Zootaxa 5458 (1): 093–107
https://www.mapress.com/zt/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

https://doi.org/10.11646/zootaxa.5458.1.5
http://zoobank.org/urn:lsid:zoobank.org:pub:C8515829-1A75-42E4-AAFB-5BD7CEB20934

A new species of *Eustomias* (*Nominostomias*) (Stomiiformes: Stomiidae) from the Kermadec Ridge—Tonga Trench region, western South Pacific Ocean, with notes on the barbel morphology of *E. trewavasae*

ANDREW L. STEWART[1*], CHRISTOPHER P. KENALEY[2] & TRACY SUTTON[3]
[1.] *Museum of New Zealand Te Papa Tongerewa PO Box 467, Wellington 6011, New Zealand.*
[2.] *Department of Biology, Boston College, Chestnut Hill, MA 02467, USA.*
cpkenaley@gmail.com; https://orcid.org/0000-0003-3832-7001
[3.] *Guy Harvey Oceanographic Research Center, Nova Southeastern University, 8000 N. Ocean Dr., Dania Beach, FL, USA.*
tsutton1@nova.edu; https://orcid.org/0000-0002-5280-7071
**Corresponding author: Andrews@tepapa.govt.nz; https://orcid.org/0000-0001-8354-3032*

Abstract

A new species of dragonfish *Eustomias* (*Nominostomias*) *robertsi* is described from the western South Pacific Ocean. The new species, the first record of a member of *Eustomias* (*Nominostomias*) Group III (*sensu* Gibbs *et al.* 1983) from the region, it is most similar to *Eustomias suluensis* in barbel morphology. However, it has a smaller proximal and distal bulb distance, the smallest distal inter–bulb value in the group, and much longer terminal filaments.

Comments are also provided on the morphology of the diagnostic features on the barbel of *Eustomias trewavasae*, including an important character overlooked in the original description of the species. The barbel morphology is redescribed taking this into account.

A brief observation is made recording the first record of the subgenus *Triclonostomias* from the western South Pacific Ocean.

He tangohanga

Kua tūhuratia te morno ikaniwha hou a *Eustomias* (*Nominostomias*) *robertsi*. Ko te whakāmarama, nō te uru o Te Moana-nui-a-Kiwa. Koinei te mauhanga tuatahi o te whānau *Eustomias* (*Nominostomias*) Rōpū III (e ai ki a Gibbs mā. 1983). I runga i ngā mātai weteāhua i ngā hurungutu, he rite tonu tōna āhua ki *Eustomias suluensis*. Heoi he iti ake te matara i waenga i te tōpuku roto me te tōpuku waho, arā, te uara matara ā-tōpuku iti rawa o tōna kāhui, oti anō he tino roa ngā pito tāpiha.

Kua tukuna anō ētahi tākupu e pā ana ki te mātai weteāhua o ngā tūāhua kohura o te hurungutu o *Eustomias trewavasae*, tae atu ki tētahi tūāhua nui i mahue i te whakaaturanga tuatahi o tēnei momo. I runga i tērā, kua whakaahuatia anō ngā kōrero rnō te mātai weteāhua o ngā hurungutu.

Kua titoa tētahi tirohanga poto mō te hopu i te mauhanga tuatahi o te puninga āpiti o *Triclonostomias* nō te uru o Te Moana-nui-a-Kiwa.

Key words: Taxonomy, marine fish, deep-sea, identification, dragonfish

Introduction

The dragonfish genus *Eustomias* is the most specious genus in the family Stomiidae with 130 recognised species (Fricke *et al.* 2023), and several more as yet undescribed. The genus has a conservative body plan, with overlapping counts of unpaired fin rays and photophores across many species. Species are primarily differentiated by the mental barbel configuration, sometimes in combination with the number of pectoral and pelvic fin rays, the presence or absence and length of a mid-ventral groove, and the number and position of depressible teeth. These differences are used to cluster species into 10 subgenera (Regan & Trewavas 1930; Gibbs *et al.* 1983; Prokofiev 2018) with a handful of species unassigned to a subgenus.

Accepted by G. Short: 24 Apr. 2024; published: 27 May 2024

Gibbs (1986) concluded that species of *Eustomias*, which were previously considered relatively few in number, widely distributed and highly variable, were extremely diverse. Some are widespread (e.g. *Eustomias macronema*), others have highly restricted distributions. Major revisions of the genus included Gibbs *et al.* (1983)—25 new species and five restored from synonymy; Gomon & Gibbs (1985)—nine new species and three restored from synonymy; Clarke (1998, 1999, 2000, 2001)—26 new species; as well as several shorter papers describing one to three species (e.g. Sutton & Hartel, 2004; Koeda & Ho, 2019; Prokofiev, 2020a, b; Prokofiev & Orlov, 2022).

In 2008, during examination of specimens at the Museum of New Zealand (NMNZ) for the stomiid chapters in *The Fishes of New Zealand*, the second author came across a single specimen of an undescribed species of *Eustomias*. As it was from the northern Kermadec Trench—southern Tonga Trench region, outside of the New Zealand EEZ, it was not included in the species accounts in that chapter (Kenaley & Stewart 2015). A second specimen was subsequently caught during the 2016 Kermadec Expedition (Clark *et al.* 2017), inside the New Zealand EEZ. This new species is similar to *Eustomias suluensis*, but has several differences, and is herein described as new to science. This is the tenth species in the subgenus *Nominostomias* Group III.

Methods and material: Methods and counts for the photophores, and measurements of the barbel follows protocols established for the genus by Gibbs *et al*. (1983). Measurements were taken with dial callipers to the nearest 0.1 mm. The bulbs along the mental barbel are numbered from the most proximal to the most distal. Abbreviations for morphology follow Hubbs & Lagler (1958); SL = Standard Length, HL = Head Length, ED = eye diameter; SnL = snout length. Institutional abbreviations follow Sabaj (2020, 2022). Sex was determined by dissection on the right side.

