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Three new species of *Luciogobius* Gill (Teleostei: Gobiidae) from Taiwan

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Abstract

Three new species of gobiid fish of *Luciogobius* Gill, 1859 have been recently discovered in Taiwan. *Luciogobius chiaojinensis* **sp. nov.** is found and collected mainly from Keelung, northern Taiwan. It can be distinguished from other congeneric species by the following combination of features: (1) second dorsal fin rays: I/10 and anal fin rays I/11; (2) pectoral fin rays modally 13 and with one upper, short free soft ray; (3) vertebral count: 20 + 21 = 41; and (4) specific coloration: head and body with small tiny blackish brown spots. Head with densely-set small blackish brown spots in male; second dorsal fin brown and darker on lower half; pectoral fin base on upper 1/2 region with round melanophores; and pectoral fin membrane mostly spotless. *Luciogobius huatungensis* **sp. nov.** is found and collected mainly from Hualien and Taitung Counties in eastern Taiwan. It can be well distinguished from other congeneric species by the following combination of features: (1) second dorsal fin modally I/15 and anal fin I/15; (2) pectoral fin rays 14 and with 4 upper, free soft rays and 1 lower free rays; (3) vertebral count: 17 + 22 = 39; and (4) specific coloration: body brown with minute creamy yellow round spots; head and body with small brown spots; belly creamy yellow with fewer brown spots; second dorsal fin with tiny white marks; and pectoral fin with several round melanophores, most membrane with brown marks. *Luciogobius newtaipeiensis* **sp. nov.** is found and collected mainly from New Taipei City in northern Taiwan. It can be well distinguished from other congeneric species by the following combination of features: (1) second dorsal fin rays: I/11 and anal fin rays I/12; (2) pectoral fin rays modally 18 and with 1 upper free soft ray; (3) vertebral count: 16 + 20 = 36; (4) a dermal projection on posterior part of eye; and (5) specific coloration: head and body with small tiny brownish black spots; second dorsal rays light brown; and pectoral fin base with many small melanophores, fin membrane with melanophores on basal region. A diagnostic key for all six nominal species of Taiwan and the Matsu Islands will be provided in this paper.

Key words: new goby, *Luciogobius*, fish taxonomy, Taiwan

Introduction

The gobiid fishes in the family Gobiidae comprise the most diverse group among teleosts (Miller 1998, Chen & Kottelat 2005). The great diversity of longitudinal gobioid fauna, which typically has a higher vertebral count, is

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mostly endemic to the West Pacific and north-western Pacific. For example, the genus *Luciogobius* and other related genera typically reside in freshwater to marine habitats in Eastern Asia, from Japan, Korea, and China to Taiwan (Chen 1932, Akihito *et al.* 1984, Chen & Fang 1999, Suzuki & Shibukawa 2004). In Japanese waters, more than 16 nominal species have been revised as valid (Regan 1940, Dôtu 1957, Shiogaki & Dotsu 1976, Okiyama 2001, Akihito *et al.* 2002, Chen *et al.* 2008, Kanagawa *et al.* 2011), and there are still over 20 undescribed species of the genus (Suzuki & Shibukawa 2004).

Chen and Liao (2024) described a new species, *L. opisthoproctus*, which was collected from the eastern coast of Taiwan. Chen *et al.* (2024) described another two new species, *L. dongyinensis* and *L. matsuensis*, from the Matsu Islands in Taiwan. During our extensive field survey of coastal waters and river drainages throughout Taiwan, several unusual gobies were found. The aim of this paper is to formally describe three new species of inland or coastal gobies belonging to the genus *Luciogobius* in Taiwan. A brief comparison of these species with their related ones will be addressed, and a diagnostic key for all six nominal *Luciogobius* species of Taiwan will also be provided.

Materials and methods

The type specimens for these three new species were all collected by hand-net from coastal waters or rivers. All counts and measurements were taken from specimens preserved in 70% ethanol. The morphometric methods follow Miller (1988), and the meristic methods follow Akihito *et al.* (1984), Chen and Shao (1996), and Chen and Kottelat (2005). The terminology used for the cephalic sensory canals and the free neuromast organ (sensory papillae) is from Wongrat and Miller (1991), based on Sanzo (1911).

The type specimens are deposited in the Pisces collection at the National Taiwan Ocean University, Keelung (NTOUP). Meristic abbreviations are as follows: A, anal fin; C, caudal fin; D1, and D2, 1st and 2nd dorsal fins respectively; P, pectoral fin; V, pelvic fin; and VC, vertebral count. All fish lengths are in standard length (SL).

Systematics

***Luciogobius chaojinensis* sp. nov.**
(潮境竿鯊)
Figures 1–3

Material examined

Holotype. NTOUP-2006-05-321, 30.2 mm SL, May 16, 2006, coll. I-S. Chen *et al.*, Chaojin Park, Keelung City, Taiwan.

Paratypes. NTOUP-2006-05-322, 2 specimens, 24.1–27.0 mm SL, collection date and locality data same as above.

Diagnosis

Luciogobius chaojinensis **sp. nov.** can be well distinguished from the other congeneric species by the following unique combination of features: (1) second dorsal fin rays: I/10 and anal fin rays I/11; (2) pectoral fin rays modally 13 and with one upper, short free soft ray; (3) vertebral count: 20 + 21 = 41; and (4) specific coloration: head and body with small tiny blackish brown spots. Head with densely-set small blackish brown spots in male; second dorsal fin brown and darker on lower half; pectoral fin base on upper 1/2 region with round melanophores; and pectoral fin membrane mostly spotless.

