

# First Record of the Anchovy *Stolephorus teguhi* (Engraulidae) from the Philippines

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## KEY WORDS :

Distribution  
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## ABSTRACT

A single Philippines specimen (59.7 mm standard length) of *Stolephorus teguhi* Kimura, Hori & Allen, 2009 (Engraulidae), previously recorded only from North Sulawesi, Indonesia, was recently discovered in the fish collection of the National Museum of Natural History, Smithsonian Institution, USA. A full description is given of the specimen, which constitutes the first record of the species from the Philippines and supports the view that *S. teguhi* is widely distributed in the Celebes Sea to the eastern part of the South China Sea.

## INTRODUCTION

The anchovy genus *Stolephorus* Lacepède, 1803, characterized by a long isthmus muscle reaching anteriorly to the posterior margin of the gill membrane, hidden urohyal and prepelvic scutes, and the absence of postpelvic scutes (Whitehead *et al.*, 1988; Wongratana *et al.*, 1999), is currently represented worldwide by 19 species (Whitehead *et al.*, 1988; Kimura *et al.*, 2009).

A single specimen of *Stolephorus* from the Philippines, found in the Museum Support Center of the National Museum of Natural History, Smithsonian Institution, USA, was identified as *S. teguhi* Kimura, Hori & Allen, 2009, being the only known specimen-based record of the species to date from the Philippines. A full description of the specimen is given.

## MATERIALS AND METHODS

Counts and measurements followed Hata & Motomura (2015). Measurements were made to the nearest 0.1 mm with needle-point digital calipers under a dissecting microscope. The examined specimen is deposited at the Museum Support Center of the National Museum of Natural History, Smithsonian Institution, Suitland, MD, USA (USNM).

## RESULTS AND DISCUSSION

*Stolephorus teguhi* Kimura, Hori & Allen, 2009  
(English name: Sulawesi Anchovy)  
(Fig. 1; Tables 1 and 2)

*Stolephorus teguhi* Kimura, Hori & Allen, 2009: 292, Fig. 1a  
–b (type locality: Pintu Kota, Lembeh Island, North Sulawesi, Indonesia).

**Material examined.** USNM 138538, 59.7 mm SL, Pagapas Bay, Luzon Island, Philippines, 1 m depth, seine net, 1907–1910.

**Description.** Meristics and morphometrics of the specimen are shown in Table 1.

Body rather compressed laterally, elongate, deepest at dorsal-fin origin. Dorsal profile of head and body slightly convex from snout tip to dorsal-fin origin, straight along dorsal-fin base. Ventral profile of head and body slightly convex from lower-jaw tip to pelvic-fin insertion, slightly convex from pelvic-fin origin to anal-fin origin, and straight along anal-fin base. Dorsal and ventral profiles of caudal peduncle straight. Abdomen somewhat rounded, covered by four sharp needle-like scutes anterior to insertion of pelvic fins. Postpelvic and predorsal scutes absent. Anus just anterior to anal-fin origin. Caudal peduncle compressed. Head compressed. Snout tip rounded; snout length less than eye diameter. Interorbital width less than eye diameter. Mouth large, inferior, ventral to body axis, extending backward beyond posterior margin of eye. Lower jaw slender, longer than upper jaw, 1.03 of upper-jaw

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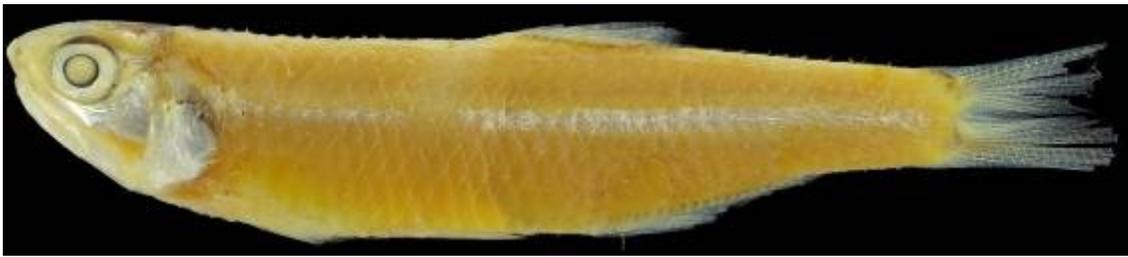
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**Table 1.** Meristics of specimens of *Stolephorus teguhi*.