Taxonomy

Eustomias (*Nominostomias*) *robertsi* sp. nov. Figs 1–5; Table 1

Holotype NMNZ P.013765, 232.1 mm SL, gravid female; Kermadec Trench/Tonga Trench, 24° 07.0'–25° 22.0'S, 175° 15.0'–11.0'W; fine mesh midwater trawl, depth n.r., RV *James Cook*, Stn. JCO 7617/063, 13 Dec 1976.

Paratype NMNZ P.058340, 144.6 mm SL, female?; east of Macauley Island, Kermadec Islands, 30° 15.88'–16.03'S, 178° 11.57'–09.22'W; meso–pelagic trawl, 100–1000 m over 1399 m, RV *Tangaroa*, Stn. TAN 1612/069, 28 Oct 2016.

Diagnosis: The new species is diagnosed from others in *Eustomias* (*Nominostomias*) Group III by the combination of the barbel morphology of: A very small distance between proximal and distal bulbs (0.1–0.2 % SL; 0.01–0.07 times distal bulb length), and three long terminal filaments, longest 30.4–42% SL.

Description: Holotype, paratype in parenthesis. D 25 (24), A 37 (39), P 3 (3), V 7 (7). OV 33 (33), VAL 19 (20), OA 52 (53); IP 7 (7), PV 34 (27), VAV 19 (20), AC 19 (21), IC 79 (75).Barbel length 42.1% SL (45.9% SL), axil internally pigmented (slightly faded on holotype); two terminal bulbs, the proximal small, round 0.5% SL (0.6% SL), position on the barbel at 40.2% SL (43.1% SL) length, distal bulb larger, oval, length 1.5% SL (1.7% SL), width 42.8% (42%) length. Proximal bulb 34.3% (36%) length of the distal bulb. Bulbs separated by a very short distance, 0.1% SL (0.2% SL). Distal bulb with three long filaments, longest 42% SL (30.4% SL), others 28.3% SL (15.6% SL). The holotype has a simple branch at about. 69% the length of the longest filament, about. 20.2% the length of the branch, with a slight elongate thickening, its length 0.2% SL (0.9% SL) (see Fig. 2). The paratype has two short filaments arising from a very short common stem, visible under magnification. The terminal filaments have granular inclusions along their lengths, most pronounced in the longest filament of the holotype. Post orbital light organ 21.9% ED (17.5% ED).

Head moderate, 14.3% SL (16.8% SL); snout pronounced, 2.8% SL, 19.8% HL (5.5% SL, 32.5% HL), eye round, large, 2.9% SL, 20.9% HL (2.3% SL, 16.5% HL). The anterior–most fangs in the maxilla and dentary, the two smaller teeth in front of these, and two tiny ones behind fixed, all the other teeth depressible (Fig. 3). Suborbital photophore small, elongate, greatest length 21.9% ED (17.5% ED). Pre–dorsal length 85.9% SL (84.6% SL), pre–anal length 73.8% SL (73.7% SL), anal fin length 23.6% SL (25% SL). Pre–pelvic length 56.6% SL (52.3% SL). Caudal peduncle depth 1.2 % SL (1.2% SL). Ventral groove absent.

Both specimens of *Eustomias robertsi* have suffered some damage making accurate counts of the number of pre–dorsal spots difficult and unreliable. The range for this character amongst species of Group III has been recorded as seven to nine (Gibbs *et al.* 1983).

Colour: (Fig. 4) Head and body skin uniform black. The barbel has slight external dark pigmentation at base; a narrow but distinct internal axis of dark pigmentation, breaking up into a line of melanophores distally (axis pigment faded on holotype), terminating in a small black pigment cap and streak on the proximal end of the proximal bulb (present on both specimens). Proximal bulb pale grey-green. The distal bulb grey-green with a slight violet flush on distal end. Terminal filament inclusions and bulblet grey-green; rapidly fading to a pale yellow–tan on death. Following preservation the entire body of the holotype faded to light brown; body photophores black.

Discussion: The new species is a member of the *Nominostomias* sub-genus *sensu* Gibbs *et al.* (1983), which are diagnosed by a combination of: Pectoral fin with three separated rays, seven pelvic fin rays, barbel without external pigmentation (axis slightly pigmented), branches or rows of dark spots proximal to terminal bulb absent; one or two terminal bulbs. Wide ventral body groove absent, or groove short, narrow, shallow. Photophore counts high (IC seldom less than 72; see Table 2).

FIGURE 1. *Eustomias robertsi* n. sp. holotype, NMNZ P.013765.; 232.1 mm SL. Illustration: Michelle Freeborn.

FIGURE 2. Terminal barbel morphology of *Eustomias robertsi* n. sp. holotype, NMNZ P.013765. Illustration: Michelle Freeborn.

