

Clinid Fishes of Chile and Peru,
with Description of a New Species,
Myxodes ornatus, from Chile

JOHN S. STEPHENS, JR.
and
VICTOR G. SPRINGER

SMITHSONIAN CONTRIBUTIONS TO ZOOLOGY • NUMBER 159

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ABSTRACT

Stephens, John S., Jr., and Victor G. Springer. Clinid Fishes of Chile and Peru, with Description of a New Species, *Myxodes ornatus*, from Chile. *Smithsonian Contributions to Zoology*, number 159, 24 pages, 15 figures, 1974.—Five genera and 10 species of clinid fishes are found in Chile and/or Peru. Of these, three genera and eight species are endemic. The other two genera and species are wide-ranging forms in the eastern Pacific with centers of distribution in the tropics. Of the 30 nominal species-group names available for the clinids of Chile and Peru, 15, including several of the oldest, have no extant type-material. The lack of type-material for some names has resulted in involved nomenclatural problems, three of which we have solved by designating neotypes based on the holotypes of other nominal species (thus creating objective synonyms). Neotypes are designated for *Blennius tetranemus* Cope, *Clinus peruvianus* Valenciennes, and *Clinus guttulatus* Valenciennes. Only one nominal species is unaccounted for—*Clinus fernandezianus* Guichenot. The description of this species pertains to no known clinid and no clinids are known from the type-locality, Juan Fernandez Islands.

A key is presented to the species treated and all species of the endemic genera (*Myxodes*, *Auchenionchus*, *Calliclinus*) are illustrated and described in a common format.

We have synonymized the clinid subtribe Calliclinidi Hubbs with the subtribe Cryptotremidi Hubbs. These clinids are distinguished from all others in having some caudal-fin rays branched.

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Clinid Fishes of Chile and Peru, with Description of a New Species, *Myxodes ornatus*, from Chile

John S. Stephens, Jr.
and *Victor G. Springer*

Introduction

The clinid fishes of the temperate waters of Peru and Chile are, essentially, a geographically restricted group. Of the five genera and ten species that we recognize, three genera and eight species are endemic to the area. The other two genera and species are wide-ranging members of the tropical Panamic fauna with distributions extending from the Gulf of California to Peru or Chile.

The clinid fishes of Peru and Chile have not previously been treated as a group, although Hildebrand (1946) discussed the Peruvian species, and DeBuen (1962), the Chilean species. Hubbs (1953) and Springer (1959) included information on the Peruvian and Chilean species of the clinid genera *Labrisomus* and *Malacoctenus* in their revisions of those genera.

Our study was initiated when we found it impossible to identify Chilean clinids using DeBuen's (1962) study. We believe that he misidentified most of his material. We have synonymized all the new taxa he proposed (one genus, two subgenera, six species), as well as several other previously recognized taxa of Chilean and Peruvian clinids.

The nomenclature of the Chilean and Peruvian clinids is unusually complex for so small a number of species. This complexity is the result of high in-

traspecific variability, inadequate species descriptions, and nonexistence, or loss, of type-material, including that for some of the oldest names. Of the 30 nominal species-group taxa of clinids previously described or reported from the area, we have been able to locate primary or secondary types for only 15. A recent attempt by R. Lavenberg of the Los Angeles County Museum of Natural History to examine or obtain DeBuen's type-specimens for us was unsuccessful. A tidal wave at Montemar in 1968 and an earthquake at Santiago in 1970 apparently destroyed DeBuen's specimens, as well as those of other early Chilean ichthyologists.

Among the nominal clinid species, *Clinus magellanicus* Philippi and *C. foncki* Philippi, both listed originally in Delfin (1899), are nomina nuda. *Clinus foncki* was synonymized with *Myxodes viridis* by Hubbs (1952), who erroneously attributed the name *C. foncki* to Philippi (1896). The systematic position of *Clinus fernandezianus* Guichenot in Gay (1848) is presently indeterminable. The description pertains to no known clinid; there is no type-material; and no clinids are known to occur at the type-locality, Juan Fernandez Islands.

METHODS.—Counts and measurements follow those of Hubbs (1952) except that the last two dorsal- and anal-fin rays were counted separately and the interorbit was measured at its narrowest point. In most clinids each segmented dorsal- and anal-fin ray is supported by a separate pterygiophore, but in

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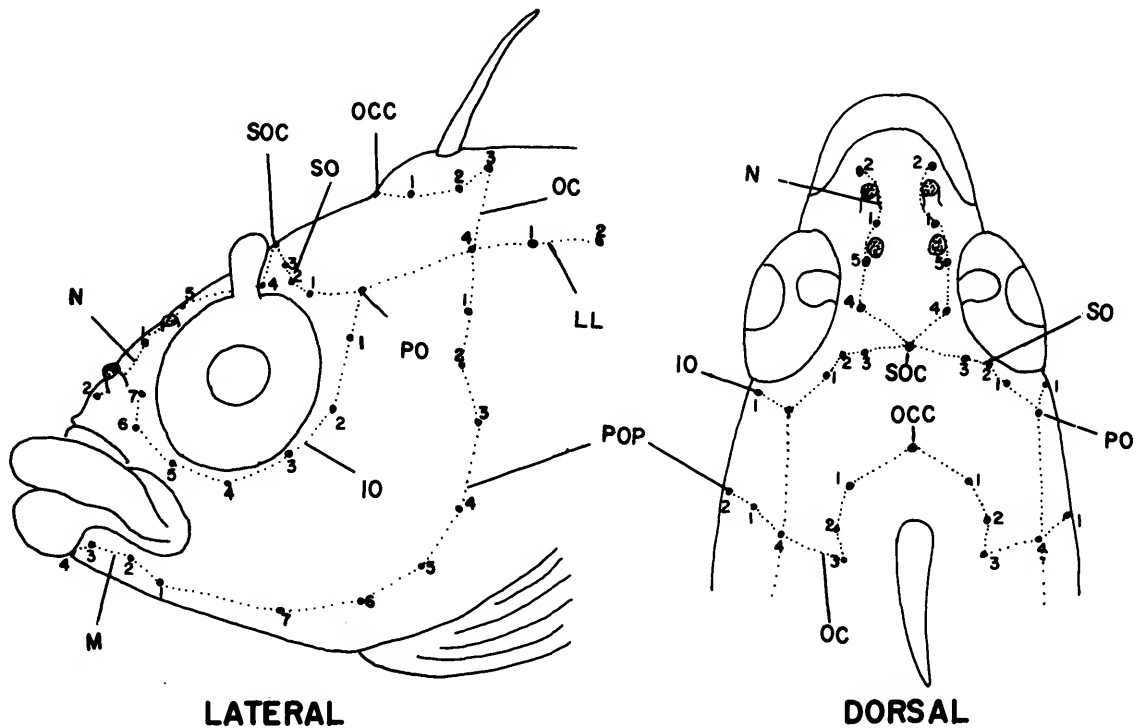


FIGURE 1.—Cranial sensory pore pattern in *Myxodes cristatus* (IO = infraorbital series; LI = lateral line; M = mandibular series; N = nasal series; OC = occipital series; OCC = occipital commissural pore; PO = postorbital pore; POP = preopercular series; SO = supraorbital series; SOC = supraorbital commissural pore).

most specimens of *Calliclinus* the last dorsal- and anal-fin pterygiophores each bear two rays, the posteriormost of which is considerably reduced and easily overlooked. Our counts of dorsal- and anal-fin rays of *Calliclinus* nevertheless include both of the last two rays in each fin. Cranial sensory pores are illustrated in Figure 1.

The synonymies include only references to original descriptions. The key is based solely on the characters of specimens examined. Many of the fin-ray counts reported by DeBuen (1962) for Chilean clinids are not duplicated in any of our specimens. DeBuen did not indicate how he made his counts and we suspect that in several instances he was in error.

Ranges for meristic characters are given followed by the mean in parentheses. Measurements, except standard length, are in percent standard length. Standard length and total length are abbreviated as

SL and TL. Vertebral counts were taken from radiographs.

The following is a list of institutional abbreviations used: USNM, United States National Museum of Natural History; MNHN, Museum National d'Histoire Naturelle, Paris; SIO, Scripps Institution of Oceanography; UCLA University of California, Los Angeles; CAS, California Academy of Sciences; ANSP, Academy of Natural Sciences of Philadelphia; BMNH, British Museum (Natural History), London; EBM, Estacion de Biologia Marina, Montemar, Chile. After each collection number, the number of specimens is recorded followed by the range in standard length to the nearest mm in parentheses.

Collections bearing the abbreviation USNM (the former United States National Museum) are deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C.

ACKNOWLEDGMENTS.—We wish to thank the following individuals and institutions for loan of specimens: R.H. Rosenblatt and J.C. McCosker, Scripps Institution of Oceanography; B.W. Walker and J. Bleck, University of California, Los Angeles; J.C. Tyler, formerly Academy of Natural Sciences, Philadelphia; and P. H. Greenwood, British Museum (Natural History). Special thanks must go to R. Lavenberg, Los Angeles County Museum, for attempting to locate DeBuen's specimens; and to M.K.

Oliver, Occidental College, for examining the holotype of *Auchenionchus crinitus*; M.L. Bauchot, Museum National d' Histoire Naturelle, Paris, for assistance in utilizing the collection and providing a photograph of the manuscript figure upon which the description of *Clinus peruvianus* is based; and J.E. Böhlke, Academy of Natural Sciences of Philadelphia for attempts to locate Cope's types. A portion of the work reported here was supported by N.S.F. research grant GB-27266 to the senior author.

Key to Clinid Fishes from Peru and Chile

1. Dorsal fin XXXII-XXXVIII,3-7; pectoral-fin rays 11-14 (usually 12); scales with radii on all margins (subfamily Clininae) 2
 Dorsal fin XVII-XXVI, 9-14; pectoral-fin rays 13-16; scales with radii on anterior margin only (subfamily Labrisomini) 4
2. Dorsal-fin membrane noticeably notched between third and fourth spines (Figure 2); total dorsal- plus anal-fin elements 60-63; dorsal fin XXXII-XXXIV,4; anal fin II,22-23; 4 sensory pores on each side of mandible anterior to rictus (Figure 1); 1-2 sensory pores in supraorbital series posterior to commissural pore; infraorbital pores 7; vertebrae 15 + 30-31 = 45-46; dusky bands on body and dorsal and anal fins *Myxodes ornatus*, new species
 Dorsal-fin membrane not notched (Figures 3, 4); total dorsal- plus anal-fin elements 64-70; dorsal fin XXXIV-XXXVII,3-7; anal-fin rays II,23-26; 5 sensory pores on each side of mandible anterior to rictus; 3-6 sensory pores in supraorbital series posterior to commissural pore; infraorbital pores 7-11; vertebrae 16-19 + 30-34 = 48-52; no bands on body and dorsal and anal fins 3
3. Dorsal fin XXXVI-XXXVIII,3-4; anal fin II,25-26; orbital cirrus length 1.5-2.2 in eye diameter, longer than nasal cirrus; tip of depressed longest anal-fin ray reaches almost to caudal-fin base; body uniformly dark brown in preserved specimens *Myxodes cristatus* Valenciennes
 Dorsal fin XXIV-XXVI,6-7; anal fin II,24-25; orbital cirrus length 3.0-4.0 in eye diameter, usually almost equal in length to nasal cirrus; distance from tip of depressed longest anal-fin ray to caudal-fin base almost equal to half caudal peduncle length; body pale or tan to colorless in preserved specimens, usually with horizontal stripe behind eye (stripe may extend across opercle, occasionally present on the body) *Myxodes viridis* Valenciennes
4. Dorsal-fin spines XVII-XXI; caudal-fin rays unbranched; lateral-line scales 53-74 (Tribe Labrisomini) 5
 Dorsal-fin spines XXIV-XXVI; central caudal-fin rays usually branched (if unbranched, fewer than 45 lateral-line scales); lateral-line scales 39-64 (Tribe Cryptotremi) 7
5. Teeth in jaws uniserial; palatine teeth absent; upper jaws less than 11.5 percent SL; lateral-line scales 53-59 *Malacoctenus tetranemus* (Cope)
 Patch of small teeth present behind outer row of large teeth in both jaws; palatine teeth present; upper jaw more than 13.0 percent SL; lateral-line scales 64-74 6
6. Pectoral-fin rays 14-16 (usually 15); lateral-line scales 68-74 (rarely 68-69) *Labrisomus philippii* (Steindachner)
 Pectoral-fin rays 13-15 (usually 14); lateral-line scales 64-69 (rarely 69) *Labrisomus multiporosus* Hubbs
7. Lateral-line scales 40-48; 3 patches of nape cirri (one on each side and one median); gill rakers 3-5 + 7-10; orbital cirrus multifid from simple fleshy base; pelvic fin I, 3-4; pectoral-fin rays 14-15 *Calliclinus geniguttatus* (Valenciennes)
 Lateral-line scales 56-64; 2 patches of nape cirri (one on each side) usually present (one or both occasionally absent); gill rakers 2 + 6-7; orbital cirrus simple to multifid, when multifid never from single base; pelvic fin I, 3; pectoral-fin rays 13-14 (*Auchenionchus* Gill) 9
9. Pectoral-fin rays 14; dorsal fin XXIV-XXV (usually XXIV),11-12; anal fin II,22; orbital

