

NOTA CIENTÍFICA

First record of the spearfish remora *Remora brachyptera* (Carangiformes: Echeneidae) in the Gulf of Tehuantepec, Mexico

Primer registro de la rémora robusta *Remora brachyptera* (Carangiformes: Echeneidae) en el Golfo de Tehuantepec, México

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ABSTRACT

Background. Seven remora species are described for the Eastern Pacific, of them *Remora brachyptera* has not been confirmed in South Mexican Pacific. **Goals.** The aim of this note is to report the presence of *R. brachyptera* on the Gulf of Tehuantepec. **Methods.** The specimen was collected during sportfish activities in May 2013 in the Gulf of Tehuantepec, Oaxaca. **Results.** This species was identified by having 17 laminae in the cephalic disc and the dorsal fin that originates above the anal fin, dorsal fin with 27 rays, pectoral fin with 23 rays, cephalic disc length 32.6% standard length, and truncated tail. **Conclusions.** This is first record of *R. brachyptera* in the Gulf of Tehuantepec.

Keywords: Echeneidae, *Remora brachyptera*, Confirmate record, Oaxaca.

RESUMEN

Antecedentes. En el Pacífico Oriental se han registrado siete especies de rémoras, de ellas *Remora brachyptera* no ha sido confirmada en el sur del Pacífico mexicano. **Objetivo.** La finalidad de este trabajo es reportar la presencia de *R. brachyptera* en el Golfo de Tehuantepec. **Métodos.** El ejemplar fue colectado durante las actividades de pesca deportiva de mayo de 2013 en Golfo de Tehuantepec, Oaxaca. **Resultados.** Se identificó la especie del ejemplar por tener 17 laminillas en el disco cefálico y la aleta dorsal que se origina por delante de la aleta anal, aleta dorsal con 27 radios, aleta pectoral con 23 radios, la longitud del disco cefálico de 32.6% de la longitud estándar y una cola truncada. **Conclusiones.** Este es el primer registro confirmado de *R. brachyptera* en el Golfo de Tehuantepec.

Palabras clave: Echeneidae, *Remora brachyptera*, Registro confirmado, Oaxaca.

Remoras are fish of the family Echeneidae, characterized by having the first dorsal fin modified in a laminated cephalic disc, comprising eight species distributed in three genera with tropical and subtropical distribution (Nelson *et al.*, 2016). Remoras species are commensals and cleaners of parasites of large fish and marine mammals (Bertoncini, 2007).

Seven species of remoras are known for the Mexican Pacific, but *Echeneis naucrates* (Linnaeus, 1758) and *Remora remora* (Linnaeus, 1758) are the most abundant species. The spearfish remora *Remora brachyptera* (Lowe, 1839) is considered potentially circumtropical distribution, however, in the southern Mexican Pacific there is no confirmed records. The CONABIO database (CONABIO, 2016) only shows records around the Baja California peninsula, Sinaloa and Nayarit. There's no evidence of its presence in Gulf of Tehuantepec after

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a review of Fishes Collections database (CICIMAR-IPN, 2011; AMNH, 2022) and scientific literature (Miller & Lea, 1972; Bastida-Zavala *et al.*, 2013; Del Moral-Flores *et al.*, 2016).

In 2009, *R. brachyptera* was included in the IUCN red list (Collette, 2010), even though its status is described as least concern, the inclusion is because some of its hosts belong to the so-called billfish, which are of great importance in sportfishing worldwide, are highly migratory species and some of them are classified as near threatened (Collette *et al.*, 2011a) and even vulnerable (Collette *et al.*, 2011b), that is to say that remoras could share vulnerabilities with their hosts, therefore collecting precise data on their biology is important.

This scientific note describes the first confirmed record of a spearfish remora, *Remora brachyptera* in the Gulf of Tehuantepec, Mexico.

A specimen of *R. brachyptera* (Fig. 1) was collected in the Gulf of Tehuantepec, inside gill cavity of a striped marlin *Kajikia audax* (Philippi, 1887) (eye-fork length 210 cm), on May 11, 2013, during sportfishing activities in Huatulco Bay, Oaxaca, with caught zone in the coastal strip of 15 nautical miles, between 15°41'17" N to 15°47'49" N. The counts and measurements were based on the proposal of Myoung *et al.* (2015), by using a 300 mm (\pm 0.02mm) caliper. The individual was required by the angler who caught it. Species was confirmed using the criteria of Paulin & Habib (1982), Schneider (1995) and Collette (2002).