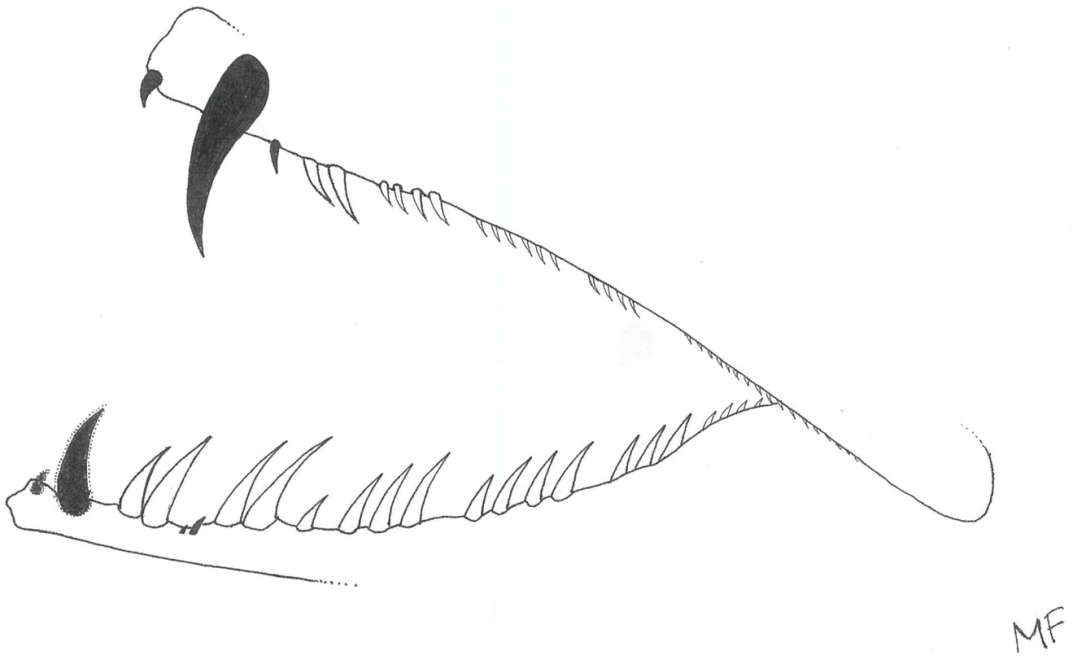

FIGURE 3. Teeth of *Eustomias robertsi* n. sp. holotype, NMNZ P.013765. Fixed teeth (black), remaining teeth depressible. Illustration by Michelle Freeborn.

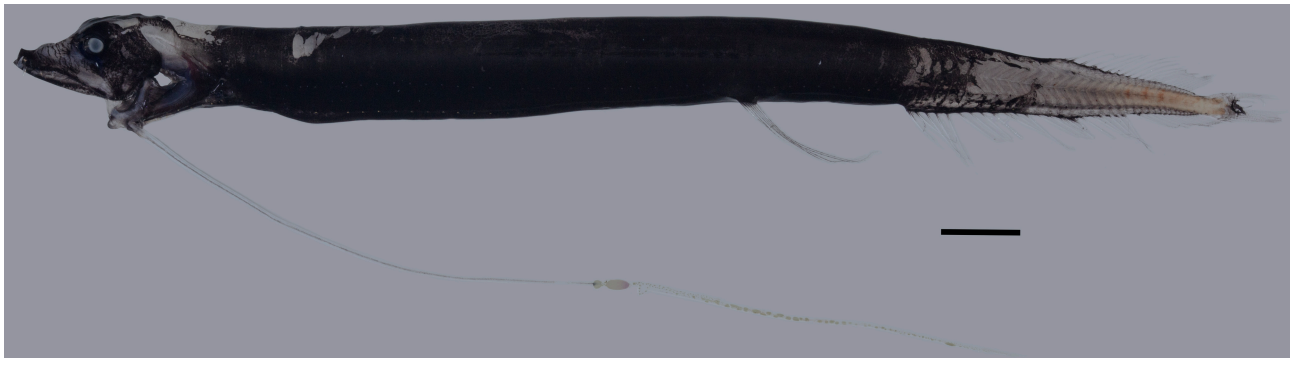

FIGURE 4. Freshly caught paratype of *Eustomias robertsi* n. sp. NMNZ P. 058340; 144.6 mm SL. Photo Carl Struthers/Thom Linley.

