16, 218-405) 05°20′ S, 081°18′ W in 120 m, ANTON BRUUN cr. 18B, sta. 761 in 120 m, 7 Sept. 1966. UF 182952 (9, 174-440) 04°06′ S, 81°09′ W in 90 m, ANTON BRUUN cr. 18B, sta. 764, 8 Sept. 1966. UF 159841 (1, 482) 05°59′ S, 85°12′ W, 4 June 1966.

Lepophidium pardale

Holotype.—**Gulf of California, Baja California:** USNM 44382 (1, 169) 28°28′ 00″ N, 112°04′ 30″ W in 53 m, Mexico, Gulf of California, Albatross sta. 3014, 23 March 1889.

Gulf of California, Baja California: SIO 60-8 (1, 193) 27.832° N, 110.825° W, Mexico, Sonora, off Guaymas in ca. 46 m, 30 Dec. 1959. UCLA W56-118 (18, 84-216) 25°18′ N, 108°48′ W in 45 m, 7-13 June 1956. SIO 60-90-61B (1, 128) 22°30.8′ N, 106°01′-06.3′ W, 11-12 Mar. 1960. SIO 60-120-61A (7, 92-190) 30°20.5′-24.2′ N, 113°08′ W in 62 m, 30-31 Mar. 1960. SIO 65-257-61A (6, 128-173) 24°20.0′-18.6′ N, 110°27.8′-25.4′ W in 78 m, 5-6 July 1965. SIO 65-292-61A (2, 80-132) 25°39.5′-38.6′ N, 111°04.9′-04.6′ W in 58-79 m, 11 July 1965. SIO 79-15 (9, 88-154) 23°36.2′ N, 109°31.5′ W, 14 Apr. 1978.

Pacific Ocean, Baja California: LACM 31862-8 (1, 189) 24°40′ N, 112°14′ W in 67 m, SEARCHER 21, 29

Jan. 1971. SIO 64-867-61 (2, 113-124) 23°33.3′ N, 110°22.5′-23,9′ W in 64 m, 9 Nov. 1964. SIO 69-235 (1, 123) 25°39.2′-38.1′ N, 112°13.0′-12.8′ W in 40 m, 19 Apr. 1969.

Costa Rica: LACM 30747-2 (1, 156) 9.558° N, 85.130° W, Costa Rica, Puntarenas, Cabo Blanco, 22-23 Dec. 1966. LACM 32554-6 (5, 131-170) 08°43.9′ N, 83°54.25′ W in 69 m, SEARCHER 479, 16 Mar. 1992. LACM 32555-7 (3, 131-134) 08°43.9′ N, 83°57.9′ - 84°00.5′ W in 82 m, SEARCHER 480, 16 Mar. 1972. UCLA W63-142 (1, 120) 10.316° N, 85.966° W Costa Rica, ca. 5 mi. off Cape Velas in 65 m, 7 May 1956. UCR 845-3 (1, 199) 8.767° N, 83.862° W, Costa Rica, Isla del Caño in 73 m, 17 Dec. 1973. UCR 323-4 (13, 185-192) 8.681°, 83.935° W, Costa Rica, Isla del Caño in 91 m, 5-9 June 1969. UCR 337-2 (11, 116-158) 9.823° N, 85.577° W, Costa Rica, 8 mi. SE of Punta Coyote in 91 m, 18 July 1969. UCR 373-2 (14) 9.823° N, 85.577° W, Costa Rica, 8 mi. SE of Punta Coyote. UCR 687-4 (1, 129) 08°46.6′ N, 84°54.0′ W in 55-73 m, 17 Mar. 1972. UCR Uncat. (1) 5.577° N, 87.050 W, Costa Rica, Cocos I. 0.5 m N of Isla Pyaia in 99 m, 1972.

Panama: LACM 33890 (1, 132) 06°57.07′ N, 80°42.35′ W in 7 m, 20 Jan. 1974. SIO 71-218 (1, 169) 08°00′N, 82°10′ W, Panama. UF 227036 (6, 154-206) 07°59.2′-59.1′ N, 79°01′-01.5′ W in 99 m, PILLSBURY sta. 553, 7 May 1967. USNM 322014 (1, 39) 08°37′ N, 79°02′ W in 12 m, 7 May 1990.

Peru: LACM 32290-9 (1, 60) 5.67° S, 80.939° W, Peru, Gulf of Guayaquil, 13-14 Apr. 1972.

Ecuador: UF 183124 (8, 186-248) 00°36′-27′ S, 90°20′-21′ W in 95 m, ANTON BRUUN Cr. 18B, sta. 791C, 21 Sept. 1966.

Lepophidium pheromystax

Holotype.—**Atlantic Ocean:** USNM 185737 (1, 173) 7°55′ N, 57°25′ W in 91 m, OREGON 2001, 5 Nov. 1957.

Paratypes.—**Atlantic Ocean:** USNM 185739 (1, 160) and FMNH 64502 (1, 155) collected with the holotype. UF 203990 (4, 150-199) 7°18′ N, 56°49′ W in 55-60 m, OREGON 2262, 1 Sept. 1958. USNM 185740 (1, 164) and FMNH 64501 (1, 157) 7°55′ N, 57°34′ W in 78 m, OREGON 1999, 5 Nov. 1957. FMNH 64499 (5, 145-168) 7°55′ N, 57°30′ W, UF 205049 (4, 161-200) and UMMZ 177299 (4, 152-198) 7°55′ N, 57°30′ W in 82 m, OREGON 2000, 5 Nov. 1957. FMNH 64519 (1, 116) 6°15′ N, 52°35′ W in 67 m, OREGON 2318, 14 Sept. 1958. FMNH 64514 (6, 108-176) 7°38′ N 57°34′ W in 47-49 m, OREGON 2250, 31 Aug. 1958. FMNH 64513 (5, 106-170) 7°40′ N, 57°34′ W in 49-55 m, OREGON 2249, 31 Aug. 1958. USNM 185738 (1, 218) 4°2′ N, 50°20′ W in 91 m, OREGON 2054, 14 Nov. 1957. USNM 185742 (6, 71-95) 6°49′ N, 55°36′ W in 47 m, COQUETTE Sta. 321, 20 July 1957. USNM 185743 (1, 99) 6°47′ N, 55°40′ W in 46 m, COQUETTE Sta. 283, 26 June 1957. USNM 185741 (1, 179) 6°50′ N, 55°24′ W in 53 m, COQUETTE Sta. 332, 20 July 1957. ANSP 89346 (1, 112) 5°45′ N, 52°18′ W in 60 m, OREGON 2311, 12 Sept. 1958. MCZ 40422 (3, 145-154) 7.33° N, 56.816° W, ANSP 89347 (2, 96-190) 7.33° N, 56.816° W, and UF 205052 (3, 115-166) 7.33° N, 56.816° W in 60 m, OREGON 2261, 1 Sept. 1958. UF 205053 (6, 93-185) 07°40′ N, 57°34′ W, in 48-55 m, OREGON sta. 2248, 31 Aug. 1958 (part of the original paratypic series that was inadvertently omitted in the original publication). UF 205050 (3, 98-119) 9° 58′ N, 61° 11′ W, OREGON 2207-2356 (Exact station unknown coordinates are for ORE 2207). FMNH 64521 (1, 154) 6.176° N, 55.212° W, Surinam, COQUETTE. FMNH 64515 (1, 85) 7°20′ N, 56°49′ W in 60 m, OREGON 2261, 1 Sept. 1958. ANSP 89348 (1, 124) 5°54′ N, 52°22′ W in 56-60 m, OREGON 2298, 11 Sept. 1958. FMNH 69301 (1, 130). 18°31′ N, 66°47′ W in 70 m, OREGON 2667, 8 Oct. 1959. UF 207037 (3 -) 18°35′ N, 65°03′ W in 77 m, OREGON sta. 2607, 26 Sept. 1959. UF 207042 (1, 175) 18°31′ N, 66°47′ W in 125 m, OREGON sta. 2667, 8 Oct. 1959. UF 216801 (5, 148-248) 11°09′ N, 60°55′ W in 68 m, OREGON sta. 5030, 22 Sept. 1964. UF 229549 (3, 171-225) 11°10′ N, 60°53′ W in 60 m, OREGON sta. 5962, 14 Mar. 1966. UF 229550 (1, 158) 11°13′ N, 60°52′ W in 60 m, OREGON sta. 5961, 13 Mar. 1966. UF 232569 (4, 92-134) 6°56′ N, 56°19′ W in 55 m, OREGON 14411, 29 Jan. 1974. UF 232570 (8, 125-200) 07°02′ N, 55°52′ W in 64 m, OREGON 14413, 29 Jan. 1974. UF 232573 (3, 163-175) 06°19′ N, 52°58′ W in 64 m, OREGON 14466-67, 5 Feb. 1974. UF 232582 (6, 103-204) 07°19′ N, 56°38′ W in 64 m, OREGON 14407, 28 Jan. 1974. UF 234580 (1) 11°09′ N, 60°55′ W in 64-68 m, OREGON sta. 5030, 22 Sept. 1964. UF 234597 (4, 117-190) 11°05′ N, 60°56′ W in 60-66 m, OREGON sta. 5032, 23 Sept. 1964. USNM 325312 (1, 166) 07°05′ N, 55°26′ W in 65 m, OREGON sta. 12020, 26 June 1972.

Gulf of Mexico: UF 205051 (1, 145) 18°43′ N, 93°29′ W in 45 m, OREGON 1059, 16 May 1954.

Caribbean Sea: UF 212274 (4, 126-150) 12°32′ N, 82°25′ W in 156 m, OREGON sta. 3577, 23 May 1962. UF 212288 (6, 185-249) 09°18′ N, 80°25′ W in 137 m, OREGON sta. 3587, 29 May 1962. UF 214181 (1, 147) 12°32′ N, 71°05′ W in 73 m, OREGON sta. 4392, 25 Sept. 1963. UF 215302 (2, 200-214) 12°32′ N, 71°04′ W in

84 m, OREGON sta. 4393, 25 Sept. 1963. UF 216108 (1, 162) 11°07′N, 62°42′ W in 57-62 m, OREGON sta. 5034, 23 Sept. 1964. UF 216243 (1, 116) 12°32′ N, 71°05′ W in 73 m, OREGON sta. 4392, 25 Sept. 1963. UF 216702 (10, 133-234) 12°32′ N, 71°04′ W in 84 m, OREGON sta. 4393, 25 Sept. 1963. UF 217066 (7, 182-270) 11°08′ N, 68°58′ W in 73-88 m, OREGON sta. 5025, 21 Sept. 1964. UF 222004 (1, 108) 09°43′ N, 79°20′ W in 95 m, OREGON sta. 5739, 19 Oct. 1965. UF 223737 (1, 161) 12°55′ N, 82°21′ W in 126-165 m, OREGON sta. 6427, 5 Feb. 1967. UF 226518 (1, 177) 09°45′-48′ N, 76°12′-09.6′ W in 82-101 m, PILLSBURY sta. 372, 13 July 1966. UF 229551 (1, 108) 11°08′-11′ N, 63°18′-17′ W in 24-27 m, PILLSBURY sta. 712, 19 July 1968. UF 234455 (1, 214) 09°56′ N, 75°56′ W in 128 m, OREGON sta. 10213, 25 Nov. 1968. USNM 325311 (3, 213-222) 09°56′ N, 75°56′ W in 127 m, OREGON sta. 10213, 15 Nov. 1968.

Lepophidium profundorum

Holotype.—**Atlantic Ocean**: USNM 6742 (1, 168) 28.967° N, 80.195° W, Off east coast of Florida in 109 m.