The examined specimen of *R. brachyptera* presented 183.62 mm standard length (SL). Description: 17 pairs of laminae in the cephalic disc, which does not reach the posterior edge of the pectoral fin, cephalic disk length 32.6% of SL. Spineless dorsal and anal fins: dorsal: 27;

anal: 25; pelvic: 1,5; pectoral: 25. First gill arch with 1+10 gill rakers (Table 1). Robust body and height 13.7% of SL. The origin of the dorsal fin is slightly ahead of the origin of the anal fin, whose posterior edge does not reach the origin of the caudal fin. Origin of the pelvic fin in the midline of the rounded pectoral fin. Truncated caudal fin. Rounded and prognathic lower jaw, pointed upper jaw, both with large numbers of caniniform teeth. The posterior edge of the jaw does not reach the edge of the eye. Small eye, 3.2% of the SL. Two pairs of nasal openings, the front ones smaller than the posterior ones. The lateral line begins at the upper posterior edge of the gill opening and ends at the base of the caudal fin. The coloration in fresh was uniformly gray of pale whitish tone, tail with blackish margin.

In addition to *R. brachyptera*, in the Gulf of Tehuantepec, there have been recorded: *R. australis*, and *R. remora*. They have differences in the number of lamellae on cephalic disc, and gill rakers on the first arch (Collete, 2002), between others. Details of some differences are showed in Table 2

Remora brachyptera occurs worldwide in tropical to warm temperate seas. In the Eastern Pacific this species has been recorded from California to Chile, however in Mexican coast, only has been recorded from Baja California peninsula to Nayarit, and with this note has report in Gulf of Tehuantepec. In the western Atlantic, it occurs from Nova Scotia to Uruguay. This species lives inside gill cavity of pelagic fishes, between them: *Xiphias gladius*, *Mola* sp., *Masturus lanceolatus*, *Prionace glauca*, and another pelagic organisms as *Caretta caretta* and occasionally, free swimming (McEachran & Fechhelm, 2005; Prandi, 2015).