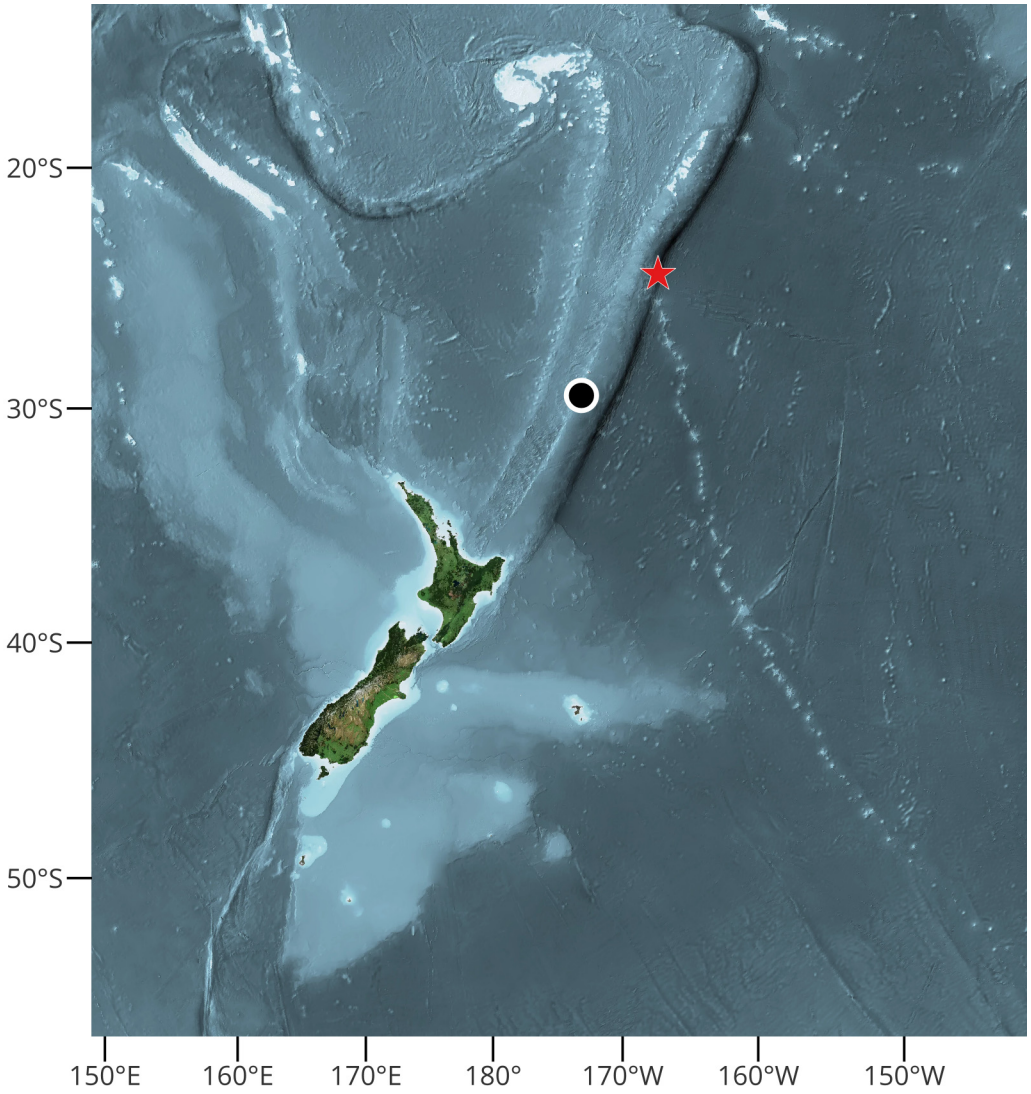

FIGURE 5. Capture locality of *Eustomias robertsi*; red star = holotype. Prepared by Thom Linley.

Within *Nominostomias*, this new species is a member of Group III *sensu* Gibbs *et al*. (1983), diagnosed by having two terminal bulbs; three or more filaments emerging from distal bulb, simple to long with prominent bulblets and/or inclusions.

With the addition of *E. robertsi, Nominostomias* Group III contained 10 species (see Gibbs *et al.*, 1983, and Table 1). Within this group, *E. robertsi* is most similar to *E. suluensis* in barbel morphology, having a slightly rounded proximal bulb followed by a larger, elongate distal bulb, and three simple terminal filaments arising from the end of the distal bulb. However, the distance between the proximal and terminal bulb of *E. robertsi* is much less (0.1–0.2% SL *cf.* 2.4–2.8% SL), and the distal bulb is slightly larger (1.5–1.7% SL *cf.* 1.2–1.3% SL), relative to the proximal (2.8–2.9 x proximal bulb diameter *cf.* 1.5–1.8 x). The barbel length (to the distal margin of the distal bulb) of *E. robertsi* is shorter that *E. suluensis* (42.1–45.9% SL *cf.* 52–59% SL) but the terminal filaments are longer (30.4–42% SL *cf.* 15–20% SL). There are small but clearly discernible bulblets (towards the distal end of one of the longest filaments) on both specimens of *E. robertsi* (*cf*. no discernible bulblets), and the longest filament branches with a slight swelling distal to the separation. The terminal filaments of *E. robertsi* arise independently from the terminal face of the distal bulb whereas in *E. suluensis* two filaments come off near the base of the central (longest) filament. The axil pigmentation of *E. suluensis* extends beyond the proximal bulb to end in a pigment cap on the proximal end of the distal bulb whereas in *E. robertsi* the axil pigmentation terminates in a cap marking on the proximal bulb. Some tiny diffuse dark spots are on the distal bulb.

The inter-bulb distances are smaller in *E. robertsi* compared with the other nine species: 0.1–0.2 % SL *cf.* 0.5–3.5 % SL, and 0.01–0.07 of the distal bulb length *cf.* 0.4–3.6 (Gibbs *et al.*, 1983; Table 4). In the overall length of the barbel, *E. robertsi* is similar to *E. bertelseni*, *E. kreffti, E. medusa*, *E. multifilis* and *E. posti*, however these species generally have more and/or different terminal filaments (occasionally 3, usually 4–16) that are much shorter (5–35% SL) *cf*. 3 filaments, 30.4–42 % SL. Only *E. kreffti* has terminal filaments with lengths overlapping with *E. robertsi*, however the number and morphology of those filaments is markedly different comprising two short plus three to nine long filaments in *E. kreffti* (Gibbs *et al* 1983; fig. 18b–c). Prokofiev (2020b) reported on a species he referred to as *E. gr. melanostigma* but the inter-barbel distance was 1.6% SL, and 1.6 times the length of the distal bulb.

Most members of *Eustomias* (*Nominostomias*) Group III are tropical to subtropical, and often restricted in distribution. Only *E. melanostigma* is widespread, from the Caribbean Sea to the western central Pacific Ocean but is not known to occur south of 10° S. *Eustomias kreffti*, *E. melanonema*, and *E. posti* are restricted to the tropical Atlantic Ocean. The other species are similarly tropical, in the eastern Indian Ocean, to the western and central Pacific. This is the first record of a species of *E.* (*Nominostomias*) Group III species from the New Zealand EEZ, and one of the southern–most species in the group. Only the holotype of *E. multifilis* was taken farther south, off southern Western Australia at 33° 34'S. For other values see Table 1.

Distribution: *Eustomias robertsi* is known only from two specimens taken on the Kermadec Ridge, and in the southern Tonga Trench region of the western South Pacific Ocean (Fig. 5).

Maximum size: 232.1 mm SL

Etymology: We take great pleasure in naming this species after our friend and colleague Dr. Clive Roberts, the former Curator of Fishes at the Museum of New Zealand *Te Papa Tongarewa*. Clive conceived, secured funding for, and directed a 20–year project to describe the fish fauna of New Zealand, culminating in publication of the award-winning multi-volume 2,000 page *The Fishes of New Zealand* (Roberts *et al.* 2015).