- cirrus multifid, obvious; nape cirri present, obvious, multifid and palmate (except in holotype, see discussion); peritoneum black; dorsal-fin spines without cirrus-like projections; squamation incomplete in specimens up to 174 mm SL (complete in holotype, 240 mm SL); belly with almost no scales; usually only 25–40 scales on pectoral-fin base; no scales on fin membranes; lateral line with 32–35 unnotched and 24–26 notched scales; greatest body depth 3.0–3.8 in SL; head profile steeply declivous from dorsal-fin origin to snout; top of head smooth *Auchenionchus variolosus* (Valenciennes)
- Pectoral-fin rays 13; dorsal fin XXV–XXVI, 9–12; anal fin 11, 23–24 orbital cirrus variable: 0–11 simple cirri, usually tiny, occasionally a single large cirrus (half eye diameter) or large cirrus and several minute ones; nape cirri usually present, always small, simple to palmate; peritoneum white; dorsal-fin spines with simple cirrus-like projections at tips; scales covering entire body and fin bases, extending onto most fin membranes in specimens larger than 50 mm SL; lateral line with 35–38 unnotched and 21–29 notched scales; greatest body depth 3.5–4.8 in SL; head profile gently curved from dorsal-fin origin to snout; top of head covered with wart-like protuberances in specimens greater than 100 mm SL, smooth on smaller specimens 10
10. Total number of orbital and nape cirri (free tips of both sides) 20–45 in specimens larger than 50 mm SL; all orbital cirri tiny; fewer than 18 teeth present in each palatine patch; dorsal fin XXV–XXVI (XXVI in 93 percent of specimens), 11–12 (11 in 86 percent of specimens); anal fin 11, 23–24 (24 in 86 percent of specimens); caudal fin with single line of large spots traversing distal half; spots absent from gill membranes, present on lips; pectoral fins usually unmarked; body generally mottled, often with large spots or bands; young with two white bands, one at base of caudal, one behind head 10
- *Auchenionchus crinitus* (Jenyns)
- Total number of orbital and nape cirri less than 20 (occasional large specimens, 220–250 mm SL, may have as many as 24); males with one large orbital cirrus and usually 1–3 tiny ones; numerous small teeth cover palatines (about 50–100 in each patch in specimens larger than 100 mm SL, 10–20 in specimens 50–100 mm SL); dorsal fin XXV–XXVI (XXV in 85 percent of specimens), 11–12; anal fin 11, 23–24 (23 in 95 percent of specimens); caudal fin, uniformly dark brown in adults, banded in young; spots present on head and gill membranes but usually absent from upper lips anteriorly; pectoral fins uniformly brown or striped; body generally uniformly brown, but small specimens (less than 100 mm SL) sometimes covered with large brown spots 10
- *Auchenionchus microcirrhitis* (Valenciennes)

Subfamily CLININAE

Tribe MYXODINI

Springer (1970) differentiated the genera of the tribe Myxodini, in which he recognized two South American genera, *Myxodes*, with two species, from the eastern Pacific, and *Ribeiroclinus*, monotypic from the western Atlantic. The new Pacific species, *Myxodes ornatus*, described below is superficially similar to *Ribeiroclinus* in color pattern and dorsal-fin shape. While some of the meristic characters of *M. ornatus* are intermediate between those of *Myxodes* and *Ribeiroclinus* as reported by Springer, its morphometric characteristics (Tables 1–2), 2 epurals, and biserial jaw teeth seem to ally it more closely with *Myxodes*.

The head, eye diameter, first dorsal-fin spine, and pelvic fin of *Ribeiroclinus* are longer than those of *Myxodes*. Most of these differences apparently re-

flect the shorter body of *Ribeiroclinus*, which has a markedly lower number of vertebrae (40–41 vs 45–51 in *Myxodes*). Although the number of dorsal- and anal-fin elements almost overlap in *Ribeiroclinus* and *M. ornatus*, the former has at least four fewer vertebrae than the latter, and therefore a different relationship exists between its vertebrae and median-fin pterygiophores.

Myxodes ornatus, new species

FIGURE 2

HOLOTYPE.—SI0 65–678, ♀, 54.3 mm SL, collected by B. W. Walker and party, La Ventana, Chile, 28 December 1965.

PARATYPES.—3 ♀♀, 50.8–59.1 mm SL, same data as holotype.

DESCRIPTION.—The diagnostic characteristics of this species are presented in the key. Table 1 lists

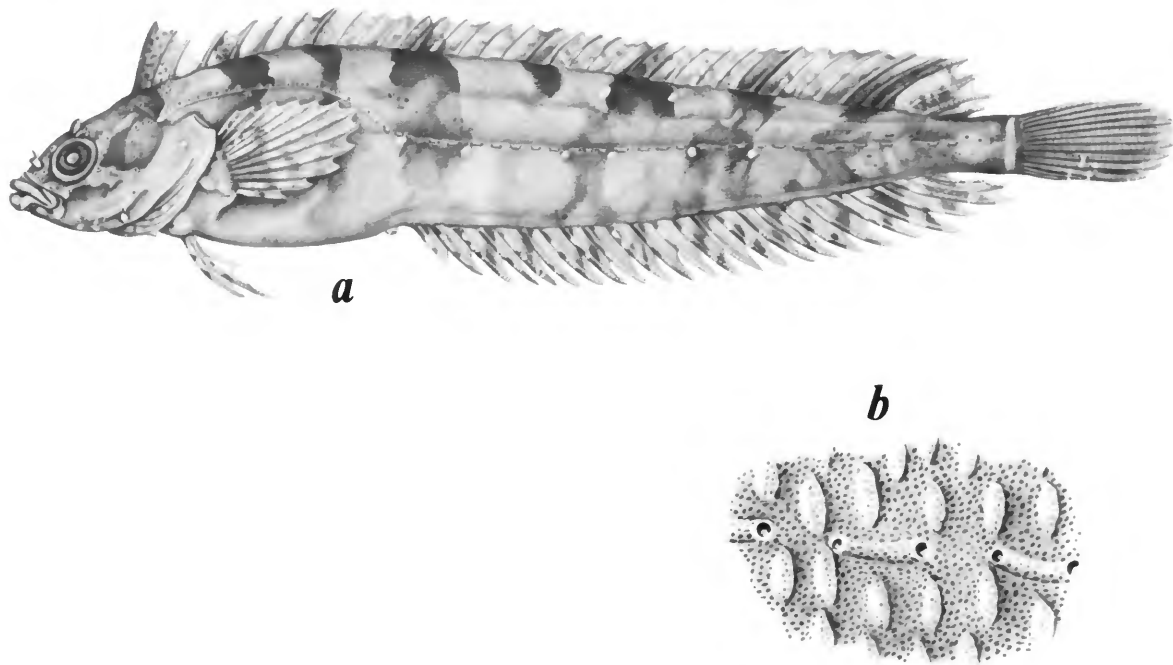


FIGURE 2.—*Myxodes ornatus*, holotype, SIO 65-678, female, 54.3 mm SL, La Ventana, Chile: *a*, lateral view; *b*, enlarged view of portion of lateral line and surrounding scales. (Drawn by J. R. Schroeder.)

counts and measurements of the holotype and three paratypes and presents comparable information for *Ribeiroclinus eigenmanni*. Table 2 compares median fin-ray differences between *Myxodes* and *Ribeiroclinus*.

Pores: Preoperculomandibular series: 1 commissural, 2-5 occipital, 7-8 preopercular, 4 mandibular; 1 in postorbital series; 7 in infraorbital series; supra-orbital series: 4-6 and commissural; nasal 2; lateral-line series: 22-24 simple pores in anterior arched portion extending to midline of body, 25-27 short, superficial tubes in posterior straight portion.

Upper jaw with about 20-22 enlarged teeth in outer row followed posteromedially by inner row of 12-28 smaller teeth; lower jaw with 20-24 enlarged outer teeth and 8-16 smaller inner teeth; palatine and vomerine teeth absent; gill rakers 3 + 7 on first arch.

Orbital cirrus simple, subcircular flap; nasal cirrus tiny, simple flap on tube of anterior nares.

Scales small, imbedded, well developed, dense on

anterior half of body, becoming sparse to absent on posterior half; caudal peduncle naked; head, fins, and pectoral-fin base unscaled.

Color pattern (females only): Body tan to brown, marked with nine dark brown bands, anterior three not reaching ventral contour of body, posterior bands extending onto median fins. Several small, pale spots on body; head dark brown with pale horizontal stripe extending from eye to anterior border of opercle, another stripe extending from lower margin of eye over posterior half of jaws; some small unpigmented spots below jaws on anteroventral edge of opercle; dorsal fin with several irregular dark brown bands; caudal fin dark brown, usually with narrow pale band at peduncle; anal fin with several dark bands; pectoral and pelvic fins mottled, bases with unpigmented areas; orbital cirrus dark brown; nasal cirrus unpigmented.

SPECIES COMPARISON.—*Myxodes ornatus* may be distinguished from the other species of *Myxodes* by

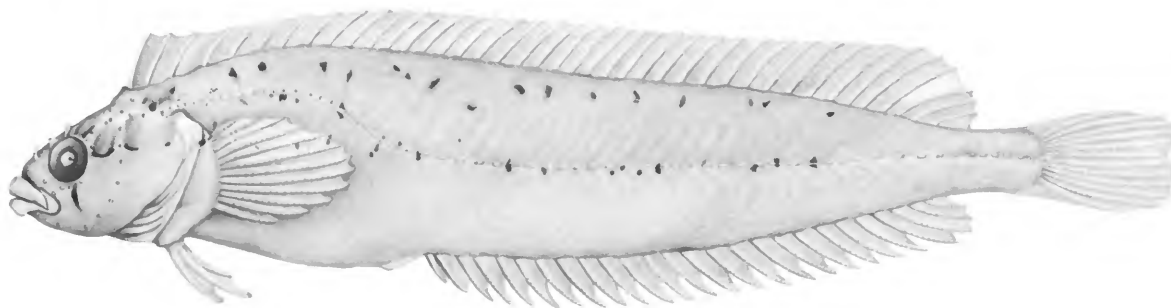


FIGURE 3.—*Myxodes viridis*, SIO 65-678, female, 73.4 mm SL, La Ventana, Chile. (Drawn by J. R. Schroeder.)

its distinctive color pattern, low number of median fin rays, notched spinous dorsal fin, and lower number of mandibular and supraorbital cranial sensory pores.

DISTRIBUTION.—Known only from La Ventana, Chile.

Myxodes viridis Valenciennes

FIGURE 3

Myxodes viridis Valenciennes in Cuvier and Valenciennes, 1836:398 [coast of Chile; holotype, MNHN A. 4139].

Myxodes ocellatus Valenciennes in Cuvier and Valenciennes, 1836: 400 [Valparaiso; holotype, MNHN A.1705].

Myxodes schmitti Hubbs, 1952:109 [Independencia Bay, Peru; erroneously reported as Santa Cruz Island, Galapagos Islands in original description; holotype, USNM 102008].

Hubbs (1952) first synonymized *M. ocellatus* with *M. viridis* but gave no reason for his action. We have examined the holotypes of both species and agree with Hubbs' action. The color pattern differences upon which Valenciennes distinguished the two species are representative of normal variations encountered in a single collection.

Hubbs described *M. schmitti* from the erroneous type-locality of Santa Cruz Island, Galapagos. The locality was corrected to Independencia Bay, Peru, by Springer (1970). Hubbs reported that *M. schmitti* had a longer head (approximately 20 percent SL) and deeper body (approximately 22 percent SL) than *M. viridis* (head length and body depth both supposedly approximately 17 percent SL). Our methods must be different from Hubbs', for we find that head length ranges from 20.5–22.2 percent SL and body depth 19.1–20.9 percent SL in

specimens of *M. viridis*, including the holotype of *M. schmitti*. We therefore find no reason to maintain *M. schmitti*.