FIGURE 1. *Luciogobius chaojinensis* **sp. nov.**, A. holotype, 30.2 mm SL, B. paratype, 27.0 mm SL, Chaojin Park, Keelung, Taiwan.

Description

Body very slender, cylindrical anteriorly and somewhat compressed posteriorly (all morphometric data is shown in Table 1). Head flat and depressed. Cheek rather fleshy in male. Eye very small. A horizontal dermal fold with papillae row on upper part of cheek and below orbit. Snout flat and short. Anterior nasal opening as a protruded, horizontal short tube and posterior nasal opening as a round hole. Interorbital region wide. Mouth very oblique and rather large, maxillary extending beyond rear vertical of orbit in male. Lower jaw rather prominent compared to upper jaw. Teeth rather minute, with 4–5 rows of tiny conical teeth where outer rows larger in both jaws. Tongue somewhat pointed, but anterior tip bilobed. Gill opening rather restricted, extending merely slightly below lower margin of pectoral base. Anus located in posterior half of body. Vertebral count 20 + 21 = 41.

***Fins*.** D2 I/10, A I/11, P 12–13 (modally 13). D1 absent. D2 with middle one third portion of rays longest. A shape similar to D2. Both first spines in D2 and A relatively short. A origin in front of D2 origin. D2 origin inserted vertically between 3rd and 4th branched rays of A. Both rear tip of D2 and A far from procurrent rays of C when depressed. P rounded and its length much shorter than postorbital length. P with one free soft ray on upper margin near upper basal region. C elliptical. V as a very reduced, round sucking disc with complete frenum.

***Scales*.** Both body and head entirely naked without any scales.

TABLE 1. Morphometry of three new species of *Luciogobius* from Taiwan.

Species	*L. chaojinensis*		*L. huantungensis*		*L. newtaipeiensis*	
	Holotype	Paratype	Holotype	Paratypes (n=3)	Holotype	Paratype
Standard length (mm)	30.2	27.0	55.2	45.4–51.2	50.2	44.3
All in % of SL						
Head length	15.5%	14.9%	20.5%	20.1–21.2(20.6)%	20.9%	16.7%
Snout to 2nd dorsal origin	73.4%	71.5%	67.0%	65.1–69.7(67.6)%	68.9%	70.6%
Snout to anus	66.6%	64.3%	61.4%	63.2–64.0(63.5)%	62.0%	65.0%
Snout to anal fin origin	69.3%	67.4%	70.5%	66.1–68.2(67.1)%	64.1%	67.4%
Preplevic length	17.9%	16.1%	20.5%	19.7–21.5(20.3)%	23.8%	21.3%
Caudal peduncle depth	6.9%	7.6%	9.3%	7.4–9.0(8.3)%	9.2%	8.9%
Caudal peduncle length	18.3%	17.7%	20.6%	18.6–20.6(19.7)%	16.0%	16.1%
2nd dorsal fin base	11.8%	11.6%	14.8%	16.8–18.4(17.9)%	18.7%	18.7%
Anal fin base	13.7%	14.0%	15.5%	15.0–15.9(15.6)%	20.2%	18.7%
Caudal fin length	10.3%	9.1%	14.1%	11.8–13.0(12.5)%	15.4%	14.1%
Pectoral fin length	8.1%	6.4%	12.9%	8.7–11.7(10.4)%	13.1%	12.5%
Pelvic fin length	2.2%	2.0%	5.6%	5.5–7.0(6.1)%	5.5%	4.8%
BD at pelvic fin origin	6.5%	7.8%	7.0%	6.5–7.6(7.1)%	10.5%	9.6%
BD at anal fin origin	7.9%	8.1%	9.5%	9.5–9.7(9.6)%	11.0%	10.3%
BW at anal fin origin	6.4%	6.6%	5.5%	4.9–6.7(5.7)%	8.9%	8.5%
Pelvic fin origin to anus	47.7%	47.5%	40.4%	41.5–44.6(43.1)%	39.5%	43.8%
All in % of HL						
Snout length	29.3%	22.2%	30.1%	30.8–33.0(32.0)%	21.2%	20.7%
Eye diameter	11.8%	11.1%	7.6%	6.8–9.7(8.1)%	16.3%	15.2%
Cheek depth	29.1%	24.4%	19.2%	16.4–20.5(18.5)%	23.0%	21.4%
Postorbital length	65.0%	62.0%	65.8%	55.4–66.0(59.6)%	63.5%	73.3%
HW in MAX	65.0%	69.5%	57.4%	49.3–70.1(59.8)%	59.5%	63.1%
HW in upper gill opening	43.3%	50.8%	43.2%	40.5–51.4(47.4)%	53.6%	55.1%
Bony interorbital width	16.8%	24.6%	36.5%	29.0–37.9(32.3)%	19.2%	21.3%
Lower jaw length	37.3%	33.5%	44.7%	39.5–46.4(43.6)%	39.4%	41.3%

Head lateral-line system (Figure 2)

Head canals: whole head lacking any canal and head pores.

Sensory papillae: a series of infraorbital sensory papillae, typically representing a longitudinal pattern. Row *a* long and extending to snout which upward to surrounding eye diameter in interorbital region. Row *b* rather long starting slightly behind middle vertical of eye, its length about two times eye diameter. Row *c* mainly below dermal fold and long. A single *cp* located below rear Row *c*. Row *d* shorter than row *c*. Row *f* paired only as two papillae. Opercle with three rows *ot*, *os*, and *oi*. Rows *oi* and *ot* well separated. Rows *z* as single vertical row. Other papillae are shown in detail in Figure 2.