Variation and re–description of the mental barbel of *Eustomias trewavasae* (Fig 6a, b)

The most commonly collected species of *Eustomias* in the New Zealand EEZ, *E. trewavasae*, displays considerable variation in barbel morphology, particularly the ornamentation and length of filaments emerging from the distal end of the second bulb compared to the frequently repeated illustration of the holotype (Fig 6a). In the original description, Norman (1930) recorded, and illustrated, these filaments as a short tuft off the distal end of the second bulb. Re-examination of the barbel of the holotype (BMNH 1930.1.12.531) shows that key information was missed. The holotype does have a number of short filaments, as illustrated, but it also has at least two long filaments bearing bulblets, off the distal base of bulb two, reaching almost half-way to bulb three (Fig. 6b). Norman's specimen is very small, 60 mm SL; and the first (proximal-most) bulb is also not mentioned in the description. However, he illustrated it as a slightly denser ovoid body in the stem, barely wider than the stem itself, and well separated from the second bulb bearing filaments. He may have considered it a thickening of the stem rather than a nascent bulb. Norman (1930:314) also noted that 'A coloured sketch of the barbel of this species was made by Mr E.R. Gunther on board the 'Discovery'.' Which, if that sketch was used as the basis for Norman's figure, may also account for the error. Given also that the section of the barbel Norman illustrated was only about 9 mm long, it is understandable that the longer filaments were overlooked. At some stage the terminal bulb of the holotype has been lost (see Fig. 6b).

Parin & Pokhil'skaya (1978), recording data from a large specimen (261 mm SL), illustrated the barbel with three short and five very long filaments arising from the distal end of bulb two, the longest reaching past the terminal bulb. Most of the filaments bear numerous branches. The illustration shows a well-developed proximal-most bulb with a shorter distance to the second bulb compared to the Norman illustration; and the distal bulb bearing a short filament. They record five bulbs along the stem, but this may be because they counted the indentation of the distal bulb as two. It appears that Parin & Pokhil'skaya counted the bulbs starting with the distal-most as the filaments are recorded as being 'behind the second bulb' rather than arising from its distal marginal. The figure they provide (Parin & Pokhil'skaya 1978. Fig. 2A) matches well with most material in the Museum of New Zealand *Te Papa Tongarewa*.

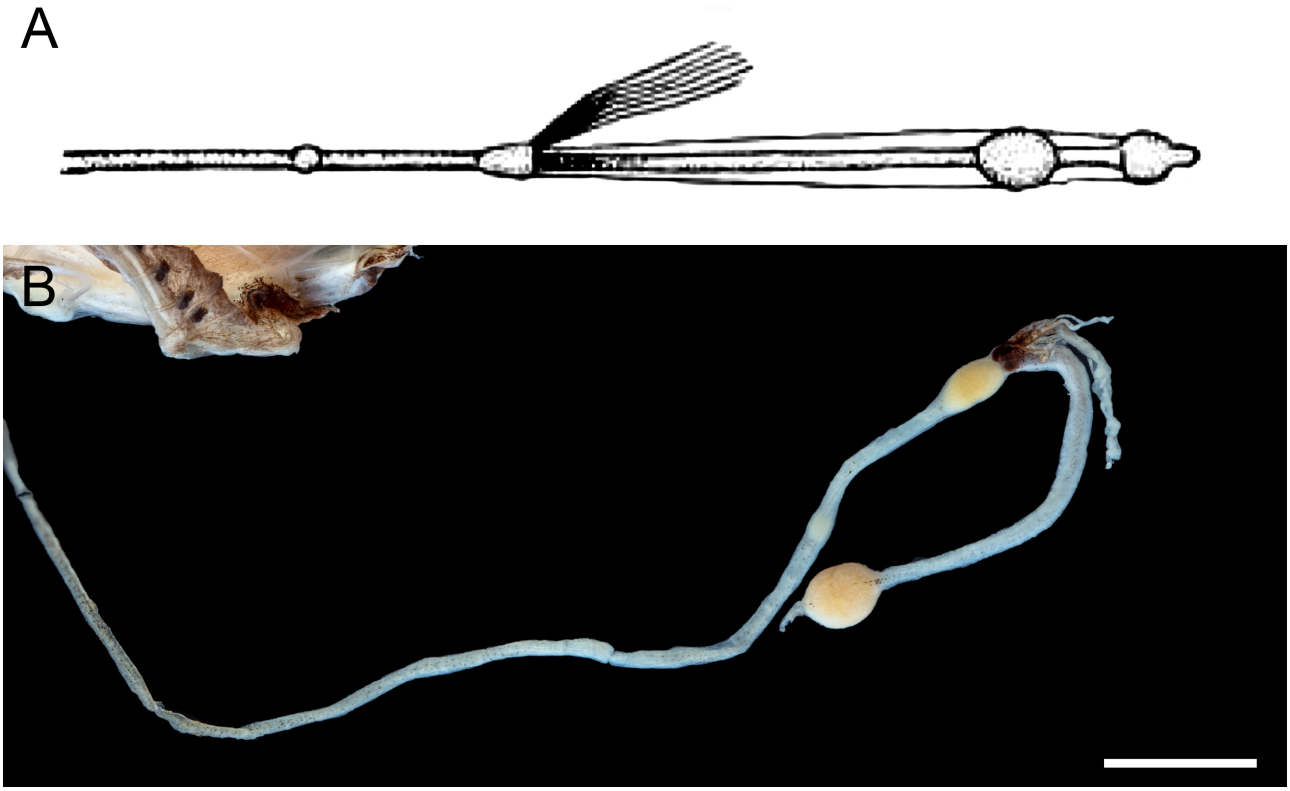

FIGURE 6. a) Original illustration of barbel of the holotype of *Eustomias trewavasae* BMNH 1930.1.12.531 (after Norman 1930: Fig. 23). **b**) photograph of the barbel. Photo Kevin Webb, Trustees of the Natural History Museum, London, and Thom Linley.

