

Johnius grypotus (Richardson, 1846), Resurrection of a Chinese Sciaenid Species

Kunio Sasaki

Department of Biology, Faculty of Science, Kochi University, Akebono, Kochi 780, Japan

Abstract A Chinese sciaenid species, long identified in both China and Japan as *Johnius belangerii* (Cuvier, 1830), is now considered to be more correctly named as *Johnius grypotus* (Richardson, 1846). The species is characterized by a blunt snout, wide interorbital space (8.0–9.7% SL), usually eight anal soft rays, high gill raker number (6–7+1+10–14), and ctenoid scales on the throat.

Whilst examining sciaenid specimens from Chinese coastal waters, formerly identified as *Johnius belangerii* (Cuvier, 1830) according to Chinese and Japanese literature, it became apparent that the specimens not only differed from the latter, but that they might represent an almost unknown Chinese species, *Corvina grypota* Richardson, 1846.

Richardson's (1846) description of *Corvina grypota* was based partly on material in the Haslar Naval Hospital Museum, Portsmouth, and partly on an unpublished drawing included in a collection of coloured illustrations compiled by John Reeves (see Whitehead, 1966). Since then, however, the name has been generally ignored, except by the following authors. Günther (1860) listed it as a doubtful name. Fowler (1933) considered *C. grypota* as a synonym of *Johnius coitor* (Hamilton, 1822), whereas Chu et al. (1963a) synonymized it with *J. dussumieri* (Cuvier, 1830). More recently, Trewavas (1977) included *C. grypota* in her section on "doubtful species", though she also included it with reservation in the synonymy of *J. belangerii* (Cuvier, 1830).

The purpose of this paper is to clarify the identity and description of *Corvina grypota*, and to review the taxonomic confusion related to this species.

The following description is based on 41 specimens from the Yellow Sea, Taiwan, and Hong Kong. Definitions of the subgenera *Johnius* and *Johnieops* follow Trewavas (1977). Counts and measurements follow Sasaki and Kailola (1988). Institutional abbreviations follow Leviton et al. (1985). Standard length and head length are expressed as SL and HL, respectively.

Johnius (Johnius) grypotus (Richardson, 1846) (Japanese name: Konibe) (Figs. 1–3)

Corvina grypota Richardson, 1846: 225, Reeves drawing number, β 12 (type locality, Canton = Kwangtung); Günther, 1860: 296 (listed); Trewavas, 1977: 448 (remarks).

Johnius dussumieri (not of Cuvier, 1830): Wang, 1935: 454, fig. 35 (Chefoo); Tang, 1937: 75 (Chusan); Chu et al., 1963a: 25 (in part, listed as a synonym of this species).

Johnius belangeri (not of Cuvier, 1830): Wang, 1935: 455, fig. 36 (Chefoo).

Johnius belangerii (not of Cuvier, 1830): Matsubara, 1937: 50, fig. 23 (Kunsan); Lin, 1938: 375 (Chekiang, Foochow, Kwangtung); Chu et al., 1962: 418, fig. 348 (Kwangtung, Hainan); Chu et al., 1963a: 24, figs. 12, 45, 71 (Chekiang, Fukien, Kwangtung, Hainan); Chu et al., 1963b: 296, fig. 207 (Chekiang, Fukien); Okamura, 1984: 157, pl. 147A (Japan); Yamada, 1986: 194 (Gulf of Pohai, Yellow Sea, East China Sea).

Johnius belangerii (not of Cuvier, 1830): Trewavas, 1977: 413 (in part, listed as a synonym of this species).

Johnius coitor (not of Hamilton, 1822): Fowler, 1933: 405 (in part, listed as a synonym of this species); Trewavas, 1977: 418 (in part of "problematical specimens", China).

Johnius macrorhynchus (not of Mohan, 1976): Yu and Shen, 1987: 93, fig. 21 (Taiwan).

