

A New Percichthyid Fish, *Neoscombrops pacificus*, from Japan, with a Redescription of *N. annectens* from South Africa

Kenji Mochizuki

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Abstract A new percichthyid fish, *Neoscombrops pacificus*, is described from Aogashima Island and Okinawa Island, Japan. A neotype for the closely related South African *N. annectens* is designated to clearly discriminate these two species. The Japanese *N. pacificus* differs from the South African *N. annectens* in several characters such as the number of lateral line and transverse scales, and the depth of the caudal peduncle.

The percichthyid *Neoscombrops annectens* Gilchrist occurs in South Africa (Gilchrist, 1922; Barnard, 1927; Smith, 1953). Mochizuki (1973) has reported this species from Japan based on three specimens taken at Aogashima Island, but the identification of these specimens was tentative because of some morphological disagreement of the Japanese specimens with the description of *N. annectens*.

Subsequently, three other specimens of this Japanese form were obtained from Okinawa Island in southern Japan. Comparison of these six Japanese specimens with South African specimens of *Neoscombrops* revealed a distinction between the Japanese form and the South African *N. annectens*.

Neoscombrops pacificus is proposed as new for this Japanese form. In order to clarify the differences between these two species, *N. annectens* is redescribed and a neotype is designated for *N. annectens*.

Neoscombrops pacificus, sp. nov.

(Japanese name: Bake-mutsu)

(Fig. 1A)

Neoscombrops annectens (not of Gilchrist); Mochizuki, 1973: 207~210, fig. 1 (Aogashima Island); Masuda et al., 1975: 209, fig. 41-F (Okinawa Island).

Holotype: ZUMT 52879 (Department of Zoology, University Museum, University of Tokyo), 312 mm in standard length (SL), collected around Aogashima Island (ca. 32°25'N, 139°47'E) at a depth between 300 m and 500 m, using a vertical long line with pieces of squid as bait, on Dec. 17, 1972.

Paratypes: 2, ZUMT 52880 and 52881 (female), 313 mm and 339 mm SL, collected with the holotype. 1, SMBL-F 73201 (Seto Marine Biological Laboratory, Kyoto University), 250 mm SL, May 28, 1973; 2, SMBL-F 73202 and 73203, 247 mm and 205 mm SL, June 14, 1973. The latter three specimens were caught by fishermen around Okinawa Island, Japan, at depths over 200 m using hand lines, and collected at Naha Fish Market, Okinawa Pref., by Mr. Tetsuo Yoshino.

Diagnosis. A species of *Neoscombrops* distinguished from other members of the genus by the following combination of characters: pored lateral line scales 49~51 to hypural end, 4~5 on caudal fin, 54~56 in total number; transverse scale rows (counted from scale under first spine of first dorsal fin) 5/11~ca. 13; depth of caudal peduncle 7.89~8.67 in SL.

Description. Counts and proportional measurements are shown in Table 1.

Body elongate, compressed, and covered with large, thin, cycloid scales. Head scaly except around nostrils and near top of snout.

Premaxillary with one or two strong canines near symphysis, surrounded by several small canines, and with a broad band of villiform teeth on each side. Dentary with one or two strong canines near symphysis, a single row of 16~22 small teeth on each side, and with a patch of villiform teeth on both anterior and posterior parts. Vomer with a horseshoe-shaped patch of villiform teeth, which are slightly enlarged at both ends. Palatine with very small teeth forming a narrow band. Maxillary reaching below center of eye.