DESCRIPTION.—Salient specific characters are presented in the key. Dorsal fin XXXIV–XXXVI (35.1), 6–7 (6.4); total dorsal-fin elements 41–43; anal fin II, XXXIV–XXXVI 24–25 (24.2); pectoral fin 11–12 (12); pelvic fin I, 3; caudal fin 11–13 (12); vertebrae 16–18 + 31–34 = 48–51.

Morphometric characters of eleven specimens examined: SL 46.1–127.0 mm, head length 20.5–22.2, head depth 14.2–15.7, head width 10.9–12.6, upper-jaw length 6.7–8.1, eye diameter 4.6–5.7, snout length 4.7–6.9, interorbital width 2.7–3.4, predorsal length 14.8–16.6, preanal length 39.7–45.0, body depth 19.1–20.9, caudal-peduncle length 9.1–12.9, caudal-peduncle depth 5.7–6.6, length first dorsal-fin spine 4.6–7.3, length fourth dorsal-fin spine 4.6–6.0, distance between dorsal-fin spines three and four 3.3–4.5, distance between dorsal-fin spines one and three 3.2–4.7, pectoral-fin length 12.3–17.0, pelvic-fin length 9.5–11.6, length inner pelvic-fin ray 6.7–9.3, orbital-cirrus length 1.0–1.6, nasal-cirrus length 0.9–1.3.

SPECIES COMPARISON.—*Myxodes viridis* is similar to *M. cristatus* in total number of median-fin rays and vertebrae as well as number of mandibular and supraorbital sensory pores. The two species differ from each other in color pattern, number of dorsal-fin spines, segmented dorsal- and anal-fin rays (Table 2), orbital-cirrus length, first dorsal spine length (Figure 5), caudal-peduncle length (Figure 6), and interorbital width (Figure 7). DeBuen (1962) gives higher pectoral-fin ray counts (13–14) for *C. viridis* than any we have found. All our speci-

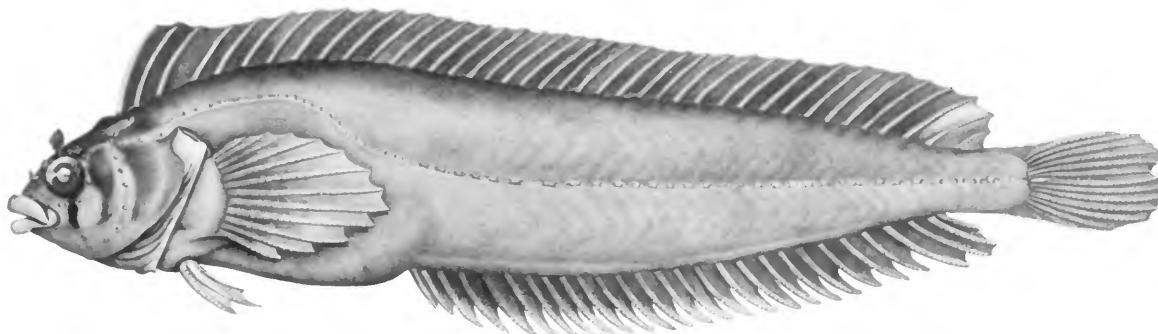


FIGURE 4.—*Myxodes cristatus*, USNM 205103, male, 81.4 mm S L, La Ventana, Chile. (Drawn by J. R. Schroeder.)

mens of *M. cristatus* and the majority of our specimens of *M. viridis*, including the holotypes, have 12 pectoral-fin rays; 11 rays were only found in 2.8 percent of our specimens of *M. viridis*.

Early in our study of *Myxodes* we thought that *M. cristatus* and *M. viridis* represented males and females of a single dimorphic species. All our sexed specimens ($N = 8$, the types were not sexed) of *M. cristatus* are males, and all but one of our specimens of *M. viridis* are either females or immature ($N = 66$: 5 ♀♀, 1 ♂, 60 immature). The fact that both *M. cristatus* and *M. ornatus* are known only from a single sex may indicate that the sexes are segregated, possibly in their depth distributions, as suggested by Williams (1954) for the myxodinine genus *Gibbonsia*.

DISTRIBUTION.—All three species of *Myxodes* were taken in the same collection (SI0 65–678) at La Ventana, Chile. *Myxodes viridis* occurs north at least to Independencia Bay, Peru, and on the basis of our collections does not occur south of Valparaiso. *Myxodes cristatus*, on the other hand, is known to occur only from La Ventana south, our most southern record being Puerto Auchemo ($43^{\circ}01'$ south latitude). It appears, therefore, that *M. viridis* and *M. cristatus* are largely allopatric.

MATERIAL EXAMINED.—Chile: Valparaiso, MNHN A-4139 (holotype of *M. viridis*, 125); La Ventana, SI0 65–678 (57:43–128), USNM 205104 (3:53–95), USNM 208072 (1:74); Vina del Mar, UCLA 66–58 (1:65); Montemar, USNM 200673 (2:58–92); Coast of Chile, MNHN A-1705 (holotype of *M. ocellatus*, 123); Peru, $14^{\circ}16'$ south latitude, USNM 203558 (1:42); Independencia Bay, USNM 102008 (holotype of *M. schmitti*, 146).

Myxodes cristatus Valenciennes

FIGURE 4

Myxodes cristatus Valenciennes in Cuvier and Valenciennes, 1836:401 [coast of Chile; holotype and paratypes, MNHN A.2103].

DESCRIPTION.—Salient characters are listed in the key and Table 2. Dorsal fin XXXVI–XXXVIII (37.0), 3–4 (3.7); total dorsal-fin elements 40–42; anal fin II, 25–26 (25.8); pectoral fin 12; pelvic fin I, 3; caudal fin 11–12 (12); vertebrae 16–17 + 32 = 48–49 (3 specimens).

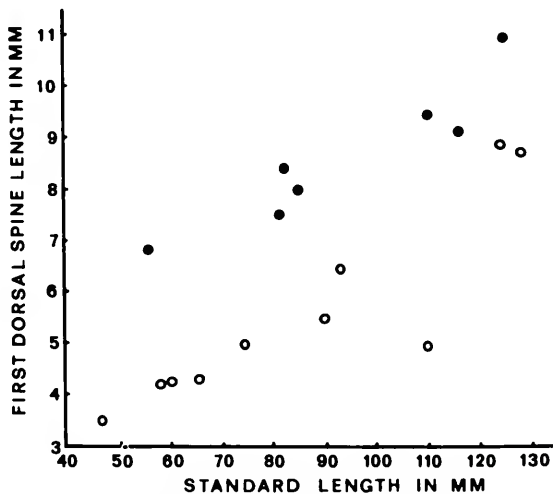


FIGURE 5.—Relationship of first dorsal spine length to standard length.

Myxodes cristatus ● *Myxodes viridis* ○

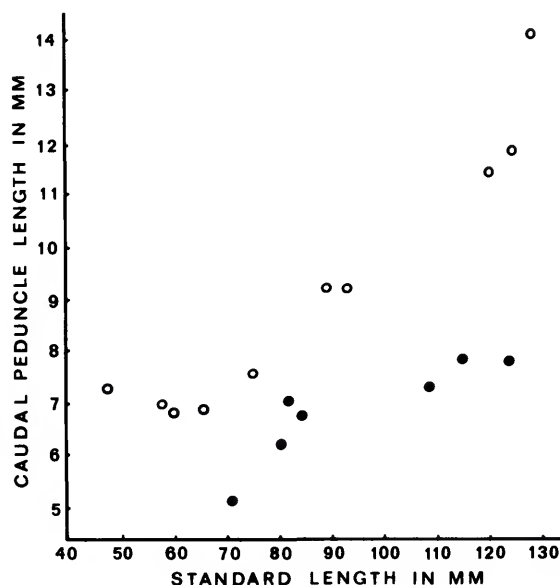


FIGURE 6.—Relationship of caudal peduncle length to standard length.

Myxodes cristatus ● *Myxodes viridis* ○

Morphometric characters of eight specimens examined: SL 70.0–123.0 mm; head length 20.8–22.5; head depth 14.3–15.6; head width 10.4–11.5; upper-jaw length 6.5–7.8; eye diameter 4.0–4.9; snout length 4.4–5.8; interorbital width 2.1–2.5; predorsal length 13.0–14.7; preanal length 39.4–44.6; caudal-peduncle length 6.3–8.3; caudal-peduncle depth 5.2–6.2; length first dorsal-fin spine 8.1–10.4; length fourth dorsal-fin spine 5.8–6.4; distance between dorsal-fin spines three and four 3.7–4.6; distance between dorsal-fin spines one and three 3.9–5.7; pectoral-fin length 13.5–18.9; pelvic fin length 9.0–11.4; length inner pelvic-fin ray 6.5–8.7; orbital-cirrus length 1.7–2.5; nasal-cirrus length 0.6–1.5.

SPECIES COMPARISON AND DISTRIBUTION.—See *M. viridis*.

SPECIMENS EXAMINED (those specimens indicated by an asterisk were lost in the mail subsequent to our examination of them).—Chile: MNHN A-2103 (holotype, 105 ± 15, and paratype, 148); La Ventana, USNM 205103 (1:81), SI0 65–678 (1:80); Vina del Mar, UCLA 66–58 (2:24–83); Gulf of Ancud, USNM 203557 (3:108–123);* Puerto Auchemo, USNM 176543 (1:71).*

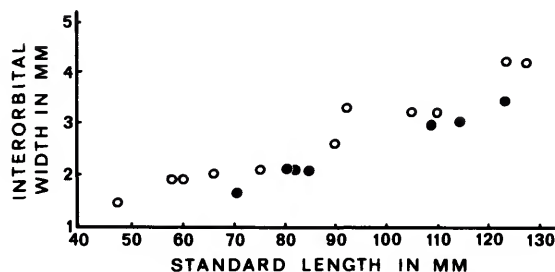


FIGURE 7.—Relationship of interorbital width to standard length.

Myxodes cristatus ● *Myxodes viridis* ○

Subfamily LABRISOMINAE

Hubbs (1952) erected the tribe Labrisomini for the genera *Labrisomus*, *Malacoctenus*, *Auchenionchus*, *Calliclinus*, and *Myersichthys*. He erected the subtribe Labrisomidi for the first two of these genera and the subtribe Calliclinidi for the other three. He distinguished the subtribes by the presence of branched caudal-fin rays in the Calliclinidi and simple caudal-fin rays in the Labrisomidi. Interestingly, he erected a tribe, Cryptotremi, for two other genera (*Cryptotrema*, *Alloclinus*) of the subfamily Labrisominae with branched caudal-fin rays. He differentiated the tribe Cryptotremi from the tribe Labrisomini because the first three dorsal-fin spines of the Cryptotremi were soft and flexible, whereas those of the Labrisomini were supposedly sharp and rigid. However, the anterior dorsal-fin spines of one species of Labrisomini (*Labrisomus filamentosus* Springer, described after Hubbs' study) are soft and flexible, and the spines of *Cryptotrema corallinum* Gilbert at best only questionably conform to Hubbs' description. Thus, the characters used by Hubbs to define the Cryptotremi are distributed mosaically among Hubbs' tribes Cryptotremi and Labrisomini.

We believe that the presence or absence of flexible anterior dorsal-fin spines is a character of little consequence for maintaining higher categories of clinids. We prefer to unite those clinids with branched caudal-fin rays into a single tribe, Cryptotremi, under which we synonymize the Calliclini. In doing so we recognize that branched caudal-fin rays represent the unspecialized (plesiomorphic) condition in clinids. According to the tenets of Phylogenetic Systematics (Hennig, 1966) we are unjustified in recognizing relationships based

on a plesiomorphic character. Our tribe Cryptotremi is based on similarity, and may well be reorganized when the phylogenetic paradigm is employed in an analysis of the Clinidae. We retain the tribe Labrisomini for *Malacoctenus* and *Labrisomus*, which genera have specialized caudal fins with unbranched rays (this character is, however, typical of all clinids except the Cryptotremi; for other characters separating the tribes of the subfamily Labrisominae see Hubbs, 1952, and Rosenblatt and Taylor, 1971).

It is of interest, if coincidental, that the geographic distribution of the Cryptotremi, which we consider to be the least specialized tribe of the subfamily Labrisominae, is antitropical, just as is the distribution of the Myxodini, which we consider (Springer, 1970) to be the least specialized tribe of the other clinid subfamily, Clininae. None of the other clinid tribes is antitropical in distribution.