Material. CAS (SU) 61070, 2 specimens, 73.8 and 76.9 mm SL, Hong Kong, west of Sha Chau Island, 13 Feb. 1958; CAS 30322, 101.9, Taiwan, northwest to northeast of Keelung, 8–9 May 1972; HUMZ 106573, 108.5 mm SL, HUMZ 106574, 114.3, Yellow Sea (33°00.00'–33°50.00'N, 125°00.00'–125°50.00'E), Oct. 1984; HUMZ 110992–110997, 80.9–100.4, Yellow Sea (33°00.00'–33°50.00'N, 121°50.00'–122°00.00'E), 18 Oct. 1985; HUMZ 106556–

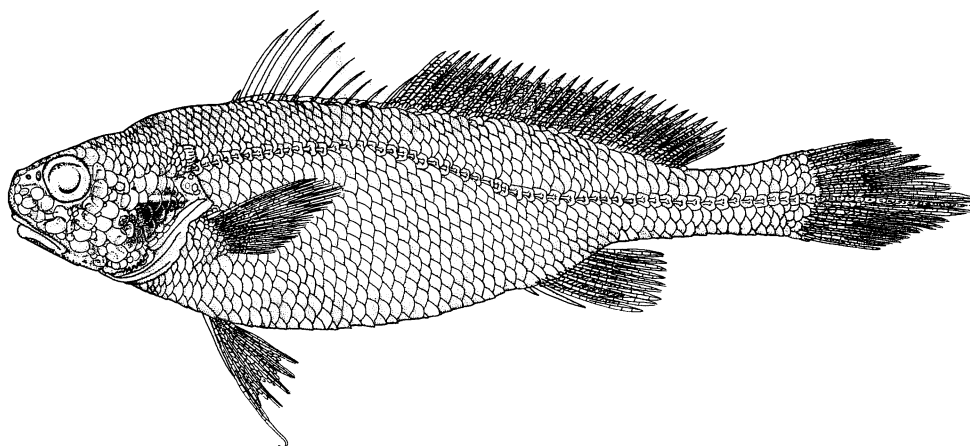


Fig. 1. *Johnius grypotus* (Richardson, 1846), HUMZ 108547, 118.8 mm SL.

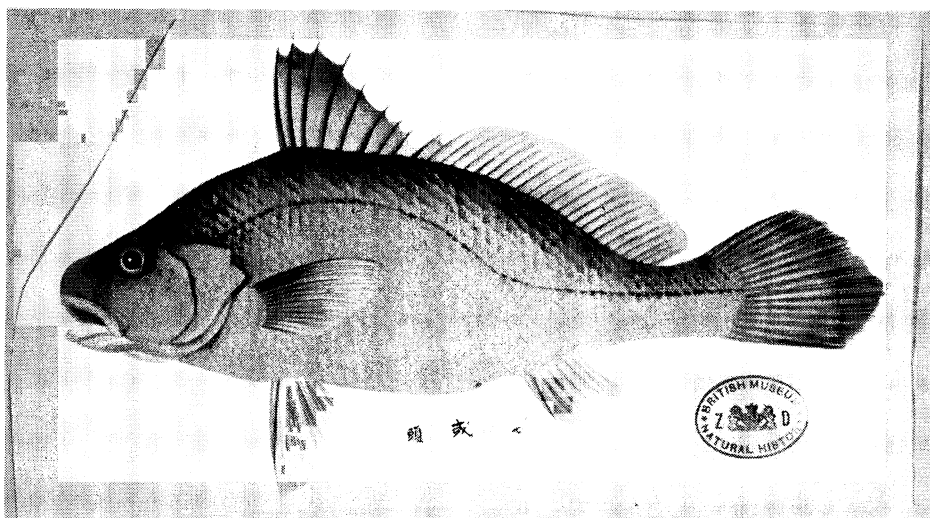


Fig. 2. *Corvina grypota* Richardson, Reeves drawing No. β 12. Courtesy of the British Museum (Natural History).

106560, 94.8–137.1, HUMZ 108599–108602, 109.7–119.7, HUMZ 108604, 88.9, HUMZ 108605, 117.2, HUMZ 108607–108610, 96.3–114.0, HUMZ 108612, 117.4, HUMZ 108613, 113.3, HUMZ 108615, 107.3, HUMZ 108622, 130.4, Yellow Sea ($34^{\circ}46.12'N$, $122^{\circ}26.97'E$), 61m, 29 Nov. 1985; HUMZ 108547–108555, 92.7–119.7, HUMZ 108557, 88.8, Yellow Sea ($34^{\circ}43.23'N$, $122^{\circ}28.75'E$), 61m, 30 Nov. 1985.

