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STOLEPHORUS REX (TELEOSTEI: CLUPEIFORMES: ENGRAULIDAE): FIRST AND NORTHERNMOST RECORDS FROM TAIWAN

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ABSTRACT

A specimen of Commerson's Anchovy *Stolephorus rex* Jordan and Seale, 1926 was collected from offshore of Ke-tzu-liao, southwestern Taiwan. Because *S. rex* was synonymized with *Stolephorus commersonnii* Lacepède, 1803, along with several other congeners for over 30 years, until its resurrection as a valid species in 2021, the exact distribution of *S. rex* is unclear. The present specimen described in detail herein represents the first reliable specimen-based record from Taiwan and the northernmost record of the species.

Keywords: biodiversity, Clupeomorpha, ichthyofauna, *Stolephorus commersonnii*, taxonomy

INTRODUCTION

Stolephorus Lacepède, 1803, is a genus of the anchovy family Engraulidae which is widely distributed in the Indo-Pacific Ocean. It currently includes at least 47 valid species (Wongratana, 1983, 1987a, b; Whitehead *et al.*, 1988; Wongratana *et al.*, 1999; Kimura *et al.*, 2009; Hata & Motomura, 2018a–e, 2021a–c, 2022a, 2022b, 2023a, 2023b, 2024a, 2024b; Hata *et al.*, 2019, 2020a, 2020c, 2021, 2022b, 2022c, 2023, 2024a; Gangan *et al.*, 2020). The genus was reviewed by Whitehead *et al.* (1988) who recognized 18 valid species. In this revision, specimens with long maxillae reaching to hind border of preopercle posteriorly, a pair of dark lines on dorsum anterior to dorsal-fin origin, 23–28 gill rakers on first lower gill arch, and lacking predorsal scutes, were regarded as belonging to a single species, *Stolephorus commersonnii* Lacepède, 1803. This single species was then considered to be widespread in the Indo-West Pacific region. However, Hata *et al.* (2021) and Hata & Motomura (2021b) indicated that at least four species, *Stolephorus grandis* Hata and Motomura, 2021, *Stolephorus mercurius* Hata, Lavoué and Motomura, 2021, *Stolephorus rex* Jordan and Seale, 1926, and *Stolephorus zephyrus* Hata, Lavoué and Motomura, 2021, are included in the previous recognized "*S. commersonnii*". Of these four species, only two, *S. mercurius* and *S. rex*, are distributed in the northwestern Pacific, and only *S. mercurius* has been reliably reported from Taiwan based on specimens (Hata *et al.*, 2021). During a recent ichthyofaunal survey

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in southern Taiwan, a specimen identified as *S. rex* was collected from the landing ground offshore from Ke-tzu-liao Fishing Port. The specimen represents the first record of the species from Taiwanese waters as well as the northernmost record. Additional information of specimen records and comments on the Taiwanese congeners are provided.

MATERIALS AND METHODS

Counts and measurements follow HATA & MOTOMURA (2017), and the latter are presented as percentage of standard length (SL) or head length (HL). All measurements were made with digital calipers to the nearest 0.1 mm. "Pelvic scute" refers to the scute associated with the pelvic-fin insertion, whereas "prepelvic", "postpelvic", and "predorsal scutes" refer to the scutes anterior to the pelvic scute, posterior to the pelvic scute, and just anterior to the dorsal-fin origin, respectively. Abbreviations are as follows — UGR, LGR and TGR: rakers on upper limb, lower limb and total gill rakers, respectively, with associated numbers indicating the specific gill arch. Institutional abbreviations follow FRICKE & ESCHMEYER (2025).

RESULTS

Stolephorus rex Jordan and Seale, 1926

(Fig. 1; Tables 1, 2)

Material examined: OISTICH 676, 88.2 mm SL, Ke-tzu-liao Fishing Port, Kaohsiung, southwestern Taiwan.

Description.— Counts and measurements, expressed as percentages of SL or HL are given in Tables 1 and 2, respectively. Body subcylindrical, laterally compressed, deepest at dorsal-fin origin. Dorsal profile of body gently increasing from snout tip to dorsal-fin origin, then gently declining to uppermost point of caudal-fin base posteriorly. Ventral profile of head and body gradually lowering from lower-jaw tip to pelvic-fin insertion, thereafter gradually elevated to lowermost point of caudal-fin base. Abdomen rounded, covered with three spine-like prepelvic scutes projecting posteriorly anterior to pelvic fin insertion. Pelvic scute without spine. Postpelvic and predorsal scutes absent. Anus just anterior to anal-fin origin.

