

## Two new species of the genus *Encrasicholina* (Clupeiformes: Engraulidae): *E. intermedia* from the western Indian Ocean and *E. gloria* from the Persian Gulf, Red Sea and Mediterranean

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**Abstract.** Two new anchovies, *Encrasicholina intermedia* and *E. gloria* are described from the western Indian Ocean, and Persian Gulf, Red Sea and Mediterranean, respectively. Both species resemble *E. punctifer* in having a short upper jaw (posterior tip not reaching to anterior margin of preopercle) and well developed needle-like scutes on the anteroventral body. *Encrasicholina intermedia* differs from *E. punctifer* and *E. gloria* in having 46–50, 36–38, 23–25 and 19–21 gill rakers on the first, second, third and fourth gill arches, respectively. *Encrasicholina gloria* is distinguished from the other two species by having a longer first unbranched dorsal-fin ray (6.8–7.9% of standard length) and higher counts of gill rakers: 51–59, 42–45, 26–29 and 19–23 on the first, second, third and fourth gill arches, respectively.

**Key words.** Teleostei, morphology, taxonomy, *Encrasicholina punctifer*, Arabian Sea

### INTRODUCTION

The genus *Encrasicholina* Fowler, 1938, small sized anchovies (less than 10 cm standard length) that primarily inhabit marine and/or estuarine waters in the Indo-Pacific and include six valid species (Whitehead et al., 1988; Hata & Motomura, 2015). The genus has been diagnosed by the presence of a short isthmus muscle not reaching anteriorly to the posterior margin of the gill membrane, an exposed urohyal and prepelvic scutes, and absence of postpelvic scutes (Whitehead et al., 1988; Wongratana et al., 1999).

During a revisionary study of *Encrasicholina*, a number of specimens of engraulid fishes from the Indian Ocean, and Red Sea, Mediterranean and Persian Gulf, respectively, were identified as new to science. They are described here as two new species of *Encrasicholina*.

### MATERIAL AND METHODS

Counts and proportional measurements followed Hata & Motomura (2015). All measurements were made with digital calipers to the nearest 0.01 mm. Osteological characters were examined from radiographs. Standard and head lengths were abbreviated as SL and HL respectively. Counts and measurements, expressed as percentages of SL or HL, are

given in Tables 1, 2. Frequency distributions of selected meristics are given in Fig. 3. Institutional codes followed those listed in Sabaj Pérez (2010).

### TAXONOMY

#### *Encrasicholina intermedia*, new species

[New English name: shiner anchovy]

(Figs. 1, 3–5; Tables 1, 2)

**Material examined.** Holotype: RMNH.PISC 26135, 57.7 mm SL, Kalient, Kerala, India, 16 August 1966. Paratypes: 14 specimens, 49.8–75.2 mm SL. BMNH 1919.9.12.6, 71.6 mm SL, Durban, South Africa, H. Marley; BMNH 1966.11.17.130–134, 5 specimens, 68.2–75.2 mm SL, Mafia Channel, Tanzania, 07°42'N, 39°37'E, ca. 34.7 m, December 1965, G. Losse; BMNH 1968.4.4.38, 50.5 mm SL, Formosa Bay, Kenya, 23 November 1965, G. Losse; KAUM–I. 80905, 49.9 mm SL, RMNH.PISC 38393, 2, 49.9–57.0 mm SL, Kalient, Kerala, India, 16 August 1966, Kerala State Fish Office; MNHN 1969-0057, 2, 54.1–55.3 mm SL, Kalient, Kerala, India, 08°30'00"N, 76°49'59"E, I. Ronquillo; USNM 204229, 2, 54.8–56.0 mm SL, Kalient, Kerala, India, 16 August 1966.

**Diagnosis.** A species of *Encrasicholina* with the following combination of characters: dorsal and anal fins with two unbranched rays; pseudobranchial filaments 21–26 (modally 24); gill rakers 20–23 (20) in upper series on 1st gill arch, 26–28 (26) in lower series, 46–50 (46) in total; gill rakers 13–14 (13) in upper series on 2nd gill arch, 23–25 (23) in lower series, 36–38 (36) in total; gill rakers 10–12 (11) in upper series on 3rd gill arch, 12–13 (13) in lower series, 23–25 (24) in total; gill rakers 9–10 (10) in upper series on 4th gill arch, 9–11 (10) in lower, 19–21 (20) in total;

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Fig. 1. Holotype of *Encrasicholina intermedia*, new species. RMNH.PISC 26135, 57.7 mm SL, Kalient, Kerala, India.

prepelvic scutes 3–6 (5); posterior tip of upper jaw not reaching to anterior margin of preopercle; length of first unbranched dorsal-fin ray 4.7–5.8% of SL.