Diagnosis. Dorsal soft rays 24–28; anal soft rays usually 8; scales above lateral line 7–9, below lateral line ca. 12–ca. 17; gill rakers 6–7+1+10–14; eye diameter 6.9–8.8% SL (23.8–30.6% HL); interorbital width 8.0–9.7 (28.4–34.0); second anal spine length 8.7–13.8 (29.5–48.5); gill raker length 1.7–2.8 (6.4–9.7); snout steep, obtusely rounded;

chin lacking barbel; scales very deciduous, coarsely ctenoid on body (including throat); gill rakers short, slender; drumming muscle present in males, absent in females; body silvery; pelvic fin pale.

Description. Dorsal rays IX–XI+I, 24–28 (usually X+I, IX+I in two, XI+I in three; 24 in one, 25 in two, 26 in 10, 27 in 18, 28 in nine), anal rays II, 7–9 (usually 8, 7 in one, 9 in three); pectoral rays 16–19 (16 in three, 17 in five, 18 in 25, 19 in three); lateral line scales 49–50; scales above lateral line 7–9, below lateral line ca. 12–ca. 17; gill rakers 6–7+1+10–14; vertebrae usually 10+15, 10+14 in one, 11+14 in one, 10+16 in one; last pleural rib usually on 10th vertebra, 11th in one (one specimen with a rudimentary rib on 11th vertebra), first anal

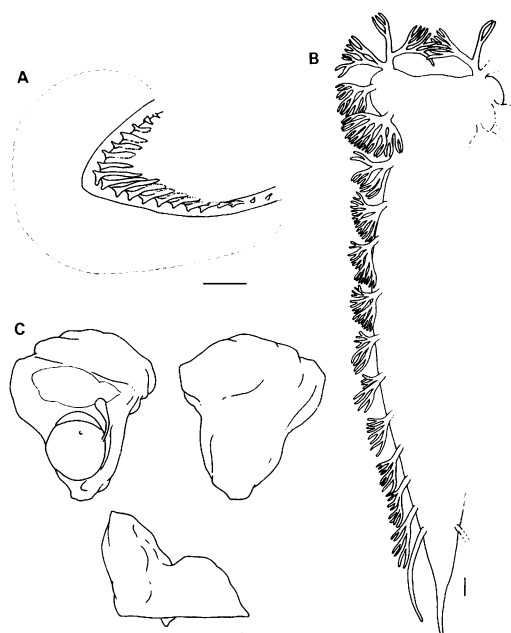


Fig. 3. First gill arch (A), swimbladder (B), and otolith (C) of *Johnius grypotus*, HUMZ 108600, 112.0mm SL. A: Lateral view. Broken line indicates outer margin of gill filaments. B: Dorsal view. C: Left, inner surface; right, outer surface; bottom, lateral view. Bar=2 mm.

proximal radial usually between 10th and 11th vertebrae, 11th and 12th in eight, 12th and 13th in one; swimbladder appendages 11–15 (counted in seven specimens). Proportions as % SL: HL 27.5–31.6; body depth 23.1–30.1; body width 11.0–23.9; caudal peduncle length 23.0–29.5; caudal peduncle depth 12.5–17.2; snout length 7.9–9.8; eye diameter 6.9–8.8; interorbital width 8.0–9.7; upper jaw length 10.9–13.3; lower jaw length 11.5–14.5; pectoral fin length 18.3–24.1; pelvic fin length 17.5–21.3; second dorsal spine length 11.3–16.5; third dorsal spine 13.1–18.0; fourth dorsal spine 11.9–16.4; fifth dorsal spine 9.8–14.4; second anal spine length 8.7–13.8; gill raker length 1.7–2.8; gill filament length 3.3–4.6. Proportions as % HL: snout length 26.9–33.6; eye diameter 23.8–30.6; interorbital width 28.4–34.0; upper jaw length 37.1–43.4; lower jaw length 40.2–46.3; second anal spine length 29.5–48.5; gill raker length 6.4–9.7; gill filament length 11.5–16.1. Proportions as % eye diameter: gill raker length 23.1–35.7; gill filament length 38.5–65.2.