Head large. Snout round, projecting, its tip horizontally level with eye center. Eye large, round, covered by adipose eyelid without slit, positioned laterally on head dorsal to horizontal through pectoral-fin insertion, visible in dorsal and ventral views. Pupil round. Orbit elliptical. Nares (nostrils) close to each other, positioned anterior to orbit. Mouth large, inferior, ventral to body axis, extending backward beyond hind margin of orbit. Maxilla rather long, its posterior tip slightly short of posterior margin of opercle. Lower jaw slender. Posterior margins of preopercle, subopercle and opercle rounded, smooth. Gill membrane without serrations. Interorbital space flat. Interorbital width less than eye diameter.

Pectoral fin triangular, its dorsal, ventral, and posterior margins nearly straight; posterior tip of fin pointed, not reaching to vertical through pelvic-fin insertion; uppermost fin ray unbranched, other rays branched. Pelvic fin triangular, its outer margins nearly straight; shorter

Figure 1. (A) Lateral, (B) dorsal, and (C) ventral views of fresh specimen of *Stolephorus rex* (OISTICH 676, 88.2 mm SL, Dong-gang, southwestern Taiwan). Photographs by Harutaka Hata.

than pectoral fin; fin insertion anterior to origin of dorsal fin; anteriormost ray unbranched, other rays branched. Posterior tip of depressed pelvic fin reaching to third dorsal-fin ray origin. Caudal fin forked, tips of both lobes pointed; outer margins of both lobes nearly straight. Dorsal-fin origin posterior to base of last pelvic-fin ray, slightly posterior to middle of body. Dorsal and anal fins with three anteriormost rays closely spaced and unbranched, other rays branched. First dorsal- and anal-fin rays minute. Dorsal fin triangular; its outer contour elevated from dorsal-fin origin to third fin ray tip, thereafter lowering to last dorsal-fin ray tip. Anal-fin origin located just below base of eleventh dorsal-fin ray. Ventral margin of anal fin lowering from fin origin to third fin ray tip, subsequently increasing to last anal-fin ray tip. Posterior tip of depressed anal fin not reaching caudal-fin base.

Pseudobranchial filaments present, not covered with fleshy membrane; length of longest filament less than eye diameter. Gill rakers long, slender; minute protrusions on inner edge of gill rakers; visible from side of head when mouth opened. Isthmus muscle long, pointed, reaching anteriorly to posterior margin of gill membrane. Urohyal embedded by isthmus muscle (not visible without dissection). Gill membrane on each side joined distally, most of isthmus muscle exposed (not covered by gill membrane).

Single row of conical teeth on each jaw and palatines. Several conical teeth on vomer. Small fine teeth patch on pterygoids. No teeth on dorsal surface of hyoid arch. One to two rows of conical teeth on dorsal surfaces of basihyal, basibranchial, hypobrachial, and ceratobranchial.

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

	Non-type specimens		Holotype	
	Southwestern Taiwan	Indo-West Pacific	Kannur, Kerala, India	
	OISTICH 676	*n* = 75	MCZ 4318	
Standard length (mm)	88.2	52.5–104.4	103.2	Modes
Dorsal-fin rays (unbranched)	3	3	3	3
Dorsal-fin rays (branched)	13	12–14	13	13
Anal-fin rays (unbranched)	3	3	3	3
Anal-fin rays (branched)	17	16–19	18	18
Pectoral-fin rays (unbranched)	1	1	1	1
Pectoral-fin rays (branched)	13	11–14	13	13
Pelvic-fin rays (unbranched)	1	1	1	1
Pelvic-fin rays (branched)	6	6	6	6
Caudal-fin rays	19	19	19	19
Gill rakers on 1st gill arch (upper)	17	16–19	19	8
Gill rakers on 1st gill arch (lower)	23	22–26	24	24
Gill rakers on 1st gill arch (total)	40	38–43	43	42
Gill rakers on 2nd gill arch (upper)	12	11–15	13	13
Gill rakers on 2nd gill arch (lower)	21	20–24	24	22
Gill rakers on 2nd gill arch (total)	33	32–38	37	35
Gill rakers on 3rd gill arch (upper)	10	9–12	10	10
Gill rakers on 3rd gill arch (lower)	14	11–15	14	13
Gill rakers on 3rd gill arch (total)	24	21–26	24	23
Gill rakers on 4th gill arch (upper)	8	7–10	8	8
Gill rakers on 4th gill arch (lower)	11	8–12	12	11
Gill rakers on 4th gill arch (total)	19	16–22	20	19
Gill rakers on posterior face of 3rd gill arch	4	3–8	5	5
Prepelvic scutes	3	2–6	4	4
Scale rows in longitudinal series	35	34–39	36	35
Pseudobranchial filaments	21	17–24	21	19
Pectoral-fin rays with melanophores	0	0–4	6	0