**Description.** Data for the holotype are presented first, followed by paratype data in parentheses. Body cylindrical, elongate; greatest body depth 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 to straight from pelvic-fin origin to anal-fin origin, almost straight along anal-fin base. Dorsal and ventral profiles of caudal peduncle slightly concave. Belly slightly rounded, covered by 4 (3 to 6) sharp needle-like scutes anterior to insertion of pelvic fins. Postpelvic and predorsal scutes absent. Anus situated just anterior to anal-fin origin. Caudal peduncle compressed, its depth greater than eye diameter. Head large, compressed. Snout length less than eye diameter, tip rounded. Interorbital width less than orbit diameter. Mouth large, inferior, ventral to body axis, extending backward beyond posterior margin of eye. Lower jaw slender, longer than upper jaw, 108.7% (100.4–119.1%) of upper-jaw length, 62.9% (59.0–67.0%) of head length. Posterior tip of maxilla blunt, scarcely projecting beyond second supra-maxilla, not reaching to anterior border of preopercle. Single rows of conical teeth on jaws and palatines. Small conical teeth on vomer. Eye large, round, covered with adipose eyelid, lateral on head, dorsal to horizontal through pectoral-fin insertion, visible in dorsal and ventral views; pupil round. Orbit elliptical. Nostrils close to each other, positioned anterior to anterior margin of orbit and above horizontal through midline of body. Posterior margin of preopercle smooth. Subopercle with rounded posterior margin. Opercular membrane without serrations. Interorbital space flat. Pseudobranchial filaments present, length of longest filament less than eye diameter. Posterior frontal fontanelles on top of head near occiput open. Gill rakers long, slender, rough, visible from side of head when mouth open. Distance between pectoral-fin and pelvic-fin insertions slightly shorter (or slightly longer in some paratypes) than distance between pelvic-fin insertion and anal-fin origin. Isthmus muscle short, not reaching anteriorly to posterior border of gill membrane, preceded by exposed urohyal between gill membranes. Exposed urohyal with two small fleshy lobes laterally. Gill membrane not broadly joined over isthmus. Scales thin, cycloid, deciduous, except for prepelvic scutes. Scales absent on head. Lateral line absent. Scales absent on fins except for broad triangular sheath

of scales on caudal fin. Pectoral-fin axillary scale missing (present in some paratypes). Dorsal-fin origin posterior to vertical through base of last pelvic-fin ray, positioned approximately at mid body. Dorsal-fin base short, its length 83.1% (76.7–95.2%) of anal-fin base length. Dorsal and anal fins with two anteriormost rays unbranched. First dorsal-fin ray and first anal-fin ray rather shorter. Two anteriormost dorsal-fin and anal-fin rays closely spaced. Anal-fin origin posterior to vertical through base of last dorsal-fin ray; posterior tip of depressed anal fin falling short of caudal-fin base. Caudal fin forked. Uppermost pectoral-fin ray unbranched, inserted below horizontal through midline of body; posterior tip of pectoral fin falling short of pelvic-fin origin; 2nd (1st or 2nd) ray longest. Pelvic fin shorter than pectoral fin, insertion anterior to vertical at dorsal-fin origin. Posterior tip of depressed pelvic fin not reaching to anus, reaching vertical through base of 5th (3rd–6th) dorsal-fin ray.

**Colour of preserved specimens.** Head and body almost uniformly pale brown, with a faint silver-gray, longitudinal band, its width slightly broader than pupil diameter, from just posterior to upper opercular margin to caudal-fin base. Black melanophores scattered on occipital, upper part of opercle, and silver longitudinal band.

**Distribution.** Currently known only from the southeast coast of Africa (Durban, South Africa; Mafia Channel, Tanzania; and Formosa Bay, Kenya) and the southwest coast of India (Kerala State) (Fig. 5).

**Etymology.** The specific name *intermedia*, an adjective from the Latin, refers to this species having the intermediate number of gill rakers between those of *E. punctifer* and *E. gloria*.

***Encrasicholina gloria*, new species**

[New English name: Red Sea anchovy]  
(Figs. 2–5; Tables 1, 2)

**Material examined.** Holotype: MNHN 1966-0646, 53.3 mm SL, Suez Bay, Egypt, 29°54'00"N, 32°31'12"E, 16 January 1929, R. P. Dollfus. Paratypes: 13 specimens, 48.9–72.0 mm SL. BMNH 1984.5.16.9–15, 5 specimens, 56.4–62.2 mm SL, Khasab, Oman, P. Cornelius; HUIJ 20531, 67.9 mm SL, Jaffa, Israel; HUIJ 20269, 3, 64.2–72.0 mm SL, KAUM-I. 80906, 65.1 mm SL, off coast between Tel Aviv and Ashdod, Israel; MNHN 1942-0049, 3, 48.9–57.2 mm SL, off Saudi Arabia, 1929, R. P. Dollfus.



Fig. 2. Holotype of *Encrasicholina gloria*, new species. MNHN 1966-0646, 53.3 mm SL, Suez Bay, Egypt.

**Diagnosis.** A species of *Encrasicholina* with the following combination of characters: dorsal and anal fins with two unbranched rays; pseudobranchial filaments 21–25; gill rakers 22–26 (modally 22, 24) in upper series on 1st gill arch, 29–33 (30, 31) in lower series, 51–59 (54) in total; gill rakers 15–16 (16) in upper series on 2nd gill arch, 26–29 (26) in lower series, 42–45 (42) in total; gill rakers 12–14 (12) in upper series on 3rd gill arch, 14–15 (14) in lower series, 26–29 (26) in total; gill rakers 9–11 (11) in upper series on 4th gill arch, 10–12 (11) in lower, 19–23 (22) in total; prepelvic scutes 3–6 (4); posterior tip of upper jaw not reaching to anterior margin of preopercle; length of first unbranched dorsal-fin ray 6.8–7.9% of SL.

