

Epigonus merleni, a Junior Synonym of *Epigonus macrops* (Actinopterygii: Perciformes: Epigonidae)

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(Received 4 July 2012; Accepted 4 September 2012)

Epigonus merleni McCosker and Long, 1997 was originally described on the basis of a single specimen collected from the Galápagos Islands. It was considered to be distinguished from *E. macrops* (Brauer, 1906) by having 11 + 14 vertebrae and 57 lateral-line scales, but our examination of the holotype of *E. merleni* revealed that it actually has 10 + 15 vertebrae and 48 + 5 lateral-line scales. The holotype also has a luminescent window near the pelvic-fin base that is otherwise unique to *E. macrops* in the genus. Based on our comparison of the holotype of *E. merleni* with a syntype and other specimens of *E. macrops*, we conclude that *E. merleni* is a junior synonym of *E. macrops*.

Key Words: Teleostei, deepwater cardinalfish, *Epigonus*, synonymy.

Introduction

Epigonus merleni McCosker and Long, 1997 was originally described from a single specimen collected on the sea surface during the 1995 eruption of Fernandina Volcano in the Galápagos Islands. According to McCosker and Long (1997), this species belongs to the “*E. telescopus* group” (*sensu* Abramov 1992) in having eight spines on the first dorsal fin. McCosker and Long (1997) distinguished their new species from the other four species of the group by its five pyloric caeca, 17 pectoral-fin rays, nine soft rays in the second dorsal fin, and 11 + 14 vertebrae. Our examination of the type specimen of *E. merleni* revealed that the original description did not accurately report several important characters. Comparison with other congeners has subsequently led us to conclude that *E. merleni* is a junior synonym of *Epigonus macrops* (Brauer, 1906).

Materials and Methods

Methods for enumerating meristic and morphometric characters follow Mayer (1974) except for body depth and body width, for which we follow the definitions of Okamoto (2011). Missing lateral-line scales were estimated by counting scale pockets. The number of pored lateral-line scales on the caudal fin is represented as “+*n*”. Definition of the first caudal vertebra follows Okamoto and Motomura (2011). Counts of vertebrae and ribs were taken from radiographs. The presence of a ventral luminescent window, the number of pyloric caeca, and sex were established by dissection of the abdomen on the right side. Standard length is

abbreviated as SL. Institutional abbreviations for the depositories of the examined specimens are: AMS, Australian Museum, Sydney; CAS, California Academy of Sciences, San Francisco; HUMZ, Hokkaido University Museum, Hakodate; MCZ, Museum of Comparative Zoology, Harvard University, Cambridge; NSMT, National Museum of Nature and Science, Tsukuba; TCWC, Texas A&M University, College Station, Texas; USNM, Smithsonian Institution National Museum of Natural History, Suitland; and ZMB, Ichthyologisches Museum, Museum für Naturkunde, Berlin.

Material examined. *Epigonus macrops* (13 specimens): ZMB 17678, syntype, 202.5 mm SL, 03°22'01"S, 101°11'05"E, western coast of Sumatra, Indonesia, eastern Indian Ocean, 903 m depth, 21 January 1899; CAS 86581, holotype of *E. merleni*, 139.1 mm SL, 00°28'S, 91°37'W, surface offshore of Cabo Hammond, Isla Fernandina, Galápagos Islands, eastern Pacific, February 1995; AMS I. 22814-018, 131.6 mm SL, 18°48'00"S, 116°60'00"E, northwest of Port Headland, Australia, Indian Ocean, 704 m depth, 6 April 1982; AMS I. 31161-004, 170.5 mm SL, 24°53'67"S, 111°80'83"E, off Cape Cuvier, Australia, Indian Ocean, 901 m depth, 28 January 1991; CSIRO H 2562-01, 178.4 mm SL, 24°28'S, 111°51'E, west of Quobba Point, Australia, Indian Ocean, 905 m depth, 28 January 1991; CSIRO H 6575-08, 126.8 mm SL, 14°35'S, 121°21'E, northwest of Cape Leveque, Australia, Indian Ocean, 709 m depth, 26 June 2007; MCZ 48827, 148.7 mm SL, 11°54'N, 69°18'W, Caribbean Sea, 910 m depth, 4 October 1963; TCWC 6372.09, 4 specimens, 103.7–145.6 mm SL, 27°64'N, 91°53'W, Gulf of Mexico, 731 m depth, 3 March 1986; TCWC 7003.10, 2 specimens 120.6–156.7 mm SL, 27°14'N, 93°39'W, Gulf of Mexico, 792–864 m depth, 8 April 1986.