Atlantic Ocean: USNM 28764 (1, 262 *holotype of L. cervinum*) 40.0167° N, 69.9333° W in 144 m, Fish Hawk 941, 8 Apr. 1881. USNM 274258 (2, 218-220 *paratypes of L. cervinum*) data as for the preceeding . ANSP Uncat. (1, 142) 39.316° N, 74.456° W, New Jersey, Ventnor, summer 1949. ANSP 68268 (1, 218) 39.082° N, 73.365° W, New Jersey, 70 mi. SE of Cape May, Mar. 1937. GMBL 73-268 (1,192) 29°25′ N, 80°12′ W in 96-109 m, 30 Oct. 1973. GMBL 76-250 (1, 221) 32°38.0′ N, 78°23.3′ W in 179 m, 9 June 1977. GMBL 77-46 (3, 179-214) 32.713° N, 78.800° W, South Carolina, ca. 60.6 mi. at 1-6° T from Charleston Light, 2 Apr. 1977. UF 200594 (1, 200) 28°42′ N, 79°56′ W in 284-329 m, PELICAN sta. 61, 11 June 1956. UF 202024 (1, 134) 29°15′ N, 80°13′ W, in 55 m, COMBAT sta. 334, 1 June 1957. UF 212363 (2, 187-202) 29°30′ N, 80°10′ W in 229 m, COMBAT sta. 491, 19 Aug. 1957. UF 202364 (1, 198) 29°29′ N, 80°10′W in 183 m, COMBAT sta. 490, 19 Aug. 1957. UF 204124 (1, 154) 29°42′ N, 80°10′ W in 220 m, SILVER BAY sta. 458, 13 June 1958, UF 204306 (1, 207) 26°12′ N, 80°02′ W in 137-155 m, PELICAN sta. 16, 25 Mar. 1956. UF 205231 (1, 127) 28°47′ N, 80°08′ W in 55 m, COMBAT sta. 94, 3 Sept. 1956. UF 207024 (2, 174-199) 28°09′ N, 79°59′ W in 128-141 m, SILVER BAY sta. 1969, 23 Apr. 1960. UF 207056 (2, 189-208) 28°23′ N, 79°59′ W in 117-137 m, SILVER BAY sta. 2039, 27 Apr. 1960. UF 209799 (1, 147) 28°20′ N, 79°48′ W in 366 m, SILVER BAY sta. 2040, 28 Apr. 1960. UF 210198 (6, 198-247) 34°35′ N, 75°40′ W in 165 m, SILVER BAY sta. 2932, 13 Mar. 1961. UF 210731 (1, 143) 34°43′ N, 75°32′ W in 64 m, SILVER BAY sta. 2931, 21 Aug. 1960. UF 210889 (1, 173) 33°12′ N, 77°14′ W in 168-192 m, SILVER BAY sta. 2541, 6 Dec. 1960. UF 211043 (1, 56) 28°24′ N, 80°09′ W in 42 m, SILVER BAY sta. 3265, 13 July. 1961. UF 211093 (1, 123) 28°30′ N, 80°02′ W in 70 m, SILVER BAY sta. 3704, 25 Jan. 1962. UF 214750 (18, 126-219) 25°37′-38′ N, 80°04′ W in 110-128 m, GERDA sta. 280, 1 Apr. 1964. UF 216274 (1, 190) 36°28′ N, 74°48′ W in 82 m, SILVER BAY sta. 4102, 31 May 1962. UF 217086 (4, 186-217) 25°02′-05′ N, 80°09′-12′ W in 185 m, GERDA sta. 452, 22 Jan. 1965. UF 217297 (2, 190-194) 29°21′ N, 80°06′ W in 379 m, OREGON sta. 5097, 14 Nov. 1964. UF 218387 (2, 130-161) 25°37′-38′ N, 80°04′ W in 110-128 m, GERDA sta. 280, 1 Apr. 1964. UF 218560 (1, 89) 26°13′ N, 80°03′-04′ W in 110-128 m, GERDA sta. 419, 22 Sept. 1964. UF 220962 (1, 210) 25°08′ N, 80°11′ W in 148 m, GERDA sta. 760, 15 Sept. 1965. UF 220965 (5, 195-225) 25°10′ N, 80°06′ W in 183 m, GERD sta. 763. 15 Sept. 1965. UF 220974 (4) 25°11′ N, 80°10′ W in 111 m, GERDA sta. 769, 26 Jan. 1966. UF 221838 (3, 208-245) 28°12′ N. 80°05′ W in 60 m, OREGON sta. 5344, 14 Mar. 1965. UF 222586 (1, 166) 24°52′ N, 80°20′-20.5′ W in 188 m, GERDA sta. 795, 19 Aug. 1966. UF 222595 (1, 188) 24°47.5′-49.5′ N, 80°21.5′-24.5′ W in 198 m, GERDA sta. 797, 19 Aug. 1966. UF 223257 (1, 197) 29°31′ N, 80°09′ W in 384 m, OREGON sta. 5093, 14 Nov. 1964. UF 223733 (2, 224-236) 31°00.5′ N, 79°53.5′ W in 183 m, OREGON sta. 6053, 25 Apr. 1966. UF 223759 (2, 165-204) 28°34.5′ N, 79°51.5′ W in 397 m, OREGON sta. 5296, 23 Feb. 1965. UF 223888 (1) 36°30′ N, 74°45′ W in 101-210 m, SILVER BAY sta. 4105, 31 May 1962. UF 224622 (5, 193-201) 29°14′ N, 80°05′ W in 357 m, OREGON sta. 5798, 29 Nov 1965. UF 227143 (1, 189) 25°49′-53′ N, 80°03′-04′ W in 137-201 m, GERDA sta. 847, 2 Aug. 1967. UF 227164 (1, 157) 27°06′-07′ N, 79°56′-56.5′ W in 143-168 m, GERDA sta. 995, 20 May 1968. UF 227183 (6, 148-200) 27°06′-07′ N, 79°56′-56.5′ W in 143-168 m, GERDA sta. 995, 20 May 1968. UF 227292 (2, 185-207) 26°45′ N, 79°57′ W in 156 m, GERDA sta. 993, 20 May 1968. UF 227383 (1, 151) 25°49′-51′ N, 80°03′ W in 212 m, 2 Aug. 1967. UF 228269 (1, 156) 25°12′-16′ N, 80°00′-03′ W in 189 m, GERDA sta. 857, 25 Aug. 1967. UF 229497 (1, 226) 36°22′ N, 74°48′ W in 247 m, OREGON sta.10761, 4 Aug. 1969. UF 229499 (2, 182-208) 26°51.0′ N, 79°57.3′ W in 161 m, GERDA sta. 1319, 1 Apr. 1971. UF 229502 (1, 182) 35°40′ N, 74°48′ W in 165 m, OREGON sta. 10765 5 Aug. 1969. UF 229547 (5, 178-202) 26°51′ N, 79°57′ W in 143-163 m, GERDA sta. 994, 20 May 1968. UF 231732 (2,

161-182) 25°36′ N, 80°01′ W in 292-313 m, GERDA sta. 844, 12 July 1967. UF 232152 (2, 120-212) 29°10′ N, 80°06′ W in 175 m, DOLPHIN sta. 31, 30 Oct. 1973. UF 232224 (1, 181) 25°90′N, 80°02.9′ W in 220 m, GERDA sta. 1266, 30 Apr. 1970. UF 232227 (1, 214) 25°11′ N, 80°09′ W in 146 m, GERDA sta. 770, 26 Jan. 1966. UF 234468 (2, 186-187) 28°11′ N, 79°50′ W in 332 m, SILVER BAY sta. 4244, 24 Oct. 1962. UF 234469 (14, 127-228) 28°41′ N, 80°10′ W in 146 m, SILVER BAY sta. 2732, 2 Feb. 1961. UF 234470 (2, 153-165) 26°37′N, 79°51′ W in 327 m, COMBAT sta. 458, 28 July 1957. UF 234471 (4, 162-182) 27°14′ N, 79°50′ W in 384 m, COMBAT sta. 462, 29 July 1957. UF 234472 (1, 197) 29°29′ N, 80°10′ W in 180 m, COMBAT sta. 490, 19 Aug. 1957. UF 234473 (1, 186) 25°13′ N, 80°10′ W in 156 m, COMBAT sta. 454, 26 July 1957. UF 234474 (3, 178-199) 29°30′ N, 80°10′ W in 293 m, COMBAT sta. 475, 14 Aug. 1957. UF 234475 (2, 175-185) 28°04′ N, 79°50′ W, in 360 m, COMBAT sta. 225, 30 Jan. 1957. UF 234476 (1, 177) 29°15′ N, 80°13′ W in 55 m. UF 234477 (3, 144-201) 29°30′ N, 80°10′ W in 229 m, COMBAT sta. 491, 19 Aug. 1957. UF 234478 (2, 168-181) 29°29′ N, 80°09′ W in 329 m, SILVER BAY sta. 220, 22 Nov. 1957. UF 234479 (2, 184-209) 36.899° N, 75.136° W, Virginia, Portsmouth, 10-20 May 1959. UF 234581 (1, 226) 36°30′ N, 74°45′ W in 109 m, SILVER BAY sta. 4104, 31 May 1962. UF 234582 (1, 167) 29°30′ N, 80°13′ W in 91 m, COMBAT sta. 488, 19 Aug. 1957. UF 234605 (3, 196-235) 28°46′ N, 80°01′ W in 146 m, SILVER BAY sta. 2731, 2 Feb. 1961. UF 182870 (4, 153-180) 27°08′ N, 79°51′ W in 360 m, COMBAT sta. 460, 28 July 1957. USNM 148324 (1, 186) 34°09′ N, 76°02′ W, ALBATROSS sta. 2614, 19 Oct. 1885. USNM 321315 (1, 257) 40°10′ N, 68°48′ W in 146 m, 30 Oct. 1968. USNM 325313 (1, 220) 30°59′ N, 79°54′ W in 183 m, OREGON sta. 11711, 20 Jan. 1972. USNM 325314 (1, 230) 40°07′ N, 68°52′ W in 225 m, 30 Oct. 1968. USNM 315591 (1, 40) 40°33′ N, 70°07′ W, DELAWARE II sta. 18, 4 Nov. 1988. UF 182869 (2, 167-172) 29°30′ N, 80°11′ W, in 139 m, COMBAT sta. 489, 19 Aug. 1957. VIMS 1374 (1, 69) 35°53′ N, 75°19′ W in 25 m., SEA BREEZE sta. T-534, 11 Nov. 1966. VIMS 1376 (1, 63) 35°39′ N, 75°21′ W, SEA BREEZE, 11 Nov. 1966.

Gulf of Mexico: FMNH 59955 (45, 165-237) 25°08′ N, 84°19′ W in 298 m, OREGON sta. 1026, 19 Apr. 1954. TU 10890 (3, 160-197) 24°20′ N, 83°20′ W in 345 m, OREGON sta. 1005, 13 Apr. 1954. UF 108972 (7) 24°18.63′ N, 82°39.56′ W in 190-210 m, 2 May 1968. UF 213517 (2, 194-199) 24°34′ N, 83°28′ W in 183 m, OREGON sta. 4370, 6 Aug. 1963. UF 217425 (2, 153-171) 24°23′-24′ N, 82°56′ W in 82=97 m, GERDA sta. 572, 13 Apr. 1965. UF 223887 (213) 24°25′ N, 83°24′ W in 256 m, OREGON sta. 5779, 25 Nov. 2965. UF 234495 (1, 196) 27°08′ N, 84°53′ W in 274-320 m, OREGON sta. 954, 3 Apr. 1954. UF 234497 (3, 202-233) 21°53′ N, 86°29′ W in 180 m, OREGON sta. 6399, 22 Jan. 1967. UF 110734 (1, 198) 24°40′ N, 80°53′ W in 64 m, SILVER BAY sta. 2395, 27 Oct. 1960. UF 180028 (2, 223-223) 27°08′ N, 84°53′ W in 273-309 m, OREGON sta. 954, 3 Apr. 1954. USNM Uncat. (1) 27°08′ N, 84°53′ W in 274-320 m, OREGON sta. 954, 3 Apr. 1954. Univ. Rome Uncat. (1, 210) Italy, Tyrrhenian Sea: fish shop in Santa Marinella (see discussion in text).