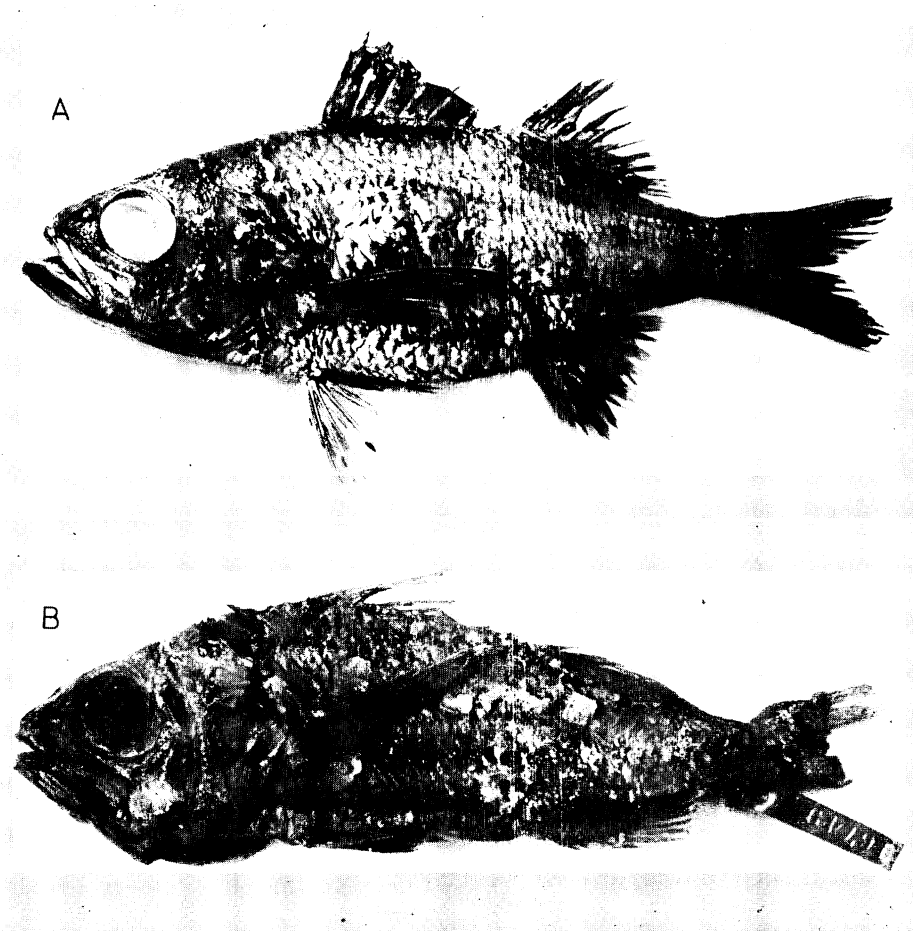


Fig. 1. A: Holotype of *Neoscombrops pacificus*, sp. nov., ZUMT 52879, 312 mm in standard length, collected around Aogashima Island, Japan, at a depth between 300 m and 500 m. B: Neotype of *N. annectens* Gilchrist, SAM 16749, 142 mm in standard length, taken off the Natal coast, South Africa.

Supramaxillary single. Subocular shelf present. Posterior margin of preopercle thin; post-horizontal edge with small weak serratures. Opercle with two flat spines. Pseudobranchiae well developed.

First spine of first dorsal fin short; the third and fourth longer than other spines. (Third and fourth spines, though mostly broken, longer than eye diameter.) Distance between last spine of first dorsal fin and spine of second dorsal fin variable, 2.91~10.67 in eye diameter. First dorsal fin naked, depressible in a groove. Bases of second dorsal and anal fins covered with two or three horizontal rows of scales; no minute scales above the scale rows. First anal spine

very short, third spine longest. Caudal fin with small scales near its base.

Proportional measurement of least depth of caudal peduncle in standard length increasing linearly in proportion to size of specimens, from 7.83 (200 mm SL) to 8.47 (340 mm SL) (Fig. 2).

Body color of fresh specimens uniformly dark purplish-brown, margin of vertical fins darker. Color in 10% formalin uniformly dark purplish-brown or light yellowish-brown.

Biological notes. Well-developed ovaries 121 g in weight were found in a specimen 1370 g in body weight taken from Aogashima Island on Dec. 17, 1972 (ZUMT 52881). This suggests that the spawning season of this

Table 1. Counts and proportional measurements of *Neoscombrops pacificus*, sp. nov. and *N. annectens*. ¹⁾ excluding a count, IX-I, 6, for a deformed fin; ²⁾ to hypural end+on caudal fin=total number; ³⁾ scales on caudal fin were not countable in 2 specimens; ⁴⁾ body depth; ⁵⁾ snout length; ⁶⁾ eye diameter.

