A NEW SPECIES OF CROAKER *Plagioscion* (PERCIFORMES, SCIAENIDAE) FROM THE ORINOCO RIVER BASIN, VENEZUELA

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ABSTRACT

A new fish species, *Plagioscion casattii* (Perciformes, Sciaenidae), is described from the Orinoco River Basin (Venezuela). This species is characterized by the following combination of characters: eye elliptical, its length fitting 5.3 to 6.2 times in head length (mean 5.6 times); length of second anal spine fitting 4.0 to 6.3 times (mean 5.2) in head length; anus-anal distance fitting 2.8 to 5.1 times (mean 4.2) in head length; tips of pelvic-fin rays not extending to anus; anterior portion of dorsal fin with ten spines, posterior portion with one spine and 31 to 36 soft rays (usually 33 to 34); gill rakers 15 to 18 (usually 15 to 16) on first gill arch; sagitta elongate and oblong, ostium apple-shaped, tip of the cauda not extending to below hind margin of the ostium, postero-ventral angle rounded. *Plagioscion casattii* n. sp. differs from similar species in the Orinoco basin in the following ways: its lower number of gill rakers (15-18 versus 18 to 23 in *P. auratus* and 20 to 25 in *P. squamosissimus*); longest radia of pelvic fin falling short of the anus by a mean distance that fits 7.7 times in the standard length (versus 3.2 in *P. squamosissimus*, or reaching the anus in *P. auratus*); second anal spine length fits in head length 5.2 times (versus 2.2 in *P. auratus* and 3.9 in *P. squamosissimus*); anus-anal distance fits in head length 4.2 times (versus 2.6 in *P. auratus*); interorbital length in head length 5.0 times (versus 4.3 in *P. squamosissimus*).

UNA NUEVA ESPECIE DE CURVINATA DEL GÉNERO *Plagioscion* (PERCIFORMES, SCIAENIDAE) DE LA CUENCA DEL RIO ORINOCO, VENEZUELA

RESUMEN

Se describe una nueva especie, *Plagioscion casattii* (Perciformes, Sciaenidae) de la cuenca del río Orinoco, Venezuela. Esta especie se caracteriza por la siguiente combinación de caracteres: ojos elípticos, su diámetro representa 5,3 a 6,2 veces la longitud de la cabeza (media 5,6); proporciones entre la longitud de la cabeza y la segunda espina anal 4,0 a 6,3 (media 5,2); proporciones entre la longitud de la cabeza y la distancia ano-anal 2,8 a 5,1 (media 4,2); radios distales de las aletas pélvicas sin alcanzar el ano; sección anterior de la aleta dorsal con diez espinas, sección posterior con una espina y de 31 a 36 radios (generalmente 33 a 34); primer arco branquial con 15 a 18 branquiespinas (generalmente 15 a 16); sagitta alargado y ovalado, ostium en forma de manzana, extremo de la cauda sin alcanzar la vertical trazada por el margen posterior del ostium, ángulo postero-ventral redondeado. *Plagioscion casattii* nueva especie, se diferencia de las especies del género presentes en la cuenca del río Orinoco por las siguientes características: menor número de branquiespinas (18 a 23 en *P. auratus*, 20 a 25 en *P. squamosissimus*); extremos de los radios distales de las aletas pélvicas distantes del ano en una proporción de 7,7 en su longitud estándar (3,2 en *P. squamosissimus*, o alcanzan el ano en *P. auratus*); proporción entre las longitudes de la cabeza y la segunda espina anal 5,2 (2,2 en *P. auratus* y 3,9 en *P. squamosissimus*); proporción entre la longitud de la cabeza y la distancia ano-anal 4,2 (2,6 en *P. auratus*); proporción entre la longitud de la cabeza y el espacio interorbital 5,0 (4,3 en *P. squamosissimus*).

INTRODUCTION

The Sciaenidae (croakers), which is a highly diverse family found in tropical and subtropical waters throughout the world, is represented by three genera and twenty species in the river systems of South America. Of these, *Plagioscion* is currently includes four nominal species (Soares and Casatti, 2000).

Neotropical freshwater sciaenids may have originated from several different marine ancestors that used the Amazon-Orinoco basin as an invasion and dispersal route (Casatti, 2000; Chao, 1978; Sasaki, 1989). The marine origin hypothesis is in agreement with the fossil record for *Plagioscion* from fully marine Neogene deposits of Brazil, Colombia, Peru, Trinidad, and Venezuela (Nolf, 1976; Schwarzhans, 1993; Monsch, 1998; Nolf and Aguilera, 1998).

Recent taxonomic and phylogenetic studies of freshwater sciaenids have revealed the existence of undescribed taxa (Casatti, 2000), and resulted in description of new species (Soares and Casatti, 2000).

The objective of this paper is to describe a new species of the genus *Plagioscion* from the Orinoco River Basin (Venezuela).