**Description.** Data for the holotype are presented first, followed by paratype data in parentheses. Body cylindrical, elongate; greatest body depth 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 to straight from pelvic-fin origin to anal-fin origin, almost straight along anal-fin base. Dorsal and ventral profiles of caudal peduncle slightly concave. Belly slightly rounded, covered by 5 (3–6) sharp needle-like scutes anterior to insertion of pelvic fins. Postpelvic and predorsal scutes absent. Anus situated just anterior to anal-fin origin. Caudal peduncle compressed, its depth greater than eye diameter. Head rather large, compressed. Snout length less than eye diameter, tip rounded. Interorbital width less than orbit diameter. Mouth large, inferior, ventral to body axis, extending backward beyond posterior margin of eye. Lower jaw slender, longer than upper jaw, 115.5% (105.4–115.5%) of upper-jaw length, 65.3% (61.1–72.1%) of head length. Posterior tip of maxilla blunt, scarcely projecting beyond second supra-maxilla, not reaching to anterior border of preopercle. Single rows of conical teeth on jaws and palatines. Small conical teeth on vomer. Eye large, round, covered with adipose eyelid, lateral on head, located dorsal to horizontal through pectoral-fin insertion, visible in dorsal and ventral views; pupil round. Orbit elliptical. Nostrils close to each other, positioned anterior to anterior margin of orbit and above horizontal through midline of body. Posterior margin of preopercle smooth. Subopercle with rounded posterior margin. Opercular membrane without serrations. Interorbital space flat. Pseudobranchial filaments present, length of longest filament less than eye diameter. Posterior frontal

fontanelles on top of head near occiput open. Gill rakers long, slender, rough, visible from side of head when mouth open. Distance between pectoral-fin and pelvic-fin insertions slightly shorter (slightly longer in some paratypes) than distance between dorsal-fin origin and anal-fin origin. Isthmus muscle short, not reaching anteriorly to posterior border of gill membrane, preceded by exposed urohyal between gill membranes. Exposed urohyal with two small fleshy lobes laterally. Gill membrane not broadly joined over isthmus. Scales thin, cycloid, deciduous, except for prepelvic scutes. Scales absent on head. Lateral line absent. Scales absent on fins except for broad triangular sheath of scales on caudal fin. Pectoral-fin axillary scale shorter than pectoral fin (absent in most paratypes, probably lost when collected or during storage). Pelvic-fin axillary scale absent in holotype and some paratypes (when present smaller than pectoral-fin axillary scale). Dorsal-fin origin posterior to vertical through base of last pelvic-fin ray, positioned approximately at mid body. Dorsal-fin base short, its length 69.2% (70.9–88.4%) of anal-fin base length. Dorsal and anal fins with two anteriormost rays unbranched. First dorsal-fin ray and first anal-fin ray rather long. Two anteriormost dorsal-fin and anal-fin rays closely spaced. Anal-fin origin posterior to vertical through base of last dorsal-fin ray; posterior tip of depressed anal fin falling short of caudal-fin base. Uppermost pectoral-fin ray unbranched, inserted below midline of body. Posterior tip of pectoral fin falling short of pelvic-fin origin; pectoral-fin rays damaged in holotype (1st or 2nd rays longest in some paratypes). Pelvic fin shorter than pectoral fin, insertion anterior to vertical at dorsal-fin origin. Posterior tip of depressed pelvic fin not reaching to anus, reaching vertical through base of 6th (6th–8th) dorsal-fin ray.

**Colour of preserved specimens.** Head and body almost uniformly pale brown, with a dull silver-gray, longitudinal band, its width slightly broader than pupil diameter, from just posterior to upper opercular margin to caudal-fin base. Few black melanophores scattered on occipital, upper part of opercle, and silver longitudinal band.

**Distribution.** Currently known only from the Persian Gulf (Khasab, Oman), the Red Sea (Egypt and Saudi Arabia) and the eastern Mediterranean (State of Israel) (Fig. 5). The distribution of specimens in the Mediterranean is considered to represent Lessepsian migration.

Table 1. Meristics of specimens of *Encrasicholina intermedia*, new species, *E. gloria*, new species, and *E. punctifer*.