Head entirely without scale. Fins scaleless, except for broad triangular sheath of scales on caudal fin. No lateral line. All lateral body scales completely fallen off. Predorsal scales arranged in median row.

Color of fresh specimen.— Body entirely milky white. Silver longitudinal band narrower than pupil running through middle part of body, extending from above pectoral-fin insertion to caudal-fin base. Cheek and opercle uniformly silver. Snout, both jaws and dorsal surface of head translucent. Melanophores scattered on snout tip and upper part of cleithrum, but not on both jaws and suborbital area. Pairs of dark patches

Table 2. Morphometrics of specimens of *Stolephorus rex*.

	Non-type specimens		Holotype	
	Southwestern Taiwan	Indo-West Pacific	Kannur, Kerala, India	
	OISTICH 676	*n* = 75	MCZ 4318	
Standard length (mm; SL)	88.2	52.5–104.4	103.2	Means
As % SL				
Head length	25.5	24.3–27.6	24.4	25.5
Body depth	24.0	18.9–24.2	18.8	21.4
Pre-dorsal-fin length	52.3	51.7–57.7	55.0	54.1
Snout tip to pectoral-fin insertion	27.9	25.3–30.3	27.0	27.6
Snout tip to pelvic-fin insertion	47.2	43.7–48.6	48.1	46.1
Snout tip to anal-fin origin	65.8	61.1–66.7	67.6	64.2
Dorsal-fin base length	15.1	13.5–16.2	14.1	15.0
Anal-fin base length	20.9	16.9–22.7	18.7	19.5
Caudal-peduncle length	18.3	15.4–20.3	17.3	18.0
Caudal-peduncle depth	11.5	8.6–11.5	8.6	10.0
D–P1	36.1	32.2–37.6	33.5	34.7
D–P2	26.1	20.0–26.6	19.7	23.4
D–A	25.3	21.3–25.1	22.5	23.2
P1–P2	21.9	17.4–22.7	20.9	19.7
P2–A	20.6	16.7–21.3	19.4	18.8
Pectoral fin length	16.4	13.8–17.5	broken	16.3
Pelvic fin length	11.0	8.4–12.0	9.4	10.5
Maxilla length	21.4	19.1–23.1	19.7	20.8
Mandibular length	17.5	15.9–18.3	16.3	17.1
Supramaxilla end to maxilla end	5.1	3.8–6.3	5.1	4.9
As % of HL				
Orbit diameter	30.3	29.1–35.6	32.7	32.0
Eye diameter	26.1	22.8–30.4	25.7	26.6
Snout length	18.2	12.1–18.7	15.8	16.5
Interorbital width	23.2	21.1–25.4	21.8	22.9
Postorbital length	54.2	47.4–60.2	55.8	52.9

Abbreviations: D–P1 (distance from dorsal-fin origin to pectoral-fin insertion); D–P2 (distance from dorsal-fin origin to pelvic-fin insertion); D–A (distance between origins of dorsal and anal fins); P1–P2 (distance between insertions of pectoral and pelvic fins); P2–A (distance between pelvic-fin insertion and anal-fin origin).