Snout steep, obtusely rounded, projecting slightly in front of upper jaw. Mouth small, inferior, max-

illary extending to posterior margin of pupil.

Five upper and five marginal snout pores, rostral fold deeply notched. Three pairs of mental pores, anterior pair with a common opening. Chin lacking barbel.

Upper jaw with a single, outer row of rather closely spaced enlarged teeth, and an inner band of small, conical teeth, comprising four or five anterior rows and three posterior rows. Lower jaw with a band of uniformly small, conical teeth (inner row very slightly enlarged in some specimens), comprising five anterior rows and two posterior rows.

Eye rounded. Nostrils immediately before eye; anterior nostril rounded, posterior nostril somewhat horizontally compressed. Gill rakers short, slender, tips pointed (Fig. 3A); gill filaments about twice as long as gill rakers adjacent to angle of gill arch.

Scales highly deciduous; cycloid on snout, below and immediately behind eye, pectoral axil, body region concealed by gill cover, membranes of dorsal, anal, and caudal fins; coarsely ctenoid on other parts of head and body, including throat.

Third dorsal spine longest. First ray of pelvic fin with short filament. Second anal spine slender, short, its length about 2/3 of first soft ray. Caudal fin rhomboidal, tip pointed.

Swimbladder (Fig. 3B) hammer-shaped, with a number of arborescent appendages arising along entire lateral surface. Sagitta (Fig. 3C) Johniine pattern (Trewavas, 1977). Drumming muscle present in males, absent in females.

Colour in preservative: grayish-brown above, whitish below. Mouth lining pale except for gray speckled palate. Branchial cavity and peritoneum varying from lightly mottled to black. Pectoral axil lightly mottled. Spinous dorsal blackish distally, soft dorsal mottled gray; pectoral and pelvic fins pale; anal fin spotted with a few melanophores; caudal fin gray. Colour when fresh: head and body silvery, slightly grayish dorsally, whitish ventrally, with brilliant iridescent shine. Pectoral, pelvic, and anal fins tinged yellow.

Remarks. Richardson (1846) referred to specimen(s) of *Corvina grypota* in the Haslar collection. Although the greater part of that collection was later transferred to the British Museum (Natural History), the aforementioned specimen(s) could not be found by Trewavas, and were presumed to be lost (Trewavas, 1977). At present, there is still no trace of Richardson's specimen(s) (G. Howes, pers. comm., 1989).

Richardson's (1846) description of *Corvina grypota* lacked both proportional measurements and gill raker counts. In addition, swimbladder and otolith descriptions (important sciaenid diagnostic characters) were not given. Nevertheless, it is possible to identify Richardson's species with considerable certainty.

Richardson's (1846) account included the following important information: a common species in Chinese waters ("most of the collection of Chinese fishes that we have examined contain examples of a *Corvina*"); similar to *Johnius coitor* in general aspects, but with the snout more obtuse ("a shorter and blunter snout that curves downwards from the nostrils"); D. X+I, 29; A. II, 7-8; mental pore pattern ("five large pores at the end of the lower jaw"); short anal spines ("second anal spine not strong, a little shorter than soft rays"); nature of scales ("scales tender, nacreous, and very deciduous"); plain colouration ("colour mostly silvery, with some yellow tints on fore part of anal, ventrals, and pectorals"); small to medium size ("about 7 inches" = about 18 cm TL).

Amongst Indo-West Pacific sciaenids, the anterior pair of mental pores being close together or opening by a single, common pore is found only in species of the Nibeini and *Johnius*. Within this group, a combination of blunt snout, weak anal spine, and plain colouration excludes all species of the Nibeini and *Johnius* (*Johnieops*) from consideration. Similarly, the illustration referred to by Richardson (Reeves drawing number, β 12; Fig. 2) does not correspond to any species of the Nibeini and *Johnius* (*Johnieops*), instead showing a close resemblance to *Johnius* (*Johnius*) in its blunt snout and inferior mouth.