Examination of twelve specimens of *Eustomais trewavasae* held at the Museum of New Zealand *Te Papa Tongarewa* (114.5–286.8 mm SL) have found the usual barbel morphology is as follows:

The stem of the barbel is largely unpigmented except for the proximal axis, the base of the stem is externally pigmented, the melanophores becoming sparse and lost within a short distance from the base. The bulbs appear to be bisected by the axial line on one side. The distal end of the second bulb has a distinct external black marking, and a cluster of filaments arises from one side of the bulb, externally pigmented for a distance approximately the bulb length, distally becoming clear with inclusions and bulblets randomly distributed, especially along the lengths of the longest filaments. The diameter of bulb one is sub–equal in size to bulb two and the gap between them. The third and fourth bulbs are very close, the space between them equal to, or less than the diameter of the third bulb. The distal bulb is ovoid, often constricted, and sometimes internally split giving the impression of two adjunct bulbs. The proximal section has a granular appearance, the distal section smooth. The distal end often has tufts of one to five short, fine filaments.

Gibbs & Craddock (1973, Fig. 2) examined 13 specimens of *E. trewavasae*, and recorded one with four bulbs and no filaments, and another in which filaments arise from the distal end of the first bulb. Variation was found in one specimen (NMNZ P.022087, 174.3 mm SL), which has a short side-branch off the main stem between bulbs two and three, terminating in a bulb bearing a terminal cluster of filaments bearing tiny swollen terminal micro-bulblets. This specimen also lacks the long filaments, but has a cluster of short ones, the longest filament is 4.53% SL, similar to what Norman (1930) illustrated. Selected measurements from 12 NMNZ specimens are given in Table 2 and compared with ranges given by Gibbs & Craddock (1973), and Parin & Pokhil'skaya (1978).

TABLE 1. Selected counts and measurements of *Eustomais robertsi* n. sp. compared with other species in *Nominostomias* Group III. Significant differences in bold.

	Eustomias (*Nominostomias*) *robertsi* n. sp.		Data taken from Gibbs *et al* 1983								
	Paratype NMNZ P.058340	Holotype NMNZ P.013765	*E. suluensis**	*E. bertelseni**	*E. kreffti**	*E. medusa**	*E. melanonema*	*E. melanostigma**	*E. melanostigmoides**	*E. multifilis**	*E. posti**
	144.6 mm SL	232.1 mm SL	n = 2, 109.1–138.3 mm SL	n = 3, 66.5–93.2 mm SL	n = 10, 76.4–125.2 mm SL	n = 17, 73.0–152.8 mm SL	n = 10, 67.6–147.8 mm SL	n = 10, 57.5–135.8 mm SL	n = 17, 67.5–165.0 mm SL	n = 1, 144.5 mm SL	n = 9, 81.3–156.3 mm SL
D	24	25	24–25	24–26	23–26	24–27	23–26	23–26	23–26	23	24–26
A	39	37	37–39	36–38	33–39	36–40	35–40	36–40	37–40	34	36–39
P	3	3	3	3	3	3	3	3	3	3	3
V	7	7	7	7	7	7	7	7	7	7	7
OV	33	33	32–33	32–33	30–34	32–35	30–33	31–35	32–34	30	32–34
VAL	20	19	18	18	18–19	17–20	17–20	17–21	17–20	18	17–19
OA	53	52	50–51	49–51	49–52	50–54	48–51	49–54	51–53	48	51–52
IP	7	7	7	7	7	7	7	7	7	7	7
PV	27	34	33	31–33	30–34	32–35	31–33	31–34	32–34	30	32–34
VAV	20	19	16–18	17–18	16–20	17–20	17–19	17–20	16–19	17	16–18
AC	21	19	19–20	19–20	17–20	17–20	17–20	17–20	18–20	15	17–20
IC	75	79	75–78	75–78	73–78	75–79	73–78	75–78	75–79	69	74–77
Terminal filament number	**3**	**3**	**3 short w. multi bulblets**	**4 long**	**2 long+ 3–9 short**	**7–10 short complex**	**5–9 short, no bulblets**	**3–7 short, no bulblets**	**4–6 short, simple, no bulblets**	**16 short**	**4 long w multi bulblets**
Ventral groove	absent	absent	NR	NR	NR	NR	NR	NR	NR	NR	NR
Measurements mm (% SL)											
Barbel length (incl filaments)	111.1 (76.8% SL)	174.9 (75.3% SL)									
Barbel length	**66.4 (45.9% SL)**	**97.75 (42.1% SL)**	**52–59% SL**	43–60% SL	37–44% SL	36–65% SL	76–92% SL	31–82% SL	67–86% SL (> 80 mmSL)	45% SL	43–50% SL
Proximal bulb position**	62.4 (43.1% SL)	93.4 (40.2% SL)									

.....*Continued on the next page*

TABLE 1. (Continued)