Tribe LABRISOMINI

Malacoctenus tetranemus (Cope)

Blennius tetranemus Cope, 1877:42 [Pacasmayo Bay, Peru; types lost].

Labrisomus afuerae Hildebrand, 1946:400 [Lobos de Afuera Island, Peru; holotype USNM 128213].

Malacoctenus afuerae multipunctatus Springer, 1959:462 [southwest end of San Lucas Bay, Baja California; holotype CAS SU 49596].

This species, as *Malacoctenus afuerae*, has been adequately described and differentiated by Springer (1959).

The depository of the holotype of *Blennius tetranemus* was not given in the original description, but most logically would have been the Academy of Natural Sciences, Philadelphia. Repeated searches of that collection, and many others, have failed to locate the holotype. The description clearly applies to a clinid as no other family of fishes exhibits the combination of dorsal-anal- and pectoral-fin element combinations, dorsal-fin shape and position, disposition of head cirri, and color pattern. Of those clinids known from Peru it could only apply to *Labrisomus multiporosus* or *Malacoctenus afuerae*, both well-known, but infrequently reported, species. Both of these names are more recent than *tetranemus* and are thus in jeopardy. We therefore prefer to recognize *Blennius tetranemus* as a senior synonym of *Labrisomus afuerae* and

to stabilize the nomenclature by designating the holotype of *L. afuerae* as the neotype of *B. tetranemus*. As a result of this action *L. afuerae* is an objective junior synonym of *B. tetranemus*.

Malacoctenus afuerae multipunctatus was believed to be restricted to the Pacific coast of Mexico north of the Gulf of Tehuantepec, and was differentiated from the nominal subspecies in having the belly densely spotted, as opposed to lacking spots on the belly. Recently collected specimens of *M. tetranemus* from Ecuador and the Galapagos Islands (new locality records for the species) exhibit variation in the amount of spotting on the belly, ranging from dense to absent. Recently collected specimens from Peru either lack spotting or have broad dark markings on the belly. In view of the large variation of color pattern within a population we do not believe that subspecies in *M. tetranemus* are warranted.

RANGE.—From the northern end of the Gulf of California to the Lobos de Afuera Islands, Peru.

MATERIAL (in addition to that reported by Springer, 1959).—Ecuador: Bahia Santa Elena, USNM 207595 (1:59); Galapagos Islands: USNM 205842 (22:29–49); Peru: Lobos de Afuera Islands, USNM 205843 (11:42–72).

Labrisomus (Labrisomus) multiporosus Hubbs

Labrisomus (Labrisomus) multiporosus Hubbs, 1953:131 [Turtle Bay, Baja California, to Lobos de Afuera Island, Peru; holotype CAS SU17553, Ormos in Acapulco Harbor, Guerrero, Mexico].

This species was fully treated by Hubbs (1953), and we have no information of consequence to add to his report. The species has not been recorded from south of northern Peru.

Labrisomus (Labrisomus) philippii (Steindachner)

Clinus philippii Steindachner, 1866:210 [west coast of South America; holotype presumably at the Naturhistorisches Museum, Vienna].

Clinus fortidentatus Cope, 1877:42 [Callao Bay; holotype apparently lost].

Clinus chilensis Sauvage, 1883:157 [Chile; holotype, MNHN A. 4870].

This species was adequately described by Hubbs (1953). He erroneously listed Steindachner's description as "*Labrisomus philippii*" and failed to note that *Clinus chilensis* Sauvage was a synonym of

L. philippii, which Bauchot (1967) was first to recognize.

The species is commonly represented in collections from Peru, and is known to range from close to the northern border of Peru (Isla Lobos de Tierra) to Coquimbo, Chile. The species is apparently uncommon south of the upper third of the Chilean coast; it was not reported by DeBuen (1962) in any of his collections from Montemar (near Valparaiso) or points south.

Tribe CRYPTOTREMINI

Auchenionchus Gill

Auchenionchus Gill, 1860:103 [originally given as *Anchenionchus*; first corrected spelling in Abbott, 1899; original orthography considered in error by Jordan, 1919; type-species: *Clinus variolosus* Valenciennes, by original designation].

Flabellclinus DeBuen, 1962:57 [proposed as a subgenus of *Auchenionchus*; type-species: *Auchenionchus verrucosus* DeBuen, 1962 (= *Clinus microcirrhys* Valenciennes), by original designation].

Chalacoclinus DeBuen, 1962:57 [proposed as a subgenus of *Auchenionchus*; type-species: *Auchenionchus chalaco* DeBuen, 1962 (= *Clinus crinitus* Jenyns), by original designation].

DeBuen (1962) differentiated his subgenus *Flabellclinus* from *Auchenionchus* on the structure of their supraorbital and nuchal tentacles (our translation of his differentiation follows):

Males with a thick, fleshy supraorbital tentacle with small basal tentacles. Females only with the basal tentacles. Nuchal tentacles absent or represented by small membranous laminae

..... *Auchenionchus*
Supraorbital tentacles consisting of small, fingerlike projections, similar among themselves. Nuchal tentacles small and palmate *Flabellclinus*

Only the males of the subgenus *Auchenionchus* would be readily distinguished by the orbital cirrus (supraorbital tentacles) character while the nape cirri (nuchal tentacles) appear to be extraordinarily variable and often are damaged or missing. Therefore, these differences in cirri do not appear worthy of subgeneric status. DeBuen examined only one specimen (the holotype of *A. verrucosus*) attributed by him to the subgenus *Flabellclinus*. He refers only to literature citations for the other included species, *A. crinitus*. In his description of *A. verrucosus* he does not mention its sex (it appears to be a female based on the nature of the spotting of the illustrated specimen, and we consider it a synonym of *A. microcirrhys*). The nature of the cirri and spot-

ting on the head can be used in conjunction with additional characters (see key) to distinguish *A. microcirrhys* from *A. crinitus*, but we do not believe that subgeneric separation is warranted.

DeBuen distinguished his subgenus *Chalacoclinus* from *Auchenionchus* and *Flabellclinus* by the presence of two pelvic-fin rays in *Chalacoclinus* and three in *Auchenionchus* and *Flabellclinus*. DeBuen had a single specimen, which served as the basis for both his new subgenus, *Chalacoclinus*, and new species, *Auchenionchus chalaco*. We believe that the pelvic fins of that specimen are anomalous. We have seen other specimens of clinids, including at least two from Chile, with bilaterally malformed pelvic fins. DeBuen's description of *A. chalaco*, except for the number of pelvic-fin rays is applicable to *Auchenionchus crinitus*, and the color pattern he describes and the number of orbital and nape cirri are descriptive only of *A. crinitus*. We, therefore, have synonymized *A. chalaco* with *A. crinitus*.

The three species of *Auchenionchus* fall into two groups based on the number of pectoral-fin rays. If subgenera should be recognized in *Auchenionchus*, then either *Flabellclinus* or *Chalacoclinus* would be available for the group that is different from the one including the type-species of *Auchenionchus*.

All three species of *Auchenionchus* occur together at La Ventana, Chile (SIO 65-678), in the vicinity of Valparaiso (33°S). *A. crinitus* was originally described from Coquimbo (30°S) and subsequently listed from Iquique (20°S) (Steindachner 1898); its synonym, *A. chalaco*, was described from Antofagasta (23°S), and we have one specimen from Pucusana, Peru (12°30'S). *A. microcirrhys* was originally described from Valparaiso and is known to occur as far north as Independencia Bay, Peru (Cope, 1877, listed it from Callao). Mann (1954) lists *A. variolosus* from Iquique to the "extreme austral" region of Chile. Our most southerly specimen is from Tome (36°38'S). It is possible that *A. variolosus* is primarily distributed to the south of Valparaiso while *A. microcirrhys* and *A. crinitus* are generally distributed to the north, with the former the most northerly in distribution.

Auchenionchus variolosus (Valenciennes)

FIGURE 8

Clinus variolosus Valenciennes in Cuvier and Valenciennes, 1836:381 [Valparaiso, Chile; holotype, MNHN A.2170].

TABLE 3.—Frequency distribution for meristic characters in *Auchenionchus* (asterisk denotes holotype)

Species	Total dorsal-fin elements				Dorsal-fin spines			Segmented dorsal-fin rays		Pectoral-fin rays		Segmented anal-fin rays				Lateral-line scales							
	35	36	37	38	24	25	26	11	12	13	14	21	22	23	24	56	57	58	59	60	61	62	63
<i>A. microcirrhys</i> (N = 23)	7	12	4*		18	5*		8	15*	46*		22*				1	2	2	4	2*	6	1	1
<i>A. crinitus</i> (N = 14)			3*	11		14*		3*	11	28*		3	11*					2	2	2*	2		
<i>A. variolosus</i> (N = 5)	1*	4			5*			1*	4		10*	1	4*			1	1	1	1				

Calliclinus validus DeBuen, 1962:80 [zone of Valparaiso; holotype EBM 10.390, apparently destroyed].

DESCRIPTION.—Counts, including those of holotype, are summarized in Table 3. Salient characters are presented in the key. Dorsal fin XXIV, 11–12; total dorsal-fin elements 35–36; anal fin II, 22; pectoral fin 14; pelvic fin I, 3; caudal fin 13; lateral-line scales 56–59; vertebrae 12–13 + 29–30 = 42 (based on 5 specimens).

Morphometric characters of four specimens examined: SL 101.2–178.0 mm; head length 29.7–31.5; head depth 21.9–24.1; head width 16.6–21.6; upper jaw length 12.1–14.5; eye diameter 5.0–6.1; snout length 8.0–10.0; interorbital width 3.1–3.4; predorsal length 21.1–24.3; preanal length 49.4–53.3; caudal-peduncle depth 7.9–8.6; caudal-peduncle length 6.9–8.2; pectoral-fin length 22.0–24.4; pelvic-fin length 14.2–17.5; length first dorsal-fin spine 5.6–7.1; length fourth dorsal-fin spine 8.0–11.2.

Orbit with cluster of 8–20 cirri (more than 10 in specimens longer than 157 mm), some simple, others bifid to multifid; all cirri contiguous at base but no common raised stalk present. In 3 specimens the nape cirrus consists of 4–10 free tips arrayed along a palmate, flattened, transverse flap (in USNM 208293 the nape cirrus is absent on one side; the holotype of *C. variolosus* has a simple cirrus on one side; the cirrus on the other side is missing); nasal cirri of 3–6 branches arising from a common base. Each jaw with about 20 widely spaced, large, recurved teeth on border; teeth variable in size, largest anteriorly; patch of small teeth posterior-medially; palatines and vomer covered with small teeth; no cirrus-like projections at tips of fin rays; anal fin not bound to caudal peduncle; no scales on head anterior to angle of opercle, none on operculum or gill membranes, weakly developed or absent on belly, pectoral-fin base and fins; lateral line horizontal, high on body anteriorly, then abruptly dropping to midline; numerous tubercle-like head pores around orbit, nasal, and postorbital region

dorsally, numerous sensory pores on head. No wart-like protuberances covering top of head.

Color in alcohol (USNM 208293): Ground color deep tan with slightly reddish hue; head darker than body, not obviously patterned, lightly pigmented beneath jaws and on branchiostegal membrane; head cirri unpigmented; body and dorsal fin traversed by five well-developed, black bars; bars wide (each covering four rays), obvious on dorsal fin, becoming indistinct black mottling toward anal fin; first bar crosses first two dorsal spines, its posterior margin even with angle of opercle, its anterior limit coalescing indistinguishably with darkly pigmented head; belly unmarked; caudal fin mottled, without distinct bands; anal fin dark brown at base, fin rays unpigmented distally; pectoral fin brown, uniformly pigmented; pelvic fin paler than pectoral, unmarked; peritoneum black.

One specimen (SIO 65–678) differs from above description in having dark brown spots on jaws and belly and distinct bands on caudal and pectoral fins. This is the only female specimen available, and these differences may be sexually associated. In many species of clinids the females are more heavily spotted than the males.

The holotype of *Clinus variolosus*, the largest specimen of the species available, is gutted and in poor condition. Much of the color pattern has faded, but it is possible to discern that the entire head, body, and all the fins are densely covered with small dark spots.

DISCUSSION AND COMPARISON.—DeBuen (1962) placed *A. variolosus* in the genus *Calliclinus*, in which he also recognized four other species: *geniguttatus*, *coventryi*, *guttulatus* and *validus*. DeBuen's allocation of *C. coventryi* was based solely on Fowler's (1940) inadequate description. *C. coventryi* is a synonym of *Calliclinus geniguttatus*. DeBuen's *C. geniguttatus* and *C. guttulatus* appear to be misidentifications of specimens referable to *Auchenionchus variolosus*, and his new species, *C. validus*, also appears identifiable with *A. variolosus*.

