

## Taxonomic Review of the Indo-Pacific Kyphosid Fish, *Kyphosus vaigiensis* (Quoy and Gaimard)

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**Abstract** The taxonomy of the Indo-Pacific fish, *Kyphosus vaigiensis* (Quoy and Gaimard) is reviewed and the species redescribed on the basis of 129 specimens, including the lectotype which is newly designated. *Kyphosus vaigiensis* is characterized by 14 (rarely 13 or 15) dorsal and 13 (rarely 12) anal fin soft-rays, 21–24 (usually 22 or 23) gill-rakers on the lower limb of the first gill-arch, 56–64 longitudinal scale rows and 11–14 (usually 12 or 13) scales above the lateral line. *Kyphosus lembus* (Cuvier), *Kyphosus bleekeri* Fowler, *Kyphosus gibsoni* Ogilby, *Pimelepterus ternatensis* Bleeker and *Pimelepterus marciac* Cuvier are recognized as junior synonyms of *K. vaigiensis*.

Sea chubs, genus *Kyphosus* (Kyphosidae), are very common rocky and coral reef inhabitants in tropical and temperate waters world wide. One of the most common Indo-Pacific species, *K. vaigiensis* (Quoy and Gaimard) has been frequently compared with *K. lembus* (Cuvier). However, morphological characters of the two species have not been clearly defined, owing to the supposed differences between them according to several authors (e.g. Günther, 1859; Bleeker, 1877; Fowler, 1928, 1933; Weber and de Beaufort, 1936; Munro, 1967) having been inconsistent. During a world-wide revision of the genus *Kyphosus*, *K. vaigiensis* was determined as being defined by five meristic characters involving the dorsal and anal fin soft-rays, gill-rakers on the first gill-arch, longitudinal scale rows and scales above the lateral line. Based on the examination of several type specimens and 124 additional specimens from various localities in the Indo-Pacific region, *K. vaigiensis* was redescribed and its synonymy discussed.

Methods of counting and measuring followed Hubbs and Lagler (1964), except for longitudinal scale rows; scales were counted in an almost straight line from near the posterior end of the gill-cover to the end of the hypural plate (Fig. 1). Vertebrae were counted from radiographs. Counts and proportional measurements are shown in Tables 1 and 2. Institutional codes follow Leviton et al. (1985) and as follows: MUFS, Fisheries Sciences Course, Department of Animal Science, Miyazaki University, Miyazaki, Japan; NMCI, Noto Marine Center, Ishikawa

Pref., Japan; OCTU, Okinawa Regional Research Center, Tokai University, Japan; TUFO, Tokyo University of Fisheries, Ogasawara Collection, Japan.

### *Kyphosus vaigiensis* (Quoy and Gaimard, 1825) (Japanese name: Isuzumi) (Figs. 1–4)

*Pimelepterus vaigiensis* Quoy and Gaimard, 1825: 386, pl. 62, fig. 4 (type locality, Waigeo I., Indonesia); Bauchot, 1963: 174 (syntypes).

*Pimelepterus marciac* Cuvier, 1831: 267 (type locality, Waigeo I., Indonesia; new name for *Pimelepterus vaigiensis* Quoy and Gaimard).

*Pimelepterus lembus* Cuvier, 1831: 269 (type locality, Vanikolo I., Santa Cruz Is.); Bleeker, 1853: 469 (Batavia, Indonesia); Günther, 1859: 498 (Seas of Batavia and Vanikolo); Bleeker, 1876, 1877: 15, pl. 364, fig. 1 (Indonesia); Bauchot, 1963: 173 (misspelt as "*Pimelepterus lumbus*").

*Pimelepterus ternatensis* Bleeker, 1853: 604 (type locality, Ternate, Moluccas Is., Indonesia); Günther, 1859: 499 (Sea of Ternate).

*Pimelepterus fuscus* (non Cuvier): Day, 1875: 143 (India).

*Pimelepterus waigiensis* (emendation of *vaigiensis*): Günther, 1859: 498 (New Guinea, Java and Amboyna); Günther, 1874: 68 (East Indies and New Guinea); Bleeker, 1876, 1877: 17, pl. 364, fig. 2 (Indonesia); Klunzinger, 1884: 65 (Red Sea); Day, 1888: 788 (India).

*Kyphosus gibsoni* Ogilby, 1912: 50 (type locality, Moreton Bay, Queensland, Australia); McCulloch, 1920: 59, pl. 12, fig. 3 (Moreton Bay, Queensland, Australia).

*Kyphosus bleekeri* Fowler, 1933: 211 (type locality, Java, Indonesia).