	Eustomias (*Nominostomias*) *robertsi* n. sp.		Data taken from Gibbs *et al* 1983								
	Paratype NMNZ P.058340	Holotype NMNZ P.013765	*E. suluensis**	*E. bertelseni**	*E. kreffti**	*E. medusa**	*E. melanonema*	*E. melanostigma**	*E. melanostigmoides**	*E. multifilis**	*E. posti**
Proximal bulb diameter	**0.9 (0.6% SL)**	**1.2 (0.5% SL)**	**0.7–0.8% SL**	0.9–1.4% SL	1.0–1.2% SL	**0.2–0.5% SL**	0.7–1.5% SL	0.3–1.6% SL	**0.3–0.7% SL**	**0.7% SL**	0.8–1.2% SL
Distal bulb position†	63.9 (44.2% SL)	94.25 (40.6% SL)									
Distal bulb greatest length	**2.5 (1.7% SL)**	**3.5 (1.5% SL)**	**1.2–1.3% SL**	0.9–1.5% SL	1.1–1.5% SL	**0.5–1.1% SL**	1.7–2.8% SL	1.0–2.2% SL	0.7–1.5% SL	**0.8% SL**	0.8–2.0% SL
Distal bulb length/width	**2.5/1.05 (2.4)**	**3.5/1.5 (2.3)**					~ 2 x				
Proximal-Distal bulb length inter-bulb distance ‡	**0.25 (0.2% SL)**	**0.25 (0.1% SL)**	**2.4–2.8% SL**	**2.7–3.0% SL**	**0.5–2.0% SL**	**0.8–2.4%SL**	**1.4–3.5% SL**	**2.1–4.1%SL**	**1.0–2.4% SL**	**1.6% SL**	**1.9–2.6% SL**
Inter bulb distance/distance bulb	**0.01 x**	**0.07 x**	**1.9–2.4 x**	**2.0–3.0 x**	**0.4–1.6 x**	**1.4–3.6 x**	**0.6–1.8 x**	**1.7–3.8 x**	**1.6–2.4 x**	**1.9 x**	**1.3–2.5 x**
Distal bulb/proximal bulb	**2.8 x**	**2.9 x**	**1.5-1.8 x**	**1**	**1.2-1.9 x**	1.5-3.0 x	**1.5-2.5 x**	**1.2-2.5 x**	1.5-4.3 x	**1.2 x**	**0.9–2.6 x**
Terminal filament length (longest)	**44 (30.4% SL)**	**97.5 (42% SL)**	**15–20% SL**	**17–~21% SL**	23–35% SL	**5–13% SL**	**<6% SL**	**<10% SL**	**<9% SL**	**1.3% SL**	**13–29% SL**
Sec terminal filament (second longest)	22.6 (15.6% SL)	65.7 (28.3% SL)									
Terminal Filament Bulblet length	1.35	0.4									
Ratio main/sec barbel	1.9	1.5									
Premaxilla teeth (depressible)	13	12									
Maxillary teeth (depressible)	8	16									
Mandibular teeth (depressible)	17	20									
Mid-dorsal spots	+3	+3	9	8–9	8	7–8	8	7–9	8–9	7	7–8
Pre-dorsal length	122.3 (84.6% SL)	199.5 (85.9% SL)	83.2% SL	83.7% SL	83.8% SL	82.4% SL	NR	84.6% SL	83.9% SL	86.2% SL	84.1% SL

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TABLE 1. (Continued)

Eustomias (*Nominostomias*) *robertsi* n. sp.			Data taken from Gibbs *et al* 1983								
	Paratype NMNZ P.058340	Holotype NMNZ P.013765	*E. suluensis**	*E. bertelseni**	*E. kreffti**	*E. medusa**	*E. melanonema*	*E. melanostigma**	*E. melanostigmoides**	*E. multifilis**	*E. posti**
Pre-anal length	106.6 (73.7% SL)	171.2 (73.8% SL)	69.6% SL	71.3% SL	72.1% SL	71.3% SL	NR	76.3% SL	72.4% SL	76.0% SL	72.3% SL
Pre-pelvic length	85.7 (52.3% SL)	131.5 (56.6% SL)	56.1% SL	55.9% SL	56.9% SL	55.3% SL	NR	57.1% SL	58.1% SL	59.2% SL	57.4% SL
HL	24.3 (16.8% SL)	32.8 (14.3% SL)	13.7% SL	12.2% SL	12.2% SL	11.1% SL	NR	13.2% SL	13.5% SL	14.0% SL	13.4% SL
SnL	7.9 (5.5% SL)	6.5 (2.8% SL)	damaged	5.4% SL	3.7% SL	3.5% SL	NR	6.2% SL	6.0% SL	4.7% SL	5.1% SL
Orbit Length	4 (2.3% SL)	6.85 (2.9% SL)	2.6% SL	2.3% SL	2.7% SL	2.7% SL	NR	2.9% SL	2.5% SL	2.9% SL	2.8% SL
Post Orb photophore diam.	0.7 (0.7%)	1.5 (0.9%)	0.7% SL	0.6% SL	0.4% SL	0.4% SL	NR	0.7% SL	0.7% SL	1.7% SL	1.6% SL
Anal fin Length	36.1 (25% SL)	54.9 (23.6% SL)	25.7% SL	24.5% SL	24.6% SL	23.5% SL	NR	24.0% SL	25.0% SL	NR	26.5% SL
Caudal Peduncle least depth	1.8 (1.2% SL)	2.9 (1.2% SL)	1.4% SL	2.30%	1.4% SL	1.5% SL	NR	2.2% SL	1.5% SL	NR	1.7% SL
Distribution	**South–west Pacific**	**Philippines**	**East Indian Ocean**	**Tropical Atlantic**	**North-west Pacific/ Oahu**	**tropical eastern Atlantic**	**Caribbean to western central Pacific**	**Hawaii**	**south–western Australia**	**subtropical western south Atlantic**	

* Single percentage values are from primary types only (Gibbs *et al*. 1983)

** From base of barbel to start of bulb

† From base of barbel to origin of bulb

‡ Posterior proximal-anterior distal bulb length

TABLE 2. Selected counts and measurements from Museum of New Zealand specimens of *Eustomias trewavasae* compared with those published by Gibbs & Craddock (1973), and Parin & Pokhil'skaya (1978).