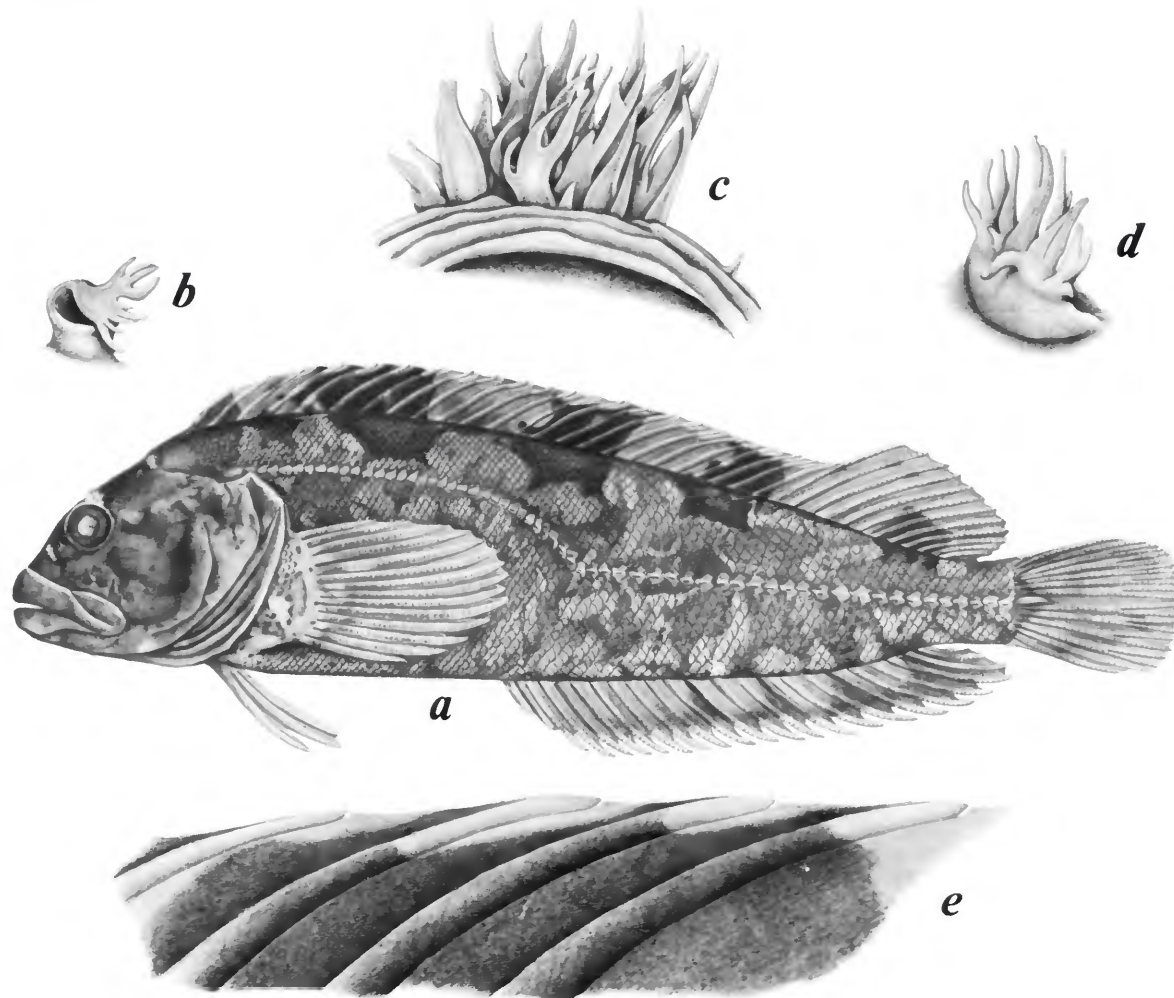


FIGURE 8.—*Auchenionchus variolosus*, USNM 208293, male, 162 mm S L, Montemar, Chile: *a*, lateral view; *b*, enlarged view of nasal cirrus; *c*, enlarged view of orbital cirri; *d*, enlarged view of nape cirri; *e*, enlarged view of tips of some dorsal fin spines. (Drawn by J. R. Schroeder.)

If one ignores DeBuen's apparently inaccurate fin-ray counts, his main characteristics for separating the several species of *Calliclinus* (except *C. coventryi*) were the form and number of the nuchal and orbital cirri. In our five specimens of *A. variolosus* the nuchal cirri are variable, and the orbital cirrus, though always multifid, varies in its degree of branching. DeBuen's new species, *C. validus*, is based on a single specimen, the description of which agrees with the holotype of *C. variolosus*, except that there are only four gill rakers on the lower limb of the first arch. None of our specimens, in-

cluding the holotype, have less than seven gill rakers, although the lower two or three are usually rudimentary. We prefer at this time to treat *C. validus* and all other *Auchenionchus* with 14 pectoral-fin rays as a single species, *A. variolosus*.

Besides pectoral-fin ray number, *A. variolosus* may be differentiated from other species of the genus by its well-developed orbital cirrus, with some bifid to multifid members, reduced squamation, lateral-line pattern, black peritoneum, and low number of dorsal-fin spines (24 rather than 25–26) and segmented anal-fin rays (22, rather than 23–24).

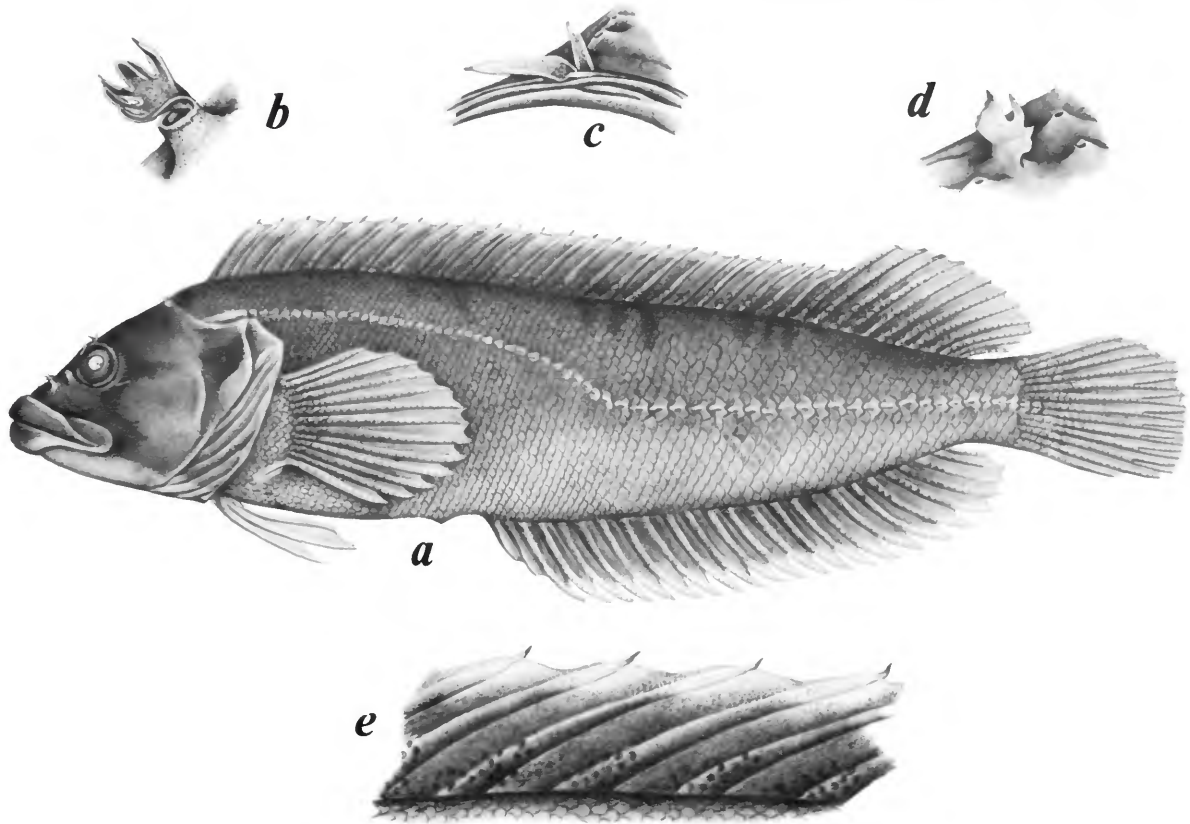


FIGURE 9.—*Auchenionchus microcirrhys*, SIO 65-678, male, 120 mm S L, La Ventana, Chile: *a*, lateral view; *b*, enlarged view of nasal cirrus; *c*, enlarged view of orbital cirrus; *d*, enlarged view of nape cirrus; *e*, enlarged view of some dorsal fin spines. (Drawn by J. R. Schroeder.)

SPECIMENS EXAMINED.—Chile: Valparaiso, MNHN A. 2170 (holotype of *C. variolosus*, 246); Tome, USNM 77380 (1:178); Montemar, USNM 208293 (1:162); La Ventana, SIO 65-670 (1:101); SIO 65-678 (1:157).

***Auchenionchus microcirrhys* (Valenciennes)**

FIGURE 9

Clinus microcirrhys Valenciennes in Cuvier and Valenciennes, 1836:384 [coasts of Valparaiso; syntypes, MNHN, A.2072, A.2126; lectotype designated in specimens examined below].

Clinus peruvianus Valenciennes, 1836:383 [no type or type-locality designated; probably Peru; described from a drawing reproduced herein as Figure 10].

Clinus niger Philippi, 1896: 377 [Chile; holotype apparently destroyed].

Auchenionchus tentaculatus DeBuen, 1962:63 [Auca; holotype, EBM 10.356, apparently destroyed].

Auchenionchus verrucosus DeBuen, 1962:68 [Antofagasta; holotype, EBM 10.021, apparently destroyed].

Auchenionchus miniatus DeBuen, 1962:60 [zone of Valparaiso; holotype, EBM 10.372, apparently destroyed].

DESCRIPTION.—Counts are summarized in Table 3. Salient characters are presented in the key. Dorsal fin XXV-XXVI, 11-12; total dorsal-fin elements 36-38; anal fin 11, 23-24; pectoral fin 13; pelvic fin 1, 3; caudal fin 13; lateral-line scales 56-63; vertebrae 12-13 + 29-31 = 32-33.

Morphometric characters of eleven specimens examined: SL 64.0-252.0 mm; head length 26.4-30.0; head depth 18.8-22.9; head width 13.8-21.6; upper-jaw length 11.9-15.0; eye diameter 4.6-7.7; snout length 7.7-12.0; interorbital width 2.4-4.6; predorsal length 23.2-26.6; preanal length 46.3-52.4;

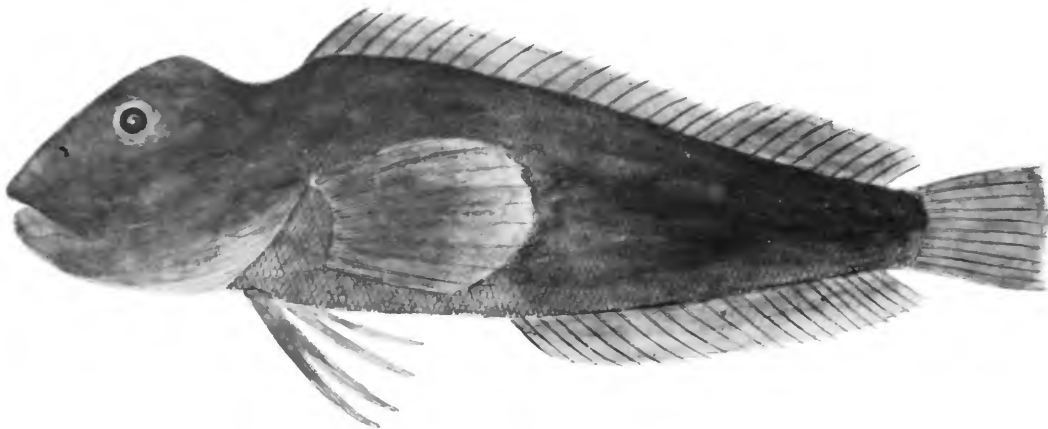


FIGURE 10.—Photocopy of illustration serving as basis for description of *Clinus peruvianus* Valenciennes. (Original illustration in library of the Muséum National d'Histoire Naturelle de Paris.)

caudal peduncle depth 7.7–9.4; caudal-peduncle length 6.0–9.4; pectoral-fin length 16.6–20.8; pelvic-fin length 9.1–14.0; first dorsal-fin spine length 5.9–7.6; fourth dorsal-fin spine length 6.5–8.2.