MATERIALS AND METHODS

The specimens were collected from the Orinoco River and were obtained in the Ciudad Bolívar fish market, in the state of Bolívar, Venezuela. The precise
locality of capture is not known. However, it is not more distant than a one-hour boat ride (upstream) from Ciudad Bolívar, Venezuela. All traditional measurements (Table 1) and color descriptions were made using fresh specimens. Left otoliths were dissected from fresh specimens except the holotype. The data were analyzed using Pearson correlation coefficients. Only significant correlation data were used in determining morphometric relationships, except the head/second anal spine, and head/anus-anal relationships. In addition, we use cross-tabulation to compare overlapping species.

RESULTS

Plagioscion casattii new species

Figure 1a-c

Types: Holotype, MBUCV-V-29490, eleven paratypes, MBUCV-V-29491 (Museo de Biología, Universidad Central de Venezuela, Caracas, Venezuela), and two paratypes, MHNLS: 14601 (Museo de Historia Natural La Salle, Caracas, Venezuela), were collected from the Orinoco River and were obtained in the Ciudad Bolívar fish market, in the state of Bolívar, Venezuela. O. Aguilera. February 15, 2000.

Diagnosis: Eye elliptical, 5.3 to 6.2 (mean 5.7) in head length. Second anal spine length in head length: 4.0 to 6.3 (mean 5.2). Anus-anal distance in head length: 2.8 to 5.1 (mean 4.2). Tips of pelvic-fin rays not extending to anus. Anterior portion of dorsal fin with ten spines, posterior portion with one spine and 31 to 36 (usually 33 to 34) soft rays. Gill rakers, 15 to 18 (usually 15 to 16) on first gill arch. Sagitta elongate and oblong, ostium apple-shape, tip of the cauda not extending to below hind margin of the ostium, postero-ventral angle rounded.

Description: A medium sized fish (Table 1), specimens examined ranged from 31.5 to 39.5 cm total length, and 250 to 600 g. Body elongate, moderately compressed, and slightly deep. Dorsal profile evenly arched, ventral profile, nearly straight. Head slightly conical, 2.9 to 3.3 in standard length. Interorbital width 4.8 to 5.3 (mean 5.0) in head. Mouth moderate, terminal, slightly oblique, tip of lower jaw not projecting beyond upper jaw, maxillary not extending to below hind margin of eye. Teeth in upper jaw larger, sharply conical, and widely spaced in an outer row, villiform teeth in the inner row. Teeth in lower jaw sharply conical, and widely spaced. Tip of the upper jaw with enlarged teeth and tip of the lower jaw with villiform teeth. Eye elliptical, 5.3 to 6.2 (mean 5.6) in head length. Chin without barbels or pores, snout without pores, and the rostral fold is thin, and entirely without notches. Gill rakers rather long and slender, 15 to 18 (usually 15 to 16) on first gill arch. Preopercular margin slightly serrated with membranous “spine”. Anterior portion of dorsal fin with ten spines, posterior portion with one spine and 31 to 36 (usually 33 to 34) soft rays. Anal fin with 2 spines and 6 to 7 (usually 6) soft rays, second spine less sturdy, equal or less than eye
Figure 1
a) *Plagioscion casatti*, new species, 36.2 cm total length, MBUCV-V-29490, holotype, from the Orinoco River, Ciudad Bolívar, Venezuela, b) Otoliths, UNEFM-PR-02. Scale bar equal to 1 mm and c) Swim bladder, MBUCV-V-29491, dorsal view. Scale bar equal to 1 cm.

Diameter, and 4.0 to 6.3 (mean 5.2) in head length. Caudal fin rhomboid. Pectoral fin not extending to below tip of pelvic fins, 4.3 to 5.0 (mean 4.7) in standard length. Tips of pelvic-fin rays not extending to anus. Swim bladder with a pair of hornlike diverticula originating from anterior quarter of main chamber, and hooked at the distal end, the acute posterior tip passes the anus. Sagitta elongate and oblong, very thick, and slightly convex; lateral surface with strong nodules; dorsal margin slightly arched and entire; ventral margin sinuous; posterior margin slightly straight; anterior margin oblique; ostium enlarged inclined, and apple-shape; long and narrow cauda, flexed ventrally in arch (“U” shape), the tip not extending to below hind margin of the ostium; crista superior poorly developed over ostium, ridge-like over cauda; shallow and elongate dorsal depression, no ventral depression; excisura very narrow and without a notch. Scales large, ctenoid, except for some cycloid scales on snout, chest and interorbital area. Soft portion of dorsal fin covered with three to four rows of small ctenoid scales at base, and small cycloid scales on membrane between rays near the basal fin. Surface of caudal fin covered with ctenoid scales. Lateral line extending to behind
Table 1
Measurements and counts of fourteen specimens of *Plagioscion casattii*, n. sp. (bold numbers Holotype, MBUCV-V-29490)

