First Record of Platyberyx rhyton (Teleostei: Perciformes: Caristiidae) Outside of Japanese Waters and Description of Juvenile Morphology

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While examining specimens identified as Paracaristius maderensis (Maul, 1949) at the Scripps Institution of Oceanography Marine Vertebrate Collection, we encountered an individual of the genus Platyberyx Zugmayer, 1911. This specimen was collected in the Central Pacific Ocean, 900 km east of Wake Atoll during the Naga Expedition 1959–1961. We identified the specimen as Platyberyx rhyton Stevenson and Kenaley, 2013, and it represents the first record of this species outside of Japanese waters. This is a range extension of around 3400 km east for this species, as well as the first record of a juvenile individual and the fourth record of the species overall. We provide a morphological description and comparisons to the three previously known adult specimens.

Key Words: manefish, Naga Expedition, rare species, range extension.

Introduction

The manefish genus Platyberyx Zugmayer, 1911 includes six species of rarely encountered mesopelagic fishes found in all tropical, subtropical and temperate oceans (Kukuev et al. 2012; Stevenson and Kenaley 2013). Of these species, four are known from the Pacific Ocean: Platyberyx andriashevi (Kukuev, Parin, and Trunov, 2012); Platyberyx paucus Stevenson and Kenaley, 2013; Platyberyx pietschi Stevenson and Kenaley, 2013; and Platyberyx rhyton Stevenson and Kenaley, 2013. Only P. rhyton is known exclusively from the Pacific and more specifically from Japanese waters (Stevenson and Kenaley 2013; Okamoto et al. 2014; Okamoto and Stevenson 2015). Platyberyx is distinguished from the subfamily Paracaristiinae (including the genera Neocaristius Stevenson and Kenaley, 2011 and Paracaristius Trunov, Kukuev, and Parin, 2006) by having a narrow suborbital series and relatively large mouth, and from the genus Caristius Gill and Smith, 1905 by the presence of a conspicuous lateral line with large scales.

We encountered a distinctive specimen while re-examining material identified as Caristius maderensis Maul, 1949 (currently Paracaristius maderensis) at the Scripps Institution of Oceanography Marine Vertebrate Collection (SIO), following major revisions of the group (Stevenson and Kenaley 2011, 2013). We reidentified many specimens from the eastern and central North Pacific as Paracaristus nudarucus Stevenson and Kenaley, 2011. The distinctive specimen, SIO 61-593, has a distinct lateral line with large scales, a distinguishing character of Platyberyx that is absent in Caristius and Paracaristius (Stevenson and Kenaley 2011, 2013). Upon further examination, this specimen matches the description of P. rhyton but was collected in the central North Pacific during the initial phase of the Naga Expedition of 1959–1961 between the Hawaiian Islands and Wake Atoll. This specimen represents the first record of P. rhyton outside of Japanese waters, a range extension of some 3400 km into the central Pacific Ocean and the fourth overall record of the species. It is also unique in that it is a juvenile specimen, and therefore provides the first opportunity to describe the juvenile morphology of the species.

Materials and Methods

Counts and measurements follow Hubbs and Lagler (1958) except body depth, which is measured through the dorsal insertion of the pectoral fin. Measurements were taken with digital calipers to the nearest 0.1 mm. Vertebral and fin ray counts were taken from radiographs. Gill raker counts are presented as upper (epibranchial) + lower (ceratobranchial) gill rakers on the anterior face of the first arch; angle raker is included in the lower count. Standard length and head length are expressed as SL and HL, respectively. Counts and morphometrics are presented in Table 1. The specimen is deposited at SIO; institutional abbreviation follows Sabaj (2019).
Table 1. Meristic and morphometric characters of Platyberyx rhyton.