	<i>Encrasicholina intermedia</i> , new species			<i>Encrasicholina gloria</i> , new species		
	Holotype		Paratypes	Holotype		Paratypes
	India	Indian Ocean		Egypt	Red Sea, Persian Gulf and Mediterranean	
	RMNH. PISC 26135	n = 14	Modes	MNHN 1966-0646	n = 13	Modes
Standard length (SL; mm)	57.7	49.8–75.2		53.3	48.9–72.0	
Dorsal-fin rays (unbranched)	2	2	2	2	2	2
Dorsal-fin rays (branched)	11	10–13	11	12	11–13	11
Anal-fin rays (unbranched)	2	2	2	2	2	2
Anal-fin rays (branched)	15	12–16	14	15	13–16	13
Pectoral-fin rays (unbranched)	1	1	1	1	1	1
Pectoral-fin rays (branched)	14	12–15	14	14	13–15	14
Pelvic-fin rays (unbranched)	1	1	1	1	1	1
Pelvic-fin rays (branched)	6	6	6	6	6	6
Caudal-fin rays (upper + lower)	10 + 9	10 + 9	10 + 9	10 + 9	10 + 9	10 + 9
Gill rakers on 1st gill arch (upper)	20	20–23	20	23	22–26	22
Gill rakers on 1st gill arch (lower)	27	26–28	26	30	30–33	30
Gill rakers on 1st gill arch (total)	47	46–50	46	53	52–59	52, 53
Gill rakers on 2nd gill arch (upper)	14	13–14	13	16	15–16	16
Gill rakers on 2nd gill arch (lower)	24	23–25	23	26	26–29	26
Gill rakers on 2nd gill arch (total)	38	36–38	36	42	42–45	42
Gill rakers on 3rd gill arch (upper)	11	10–12	11	12	12–14	12
Gill rakers on 3rd gill arch (lower)	13	12–13	13	14	14–16	14
Gill rakers on 3rd gill arch (total)	24	23–25	24	26	26–29	26
Gill rakers on 4th gill arch (upper)	10	9–10	10	9	9–11	11
Gill rakers on 4th gill arch (lower)	11	9–10	10	11	10–12	11
Gill rakers on 4th gill arch (total)	21	19–21	19, 20	20	19–23	22
Gill rakers on posterior face of 3rd gill arch	7	4–7	6	5	3–8	7
Total gill rakers of all gill arches	137	131–136	134	146	144–161	147, 155
Prepelvic scutes	4	3–6	5	5	3–6	5
Lateral-line scales	40	39–43	40	41	41–43	42
Pseudobranch filaments	26	21–26	24	24	21–26	24

<i>Encrasicholina punctifer</i>					
Holotype of <i>Encrasicholina punctifer</i>	Paratypes of <i>Encrasicholina punctifer</i>	Holotype of <i>Stolephorus buccaneeri</i>	Paratypes of <i>Stolephorus buccaneeri</i>	Non-type specimens	
French Polynesia		Hawaii		Indo-Pacific	
ANSP 68308	n = 12	USNM 177742	n = 27	n = 83	Modes
29.9	23.4–31.9	51.0	37.6–56.4	21.9–95.5	
broken	2	2	2	2	2
broken	10–12	11	11–12	10–13	11
broken	2	2	2	2	2
broken	12–14	13	12–14	11–16	13
broken	1	1	1	1	1
broken	13–14	15	13–16	11–16	14
1	1	1	1	1	1
6	6	6	6	6	6
10 + 9	10 + 9	10 + 9	10 + 9	10 + 9	10 + 9
14	11–14	17	16–18	11–20	17
23	23–24	25	24–26	21–26	24
37	34–38	42	41–43	34–45	42
11	8–11	10	10–12	7–14	11
18	17–19	21	20–22	17–23	21
29	26–30	31	30–34	25–36	32
9	6–9	8	8–11	7–11	9
11	8–12	11	9–12	10–13	12
20	14–20	19	18–23	18–23	21
8	6–8	9	7–9	5–10	8
8	7–9	9	8–10	7–12	9
16	13–17	18	16–19	13–20	17
3	3–4	5	4–6	3–7	5
105	94–96	115	111–120	94–125	116
broken	broken	7	4–6	3–5	5
broken	broken	41	41–43	38–43	40
broken	18–21	23	20–24	16–28	24

Table 2. Morphometrics of specimens of *Encrasicholina intermedia*, new species, *E. gloria*, new species, and *E. punctifer*.