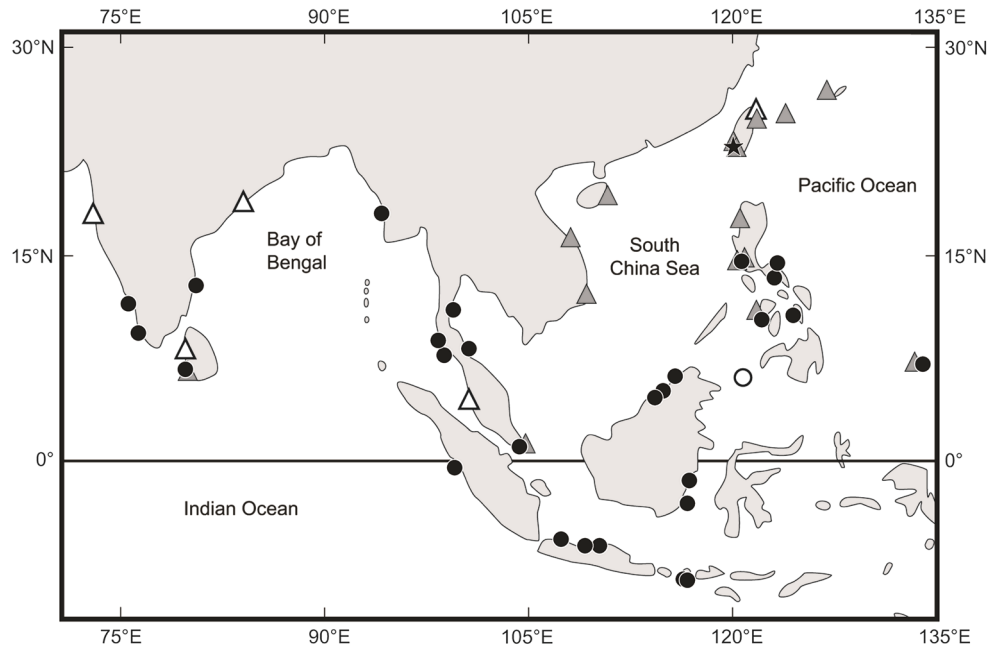

Figure 2. Distributional records of *Stolephorus rex* (black circles; Taiwanese record as a star) and *S. mercurius* (gray triangles). Specimens examined in present study, closed symbols; literature records (LAVOUÉ *ET AL.*, 2022; HATA *ET AL.,* 2022a; GOUDA *ET AL.*, 2023), open symbols.

on parietal and occipital regions. Double dark lines on dorsum from occipital region to dorsal-fin origin. Scale pockets on dorsum with black posterior margins. Dorsal fin translucent, melanophores scattered along first to eighth fin rays. Pectoral, pelvic, and anal fins without melanophores. Scattered melanophores along bases of dorsal and anal fins. Caudal fin basally yellow, margined black, with scattered melanophores on fin rays. Pupil and iris silver and black, respectively.

Distribution.— *Stolephorus rex* is widespread in the Indo-West Pacific region, from the southwestern coast of India to Taiwan, Palau, and Indonesia based on examination of specimens (HATA *ET AL.*, 2021, 2022a, 2024b; HATA & MOTOMURA, 2024c; this study; Fig. 2).

DISCUSSION

Identification

The Taiwanese specimen is identified as a species of the genus *Stolephorus* as determined by WHITEHEAD *ET AL.* (1988) and WONGRATANA *ET AL.* (1999) due to the presence of prepelvic scutes and a forked caudal fin not connected to anal fin, a long isthmus muscle anteriorly reaching to the posterior margin of the gill membrane, the urohyal embedded in the isthmus muscle, and lacking of postpelvic scutes and filamentous extensions on the pectoral fin.

In addition, the present specimen closely matches the following combination of diagnostic characters of *S. rex* shown in Hata *et al.* (2021): paired double black lines on dorsum anterior to dorsal fin; posterior tip of depressed pelvic fin reaching to vertical through third dorsal-fin ray origin; maxilla posteriorly beyond the posterior margin of preopercle; 1TGR 40; head length 25.5% of SL. Other meristic and morphometric characters of the specimen closely matched those obtained for *S. rex* specimens collected from Indo-West Pacific, including the holotype (Tables 1, 2).

