

## Review of the South American-Antarctic Triplefin Fish Genus *Helcogrammoides* (Perciformes: Tripterygiidae)

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**Abstract.** The genus *Helcogrammoides* comprises three species of small, cryptic shorefishes, *H. antarcticus*, *H. chilensis*, and *H. cunninghami*. All three species inhabit shallow water along exposed rocky coasts. Specimens reported herein extend the known distributions of *H. chilensis* and *H. cunninghami* to the vicinity of Lima, Peru, approximately 1 600 km north of their previously reported northernmost records in Chile. *Helcogrammoides chilensis* and *H. cunninghami* occur sympatrically over most of their ranges in Peru and Chile and are frequently taken together in the same field collections. Lectotypes are designated for *H. chilensis* and *H. cunninghami*. Diagnoses and an identification key are provided for the species.

**Keywords:** *Helcogrammoides*, Peru, Chile, identification key, triplefin fishes

The genus *Helcogrammoides* (family Tripterygiidae) was first recognized as distinct in an unpublished Ph.D. dissertation (Rosenblatt 1959). Rosenblatt in Gon (1990) first published the generic name *Helcogrammoides*, making it available for tripterygiids lacking anal-fin spines and having the lateral line complete, multifid supraorbital cirri, and one or more cirri present on both anterior and posterior rims of the anterior nostril. Rosenblatt (1959) included only one species, *Tripterygium cunninghami* Smitt 1898, in the genus, but suggested that another species might be present among his small collection of postlarval specimens from Valparaiso, Chile. Fowler (1945) incorrectly included Smitt's species as being from Chile, even though he correctly cited the type locality as "Known only from Puerto Madryn in Patago-

nia." Rosenblatt (1959) incorrectly cited the type locality for *H. cunninghami* as "Puerto Madryn, Chile." Navarro and Pequeño (1979) and Castillo and Pequeño (1998) correctly indicated the syntypes were collected from Puerto Madryn, Argentina. Gon (1990) expanded the genus to include *Tripterygium antarcticus* Tomo 1982, which is known only from Paradise Bay, Antarctica. This is the only tripterygiid known from Antarctica and its occurrence in Paradise Bay represents the southernmost locality for any member of the suborder Blennioidei.

In a recent synopsis of the tripterygiids of Chile, Castillo and Pequeño (1998) redescribed the two Chilean species of *Helcogrammoides* (the only tripterygiid genus occurring in Chilean waters) and discussed their geographic distributions. They

placed *Tripterygion chilensis* Cancino in De Buen (1960) in *Helcogrammoides*, provided the first thorough description of *H. chilensis*, and discussed characters useful in distinguishing *H. chilensis* from the sympatric *H. cunninghami*. The original description of *H. chilensis* was published as a footnote in a list of the species of Chile (De Buen 1960). The description was based on more than one specimen, but a holotype was not designated; therefore, all of Cancino's specimens must be considered syntypes. Inasmuch as Cancino did not differentiate her species from the sympatric *H. cunninghami* and the number of syntypes and their identifications are unknown, it is necessary to designate a lectotype for *H. chilensis* to restrict the name and avoid taxonomic confusion in the future.

During a visit to the National Museum of Natural History in 1999, Hernan Ortega

tototype for *H. chilensis*, and document geographic range extensions of over 1 600 km northward to Lima, Peru, for *H. chilensis* and *H. cunninghami*.

#### MATERIAL AND METHODS

Method of taking counts follows Castillo and Pequeño (1998). The following abbreviations are used in the text: LL-lateral line; SL-standard length; TL-total length. Acronyms used are as follows: IAA: Instituto Antartico Argentina; MNHNC: Museo Nacional de Historia Natural, Chile; MUSM: Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos, Lima; NRM: Swedish Museum of Natural History; SIO: Scripps Institution of Oceanography; USNM: National Museum of Natural History, Smithsonian Institution.