	<i>Encrasicholina intermedia</i> , new species			<i>Encrasicholina gloria</i> , new species		
	Holotype		Paratypes	Holotype		Paratypes
	India	Indian Ocean		Egypt	Red Sea and Mediterranean	
	RMNH.PISC 26135	n = 14	Means	MNHN 1966-0646	n = 13	Means
Standard length (SL; mm)	57.7	49.8–75.2		53.3	48.9–72.0	
As % SL						
Head Length	24.2	22.7–26.6	24.4	26.4	24.2–25.7	25.0
Body depth	15.6	13.9–16.8	15.6	14.9	13.3–18.1	15.7
Pre-dorsal-fin length	51.8	48.4–53.7	52.0	54.1	49.8–53.0	51.6
Snout tip to pectoral-fin insertion	25.6	23.5–28.7	25.2	26.9	23.4–27.3	25.7
Snout tip to pelvic-fin insertion	44.4	42.0–47.9	45.0	49.3	44.1–46.8	45.9
Snout to anal-fin origin	66.5	59.8–67.0	65.3	70.5	61.2–66.1	65.2
Dorsal-fin base length	11.3	10.2–12.4	11.6	11.9	9.9–12.2	11.4
Anal-fin base length	13.7	13.0–15.2	14.6	17.2	13.7–16.6	15.1
Caudal-peduncle length	17.7	17.2–21.0	19.2	18.6	18.8–21.7	20.4
Caudal-peduncle depth	7.8	7.1–8.5	7.6	8.2	7.1–8.6	7.8
Pectoral-fin length	12.8	12.3–14.1	13.2	14.6	11.8–15.2	14.2
Pelvic-fin length	7.9	7.2–9.2	8.2	9.7	8.0–10.1	9.3
Interorbital width	4.3	4.1–4.8	4.4	5.2	4.1–5.8	4.6
Upper-jaw length	14.0	13.6–15.8	14.4	14.9	14.2–16.1	15.0
Mandibular length	15.2	14.9–16.3	15.7	17.2	15.6–18.1	16.8
1st unbranched dorsal-fin ray length	5.3	4.7–5.8	5.4	7.6	6.8–7.9	7.2
2nd unbranched dorsal-fin ray length	12.3	12.1–15.2	12.2	broken	14.5–16.3	15.3
3rd dorsal-fin ray length	12.5	11.9–15.0	13.3	broken	14.3–17.3	15.6
1st unbranched anal-fin ray length	broken	2.8–4.1	3.3	4.1	3.0–4.3	3.6
2nd unbranched anal-fin ray length	8.3	7.9–10.8	9.3	broken	9.8–11.8	10.9
3rd anal-fin ray length	9.3	8.6–10.5	9.3	broken	10.3–11.4	11.0
1st pectoral-fin ray length	12.5	12.0–13.8	12.8	13.9	13.1–15.2	14.4
1st pelvic-fin ray length	7.9	7.2–9.2	8.1	9.4	8.0–9.5	8.9
As % HL						
Orbit diameter	29.0	28.3–34.7	31.5	30.6	30.3–35.5	32.7
Eye diameter	24.0	21.4–28.0	24.6	26.0	24.2–27.8	26.1
Snout length	15.2	13.3–17.7	15.3	17.0	14.1–18.2	16.1
D–P1	122.7	109.5–150.1	128.3	115.1	114.0–128.3	119.2
D–P2	69.1	59.2–74.6	67.5	58.6	56.2–75.3	65.3
D–A	88.9	78.2–93.5	86.3	79.4	74.2–89.6	83.1
P1–P2	82.1	71.1–104.3	86.3	86.3	80.1–88.0	84.3
P2–A	89.5	69.5–90.2	81.3	78.1	69.3–82.8	77.0
Postorbital length	55.9	48.4–57.7	53.2	49.7	47.8–54.8	50.7

<i>Encrasicholina punctifer</i>					
Holotype of <i>Encrasicholina punctifer</i>	Paratypes of <i>Encrasicholina punctifer</i>	Holotype of <i>Stolephorus buccaneeri</i>	Paratypes of <i>Stolephorus buccaneeri</i>	Non-type specimens	
French Polynesia		Hawaii		West Pacific and Phuket	
ANSP 68308	n = 12	USNM 177742	n = 27	n = 83	Means
29.9	23.4–31.9	51.0	37.6–56.4	21.9–95.5	
broken	17.3–23.0	22.4	22.2–26.4	17.2–27.0	23.5
10.8	8.5–11.8	15.1	13.7–15.8	8.7–18.8	14.1
broken	49.9–55.7	52.8	48.9–53.8	49.3–57.4	52.7
21.4	17.8–24.9	24.6	22.5–28.9	17.5–28.7	24.1
42.9	41.5–44.9	51.9	43.2–52.5	39.1–50.2	45.6
61.6	60.2–66.4	70.9	65.6–72.9	61.2–71.4	66.8
broken	10.0–12.5	10.5	9.9–12.7	9.2–14.4	11.4
13.3	11.6–15.7	11.3	12.4–15.1	12.3–16.1	14
broken	18.4–21.1	14.4	14.4–20.1	15.6–22.2	18
6.0	4.5–7.3	7.0	6.5–8.2	5.6–8.6	7.3
broken	broken	12.1	11.0–14.8	10.0–15.1	13.1
broken	4.8–7.2	8.3	7.2–9.3	4.4–10.0	7.9
broken	2.7–4.1	3.8	3.7–4.3	2.9–5.5	4.2
9.8	7.4–11.3	14.1	12.7–15.6	7.5–16.7	13.5
11.9	8.5–13.0	15.4	14.0–17.9	8.9–19.6	15.0
broken	3.7–5.4	5.0	3.8–6.3	3.8–6.8	5.5
broken	8.7–11.2	13.5	11.3–16.4	10.3–16.8	13.8
broken	8.6–11.0	13.2	11.1–15.3	11.2–17.1	13.7
broken	2.6–3.4	2.4	2.1–4.0	2.0–4.3	3.2
broken	6.7	8.6	7.3–10.9	6.8–11.3	9.3
broken	7.0–8.6	8.6	8.1–11.7	7.5–11.5	9.5
broken	broken	12.1	9.9–14.1	2.3–14.7	12.1
broken	4.8–7.2	7.9	7.2–9.3	5.4–10.1	8.0
broken	24.3–36.0	31.8	26.2–33.4	25.1–36.4	31.7
broken	19.3–23.3	19.6	19.2–26.9	19.1–32.5	24.3
broken	11.7–15.7	15.0	12.8–16.3	11.6–17.2	14.7
broken	136.7–193.1	135.3	104.0–140.8	106.3–212.7	135.1
broken	59.1–80.1	73.4	55.8–68.2	51.1–90.3	67.6
broken	65.3–89.1	98.9	82.7–101.0	68.2–109.8	87.8
broken	83.5–125.7	103.3	87.7–105.3	66.0–141.6	95.6
broken	89.8–106.7	100.0	72.5–99.8	61.6–133.5	91.6
broken	49.8–60.7	59.3	51.3–60.6	47.9–58.4	53.6