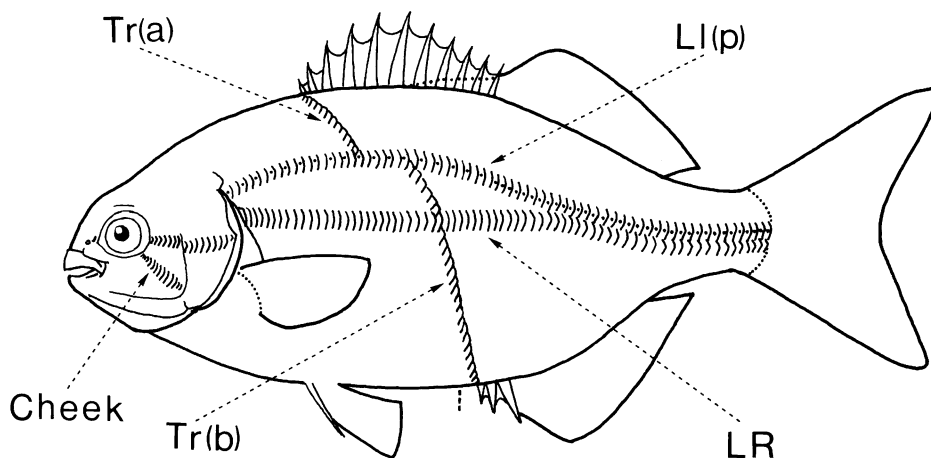


Fig. 1. Method of counting scales of *Kyphosus*. *LI(p)*—pored scales in lateral line; *Tr(a)*—scales above lateral line; *Tr(b)*—scales below lateral line; *LR*—longitudinal scale rows; *Cheek*—cheek scales.

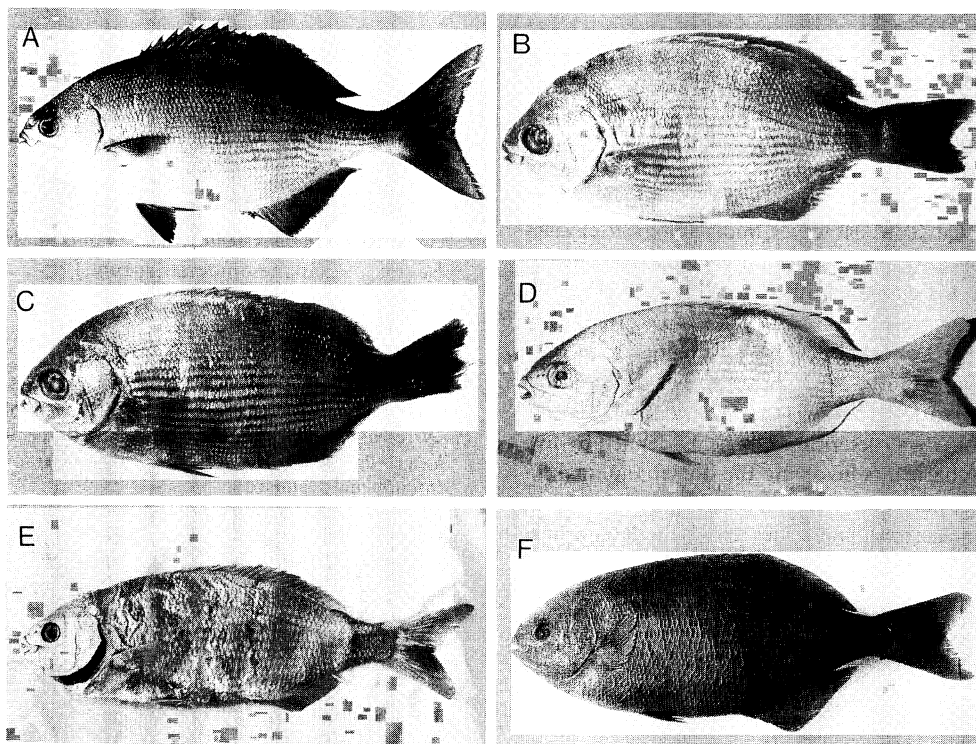


Fig. 2. *Kyphosus vaigiensis* (Quoy and Gaimard). A) FAKU 60760, 236.0 mm SL; B) MNHN 9602, 103.0 mm SL (lectotype); C) MNHN 1995-13, 107.5 mm SL (paralectotype); D) MNHN 9660, 216.0 mm SL (holotype of *Pimelepterus lembus* Cuvier); E) RMNH 5728, 330.0 mm SL (holotype of *K. bleekeri* Fowler); F) QM.I 30, 348.0 mm SL (holotype of *K. gibsoni* Ogilby).