#### Key to the species of *Helcogrammoides*

- 1a. Belly covered with cycloid scales ..... *Helcogrammoides antarcticus*  
 1b. Belly naked ..... 2
- 2a. First dorsal-fin spine shorter than second; 7-12 (modally 8-10) scales between base of first spine of second dorsal fin and LL; second spine elongate to filamentous in males ..... *Helcogrammoides chilensis*  
 2b. First dorsal-fin spine longer than second; 4-7 (rarely 7) scales between base of first spine of second dorsal fin and LL; first spine elongate to filamentous in males ..... *Helcogrammoides cunninghami*

asked us to examine some tripterygiid specimens collected in 1956 and 1957 from the vicinity of Lima, Peru. Specimens of both *H. cunninghami* and *H. chilensis* were present in the collections. These specimens represent the first and only known geographic records of the genus north of Chile. It is likely that these species occur on high-energy, exposed rocky shores in southern Peru, but it is difficult to collect in these habitats and this could explain why no specimens are known from southern Peru.

Herein we provide diagnoses and a key to the identification of the three recognized species of *Helcogrammoides*, designate a lec-

*Helcogrammoides antarcticus* (Tomo 1982)  
*Tripterygium antarcticum* Tomo 1982 ["1981"]: 88 figs.  
 66-69, Antarctic Peninsula, Paradise Bay (64°S, 62°W).  
 Holotype: IAA4 (59 mm TL)

**Diagnosis** (based on Tomo 1982, Gon 1990). Belly with cycloid scales; first dorsal fin with first spine elongate (especially in males); 3 cirri on each eye; anterior nostril with simple cirrus on both anterior and posterior rims; caudal peduncle with a roughly square-shaped, broad dark bar bordered anteriorly and posteriorly by narrow pale bars; 38 to 40 LL scales.

**Remarks.** The description of *H. antarcticus* was based on a holotype and four

paratypes, all collected from Paradise Bay, Antarctica. We have not examined the type specimens, but Gon (1990) describes the types, which are the only known specimens of *H. antarcticus*, as disintegrating and poorly preserved.

The publication date of 1981 for the description of *H. antarcticus* appears to be incorrect. Although 1981 is printed on the cover page, the endpaper of the volume bears the following printing:

IMPRESO EN  
DIRECCION NACIONAL DEL ANTARTICO  
Cerrito 1248 – Buenos Aires  
1982

*Helcogrammoides chilensis*  
(Cancino in De Buen 1960)

Fig. 1

*Tripterygion chilensis* Cancino in De Buen 1960: 70 Maitencillo Quintero El Tabo. Syntypes: 38-75 mm. Lectotype designated herein: MNHNC-P-6879 (female 61.6 mm SL).

**Diagnosis** (modal counts are followed by lowest-highest counts in parentheses). Belly naked; first dorsal fin with second spine elongate to filamentous (especially in males); 8-10 (7-12) scales between base of first spine of second dorsal fin and LL; 5-6 (3-7) cirri on each eye; anterior nostril with simple to bifurcate cirrus (rarely absent) on anterior rim mutifid cirrus on posterior rim; caudal peduncle with an almost triangular-shaped dark bar (dorsal edge longest tapering to a very short ventral section at base of ventral procurrent rays) bordered anteriorly and posteriorly by narrow pale bars; 15 (15-16) pectoral-fin rays; 40-42 (38-43) LL scales.

**Remarks.** Castillo and Pequeño (1998) redescribed *H. chilensis* based on 55 specimens collected along the Chilean coast from Antofagasta (23° 39' S) to Talcahuano (36° 45' S). Among the specimens in the material examined from MNHNC is a specimen they list as "...6879, 1(Holotipo, 61.6)..." As the original description by Cancino in De Buen (1960) did not designate types, the specimen listed by Castillo and Pequeño as "Holotipo" must be considered a syntype. Their designation of the specimen as the holotype does not

meet the requirements of Article 74.6 of the International Code of Zoological Nomenclature (1999) dealing with the fixation of lectotype by inference of "holotype" before 2000. To be a valid lectotype designation, Article 74.6 requires that it be "...accepted that a nominal species-group taxon was based on a single specimen and the original description neither implies nor requires that there were syntypes, ..." The original description did not mention any syntypes, but Cancino provided ranges of variation for several characters and used the term "ejemplares," clearly referring to more than one specimen. Therefore any specimen Cancino may have examined in preparing the original description could be considered a syntype. Specimens of *H. chilensis* are often collected together with *H. cunninghami*, making it critical that the name be fixed to avoid confusion. The specimen referred to as the holotype by Castillo and Pequeño was collected at Maitencillo, a locality to the north of Quintero (Roberto Meléndez pers. comm.). Meléndez (pers. comm.) has read Cancino's unpublished thesis and informed us that "She selected one specimen from Quintero Chile, as the holotype, and another 12 as paratypes from the same locality." In an attempt to avoid confusion in the future, we select as lectotype the specimen referred to as holotype by Castillo and Pequeño, and herein designate this syntype as lectotype: MNHNC-P-6879 (female, 61.6 mm SL), Maitencillo, collected by C. Cancino, Feb. 1954.