**Etymology.** The specific name *gloria* is derived from the Latin meaning “glory”, in reference to the brilliant silver stripe along the body.

**Comparisons.** Eight nominal species have been attributed to the genus *Encrasicholina* (Whitehead et al., 1988; Hata & Motomura, 2015). *Encrasicholina intermedia* new species and *E. gloria* new species are easily distinguished from all congeners, except for *E. punctifer* Fowler, 1938, and *Stolephorus buccaneeri* Strasburg, 1960, by having a short upper jaw, its posterior tip not reaching to the anterior border of the preopercle (vs. posterior tip of upper jaw reaching or extending beyond the anterior border; Hardenberg, 1933, 1934; Wongratana, 1983; Whitehead et al., 1988; Wongratana et al., 1999; Hata et al., 2012; Hata & Motomura, 2015). The first dorsal-fin ray length also can be used for distinguishing the three species from *E. devisi* (0.4–1.7% SL) and *E. macrocephala* (0.6–1.3% SL; Hata & Motomura, 2015; this study).

*Encrasicholina intermedia*, *E. gloria*, and *E. punctifer* [with its junior synonym *Stolephorus buccaneeri* (Wongratana, 1983; Whitehead et al., 1988; Wongratana et al., 1999; this study)] resemble each other in sharing two unbranched rays in the dorsal and anal fins, a short upper jaw with its posterior tip not reaching to the anterior border of the preopercle, and an exposed urohyal with two small fleshy lobes. They can be distinguished from each other by the numbers of gill rakers on the first to fourth gill arches (Table 1; Fig. 3). *Encrasicholina gloria* is also distinguished from the other two species in having a longer 1st unbranched dorsal-fin ray [6.8–7.9% (mean 7.3%) SL vs. 3.8–6.8% (5.4%) in *E. punctifer* and 4.7–5.8% (5.4%) in *E. intermedia*; Table 2; Fig. 4.].

**Comparative material examined.** *Encrasicholina punctifer* (137 specimens, 21.9–95.5 mm SL): ANSP 68308, holotype of *E. punctifer*, 29.9 mm SL, ANSP 68309, 12 paratypes of *E. punctifer*, 23.4–31.9 mm SL, Fare Bay, Huaheine Island, Society Islands, French Polynesia, 17 April 1937; ANSP 82384, 10 of 19, 24.3–27.7 mm SL, Bora Bora Island, Society Islands, French Polynesia, 21 April 1937; BMNH 1965.10.19.39–40, 2, 37.4–51.5 mm SL; ca. 32 km northwest of Iriomote Island, Japan, 11 June 1965; BMNH 1967.11.10.1, 40.3 mm SL, taken from mouth of *Coryphaena hippurus* captured off Haputo, Guam, 8 August 1967; BMNH 1967.11.13.905–906, 2, 39.2–41.8 mm SL, Singapore, 13 July 1963; BMNH 1970.5.27.1–3, 2 of 3, 40.3–51.7 mm SL, taken from stomach of tuna captured off Apia Harbour, Upolu Island, Samoa; BMNH 1971.8.26.7–8, 1 of 2, 30.1 mm SL, Suruga Bay, Japan, 1967; BMNH 1971.8.26.9–10, 2, 28.2–19.9 mm SL, between Starbuck Island and Malden Island, Kiribati, 04°57’S, 155°07’W, 3 October 1969; BMNH 1972.9.7.32–33, 2, 53.2–43.9 mm SL, Fuellerborn Harbour, New Britain Island, Papua New Guinea, 7 April 1972; BMNH 1976.4.27.18, 55.7 mm SL, Hong Kong; BMNH 1978.8.17.7–8, 2, 51.8–54.2 mm SL, Pomona, Queensland, Australia; BMNH 1988.8.1.74–86, 11, 51.1–61.8 mm SL, Hainan Island, China, 22 April 1988; KAUM–I. 6673, 52.7 mm SL, off Chiringa Island,