Johnius belangerii (Cuvier) and *J. weberi* Hardenberg, 1936 have been recorded as Chinese species of *Johnius* (*Johnius*) lacking a chin barbel (Trewavas, 1977). In addition, a species of this subgenus of questionable identity occurs in the region (pers. obs.). *J. belangerii*, however, does not conform to Richardson's (1846) description and the Reeves illustration, differing in colouration (body usually dark gray, pelvic fins always dark at least distally), rather strong anal spine, and scale type (rather thick, not easily deciduous). *J. weberi* differs from the description and illustration in having a snout projecting rather pointedly before the mouth, and non-deciduous scales. Furthermore, the last mentioned species disagrees with the description in having a

disjunct modal number of dorsal soft rays (24-26, 15 specimens). On the other hand, the specimens described in this study mostly agree with the above features.

Although the study material differs from the original description in both dorsal and anal soft ray counts (24-28, modally 26-28 vs. 29, usually 8 vs. 7-8, respectively), such differences fall within an expected variance. In fact, Lin (1938) and Yamada (1986) gave the range of dorsal soft rays as 25-31 in their "*belangerii*" (see below). Compared with the present specimens, the Reeves drawing (Fig. 2) shows a rather small eye. However, this may be attributed to inaccuracy, since the eye size illustrated is smaller than that of any *Johnius* species known from China.

Comparisons. *Johnius grypotus* is similar to *J. coitor* (Hamilton, 1822), *J. carouna* (Cuvier, 1830), *J. glaucus* (Day, 1876), and an undescribed species of *Johnius* (*J. coitor* of Gloerfelt-Tarp and Kailola, 1984) in having ctenoid scales, more than 10 lower gill rakers, and lacking chin barbel(s). However, it differs from the above in having usually 8 anal soft rays (vs. 7; Trewavas, 1977; Mohan, 1984; pers. obs.), and coarse ctenoid scales on the throat (vs. cycloid; Trewavas, 1977, pers. obs.). Moreover, *J. grypotus* differs from *J. coitor* in its less pointed snout, larger eye (vs. 5.7-6.9% SL, 18.9-23.5% HL; pers. obs.), wider interorbital space (vs. 6.4-7.6% SL, 22.1-26.1% HL; pers. obs.), and 25 total vertebrae (vs. 26; pers. obs.); from *J. carouna* in its greater number of transverse scales (vs. 5/1/9-12; Mohan, 1984, pers. obs.); from *J. glaucus* in the absence of a drumming muscle in females (vs. present; Trewavas, 1977, pers. obs.); and from *Johnius* sp. in its fewer number of dorsal soft rays (vs. 29-34; pers. obs.).

Synonymies. Wang's (1935) "*dussumieri*" and "*belangerii*" both resemble *Johnius grypotus* in having a blunt snout, eight anal soft rays, wide interorbital space (27.8% HL), and pale pelvic fin (figs. 35 and 36, respectively). Although Wang's gill raker count ("about 8 on lower limb") in both species is lower than that of *grypotus*, the lowermost two or three rakers may well have been overlooked owing to their small size.

Tang (1937) recorded "*dussumieri*" from Chusan, based on a specimen of 158 mm (SL?). The characters given agree well with the diagnosis of *Johnius grypotus* viz. blunt snout, eight anal soft rays, high gill raker number (6+14), and wide interorbital

space (8.4% SL, 28.5% HL). Tang's reference to cycloid head scales is considered to be erroneous.

Two specimens from Kunsan, Korea, recorded as "*belangerii*" by Matsubara (1937), to which Trewavas (1977) found difficulty in allocating a name, were undoubtedly *Johnius grypotus*, conforming in most details. Although Matsubara considered the dorsal and anal fins to be scaleless, such was likely owing to scale loss.