Coloration when fresh

Body and head light yellowish to deep brown background. Head and body with small tiny blackish brown spots. Entire head with densely-set small blackish brown spots in male. Belly yellowish or pale white; golden ovary seen in female. Second dorsal fin brown and darker on lower half. Anal fin whitish or pale yellowish. Pectoral fin base on upper 1/2 region with several small round melanophores in male and mostly pectoral fin membrane translucent

and spotless. Caudal fin entirely brown to blackish brown and lacking any light rounded spot. Pelvic fin translucent and pale white.

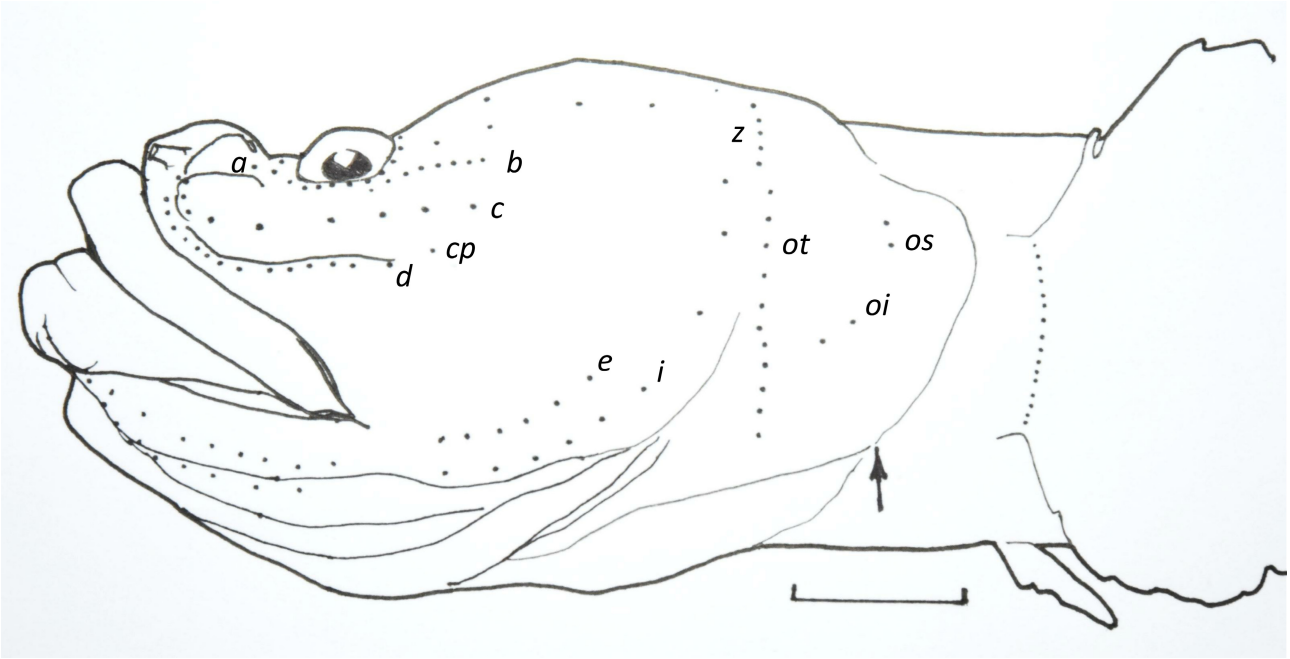

FIGURE 2. Head lateral-line system of *Luciogobius chaojinensis* **sp. nov.**, holotype, 30.2 mm SL, Chaojin Park, Keelung, Taiwan. (Bar = 1 mm) (The arrow shows the ventral terminal of the gill opening).