Comparative materials. *Epigonus angustifrons*



Fig. 1. Photographs of *Epigonus macrops*. A, holotype of *E. merleni* (CAS 86581, 139.1 mm SL); B, syntype of *E. macrops* (ZMB 17678, 202.5 mm SL).

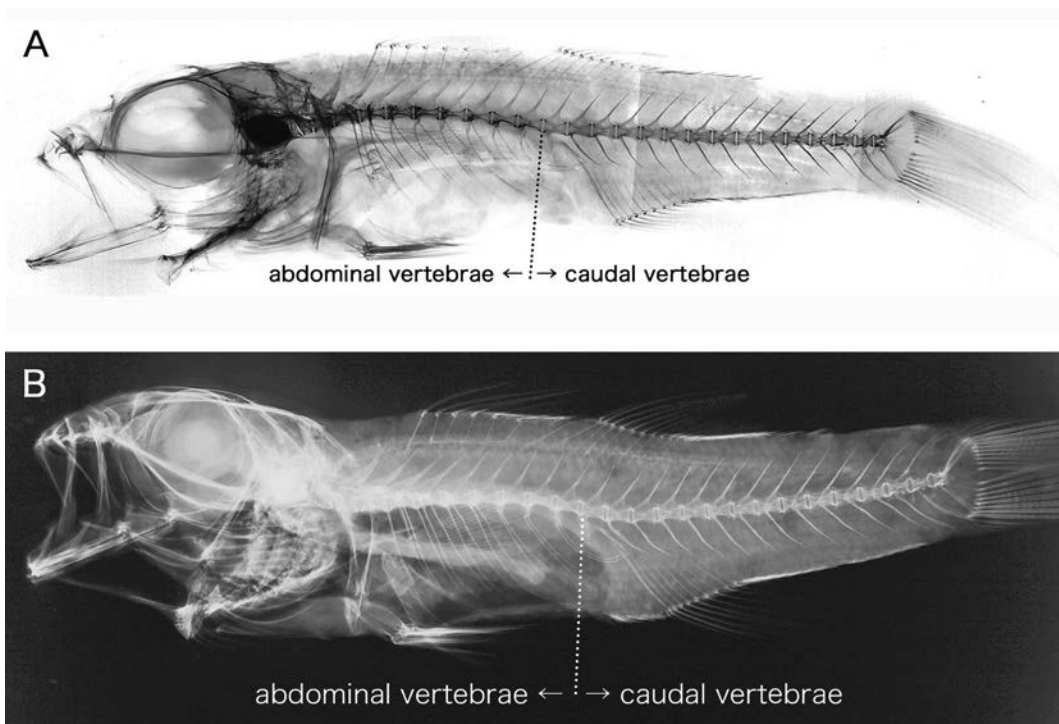


Fig. 2. X-ray photographs of *Epigonus macrops*. A, holotype of *E. merleni* (CAS 86581, 139.1 mm SL); B, syntype of *E. macrops* (ZMB 17678, 202.5 mm SL).