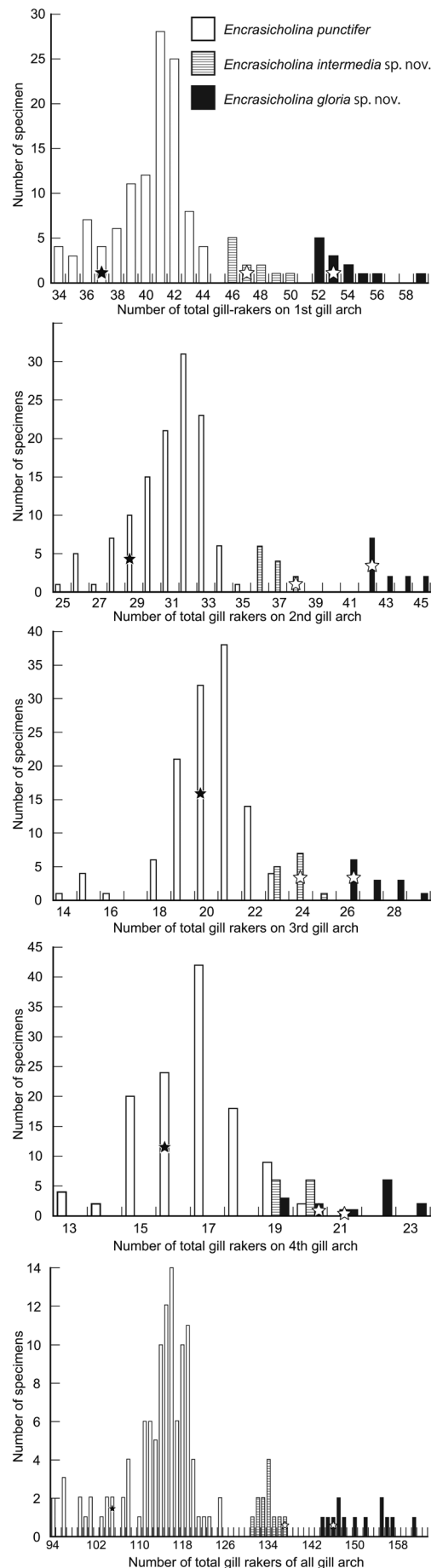


Fig. 3. Frequency distribution of number of total gill rakers of *Encrasicholina intermedia*, new species, *E. gloria*, new species, and *E. punctifer*; stars indicate data for holotypes.



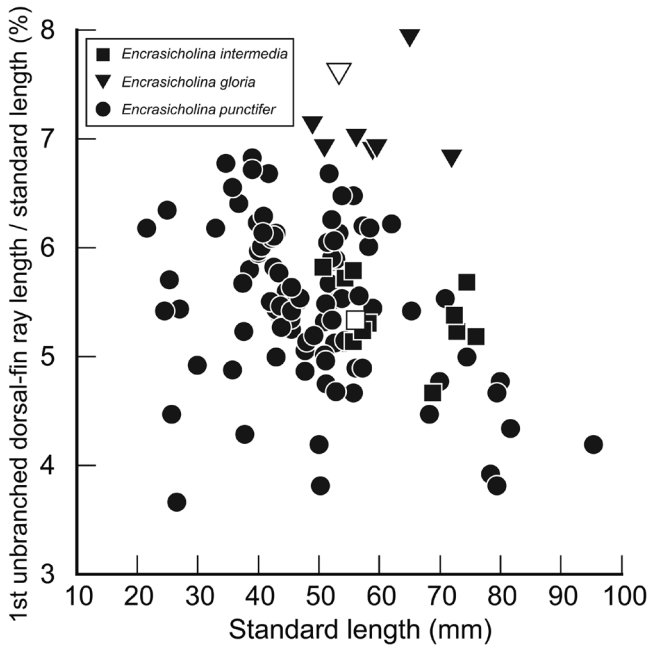


Fig. 4. Relationships of 1st unbranched dorsal-fin ray length to standard length in *Encrasicholina intermedia*, new species [closed squares (open square = holotype)], *E. gloria*, new species [closed triangles (open triangle = holotype)], and *E. punctifer* (closed circles).

Ibusuki, Kagoshima, Japan, 31°16'38"N, 130°40'18"E, 25 m, 3 October 2007; KAUM-I. 7374, 53.5 mm SL, off Chiringa Island, Ibusuki, Kagoshima, Japan, 31°16'38"N, 130°40'18"E, set net, 25 m, 28 November 2007; KAUM-I. 7398, 55.2 mm SL, off Tsushiro, Uchinoura Bay, Koyama, Kimotsuki, Kagoshima, Japan, 31°17'N, 130°41'E, set net, 40 m, 29 October 2007; KAUM-I. 10445, 95.5 mm SL, off Kaimon, Ibusuki, Kagoshima, Japan, 31°10'20"N, 130°32'56"E, set net, 50 m, 25 June 2008; KAUM-I. 22921, 57.5 mm SL, mouth of Bang Pakong River, Chachoengsao,