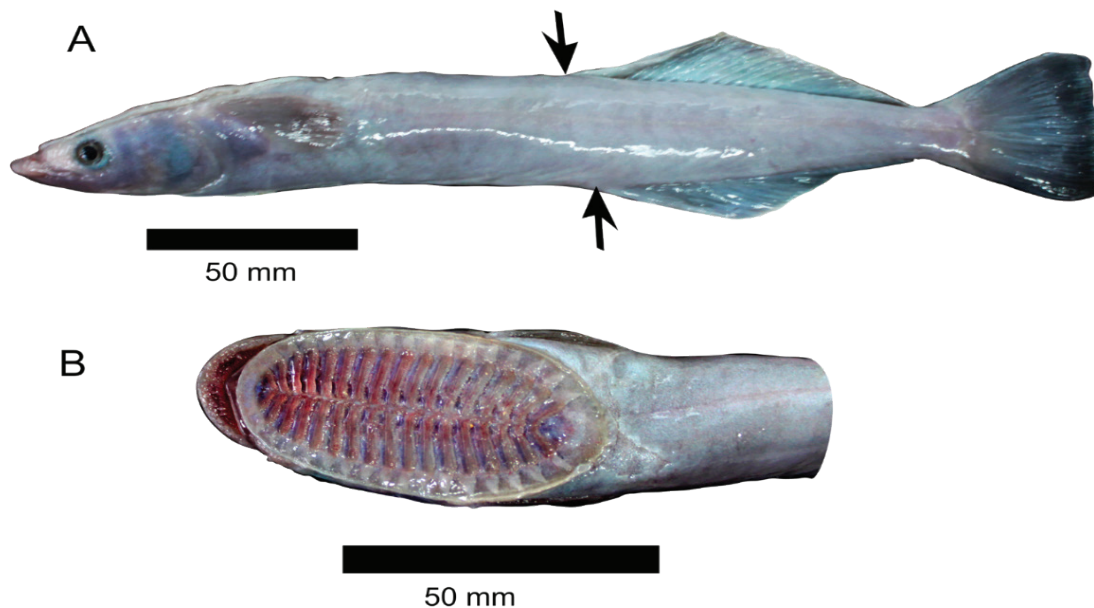


Figure 1.- *Remora brachyptera* (Lowe, 1839), 182.62 mm of standard length, collected from Gulf of Tehuantepec, Oaxaca, Mexico. A, lateral view. B, dorsal view of the head. The arrows mark the origin of the dorsal and anal fins. Photos by Vicente Anislado-Tolentino.

Even when big sportfish as billfish are common in sport catches, the species associated with them are not taken into account, that is a way that the remoras are not recorded, because large-sized remoras separates from the host when is caught, or remoras of small size are hidden within the gill or oropharyngeal cavity and go unnoticed. In sportfishing, the fish are revised by tournament judges to remove some objects (i.e. remoras, cans, bait) that can increase the weight of billfish. In this case, the first author (as tournament judge) removed the remora

to weigh the striped marlin. Normally, the remora will be rule-out as trash, liberated in the bay or, as in this case, the angler take it as an accessorial trophy.

The presence of *R. brachyptera* in the Gulf of Tehuantepec is confirmed in this note. This information increases the ichthyological knowledge of regional diversity, but is necessary to encourage the research about ecology of *R. brachyptera*, in order to know more details about it, because this species is included in the IUCN red list (Collete, 2010).

Table 1. Comparison of measurements (in mm) and counts of *Remora brachyptera*.

Morphological characters	Present study	Lowe (1839)	Paulin & Habib (1982)	Hatooka & Kai (2013)	Myoung <i>et al.</i> (2015)	Bañón <i>et al.</i> (2017)
No. Specimens	1		15		2	1
Total length (TL)	210.62					141
Standard length (SL)	182.62		120-244		180.2-209	121
COUNTS						
Pairs of laminae in cephalic disc	17		16-17		16	16
Dorsal rays	27	28	26-30	27-37	30	28
Anal rays	25	24		22-34	25-27	23
Pectoral rays	25	26		23-28	25	22
Pelvic rays	1, 5	1,5			1, 5	1, 5
Gill rakers on first gill arch	1+11		1-3+9-12		1+10-11	1+11
MEASURES % OF SL						
Head length	27.6		26.5 (25.4-27.7)		26.4-27.7	24.8
Eye diameter	3.2		3.5 (3.2-4.1)		3.4-4.2	4.1
Snout length	12.9				13-13.5	10.7
Head width	18.1		16 (14.3-18)		15.4-16.2	
Cephalic disk length	32.6		31.3(29.4-33.1)		31.1	28.9
Cephalic disk width	16.9		16.9 (15.2-19.2)		14.9	12.4
Pre-dorsal length	58.5		56.5 (52.4-60.8)		56.1-62.8	56.2
Pre-anal length	62.1					
Maximum height	13.7		15.3 (13.9-17.1)		15.7-17.4	
Length of the dorsal fin	37.0		37.6 (32.5-42.4)		38.4-39.7	35.5
Length of the anal fin	32.62				31.5-33.4	31.4
Length of the pectoral fin	14.0				11.6-14.2	
Pelvic fin length	12.1				9.8-12.6	12.4
Caudal fin length	19.0				19.2-20.2	
Height of the caudal peduncle	6.5		6.2 (4.5-7.1)		5.9-6.8	

Table 2.- Comparison of characters between the three remora species in the Gulf of Tehuantepec (According with Collette, 2002).

Morphological characters	<i>R. brachyptera</i>	<i>R. australis</i>	<i>R. remora</i>
Laminae on cephalic disc	14-17	24-28	16-20
Gill rakers	<21	17-20	29-34
Dorsal Rays	27-34	25-27	22-26
Cephalic disk as % standard length	28-40%	50%	
Caudal fin type	Emarginated	Forked	Forked
Dorsal fin Origin	Front to de anal fin origin	Just to origin of anal fin	Behind to the anal fin origin

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