Also recognizable as *Johnius grypotus* are the records of "*belangerii*", by Lin (1938) and Chu et al. (1962), who described 26 and 10 specimens from the southern coasts of China, respectively. Although Lin gave a very narrow interorbital space proportion (22.2% HL), this was likely to be an inaccuracy.

Chu et al. (1963a) recorded seven anal soft rays in their "*belangerii*." Their specimens do not conform to *Johnius belangerii* owing to the interorbital space being wider than the eye diameter (vs. equal to or narrower than the eye diameter) and their pale pelvic fins (vs. dark at least distally). On the other hand, their new species, *J. fasciatus*, synonymized with *J. belangerii* by Trewavas (1977), had a narrow interorbital space equal to the eye diameter, and dark pelvic fins. Although Trewavas also synonymized the "*belangerii*" of Chu et al. with *J. belangerii*, it is now evident that the former is attributable to *J. grypotus*. Although Chu et al. recorded seven anal rays for "*belangerii*", this was possibly in error, especially since they gave eight anal rays for "*belangerii*" in the accompanying key (p. 20). The error (?) was repeated in Chu et al. (1963b).

Okamura (1984) and Yamada (1986) gave seven and seven or eight anal rays for "*belangerii*", respectively. However, the colour photographs included by these authors, show a fish similar to *Johnius grypotus* in every respect.

Eleven specimens from Taiwan recorded as *Johnius macrorhynchus* (Mohan, 1976) by Yu and Shen (1987) are also *J. grypotus*, judging from the colour photograph which shows a fish with a blunt snout dissimilar to the former, though the authors recorded rather few gill rakers (3-5+8-11).

Distribution. *Johnius grypotus* is distributed along the coasts of China and Taiwan, from the Gulf of Pohai to Hainan, and is the most common species of *Johnius* (*Johnius*) in Chinese waters.

Acknowledgments

I thank Dr. Osamu Okamura, Department of Biology, Faculty of Science, Kochi University, and Dr. Graham S. Hardy, Minoo City, Osaka, for their critical review of the manuscript. I am grateful to Dr. Kunio Amaoka, Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University, Dr. M. Eric Anderson, J. L. B. Smith Institute of Ichthyology, and Dr. Gordon Howes, British Museum (Natural History) for providing specimens and information.

Literature cited

- Chu, Y.-T. and eleven coauthors. 1962. Fishes of the South China Sea. Science Press, Peking, xxxi+1184 pp. (In Chinese.)
- Chu, Y.-T., Y.-L. Lo and H.-L. Wu. 1963a. A study on the classification of the sciaenoid fishes of China, with description of new genera and species. Science and Technology Press of Shanghai, Shanghai, 100 pp., 40 pls. (In Chinese with English summary.)
- Chu, Y.-T., Y.-L. Lo and H.-H. Wu. 1963b. Family Sciaenidae. Pages 268-294 in Y.-T. Chu, T.-L. Tchang and Q.-T. Chang, eds. Fishes of the East China Sea. Science Press, Peking. (In Chinese.)
- Cuvier, G. and A. Valenciennes. 1830. Histoire naturelle des poissons. Vol. 5. F. G. Levrault, Paris, 499 pp.
- Day, F. 1876. The fishes of India, being a natural history of the fishes known to inhabit the seas and fresh water of India, Burma, and Ceylon. Part 2. London, pp. 169-368, pls. 41-78.
- Fowler, H. W. 1933. Contributions to the biology of the Philippine Archipelago and adjacent regions. U.S. Natn. Mus., Bull. 100, 12, vi+465 pp.
- Gloerfelt-Tarp, T. and P. J. Kailola. 1984. Trawled fishes of southern Indonesia and northwestern Australia. The Australian Development Assistance Bureau, the Directorate-General of Fisheries, Indonesia, and the German Agency for Technical Cooperation, Jakarta, xix+406 pp.
- Günther, A. 1860. Catalogue of the fishes in the British Museum. Vol. 2. Taylor and Francis, London, xxi+548 pp.
- Hamilton, F. 1822. An account of the fishes found in the River Ganges and its branches. Archibald Constable, Edinburgh, 405 pp.
- Hardenberg, J. D. F. 1936. On a collection of fishes from the estuary and the lower and middle course of the River Kapuas (W. Borneo). Treubia, 15(3): 225-254.
- Leviton, A. E., R. H. Gibbs, Jr., E. Heal and C. E. Dawson. 1985. Standards in herpetology and ichthyology: Part 1. Standard symbolic codes for institutional resource