*Kyphosus vaigiensis*: Fowler, 1928: 222 (East Indies, Melanesia, Micronesia, Polynesia); Fowler, 1933: 209 (Philippines); Weber and de Beaufort, 1936: 227, fig. 58 (Indo-

Australian Archipelago); Schultz, 1953: 564 (Marshall and Mariana Is.); Smith, 1961: 246, fig. 638a (South Africa); Bauchot, 1963: 174 (syntypes); Munro, 1967:

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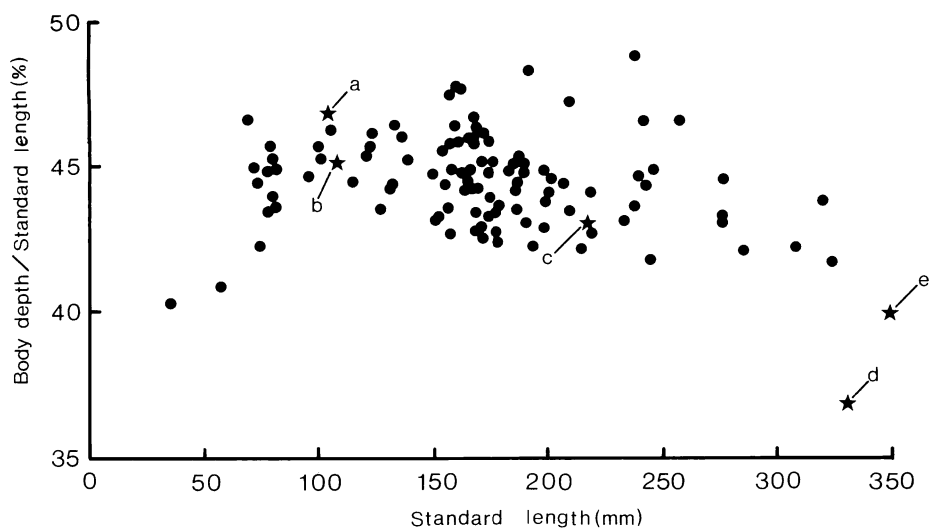


Fig. 3. Relationship between percent of body depth/standard length and standard length in *Kyphosus vaigiensis*. a—lectotype of *K. vaigiensis*; b—paralectotype of *K. vaigiensis*; c—holotype of *Pimelepterus lembus*; d—holotype of *K. bleekeri*; e—holotype of *K. gibsoni*.

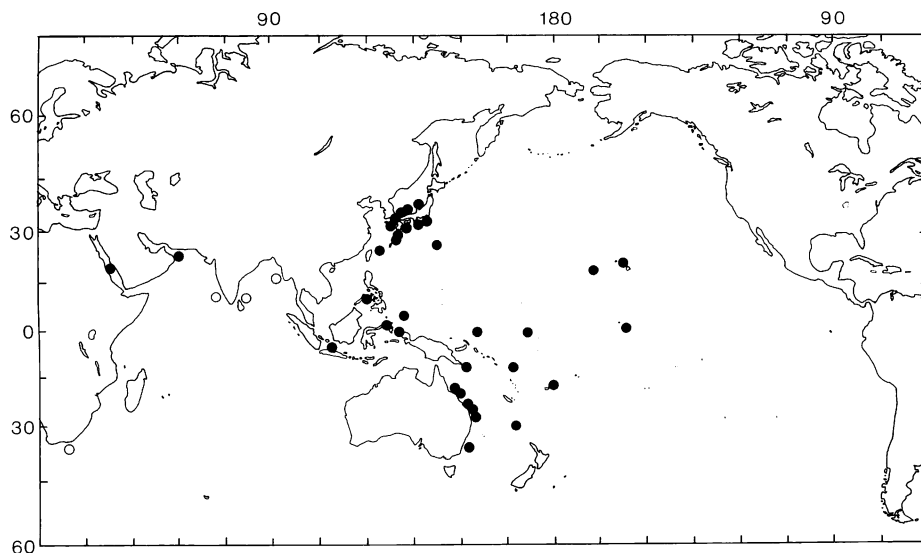


Fig. 4. Distribution of *Kyphosus vaigiensis*. Solid circles indicate localities of specimens examined. Open circles indicate literature records.

353, pl. 47, fig. 662 (New Guinea); Jones and Kumaran, 1980: 359, pl. 306 (Laccadive Archipelago); Schroeder, 1980: 160, pl. 36, fig. 168 (Philippines); Randall, 1983: 82 (Red Sea); Gioerfelt-Tarp and Kailola, 1984: 217, pl. 216 (southern Indonesia and Northwestern Australia); Randall, 1985: 22, pl. 51 (Hawaiian Is.); Smith, 1986: 603 (South Africa); Myers, 1989: 151 (Micronesia); Randall et al., 1990: 215, one photo on p. 215 (Great Barrier Reef and Coral Sea); Nakabo, 1993: 772 (fig. and key).