	This study	Kimura <i>et al.</i> (2009)	
	Philippines	North Sulawesi, Indonesia	
	USNM 138538	Holotype MZB 17.282	Paratypes <i>n</i> = 14
Standard length (mm)	59.7	69	49–77
Dorsal-fin rays (unbranched)	3	3	3
Dorsal-fin rays (branched)	12	12	11–12
Anal-fin rays (unbranched)	3	3	3
Anal-fin rays (branched)	21	20	19–21
Pectoral-fin rays (unbranched)	1	–	–
Pectoral-fin rays (branched)	13	–	–
Pectoral-fin rays (total)	14	13	13–14
Pelvic-fin rays (unbranched)	1	1	1
Pelvic-fin rays (branched)	6	6	6
Caudal-fin rays	19	19	19
Gill rakers on 1st gill arch (upper)	35	32	31–36
Gill rakers on 1st gill arch (lower)	43	44	41–46
Gill rakers on 1st gill arch (total)	78	76	72–82
Gill rakers on 2nd gill arch (upper)	23	–	–
Gill rakers on 2nd gill arch (lower)	40	–	–
Gill rakers on 2nd gill arch (total)	63	–	–
Gill rakers on 3rd gill arch (upper)	17	–	–
Gill rakers on 3rd gill arch (lower)	21	–	–
Gill rakers on 3rd gill arch (total)	38	–	–
Gill rakers on 4th gill arch (upper)	12	–	–
Gill rakers on 4th gill arch (lower)	16	–	–
Gill rakers on 4th gill arch (total)	28	–	–
Gill rakers on posterior face of 3rd gill arch	6	–	–
Prepelvic scutes	4	3	2–5
Lateral-line scales	37	36	34–37
Pseudobranchial filaments	18	–	–

**Table 2.** Morphometrics of specimens of *Stolephorus teguhi*. Figures in parentheses indicate mean values.

	This study Philippines	Kimura <i>et al.</i> (2009) North Sulawesi, Indonesia	
	USNM 138538	Holotype MZB 17.282	Paratypes <i>n</i> = 14
Standard length (mm)	59.7	69	49–77
As % SL			
Head length	26.4	25.1	24.7–27.0 (25.7)
Body depth	20.9	21.4	20.4–22.8 (21.5)
Pre-dorsal-fin length	55.9	53.5	51.4–58.6 (54.5)
Snout tip to pectoral-fin insertion	27.3	26.8	25.5–29.4 (26.8)
Snout tip to pelvic-fin insertion	48.4	44.8	45.8–48.9 (46.9)
Snout tip to anal-fin origin	65.1	63.7	62.2–68.8 (64.3)
Dorsal-fin base length	14.9	15.0	14.1–16.2 (15.1)
Anal-fin base length	24.3	23.5	22.5–25.9 (23.6)
Caudal-peduncle length	14.5	16.2	14.1–16.9 (15.6)
Caudal-peduncle depth	9.3	–	–
Pelvic-fin length	11.4	–	–
1st unbranched dorsal-fin ray length	1.4	–	–
1st unbranched anal-fin ray length	2.0	–	–
2nd unbranched anal-fin ray length	6.2	–	–
As % HL			
Orbit diameter	33.5	–	–
Eye diameter	27.4	25.6	23.3–28.2 (25.5)
Snout length	17.2	22.1	17.0–22.3 (19.6)
D–P1	137.8	–	–
D–P2	87.2	–	–
D–A	86.3	–	–
P1–P2	81.8	–	–
P2–A	67.5	–	–
Pelvic-fin length	43.3	45.3	40.7–46.6 (43.2)
Postorbital length	55.6	57.0	55.4–59.1 (57.2)
Interorbital width	23.6	–	–
Upper-jaw length	62.2	66.3	61.8–77.9 (72.2)
Mandibular length	64.5	–	–
As % length of upper jaw			
Distance between posterior ends of supramaxilla and maxilla	8.7	7.0	6.6–12.7 (10.0)



**Figure 1.** Preserved specimen of *Stolephorus teguhi* (59.7 mm SL) collected from Pagapas Bay, Luzon Island, Philippines (USNM 138538).