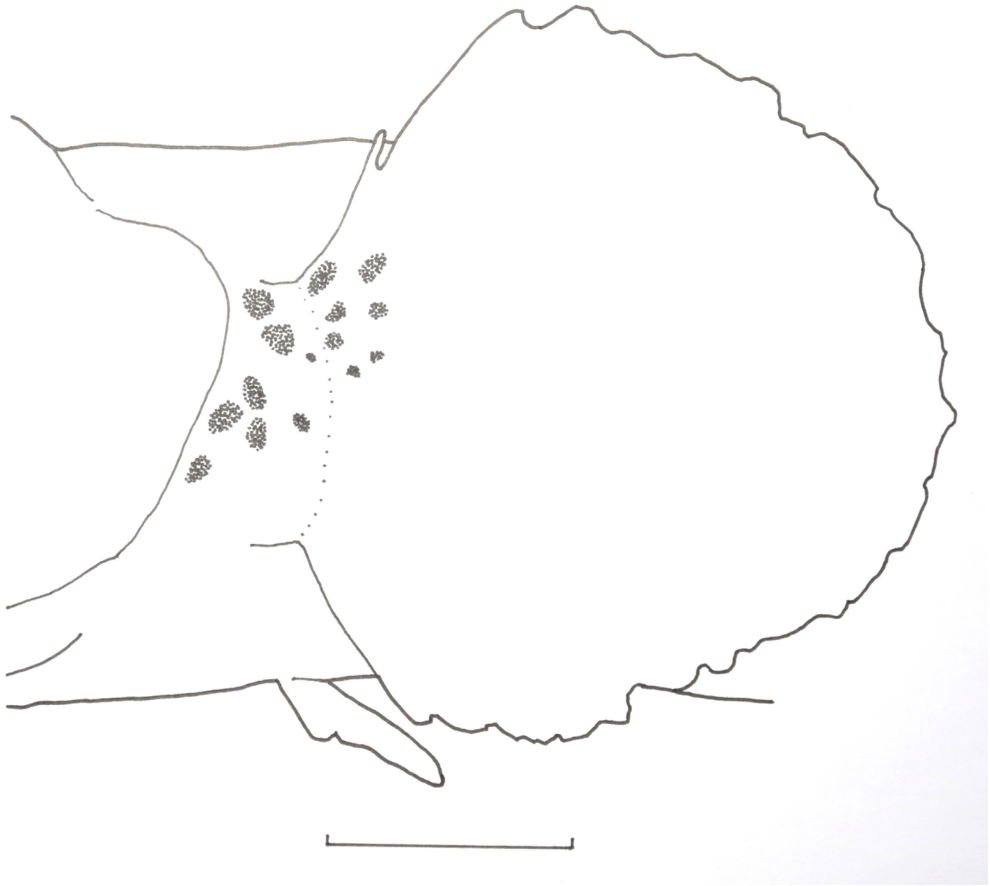

FIGURE 3. Pectoral fin pigmentation of *Luciogobius chaojinensis* **sp. nov.**, 30.2 mm SL, Chaojin Park, Keelung, Taiwan. (Bar = 1 mm).

Distribution

Till present, this new species is endemic to the Chaojin Park, Keelung City in northern Taiwan. It is a coastal species of Taiwan. However, it is still quite possible to find it in other localities in northern Taiwan, even though it may be largely confined to Taiwanese waters.

Etymology

The specific name, *chaojinensis*, refers to the type locality from the "Chaojin Park", a famous marine conservation zone in Keelung City in northern Taiwan.

Remarks

Luciogobius chaojinensis **sp. nov.** is more similar to *Luciogobius opisthoproctus* Chen & Liao, 2024 than it is to any other congeneric species.

However, *Luciogobius chaojinensis* **sp. nov.** can be well distinguished from the closely related species, *Luciogobius opisthoproctus*, by the following features: (1) anal fin rays I/11 vs. I/12; pectoral fin rays 13 vs. modally 11; (2) pectoral fin with one upper free rays vs. none of them; (3) vertebral count: 41 vs. modally 43; and (4) specific coloration: head in lateral side with densely-set of small brown spots superficially (around 60–95, higher count in male) vs. with very few brown to black spots (8–10); pectoral fin base: in having several brownish black spots vs. entirely spotless.

It is quite possible that we will see more undescribed species with a slender form in the cryptic habitats of Taiwanese waters in the near future.

***Luciogobius huatungensis* sp. nov.**

(花東竿鯊)
Figures 6–9

Material examined

Holotype. NTOUP-2020-05-205, 55.2 mm SL, coll. I-S. Chen *et al*., May 26, 2020, Ji-An Village, Hualien River basin, Hualian County, Taiwan.

Paratypes. NTOUP-2020-05-206, 7 specimens, 43.3–51.2 mm SL, collection date and locality data same as above.

Diagnosis

Luciogobius huatungensis **sp. nov.** can be well distinguished from all other congeneric species by the following unique combination of features: (1) second dorsal fin modally I/15 and anal fin I/15; (2) pectoral fin rays modally 14 and with 4 upper, free soft rays and 1 lower free ray; (3) vertebral count: 17 + 22 = 39; and (4) specific coloration: body brown with minute creamy yellow round spots; head and body with small brown spots; belly creamy yellow with fewer brown spots; second dorsal fin with tiny white marks; and pectoral fin with several round melanophores, most membrane with brown marks.

Description

Body slender, cylindrical anteriorly and somewhat compressed posteriorly (all morphometric data is shown in Table 1).

FIGURE 4. *Luciogobius huatungensis* **sp. nov.**, paratype, about 50 mm SL, Hualien River basin, Hualien County, Taiwan.

Head flat and depressed. Cheek slightly fleshy. Eye somewhat small. A horizontal dermal fold with papillae row on upper part of cheek and below orbit.

Snout flat and short. Anterior nasal opening as a protruded, horizontal short tube and posterior nasal opening as a round hole. Interorbital region wide. Mouth oblique and large, maxillary extending beyond middle vertical of orbit. Lower jaw slightly prominent compared to upper jaw. Teeth rather minute, with 4–5 rows of tiny conical teeth where outer rows larger in both jaws. Tongue somewhat pointed, but anterior tip bilobed. Gill opening restricted, extending ventrally slightly below lower margin of pectoral base. Anus located in posterior half of body. Vertebral count 17 + 22 = 39.

***Fins*.** D2 I/14–15 (modally 15), A I/15, P 14–15 (modally 14). D1 absent. D2 with middle one third portion of rays longest. A shape similar to D2. Both first spines in D2 and A relatively short. A origin about equal to D2 origin. Both rear tip of D2 and A is far from procurrent rays of C when depressed. P rounded and its length slightly shorter than postorbital length. P with four free soft rays on upper margin near upper basal and anterior region and one lower free soft ray. C elliptical. V as a round sucking disc with complete frenum and rather small.