| Character                  | Present study | Previous specimens* |
|---------------------------|---------------|---------------------|
|                           | n=1           | n=3                 |
| Central Pacific Ocean     |               |                     |
| Standard length (mm)      | 36            | 88–146              |
| Vertebrae                 | 16–18         | 15–16+18 (33–34)    |
| Dorsal-fin rays           | 31            | 30–31               |
| Anal-fin rays             | 19            | 18–19               |
| Pectoral-fin rays         | 18            | 17–18               |
| Vomerine teeth            | 10            | 6–17                |
| Palatine teeth            | 15            | 10–17               |
| Upper jaw teeth           | 36            | 30–40               |
| Lower jaw teeth           | 32            | 34–40               |
| Gill rakers               | 6+15          | 6+15 (21)           |
| As % SL                   |               |                     |
| Body depth                | 57.1          | 45.3–52.5           |
| Head length               | 43.4          | 30.4–33.9           |
| Predorsal length          | 23.9          | 14.9–22.6           |
| Prepectoral length        | 46.4          | 31.4–34.0           |
| Prepelvic length          | 36.8          | 27.4–28.5           |
| Pectoral-fin base         | 10.7          | 7.2–8.4             |
| Prenal length             | 63.1          | 52.4–54.6           |
| Dorsal-fin base           | 71.1          | 76.0–79.0           |
| Anal-fin base             | 35.2          | 36.8–39.5           |
| Peduncle length           | 13.7          | 13.3–13.5           |
| Peduncle depth            | 13.5          | 12.8–14.0           |
| As % HL                   |               |                     |
| Upper jaw length          | 61.3          | 56.0–59.4           |
| Lower jaw length          | 46.8          | 50.8–57.6           |
| Bony orbit width          | 47.5          | 43.8–47.2           |

* Data on previous specimens from Okamoto and Stevenson (2015).

Platyberyx rhyton Stevenson and Kenaley, 2013

[Japanese name: Sanriku-yaeisyu]

(1) Platyberyx rhyton Stevenson and Kenaley, 2013: 424 (type locality: off Iwate Prefecture, northeastern Japan; Okamoto et al. 2014: 26 (off northeastern Japan); Okamoto and Stevenson 2015: 15 (off the Ogasawara Islands, Japan).

Caristius macropus (not Bellotti, 1903): Tatsuta et al. 2014: 52 (Ogasawara Islands, Japan, in part).

Material examined. 1 specimen, SIO 61-593 (previously identified Platyberyx rhyton specimens (36 mm SL vs. 88–164 mm SL) and exhibits a transitional juvenile morphology similar to other caristiids (Moser 1996; Angulo et al. 2014). This specimen shows a different morphology than adult P. rhyton with a deeper body (57% SL vs. 45–52% SL); a longer head length (43% SL vs. 30–34% SL) and upper jaw length (61% HL vs. 56–59% HL); longer predorsal, prepectoral and preanal lengths; a longer pectoral-fin base (11% SL vs. 7–8% SL) and a slightly shorter dorsal-fin base (71% SL vs. 76–79% SL). However, it has no meristic differences from the larger specimens (Table 1) and is within the diagnostic ranges for the species. This specimen further matches P. rhyton in that palatine teeth are present (vs. absent in P. paucus), mouth is large, extending near posterior margin of orbit (vs. extending to mid-orbit in P. pietshi and P. opalescens; Fig. 1) and Gill rakers are narrow and blade-like, with one or two small bristles near the tips (vs. stout and rounded in P. mauli; small bristles in P. opalescens; or small bristles and large spikes in P. pietshi). Because the lower portion of the caudal fin is damaged, the presence of the ventral caudal spur and the condition of the ventral caudal rays cannot be determined. Unlike the adult P. rhyton specimens that are uniformly dark, SIO 61-593 has five dark transverse bars along the body; the first behind the orbit, second at the origin of the dorsal fin, two on the body and the last on the anterior two-thirds of the caudal peduncle (Fig. 1).
barring is noted in juvenile and smaller *Caristius, Paracaristius* and *Platyberyx* (Okamoto et al. 2010; Angulo et al. 2014; Mincarone et al. 2019).

The previously reported specimens of *P. rhyton* were collected in the western North Pacific off northeastern Japan and around 1400 km south off the Ogasawara Islands (Fig. 2; Okamoto and Stevenson 2015). This specimen, SIO 61-593, extends the known range of *P. rhyton* some 3400 km east into the northern Central Pacific and some 600 km south (Fig. 2). Given the broad distributions of congeners, it is reasonable that *P. rhyton* is wide-ranging as well. Although no depth record is provided for the collection event, Naga Station 27/Biological Station 59-8, Faughn (1974) notes that 2 m stramin nets were towed with 100–200 m of wire out. Therefore, this specimen was likely collected in the upper 100 m or so of the water column.

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