CHIRONEMID FISHES FROM JUAN FERNANDEZ ARCHIPELAGO AND DESVENTURADAS ISLANDS, CHILE. (PERCIFORMES: CHIRONEMIDAE).

Roberto Meléndez C.*

ABSTRACT. Chironemid fishes from Juan Fernández Archipelago and Desventuradas Islands, Chile. (Perciformes: Chironemidae).

Chironemus delphinii (Porter 1914) is resurrected and redescribed from eleven specimens collected at Juan Fernández Islands, Chile. Chelodactylyus bicornis Steindachner 1896, also from Juan Fernández Archipelago and Desventuradas Islands, is validated as Chironemus and is redescribed. Chironemus delphinii is distinguished from Chironemus bicornis by the absence of supraorbital tubercles, a flat interorbital space, and fewer than 17 dorsal fin rays. Chironemus delphinii appears to be endemic around the Juan Fernández Archipelago.

Key words: Chironemus, coastal fishes, systematics, distribution.

RESUMEN. Peces chironémidos del Archipiélago de Juan Fernández e Islas Desventuradas, Chile (Perciformes: Chironemidae).

Se revalida y redescribe Chironemus delphinii (Porter 1914) sobre la base de once ejemplares recolectados en el Archipiélago de Juan Fernández, Chile. Chelodactylyus bicornis Steindachner 1896, también del mismo Archipiélago e Islas Desventuradas se redescribe y se revalida a Chironemus. Chironemus delphinii se distingue de Chironemus bicornis por la ausencia de las crestas óseas supraorbitales, espacio interorbital plano, y menos de 17 radios en la aleta dorsal. Chironemus delphinii sería endémico del Archipiélago de Juan Fernández.

Palabras clave: Chironemus, peces costeros, sistemática, distribución.

* Museo Nacional de Historia Natural, Casilla 707, Santiago, Chile.
INTRODUCTION

The Chironemidae is a marine family comprised of two genera, Chironemus and Threpterus (Nelson 1984). Records exist from coastal Australia, Tasmania and New Zealand (Smit 1962, Norman 1966, Last et al. 1983, Nelson 1984) and Juan Fernández islands (Steinitzmann 1905). They are characterized by the presence of 14 or 16 spines and 16-21 soft rays in the dorsal fin; vomer with teeth and palatines toothless. They are included in the Superfamily Chirinthoidea, and are related to Chirinchidae, Aploactyliidae, Cheilodactyliidae y Latridae (Nelson 1984). Chironemus has teeth on vomer, operculum with two first spines, villiform teeth in both jaws, without canines; 6 or 7 simple lower pectoral rays; dorsal with 14-16 spines. Chironemus differs from Threpterus in its smaller mouth, premaxilla only reaching the middle of the orbit versus premaxilla extending behind the middle of the orbit, and in its un-notched dorsal membrane versus deeply notched dorsal membrane between the second and third spines (Last et al. 1983).

This paper resurrects Chironemus delitiae and redescribes a second species of genus from Juan Fernández islands, Chironemus biocronis Steinitzmann 1908, which was initially described to Cheilodactylus.

METHODS

Measurements and counts follow Hubbs & Lagler (1958), except pectoral fin ray counts which are given as the number of upper branched pectoral fin rays (Arabics numbers) plus the number of thickened unbranched lower pectoral fin rays (Roman numbers). The counts of dorsal and anal fins are based mostly on radiographs. Institutional abbreviations follow Leviton et al. (1985).

RESULTS

Key to the species of Chironemidae of Juan Fernández Archipelago and Desventuradas islands

1a) Supraorbital tubercles present (in adults); interorbital space concave; base of spinous and soft portions of dorsal fin about the same length ..................C. biocronis (Juan Fernández Archipelago and Desventuradas islands)

1b) Supraorbital tubercles absent; interorbital space flat; base of
Chironemus delfini (Porter 1914)

Fig. 1. Chironemus delfini (Porter 1914) 310 65-655 245 mm SL.

Chilodactylus delfini: Porter 1914: 204-205 (original description)

Diagnosis: A species of Chironemus with the length of base of the spiny portion of the dorsal fin more than 1.5 times the length of the soft dorsal fin, supraorbital tubercles absent, interorbital space flat, premaxillary extending to mid orbit. Dorsal fin membranes with more than 4 procurrent dermal cirri behind each spine.