Color in alcohol: Ground color dark brown becoming light brown to tan ventrally; few distinct markings on large adults; orbital region of head and cirri almost black, a well-developed large brown spot covers dorsal half of opercle of some specimens; brown spots on branchiostegal membrane and pelvic base, spotting sometimes covering jaws below lips; body with some irregular mottling, a sprinkling of small, dark brown spots on belly and under axilla; spots vary in size from tiny dots to pupil-sized markings; dorsal fin brown, darker anteriorly, with line of dark pigment along proximal edge posteriorly; occasional specimens with 5 faint, black bars along dorsal-fin base that extend across fin; anal fin light brown with few dark-brown spots along proximal portion of membrane; caudal and pectoral fins uniformly dark brown; pelvic fins light brown. A 140 mm SL specimen (SIO 65–678) has a vertical white band crossing body at posterior extension of pectoral fin. Specimens less than 65 mm have distinctly banded caudal and pectoral fins and well-developed, dark-brown band at caudal fin base. No obvious sexual dichromatism present, though males tend to be darker and females may have more extensive ventral spotting.

DISCUSSION.—There are seven names available for the two species of *Auchenionchus* with 13 pectoral

rays. The two oldest names that can be assigned definitely to our specimens are *C. microcirrhis* and *C. crinitus*. The characters separating these two species are not obvious, and it is only with some hesitation that a synonymy can be developed from those nominal species without extant types. *C. microcirrhis* applies to specimens with well-developed palatine dentition (Figure 11), few orbital cirri (Figure 12), modally 25 dorsal-fin spines and 11,23 anal-fin elements. The holotype of *C. crinitus* has 12–15 teeth on each palatine and the orbital "cirrus" consisting of 11 separate cirri, 26 dorsal-fin spines, and an anal-fin count of 11,24. All of these characters are consistent with our non-*microcirrhis* specimens with 13 pectoral-fin rays, and we therefore apply to these the name *Auchenionchus crinitus*.

Clinus peruvianus was described from an illustration, which is reproduced here as Figure 10. The figure appears to represent a specimen whose dorsal fin and nape were malformed or badly damaged and healed. This would explain the presence of only 18 dorsal-fin spines and the position of the fin origin posterior to the limit of the opercle. The 21 anal-fin rays are close to the number found in the genus *Auchenionchus* but are more numerous than those of the only other clinid genus (*Labrisomus*) to which the description and figure could be referred. The pectoral-fin count (10) is obviously erroneous, unless the fin was aberrant. In order to remove this name from nomenclatural contention we designate

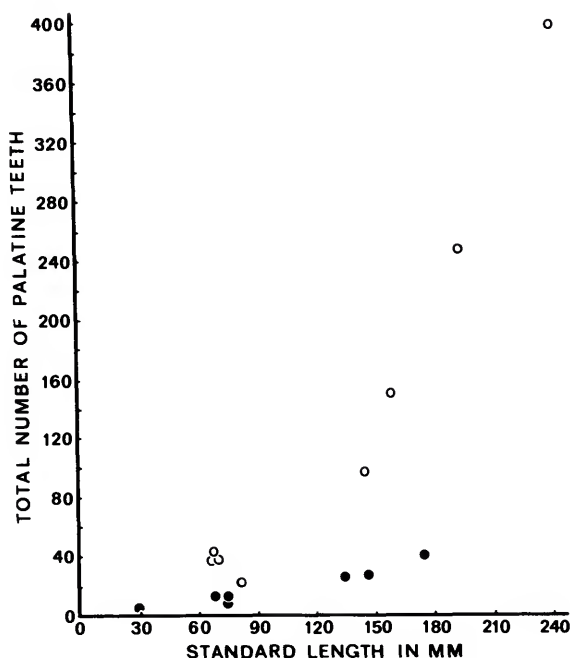


FIGURE 11.—Relationship of number of palatine teeth to standard length.

Auchenionchus microcirrhys ○ *Auchenionchus crinitus* ●

the lectotype of *C. microcirrhys* as neotype of *C. peruvianus* and, as first revisors, arbitrarily accord *C. microcirrhys* senior synonymy even though its original description appeared on a later page of the same book in which the original description of

C. peruvianus appeared. *C. peruvianus* thus becomes a junior objective synonym.

Clinus niger Philippi was synonymized with *A. microcirrhys* by Hubbs (1952). *C. niger* was based on a laquered specimen (present existence unknown) differentiated by Philippi from *C. microcirrhys* by color alone, "El color es negro, con excepcion de la garganta y el vientre." Of the counts (dorsal fin XXV,10; anal fin XVI,6; pectoral fin 14) given for the holotype, that of the anal fin is obviously inaccurate. The presence of 14 pectoral rays could ally *C. niger* with *A. variolosus*, but the lack of noticeable head cirri of *C. niger* supports its synonymy with *A. microcirrhys*. We therefore follow Hubbs in recognizing *C. niger* as a junior synonym of *A. microcirrhys*.

DeBuen (1962) differentiated *A. miniatus* from *A. microcirrhys* on the basis of color alone, yet he had only a single specimen of *A. microcirrhys* and four of *A. miniatus*. His description of *A. miniatus* fits our description of *A. microcirrhys*, and we consider it synonymous.

Auchenionchus tentaculatus was separated by DeBuen from *A. microcirrhys* by its larger eye (16–17 percent of head rather than 12.5–15.5 percent). Eye size decreases relative to SL, and in our specimens (60.0–245.0 mm SL) varies from 27.5 to 13.1 percent of head length. While DeBuen's specimens of *A. microcirrhys* were all large (275 mm–382 mm TL) and had relatively small eyes, his specimens of *tentaculatus* (280–360 mm TL) average 28 mm TL shorter than those of his *microcirrhys* group. We

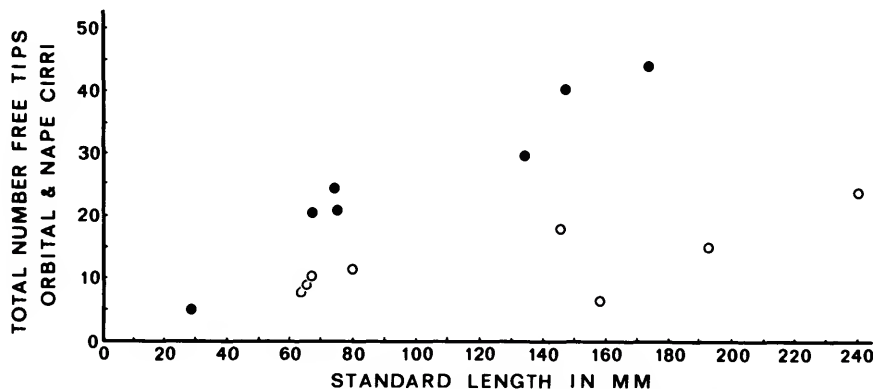


FIGURE 12.—Relationship of total number of free tips on orbital and nasal cirri to standard length.

Auchenionchus microcirrhys ○ *Auchenionchus crinitus* ●

therefore believe that *A. tentaculatus* should be synonymized with *A. microcirrhus*.

Auchenionchus verrucosus was described from a single specimen (236.0 mm TL). Its reduced number of orbital and nape cirri indicate that this species should be included as a synonym of *A. microcirrhus*. DeBuen does not list the sex of the holotype, but the extensive ventral spotting in the illustration suggests that it is a female.

A. microcirrhus is one of the largest clinids (in excess of 250 mm SL) and is a food fish. Among the clinids, only *Labrisomus philippii*, from Peru and Chile, and *Heterostichus rostratus* and *Neoclinus blanchardi*, of California, attain a similar size.

SPECIMENS EXAMINED.—Peru: Viejas Island, USNM 128215 (2:244–245); San Juan Bay, USNM 128216 (1:235); entered in catalog as “Chile or Peru”: USNM 83454 (1:204), USNM 83456 (1:157), USNM 83458 (1:245), USNM 83459 (1:245); Chile: Arica Bay, USNM 176601 (4:215–245); La Ventana, SIO 65–678 (14:64–235); Valparaíso, MNHN A. 2126 (lectotype of *C. microcirrhus* and neotype of *C. peruvianus*, 168), MNHN A. 2072 (paralectotype, 185).

Auchenionchus crinitus (Jenyns)

FIGURE 13

Clinus crinitus Jenyns, 1842:90 [Coquimbo, Chile; holotype, BMNH 1917.7.14.55, from the *Beagle*].

Auchenionchus chalaco DeBuen, 1962:70 [Antofagasta; holotype, EBM 10.022, apparently lost].

DESCRIPTION.—Counts summarized in Table 3. Salient characters are presented in the key. Dorsal fin XXVI, 11–12; total dorsal-fin elements 37–38; anal fin II, 23–24; pectoral fin 13; pelvic fin I, 3; caudal fin 13; lateral-line scales 58–61; vertebrae 13 + 29–30 = 32–33 (7 specimens).

Morphometric characters of eleven specimens examined: SL 25.2–173.0 mm; head length 25.8–34.6; head depth 18.2–24.2; head width 13.8–18.3; upper-jaw length 11.8–15.4; eye diameter 5.8–10.2; snout length 6.3–10.2; interorbital width 3.2–5.9; pre-dorsal length 20.8–28.9; preanal length 46.6–57.3; caudal-peduncle depth 7.1–10.9; caudal-peduncle length 11.4–18.3; first dorsal-fin spine length 5.2–9.0; fourth dorsal-fin spine length 6.9–9.8.

Orbital cirri: 4–8 small cirri, each separate and

simple, none enlarged; cirri not well developed in specimens below 30 mm; nape cirri: palmate with 6–13 branches at distal edge (usually 9–10); nasal cirri: 4–10 branches, arborescent or palmate; teeth: single outer row of about 20 enlarged teeth on premaxillary and dentary, patches of small teeth internal to enlarged outer row, patches separated medially by narrow toothless groove; 5–18 teeth on each palatine; vomer covered with small teeth. Membrane at tips of dorsal- and anal-fin rays forms free cirrus-like projections. Anal fin not bound to caudal peduncle. Scales and pores as described for *A. microcirrhus*.

Color in alcohol: The following is a description of the coloration of the holotype (probably ♀) prepared for us by M.K. Oliver. It is followed by a description of our largest male specimen and significant variations. Holotype (143 mm SL). Ground color brown (lighter in patches where scales are missing), slightly darker on dorsal half of body; operculum with 5 distinct dark brown spots, more or less circular, somewhat smaller in size than pupil; 8–10 similar spots on preopercle and cheek, most following boundary between anterior edge of preopercle and cheek; spots becoming progressively smaller and lighter anteroventrally; lips brown with darker brown rounded spots; branchiostegal membrane light brown with distinct rounded darker brown spots, spots lighter ventromedially; body without vertical bars, with scattered dark brown, circular, pupil-sized spots, almost evenly distributed (and equally dark) dorsoventrally and antero-posteriorly, but lighter on belly; dark brown pupil-sized spots on basal one-third of skin of 17th dorsal-fin spine; similar but lighter spots elsewhere on spinous dorsal fin at various distances from fin base; three vague, dark brown spots, somewhat larger than pupil, in row on soft dorsal fin, two-fifths distance toward ends of rays; caudal fin uniformly dark brown, with darker spot size of eye covering bases of central caudal-fin rays; anal fin brown, with about 7 dark brown circular spots, somewhat larger than pupil, evenly spaced along posterior two-thirds of fin, spots becoming progressively darker and more distinct posteriorly; pectoral fins uniform light brown; pelvic fins brown, innermost ray abruptly darker brown; all cirri dark brown.