***Scales*.** Both body and head entirely naked without any scales.

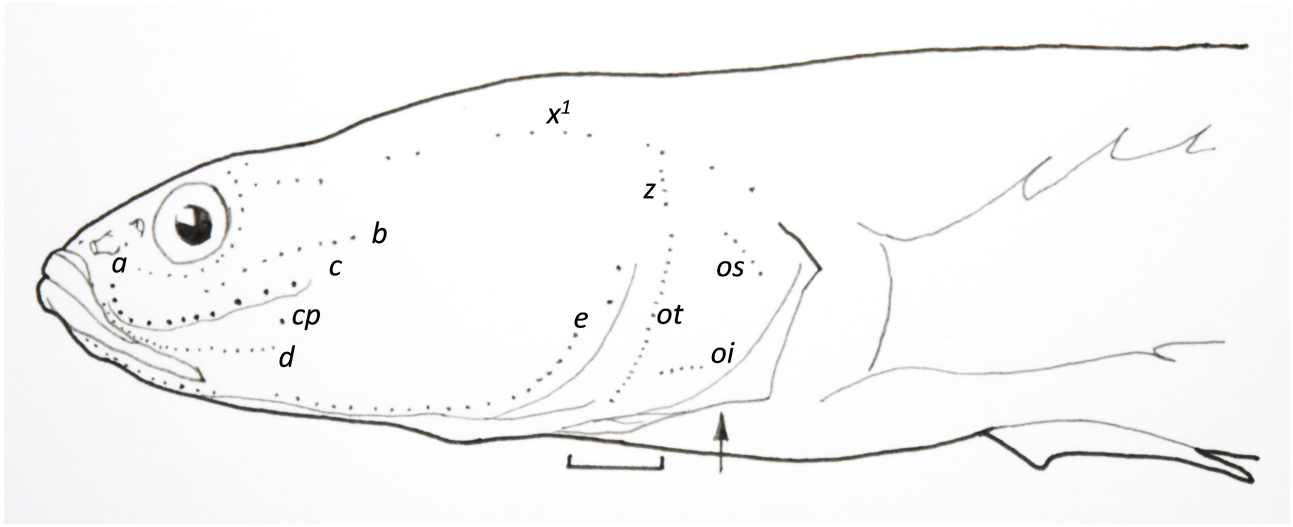

FIGURE 5. Head lateral-line system of *Luciogobius huatungensis* **sp. nov.**, holotype, 55.2 mm SL, Hualien River, Hualien County, Taiwan. (Bar = 1 mm) (The arrow shows the ventral terminal of the gill opening).

Head lateral-line system **(Figure 5)**

Head canals: whole head lacking any canal and head pores.

Sensory papillae: a series of infraorbital sensory papillae, typically representing a longitudinal pattern. Row *a* long and extending to snout which upward to surrounding eye diameter in interorbital region. Row *b* rather long starting above middle of dermal ridge. Row *c* mainly below dermal fold and long. A single *cp* located below rear Row *c*. Row *d* somewhat shorter than row *c*. Row *f* paired only as two papillae. Opercle with three rows *ot*, *os*, and *oi*. Rows *oi* and *ot* well separated. Rows *z* as single vertical row. Other papillae are shown in detail in Figure 5.

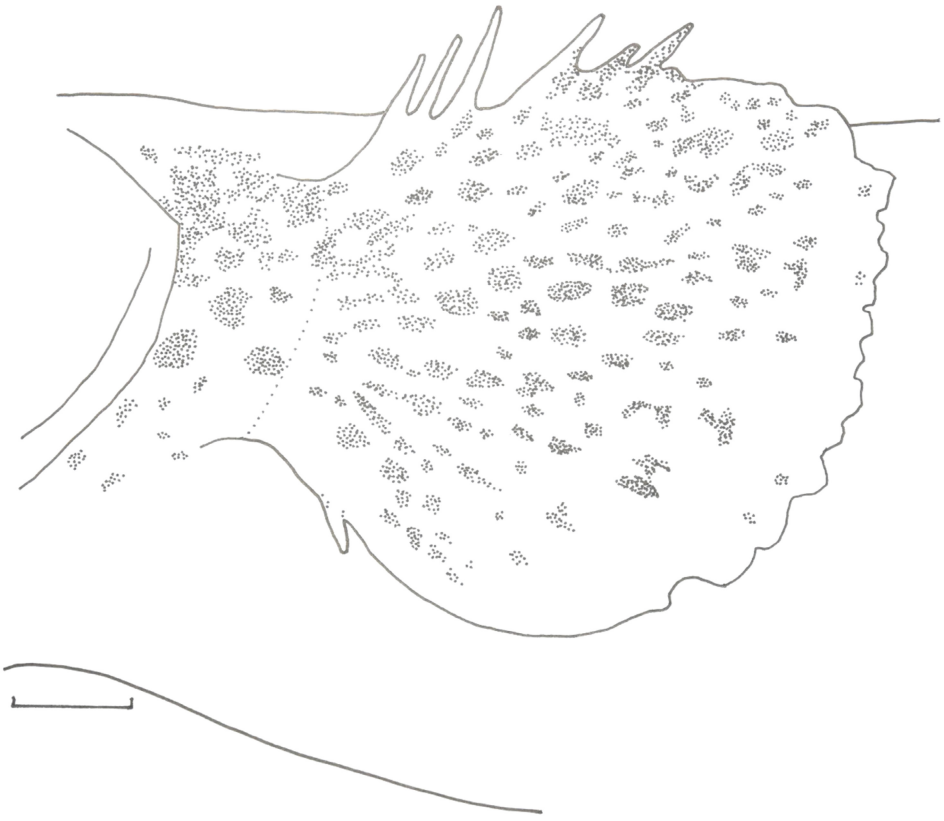

FIGURE 6. Pectoral fin pigmentation of *Luciogobius huatungensis* **sp. nov.**, paratype, 50.2 mm SL, Hualien River basin, Hualien County, Taiwan. (Bar = 1 mm).