Abramov and Manilo, 1987: HUMZ 99978, 216.0 mm SL, 26°09'S, 06°21'E, eastern South Atlantic, 246 m depth, 10 March 1983. *Epigonus notacanthus* Parin and Abramov, 1986: HUMZ 166513, 107.6 mm SL, 25°33'S, 87°15'W, Nazca Ridge, eastern South Pacific, 11 October 1999; HUMZ 166519, 90.7 mm SL, data same as HUMZ 166513. *Epigonus telescopus* (Risso, 1810): AMS I. 28165-001, 3 specimens, 112.4–187.9 mm SL, 33°35'17"S, 44°09'33"E, Walters Shoal,

southwestern Indian Ocean, 750 m depth, 18 December 1988; USNM 307603, 201.2 mm SL, 33°43'42"S, 43°61'58"E, Walters Shoal, southwestern Indian Ocean, 1,000–1,030 m depth, 17 December 1988; USNM 307608, 2 specimens, 137.8–154.3 mm SL, 33°37'42"S, 44°10'42"E, Walters Shoal, southwestern Indian Ocean, 750–775 m depth, 18 December 1988.

Table 1. Selected counts and measurements of specimens of *Epigonus macrops*, including the holotype of *E. merleni* and a syntype of *E. macrops*.

	<i>E. merleni</i>		<i>E. macrops</i>	
	CAS 86581	ZMB 17678	Other specimens	
	Holotype	Syntype	<i>n</i> =11	
Standard length (mm)	139.1	202.5	103.7–178.4	
Counts				
Dorsal-fin rays	VII-I-I, 10	VII-I-I, 10	VII-I-I, 10	
Anal-fin rays	II, 9	II, 9	II, 9	
Pelvic-fin rays	19	18	18–19	
Pored lateral-line scales	48+5	51+5	44–51+2–5	
Gill rakers	4+15=19	4+15=19	4–5+13–15=18–20	
Vertebrae	10+15	10+15	10+15	
Measurements (% standard length)				
Head length	36.7	37.8	34.6–37.8	
Head height	18.6	17.8	17.4–20.2	
Body depth	24.2	23.2	20.8–24.3	
Body width	17.3	17.7	14.0–17.7	
Caudal-peduncle depth	10.4	10.7	8.9–10.9	
Caudal-peduncle length	26.1	24.5	24.4–28.9	
Orbital diameter	15.3	14.3	12.7–17.5	
Interorbital width	10.9	12.0	10.2–11.5	
Postorbital length	14.2	14.4	12.3–14.6	
Upper-jaw length	14.0	14.3	13.3–14.8	
Lower-jaw length	17.3	17.0	15.9–19.3	
Snout length	7.9	9.4	6.7–9.5	
Pre-1st dorsal-fin length	36.9	40.0	36.8–40.1	
Pre-2nd dorsal-fin length	57.3	60.1	57.0–60.3	
Pre-pectoral-fin length	35.5	39.3	35.2–39.5	
Pre-pelvic-fin length	36.0	41.6	35.8–41.7	
Pre-anus length	59.0	61.4	57.0–61.7	
Pre-anal-fin length	64.4	68.3	64.3–69.4	
1st spine length on 1st dorsal fin	2.2	Tip broken	1.2–2.8	
2nd spine length on 1st dorsal fin	12.4	14.1	11.5–15.9	
3rd spine length on 1st dorsal fin	14.1	14.5	12.3–15.7	
2nd dorsal-fin spine length	7.5	6.0	4.9–7.8	
1st anal-fin spine length	1.4	Tip broken	1.2–2.7	
2nd anal-fin spine length	7.6	7.7	4.8–8.8	
Pelvic-fin spine length	13.5	13.5	11.7–14.8	
1st dorsal-fin base	14.3	11.5	10.8–16.0	
2nd dorsal-fin base	10.6	9.8	9.6–11.3	
Anal-fin base	9.3	9.7	9.3–10.9	
Pectoral-fin length	21.2	20.7	16.7–21.3	
Pelvic-fin length	15.8	15.7	14.9–16.0	