<table>
<thead>
<tr>
<th></th>
<th>HOLOTYPE</th>
<th>PARATYPE RANGE</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
<th>PEARSON CORRELATIONS</th>
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</thead>
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<tr>
<td>Total length (cm)</td>
<td>36.2</td>
<td>31.5 to 39.5</td>
<td>35.4</td>
<td>2.46</td>
<td></td>
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<tr>
<td>Standard length (cm)</td>
<td>29.2</td>
<td>25.60 to 32.3</td>
<td>28.6</td>
<td>2.05</td>
<td></td>
</tr>
<tr>
<td>Standard length /Head</td>
<td>3</td>
<td>2.9 to 3.3</td>
<td>3.2</td>
<td>0.13</td>
<td>0.858 **</td>
</tr>
<tr>
<td>Standard length /Pectoral fin</td>
<td>4.8</td>
<td>4.3 to 5.0</td>
<td>4.8</td>
<td>0.20</td>
<td>0.824 **</td>
</tr>
<tr>
<td>Head /Eye diameter</td>
<td>5.6</td>
<td>5.3 to 6.2</td>
<td>5.7</td>
<td>0.24</td>
<td>0.765 **</td>
</tr>
<tr>
<td>Head /Interorbital</td>
<td>5.1</td>
<td>4.8 to 5.3</td>
<td>5.0</td>
<td>0.17</td>
<td>0.906 **</td>
</tr>
<tr>
<td>Head /Pectoral fin</td>
<td>1.6</td>
<td>1.4 to 1.6</td>
<td>1.5</td>
<td>0.08</td>
<td>0.715 **</td>
</tr>
<tr>
<td>Interorbital /Eye diameter</td>
<td>1.1</td>
<td>1.1 to 1.3</td>
<td>1.1</td>
<td>0.06</td>
<td>0.672 **</td>
</tr>
<tr>
<td>Standard length/Pelvic-Anus</td>
<td>10.0</td>
<td>6.5 to 10.0</td>
<td>7.7</td>
<td>0.83</td>
<td>0.656 *</td>
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<tr>
<td>Head /Anus-Anal</td>
<td>4.8</td>
<td>2.8 to 5.1</td>
<td>4.2</td>
<td>0.61</td>
<td>0.076</td>
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<tr>
<td>Head /2nd Spine</td>
<td>5.6</td>
<td>4.0 to 6.3</td>
<td>5.2</td>
<td>0.63</td>
<td>0.254</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed)**
* Correlation is significant at the 0.05 level (2-tailed)

<table>
<thead>
<tr>
<th>Gill rakers</th>
<th>Dorsal fin</th>
<th>Anal fin</th>
<th>Lateral line</th>
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<tbody>
<tr>
<td>Upper</td>
<td>Total</td>
<td>spines</td>
<td>rays</td>
</tr>
<tr>
<td>Lower</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
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</tr>
<tr>
<td>X,I</td>
<td>31</td>
<td>32</td>
<td>33</td>
</tr>
<tr>
<td>14</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>13</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>
margin to caudal fin, 49 to 51 (usually 50) scales along lateral line concealed by many smaller scales appearing as one enlarged scale. Body nearly uniform silvery, lighter ventrally, darker dorsally, without conspicuous spots but with diffuse dark areas along base of dorsal fin, on margin of spinous and soft dorsal fin, and hind margin of caudal fin. Bases of pectoral fins with a brown spot.

**Etymology:** Dedicated to Lilian Casatti, for her valuable contribution to the study of freshwater Sciaenidae.

**Distribution:** *Plagioscion casattii*, new species, is known thus far only from the Orinoco River near Ciudad Bolívar, Bolívar State, Venezuela.

**Discussion:** *Plagioscion casattii* n.sp. can be distinguished from similar sympatric species. It differs from *P. auratus* by a lower number of gill rakers (15 to 18 in *P. casattii*, versus 18 to 23 in *P. auratus*), the length of the pelvic fin (distal rays fall short of anus by a mean distance of 7.74 times in the standard length, versus reaching the anus in *P. auratus*), the second anal spine length in head length (mean 5.18 in *P. casattii*, versus mean 2.19 in *P. auratus*), and the anus-anoal distance in head length (mean 4.21 in *P. casattii*, versus mean 2.61 in *P. auratus*). It can be distinguished from *P. squamosissimus* by a lower number of gill rakers (20 to 25 in *P. squamosissimus*), the second anal spine length in head length (mean 3.87 in *P. squamosissimus*), the interorbital length in head length (mean 5.03 in *P. casattii*, versus 4.26 in *P. squamosissimus*), and the length of pelvic fin distal rays (not reaching anus by a mean distance of 3.18 in the standard length).

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**REFERENCES**


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