We have examined six specimens (27.2-63.2 mm SL) from the MUSM collections that Freyman collected from the coast of Lima, Peru, in 1956 and 1957. The six specimens have the following counts: dorsal-fin rays III,XV,10 to 11 (last ray split through base); anal-fin rays 21 (last ray split through base); pectoral-fin rays 15; vertebrae 10+30 to 31=40 to 41 (three with 10+31=41); last pleural ribs borne on centrum 11; last epineurals borne on centrum 17-20 (two with 17, two with 19, two with 20); LL scales 41-42 (two with 42); scales above LL 7-9 (two with

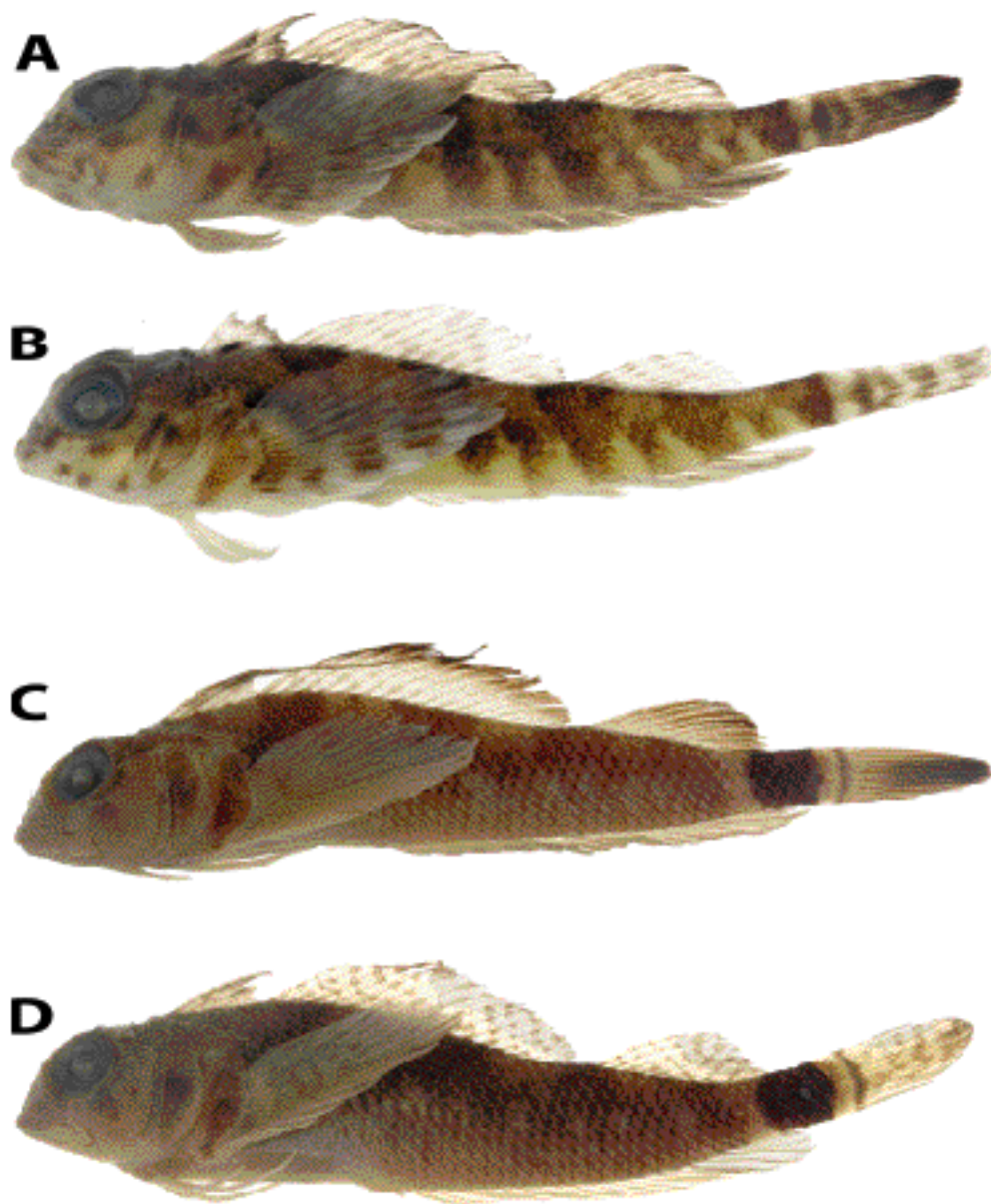


Fig.1. Color patterns of preserved specimens. *Helcogrammoides chilensis*, SIO 97-60, Viña del Mar, Chile: A) Male (53.5 mm SL); B) Female (42.6). *H. cunninghami*, SIO 65-678, La Ventana, Chile: C) Male (44.7); D) Female (42.3).

7, one with 9); scales below LL8-9 (two with 8); gill rakers 2+6 to 7=8 to 9 (two with 8, three with 9); dentary sensory pore series 4+2+4 (one 60.5 mm SL specimen with 6+2+6; all have 2 relatively small symphyseal pores); orbital cirri 5 to 6 on each eye; anterior nostril with 1 (one with 2) cirrus on anterior rim and 4-5 (one each with 2 and 3) cirri on posterior rim. The counts fall within the range of variation published for the Chilean material (Castillo and Pequeño 1998) and are considered to be conspecific with the Chilean *H. chilensis*.

These specimens represent a northward range extension of about 1 600 km from Antofagasta, Chile, which was previously the northernmost reported locality for *H. chilensis*. Its absence from the southern coast of Peru is probably a collecting artifact, as there have been very few shore collections in the area.

**Material examined:** Lectotype designated herein: MNHNC-P-6879 (female, 61.6 mm SL), Maitencillo, Chile, C. Cancino, Feb. 1954. Paralectotypes: MNHNC P-6888 (2), Maitencillo, Chile, 31°18' S, 71°40' W, C. Cancino; MNHNC P-5559 (11, poor condition), Quintero, Chile, 32°45' S, 71°32' W, C. Cancino, Feb. 1953. Peru: MUSM 14499 (1), 14500 (1 mixed with 1 *H. cunninghami*), 14501 (2 mixed with 1 *H. cunninghami*), 14502 (1), USNM 359588 (1) (originally MUSM 14503). Chile: SIO 65-670 (7), 97-60 (13).

*Helcogrammoides cunninghami* (Smitt 1898)