Distributional Records of *S. rex*

Stolephorus rex had long been regarded as a junior synonym of *S. commersonnii* in previous literatures (Whitehead *et al.*, 1988; Wongratana *et al.*, 1999). However, Hata *et al.* (2021) resurrected *S. rex* as a valid species based on specimens collected from the southwestern Indian coast to Indonesia and the Philippines. Subsequently, Hata *et al.* (2022a) reported the species from Java, the Philippines, and Palau. Given the identification of the present specimen and prior taxonomic revisions, other individuals previously reported from Taiwan as *S. commersonnii* may include *S. mercurius* and *S. rex*. Counts of gill rakers on first gill arch separate *S. mercurius* (18–22 + 24–28 = 44–49) and *S. rex* (16–19 + 22–26 = 39–43) (Hata *et al.*, 2021; this study). "*Stolephorus commersonnii*" has been recorded from Taiwanese waters by several researchers, with diagnostically-relevant counts of gill rakers on first gill arch shown by Chen (1956: 17–19 + 21–25), Shen (1984a: 1LGR 23–27), Mok (1993: 1LGR 23–28) and Shen & Wu (2011: 1LGR: 23–28). Because these ranges partly overlap the gill-raker count of *S. rex*, their *S. commersonnii* records may include individuals of *S. rex*. However, as they have never shown the registration numbers or deposit location of voucher specimens and identification of these records remains ambiguous.

Fowler (1941) included Formosa (former name of Taiwan) in the distributional range of *S. commersonnii* (as *Anchoviella commersonii*) by citing a record of *Anchovia koreana* (Kishinouye, 1908) from Jordan & Richardson (1909), which reported a specimen collected from Takao (former name of Kaohsiung), Taiwan. Because Jordan & Richardson (1909)'s *A. koreana* has 30 anal-fin rays, it is clearly not a member of *Stolephorus,* which is diagnosed by 25 or fewer anal-fin rays (Whitehead *et al.*, 1988; Wongratana *et al.*, 1999). In addition, *A. koreanus* is now regarded as a junior synonym of *Thrissina chefuensis* (Günther, 1874) (Whitehead *et al.*, 1988; Hata *et al.*, 2020b).

Young *et al.* (1994) reported engraulid specimens collected from Kaohsiung (NTUM 83022) as *S. commersonnii*. Because specimens have at least 47 gill rakers on the first gill arch (1TGR), they were identified as *S. mercurius*. Although Shao (2011) and Hata (2019, 2020) assigned specimens of engraulid fish collected from Dapeng Bay (ASIZP 64669) and Dong-gang (NMMB-P 23106) as *S. commersonnii*, these specimens are now re-identified as *S. mercurius* based on examination of voucher specimens.

Hata *et al.* (2019, 2020a) reported the cytochrome *b* and COI sequences of engraulid fish collected from Dong-gang (NMMB TA01) under the name *S. commersonnii*. However, the analyzed specimen was registered as NTUM 15426 and re-designated as a paratype of *S. mercurius* in Hata *et al.* (2021).

As a result of prior taxonomic confusion, no accurate specimen-based record of *S. rex* from Taiwanese waters has been found to date. Therefore, the present specimen described in this study represents the first record of *S. rex* from Taiwan and has extended the northern

limit of the species' distribution by approximately 5 degrees in latitude. The present Taiwanese specimen, or its ancestors, could have dispersed through or been transported by northward currents from the Philippines, which is the northern limit of the species' previously known distribution in the Pacific Ocean (Fig. 2).

Stolephorus rex and *S. mercurius*, two species previously regarded as a single species included in *S. commersonnii* (Whitehead *et al.*, 1988; Wongratana *et al.*, 1999), are genetically closely related, suggesting that they are sister species (Hata *et al.*, 2021, 2022c, 2024a). Hata *et al.* (2021: Fig. 22) indicated that *S. mercurius* and *S. rex* are mainly distributed in the western Pacific (Philippines to Singapore) and the northeastern Indian Ocean and the western Pacific (Philippines to southern Indonesia), respectively. Judging from their reported ranges, geographic isolation is predicted to have led to the allopatric speciation of the two species. In recent studies, detailed distributional ranges of these two species were indicated; *S. mercurius* is also distributed in the northeastern Indian Ocean (Lavoué *et al.*, 2022; Gouda *et al.*, 2023; Hata & Motomura, 2024c), on the other hand, *S. rex* has also been confirmed to be distributed sympatrically in Palau and Taiwan, where *S. mercurius* is also observed (Hata & Motomura, 2022a; this study). The current ranges of these two species have been shown to largely overlap. These two species differ in their morphological traits related to feeding behavior, e.g. the number of gill rakers and head length (see the key below), and so difference in diet may have been a factor in their speciation. However, little is known about the ecology of the two species due to taxonomic confusion, and further investigation is needed.