| Characters | <i>N. pacificus</i> , sp. nov. | | | | <i>N. annectens</i> Gilchrist | | | | Values in Gilchrist (1922) |
|--|--------------------------------|---------------------|------------|---|-------------------------------|----------------------|------------|-----------------|----------------------------|
| | Holotype ZUMT 52879 | Paratypes Range | Mean | n | Neotype SAM 16749 | FSFL specimens Range | Mean | n | |
| Standard length in mm | 312 | 205~339 | (271) | 5 | 142 | 57~206 | (125) | 10 | — |
| Total length in mm | — | 263~384 | (320) | 4 | — | 72~258 | (164) | 5 | — |
| Counts | | | | | | | | | |
| Dorsal fin rays | IX-I, 10 | IX-I, 10 | (IX-I, 10) | 5 | IX-I, 10 | IX-I, 10 | (IX-I, 10) | 9 ¹⁾ | IX-I, 9 |
| Anal fin rays | III, 7 | III, 7 | (III, 7) | " | III, 7 | III, 7 | (III, 7) | 10 | III, 7 |
| Pectoral fin rays | 15 | 15 | (15) | " | 16 | 15~16 | (16) | " | — |
| Pelvic fin rays | I, 5 | I, 5 | (I, 5) | " | I, 5 | I, 5 | (I, 5) | " | — |
| Branched caudal fin rays | 8+7 | 8+7 | (8+7) | " | 8+7 | 8+7 | (8+7) | " | — |
| Lateral line scales ²⁾ | 50+4 | 49~51+4~5 =54~56 | (50+5=55) | " | ca. 39+4 or more | 38~41+3~4 =42~45 | (39+4=43) | " ³⁾ | 47 |
| Transverse scales | 5/ca. 12 | 5/11~ca. 13 | (5/ca. 12) | " | 4 or 5/- | 3~5/9~11 | (4/10) | 9 | 4/- |
| Gill rakers (upper+middle+lower) | 6+1+15 | 5~8+1+14~15 | (6+1+15) | " | — | 4~6+1+14~15 | (5+1+15) | 10 | — |
| Vertebrae | 10+15 | 10+15 | (10+15) | " | 10+15 | 10+15 | (10+15) | " | — |
| Predorsal bones | 3 | 3 | (3) | " | 3 | 3 | (3) | " | — |
| Branchiostegals | 7 | 7 | (7) | " | 7 | 7 | (7) | " | 7 |
| Canines on lower jaw (left/right) | 19/18 | 19~22/16~21 | (20/18) | " | — | 14~26/13~23 | (18/17) | " | ca. 12 |
| Measurements in standard length | | | | | | | | | |
| Head length | 2.84 | 2.60~ 2.78 | (2.69) | " | 2.73 | 2.52~ 2.71 | (2.60) | 3 | =BD ⁴⁾ |
| Body depth | 2.69 | 2.59~ 3.25 | (2.91) | " | 3.30 | 3.22~ 3.64 | (3.38) | 10 | — |
| Body width | 5.29 | 5.14~ 6.68 | (5.99) | " | 7.41 | 6.15~ 7.25 | (6.56) | " | — |
| Snout length | 9.75 | 9.26~ 9.76 | (9.54) | " | 10.52 | 9.44~11.43 | (10.62) | " | — |
| Eye diameter | 9.75 | 7.58~10.10 | (8.66) | " | 8.61 | 8.00~10.11 | (8.86) | " | — |
| Interorbital space | 10.40 | 9.78~12.06 | (10.94) | " | 11.83 | 9.50~13.71 | (11.66) | " | =SL ⁵⁾ |
| Upper jaw length | 6.12 | 5.37~ 5.95 | (5.59) | " | 5.46 | 5.18~ 6.26 | (5.27) | " | — |
| Caudal peduncle depth | 8.67 | 7.89~ 8.48 | (8.09) | " | — | 8.79~10.00 | (9.34) | " | — |
| Snout to origin of dorsal fin base | 2.44 | 2.29~ 2.51 | (2.42) | " | 2.41 | 2.58~ 2.97 | (2.73) | " | — |
| Snout to end of dorsal fin base | 1.25 | 1.21~ 1.25 | (1.23) | " | 1.21 | 1.22~ 1.33 | (1.26) | " | — |
| Snout to origin of anal fin base | 1.41 | 1.31~ 1.44 | (1.40) | " | 1.41 | 1.38~ 1.51 | (1.43) | " | — |
| Snout to end of anal fin base | 1.24 | 1.19~ 1.25 | (1.22) | " | 1.20 | 1.18~ 1.25 | (1.22) | " | — |
| Snout to pectoral insertion | 2.86 | 2.69~ 2.98 | (2.78) | " | 2.63 | 2.42~ 3.00 | (2.66) | " | — |
| Snout to pelvic insertion | 2.54 | 2.28~ 2.61 | (2.45) | " | 2.45 | 2.11~ 2.76 | (2.42) | " | — |
| Length of pectoral fin | 3.22 | 2.98~ 3.19 | (3.09) | " | — | 3.00~ 3.45 | (3.16) | 9 | — |
| Length of pelvic fin | 5.29 | 4.64~ 5.40 | (4.88) | " | — | 5.00~ 6.24 | (5.65) | 10 | — |
| Measurement in total length | | | | | | | | | |
| Body depth | — | 3.62~ 4.17 | (3.97) | 3 | — | 4.09~ 4.50 | (4.26) | 5 | 3 $\frac{1}{4}$ |
| Measurement in head length | | | | | | | | | |
| Snout length | 3.43 | 3.45~ 3.75 | (3.55) | 5 | 3.85 | 3.80~ 4.43 | (4.02) | 3 | 2 $\frac{1}{2}$ |
| Eye diameter | 3.44 | 2.88~ 3.68 | (3.23) | " | 3.15 | 3.10~ 3.45 | (3.28) | " | 3 |
| Measurements in eye diameter | | | | | | | | | |
| Third spine length of first dorsal fin | — | 0.83 | (0.83) | 1 | — | 0.71~ 0.79 | (0.76) | 3 | =ED ⁶⁾ |
| Third spine length of anal fin | 0.70 | 0.78~ 0.94 | (0.88) | 3 | 0.85 | 0.91~ 1.15 | (1.01) | 9 | =ED |