Fig. 1

*Tripterygium cunninghami* Smitt 1898: 26, Puerto Madryn (43°S, 65°W). Lectotype (herein designated): NRM 40358, female, 26.4 mm SL.

**Diagnosis** (modal counts are followed by lowest-highest counts in parentheses). Belly naked; first dorsal fin with first spine elongate to filamentous (especially in males); 4-6 (4-7) scales between base of first spine of second dorsal fin and LL; 3-4 (0-5; Castillo and Pequeño (1998) report one specimen each with 0 and 2) cirri on each eye; anterior nostril with no or simple cirrus on anterior rim, simple (rarely bifurcate) cirrus on posterior rim; caudal peduncle with a roughly hexagonal-shaped, dark bar (darker than

other body bars) bordered anteriorly and posteriorly by narrow pale bars; 16 (15-17) pectoral-fin rays; 40-41 (36-42) LL scales.

**Remarks.** Smitt (1898) reported 42-45 LL scales, but our examination of Smitt's types resulted in a count of 41 for the lectotype (NRM 40358) and, for the four paralectotypes (NRM 45667), three with 41 and one with 40 (scale pockets representing missing LL scales were counted to obtain LL counts). Additional counts for the paralectotypes and lectotype (in parentheses) are: dorsal-fin rays III,XV,10-11 (III,XV,10), last ray split through base; anal-fin rays 23 (22), last ray split through base; pectoral-fin rays 16 (16); vertebrae 10+30-32=40-42 (10+31=41); last pleural ribs borne on centrum 11 (11); last epineurals borne on centrum 19 or 20 (19); scales above LL to second dorsal-fin origin 4 (4); scales below LL to anal-fin origin 5 (5); dentary sensory pore series 3+1+3 (3+1+3), all have one large symphyseal pore; 3 or 4 cirri on each eye (4 left side, 5 right); anterior nostril with 1 (1) cirrus on anterior rim and 1 (1) cirrus on posterior rim.