Lepophidium prorates

Holotype.—**Pacific Ocean, Panama**: USNM 41149 (1, 236) Panama, 08°47′ N, 79°29′ 30″ W in 25 m, Albatross Sta. 2801, 30 March 1888.

Pacific Ocean, Panama: SU 445 (2, 208-234 - paratypes) 8.885° N, 79.387° W, Panama, winter and spring of 1888. USNM 41247 (2, 231-261 - paratypes) Panama, data perhaps as for preceding. UCLA-W53-275 (10, 189-238) 8.872° N, 79.200° W, Panama, Bahia Panama, between Panama City and "Punta Gorda", in 4-42 m, 1-5 July 1953. UCLA-W55-65 (1, 169) 8.1° N, 78.366° W, Panama, Bahia San Miguel, 2 miles N of Garachiné village, in 4 m, 7 Feb. 1955. UCLA-W54-345 (1, 192) 8.283° N, 80.25° W, Panama, Antoine River, April-May, 1954. UCLA-W53-273 (1, 199) 8.757° N, 79.508° W, Panama, Bahia Panama, 1-3 miles SE of Isla Taboga and 2-4 miles off Rio Pacora, in 13-22 m, 1-2 July 1953. BMNH 64-1-26-353 (2, 206-212) 8.347° N, 79.638° W, Pacific Coast of Panama. KU 33117 (10, 126-258) 08°54′-54.5′ N, 79°10.2′-10.9′ W in 17 m, PILLSBURY sta. 534, 6 May 1967. LACM 32044-10 (4, 134-197) 28°17.75′N, 115°09.25′ W in 86 m, 19 Oct. 1971. SIO 63-295 (2, 101-142) 9° N, 79°29.0′ W, Panama, Viejo, 1961. SIO 64-425 (1, 65) 7°40′ N, 81°7′ W, Panama, Isla Gobernadora, 30 Mar. 1962. SIO 69-386 (2, 181-209) 8°42′ N, 78°37′ W, Panama, Gulf of Chuman in 9 m, 27 May 1969. SIO 70-141 (1, 175) 8°0′ N, 82°20′ W, Panama, Golfo de Chiriqui in 36 m, 31 Mar. 1970. SIO 71-218 (2, 196-197) 08°00′N, 82°10′ W in 40 m, 23 Sept. 1970. UF 210014 (3, 180-250) 8.971° N, 79.522° W, Panama, Bella Vista Beach, 10- 11 Mar. 1961. UF 225001 (10, 148-256) 08°39.3′-40.5′ N, 79°30.7′-31.7′ W in 22 m, PILLSBURY sta. 483, 1 May 1987. UF 225017 (2, 216-217) 08°32.8′-33.2′ N, 79°35.4′-36.5′ W in 15 m, PILLSBURY sta. 484, 1 May 1967. UF 225043 (1, 249) 08°19.8′-20′ N, 79°49.7′-50.2′ W in 20 m, PILLSBURY sta. 486, 1 May 1967. UF 225070 (6,

137-271) 08°06.0′-6.3′ N, 80°18.2′-19.7′ W in 20 m, 2 May 1967. UF 225074 (1, 193) 07°58.7′-59.1′ N, 80°13.6′-14.2′ W in 20 m, PILLSBURY sta. 491, 2 May 1967. UF 225092 (2, 113-184) 07°50.7′-51′ N, 80°09.8′-10.2′ W in 17 m, PILLSBURY sta. 492, 2 May 1967. UF 226093 (2, 164-291) 08°26.5′-27.2′ N, 78°36.5′-26.8′ W in 18 m, PILLSBURY sta. 544, 7 May 1967. UF 226134 (1, 211) 07°59.1′-59.2′ N, 79°01′-01.5′ W in 99 m, PILLSBURY sta. 253, 7 May 1967. UF 226154 (1, 261) 07°50.5′-50.8′ N, 78°48′-49′ W in 58 m, PILLSBURY sta. 556, 8 May 1967. UF 226203 (32, 108-259) 08°54′-54.5′ N, 79°10.2′-10.9′ W in 17 m, PILLSBURY sta. 534, 6 May 1967. UF 226213 (4, 180-212) 08°38.2′-38.6′ N, 78°51.9′-52.5′ W in 31 m, PILLSBURY sta. 535, 6 May 1967. UF 226234 (7, 134-249) 08°30′-30.1′ N, 78°44.2′-49.7′ W in 29 m, PILLSBURY sta. 541, 7 May 1967. UF 226259 (10, 149-256) 08°26.2′-26.3′ N, 79°43.2′-48.′ W in 15 m, PILLSBURY sta. 485, 1 May 1967. UF 226839 (3, 155-200) 08°35.7′ N, 78°41.4′ W in 18 m, PILLSBURY sta. 536, 6 May 1957. USNM 41429 (1, 167) 8.794° N, 79.262° W, Panama. USNM 82676 (1, 141) 8.91° N, 79.50° W, Panama, Panama Bay, Balboa, 27 Mar. 1912. USNM 322015 (1, 213) 08°40′ N, 79°20′ W in 40 m, 7 May 1990. USNM 325316 (1, 207) 08°44.25′ N, 78°51.0′ W in 7 m, 29 July 1967. USNM 325317 (1, 173) 07°55.0′ N, 78°40.0′ W, 6 Apr. 1967. USNM 325318 (1, 220) 8.92° N, 79.522° W, Panama, Ft. Amador in 1 m, 17 Mar. 1967. USNM 325319 (2, 242-245) 08°43.17′ N, 79°15.0′ W in 52 m, 26 July 1967.

Costa Rica: UCLA-W54-131 (1, 193) 9.956° N, 84.769° W, Costa Rica, Gulfo de Nicoya, Barranca Chacarita in 4-7 m, 29 Sept. 1953. LACM 9754-16 (1, 207) 9.797° N, 84.672° W, Costa Rica, Gulf of Nicoya, between Isla San Lucas and Isla Negritos, no date. LACM 30710-5 (5, 213-257) 9.783° N, 84.633° W, Costa Rica, Puntarenas, Golfo de Nicoya, Bahia del Rio Grande de Tarcoles, no date. LACM 30716-8 (4, 195-205) 9.843° N, 84.833° W, Costa Rica, Puntarenas, Golfo de Nicoya, off Isla Negritos, 13 Feb. 1968. LACM 32540-6 (40, 48-237) 09°24.58′ N, 84°11.17′ W in 37 m. SEARCHER sta. 465, 12 Mar. 1972. LACM 32542-13 (1, 209) 09°08.58′ N, 83°45.2′ W in 18 m, SEARCHER sta. 467, 13 Mar. 1972. LACM 32575 (145, 53-218) 08°28.5′ N, 83°12.75′ W in 55 m, SEARCHER sta. 500, 21 Mar. 1972. LACM 33808-1 (32, 131-248) 9.766° N, 84.766° W, Costa Rica, Golfo de Nicoya ca. 15 mi. S and SE of Puntarenas in 36-46 m, 12 June 1973. LACM W63-142 (1, 268) 10°19′ N, 85°58′ W in 65 m, 7 May 1963. SIO 73-298 (12, 95-225) 09°27.3′-27.7′ N, 84°30.0′-31.3′ W in 31 m, 22 Apr. 1973. UCR 136-7 (3, 101-230) 9.914° N, 84.84° W, Costa Rica, Golfo de Nicoya between Isla San Lucas and Isla Negritos in 30-40 m, 7-9 Mar. 1967. UCR 224-11 (3, 205-241) 10.086° N, 85.035° W, Costa Rica, Golfo de Nicoya in front of islas Chira and Chornes in 9 m, 8 Jan. 1968. UCR 386-45 (1, 93) 9.77° N, 84.664° W, Costa Rica, Golfo de Nicoya, Bahía del Rio Grande de Tárcoles in 19-37 m, 11-12 Nov. 1969. UF Uncat. (1, 195) 9.77° N, 84.797° W, Costa Rica, Golfo de Nicoya in 45 m, 14 Mar. 1974. UF Uncat. (1, 210) 9.823° N, 84.779° W, Costa Rica, Golfo de Nicoya in 28 m, 14 Mar. 1974.

Gulf of California, Baja California: UCLA-W49-55 (6, 133-227) 31.356° N, 114.037° W, Mexico, Sonora, Gulf of California, 20 miles SW of Golfo, in 13-27 m, 3-4 Feb. 1949. UCLA-W52-45 (1, 156) 32.244° N, 116.991° W, Mexico, Baja California, Gulf of California, 2-3 miles off Punta San Fermin, South of San Felipe, in 18 m, 30-31 Jan. 1952. UCLA-W50-43 (16, 142-232) 26.959° N, 110.029° W, Mexico, Sonora, Gulf of California, 80 miles S of Guaymas, vicinity of Boca del Rio Mayo, 2 miles offshore in 11-18 m, 27-29 Jan. 1950. UCLA-W49-91 (1, 207) 30.95° N, 114.683° W, Mexico, Baja California, Gulf of California, 10 miles SE of San Felipe, in 27-46 m, late Feb. 1949. UCLA-W58-47 (1, 210), and UCLA-W58-46 (2, 166-198) 25° N, 109° W, Mexico, Sinaloa, Gulf of California, S of Bahia Topolobampo, off Isla San Ignacio and Isla Macapule, in 7-15 m, 10-14 Feb. 1958. UCLA-W56-118 (24, 209-271) 25.249° N, 108.857° W, Mexico, Sinaloa, Gulf of California, ca. 25 miles S of Bahia Topolobampo, in 40-49 m, 7-13 June 1956. SIO-59-268 (4, 147-233) 23°35′ N, 106°09.4′ W in 44-47 m, 13 May 1959. SIO-59-270 (4, 198-243) 21°50′-52.2′ N, 106°09.4′-12.2′ W, in 54 m, 18 May 1959. SU 58616 (1, 251) 27.864° N, 110.836° W, Mexico: near Guaymas, Mar. 1956. LACM-W59-19, (1) 29.783° N, 114.317° W, Mexico, Baja California 1 mi. off Bahia San Luis Gonzaga, 4 Feb. 1959. LACM W62-45 (1, 132) 23°46′ N, 106°59′ -107°03′ W in 26 m, 27 Feb. 1962. SIO 60-87-61A (8, 142-225) 21°46.7′-50.5′ N, 105°25.2′-44.0′ W in 21 m, 8-9 Mar. 1960. SIO 60-89-61A (1, 190) 22°09′-05′ N, 106°09′-02.3′ W in 58 m, 10-11 Mar. 1960. SIO 60-90-61A (1, 129) 22°30.8′ N, 106°01.2′-06.3′ W in 50 m, 11-12 Mar. 1960. SIO 60-95 (4, 116-332) 24°32.6′-33.4′ N, 108°03′-04.5′ W in 34 m, 16 Mar. 1960. SIO 61-282-61B (1, 259) 29° N, 113° 30.0 W, Mexico, Gulf of California, Bahia de Los Angeles, central portion of bay, 23 June 1961. SIO 62-68 (1, 62) 21°54.2′-55.0′ N, 105°49.2′-50.5′ W in 41 m, 24 Aug. 1961. SIO 62-68 (1, 64) 21°54.2′-55.0′ N, 105°49.2′-50.5′ W in 41 m, 24 Aug. 1961. SIO 62-69-61 (2, 90-226) 21°55.5′-57.7′ N, 105°46.5′-46.8′ W in 38 m, 24 Aug. 1961. SIO 62-74-61 (1, 209) 22°11′ N, 105°52′ W in 40 m, 25 Aug. 1961. SIO 62-75 (1, 221) 22°15′ N, 106°03′ W in 53 m, 25 Aug. 1961. SIO 62-75 (4, 36-61) 22°15′

N, 106°03′ W in 53 m, 25 Aug. 1961. SIO 65-158-61 (20, 125-198) 24°37.5′ N, 108°13.5′ W in 25 m, 26 May 1965. SIO 65-160-61a (1, 171) 20°44′ N, 105°24.6′ W in 29 m, 2 June 1965. SIO 65-305-61A (1, 199) 26°56.9′-58.3′ N, 111°51.9′-53.5′ W in 78 m, 14 July 1965. SIO 68-92 (1, 266) 30°28.7′-28.9′ N, 114°13.5′-13.9′ W in 81 m, 19 Jan. 1968. SIO 70-253 (5, 113-286) 29°30.0′N, 112°50.5′-53.6′ W in 91 m, 16 Apr. 1969. SIO 73-231 (2, 178-198) 21°56.1′ N, 106°12.2′-10.0′ W, 31 Mar. 1973. SIO 73-232 (3, 93-202) 21°56′-57′ N, 106°10.0′-11.0′ W in 52 m, 31 Mar. 1973.

