

Two rare teleosts *Paraulopus brevirostris* (Aulopiformes: Paraulopidae) and *Acropoma lecorneti* (Perciformes: Acropomatidae) from Taiwan, Northwestern Pacific Ocean

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Abstract

Two rare teleosts *Paraulopus brevirostris* (Fourmanoir 1981) and *Acropoma lecorneti* (Fourmanoir 1988) are collected from bottom trawlers in northeastern Taiwan. Both poorly known species are new record from Taiwan. Description of morphological characters in detail are given in the present study.

Keywords: *Paraulopus brevirostris*, *Acropoma lecorneti*, First record, Northwestern Pacific, Taiwan.

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Introduction

Acropoma lecorneti Fourmanoir, 1988 (Perciformes: Acropomatidae), was described based on a specimen from New Caledonia. Two additional specimens were reported from Okinawa, Japan and Vanuatu, respectively (Yamanoue and Toda 2008; Okamoto and Motomura 2017). No specimens had been known since then. *Paraulopus brevirostris* Fourmanoir, 1981 (Aulopiformes: Paraulopidae) was described as *Chlorophthalmus brevirostris* based on a specimen from the Philippines. Sato and Nakabo (2002) repositioned *C. brevirostris* into the newly described family Paraulopidae and genus *Paraulopus*. Sato and Nakabo (2003) examined 12 specimens of *P. brevirostris* from Japan, the Philippines and eastern Australia collected between 1976 and 1978. No specimens were examined since 2003.

Two specimens of genus *Paraulopus* and genus *Acropoma* were collected from bottom trawlers in Daxi port, Yilan, Northeastern Taiwan in 2017. The two specimens were identified as *P. brevirostris* and *A. lecorneti*, respectively, by their unique characters among the corresponding genera, which was 14 pectoral fin rays and 18 gill rakers in the former species and having an O-shaped luminous gland in the latter species. Both species are apparently rare, probably due to the great depths they inhabited and they are also new records from Taiwan. In the present study, descriptions based on morphological characters in detail of both specimens are provided herein.

Material and Methods

Methods for meristic measurements of *P. brevirostris* and *A. lecorneti* followed Sato and Nakabo (2003) and Yamanoue and Toda (2008), respectively. Rudiments were included in gill rakers count in *P. brevirostris*, but not in *A. lecorneti* by the reason of gill rakers count difficulties of this species mentioned in Yamanoue and Toda (2008). Standard length and head length were expressed as SL and HL. Both specimens are deposited at Department of Environmental Biology and Fisheries Science, National Taiwan Ocean University, Keelung, Taiwan.

Table 1. Counts and measurements of *Paraulopus brevirostris* with comparisons with holotype.

	NTOUEBFS-0001 Present study	MNHN1979-433 Holotype (Fourmanoir 1981)
Locations	Taiwan	The Philippines
Standard length (mm)	100	127.4
%SL		
Body depth	16	12.3
Body width	13	13.6
Preanus length	50	54.9
Predorsal length	33	41
Prepectoral length	27	30.7
Prepelvic length	38	42.7
Dorsal-fin base	13	12.3
Anal-fin base	7	5.3
Pectoral-fin length	19	18.2
Pelvic-fin length	29	28.5
Pelvic-fin to anus	10	13.4
Anus to anal fin	21	21.4
Interpelvic width	9	11.2
Caudal-peduncle length	15	17.3
Caudal-peduncle depth	6	4.6
Head length	27	31.1
%HL		
Head depth	44.4	49.5
Head width	44.4	48.2
Snout length	22.2	21.7
Orbit diameter	37	35.9
Postorbital length	44.4	47
Interorbital length	8.5	12.1
Upper jaw length	44.4	42.9
Counts		
Dorsal-fin rays	11	11
Anal-fin rays	9	8
Pectoral-fin rays	14	14
Pelvic-fin rays	9	9
Gill rakers	18	18

Results

Paraulopus brevirostris Fourmanoir 1981 (Fig. 1)

Paraulopus brevirostris Fourmanoir, 1981: 87, fig. 2 (type locality, Philippines)

Materials: NTOUEBFS-0001, 100 mm SL, off Daxi, northeastern Taiwan, 300-400 m depth 11 May 2019.