Coloration when fresh

Body and head light creamy brown to brown background. Body with minute creamy yellow round spots. Head and body with small brown spots. Head lighter on lower half. Belly pale white to creamy yellow with fewer brown spots. Second dorsal fin brown with tiny white marks. Anal fin whitish or yellowish. Pectoral fin with several round melanophores, most of fin membrane translucent with small grayish brown marks. Caudal fin brown with small creamy yellow rounded dots. Pelvic fin creamy white.

Distribution

Till present, this species is only found in both "Hualien and Taitung" Counties in eastern Taiwan. It can be seen as either coastal species or an inland-water species on the island. Some field collection records of the species have actually been obtained from river basins in the southern part of Taitung County, Taiwan.

Etymology

The specific name, *huatungensis*, refers to the type localities found in both "Hualien and Taitung" Counties in eastern Taiwan. The abbreviation "Huatung" is commonly used in Mandarin to refer to these two counties collectively.

Remarks

Luciogobius huatungensis **sp. nov.** is more similar to *Luciogobius grandis* Arai, 1970 than it is to any other remaining congeneric species.

However, *Luciogobius huatungensis* **sp. nov.** can be well distinguished from its closely related species, *Luciogobius grandis*, by the following features: (1) pectoral fin rays modally 14 vs. modally 15; with one lower free ray vs. two of them; (2) vertebral count: 17 + 22 = 39; and modally 18 + 23 = 41; and (3) specific coloration: belly less spotted vs. belly highly spotted; pectoral fin base with 4–5 large blackish brown spots and upper brownish mark vs. entirely brown background with few white spots.

Luciogobius grandis is only endemic to mainland Japan and South Korea as a template coastal species. However, *Luciogobius huatungensis* **sp. nov.** is completely different, being a subtropical species endemic to Taiwan, mainly in the eastern region. The so-called "*Luciogobius grandis*" mentioned in some previous records in Taiwanese fish guide books may have been misidentified and overlooked for this new species.

***Luciogobius newtaipeiensis* sp. nov.**

(新北竿鯊)

Figures 7–9

Material examined

Holotype. NTOUP-2023-05-305, 50.2 mm SL, coll. I-S. Chen *et al.*, coast area near Longdong Bay, New Taipei City, Taiwan.

Paratypes. NTOUP-2023-05-306, 44.3 mm SL, collection date and locality data same as above.

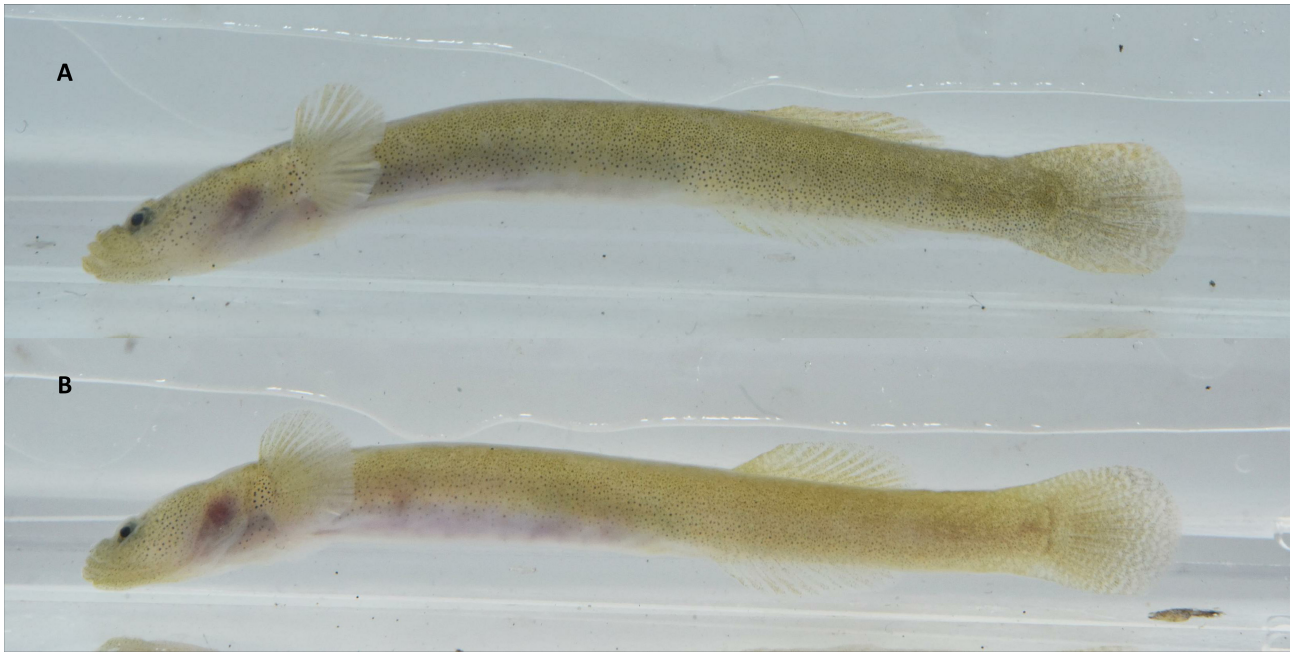

FIGURE 7. *Luciogobius newtaipeiensis* **sp. nov.**, holotype, A. 50.2 mm SL, B. paratype, 44.3 mm SL, New Taipei City, Taiwan.