Peru: IMARPE 135d (1, 213) 5.041° S, 81.111° W, Peru, Paita, Mar. 1966.

Colombia: KU 34095 (20, 178-236) and MCZ 163741 (20, 178-243) 03°01′ N, 077°50′ W in 36 m, ANTON BRUUN 18b, sta. 785, 16 Sept. 1966. UF 118236 (6, 194-216) 03°39′ N, 77°18′ W in 9 m, 19 Sept. 1969. UF 118237 (2, 235-240) 03°35′ N, 77°33′ W in 74 m, 21 Sept. 1969. UF 118238 (8, 201-238) 03°36′ N, 77°28′ W in 38 m, 19 Sept. 1969. UF 118239 (1, 216) 03°14′-16′ N, 77°37.0′-37.5′ W in 18 m, 23 Oct. 1970. UF 118241 (1, 234) 03°39′ N, 77°36′ W in 75 m, 23 Jan. 1969. UF 118242 (1, 236) 03°39′ N,, 77°36′ W in 74 m, 23 Jan. 1969. UF 118243 (1, 232) 03°35′ N, 77°30′ W in 56 m, 24 Jan. 1969. UF 118244 (3, 186-244) 07°01′ N, 77°44′ W in 6 m, 4 Mar. 1969. UF 118245 (4) 03°31′-33′ N, 77°22.0′-22.5′ W in 9 m, 22 Oct. 1970. UF 118267 (2, 164-191) 3.766° N, 77.313° W, Colombia, Buenaventura (market purchase). UF 118268 (1, 122) 3.766° N, 77.313° W, Colombia, Buenaventura (market purchase). UF 180293 (151, 130-239) 03°01′ N, 77°50′ W in 36 m, ANTON BRUUN 18b sta. 785, 16 Sept. 1966. USNM 325320 (6, 157-236) 07°00,0′ N, 77°44.0′ W in 37 m, 20 Apr. 1967. UF 158080 (1, 180) 04°23′-25′ N, 77°27.67′-28′ W in 18 m, 6 Nov. 1970. USNM 405924 (3, 210-248) 02°57′ N, 77°48′ W in 9 m, 20 Sept. 1969. USNM 405919 (30, 174-229) 03°01′ N, 77°50′ W in 37 m, ANTON BRUUN 18B sta. 785, 16 Sept. 1966.

El Salvador: LACM 6945-12 (1, 235) 13° N, 89° W, El Salvador, 15 Aug. 1965. LACM 31310-26 (2, ?-214) 8.7° N, 78.65° W, Panama, Gulf of Chuman, 27 May 1969. LACM 32532-9 (5, 91-250) 09°38.8′ N, 84°40.8′ W in 37 m, SEARCHER sta. 457, 10 Mar. 1972. SIO 79-7 (2, 102-140) 13°01.2′N, 88°01.4′ W in 42 m, 4 Apr. 1978. UF 118240 (2, 208-253) 13.318° N, 89.210° W, El Salvador in 25 m, 29 Oct. 1975.

Mexico: SIO 63-503 (1, 248) 16°02.5′ N, 95°02.5′ W in 37 m, 8 July 1963. SIO 63-521-61A (2, 168-266) 15°41′ N, 96°07.5′ W in 37-73 m, 14 July 1963. SIO 70-70 (2, 112-215) 27°57′ N, 111°7′ W, Mexico, Sonora, N of Cerro Colorado in 36 m, 17-18 Mar. 1970. SIO 70-73 (4, 144-208) 27°57′ N, 111°7′ W, Mexico, Sonora off Cerro Colorado in 36 m, 18 Mar. 1970. SIO 73-244 (1, 59) 18°06.5′-07.0′ N, 102°57.3′-58.6′ W, 4 Apr. 1973.

Nicaragua: UCR 360-30 (1, 205) 12.971° N, 87.879° W, Nicaragua, 1-12 mi W of the mouth of the Gulf of Fonseca in 15-50 m, 24-25 June 1969. UCR 558-6 (1, 197) 12.45° N, 87.253° W, Nicaragua Prov. Chinandega in 31m, 7 Mar. 1970.

Lepophidium robustum

Holotype.—**Caribbean Sea:** UF 234453 (1, 230) 09°02′ N, 81°26′ W in 186 m, OREGON sta. 3595, 30 May 1962.

Paratypes.—**Caribbean Sea**: UF 233172 (1, 183) 11°14.5′ N, 61°46.2′ W in 255 m, PILLSBURY sta. 849, 2 July 1969. UF 234460 (1, 194, cleared and stained) 11°08.5′ N, 74°18′ 6″ W in 101-165 m, PILLSBURY sta. 786, 31 July 1968. UF 234488 (1, 176) 11°08′ N, 74°23.8′ W in 180 m, OREGON sta. 4856, 19 May 1964. UF 234496 (3, 62-148) 10°21.9′-20.2′ N, 75°47.3′-44′ W in 150-170 m, PILLSBURY sta. 797, 1 Aug. 1968. UF 234499 (2, 72-166) 11°16.9′-19.7′ N, 74°17.0′-14.4′ W in 170 m, PILLSBURY sta. 785, 31 July 1968.

Lepophidium staurophor

Holotype.—**Caribbean Sea**: FMNH 64383 (1, 236) 16°39′N, 81°43′ W in 229 m, OREGON sta. 1878, 22 Aug. 1957.

Paratypes.—**Gulf of Mexico**: UF 70590 (1, 156) 23°51′ N, 88°59′ W in 192 m, TURSIOPS cr. 7016, sta. 06, 31 May 1970.

Caribbean Sea: FMNH 64384 (2, 232-260) 15°15′ N, 81°10′ W, in 265 m, OREGON sta. 1894, 25 Aug. 1957. UF 202349 (1, 224) 11°34′ N, 83°07′ W in 229 m, OREGON sta. 1904, 10 Sept. 1957. Nontypes: FMNH 67928 (2, 129-260) 11°31′ N, 83°09′ W in 274 m, OREGON sta. 1903, 9 Sept. 1957. UF 211521 (1, 245) 16°26′ N, 81°35′ W in 22 m, OREGON sta. 3625, 6 June 1962. UF 211597 (1, 229) 12°26′ N, 82°26′ W in 229 m, OREGON sta. 3579, 23 May 1962. UF 211768 (3, 241-249) 12°26′ N, 82°26′ W in 229 m, OREGON sta. 3579, 23 May 1962. UF 223732 (1, 239) 14°07.5′ N, 81°56′ W i 229 m, OREGON sta. 6458, 12 Feb. 1967. UF 223734 (1, 232) 13°12.5′

N, 82°15.6′ W in 201-220 m, OREGON sta. 6424, 4 Feb. 1967. UF 223735 (1, 249) 13°47′ N, 81°57′ W in 182-186 m, OREGON sta. 6455, 11 Feb. 1967. UF 229503 (2, 242-261) 14°08′ N, 81°52′ W in 485 m, OREGON sta. 10197, 20 Nov. 1968. UF 232532 (4, 224-273) 14°17′ N, 81°55′ W in 330 m, OREGON sta. 10195, 19 Nov. 1968. UF 234545 (3, 224-256) 14°53.9′ N, 81°23.2′ W in 296-375 m, PILLSBURY sta. 1356, 31 Jan. 1971.

Lepophidium stigmatistium

Holotype.—**Gulf of California, Baja California**: USNM 44389 (1, 236) 24°30′15″ N, 110°29′00″ W in 204 m, Mexico, Gulf of California, Albatross Sta. 2996, 16 Mar. 1889.

Pacific Ocean, Baja California: SIO-H49-14 (1, 235) 28°12′ N, 115°15′ W, Mexico, Baja California, off Cedros Island in 64-71 m, 8 Mar. 1949. SIO 62-114 (1, 78.8) 24°32′-33.4′ N, 112°00.3′-01.2′ W, 29 Nov. 1961. SIO 62-701 (11, 46-140), 23°58.6′ N, 111°01.0′-2.7′ W, in 91 m, 4 Dec.1962. SIO 62-709 (5 yg., 65-68, 1 ad., 200) 24°07.9′-08.4′ N, 111°13.2′-14.3′ W in 73 m, 4 Dec. 1962. SIO 64-6 (1, 126) 25°31.3′ N, 112°25.7′ W, in 97 m, 28 Jan. 1964. SIO 64-879-61 (1, 220) 24°18.2′-18.6′ N, 111°50.0′-51.4′ W in 88 m, 13 Nov. 1964. SIO 64-881 (2, 59-63) 24°53.7′-55.0′ N, 112°19.8′-20.1′ W in 73 m, 15 Nov. 1964. SIO 64-883-61 (2, 157-188) 25°35.8′-36.2′ N, 112°18.5′-19.7′ W in 73-79 m, 16 Nov. 1964. SIO 64-889 (2) 24°53.7′-55.0′ N, 112°19.8′-20.1′ W in 73 m, Baja California Sur, 4 mi. NW of Isla Magdalena. SIO 84-88 (1, 173) 25°11.0′N, 112°25.0′W in 100-104 m, TOADHOP I, sta. 22, 19 July 1984.

Gulf of California, Baja California: SIO 61-282-61A (2, 156-188) 29° N, 113° 30′ W, Mexico, Golfo de California Norte, Bahía Norte, central portion of bay, 23 June 1961. SIO 62-236-61A (2, 156-188) 28°55′-56′ N, 113°31′-33′ W in 22-90 m, 26 Apr. 1962. SIO 65-257-61 (1, 104) 24°19.3′ N, 110°26.6′ W in 55-79 m, 5-6 July 1965. SIO 65-305-61B (1, 139) 26°56.9′-59.2′ N, 111°51.5′-53.5′ W, in 73-91 m, 14 July 1965. SIO 68-67-61 (3, 89-106) 24°24.3′-25.6′ N, 110°23.7′-25.5′ W, in 82-119 m, 12 Jan. 1968. SIO 70-253 (2, 115-117) 29°-30.0° N, 112°50.5′-53.6′ W in 91 m, 26 April l969. SIO 84-67 (2, 248-253) 24°21.3′ N, 110°25.2′ W in 110-124 m, 13 July 1984. SIO 84-70 (1, 178) 24°25.45′ N, 110°36.75′ W in 238 m, TOADHOP I sta. 4, 14 July 1984.