Diagnosis: This species can be readily distinguished from other *Paraulopus* species by having 12-14 pectoral fin rays and 16-19 gill rakers.

Description: All counts and measurements given as percentage of standard length were compared with holotype (MNHN 1979-433) (Fourmanoir 1981) (Table 1). Body extends with square-like cross section. Caudal peduncle extremely narrow (depth 6% SL). Snout slightly blunt. Nostrils at midpoint between snout tip and start of orbit. Eyes rounded, located laterally. Interorbital region broad (width 18.5% HL). Lower jaw not displacing when mouth closed. Tongue thin and narrow, with spin-like teeth which is larger than jaw teeth on the upper side. Dorsal fin nearly straight. Pectoral fin short, not reaching to end point of dorsal-fin base. Pelvic fin remarkably long, length 24.6–30.9% SL.

Color of fresh: Body silvery laterally with four large black marks. Dorsal side light greenish with groups of small yellow spots, distributing not below lateral line (Fig. 1).



Figure 1. *Paraulopus brevirostris* NTOUEBFS-0001, 100 mm SL, off Daxi, northeastern Taiwan, 300-400 m depth 11 May 2019.



Figure 2. *Acropoma lecorneti* NTOUEBFS-0002, 185 mm SL, off Daxi, northeastern Taiwan, 300-400 m depth, 25 July 2019.

Color in alcohol: Body light yellowish with four large black marks on lateral surface, and bunches of white spots dorsally. All fins colorless.

Distribution: Western Pacific, including northeastern Taiwan, southern Japan, the Philippines, Strait of Malacca, southern Indonesia, and Australia.

Remarks: *Paraulopus albimaculatus* Okamura 1984 was regarded as junior synonym of *P. brevirostris*. Sato and Nakabo (2002) mentioned geographic variations of morphological characters between specimens from southeastern Australia and northwestern Pacific, which is also consistent in the specimen collected in the present study, except head depth (head depth 40.9-46.0 % HL in southeastern Australia vs. 44.8-53.9 % HL in the northwestern Pacific, 44.4% in the present study). This species is the first record from Taiwan. Specimen collected in present study (NTOUEBFS-0001) is also the first one collected since 1978.

***Acropoma lecorneti* (Fourmanoir, 1988) (Figs. 2-3)**

Acropoma lecorneti Fourmanoir, 1988: 259, fig. 1 and photo (type locality, west coast of New Caledonia; holotype lost: MHNH 1986-0552); Yamanoue and Toda, 2008: 199, figs 1-3 (off Okinawa, Japan); Okamoto and Motomura, 2017: 373, figs 1-2 (Vanuatu).

Materials: NTOUEBFS-0002, 185 mm SL, off Daxi, northeastern Taiwan, 300-400 m depth, 25 July 2019.

Diagnosis: *Acropoma lecorneti* was distinguished from other *Acropoma* species by having fewer number of gill rakers (14-21), slender proximal radial of 1st anal fin pterygiophore which lack trough or hollow, a more anterior position of anus and a O-shaped luminous gland (Fig. 3).

Table 2. Counts and measurements of *Acropoma lecorneti* with comparisons. *: measured in Okamoto and Motomura (2017)