Species of the Genus *Stolephorus* in Taiwan

Young *et al.* (1994) reviewed engraulid fishes in Taiwan and identified species according to the formulation of Wongratana (1983, 1987b). They recognized four species of *Stolephorus*, viz., *S. commersonnii* (as *S. commersonii*), *Stolephorus indicus* (van Hasselt, 1823), *Stolephorus insularis* Delsman, 1931, *Stolephorus waitei* Jordan and Seale, 1926. As stated in the introduction, species and specimens previously treated as *S. commersonnii* were subsequently shown to belong to at least four valid species. Among them, *S. mercurius* and *S. rex* have been confirmed to be distributed in Taiwanese waters (Hata *et al.*, 2021; this study). Although *S. indicus* has also been reported from Taiwan by various researchers (e.g., Chen, 1956; Shen, 1984a, 1984b; Mok, 1993; Chen, 2003; Shen & Wu, 2011; Shao, 2011; Hata, 2019, 2020), specimens referred to "*S. indicus*" in the northwestern Pacific including Taiwan, have since been reassigned to a separate species, *Stolephorus balinensis* (Bleeker, 1851) (Hata *et al.*, 2021).

Furthermore, Hata *et al.* (2019, 2022b) showed that the two species in the Far East previously treated as *S. insularis* and *S. waitei* were, in fact, *Stolephorus eldorado* Hata, Lavoué and Motomura, 2022 and *Stolephorus bataviensis* Hardenberg, 1933, respectively.

Based on our observations, specimens reported as *S. insularis* by Shen (1984b), Mok (1993), Shen & Wu (2011) are most likely misidentifications of *Encrasicholina heteroloba* (Rüppell, 1837), a species which exhibits the origin of anal fin behind dorsal-fin base end. Three additional species of the genus *Stolephorus*, *Stolephorus heterolobus, Stolephorus pseudoheterolobus* Hardenberg, 1933, and *Stolephorus punctifer* (Fowler, 1938) (sometimes reported as *Stolephorus buccaneeri* Strasburg, 1960, a junior synonym of *E. punctifer*; Hata & Motomura, 2016a) have also been reported from Taiwanese waters (Chen, 1956; Shen, 1984a, 1984b), but all three are currently classified within another engraulid genus *Encrasicholina* Fowler, 1938 (Wongratana, 1983, 1987b; Whitehead *et al.*, 1988; Young *et al.* 1994; Wongratana *et al.*, 1999; Hata & Motomura, 2016b).

In addition, *Stolephorus tri* Bleeker, 1852, a species with a predorsal scute, has been reported from Taiwan in the past (Chen, 1956; Shen, 1984a), even though subsequent work shows that this species is typically distributed only in the region from southern Vietnam to Indonesia (Rainboth *et al.*, 2012; Hata *et al.*, 2019, 2022c). These Taiwanese records of *S. tri* are most likely misidentifications of *S. eldorado*, the only Taiwanese species with a predorsal scute.

Although Hata (2019, 2020) reported an engraulid specimen collected from southern Taiwan as *Stolephorus bengalensis* (Dutt and Babu Rao, 1959), the specimen was later re-identified as *S. eldorado* (Hata *et al.*, 2022b). Moreover, Hata & Motomura (2018e) described their new species, *Stolephorus insignus* Hata and Motomura, 2018 based on specimens from the western Pacific including Taiwan. Consequently, a total of six species of *Stolephorus* have been confirmed distributing in Taiwan based on voucher specimens.

Key to Species of *Stolephorus* Recorded from Taiwan

1a. Predorsal scute present; paired dark lines on dorsum only posterior to dorsal fin; small species, < 60 mm SL..... ***S. eldorado*** [a]
1b. Predorsal scute absent; no paired lines on dorsum or present only on anterior to dorsal fin (in *S. mercurius* and *S. rex*); reaching to 70 mm SL or more 2

2a. Maxilla short, posteriorly just reaching or extending slightly beyond anterior margin of preopercle; depressed pelvic fin not reaching to vertical through dorsal-fin origin..... ***S. balinensis*** [b]
2b. Maxilla long, posteriorly just reaching or extending beyond posterior margin of preopercle; depressed pelvic fin reaching to or beyond vertical through dorsal-fin origin 3