Thailand, 13°27'N, 100°57'E; KAUM-I. 41056, 54.1 mm SL, KAUM-I. 41057, 53.2 mm SL, KAUM-I. 41058, 53.1 mm SL, east of Sakinoyama, Kataura, Kasasa, Minami-satsuma, Kagoshima, Japan, 31°25'44"N, 130°11'49"E, 27 June 2009, 27 m; KAUM-I. 59680, 80.0 mm SL, KAUM-I.59681, 73.9 mm SL, off Phuket, Thailand; KAUM-I. 60391, 65.6 mm SL, KAUM-I. 60396, 68.4 mm SL, KAUM-I. 60419, 78.6 mm SL, KAUM-I. 60426, 81.9 mm SL, KAUM-I. 60430, 74.9 mm SL, KAUM-I. 60441, 79.7 mm SL, KAUM-I. 60442, 79.8 mm SL, East China Sea; MNHN 1959-0535, 53.7 mm SL, Manila, Luzon, Philippines, 14°36'00"N, 120°58'59"E; NSMT-P. 63820, 9, 51.0–58.6 mm SL, NSMT-P. 63833, 52.1 mm SL; NSMT-P. 68755, 71.2 mm SL, Nha Trang, Khánh Hòa, Vietnam; USNM 177742, holotype of *Stolephorus buccaneeri*, 51.0 mm SL, USNM 177743, 19 paratypes of *S. buccaneeri*, 42.2–54.5 mm SL, ca. 1.8 km west of Lehua Island off Niihau Island, Hawaiian Islands, 15 Sept. 1958, Noboru Tsue and crew of M/V BUCANEER OF HONOLULU; USNM 177744, 8 paratypes of *S. buccaneeri*, 37.6–48.3 mm SL, taken from stomach of *Euthynnus affinis* captured from 1.6 km off Makua, Oahu, Hawaiian Islands, 10 Sept. 1958, M/V MAKUA OF HONOLULU; USNM 417167, 26 of 111, 21.9–70.2 mm SL, east of Agrihan Island, Northern Mariana Islands, 19°02'00"N, 148°25'00"E, 7 Nov. 1971, trawl, 50 m; YCM-P. 39398, 2, 34.9–35.8 mm SL, Atetsu Bay, Amami Island, Kagoshima, Japan, 4 September 1999; ZMA 108.384, 71.3 mm SL, Pidjot Bay, Lombok, Indonesia, 24–26 March 1899; ZMA 108.399, 2, 47.7–59.2 mm SL, Bitung, Sulawesi, Indonesia, 3 December 1909. Examined specimens of other species of *Encrasicholina* were listed in Hata & Motomura (2015).

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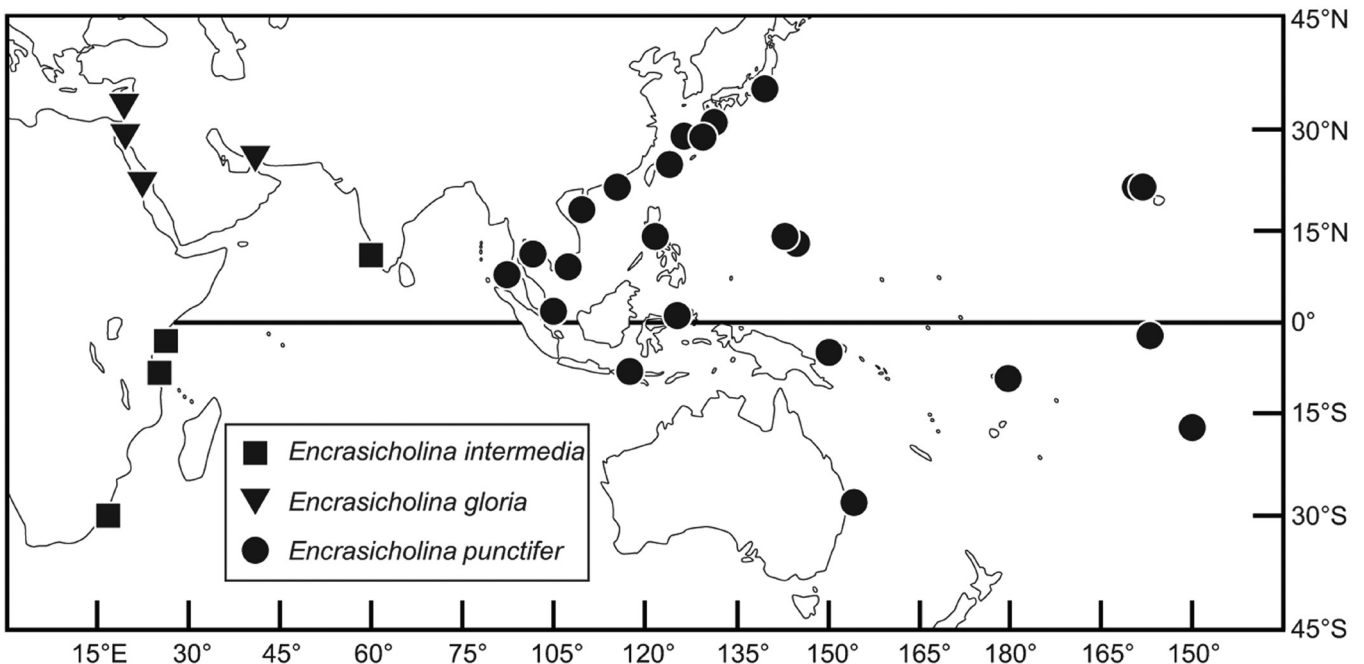


Fig. 5. Distributional records of *Encrasicholina intermedia*, new species (squares), *E. gloria*, new species (triangles), and *E. punctifer* (circles), based on specimens examined in this study.

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