- collections in herpetology and ichthyology. *Copeia*, 1985(3): 802-832.
- Lin, S.-Y. 1938. Further notes on sciaenid fishes of China. *Lingnan Sci. J.*, 17(3): 367-381.
- Matsubara, K. 1937. Sciaenoid fishes found in Japan and its adjacent waters. *J. Imp. Fish. Inst. Tokyo*, 32(3): 25-86. (In Japanese.)
- Mohan, R. S. Lal. 1976. Two new species of sciaenid fishes *Johnius elongatus* and *Johnieops macrorhynchus* from India. *Matsya*, 1: 19-25.
- Mohan, R. S. Lal. 1984. Systematic position of the sciaenid *Corvina carouna* Cuvier 1830. *Indian J. Fish.*, 31(3): 373-377.
- Okamura, O. 1984. Family Sciaenidae. Pages 157-158, pls. 147 and 350 in H. Masuda, K. Amaoka, C. Araga, T. Uyeno and T. Yoshino, eds. *The fishes of the Japanese Archipelago*. Tokai Univ. Press, Tokyo.
- Richardson, J. 1846. Report on the ichthyology of the seas of China and Japan. Richard and John E. Taylor, London. 133 pp.
- Sasaki, K. and P. J. Kailola. 1988. Three new Indo-Australian species of the sciaenid genus *Atrubucca*, with a reevaluation of generic limit. *Japan. J. Ichthyol.*, 35(3): 261-277.
- Tang, D.-S. 1937. A study of sciaenoid fishes of China. *Chi. Mar. Biol. Bull.*, 2: 47-88, pl. 1.
- Trewavas, E. 1977. The sciaenoid fishes (croakers or drums) of the Indo-West-Pacific. *Trans. Zool. Soc. Lond.*, 33(4): 235-541, pls. 1-14.
- Wang, K.-F. 1935. Study of the teleost fishes of coastal region of Shangtung, II. *Contr. Biol. Lab. Sci. Soc. China, Zool. Ser.*, 10(9): 393-481.
- Whitehead, P. J. P. 1966. The elopoid and clupeoid fishes in Richardson's "Ichthyology of the seas of China and Japan" 1846. *Bull. Brit. Mus. (Nat. Hist.)*, Zool., 14(2): 15-54, pls. 1-7.
- Yamada, U. 1986. Family Sciaenidae. Pages 194-213 in O. Okamura ed. *Fishes of the East China Sea and the Yellow Sea*. Seikai Regional Fisheries Research Lab., Nagasaki. (In Japanese.)
- Yu, L.-C. and S.-C. Shen. 1987. Study on sciaenoid fishes from the adjacent waters around Taiwan. *Ann. Taiwan Mus.*, 30: 65-133. (In Chinese with English abstract.)

(Received January 29, 1990; accepted July 24, 1990)

コニベに用いるべき学名は *Johnius grypotus* (Richardson, 1846)

佐々木邦夫

Richardson (1846) が中国産として発表したニベ科魚類 *Corvina grypota* は、その実体が不明のまま今日まで残されてきた。今回、本種の実体を Richardsson が記載に際して参照した未発表の色彩画を検討した。その結果、本種は中国と日本において *Johnius belangerii* (Cuvier) と誤って同定されてきた種と同一であることが明らかになった。従って和名コニベ (松原, 1937) は *Johnius grypotus* (Richardson) と対応する。本報では本種の再記載とシノニムの整理を行った。本種は鈍円な吻、幅広い両眼間隔 (体長の 8.0-9.7%)、8 本の腎臓軟条、多数の鰓耙 (6-7+1+10-14)、櫛鱗の覆う喉部などによって特徴づけられる。その分布は中国大陸棚に沿って渤海から台湾を経て海南島に至る。

(780 高知市曙町 2-5-1 高知大学理学部生物学教室)