Morphometry of the adult specimens (n = 9): 174-245 mm SL. Morphometric data expressed as % SL: Head length 34.4 - 40.3, snout 10.9 - 13.7, postorbital length 18.0 - 22.0, interorbital width 5.4 - 6.6, orbit diameter 5.4 - 6.6, premaxilla length 10.9 - 15.4, predorsal length 29.6 - 38.2, prescal length 66.3 - 75.4, prepectoral length 31.2 - 35.4, prepelvic length 44.3 - 53.5, base of dorsal fin 53.9 - 65.3, base of soft portion of dorsal fin 36.9 - 44.3, base of soft portion of dorsal fin 20.2 - 24.8, pectoral fin...
base 8.8 - 10.8, pelvic fin base 3.6 - 5.1, body depth 24.4 - 38.9, caudal peduncle depth 10.5 - 11.5.

Morphometry of juvenile specimens (n=2) 51 - 53 mm TL. Head length 33.7 - 35.7, snout 8.8 - 9.4, post orbit length 16.9, interorbital length 5.9 - 6.6, orbit diameter 9.0 - 9.2, premaxillary length 9.4 - 10.0, predorsal length 30.2 - 32.1, preoral length 70.6 - 71.6, prepiriform length 32.9 - 36.0, prepelvic length 51.3 - 51.5, dorsal fin base length 28.6 - 30.6, spinous dorsal fin base length 34.9 - 37.5, soft dorsal fin base length 22.5 - 22.8, pectoral fin base 9.6 - 9.8, pelvic fin base 2.7 - 3.0, body depth 30.2 - 30.4, caudal peduncle depth 9.6 - 10.8.

Body elongate, head triangular in lateral view. Interorbital space flat. Premaxillary extending to mid orbit. Upper jaw slightly longer than lower jaw. Lips very thick. Conical teeth in rows. In both jaws, becoming a triangular patch near symphysis, vomer with teeth. Nastrils large, the anterior with flabellate lobes. Snout, suboperculum, and border of preoperculum scaleless. Opercle broad, with two separated flat spines in its upper portion. Cycloid scales on body, lateral line almost straight. Single dorsal fin originating anterior to pectoral fin, spinous dorsal base length more than 1.5 the soft dorsal base length, membrane behind each dorsal spine with more than 4 prominent dorsal cirl. Dorsal fin with a row of scales along its base. Anal fin short, with a row of scales along its base, the second spine larger and stronger. Pectoral fin with scaled base, area under pectoral fin scaleless. Upper pectoral rays branched, lower rays greatly thickened, the second one the longest. Pelvic fin base scaleless. Caudal fin rounded to truncate.

Color in formalin and alcohol: In adults the body is dark brown and in others pale yellow, with a diffuse pattern of obscure vertical bands. Preopercle and opercle ventrally with a white reticulate pattern. Fins with dark brown vertical banding. In juveniles body pale brown with oral reticulate pattern including paired and unpaired fins; ventral area of head and abdomen before anal fin pale brown without reticulate pattern; lips dark brown.

Similar species: Chromomus delfinai is similar to Chromomus nannosus Gmelin 1791 and Chromomus georgianus Gmelin 1791, both from the Australian-New Zealand region, mainly because of the lack of supraorbital tubercles. Chromomus nannosus has approximately equal length spinous and soft-rayed sections of the dorsal fin, and the dorsal membranes lack dorsal cirl behind each spine (Table 1). Chromomus georgianus has fewer scales in the lateral line (Table 1), and the length of the premaxilla does not reach the anterior border of the orbit (versus premaxilla reaches to mid orbit).

Distribution: Chromomus delfinai is known only from the Juan Fernández Archipelago, Chile, between 0-20 n.

Size: Chromomus delfinai reaches 460 mm in TL.
Remarks: The eye and the premaxillae of this species show ontogenetic change. The eye size is proportionally greater and the length of the premaxillae proportionally shorter in juveniles than the adults.

Comments: Porter (1914), described Chironemus defilsi from Chironemus biocora. De Buen (1991), included Chironemus defilsi as a synonym of Chironemus biocora, and this criteria has been used since then by other authors e.g., Bahamonde & Pequeño (1975), Sepúlveda (1990) and Pequeño (1999).