*Kyphosus lembus*: Jordan and Thompson, 1912: 595 (Wakanaoura, Japan); Herre and Montalban, 1927: 437, pl. 7, fig. 2 (Philippines); Fowler, 1928: 221 (Zanzibar, East Indies, Melanesia); Weber and de Beaufort, 1936: 226 (Indo-Australian Archipelago); Matsubara, 1955: 647 (keys); Munro, 1967: 352, pl. 47, fig. 661 (New Guinea); Masuda et al., 1975: 227, pl. 54-H (southern Japan); Zama, 1976: 100–104 (Ogasawara and Izu Is., Japan); Cheng et al., 1962: 545, fig. 449 (Shan-Wei, Guangdong,

Table 1. Counts of *Kyphosus vaigiensis*

Locality	Lectotype of <i>K. vaigiensis</i>	Paralectotype of <i>K. vaigiensis</i>	123 specimens	Holotype of <i>P. lembus</i>	Holotype of <i>K. bleekeri</i>		Holotype of <i>K. gibsoni</i>
	Waigeo I., Indonesia			Vanikolo I.	Java		Moluccas
Cat. number	MNHN 9602	MNHN 1995-13	Range (mean, <i>n</i> )	MNHN 9660	RMNH 5728	BMNH 1845.6.22.24	QM.I 30
Standard length (mm)	103.0	107.5	34.5–470.0 (172.2, 122)	216.0	330.0	285.0	348.0
Total length (mm)	131.0	—	42.5–420.0 (217.2, 104)	275.0	410.0	350.0	430.0
Counts							
Dorsal fin spines	X	XI	X–XI ( 11.0, 122)	XI	XI	XI	XI
Dorsal fin soft rays	15	14	13–15 ( 14.0, 122)	14	14	14	13
Anal fin spines	III	III	III ( 3.0, 121)	III	III	III	III
Anal fin soft rays	13	13	12–13 ( 13.0, 121)	13	13	13	12
Pectoral fin rays	19	20	18–20 ( 19.1, 116)	19	19	20	19
Pelvic fin rays	I, 5	I, 5	I, 5 ( I, 5, 103)	I, 5	I, 5	—	I, 5
Caudal fin rays	17	17	17 ( 17.0, 103)	17	17	—	17
Gill rakers-upper limb	9	9	8–10 ( 9.0, 103)	9	9	—	—
-lower limb	23	23	21–24 ( 22.5, 102)	23	22	—	23
-total	32	32	29–34 ( 31.4, 102)	32	31	—	—
Pored scales in lateral line	53	53	51–55 ( 52.5, 113)	53	52	—	53
Scales above lateral line	12	11	11–14 ( 12.3, 112)	11	12	13	13
Scales below lateral line	20	21	18–21 ( 18.9, 113)	18	19	18	20
Longitudinal scale rows	59	60	56–64 ( 60.3, 99)	58	60	—	63
Cheek scales	17	16	11–18 ( 15.5, 92)	15	16	—	18
Incisor-like teeth on upper jaw	23	17	16–34 ( 26.0, 71)	30	29	32	29
Incisor-like teeth on lower jaw	19	16	12–34 ( 24.4, 69)	33	29	34	30
Vertebral number (AV+CV)	10+16	10+16	10+16 ( —, 36)	—	10+16	—	—
Preorbital scales	absent	absent	absent: 74 (75.5%, 98)	absent	present	absent	present

Table 2. Proportional measurements in %SL of *Kyphosus vaigiensis*

Locality	Lectotype of <i>K. vaigiensis</i>	Paralectotype of <i>K. vaigiensis</i>	123 specimens	Holotype of <i>P. lembus</i>	Holotype of <i>K. bleekeri</i>	Holotype of <i>K. gibsoni</i>	
	Waigeo I., Indonesia			Vanikolo I.	Java		Moluccas
Cat. number	MNHN 9602	MNHN 1995-13	Range (mean, n)	MNHN 9660	RMNH 5728	BMNH 1845.6.22.24	QM.I 30
Standard length (mm)	103.0	107.5	34.5–470.0 (172.2, 122)	216.0	330.0	285.0	348.0
Head length	29.1	27.9	25.1– 34.5 ( 27.9, 109)	25.9	24.0	25.4	24.5
Body width	8.3	9.8	12.5– 20.2 ( 16.6, 100)	—	—	—	21.1
Body depth	46.8	45.1	40.3– 48.8 ( 44.5, 110)	43.1	36.9	—	39.9
Caudal peduncle length	20.8	19.2	17.3– 21.1 ( 19.1, 108)	18.0	17.3	—	18.8
Caudal peduncle depth	12.6	11.9	10.3– 12.9 ( 11.2, 110)	10.7	10.1	10.8	10.0
Snout length	8.0	7.3	7.8– 10.1 ( 8.7, 108)	8.1	7.7	8.2	7.8
Eye diameter	8.7	8.2	5.6– 11.1 ( 7.3, 109)	7.4	6.0	6.3	5.3
Interorbital width	12.1	11.4	9.7– 13.0 ( 10.8, 107)	9.9	9.9	9.8	10.5
Upper jaw length	8.7	8.7	7.3– 10.5 ( 8.4, 105)	7.8	7.1	—	7.2
Preanal length	55.8	56.0	53.8– 62.6 ( 57.3, 105)	57.7	54.5	—	55.4
Predorsal length	43.5	41.7	38.6– 45.6 ( 42.0, 108)	41.8	39.1	—	38.4
Dorsal fin base length	51.7	51.5	48.1– 54.3 ( 51.1, 108)	48.8	50.4	49.8	48.7
Spinous dorsal fin base length	24.0	24.9	21.0– 29.1 ( 24.6, 108)	24.0	22.9	23.3	25.6
Soft dorsal fin base length	30.1	27.7	24.2– 30.3 ( 27.4, 108)	26.6	27.1	26.6	24.4
Pectoral fin length	20.3	19.3	16.8– 22.1 ( 18.8, 107)	17.6	15.2	—	15.2
Anal fin base length	28.2	28.3	24.2– 28.9 ( 27.4, 109)	26.6	25.9	—	25.8
Caudal fin length	29.6	19.2	23.4– 34.2 ( 29.0, 100)	30.2	24.9	—	23.1
Pelvic fin length	18.6	18.4	15.0– 20.0 ( 17.6, 106)	16.5	—	—	14.4
1st dorsal spine length	2.8	2.1	1.6– 4.0 ( 2.8, 73)	1.9	2.8	—	2.3
6th dorsal spine length	12.1	10.2	8.8– 13.3 ( 10.7, 105)	10.6	—	—	9.3
4th dorsal ray length	11.7	11.0	7.5– 13.3 ( 10.0, 108)	8.8	8.2	—	7.4
3rd anal spine length	6.8	6.3	4.2– 8.4 ( 6.2, 107)	5.8	4.4	—	4.8
2nd anal ray length	13.6	14.0	10.3– 16.4 ( 12.4, 108)	12.2	10.1	—	10.5