SIO 65–678, male, 173 mm SL. Ground color brown to tan, darker on dorsal half of head and

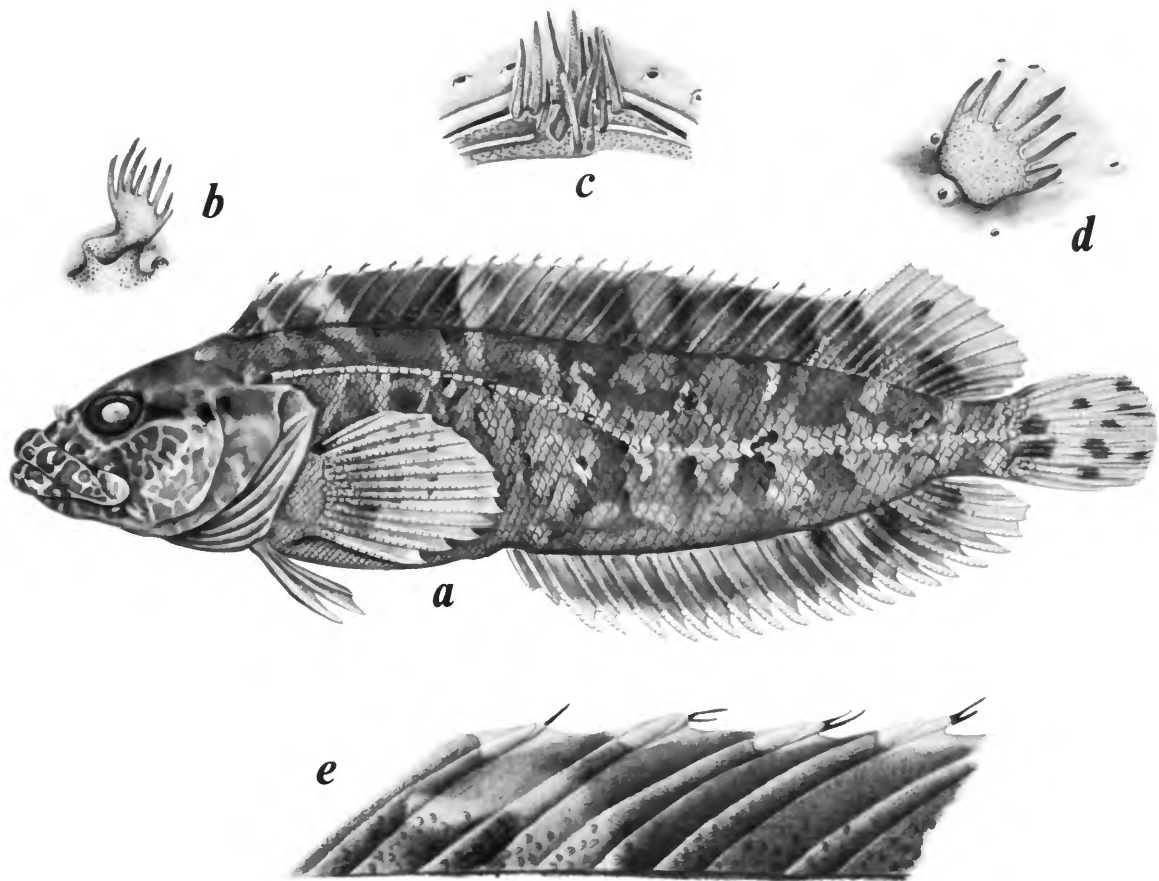


FIGURE 13.—*Auchenionchus crinitus*, SIO 65-678, male, 115 mm S L, La Ventana, Chile: *a*, lateral view; *b*, enlarged view of nasal cirrus; *c*, enlarged view of orbital cirri; *d*, enlarged view of nape cirrus; *e*, enlarged view of some dorsal fin spines (note cirri at tips of spines). (Drawn by J. R. Schroeder.)

body; no distinct markings on head; except lips and chin spotted anteriorly; opercle and branchiostegals unmarked. About 6-7 wide, dark brown bands on dorsal-fin base; bands coalescing at about lateral line, separated dorsally by narrow, short, unpigmented blotches; bands continuing anterodorsally across spinous dorsal fin; body below lateral line indistinctly mottled, no spots present; soft dorsal fin marked with 2 large brown spots on proximal half, each covering 3-4 rays; caudal fin with series of 3-5 large brown spots on distal half and indistinct spotting along proximal edge; anal fin light brown proximally with dark brown to black longitudinal stripe just distal to middle of fin, distal edge unmarked; pectoral fin brown with bands

present on proximal half; pelvic fin brown; inner pelvic ray dark brown to black; no markings on belly; all cirri dark brown.

Smaller specimens exhibit both patterns described above but markings more distinct, especially on caudal fin, which bears distinct band, almost at distal fin edge, and somewhat diffuse spot covering central rays near bases. Spots on soft dorsal fin also distinct. Large spots sometimes present on cheek, and scattering of obvious, dark brown spots present on body below lateral line, but well above anal-fin base and in line with caudal-fin spots. One specimen (♂, 147 mm SL) and our only Peruvian specimen (♂, 130 mm SL) with bands on dorsal-fin base continuing vertically almost to anal-fin base. In

specimens smaller than 60 mm SL, head spotting sometimes more dispersed, continuing onto branchiostegal membrane, pelvic- and pectoral-fin bases, and body posterior to pectoral fin. Two of our four smallest specimens (24.1 and 28.0 mm SL) have 2 well-developed white bands; anterior band forming rectangular area between preopercle (anteriorly) and middle of pectoral fin (posteriorly), terminating ventrally at level of lowermost pectoral-fin ray; posterior band at caudal fin base anterior to proximal stripe. This last-described coloration is also mentioned by DeBuen (1962:58, figure 13), for a single specimen (37 mm TL). The smaller of these 2 specimens additionally has a midlongitudinal white band extending from tip of snout to dorsal-fin origin. A third small specimen (26.5 mm SL) only vaguely exhibits the vertical body bands, while no white markings are evident on a fourth (28.5 mm SL) specimen.

DISCUSSION.—Adult specimens of *Auchenionchus crinitus* can easily be distinguished from *A. microcirrhitis* by the number of palatine teeth (Figure 11) and the number of free tips on the head cirri (Figure 12).

Auchenionchus (Chalacoclinus) chalaco DeBuen (1962) was separated from other members of the genus because of its reduced number of pelvic-fin elements (1,2). In DeBuen's illustration (page 7, figure 17) of the anterior region of the holotype and only specimen, the pelvic fins appear short and malformed. We believe that this is an aberrant specimen and that the fin-ray counts reflect this aberrancy. Besides the pelvic-fin counts, the dorsal and anal fins are reported to have 2 elements less than the numbers we found for our specimens of *A. crinitus*. The cirri however are characteristic only of *A. crinitus*, as is the head color pattern. We therefore synonymize *A. chalaco* with *A. crinitus*.

SPECIMENS EXAMINED.—Chile: Coquimbo, BMNH 1917.7.14.55 (holotype examined by M. K. Oliver, 143); La Ventana, SIO 65-678 (9:24-173), USNM 205106 (3, one cleared and stained :63-94); Vina Del Mar, SIO 65-669 (1:148); Peru: island off Pucusana, UCLA W66-49 (1:130).

Calliclinus Gill

Calliclinus Gill, 1860:103 [type-species: *Clinus geniguttatus* Valenciennes, by original designation].

Myersichthys Hubbs, 1952:103 [type-species: *Clinus guttulatus*

Valenciennes (= *Clinus geniguttatus*), by original designation].

Pennaclinus DeBuen, 1962:82 [type-species: *Pennaclinus racemarius* DeBuen (= *Clinus geniguttatus*), by original designation].

Gill proposed the name *Calliclinus* for *Clinus geniguttatus* Valenciennes in Cuvier and Valenciennes (1836), mistakenly listing three pelvic-fin rays as a character of the species. *Clinus guttulatus* was described by Valenciennes (in Cuvier and Valenciennes, 1836), who gave little information on the species and based his description on an illustration prepared by Gay of a specimen then no longer in existence. Gay (1848) later published an illustration of *Clinus guttulatus*, which is possibly the same used by Valenciennes for his description. Unfortunately, there is little resemblance between the illustration and Valenciennes' description, except for the coloration. Valenciennes' description is inadequate for identification of specimens. Gay's published figure, however, clearly shows large cirri on the head, with the supraorbital cirrus multifid from a common stalk. There also appear to be about 48 scales on the lateral line. This combination of characters is diagnostic only of *Calliclinus*, and for this reason we place *C. guttulatus* within *Calliclinus*. To stabilize the nomenclature, we designate as neotype for *C. guttulatus* the lectotype of *Clinus geniguttatus* Valenciennes (see page 20).

Hubbs (1952) imprudently made *C. guttulatus* the type-species of his new genus *Myersichthys*. It appears that Hubbs based his description of *Myersichthys* on specimens of *Auchenionchus variolosus*, as he gives several characters in his description that are not obtainable from either Valenciennes' description or Gay's illustration of *C. guttulatus*. For nomenclatural purposes Hubbs' description is irrelevant; it is the identity of the holotype of the type-species that is important. Since *C. guttulatus* is referable to *Calliclinus*, *Myersichthys* is a synonym of *Calliclinus*.

DeBuen (1962) incorrectly assumed that Hubbs (1952) was in error in his identification of *Calliclinus geniguttatus* and allied the name *Calliclinus* to several species, the majority of which seem to be identifiable as synonyms of *Auchenionchus variolosus*. He even included *C. variolosus* (the type-species of *Auchenionchus*) in *Calliclinus*. DeBuen correctly, but fortuitously, included *Myersichthys* as a subgenus (and therefore a synonym) of *Calli-*

clinus. DeBuen then described *Pennaclinus*, a new genus, for his new species, *P. racemarius*, which we have determined to be a synonym of *Calliclinus geniguttatus*. *Pennaclinus*, therefore, is also a junior synonym of *Calliclinus*. The genus appears to be monotypic.

***Calliclinus geniguttatus* (Valenciennes)**

FIGURE 14

- Clinus geniguttatus* Valenciennes in Cuvier and Valenciennes, 1836:386 [Valparaiso, 3 syntypes, MNHN A. 2069; lectotype is herein designated: the largest of the syntypes, 120 mm SL; the paralectotypes are 91 mm SL and 110 mm SL].
Clinus elegans Valenciennes in Cuvier and Valenciennes 1836:386 [Valparaiso, 2 syntypes, MNHN A. 2073].
Clinus guttulatus Valenciennes in Cuvier and Valenciennes, 1836:387 [Valparaiso, type missing; the lectotype of *Clinus geniguttatus*, MNHN A. 2069, is herein designated as neotype of *C. guttulatus*; see discussion below].
Clinus guttatus Guichenot in Gay 1848:248 [misspelling of *guttulatus*].
Labrisomus conventryi Fowler, 1940:187 [Mocha, Chile; holotype, ANSP 69149].
Pennaclinus racemarius DeBuen, 1962:82 [Chan Chan in Valdivia; depository of holotype not given, type probably destroyed].

DESCRIPTION.—Dorsal fin XXIV-XXV, 11–13 (24.9, 12.1); total dorsal-fin elements 36–38 (37); anal fin II, 20–22 (21.4); pectoral fin 15; pelvic fin 1.4; caudal fin 13 (7–9 branched); lateral-line scales 41–45 (43.4); vertebrae 13–14 + 27–29 = 41–43 (usually 14 + 28).

Morphometrics based on sixteen specimens: SL 33.0–114.0 mm; head length 25.6–31.0; head depth 19.1–23.3; head width 16.0–21.4; upper jaw length 12.4–16.0; eye diameter 6.4–9.7; snout length 7.1–8.3; interorbital width 3.0–4.5; predorsal length 19.7–25.3; preanal length 48.3–53.0; caudal-peduncle depth 8.0–9.7; caudal-peduncle length 5.7–8.9; pectoral-fin length 15.4–24.8; pelvic-fin length 13.2–18.7; first dorsal-fin spine length 6.3–9.1; fourth dorsal-fin spine length 7.6–10.9.

Orbital cirri: Multifid, bushlike, 10–20 branches arising from well-developed common stalk, entire cirrus usually less than half orbit in length; nasal cirri: smaller than orbital cirrus, multifid, 5–10 branches, less than one-third orbital length; nape cirri: 3 patches, each oriented transversely, each patch with 1–16 simple, fringelike cirri, each lateral patch slightly posterior to median patch; jaw teeth consisting of enlarged outer row with well-developed

patches of minute teeth posteromedially; upper jaw teeth occur posteriorly only slightly more than half distance to rictus; palatines and vomer with continuous patches of small teeth; gill rakers 2 + 6 – 7 on first arch; spinous dorsal fin uniformly low, first dorsal-fin ray twice length last spine, last ray bound to peduncle for half ray length; anal fin not adnate to peduncle; pectoral fin rounded; pelvic fin rounded; pelvic fin with second ray longest, first and third rays approximately equal, fourth ray (innermost) shortest, membrane incised between first and second rays only.

Body elongate, somewhat compressed; greatest body depth 3.5–4.0 in SL; head depth greater than head width; jaws terminate posteriorly near posterior border of orbit; scales smaller on belly and pectoral-fin base than on remainder of body; no scales on head anterior to nape or on fin membranes; well-developed sensory pores on dorsal half of head, sometimes raised.