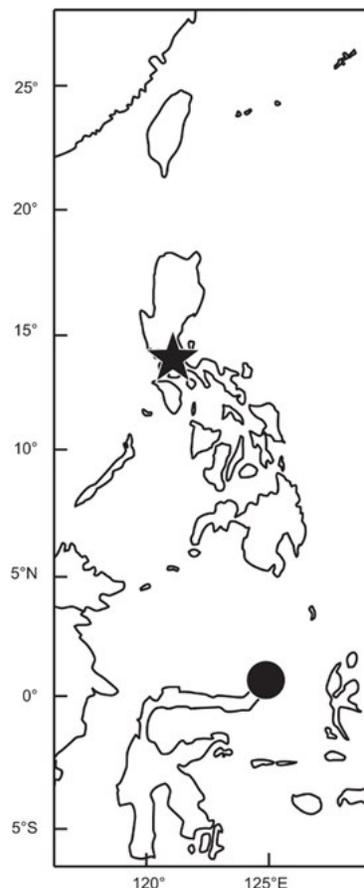
length. Posterior tip of maxilla rounded, reaching to just behind anterior margin of preopercle, not reaching to posterior margin. Eye large, round, positioned laterally on head dorsal to horizontal through pectoral-fin insertion, visible in dorsal view. Pupil round. Orbit elliptical. Nostrils close to each other, positioned anterior to orbit. Posterior margins of preopercle and opercle smooth. Subopercle with rounded posterior margin. Opercular membrane without serrations. Interorbital space flat. Pseudobranchial filaments present, length of longest filament clearly less than eye diameter. Gill rakers long, slender, rough, visible from side of head when mouth opened. Isthmus muscle long, reaching anteriorly to posterior border of gill membrane. Gill membrane not broadly joined over isthmus. Lateral line absent. No scales on fins, except for broad triangular sheath of scales on caudal fin. Dorsal-fin origin posterior to vertical through base of last pelvic-fin ray, slightly posterior to middle of body. Dorsal and anal fins with three anteriormost rays unbranched. First dorsal-fin ray and first anal-fin ray minute. Anteriormost three rays of both dorsal-fin and anal-fin closely spaced. Anal-fin origin just below base of eighth dorsal-fin ray. Posterior tip of depressed anal fin short of caudal-fin base. Uppermost pectoral-fin ray unbranched, inserted below midline of body. Posterior tip of pectoral fin not reaching vertical through pelvic-fin origin; pelvic-fin shorter than pectoral fin; pelvic-fin insertion anterior to vertical through dorsal-fin origin. Posterior tip of depressed pelvic fin not reaching anus, reaching vertical through base of fourth dorsal-fin ray.

**Coloration of preserved specimen (Fig. 1).** Body pale with a faint silver longitudinal band from just posterior to upper opercular margin to caudal-fin base. Cheek and opercle silver. Melanophores scattered on snout tip to upper part of head, tip of mandible, longitudinal band, bases of dorsal and anal fins, and fin rays of dorsal and caudal fins. Fins, except dorsal and caudal fins, translucent.

**Remarks.** The Philippines specimen was identified as *Stolephorus teguhi* due to the following combination of characters: short upper jaw, reaching to just behind anterior margin of preopercle;  $35 + 43 = 78$  gill rakers; ratio of distance between posterior margins of supramaxilla and maxilla to

upper jaw length 8.7%; ratio of postorbital length to head length 55.6 %; and posterior margin of preopercle rounded, not indented. These characters agreed well with the diagnosis of *S. teguhi* given by Kimura *et al.* (2009). In addition, the meristics and morphometrics of the present specimen greatly agreed with those of *S. teguhi* given by Kimura *et al.* (2009).

*Stolephorus teguhi* was originally described by Kimura *et al.* (2009) based on 15 specimens collected from North Sulawesi, Indonesia. No subsequent reports on the species have been published (Fig. 2). The present specimen, from Luzon Island, represents the first record of *S. teguhi* from the Philippines and suggests that the species is widely distributed in Celebes Sea to the eastern part of the South China Sea.



**Figure 2.** Distributional records of *Stolephorus teguhi*. Star and circle indicate localities of specimen examined in this study and previously recorded, respectively.

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