China); Araga, 1984: 161, pl. 152-A, B (southern Japan); Sakai, 1991: 2 (southern Japan).  
*Kyphosus oblongior* (non Cuvier): Fowler, 1933: 208 (in part, Queensland, Australia).  
*Segutilum (Leptokyphosus) gibsoni* Whitley, 1931: 320 (after Ogilby, 1912).

**Material examined.** Indonesia and Philippines: MNHN 9602 (lectotype of *Pimelepterus vaigiensis* Quoy and Gaimard), 103.0 mm, and MNHN 1995-13 (paralectotype of *P. vaigiensis*), 107.5 mm SL, Waigeo I.; RMNH 5728 (identified as *P. vaigiensis* by Bleeker, 1877; holotype of *K. bleekeri* Fowler), 330.0 mm SL, Java; RMNH 5729, 8 specimens (identified as *P. lembus* by Bleeker, 1877), 39.0–232.0 mm SL, Java; RMNH 1223, 95.0 mm SL, Java; CAS 35609, 1 of 2 specimens, 113.2 mm SL, Jakarta, Java, 29 Sept. 1975; BMNH 1845.6.22.24, 285.0 mm SL, Moluccas Is.; NSMT-P 21383, 125.5 mm SL, Babelthuap I., Palau Is., 13 July 1980; CAS 45885 and 46074, 2 specimens, 158.4, 181.8 mm SL, Siluag I., Philippines, 22 June 1948. Micronesia and Melanesia: MNHN 9660 (holotype of *P. lembus*), 216.0 mm SL, Vanikolo I., Santa Cruz Is.; AMS.IA 2847 and 2868, 151.0, 218.3 mm SL, Vanikolo I. Santa Cruz Is., 11°42'S, 166°50'E; AMS.I 13400, 238.0 mm SL, Engineer Group, New Guinea, Sept. 1914; AMS.IB 1877, 171.0 mm SL and IB 1878, Ocean I., 0°52'S, 169°35'E; CAS 68577, 6 specimens, 149.0–185.6 mm SL, Kapingamarangi Atoll, 1°01'36"N, 154°46'35"E, 12 Aug. 1954; ROM 51890, 2 specimens, 200.5, 208.3 mm SL, Dravuni I., Fiji Is., 18°45'26"S, 178°31'43"E, 4 Apr. 1983. Australia: QM.I 30 (holotype of *K. gibsoni*), 348.0 mm SL, Moreton Bay, Queensland; QM.I 6696, 225.0 mm SL, Upstart Bay, Queensland; QM.I 6813, 173.5 mm SL, Magnetic I., Queensland; QM.I 11129, 220.0 mm SL, North Stradbroke I., Queensland; QM.I 13175 and 13176, 2 specimens, 285.0, 313.0 mm SL, Bundaberg, Queensland; QM.I 17816, 335.0 mm SL, Great Keppel Is., Queensland; NSMT-P 2517, 243.0 mm SL, Port Jackson, N.S.W., May 1907; AMS.I 20256-012, 121.4 mm SL, Duncombe Bay, Norfolk I., 17°29'S, 167°56'E, 8 Sept. 1975. Central Pacific: BPBM 17945, 57.0 mm SL, Oahu I., Hawaiian Is., 11 June 1968; BPBM 29590, 168.5 mm SL, Johnston I., 7 Apr. 1984; BPBM 31901, 240.0 mm SL, Christmas I., Laine Is., 1 Aug. 1987. Indian Ocean: BMNH 1891.2.9.21, 470.0 mm SL (stuffed specimen, not measured), Muscat, Oman, Arabian Sea; BPBM 20368, 165.5 mm SL, Sudan, Red Sea, 11 Oct. 1974. Japan: IORD 76-1391, 199.0 mm SL, Amitori Bay, Iriomote I., Yaeyama Is., 18 Dec. 1976; IORD 77-57 and OCTU-P 77-301, 2 specimens, 275.0, 275.5 mm SL, Amitori Bay, 10 March–16 July 1977; IORD 78-24, 78-25 and OCTU-P 78-24, 3 specimens, 158.7–323.0 mm SL, Amitori Bay, 12 Jan.–19 Feb. 1978; IORD 85-283, 85-285, 85-286 and OCTU-P 85-111, 12 specimens, 68.7–99.5 mm SL, mouth of Sakiyama Bay, Iriomote I., associated with floating wood, 12 Aug. 1985; IORD 85-377 and 85-378, 2 specimens, 256.4, 284.0 mm SL, Shinokawa Bay, Oshima I., Amami Is., 2 Aug. 1985; FAKU 25474, 275.0 mm SL, Makurazaki, 15 Dec. 1955; ZUMT 50035, 154.0 mm SL, Hukue I., Goto Is., 13 Oct. 1953; FAKU S-3, 113.6 mm SL, Tsushima Is., summer 1973; MUFS 6075, 161.4 mm SL, Nango, Miyazaki Pref., 25 Nov. 1984; MUFS 7942,