Lepophidium wileyi

Holotype.—**Atlantic Ocean**: UF 229501 (1, 164) 20°52′ N, 73°20′ W in 329 m, OREGON sta. 10852, 14 Dec. 1969.

Paratypes.—**Gulf of Mexico**: FMNH 46668 (2, 110-114) 22°14′ N, 91°26′ W in 91 m, OREGON sta. 406, 16 Aug. 1951.

Caribbean Sea: FMNH 66602 (1, 132) 15°15′ N, 81°19′ W in 265 m, OREGON sta. 1894, 25 Aug. 1957. FMNH 69287 (1, 149) 18°12′ N, 67°18′ W in 274 m, OREGON sta. 2648, 6 Oct. 1959. UF 207312 (2, 128-177) 18°12′ N, 67°18′ W in 275 m, OREGON sta. 2648, 6 Oct. 1959. UF 211520 (25, 113-175) 16°26′ N, 81°35′ W in 219 m, OREGON sta. 2625, 6 June 1962. UF 211598 (24, 113-170) 12°26′ N, 82°26′ W in 229 m, OREGON sta. 3579, 23 May 1962. UF 211767 (28, 138-180) 16°26′ N, 81°35′ W in 219 m, OREGON sta. 3625, 6 June 1972. UF 212268 (9, 100-147) 12°28′ N, 82°25′ W in 186 m, OREGON sta. 3578, 23 May 1962. UF 212282 (19, 140-173) 12°26′ N, 82°26′ W in 229 m, OREGON sta. 3579, 23 May 1962. UF 215274 (4, 140-165) 12°13′ N, 72°34′ W in 186 m, OREGON sta. 4920, 1 June 1964. UF 215405 (3, 127-170) 12°09′ N, 72°47′ W in 180 m, OREGON sta. 4913, 1 June 1964. UF 234540 (9, 45-130) 18°21.4′ N, 69°08.7′ W in 1300-165 m, PILLSBURY sta. 1387, 9 July 1971. UF 234541 (8, 105-166) 12°07′ N, 82°44′ W in 192 m, OREGON sta. 6444, 7 Feb. 1967. UF 183090 (2, 79-97) 18°21′ N, 69°14.3′ W in 170-176 m, PILLSBURY sta. 1303, 21 July 1970. UF Uncat. (4, 160-178) 16°38′ N, 81°39′ W in 274 m, OREGON sta. 1879, 22 Aug. 1957. USNM 405920 (20, 128-178) 16°26′ N, 81°35′ W in 220 m, OREGON sta. 3625, 6 June 1962. USNM 405925 (23, 122-170) 12°26′ N, 82°26′ W in 229 m, OREGON sta. 3579, 23 May 1962.

Atlantic Ocean: FMNH 69295 (1, 128) 18°26′ N, 67°11′ W in 229 m, OREGON sta. 2654, 6 Oct. 1959. GMBL 1716 (2, 142-168) 23°52′ N, 79°11′ W in 364-384 m, SILVER BAY sta. 2468. 6 Nov. 1960. UF 211022 (1, 167) 22°57′ N, 78°40′ W in 366-402 m, SILVER BAY sta. 3511, 7 Nov. 1961. UF 211635 (57, 79-178) 23°52′ N, 79°11′ W in 366-384 m, SILVER BAY sta. 2468, 6 Nov. 1960. UF 229536 (2, 118-132) 11°13′ N, 60°52′ W in 60 m, OREGON sta. 5961, 13 Mar. 1966. UF 234510 (8, 135-178) 23°52′ N, 79°11′ W in 375 m, SILVER BAY sta. 2468, 6 Nov. 1960. UF 234527 (1, 104) 23°40′ N, 79°06.5′ W in 229 m, SILVER BAY sta. 2467, 6 Nov. 1960. UF 234539 (3, 182-187) 17°27′ N, 62°04′ W in 245-285 m, OREGON sta. 6700, 19 May 1967. UF 182907 (3, 178-209)

17°27′ N, 62°04′ W in 245-285 m, OREGON sta. 6700, 19 May 1967. USNM Uncat. (1, 110) 11°08′ N, 60°58′ W in 73-88 m, OREGON sta. 5025, 21 Sept. 1964. UF 182819 (1, 135) 24°25′ N, 79°13′ W in 229 m, SILVER BAY sta. 2470, 7 Nov. 1960. USNM Uncat. (2, 156-172) 23°12′ N, 78°49′ W in 274 m, OREGON sta. 10861, 15 Dec. 1969.

Lepophidium zophochir

Holotype.—**Atlantic Ocean**: UF 182222 (1, 176) 09°39′ N, 59°47′ W in 182 m, OREGON sta. 1986, 4 Nov. 1957.

Paratypes.—**Atlantic Ocean**: FMNH 64496 (4, 183-201) 09°53′ N, 59°53′ W in 229 m, OREGON sta. 1983, 3 Nov. 1957. FMNH 64497 (3, 116-219) 09°41′ N, 59°47′ W in 274 m, OREGON sta. 1985, 3 Nov. 1957. FMNH 64505 (6, 173-203) 07°15′ N, 53°21′ W in 247 m, OREGON sta. 2023, 9 Nov. 1957. FMNH 64509 (3) 09°55′ N, 60°53′ W in 60 m, OREGON sta. 2208, 26 Aug. 1958. UF 204121 (13, 204-237) 07°26′ N, 54°40′ W in 174 m, OREGON sta. 2288, 8 Sept. 1958. UF 204969 (2, 117-160) 07°27′ N, 54°27′ W in 187-247 m, OREGON sta. 2291, 8-9 Sept. 1958. UF 205014 (2, 187-193) and UF 234546 (1, 235, cleared and stained) 07°27′ N, 54°32′ W in 201 m, OREGON sta. 2290, 8-9 Sept. 1958. UF 183126 (3, 210-225) 07°27′ N, 54°30′ W in 201 m, OREGON sta. 10622, 16 May 1969. UF 182959 (5, 171-200) 09°53′ N, 59°53′ W in 230 m, OREGON sta. 1983, 3 Nov. 1967. UF Uncat. (4, 157-193) 07°15′ N, 53°15′ W in 293 m, OREGON sta. 2024, 9 Nov. 1957. UF Uncat. (2, 218-226) 9.613° N, 59.7° W, Venezuela, off mouth of Orinoco R. in 298 m. USNM 405926 (5, 150-182) 09°41′ N, 59°47′ W in 274 m, OREGON sta. 1985, 3 Nov. 1957. USNM 405927 (3, 172-198) 07°15′ N, 53°25′ W in 247 m, OREGON sta. 2022, 9 Nov. 1957. USNM 405928 (2, 172-177) 07º 15′ N, 53°21′ W in 247 m, OREGON sta. 2023, 9 Nov. 1957. USNM 405929 (4, 157-193) 07°15′ N, 53°15′ W in 293 m, OREGON sta. 2024, 9 Nov. 1957.

Caribbean Sea: UF 182960 (3, 203-225) 11°09.5′ N, 74°24.5′ W in 311-329 m, OREGON sta. 4838, 16 May 1964. UF 182961 (1, 183) 10°42′ N, 67°56′ in 192 m, OREGON sta. 5628, 28 Sept. 1965. UF 215414 (3, 220-243) 11°50′ N, 73°05′ W in 320-348 m, OREGON sta. 4911, 31 May 1964. UF 215277 (6, 198-212) 11°09′ N, 74°26′ W in 284-293 m, OREGON sta. 4860, 19 May 1964.

TABLES

The following tables present the frequency distributions of characters for the species of *Lepophidium.* In two cases, *Lepophidium brevibarbe* and *Lepophidium entomelan*, we present separate data for different geographic regions. For *Lepophidium brevibarbe*, these are the Atlantic coast of South America (abbreviated SA), the Caribbean region (CAR) and the Gulf of Mexico and southeastern U.S. coast (GM). For *Lepophidium entomelan*, these are the western Caribbean region (abbreviated WC) and the Gulf of Mexico plus the one Atlantic coast record (GM).

Table 1. Frequency distribution of precaudal vertebrae in *Lepophidium*.

	12	13	14	15	16	17	mean
aporrhox	11	32					12.7
brevibarbe (SA)			3	156	9		15.0
brevibarbe (CAR)			15	184			14.9
brevibarbe (GM)			3	67			15.0
collettei			15	13			14.5
crossotum		3	60				14.0
cultratum			9	125			14.9
entomelan (GM)			3	47	6		15.1
entomelan (WC)			1	34	14		15.3
gilmorei			6				14.0
hubbsi			5	11			14.7
inca			2	18	1		15.0
jeannae			2	28	2		14.9
kallion			6	53	1		14.9
marmoratum			34	13			14.3
microlepis			7	40			14.9
negropinna				5	36	1	15.9
pardale			8	29			14.8
pheromystax			3	25			14.9
profundorum				3	49	15	16.2
prorates			4	98	2		15.0
robustum			9				14.0
staurophor				8	9		15.5
stigmatistium			2	14			14.9
wileyi			135	84			14.4
zophochir				4	75	1	16.0

Table 2. Frequency distribution of caudal vertebrae in *Lepophidium*.

	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	mean
aporrhox	3	10	9	11	5															51.1
brevibarbe (SA)							14	70	65	4	1									56.4
brevibarbe (CAR)						11	47	86	28	1										55.8
brevibarbe (GM)							5	23	37	2										56.5
collettei			3	9	12	3														52.6
crossotum					5	31	25	1												54.4
cultratum								9	69	49	6									57.4
entomelan (GM)								1	15	24	10									57.9
entomelan (WC)									9	20	11	5								58.3
gilmorei			1	2	3															52.3
hubbsi								1	4	9	2									57.8
inca											3	13	4	1						60.1
jeannae										2	14	11	4							59.5
kallion									9	23	20	4								58.3
marmoratum							10	14	19	2										56.3
microlepis			1	10	17	16	3													53.2
negropinna											3	9	14	11	4	1				61.2
pardale								4	12	16	4	1								57.6
pheromystax						1	3	14	9	1										56.2
profundorum									5	20	28	9	4							58.8
prorates							2	16	55	24	1									57.1
robustum						1	1	6	1											55.8
staurophor																	6	9	2	65.8
stigmatistium						6	7	2												54.7
wileyi								13	51	93	36	4								57.8
zophochir										7	35	29	8							59.5

Table 3. Frequency distribution of total vertebrae in *Lepophidium*.

	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	mean
aporrhox	1	5	13	4	11	4																		63.8
brevibarbe (SA)										12	66	62	6	1										71.4
brevibarbe (CAR)									15	50	83	25	1											70.7
brevibarbe (GM)										5	26	34	2											71.5
collettei					1	5	13	9	1															67.1
crossotum							6	31	23															68.3
cultratum										1	8	71	47	5										72.4
entomelan (GM)											1	13	25	10										72.9
entomelan (WC)											1	4	18	19	4									73.5
gilmorei					1	2	3																	66.3
hubbsi											2	7	7											72.3
inca														3	14	3	1							75.1
jeannae													2	14	10	3	1							74.6
kallion											1	9	25	14	5									73.2
marmoratum									4	16	19	6												70.6
microlepis						3	9	18	16	1														68.1
negropinna															5	7	13	10	5	1				77.1
pardale										2	3	15	12	3	2									72.5
pheromystax									2	3	13	10												71.1
profundorum													3	15	32	11	3	1						75.0
prorates										1	20	51	24	1										72.0
robustum								1	1	6	1													69.8
staurophor																				3	7	6	1	81.3
stigmatistium									7	7	1													69.6
wileyi										5	28	95	64	9	1									72.2
zophochir														7	25	25	9							75.5

Table 4. Frequency distribution of dorsal rays in *Lepophidium.*

	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
aporrhox		1	7	4	3	4	5	4	4	3	4												
brevibarbe (SA)																				1	5	13	16
brevibarbe (CAR)																1	2	5	11	8	13	16	30
brevibarbe (GM)																				4	3	7	10
collettei												2	6	3	5	3	1	2					
crossotum													1	2	5	7	16	12	15	3	1		
cultratum																							
entomelan (GM)																						1	3
entomelan (WC)																						1	2
gilmorei													1	1	1	1	1	1					
hubbsi																							
inca																							
jeannae																							
kallion																							
marmoratum																	1	2	3	5	3	6	12
microlepis													1	1	2	1	9	8	5	8	3	4	2
negropinna																							
pardale																					1	-	-
pheromystax																					1	3	5
profundorum																							
prorates																				1	-	4	9
robustum																			2	1	3	1	
staurophor																							
stigmatistium																			3	1	3	5	-
wileyi																				2	3	6	10
zophochir																							

Table 4. Frequency distribution of dorsal rays in *Lepophidium* (continued).