Diagnosis

Luciogobius newtaipeiensis **sp. nov.** can be distinguished from all other congeneric species by the following unique combination of features: (1) second dorsal fin rays: I/11 and anal fin rays I/12; (2) pectoral fin rays modally 18 and with 1 upper free soft ray; (3) vertebral count: 16 + 20 = 36; (4) a dermal projection on posterior part of eye; and (5) specific coloration: head and body with small tiny brownish black spots; second dorsal rays light brown; and pectoral fin base with many small melanophores, fin membrane with melanophores on basal region.

Description

Body very slender, cylindrical anteriorly and somewhat compressed posteriorly (all morphometric data is shown in Table 1).

Head flat and depressed. Cheek slightly fleshy. Eye small. A horizontal dermal fold with papillae row on upper part of cheek and below orbit. A dermal projection present on rear corner of orbit.

Snout flat and short. Anterior nasal opening as a protruded, horizontal short tube and posterior nasal opening as a round hole. Interorbital region wide. Mouth oblique and large, maxillary extending to vertical of anterior margin of orbit. Lower jaw more prominent compared to upper jaw. Teeth rather minute, with 4–5 rows of tiny conical teeth where outer rows larger in both jaws. Tongue somewhat pointed, but anterior tip bilobed. Gill opening rather restricted, extending merely slightly below lower margin of pectoral base. Anus located in posterior half of body. Vertebral count 16 + 20 = 36.

***Fins*.** D2 I/11, A I/12, P 18. D1 absent. D2 with middle one third portion of rays longest. A shape similar to D2. Both first spines in D2 and A relatively short. A origin in front of D2 origin. D2 origin inserted vertically between 1st and 2nd branched rays of A. Both rear tip of D2 and A far from procurrent rays of C when depressed. P rounded and its length much shorter than postorbital length. P with one free soft ray on upper margin very near upper basal region. C elliptical. V as a round sucking disc with complete frenum and rather small.

***Scales*.** Both body and head entirely naked without any scales.

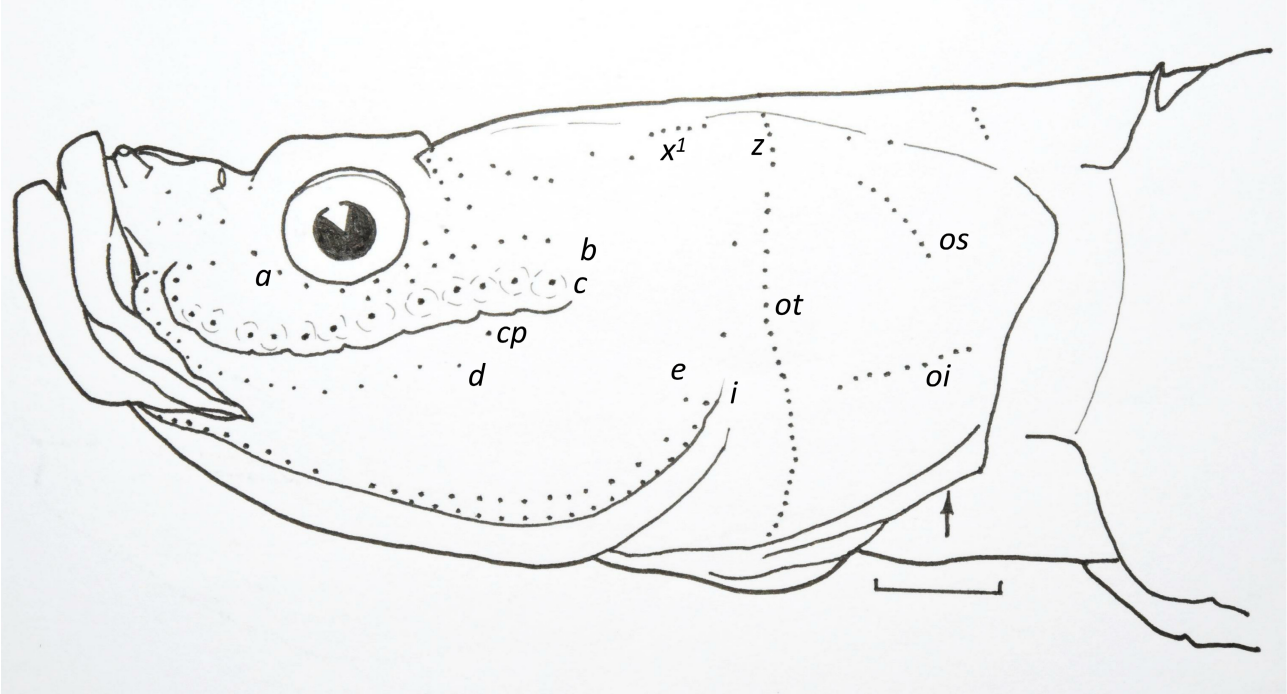

FIGURE 8. Head lateral-line system of *Luciogobius newtaipeiensis* **sp. nov.**, holotype, 50.2 mm SL, New Taipei City, Taiwan. (Bar = 1 mm) (The arrow shows the ventral terminal of the gill opening).

Head lateral-line system (Figure 8)

Head canals: whole head lacking any canal and head pores.