132.1 mm SL, Nango, 4 Aug. 1982; MUFS 8522, 34.5 mm SL, off Mimitsu, Miyazaki Pref., 12 July 1983; FRLM 3626, 120.0 mm SL, mouth of Ago Bay, Mie Pref., 10 July 1982; FRLM 6797, 6799, 6801, 6803–6805, 6815, 6816 and 6818, 9 specimens, 148.5–241.5 mm SL, off Wagu, Mie Pref., 8–19 Nov. 1987; NSMT-P 19246, 3 specimens, 121.8–169.3 mm SL, off Ito, Izu Peninsula; IORD 85-39 and 85-41, 2 specimens, 306.2, 318.0 mm SL, Izu Oshima I., Izu Is., 13 June 1985; TUFO 1153, 208.3 mm SL, Chichi I., Ogasawara Is., 27°05.5'N, 142°11.7'E, 9 Sept. 1973; FAKU 36517 and 36519, 2 specimens, 131.4, 152.5 mm SL, off Shimane Pref., 12 May 1964; FAKU 38668, 104.0 mm SL, Oki I.; FAKU 104085, 72.3 mm SL; QM.I 28144–28145, NSMT-P 35686–35689, FAKU 60769, 60770 and NMCI-P 4, 9 specimens, 135.0–189.3 mm SL, off Ushitsu, Toyama Bay, 23 Oct. 1985; NSMT-P 35680–35685, FAKU 55445–55447, 60760, 60771–60773, 60767, 60768 and NMCI-P 1–3, 5, 6, 20 specimens, 149.8–244.3 mm SL, off Enome, Toyama Bay, 28 Aug.–18 Dec. 1985; UF 47530–47532, NMCI-P 7–12, 9 specimens, 160.3–217.0 mm SL, off Enome, Toyama Bay, 13 Oct.–25 Nov. 1986.

**Comparative material examined.** *K. elegans* (Peters, 1869): ZMB 15958, 222.0 mm SL, Panama; CAS-SU 2877, 2 specimens, 147.0, 154.0 mm SL, Mazatlan, Sonora State, Mexico; CAS 47430, 2 specimens, 123.5, 143.7 mm SL, middle of Sandy beach, San Lucas Bay, Baja California, Mexico, 22°53'30"N, 109°53'20"W; CAS 1378, 140.5 mm SL, Socorro I., Revilla Gigeo Is., Baja California del sur, Mexico, 3 May 1925.

**Diagnosis.** A species of *Kyphosus* from the Indo-Pacific region with 14 (rarely 13 or 15) dorsal and 13 (rarely 12) anal fin soft-rays, 21–24 (usually 22 or 23) gill-rakers on lower limb of first gill-arch, 56–64 longitudinal scale rows, and 11–14 (usually 12 or 13) scales above lateral line.