Chironemus biocora (Steindachner 1898)

![Fig. 2. Chironemus biocora (Steindachner 1898) (after Steindachner, 1898)](image)

Diagnosis: A Chironemus with one supracleithral scale, interorbital space concave, length of base of spinous dorsal fin less than 1.5 times length of soft-rayed dorsal fin.

Counts: D XIV, 17-19, A III, 6-8, P 9-11, pelvic fin I-5. Lateral line scales 60-65. Vertebrae 31-32 (12+19-20). Morphometry of adult specimens (in mm): 113-190 on SL. Morphometric data expressed as percent of SL, as follows: Head length 26.0-33.5, snout 8.7-11.6, postorbital length 13.6-
15.4. Interorbital width 6.4 - 8.4, orbit diameter 7.0 - 8.8, premaxilla length 7.6 - 9.6, predorsal length 27.5 - 31.7, preanal length 65.0 - 77.0, prepectoral length 28.0 - 32.1, propelvic length 40.3, base of dorsal fin 58.5 - 69.2, anal fin base 9.9 - 12.5, pectoral fin base 9.3 - 11.3, pelvic fin base 3.9 - 4.7, base of spinous portion of dorsal fin 32.8 - 36.4, base of soft portion of dorsal fin 26.7 - 33.4, maximum body depth 21.6 - 25.8, caudal peduncle depth 8.4 - 9.2.

Morphometry of juvenile specimens (n = 18) 25.3 - 53.5 mm SL: morphometric data expressed as a percent of SL, are as follows: head length 31.2 - 34.7, snout 7.4 - 11.2, postorbital length 14.1 - 16.5, interorbital width 6.0 - 8.3, orbit diameter 8.5 - 10.0, premaxilla length 7.1 - 8.9, predorsal length 30.7 - 33.3, preanal length 69.1 - 75.3, prepectoral length 28.0 - 32.1, propelvic length 41.5 - 48.6, base of dorsal fin 54.5 - 62.1, anal fin base 11.1 - 16.2, pectoral fin base 10.1 - 11.8, pelvic fin base 2.8 - 4.4, base of spinous portion of dorsal fin 24.0 - 32.1, base of soft portion of dorsal fin 24.2 - 31.0, maximum body depth 22.6 - 27.4, caudal peduncle depth 9.0 - 11.2.

Comments: Steinacher (1989) described Cheliodactylus bicornis from Juan Fernández Island. In 1995 he declared that Cheliodactylus bicornis was a lapsus calami, and said the name should be Chironemus bicornis. Perhaps this error occurred because the Cheliodactylidae and Chironemidae are very similar morphologically and have overlapping ranges in numbers of fin elements. They are distinguished by the presence of vomerine teeth and two flat spines in the opercle in Chironemidae and absence of both characters in Cheliodactylidae (Smith 1980, Nelson 1984). These two characters are present in Chironemus bicornis.

Steinacher's (1989) original description of C. bicornis did not mention the presence of one to three cirri in the dorsal membrane behind each spine of the dorsal fin. These cirri are hard to find in preserved specimens, because the membrane is very fragile. Only a few well-preserved specimens had cirri present.

All juvenile specimens of C. bicornis (less than 45.0 mm SL) lack the supernumerary cirrus. Based on the material examined, the cirrus should develop between 43.0 and 53.5 mm SL.

Color in formalin or alcohol: Adults specimens dark brown with six dark spots along the dorsal base and the upper 1/3 of the body, the last one on the caudal peduncle. Ventral area from the mouth to the origin of the anal fin pale. Juveniles specimens follow the same pattern of the adults but without heavy pigmentation on pectoral and caudal fins. A black spot between the two spines on the opercle is typically present in the juveniles of C. bicornis.

De Buen (1999), indicated that Chironemus bicornis attains more than 600 mm total length, and they are found resting above rocks covered by calcareous algae.
Table 1. Comparison of selected morphometric and meristic characters ranges of the Chironemus species. (Values of morphometry expressed as a percent of standard length).