Color in alcohol: General ground color light to dark brown; body irregularly marked with dark (brown to black) mottling, sometimes appearing as indistinct bars; occasionally 5–6 well-developed, black rectangular blotches along dorsal fin base; blotches sometimes continuing as irregular bands across body, usually not quite reaching anal fin but extending onto fin rarely; blotches usually continuous with mottling on dorsal fin; dorsal and lateral aspect of head dark brown; dark brown spots usually covering cheek and suborbital region; under surface of lower jaw and branchiostegal membrane unmarked, lighter; all fins except pelvics with some spotting, a few discernible bands usually visible on caudal fin; cirri dark brown at base, unpigmented at tips. No obvious sexual dichromatism.

Markings most distinct on specimens less than 80 mm SL. Specimens smaller than 50 mm SL with distinct markings on head: oblique bar originating at midventral edge of orbit and extending posteroventrally to posterior edge of preopercle; well-developed blotch on posterior rim of orbit and series of 5–6 marks along opercle, appearing to be remnants of additional indistinct oblique bars; dorsal fin with well-defined ocellus between second and fourth spines, covering most of fin membrane (only faintly visible in larger specimens).

DISCUSSION.—*C. elegans* Valenciennes was first synonymized with *C. geniguttatus* by Steindachner (1898). In his original description, Valenciennes

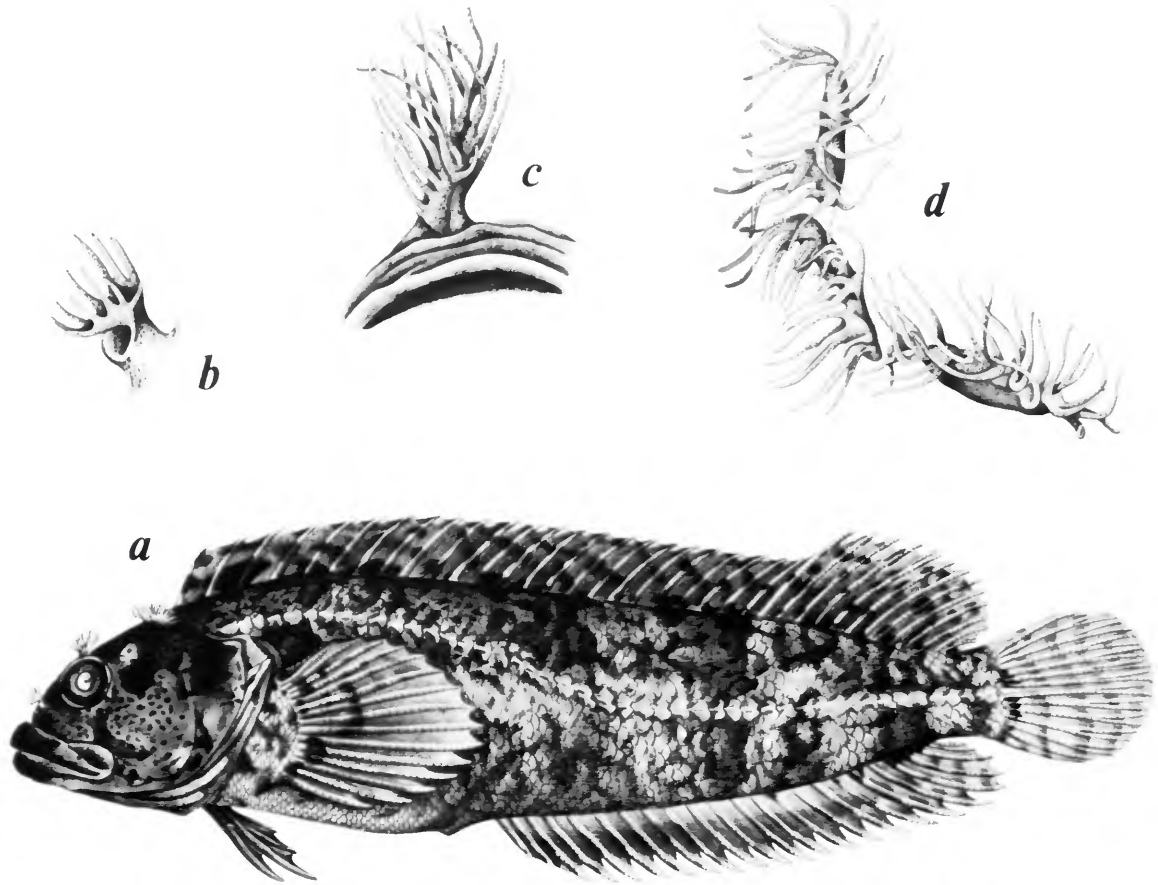


FIGURE 14.—*Calliclinus geniguttatus*, USNM 205105, female, 92.5 mm SL, Valparaiso, Chile: *a*, lateral view; *b*, enlarged view of nasal cirrus; *c*, enlarged view of orbital cirrus; *d*, enlarged dorsal view of nape cirri patches. (Drawn by J. R. Schroeder.)

distinguished this species by the striking color of one of his two syntypes. We have examined the types and find no basis for recognizing *C. elegans* as a distinct species, although the larger of the two syntypes, MNHN A.2073, has a pelvic count of I, 3.

The holotype of *Labrisomus coventryi* Fowler is in poor condition but has approximately 41 lateral-line scales, 3 nape cirri patches, a stalked orbital cirrus, and 15 pectoral rays, all characteristics that are diagnostic only of *C. geniguttatus*.

Pennaclinus racemarius DeBuen was erroneously described as new because DeBuen followed Valenciennes' original description of *C. geniguttatus*, which cited only 2 nape cirri patches and 3 pelvic-fin rays, though Günther (1861) had correctly described the

third (median) nape cirrus patch, and Hubbs (1952) noted the four pelvic-fin rays. All characteristics of *P. racemarius* fit *C. geniguttatus* and it is, therefore, a junior synonym.

Of the 68 adult *Calliclinus*-like specimens that we have examined, all but three fit within the parameters of our description of *C. geniguttatus*. One exception, the larger syntype of *C. elegans*, has only 3 pelvic rays. Another specimen (USNM 207361) appears to represent an anomalous specimen of *C. geniguttatus*. Its measurements, except for the deformed pelvic fins, are all within the range of variation exhibited by other specimens of *geniguttatus*. The low pelvic-fin counts of I, 3 and the presence of only 3 branched caudal fin rays, appear to be the result of anomalous development.

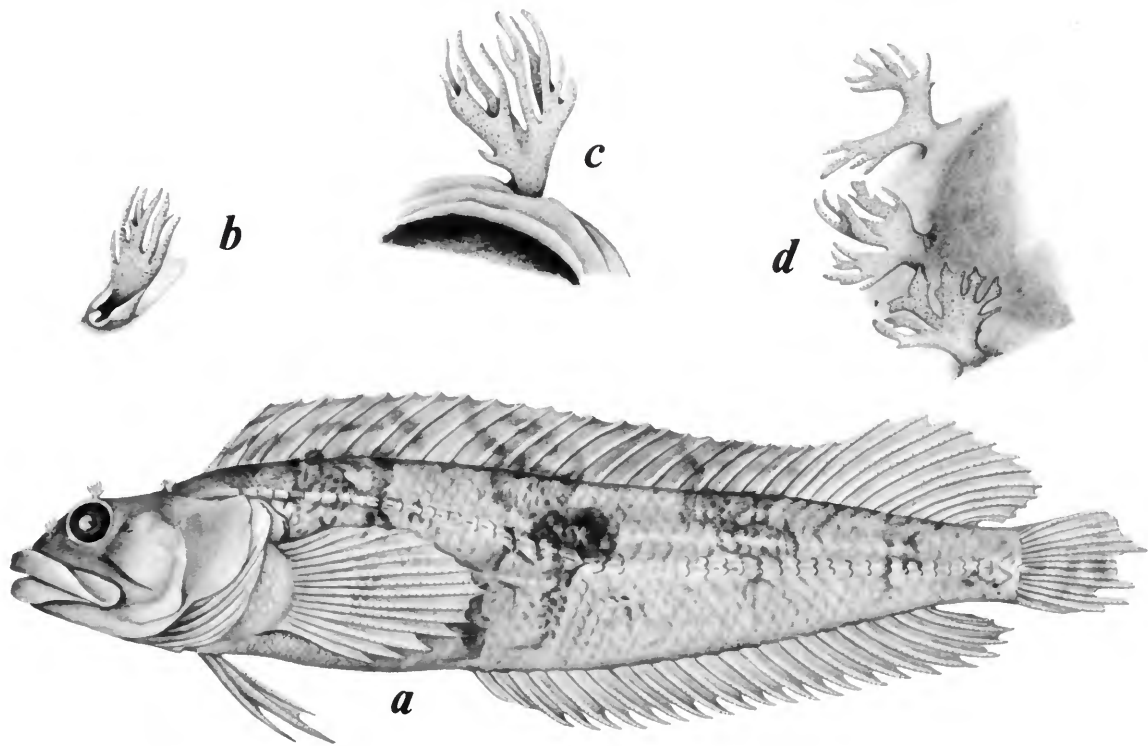


FIGURE 15.—*Calliclinus* sp. (cf. *geniguttatus*), CAS SU 18336, male, 104 mm SL, Valparaíso, Chile: *a*, lateral view; *b*, enlarged view of nasal cirrus; *c*, enlarged view of orbital cirrus; *d*, enlarged dorsal view of nape cirri patches. (Drawn by J. R. Schroeder.)

We cannot explain the low dorsal (XXIV,10) and anal-fin ray (II,19) and vertebral ($14 + 25 = 39$) counts.

Ten of the 21 morphometric characters of a third specimen (CAS SU 18336) fall outside the range exhibited by our other specimens of *C. geniguttatus*. This specimen is illustrated in Figure 15. Its counts and measurements follow (measurements in mm; percent SL in parentheses, variant characters in *italics*): dorsal fin XXIV,12; anal fin, II,23; pectoral fins 14–14; pelvic fins 1,3 (partially deformed); lateral-line scales 42; vertebrae $12 + 29 = 41$; SL 104.2; head length 29.2 (28.0); head depth 16.4 (15.7); head width 16.3 (15.6); upper jaw length 13.6 (13.1); eye diameter 5.5 (5.3); snout length 6.3 (6.1); interorbital width 2.8 (2.7); predorsal length 20.9 (20.1); preanal length 49.7 (47.7); caudal peduncle depth 7.2 (6.9); caudal peduncle length 6.3 (6.1); pectoral fin length 21.7 (20.8); pelvic-fin length 17.3 (16.6); first dorsal-fin spine length 11.1 (10.6);

fourth dorsal-fin spine length 10.1 (9.7).

In addition to the counts and measurements listed above, this specimen differs from others we have examined in having the orbital cirrus with only 5–7 small branches (rather than 10–20), nape cirri in 3 closely arranged patches with each cirri patch palmate from a narrow base (rather than a broad base) and with only 5–7 small branches, and gill rakers 3 + 7 (rather than 2) on the first arch.

Other differences are body elongate, relatively slender as compared with that of other specimens; greatest body depth 4.8 in SL; head profile low; ventral posterior border of subopercle rectangular (opposed to triangular); jaws extending well past posterior border of orbit (opposed to near posterior orbit); first dorsal fin-spine slightly longer than adjacent spines (opposed to equal to or slightly shorter than adjacent spines); caudal fin damaged; no visible branching of rays but all distal tips on principal rays missing.

This single specimen is in rather poor condition. It is either an extremely aberrant *C. geniguttatus* or a new species. In order to facilitate the naming of a new species, if it is warranted, we purposely remove *C. guttulatus* (the only remaining name unaccounted for in this revision) from availability by here designating the lectotype of *C. geniguttatus* as neotype of *C. guttulatus*.

SPECIMENS EXAMINED.—Chile: Valparaiso, MNHN A. 2069 (lectotype, 120, and 2 paralectotypes, 91–110, of *C. geniguttatus*; lectotype is also

neotype of *Clinus guttulatus*), MNHN A. 2073 (2 syntypes of *C. elegans*, 74–88), SIO 65–672 (1:24), SIO 65–699 (35:21–27), USNM 83101 (2:80–100), CAS SU 18336 (1:104); La Ventana, SIO 65–670 (3:60–67), SIO 65–678 (5:68–117), USNM 205105 (4:78–97), USNM 207361 (1:86); Montemar, USNM 203856 (6:39–92, including 2 cleared and stained), USNM 143029 (3:76–100); Mocha, ANSP 69149 (holotype of *L. conventryi*); listed as Fiji, but certainly an error, USNM 82766 (1:70).

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