**Description.** D XI (rarely X), 14 (rarely 13, 15); A III, 13 (rarely 12); P<sub>1</sub> 19 (rarely 18, 20); P<sub>2</sub> I, 5; C 17; Vertebral number 10 (abdominal) + 16 (caudal) = 26; pored scales in lateral line 51–55 (usually 52, 53); longitudinal scale rows 56–64; scales above lateral line 11–14 (usually 12 or 13); scales below lateral line 18–21 (usually 18 or 19); gill-rakers on first gill-arch 8–10 (usually 9) + 21–24 (usually 22 or 23) = 29–34 (usually 31 or 32); cheek scales 11–18.

Body elliptical, compressed; depth increasing with growth to 70–80 mm SL, decreasing thereafter (Fig. 3). Lateral line single, arched at mid-body.

Head small. Snout short. Dorsal contour before eye steep. Two pairs of nostrils before eye; anterior pair rounded, posterior pair elongated with short tube. Interorbital space convex. Posteroventral corner of preopercle serrated. Opercle with two weak retrorse spines.

Mouth terminal; posterior end of maxilla reaching

vertical through anterior margin of eye. Single outer row of lanceolate, incisor-like teeth on both jaws, number of teeth ca. 30–34 in adults (over 20 cm SL); anterior tips of teeth not protruding beyond anterior margin of lips; very narrow inner bands of small, canine-like teeth on both jaws. Bands of villiform teeth on palatine, prevomer and tongue.

Dorsal fin origin above pelvic fin origin; spinous portion convex, soft-rayed portion low, straight; 1st dorsal spine short, increasing in length to 5th, 6th and 7th spines which are about four times as long as 1st spine and a little longer than longest dorsal ray. Anal fin beginning slightly behind mid-body; 3rd spine longest; anterior part of soft-rayed portion elevated, height twice length of 3rd spine, greater than longest dorsal spine. Pectoral fin bluntly pointed posteriorly. Pelvic fin beginning a little behind and slightly shorter than pectoral fin. Caudal fin forked shallowly.

Scales ctenoid, non-deciduous; body, head, maxilla, soft-rayed portions of dorsal and anal fins, and proximal part of caudal fin densely covered with scales; snout, premaxilla and lower jaw without scales; preorbital region below nostrils and anterior part of eye with or without scales.

*Color in life.*—Body bluish-brown dorsally, silver ventrally, with several olive-brown or yellow longitudinal lines on flank; large specimens (ca. 50 cm SL) uniformly dark brown dorsally (Araga, 1984). Head with 2 oblique olive-brown or yellow bands; one before or behind eye, and the other below eye. Dorsal and anal fins dark brown, margin of soft-rayed portion with darker band. Pectoral fin silver near base, distal half slightly darker.

**Geographic distribution.** The species is broadly distributed in the Indo-Pacific region, including the Red Sea and South African waters, but is not found in the eastern Pacific (Fig. 4).

### Discussion

The two syntypes of *Kyphosus vaigiensis*, MNHN 9602, were measured 103.0 mm SL and 107.5 mm SL, the former having 15 dorsal fin soft-rays and the latter 14. The 103.0 mm syntype agreed well with the original description and figure by Quoy and Gaimard (1825) which show the number of dorsal fin soft-rays as 15. The 103.0 mm SL syntype is here designated as the lectotype of *Kyphosus vaigiensis*. The remain-

ing (107.5 mm SL) syntype, which becomes the paralectotype, has been renumbered as MNHN 1995-13.

In this study, only a single Indo-Pacific species characterised by 14 dorsal and 13 anal fin soft rays was recognized. All specimens examined of this species agreed closely with the lectotype and paralectotype of *K. vaigiensis*, in almost all characters. Dorsal fin soft rays usually numbered 14, although ranging from 13 to 15. Preorbital scales were absent in 75 of the 99 specimens examined, but the lack of corroborative character differences indicated the preorbital scale condition to be subject to intraspecific variation.

*Kyphosus lembus* has been considered common in the Indo-Pacific region (Günther, 1859; Bleeker, 1877; Fowler, 1928; Weber and de Beaufort, 1936; Munro, 1967), but its supposed differences from *K. vaigiensis* given by these authors have been inconsistent. Recently, Indo-Pacific (excluding Japan) *Kyphosus* with 14 dorsal and 13 anal fin soft rays have been identified as *K. vaigiensis* (Randall, 1983; Gloerfelt-Tarp and Kailola, 1984; Smith and Heemstra, 1986; Myers, 1989; Randall et al., 1990). Specimens from Japan have been identified as *K. lembus* since Jordan and Thompson (1912); for example, Matsubara (1955), Zama (1976) and Araga (1984), the last-named noting that *K. lembus* was distributed from Tokyo Bay southward to the Indo-Pacific.

Our examination disclosed that the holotype of *K. lembus* (MNHN 9660) agreed closely with the lectotype, paralectotype and other specimens of *K. vaigiensis* (Table 1), indicating the former to be a junior synonym of *K. vaigiensis*.