	NTOUEBFS-0002 Present study	MNHN-IC-2008-1612 Okamoto and Motomura (2017)	NSMT-P 75219 Yamanoue and Toda (2008)
Standard length (mm)	185 mm	141.9 mm	221 mm
Location	Northeastern Taiwan	Vanuatu	Okinawa, Japan
Counts			
Dorsal-fin rays	VII-I-I, 10	VII-I-I, 10	VII-I-I, 10
Anal-fin rays	III, 8	III, 7	III, 7
Pectoral-fin rays	15	15	15
Gill rakers (left/right)	15/14	27/21	15/14
Lateral line scales	49	48	49
%SL			
Body depth	25	24.8	25
Body width at pectoral fin base	14.5	14.1	15
Head length	35	37.4	37
Head depth	19.5	No data	23
Head width	12.4	No data	15
Snout length	14.2	12	12
Length of orbit	10.8	11.6	7.9
Fleshy interorbital width	7.6	7	8.5
Postorbital length	16.2	15.1	15
Upper-jaw length	15.1	16.1	16
Lower-jaw length	18.9	19.9	22
Snout to first dorsal-fin origin	44	40.4	42
Snout to second dorsal-fin origin	64.9	62.8	64.1*
Snout to anal-fin origin	67	70.5	71
Snout to pectoral-fin origin	36.7	36.9	37
Snout to pelvic-fin origin	37.8	40.4	40
Snout to anus	45.9	49.1	47.5*
Pelvic fin to anus	8.1	9.3	9.1
First dorsal-fin base	18.9	15.1	17.5*
Second dorsal-fin base	16.2	14	15.8*
Anal-fin base	11.9	14	11
Pectoral-fin length	24.5	26	24
Pelvic-fin spine	11.4	12.8	11
Pelvic-fin length	16.2	17.7	15*
1st dorsal-fin spine	7	6.4	6.6
2nd dorsal-fin spine	15.1	12	13.6*
3rd dorsal-fin spine	17.3	Broken	17
7th dorsal-fin spine	6.5	5.5	6.1
1st anal-fin spine	1.1	1.6	1.6*
2nd anal-fin spine	5.4	6.1	5*
3rd anal-fin spine	10.8	10.5	9.6*
1st dorsal-fin soft ray	13.5	No data	8.5
3rd anal-fin spine	9.7	10.5	9.6
Caudal peduncle depth	11.4	10.4	10
Caudal peduncle length	18.9	24.9	21
Luminous-gland length	13.5	13.2	14.6

Description: All counts and measurements are given as percentage of standard length. Comparisons with holotype (MHNH1986-0552) (Fourmanoir 1988), a specimen from Okinawa, Japan (NSMT-P 75219) (Yamanoue and Toda 2008) and a specimen from Vanuatu (MNHN-IC-2008-1612) (Okamoto and Motomura 2017) are shown in Table 2. Body slightly elongate and compressed. One pair of canine teeth at symphysis of both jaws, conical teeth at outer part of upper jaw and posterior part of lower jaw. Opercle with two small spines on posterior part. Nostrils close to each other. Anus near origin of pelvic fin. O-shaped luminous gland in circular

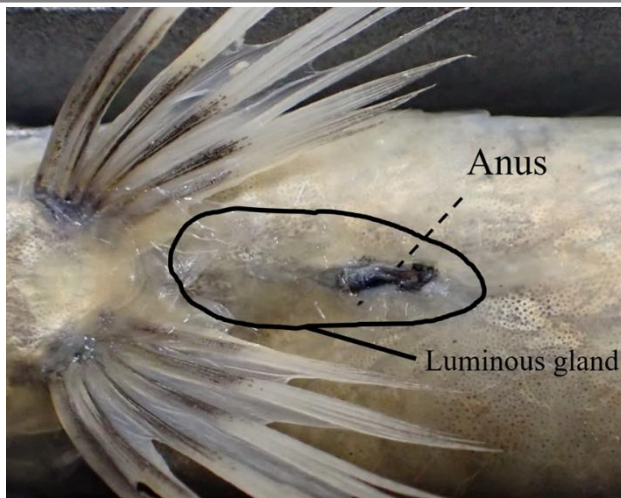


Figure 3. O-shaped luminous gland of *Acropoma lecorneti*, NTOUEBFS-0002.

shape around anus, anterior end reaching pelvic spine base. Head and body covered with ctenoid scales.

Color of fresh: Body light red dorsally, turn silvery gradually to the lower half. Ventral side dark (Fig. 2).

Color in alcohol: Dorsal part slightly, others similar to fresh.

Distribution: Western Pacific Ocean, including New Caledonia, Vanuatu, northeastern Taiwan and Okinawa, Japan.

Remarks: *Acropoma lecorneti* is the largest species in the genus, the holotype was measured 326 mm SL, whereas other congeneric species do not exceed 200 mm SL (Froese and Pauly 2019). This species is a new record for Taiwan and the fourth specimen reported in the world.

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