Sensory papillae: a series of infraorbital sensory papillae, typically representing a longitudinal pattern. Row *a* long and extending to snout which upward to surrounding eye diameter in interorbital region. Row *b* rather long starting above middle of dermal ridge, its length about two times eye diameter. Row *c* mainly below dermal fold and long. A single *cp* located below rear Row *c*. Row *d* shorter than row *c*. Row *f* paired only as two papillae. Opercle with three rows *ot*, *os*, and *oi*. Rows *oi* and *ot* well separated. Rows *z* as single vertical row. Other papillae are shown in detail in Figure 5.

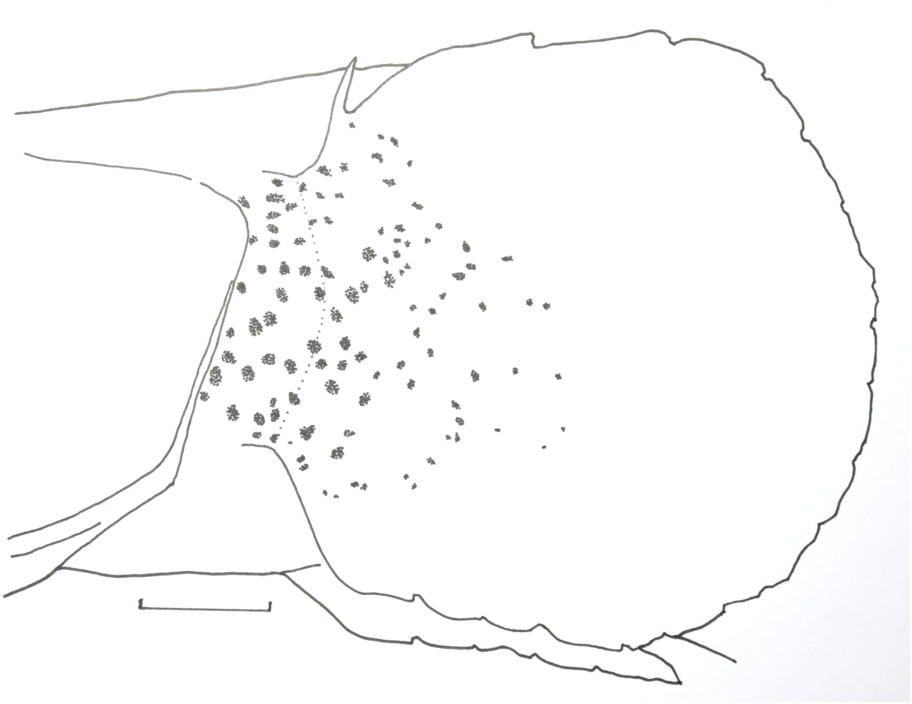

FIGURE 9. Pectoral fin pigmentation of *Luciogobius newtaipeiensis* **sp. nov.**, holotype, 50.2 mm SL, New Taipei City, Taiwan. (Bar = 1 mm).

Coloration when fresh

Body and head light creamy yellow to yellowish brown background. Head and body with small tiny brownish black spots. Second dorsal fin translucent with all rays light brown. Anal fin translucent all rays creamy yellow or pale yellow. Pectoral fin base with many small melanophores, pectoral fin membrane translucent with small melanophores merely on basal region. Caudal fin light brown with small light marks posteriorly. Pelvic fin translucent and creamy white.

Distribution

Till present, this species has only been found in the coastal region of New Taipei City in Taiwan. It is a coastal species on the island. There is a high possibility that it is a species endemic to Taiwan.

Etymology

The specific name, *newtaipeiensis*, refers to the type locality from New Taipei City in Taiwan.

Remarks

Luciogobius newtaipeiensis **sp. nov.** is quite similar to *Luciogobius guttatus* Gill, 1859 due to the similarities in the number of pectoral fin rays and the presence of one upper free ray, more so than any other congeneric species.

However, *Luciogobius newtaipeiensis* **sp. nov.** can be well distinguished from *Luciogobius guttatus* by the following features: (1) second dorsal fin rays I/11 vs. modally I/12; (2) anal fin rays I/12 vs. modally I/13; (3) vertebral count: 16 + 20 = 36 vs. 17 + 21 = 38; (4) an upper dermal projection on orbit: present in male vs. none; and (5) specific coloration: pectoral fin membrane with less brown spotted merely extending around anterior 1/3 of fin membrane vs. rather high black spotted extending beyond middle of fin membrane.

Since *L. guttatus* is believed to be an endemic species to Japan, it is possible that some fish guide books in Taiwan may have misidentified this new species as the so-called "*Luciogobius guttatus*".

Diagnostic key for six nominal species of *Luciogobius* from Taiwan and the Matsu Islands, ROC:

1a	Vertebral count 3	***L. newtaipeiensis* sp. nov.**
1b	Vertebral count more than 36	2
2a	Pectoral fin with 1 or more upper free ray(s)	3
2b	Pectoral fin without any upper free rays	*L. opisthoprotus* Chen & Liao 2024
3a	Pectoral fin with 1 upper free ray	4
3b	Pectoral fin with more than 1 upper free ray	5
4a	Pectoral fin modally 16; vertebral count 37–38	*L. matsuensis* Chen *et al.* 2024
4b	Pectoral fin modally 13; vertebral count 41	***L. chaojinensis* sp. nov.**
5a	Second dorsal fin modally I/15; pectoral fin with 4 upper free rays; vertebral count 39	***L. huatungensis* sp. nov.**
5b	Second dorsal fin I/16; pectoral fin with 3 upper free rays; vertebral count 41	*L. dongyinensis* Chen *et al.* 2024

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