Cuvier (1831) redescribed MNHN 9602 (syntypes of *K. vaigiensis*) under the name *Pimelepterus marciac* Quoy and Gaimard. However, Quoy and Gaimard (1825) used *Piméleptère Marciac* simply as a vernacular name for *Pimelepterus vaigiensis*. *P. marciac* Cuvier, therefore, is also a junior synonym of *K. vaigiensis*.

Fowler (1933) described *Kyphosus bleekeri* as a new species, based on *Pimelepterus waigiensis* sensu Bleeker (1876, 1877), which he considered specifically distinct from Quoy and Gaimard's (1825) species, because of its lower body, presence of preorbital scales and the soft dorsal and anal fins subequal to or higher than the spinous fins. Fowler (1933) also regarded BMNH 1845.6.22.24 (identified as *P. lembus* by Günther, 1859) as *K. bleekeri*. Bleeker's

(1876, 1877) redescription of *P. waigiensis* (emended spelling) was from a single specimen, RMNH 5728, now regarded as the holotype of *K. bleekeri* according to Article 72 (b) (ii) of the International Code of Zoological Nomenclature (1985), because the original description of *K. bleekeri* Fowler (1933) was based on Bleeker's (1876, 1877) *P. waigiensis*. Our examination of RMNH 5728 disclosed that it was conspecific with *K. waigiensis*. Although the body of RMNH 5728 was lower than other examples of *K. waigiensis*, specimens of this species larger than 70–80 mm SL decrease in body depth with growth (Fig. 3). There were no apparent differences in the heights of the spinous and soft-rayed parts of the dorsal fin of the holotype of *K. bleekeri*, RMNH 5728, and other *K. waigiensis* specimens. The specimen identified by Günther (1859: 498) as *Pimelepterus lembus*, BMNH 1845.6.22.24, is also *K. waigiensis* (Table 1).

Ogilby (1912) described *K. gibsoni* on the basis of a single specimen from Moreton Bay, Queensland, Australia. Having 13 dorsal and 12 anal fin soft rays, the holotype (QM.I 30) resembled *K. elegans* (Peters, 1869) from the eastern Pacific. However, differences occurred in gill raker counts (23 on lower limb of first gill-arch in former vs. 18–20 in latter) and longitudinal scale row counts (63 vs. 51–57). In other aspects, the holotype of *K. gibsoni* agreed closely with *K. waigiensis*; clearly the dorsal and anal fin soft ray counts of the former represent intra-specific variation applicable to *K. waigiensis*. *K. gibsoni* Ogilby is, therefore, a junior synonym of *K. waigiensis*.

Bleeker (1853) described *Pimelepterus ternatensis* from Ternate, Indonesia, as a new species, but later he (Bleeker, 1877) synonymized it with *Pimelepterus lembus*. Unfortunately, as the type specimens have not been found, the identity of *P. ternatensis* is uncertain. However, the original description of *P. ternatensis* indicates its likely synonymy with *K. waigiensis*. Therefore, in the absence of evidence to the contrary, *P. ternatensis* Bleeker is here regarded as a junior synonym of *K. waigiensis*.

Cuvier (1831) described *Pimelepterus oblongior* on the basis of a single specimen (locality unknown), 168 mm TL, deposited in Rijksmuseum, Leiden. Although the original description by Cuvier (1831) was insufficient for subsequent identification, Bleeker (1876, 1877) redescribed the specimen (Weber and de Beaufort, 1936; Bauchot, 1963), including a figure (pl. 364, fig. 3). Reported as lost by Bauchot (1963), the specimen could not be located during our recent

search of the RMNH fish collection. Although Bleeker's (1876) figure of *P. oblongior* is reminiscent of *K. waigiensis*, *P. oblongior* should be considered a nomen dubium, because insufficient information was given by Bleeker (1876, 1877) to enable an unequivocal identification of the species.

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#### イスズミの分類学的再検討

坂井恵一・中坊徹次

インド・太平洋海域に分布するイスズミ *Kyphosus vaigiensis* の分類学的再検討を行い、後模式標本を指定すると共に、各地から得られた 123 個体の標本にもとづき再記載を行った。イスズミは背鰭に 14 (稀に 13 か 15)、臀鰭に 13 (稀に 12) 軟条を持ち、第 1 鰓弓の下枝鰓耙数が 21–24 (多くは 22 か 23)、体側中央の縦列鱗数が 56–64、そして側線より上方の横列鱗数が 11–14 (多くは 12 か 13) であることによって特徴づけられる。そして、これらの形質を組み合わせることによって、インド・太平洋海域に分布する他の本属魚類と識別できる。

従来より本邦産のイスズミの学名に適用されてきた *Kyphosus lembus* (Cuvier) をはじめ、*Pimelepterus marciac* Cuvier, *P. ternatensis* Bleeker, *K. bleekeri* Fowler, そしてオーストラリア沿岸にだけ分布するとされている *K. gibsoni* Ogilby は、それぞれの模式標本を検討した結果、すべて *Kyphosus vaigiensis* の新参同物異名であることが判明した。

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