	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	mean
aporrhox																								110.5
brevibarbe (SA)	26	35	30	16	11	3	3																	129.0
brevibarbe (CAR)	32	29	15	6	2																			127.1
brevibarbe (GM)	24	11	16	7	3																			128.5
collettei																								118.5
crossotum																								121.5
cultratum	2	8	16	28	16	23	17	10	9	3														132.3
entomelan (GM)	8	10	11	6	6	1																		129.6
entomelan (WC)	5	11	9	7	7	3																		130.0
gilmorei																								119.5
hubbsi	1	1	1	2	6	2	2																	131.7
inca						1	-	1	-	4	8	5	-	2										138.0
jeannae						3	3	6	4	3	6	4	5											136.8
kallion		1	4	10	5	15	11	8	2	2														133.0
marmoratum	9	2	2																					126.2
microlepis	1																							122.8
negropinna							1	1	1	1	4	2	3	7	4	8	6	7	3	-	1			142.0
pardale	3	5	4	7	4	6	1	2	1	2														131.5
pheromystax	14	15	7	3	1	1																		128.7
profundorum		1	-	4	6	10	9	11	12	5	2	3	2	1	1									134.9
prorates	9	14	15	17	17	9	2	1																130.1
robustum																								124.4
staurophor													1	-	4	4	4	3	-	1				143.4
stigmatistium	1	-	1	1																				125.8
wileyi	31	50	40	29	10	9	-	1																129.4
zophochir			1	2	7	11	17	20	8	10	2	1												134.6

Table 5. Frequency distribution of anal rays in *Lepophidium*.

	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114
aporrhox	2	4	3	6	7	5	5	3	5														
brevibarbe (SA)											3	10	25	32	27	31	14	9	2				
brevibarbe (CAR)								2	1	9	6	16	34	33	37	19	10	2	2				
brevibarbe (GM)												4	8	10	18	23	16	6	1				
collettei					1	1	6	2	9	2	-	1											
crossotum								1	3	6	16	14	11	7	2								
cultratum														1	3	7	18	27	31	26	13	3	2
entomelan (GM)														5	3	6	14	7	8	3			
entomelan (WC)												2	-	3	3	8	10	8	3	4	1		
gilmorei				1	-	-	-	1	3	1													
hubbsi																	3	3	4	3	2	1	
inca																					1	-	-
jeannae																			2	-	4	6	7
kallion																	3	3	12	7	14	9	3
marmoratum												3	6	6	8	9	9	5	1				
microlepis						1	-	2	-	6	9	8	13	4	2	-	1						
negropinna																				1		1	
pardale															1	2	7	4	6	6	3	2	
pheromystax													5	5	14	8	8	5	3	1	1		
profundorum																		1	2	3	6	10	11
prorates														1	5	9	12	22	18	18	10	4	
robustum											1	3	-	2	1	1							
staurophor																							
stigmatistium												6	1	2	2	1	2	1					
wileyi														1	4	11	26	38	49	36	19	5	-
zophochir																	2	2	1	8	14	28	17

Table 5. Frequency distribution of anal rays in *Lepophidium* (continued).

	116	117	118	119	120	121	122	123	124	125	126	127	Mean
aporrhox													96.3
brevibarbe (SA)													105.8
brevibarbe (CAR)													104.9
brevibarbe (GM)													106.5
collettei													99.3
crossotum													102.8
cultratum													109.8
entomelan (GM)													108.1
entomelan (WC)													107.9
gilmorei													99.2
hubbsi													110.1
inca	7	2	6	2	2	1							117.4
jeannae	1	2	2	1									114.2
kallion													111.5
marmoratum													106.4
microlepis													102.9
negropinna	3	10	8	6	10	5	1	2					118.4
pardale	3												110.6
pheromystax													106.9
profundorum	11	11	2	1	-	1							114.6
prorates													109.5
robustum													104.3
staurophor					2	1	6	2	2	1			122.3
stigmatistium													105.1
wileyi	-	1											109.7
zophochir	2												112.9

Table 6. Frequency distribution of pectoral rays in *Lepophidium*.

	19	20	21	22	23	24	25	26	27	mean
aporrhox		3	19	41	21					22.0
brevibarbe (SA)		5	33	87	27					21.9
brevibarbe (CAR)		15	167	121	13					21.4
brevibarbe (GM)		5	49	79	9					21.6
collettei			1	12	18	7	5			23.1
crossotum	6	50	57	12						20.6
cultratum				5	66	138	56	1		23.9
entomelan (GM)		1	3	17	18	4				22.5
entomelan (WC)				14	52	23	4			23.2
gilmorei		1	4	6	1					21.6
hubbsi					3	20	5	3		24.3
inca					3	22	4			24.0
jeannae		12	43	11						21.0
kallion			5	39	35	11				22.6
marmoratum		1	19	31	38	6				22.3
microlepis			1	10	17	10				22.9
negropinna			2	8	37	35	2			23.3
pardale			4	32	16	8				22.5
pheromystax		20	73	7						20.9
profundorum		3	25	53	38	3				22.1
prorates		1	11	68	66	10				22.5
robustum				7	9	1				22.6
staurophor				15	17					22.5
stigmatistium	3	6	16	2						20.6
wileyi		14	131	167	56	3	1			21.7
zophochir			2	17	66	62	6	2	1	23.4

Table 7. Frequency distribution of caeca in *Lepophidium*.

	1	2	3	4	5	6	7	8	9	mean
aporrhox				32	6	3	1			4.3
brevibarbe (SA)		1	13	65	11	2				4.0
brevibarbe (CAR)			18	131	8					3.9
brevibarbe (GM)			5	53	10					4.1
collettei				2	11	8	1			5.4
crossotum		4	41	17						3.2
cultratum		1	95	35	3					3.3
entomelan (GM)			2	3	11	2	3			5.0
entomelan (WC)				17	19	9	2			4.9
gilmorei			5	1						3.2
hubbsi				1	3	5	6	1		6.2
inca						1	9	5	1	7.4
jeannae		1	30	1						3.0
kallion			7	12	18	4				4.5
marmoratum			12	28	6					3.9
microlepis					8	9	2	1		5.8
negropinna			1	33	10	1				4.2
pardale			3	25	2					4.0
pheromystax	1	1	45	2						3.0
profundorum		1	46	7						3.1
prorates			5	67	7					4.0
robustum					3	4	1			5.8
staurophor			18	1						3.1
stigmatistium					2	5	1			5.9
wileyi			16	125	40	4				4.2
zophochir			1	11	22	27	16	3		5.7

Table 8. Frequency distribution of upper gill arch elements in *Lepophidium*.

	Upper Rudiments							Upper Developed
	1	2	3	4	5	6	mean	1
aporrhox		1	44	3	1		3.0	1
brevibarbe (SA)		3	88	1			3.0	0
brevibarbe (CAR)		5	148	3			3.0	0
brevibarbe (GM)		4	65				2.9	0
collettei			22				3.0	0
crossotum		2	63				3.0	0
cultratum		1	85	48			3.4	0
entomelan (GM)		1	21	1			3.0	0
entomelan (WC)		1	41	7			3.1	1
gilmorei		3	3				3.0	0
hubbsi			13	4			3.2	0
inca			10	7			3.4	0
jeannae		39	3				2.1	0
kallion		2	64	1			3.0	1
marmoratum	1	-	39	8			3.2	0
microlepis			14	5			3.3	0
negropinna		1	40	4			3.1	0
pardale		2	30				2.9	0
pheromystax		64					2.0	0
profundorum		36	28				2.4	0
prorates			84	2			3.0	0
robustum				6	3		4.3	0
staurophor			1	16			3.9	0
stigmatistium			2	16	2	1	4.1	0
wileyi		1	185	6			3.0	1
zophochir		1	79	1			3.0	0

Table 9. Frequency distribution of lower gill arch elements in *Lepophidium*.

	Lower Rudiments																Lower Developed								
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	mean	3	4	5	6	7	8	9	10	mean
aporrhox									3	12	21	9	3			9.9			1	31	17				6.3
brevibarbe (SA)		1	9	45	28	7	2									3.4		92	1						4.0
brevibarbe (CAR)			13	77	43	16	5	2	2	1						3.6		158	3						4.0
brevibarbe (GM)		1	10	28	19	7	1	-	-	1						3.4		69							4.0
collettei			1	7	5	4	4	1								4.3				2	19	1			7.0
crossotum	52	12	1													0.2				15	50				6.8
cultratum	18	50	38	19	6	3										1.7		1	4	60	64	5			6.5
entomelan (GM)	1	1	2	9	4	4	4	1								3.8			9	14	3				5.8
entomelan (WC)	4	8	10	12	7	6	-	1	1							2.8			2	20	26	1			6.5
gilmorei		1	4	1												2.0		5	1						4.2
hubbsi		1	7	-	4	3	2									3.4			5	9	3				5.9
inca		1	8	6	1	1										2.6		8	9						4.5
jeannae			22	21												2.5		42							4.0
kallion	41	24	2													0.4			1	31	34	1			6.5
marmoratum	28	19	-	1												0.5					26	21	1		7.5
microlepis			1	4	6	4	4									4.3		10	8	1					4.5
negropinna		1	1	2	1	4	9	9	11	2	3					6.7		35	8						4.2
pardale	1	12	11	4	3	2										2.1		10	20	1	1				4.8
pheromystax		1	51	12												2.2		60	4						4.1
profundorum	13	17	19	11	5											1.7		1	9	41	12	1			6.0
prorates			1	3	9	21	17	21	9	3						6.0		79	6						4.1
robustum									2	-	1	1	2	1	2	11.3					1	3	4	1	8.6
staurophor	10	5	1	1												0.6					4	13			7.8
stigmatistium					1	3	4	8	4	1						6.7					6	11	2	2	8.0
wileyi	171	18	3													0.1					70	117	5		7.7
zophochir	5	18	44	10	2	2										1.9		1	63	12	5				5.3

Table 10. Frequency distribution of total gill arch elements in *Lepophidium*.

	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	mean
aporrhox										2	6	18	16	5	2								19.4
*brevibarbe (*SA)	1	10	50	26	7	2																	10.4
brevibarbe (CAR)		18	68	44	16	5	2	3	1														10.6
brevibarbe (GM)	2	10	26	21	7	1	-	-	1														10.4
collettei					1	7	5	5	3	1													14.2
crossotum		6	57	3																			10.0
cultratum		2	31	36	35	21	8	1															11.5
entomelan (GM)			2	4	6	7	5	2															12.6
entomelan (WC)			7	8	10	13	4	5	-	1	1												12.5
gilmorei	2	4																					8.7
hubbsi		4	2	2	3	2	4																11.5
inca		2	8	5	-	2																	10.5
jeannae	20	20	2																				8.6
kallion		9	54	5																			9.9
marmoratum		1	8	28	8	2																	11.0
microlepis			3	7	6	3	2	1															11.9
negropinna		1	2	2	4	12	10	9	6	2	1												13.8
pardale	4	14	3	5	5																		9.8
pheromystax	49	15																					8.2
profundorum	7	15	19	14	6	3																	10.1
prorates		1	-	10	19	16	19	10	4														13.1
robustum													1	-	2	1	2	-	-	2	-	1	23.6
staurophor				2	12	1	1	1															12.2
stigmatistium								1	1	7	5	7											17.8
wileyi			45	131	15	1																	10.9
zophochir		12	49	15	3	1																	10.2

Table 11. Frequency distribution of dorsal fin origin in *Lepophidium*.