	NMNZ *Eustomias trewavasae*	Gibbs & Craddock, 1973	Parin & Pokhil'skaya, 1978
SL	n = 12; 114.5–286.8 mm SL	n = 13; 45.7–178.6 mm SL	261 mm SL
D	21–26	20–26	22
A	30–37	31–37	35
Pec	3–4	3	3
Pelv	7	7	7
OV	25–30	30–32	30
VAL	14–17	15–17	15
OA	40–46	46–49	45
OC	58–65	60–65	[63]
IP	7	7–8	7
PV	29–32	29–32	30
VAV	14–16	14–17 (5–6 over A)	15
AC	13–22	14–17	18
IC	65–73	65–72	70
Bulb 4 constricted	Y		N
Filaments off bulb number	2	largest has no filaments	2
Number of filaments	many		5 + many
Filaments with bulblets		mostly yes	N?
Terminal filament	variable	Y, several in one sppm	Y?
	% SL	**% SL**	**% SL**
Barbel L	52.05–80.54%	44.1–73.3% [28.9–29.5 , < 70 mm SL]	88.50%
Barbel to Bulb L	40.96–63.46%		
Bulb 1 Diameter	0.58–1.22%		
Bulb 1–2 interspace	0.57–1.28%		
Barbel to Bulb 2 L	42.73–64.99%		
Bulb 2 Diameter	0.61–1.32%		
Bulb 2–3 interspace	7.59–15.95%		
Barbel to Bulb 3 L	51.29–80.53%		
Bulb 3 Diameter	0.37–0.73%		
Bulb 3–4 interspace	0.27–0.66%		
Barbel to Bulb 4 L	57.86–80.89%		
Bulb 4 D	0.44–0.87%		
Longest filament off bulb 2	[4.53] 8.40–13.47%		
Sn–D origin	82.95–87.66%	81.6–86.0%	84.70%
Sn–A origin	70.88–78.38%	72.7–76.4%	73.30%
Sn–Pelvic origin	53.99–69.43%	57.6–62.5%	58.10%
HL	11.83–14.36%	12.1–17.0%	13.50%
ED [% HL]	13.33–21.79%	17.1–21.8%	
SnL [% HL]	26.23–51.33%	33.1–40.6%*	
PO photophore [% HL]	2.00–7.88%		
		* data from six specimens > 125 mm SL	

Flynn & Pogonoski (2012:75) illustrated a fresh-caught specimen of *E. trewavasae* with the elongate filaments arising from the distal end of bulb two (which they describe as the proximal bulb). Their image also shows bulb one a pale green, bulb two and four slightly darker, and bulb three blueish.

Range extension of *Eustomias* (*Triclonostomias*)

A single known specimen in the Museum of New Zealand collection (NMNZ P.017937) has a terminal barbel morphology similar to that of *Eustomias* (*Rhynchostomias*) *parri*, but has an internally pigmented stem and long twin filaments distinctly proximal to the swollen terminal bulb, each terminating in a round bulblet bearing tiny threads. The pectoral fins have broken off and the specimen is small (96 mm SL), but it has eight pelvic fin rays. In other aspects this specimen shares features of the subgenus *Triclonostomias*, and a hand-written note in the jar states "*Eustomias furcifer* group (per unpublished study by Gibbs, Clarke & Gomon, discontinued in 1988.)".

E. furcifer is a member of the subgenus *Triclonostomias*, whereas *E. parri* is a member of the subgenus *Rhynchostomias*. However the subgenera have been constructed on morphological and meristic features and these have not been tested using molecular analysis because of the paucity of tissues for analysis. The loss of the pectoral fins prevents certain subgenus placement, but given Gomon, Clark, and Gomon's expertise in this genus, this record follows their identification.

Fricke *et al.* (2023) records *E. furcifer* as circumglobal, but it is known from a only few specimens, and all are from the Atlantic (e.g. Santos *et al.* 1997, Harold 2016, Sutton *et al*. 2020). The loss of skin from most of the posterior body, with the associated photophores, precludes confirming the specimen above as one of the five known species in *E.* (*Triclonostomias*), or a new species. This note is the first record of the subgenus *Triclonostomias* from the western South Pacific Ocean.

Discussion: The state of some *Eustomais trewavasae* and the *E.* (*Triclonostomias*) specimens highlights some of the problems with this genus, namely that species are small, usually caught in low numbers, and susceptible to damage, with loss of critical characters. The mental barbel of *Eustomais* offers challenges to the researcher, frequently with damage, or if crucial diagnostic filaments are lying appressed against the main stem, and easily overlooked, especially in preserved specimens. With fresh material, time should be taken to gently tease out these filaments and fix with full strength formalin to help mitigate this problem. Unfortunately, little can be done to make up for loss of photophore information when the specimen is skinned.

As well as occurring in low numbers, many species of *Eustomias* are small which also reduces their incidence of capture as evidenced by account of the *E.* (*Triclonostomias*) above, and the nearly 40 years between the capture of the holotype and paratype of *E. robertsi*. However, increased sampling of the meso- and bathy-pelagic regions of the New Zealand EEZ using fine-mesh nets is expected to recover more new records of stomiiformes, as well as undescribed species. With an average depth of just over 2000 m most of the New Zealand EEZ is still largely unexplored.

Acknowledgements

Special thanks go to James Maclaine of the Natural History Museum (London) for providing the photograph of the barbel of the holotype of *Eustomais trewavasae* (Figure 6b). ALS also thanks colleagues Michelle Freeborn (Figures 1–3), Carl Struthers who took the image used for Figure 4, Thom Linley for processing Figures 4 and 6, and produced the distribution map (Figure 5), and Peter McMillan greatly improved an early draft of the manuscript. Thank you also to Tamahou McGarvey and Ranea Aperahama for translating the Abstract into Te Reo Māori. The Base map source was Toitū Te Whenua Land Information New Zealand and licensed by Toitū Te Whenua Land Information New Zealand for re-use under the Creative Commons Attribution 4.0 International licence. The comments from the anonymous reviewers are also gratefully acknowledged for further improvements. The paratype of *Eustomias robertsi* was taken as part of the 2016 Biodiversity Expedition to the Kermadec Islands and Ridge (TAN1612). Thanks to the crew and officers of the R/V *Tangaroa* for their continuing excellence in sampling the waters around New Zealand and making these expeditions so enjoyable. This project was supported (in part) by the NZ National Institute of Water and Atmospheric Research Ltd. Core Funded SSIF Coasts and Oceans Programme 2: Biological Resources subcontract for fundamental knowledge of marine fish biodiversity with the Museum of New Zealand Te Papa Tongarewa.

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