Pequeño (pers. comm. 1998) questioned the original collecting locality for Smitt's type specimens. Pequeño visited Puerto Madryn, where he inquired of local scientists as to the existence of *Helcogrammoides*. He made no collections and the local scientists indicated they had never seen the genus. Although additional specimens have not been collected from Argentine waters, Erik Ahlander (pers. comm. 2000) notes that the data at NRM support Puerto Madryn as the correct locality. Additional collecting from exposed, rocky shores along the Argentine coastline is needed.

We have examined three specimens (35.2-38.5 mm SL) from the MUSM collections that were taken in the vicinity of Lima, Peru. Freyman collected all three specimens from the coast of Lima in 1956 and 1957. The three specimens have the following counts: dorsal-fin rays III,XV,10 to 11 (one with 11, last ray split through base); anal-fin rays 21, 22, 23 (last ray split through base); pectoral-

fin rays 16; vertebrae 10+30=40; last pleural ribs borne on centrum 11; last epineurals borne on centrum 16 in one and 20 in two; LL scales 39, 40, 42; scales above LL to second dorsal-fin origin 5; scales below LL to anal-fin origin 6-7 (one with 7); gill rakers 2+7=9, 2+8=10, 3+9=11; dentary sensory pore series 3+1+3 (all have one large symphyseal pore); 3 cirri on each eye; anterior nostril with 1 cirrus on anterior rim and 1 cirrus on posterior rim.

The Peruvian specimens represent a northward range extension of about 1 600 km from Coquimbo, Chile, which was the northernmost reported locality (Castillo and Pequeño 1998) for *H. cunninghami*. However, the counts of the three MUSM specimens collected from the coast west of Lima, Peru, fall within the range of variation for the Chilean (Castillo and Pequeño 1998) and Argentine specimens. The geographic separation between the southernmost known occurrence of *H. cunninghami* on the Chilean coast, at Chiloé (43° 08'S), and the Argentine record at Puerto Madryn (43°S, 65°W) is also vast. It is possible, however, that gaps in the distribution of *H. cunninghami* are collecting artifacts. Rotenone collections (the only safe and effective method of collecting cryptic fish from high-energy habitats) from along the vast coastlines between known occurrences of the species are needed to determine if the gaps are truly artifacts and if the Argentine and Peru-Chile species are the same. If not, the Pacific form will need to be described as a new species.

**Material examined:** Lectotype designated herein: NRM 40358, 26.4 mm SL female, Puerto Madryn, Argentina. Paralectotypes: NRM 45667 (4: 24.8-26.6 mm SL), collected with lectotype.

Peru: MUSM 14500 (1); 14501 (1 mixed with 2 *H. chilensis*), USNM 359589 (1) (out of MUSM 14500). Chile: SIO 65-669 (30 of 189), 65-678 (37).

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and German Pequeño sent copies of references not readily available to us. Roberto Meléndez lent specimens from the MNHNC that had been examined by Cancino. Erik Ahlander and Sven Kullander allowed us to examine the NRM type specimens. We thank Richard Rosenblatt and Cindy Klepadlo for sending Smitt's syntypes. Sandra Raredon photographed the specimens in Fig. 1 and Kris Murphy provided radiographs.

#### RESUMEN

Se amplía 1 600 km al norte la distribución de *H. chilensis* y *H. cunninghami* a Lima, Peru, donde con frecuencia se hallan en simpatria. Se designa leptotipos para *H. chilensis* y *H. cunninghami*. Se incluye diagnósticos de especies y una clave para el género.

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**Addendum.** While our manuscript was in press, Dr. David Smith discovered two specimens of *Helcogrammoides cunninghami* among unidentified collections stored at the NMNH. These specimens (now cataloged as USNM 364253) had been collected from Argentina at a locality near Puerto Madryn on 21 July 1978. The two specimens were taken from a shallow water intertidal area at 42° 53' 36" S, 64° 42' 48" W. The counts and mea-

surements taken from these two specimens are in complete agreement with those of other *H. cunninghami*. The 1978 capture of *H. cunninghami* specimens in Argentina validates the Smitt (1898) report of the type locality for the species as Puerto Madryn, Argentina. It is likely that the disjunction between Chilean and Argentine populations of *H. cunninghami* around the southern tip of South America is a collecting artifact.