Results and Discussion

McCosker and Long (1997) referred *E. merleni* to the *E. telescopus* group (*sensu* Abramov 1992) based on the presence of eight spines in the first dorsal fin. According to Abramov (1992) and Okamoto (2012), this species group comprises four species besides *E. merleni*: *E. angustifrons*, *E. macrops*, *E. notacanthus*, and *E. telescopus*. McCosker and Long (1997) stated that *E. merleni* is distinguishable from three species of this group in having 11+14 vertebrae (the same number as in *E. telescopus* vs 10+15 vertebrae in *E. angustifrons*, *E. macrops*, and *E. notacanthus*); however, our

examination of the holotype of *E. merleni* revealed the vertebral number to be 10+15 (Fig. 2). There are no clear differences in other meristic and morphometric characters between this holotype and the examined specimens, including a syntype of *E. macrops* (Table 1). In addition, we confirmed the presence of a luminescent window near the pelvic-fin base in the holotype of *E. merleni* (Fig. 3). Mayer (1974) considered a ventral luminescent organ to be unique for *E. macrops* within the genus. Accordingly, the holotype of *E. merleni* is considered to be a specimen of *E. macrops*, and the former nominal species is reduced to a junior synonym of *E. macrops*.

In addition to the above-mentioned characters, the

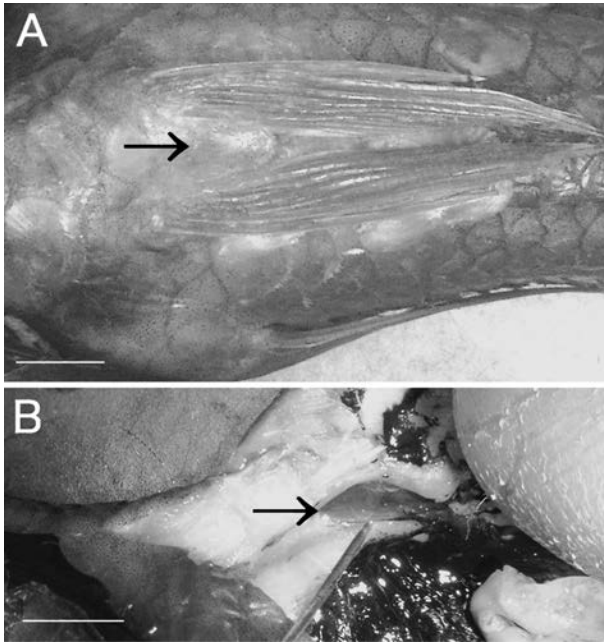


Fig. 3. External (A) and internal (B) views of the ventral region of the holotype of *Epigonus merleni* (CAS 86581, 139.1 mm SL). Arrows point to the luminescent window, covering a large scale in A. Scale bars: 5 mm.

dorsal- and anal-fin ray counts and the number of lateral-line scales reported by McCosker and Long (1997) for *E. merleni* are erroneous. Although these authors presented the count as “dorsal rays VIII+I, 9”, the holotype of *E. merleni* has seven spines in the first dorsal fin, an isolated spine between the first and second dorsal fins, and one spine and ten soft rays in the second dorsal fin (expressed as VII-I-I, 10). Our examination of the other species of the *E. telescopus* group showed that the first dorsal fin of all species comprises seven spines connected by a fin membrane, plus an eighth isolated spine. A number of authors (*e.g.*, Mayer 1974; Abramov and Manilo 1987; Abramov 1992) have misconstrued the condition of the first dorsal fin and given the spine count as VIII. Abramov (1992) considered that count a unique diagnostic character for the *E. telescopus* group. McCosker and Long (1997) also stated that the anal fin has one spine rather than two as in other species of *Epigonus*. We confirmed there are two spines in the anal fin

of the holotype of *E. merleni*. Although McCosker and Long (1997) described *E. merleni* as having the greatest number of pored lateral-line scales (57) in the genus, in the holotype we found only 48 pored lateral-line scales to the end of the hypural, plus 5 pored lateral-line scales on the caudal fin.

Acknowledgments

We are especially grateful to T. Iwamoto (CAS) for providing valuable data on the holotype of *E. merleni* and for his critical reading of this manuscript. We also thank M. McGrouther (AMS), A. Graham (CSIRO), M. Yabe and T. Kawai (HUMZ), K. Hartel (MCZ), K. W. Conway and H. L. Prestridge (TCWC), and J. Williams and E. Wilbur (USNM) for loans of comparative specimens.

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