	2	3	4	5	6	7	mean
aporrhox			7	17			4.7
brevibarbe (SA)		41	2				3.0
brevibarbe (CAR)		63	1				3.0
brevibarbe (GM)		16	4				3.2
collettei			4	18			4.8
crossotum		20	40				3.7
cultratum		25	65				3.7
entomelan (GM)		6	33	2			3.9
entomelan (WC)		2	44	3			4.0
gilmorei		6					3.0
hubbsi		16	1				3.1
inca		16	5				3.2
jeannae	20	12	-	1			2.5
kallion		1	41				4.0
marmoratum		6	32	1			3.9
microlepis		6	36				3.9
negropinna		17	26				3.6
pardale		26	1				3.0
pheromystax	18	11					2.4
profundorum		1	-	49	16	1	5.2
prorates		6	85	8			4.0
robustum			6				4.0
staurophor			11	6			4.4
stigmatistium	1	1	11				3.8
wileyi		10	113	2			3.9
zophochir		1	73	5			4.1

Table 12. Frequency distribution of post orbital length (%HL) in *Lepophidium*.

	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	mean
aporrhox			1	1	-	2	2	8	3	-	2	-	1												52.0
brevibarbe (SA)								2	3	4	2	6	5	7	1										55.8
brevibarbe (CAR)								3	3	2	3	8	1	1	2										55.2
brevibarbe (GM)								1	2	6	5	5	2	3	2										55.5
collettei					1	-	-	4	4	5	4	2													53.6
crossotum	1	1	2	6	2	2	2	-	1																48.6
cultratum						1	3	4	2	11	11	7	2	3											54.5
entomelan (GM)			3	1	1	2	4	5	3	1															50.8
entomelan (WC)							1	-	1	3	2	2	1	-	1										54.9
gilmorei							1	3	-	1															52.2
hubbsi											2	4	6	2	-	1									56.8
inca											1	4	2	1	3										57.1
jeannae				1	-	2	-	6	5	7	3	2	1												53.2
kallion									1	4	3	8	6	4											56.0
marmoratum						1	-	3	2	9	4	4	4	1	-	1									54.8
microlepis											1	1	1	1	2	2	3	-	-	1					59.3
negropinna										2	1	2	1	1	2	7	3	3	6	3	5	4	-	1	61.6
pardale										1	1	6	1	2	2	1									56.1
pheromystax					2	-	1	5	10	15	6	5													53.6
profundorum					1	-	1	1	4	3	11	12	4	3	2	2									55.5
prorates											1	6	4	8	5	5	2	1							58.2
robustum						2	1	2	-	-	1	1													52.3
staurophor										1	2	4	6	3											56.5
stigmatistium											1	-	-	-	4	1									58.5
wileyi			1	2	3	4	5	4	2	2															50.7
zophochir							2	2	9	15	4	3	1	3											54.2

Table 13. Frequency distribution of orbit diameter (%HL) in *Lepophidium*.

	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	mean
aporrhox									1	1	1	3	2	1	3	5	1	1	1		29.3
brevibarbe (SA)							2	4	4	5	7	2	2	2	1	-	1				25.6
brevibarbe (CAR)							1	3	1	4	6	4	2	1	1						25.8
brevibarbe (GM)							2	3	6	4	5	4	2	-	4	-	1				25.9
collettei						2	2	2	5	4	3	-	-	1							24.2
crossotum													1	2	5	2	4	3			30.9
cultratum									3	4	15	4	8	5	3	1	1				27.1
entomelan (GM)										2	3	1	6	2	5	2					28.2
entomelan (WC)							2	4	5	1	1	1									23.9
gilmorei												2	-	-	1	-	-	1	-	1	30.4
hubbsi							1	2	3	4	1	-	3	1							25.3
inca							1	1	1	1	1	2	3	1							26.1
jeannae								1	4	3	6	6	4	1	1	1					26.4
kallion					1	-	2	2	3	4	5	6	2	-	1						25.4
marmoratum						3	3	6	7	2	3	-	3	-	1						24.2
microlepis							5	2	1	1	2	1									23.7
negropinna	1	-	2	4	11	4	7	3	1	5	-	2	1	2							22.0
pardale										4	6	5	4	1	3	2					27.4
pheromystax										1	-	-	10	12	9	8	5	3			29.8
profundorum					1	1	9	8	7	2	8	4	1	1	1	1					24.4
prorates						3	7	7	6	4	3	2	-	-	1						23.8
robustum									1	3	2	-	1								25.6
staurophor							2	1	1	6	2	2	1	1							25.3
stigmatistium						1	1	-	2	1	-	-	1								24.0
wileyi											2	-	5	5	5	1	4	1			29.5
zophochir							2	3	4	10	5	7	4	2	2						25.8

Table 14. Frequency distribution of body depth at occiput (%SL) in *Lepophidium*.

	8	9	10	11	12	13	14	15	16	mean
aporrhox					5	8	5	2		13.2
brevibarbe (SA)			2	7	11	6	3			12.0
brevibarbe (CAR)				1	7	12	3			12.7
brevibarbe (GM)					10	12	6			12.9
collettei			2	8	8	1	-	-	1	11.7
crossotum			8	6	3					10.7
cultratum				2	12	22	7			12.8
entomelan (GM)		1	5	10	1	1				10.8
entomelan (WC)				7	7					11.5
gilmorei				2	2	1				11.8
hubbsi					2	5	8			13.4
inca				1	9	1				12.0
jeannae			2	10	13	1				11.5
kallion					3	11	11			13.3
marmoratum				4	11	13	1			12.4
microlepis				1	9	2				12.1
negropinna			4	12	13	12	2			11.9
pardale			6	11	6	2				11.2
pheromystax				6	21	12				12.2
profundorum	7	20	15							9.2
prorates			3	12	14	3				11.5
robustum					4	3				12.4
staurophor					7	4	3	-	1	12.9
stigmatistium				3	3					11.5
wileyi				2	14	6	1			12.3
zophochir		1	15	20	3					10.6

Table 15. Frequency distribution of body depth at origin of dorsal fin (%SL) in *Lepophidium*.

	8	9	10	11	12	13	14	15	16	17	mean
aporrhox							6	6	6	1	15.1
brevibarbe (SA)			1	3	3	5	11	6			13.4
brevibarbe (CAR)					3	6	6	5	1	1	13.9
brevibarbe (GM)				2	-	8	8	6			13.7
collettei						1	6	7	6		14.9
crossotum			2	3	6	1					11.5
cultratum				1	1	11	16	7	8		14.2
entomelan (GM)			2	4	9	4					11.8
entomelan (WC)				6	6	1	1				11.8
gilmorei					1	3	1				13.0
hubbsi					1	1	5	6			14.2
inca				1	5	2	3				12.6
jeannae					16	10	1				12.4
kallion				1	-	1	12	8	4		14.5
marmoratum				1	7	7	10	4			13.3
microlepis				1	-	-	-	5	5	1	15.3
negropinna			2	4	6	9	18	2	1	1	13.2
pardale				9	8	6	1	1			12.1
pheromystax				6	17	14	3	1			12.4
profundorum	1	3	16	11	7						10.5
prorates				1	5	13	13	-	1		13.3
robustum							3	3	1		14.7
staurophor				3	1	5	6	1			13.1
stigmatistium					2	2	-	2			13.3
wileyi					6	8	6	2			13.2
zophochir		1	6	12	11	6					11.4

Table 16. Frequency distribution of body depth at origin of anal fin (%SL) in *Lepophidium*.

	7	8	9	10	11	12	13	14	15	mean
aporrhox						3	3	12	2	13.7
brevibarbe (SA)				2	4	6	15	3		12.4
brevibarbe (CAR)				1	4	9	6	2	1	12.3
brevibarbe (GM)				2	8	13	5			11.8
collettei						3	8	7	2	13.4
crossotum			3	7	4					10.1
cultratum				2	11	22	9			11.9
entomelan (GM)			1	7	9	4				10.8
entomelan (WC)				9	5					10.4
gilmorei				2	2	1				10.8
hubbsi					6	8	1			11.7
inca				2	5	2	3			11.5
jeannae			1	12	14					10.5
kallion					6	16	4			11.9
marmoratum				4	15	10				11.2
microlepis					2	3	6	1		12.5
negropinna			1	8	12	15	7			11.4
pardale			1	8	11	5				10.8
pheromystax				8	28	6				11.0
profundorum	1	9	25	6						8.9
prorates				2	3	18	9	1		12.1
robustum							5	2		13.3
staurophor			6	6	4					9.9
stigmatistium				1	2	3				11.3
wileyi				4	12	7				11.1
zophochir			4	11	23	1				10.5

Table 17. Frequency distribution of head length (%SL) in *Lepophidium*.

	15	16	17	18	19	20	21	22	23	24	25	26	mean
aporrhox						2	6	10	1	1			21.7
brevibarbe (SA)					1	8	10	9	2				21.1
brevibarbe (CAR)						1	9	13					21.5
brevibarbe (GM)					1	6	12	10	1	1			21.2
collettei						7	11	2					20.8
crossotum				5	9	3							18.9
cultratum				1	-	1	5	26	13				22.0
entomelan (GM)					9	9	1	1	1				19.9
entomelan (WC)					9	4	-	1					19.5
gilmorei					2	1	2						20.0
hubbsi								2	8	4	1		23.3
inca							8	3					21.3
jeannae				1	4	12	9	1					20.2
kallion					7	9	10						20.1
marmoratum					4	17	4	4					20.3
microlepis								1	4	1	3	3	24.3
negropinna						1	2	9	15	11	4	1	23.1
pardale				1	8	12	1	3					19.9
pheromystax					2	14	14	18					21.0
profundorum	1	11	22	10									16.9
prorates						3	14	13	3				21.5
robustum						1	3	3					21.3
staurophor				2	10	3	-	1					19.3
stigmatistium						2	-	4					21.3
wileyi				2	9	12							19.4
zophochir				1	9	21	8						19.9

Table 18. Frequency distribution of snout tip to occiput (%SL) in *Lepophidium*.

	11	12	13	14	15	16	17	18	mean
aporrhox			6	12	2				13.8
brevibarbe (SA)			2	15	13				14.4
brevibarbe (CAR)				13	9	1			14.5
brevibarbe (GM)			1	17	9				14.3
collettei			10	8	2				13.6
crossotum		2	13	2					13.0
cultratum		1	2	13	26	2			14.6
entomelan (GM)		1	8	10	1				13.6
entomelan (WC)		2	9	3					13.1
gilmorei			1	4					13.8
hubbsi				1	8	5	-	1	15.5
inca				9	1				14.1
jeannae		1	6	13	7				14.0
kallion		2	14	7	3				13.4
marmoratum		4	18	5	2				13.2
microlepis				2	5	3	2		15.4
negropinna				12	22	7	2		15.0
pardale		9	11	5					12.8
pheromystax			3	27	15	1			14.3
profundorum	18	21	5						11.7
prorates			4	18	11				14.2
robustum			2	4	1				13.9
staurophor	2	10	4						12.1
stigmatistium			2	1	3				14.2
wileyi		2	10	11					13.4
zophochir	2	2	15	19					13.3

Table 19. Frequency distribution of predorsal distance (%SL) in *Lepophidium*.