3a. Paired black lines on dorsum 4
3b. No dark lines on dorsum 5

4a. 1TGR ≥ 44; head short, 23.1–24.8% SL ..... ***S. mercurius*** [b]
4b. 1TGR ≤ 43; head long, 24.3–27.6% SL ..... ***S. rex*** [b]

5a. 1LGR 19–22; 1TGR 33–38; melanophores scattered on lower-jaw tip and suborbital area (in most individual > 60 mm SL); maxilla long, reaching to or slightly not to posterior margin of opercle ..... ***S. bataviensis*** [c]
5b. 1LGR 26–28; 1TGR 46–49; melanophores not scattered on lower-jaw tip and suborbital area; maxilla rather short, just reaching to posterior margin of preopercle ..... ***S. insignus*** [d]

[a] Data based on Hata *et al.* (2022b); [b] Hata *et al.* (2021); [c] Hata *et al.* (2019); [d] Hata & Motomura (2018e).

Comparative material examined: *Stolephorus mercurius*, 40 specimens, 62.3–103.6 mm SL: listed in Hata *et al.* (2021) and 12 additional specimens. ANSP 63211, 1 of 9 specimens, 73.3 mm SL, Santa Maria, Ilocos Sur, Luzon, Philippines; ANSP 63302, 71.2 mm SL, Orion, Bataan Province, Luzon, Philippines; ASIZP 64669, 88.4 mm SL, Tapeng Bay, Pingtung, Taiwan, 6 m depth; NMMB-P 23106, 2 specimens, 88.5–90.3 mm SL, Donggang, Pingtung, Taiwan; NRM 72015, 96.0 mm SL, Colombo, Western Province, Sri Lanka; SMF 24998, 1 of 4 specimens, 103.0 mm SL, Boao, Hainan Island, China; ZUMT 62051, 5 specimens, 78.0–92.8 mm, Palau.

Stolephorus rex, 76 specimens, 52.5–104.4 mm SL: listed in Hata *et al.* (2021) and 32 additional specimens. ANSP 27444, 2 of 3 specimens, 74.3–84.2mm SL, Padang, Sumatra, Indonesia; BPBM 26577, 58.9 mm SL, Jakarta, Java, Indonesia; CAS-SU 8041, 73.6 mm SL, Sumatra, Indonesia; CAS-SU 52150, 97.1 mm SL, Singapore; MNHN 1981-1156, 91.7 mm SL, Kochi, Kerala, India; MZB 4886, 77.8 mm SL, Cijaralang, Sumur, Pandeglang, Java, Indonesia; MZB 4905, 72.1 mm SL, Cijaralang, Sumur, Pandeglang, Java, Indonesia; MZB 28361, 96.3 mm SL, off Tanjung Pasir, Java, Indonesia (obtained at Tanjung Pasir Fish Market); NRM 24928, 3 specimens, 89.4–97.8 mm SL, Colombo, Sri Lanka; NRM 25490, 2 specimens, 52.5–60.5 mm SL, Brunei Bay, near Sipitang, Sabah/Sarawak Border, Borneo, Malaysia; PMBC 6508, 2 specimens, 86.9–89.1 mm SL, San Miguel Bay, Luzon, Philippines; PMBC 9826, 92.7 mm SL, Bang Saphan Noi, Prachuap Khiri Khan, Thailand; QM I. 31064, 78.1 mm SL, estuary of Sungai Tarkan, Sebuku Island, South Kalimantan, Indonesia; USNM 138536, 67.4 mm SL, river at Pasacao, Ragay Gulf, Luzon, Philippines; USNM 398323, 3 of 5 specimens, 64.2–74.6 mm SL, Minyar Chaung, Sandoway District, Rakhine State, Myanmar (17°46′57″N, 94°30′29″E), 1.1 m depth; USNM 402003, 3 specimens, 58.8–76.8 mm SL, Tanah Palang, Kuala Tutong, Tutong District, Borneo, Brunei (4°46′04.1″N, 114°36′10.8″E), 0–1 m depth; ZMA 108.365, "2 specimens," 64.8–72.1 mm SL, Jakarta, Indonesia; ZMH 10651, 97.4 mm SL, Java, Indonesia; ZUMT 62052, 3 specimens, 79.4–82.8 mm SL, Palau.

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