<table>
<thead>
<tr>
<th></th>
<th>Chironemus</th>
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<tbody>
<tr>
<td></td>
<td>bicoloris</td>
<td>delphin</td>
<td>georgianus</td>
<td>marneratus</td>
<td>microlepis</td>
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<td>Morphometry</td>
<td></td>
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<tr>
<td>Standard length (mm)</td>
<td>25.3-190</td>
<td>62.0-460</td>
<td>45.0-149</td>
<td>75.0-201</td>
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<td>Head length</td>
<td>29.0-34.7</td>
<td>33.7-40.3</td>
<td>33.5-38.6</td>
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<td>32.7</td>
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<tr>
<td>Interorbital width</td>
<td>6.0-8.4</td>
<td>7.4-9.8</td>
<td>6.7-8.0</td>
<td>7.0-7.5</td>
<td>7.4</td>
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<td>Premaxilla length</td>
<td>7.1-9.6</td>
<td>8.6-11.4</td>
<td>8.2-11.9</td>
<td>8.5-12.0</td>
<td>10.7</td>
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<td>Dorsal fin base length</td>
<td>54.5-69.2</td>
<td>56.4-66.3</td>
<td>57.1-61.4</td>
<td>60.5-65.9</td>
<td>64.0</td>
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<td>Anal fin base length</td>
<td>9.4-16.2</td>
<td>11.0-14.7</td>
<td>10.0-14.8</td>
<td>10.9-12.6</td>
<td>10.1</td>
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<td>Spinous portion of dorsal fin</td>
<td>24.0-36.2</td>
<td>34.9-43.0</td>
<td>32.3-40.9</td>
<td>29.8-36.8</td>
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<td>Soft portion of dorsal fin</td>
<td>24.2-33.8</td>
<td>20.2-24.8</td>
<td>33.5-50.5</td>
<td>27.2-32.2</td>
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Counts

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<tr>
<td>Dorsal fin</td>
<td>XIV, 17-19</td>
<td>XVI, 15-16</td>
<td>XV, 15-16</td>
<td>XIV, 19-20</td>
<td>XV, 17</td>
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<tr>
<td>Anal fin</td>
<td>III, 6-8</td>
<td>III, 7-8</td>
<td>III, 6-7</td>
<td>III, 6-7</td>
<td>III, 6-7</td>
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<tr>
<td>Pectoral fin</td>
<td>9, VI</td>
<td>8, VIII</td>
<td>7, VIII</td>
<td>9, VII</td>
<td>8, VI</td>
</tr>
<tr>
<td>Scales on lateral line</td>
<td>60-65</td>
<td>59-62</td>
<td>50-52</td>
<td>56-60</td>
<td>&gt; 60</td>
</tr>
<tr>
<td>Cirri on dorsal fin</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Number of specimens</td>
<td>35</td>
<td>11</td>
<td>16</td>
<td>5</td>
<td>1</td>
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</table>

Similar species: Chironemus bicoloris is similar to Chironemus microlepis Walti 1916, from Australia and New Zealand in the presence of a supracircular tubercle, but in C. microlepis they are less developed. Chironemus bicoloris differs from C. microlepis in the lower count of scales above and below the lateral line.

Distribution: Chironemus bicoloris is known from the Juan Fernández Archipelago, Chile, between 0-20 m depth, and Desventuradas Islands (Degrew 1980). Material examined

Chironemus delphin: MNHN P. 6655, 305 mm Standard Length (SL), male, February 1973, Juan Fernández Island. MNHN P. 6655, 175 mm SL, February 1970, El Polillo Bay, Juan Fernández Island. MNHN P. 6655, 359 mm SL, 5-12 m depth, 6 March 1970, Juan Fernández Island. USNM 88765, 319 mm SL, 15 December
1966, Juan Fernández Island, MNC 46157, two specimens, 51-53 mm SL, 12 January 1966, 0-20 m depth, West Bay, Más a Tierra, Juan Fernández Island. 510-636, 17 specimens, 28.0-148 mm SL, off Chile, isla Juan Fernández, HYOS-IV-45, 510-619, 10 specimens, 37.3-172 mm SL. CAS 5569, 1 specimen, 53.5 mm SL, San Félix Island, 18 February 1935.

Comparative material: Chionomus parvulus Cuvier 1829. WAM P. 27127-014, 8 specimens, 45-105 mm SL, Sorrento, Victoria, Australia, 38° 20' S, 144° 45' E, 1981. AMS 1. 20162-001, 6 specimens, 62-149 mm SL, Kangaroo Island, Stokes Bay South Australia, 35° 38' S, 137° 12' E.


Chionomus microlepis Waite 1916. AMS 1. 140067, 275 mm SL, Lord Howe Island, N.S.W., January, 1917.

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