	20	21	22	23	24	25	26	27	28	29	mean
aporrhox						1	5	10	4		26.9
brevibarbe (SA)			7	13	8	2					23.2
brevibarbe (CAR)			2	6	14	1					23.6
brevibarbe (GM)			4	11	15	1					23.4
collettei				2	6	9	2	1			24.7
crossotum		3	10	4							22.1
cultratum			1	1	13	15	12	2			25.0
entomelan (GM)		2	4	11	3	1					22.9
entomelan (WC)				3	9	1	1				24.0
gilmorei	1	-	2	2							22.0
hubbsi				1	8	5	-	1			24.5
inca			1	4	6						23.5
jeannae	5	9	10	3							21.4
kallion				7	16	2	1				23.9
marmoratum		1	2	5	16	4	1				23.8
microlepis					1	1	3	1	5	1	26.9
negropinna		1	-	1	12	12	12	2	3		25.2
pardale		3	8	10	2	2					22.7
pheromystax	1	7	30	8							22.0
profundorum	4	10	21	9							21.8
prorates				1	8	15	9				25.0
robustum						3	4				25.6
staurophor			4	8	4						23.0
stigmatistium				1	2	1	1	1			24.8
wileyi			5	10	7	1					23.2
zophochir		1	2	9	21	6					23.7

Table 20. Frequency distribution of preanal distance (%SL) in *Lepophidium*.

	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	mean
aporrhox			3	1	2	5	7	1	1								36.0
brevibarbe (SA)								4	4	13	6	2	1				40.0
brevibarbe (CAR)								5	5	6	6	1					39.7
brevibarbe (GM)						1	2	7	4	9	4	4					39.5
collettei				1	4	5	5	4	1								36.5
crossotum				3	5	4	5										35.6
cultratum						1	1	6	1	16	13	5	1				40.1
entomelan (GM)						1	4	7	4	4	1						38.4
entomelan (WC)							1	8	3	2							38.4
gilmorei					1	1	-	2									36.8
hubbsi							1	2	4	6	2						39.4
inca					1	-	5	4	1								37.4
jeannae			1	5	3	11	1	4	1	-	1						36.0
kallion							2	6	5	5	6	1	-	1			39.6
marmoratum						1	2	6	12	5	2	1					39.0
microlepis						1	-	1	1	1	4	-	3	-	-	1	41.0
negropinna			1	-	1	1	5	6	7	9	6	5	1	1			39.4
pardale					5	9	8	1	2								36.4
pheromystax					3	10	13	7	8	5							37.5
profundorum	2	8	16	14	3	1											33.3
prorates								9	12	9	3						39.2
robustum					2	1	2	2									36.6
staurophor					1	1	2	7	4	1							37.9
stigmatistium						1	1	-	2	1	1						38.7
wileyi				1	2	8	5	7									36.7
zophochir					1	1	4	14	11	5	2						38.5

Table 21. Frequency distribution of pelvic fin length long (%SL) in *Lepophidium*.

	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	mean
aporrhox										1	4	7	6	-	1	15.2
brevibarbe (SA)			4	12	10	2	1									7.4
brevibarbe (CAR)				1	7	10	5									8.8
brevibarbe (GM)				1	5	17	4									8.9
collettei						9	10	1								9.6
crossotum		2	14	1												5.9
cultratum			8	25	11											7.1
entomelan (GM)	2	8	10	1												5.5
entomelan (WC)	4	9	1													4.8
gilmorei					2	-	3									9.2
hubbsi			3	8	4											7.1
inca		1	9	1												6.0
jeannae					4	12	10	1								9.3
kallion		2	15													5.9
marmoratum							5	4	15	3	2					11.8
microlepis		1	2	5	2											6.8
negropinna	1	4	11	10	15	1										6.9
pardale	5	13	7													5.1
pheromystax			1	7	7	15	13									8.7
profundorum	21	18	3													4.6
prorates			1	9	18	4										7.8
robustum						2	5									9.7
staurophor							3	9	3	-	1					11.2
stigmatistium			2	3	1											6.8
wileyi			20	3												6.1
zophochir					12	22	4	1								8.8

Table 22. Frequency distribution of pelvic fin length short (%SL) in *Lepophidium*.

	2	3	4	5	6	7	8	9	10	11	12	mean
aporrhox							2	1	9	6	1	10.2
brevibarbe (SA)			6	16	8							5.1
brevibarbe (CAR)			2	14	7							5.2
brevibarbe (GM)			2	14	12							5.4
collettei				3	12	5						6.1
crossotum	1	7	9									3.5
cultratum		1	7	25	11							5.0
entomelan (GM)		8	11	1	1							3.8
entomelan (WC)		7	7									3.5
gilmorei				1	2	1	1					6.4
hubbsi			5	9	1							4.7
inca		1	10									3.9
jeannae				2	11	13	1					6.5
kallion	1	7	9									3.5
marmoratum							7	14	4	2	2	9.2
microlepis		1	2	5	2							4.8
negropinna		7	11	22	1	1						4.5
pardale		11	14									3.6
pheromystax				4	13	22	4					6.6
profundorum	3	29	7	1								3.2
prorates			5	22	5							5.0
robustum				1	2	3	1					6.6
staurophor						1	6	7	1	1		8.7
stigmatistium			5	1								4.2
wileyi		1	21	1								4.0
zophochir	2	33	4									3.1

Table 23. Frequency distribution of pectoral fin length (%SL) in *Lepophidium*.

	6	7	8	9	10	11	12	13	mean
aporrhox				1	4	13	2		10.8
brevibarbe (SA)			6	11	10	3			9.3
brevibarbe (CAR)			1	14	6	2			9.4
brevibarbe (GM)			1	5	19	4			9.9
collettei				6	14				9.7
crossotum			1	11	5				9.2
cultratum	2	-	1	5	27	9			9.9
entomelan (GM)				7	10	3			9.8
entomelan (WC)				2	12				9.9
gilmorei					4	-	1		10.4
hubbsi						4	8	3	11.9
inca				1	3	5	1	1	10.8
jeannae		1	10	13	3				8.7
kallion			1	10	13	2			9.6
marmoratum			4	17	8				9.1
microlepis					5	5	2		10.8
negropinna			2	18	20	2	1		9.6
pardale		1	9	10	5				8.8
pheromystax		2	28	12	2				8.3
profundorum		6	29	8					8.0
prorates			4	19	10				9.2
robustum				1	3	2	1		10.4
staurophor		1	10	5					8.3
stigmatistium				1	4	1			10.0
wileyi			1	10	12				9.5
zophochir			12	22	4	1			8.8

Table 24. Frequency distribution of snout length (%HL) in *Lepophidium*.

	15	16	17	18	19	20	21	22	23	24	mean
aporrhox				5	6	3	5	1			19.6
brevibarbe (SA)			1	3	10	5	9	1			19.7
brevibarbe (CAR)			2	2	6	7	4	2			19.7
brevibarbe (GM)			1	2	5	5	10	6	2		20.5
collettei				2	2	7	6	-	3		20.5
crossotum		1	1	5	4	3	2	1			19.0
cultratum				13	16	10	3	2			19.2
entomelan (GM)			1	4	-	4	6	6			20.3
entomelan (WC)	1	2	4	2	3	2					17.7
gilmorei			1	1	-	3					19.0
hubbsi	1	2	1	6	2	2	1				18.1
inca	1	-	-	8	1	-	1				18.1
jeannae					1	3	8	9	4	2	21.7
kallion		1	4	6	4	5	3	1	2		19.2
marmoratum				2	1	4	7	7			20.8
microlepis		1	4	4	2	1					17.8
negropinna		1	5	12	15	9	1				18.7
pardale		2	6	5	5	5	2				18.4
pheromystax					6	16	18	3	1		20.5
profundorum		1	2	7	6	11	8	3	3	3	20.1
prorates			2	7	4	9	9	2			19.7
robustum					1	1	-	1	4		21.9
staurophor	1	3	2	5	2	1	2				17.9
stigmatistium				2	1	3					19.2
wileyi					1	6	11	5			20.9
zophochir	1	2	8	15	6	4	1	2			18.3

Table 25. Frequency distribution of bony interorbit distance (%HL) in *Lepophidium*.

	11	12	13	14	15	16	17	18	19	20	21	22	mean
aporrhox				4	8	2	3	3					15.7
brevibarbe (SA)			2	2	8	9	7	2					15.8
brevibarbe (CAR)			3	8	5	4	2	-	1				14.9
brevibarbe (GM)		1	3	13	6	4	3	1					14.7
collettei		2	7	7	2	2							13.8
crossotum		1	1	9	2	2	2						14.5
cultratum		4	4	17	13	4	1	-	-	1			14.4
entomelan (GM)			1	2	11	2	1	4					15.6
entomelan (WC)			1	4	3	2	1	1	1				15.4
gilmorei				3	2								14.4
hubbsi				7	5	3							14.7
inca				1	7	3							15.2
jeannae			1	5	7	6	4	2	-	1	-	1	15.9
kallion			2	9	8	6	1						14.8
marmoratum				1	2	9	5	8	4				17.0
microlepis		4	8										12.7
negropinna	1	3	3	8	7	8	6	1	3	2	1		15.6
pardale					3	5	4	2					16.3
pheromystax				6	10	17	9	1					15.7
profundorum		4	3	15	6	8	4	2					14.7
prorates	1		4	7	10	5	6						14.9
robustum				1	2	3	-	1					15.7
staurophor	1	2	4	3	5	-	1						13.8
stigmatistium				1	4	-	1						15.2
wileyi							2	9	9	3			18.6
zophochir			3	6	10	14	5	1					15.4

Table 26. Frequency distribution of lateral line length (%SL) in *Lepophidium*.

	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	mean
aporrhox				1	-	-	1	3	1	4	1	6	1							87.0
brevibarbe (SA)						1	-	2	-	-	-	2	2	6	6	6	4	-	1	91.3
brevibarbe (CAR)												1	4	5	6	6	1			91.7
brevibarbe (GM)											3	2	2	3	2	-	-	1		90.3
collettei	1	-	-	-	-	-	-	2	-	1	2	2	1	3	5	1	1	1		89.7
crossotum					2	1	1	-	1	2	2	-	4	3	1					87.8
cultratum								2	-	2	5	6	5	14	3	6	1			90.2
entomelan (GM)								1	1	-	2	3	2	4	4	1	2	-	1	90.6
entomelan (WC)								1	1	-	3	3	2	1	1	2				89.4
gilmorei													1	1	-	1	-	-	2	93.2
hubbsi												1	1	2	6	3	-	1	1	92.2
inca										1	1	2	1	3	2	-	1			90.4
jeannae												2	3	5	6	2	3	3	1	92.2
kallion					1	1	-	1	2	2	6	2	1	6	3	-	-	-	1	88.8
marmoratum							1	3	1	2	2	6	4	1	1	1	-	1		88.7
microlepis					1	-	-	1	-	-	4	-	3	3						88.5
negropinna											4	1	12	1	8	8	2	-	1	91.2
pardale											1	-	2	2	2	4	5	6	3	93.4
pheromystax										3	1	4	7	7	10	1	4	-	2	91.1
profundorum			1	-	-	1	-	-	-	-	1	1	2	1	6	3	8	6	6	92.8
prorates									1	2	3	1	1	4	5	9	3	1	2	91.7
robustum												1	-	-	-	2	2	-	2	93.6
staurophor									1	3	2	1	3	2						88.7
stigmatistium											2	2	1							88.8
wileyi										1	3	3	-	-	7	5	3	1		91.5
zophochir			1	-	-	-	-	1	3	2	5	7	6	2	6	3	3			89.6

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