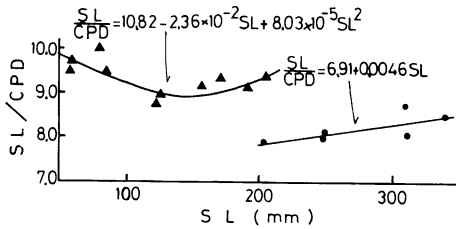


Fig. 2. Relationship between the least depth of the caudal peduncle (CPD) in standard length (SL) and the standard length. Solid circle, *N. pacificus*; solid triangle, *N. annectens*.

species is winter. An unidentifiable fish was found in the stomach of this specimen.

Etymology. This species is named *pacificus* after its distribution in the Pacific Ocean in contrast to the distribution of the related *N. annectens* in the southwestern part of the Indian Ocean.

Neoscombrops annectens Gilchrist
(Fig. 1B)

Neoscombrops annectens Gilchrist, 1922: 67~68, pl. XI, fig. 2 (Natal coast); Barnard, 1927: 528~529 (Natal coast); Smith, 1953: 211, fig. 497 (Natal coast); Far Seas Fish. Res. Lab., 1976: 95, fig. E. Afr-58 (Natal coast).

Neotype: SAM 16749 (South African Museum), 142 mm SL, caught in shallow water off the Natal coast, South Africa, by H. W. Bell-Marley, in 1923.

Other specimens examined: FSFL N907 (Far Seas Fish. Res. Lab., Fish. Agency, Japan), 206 mm SL, FSFL N951, 80 mm SL, both collected from 25°16'S, 34°24'E at a depth of 268 m, on Nov. 23, 1970, using bottom trawl. FSFL R273, 156 mm SL, FSFL R263, 169 mm SL, FSFL R274, 192 mm SL, FSFL R278, 125 mm SL, FSFL R394, 123 mm SL, FSFL Q846, 57 mm SL, FSFL Q851, 85 mm SL, FSFL Q864, 58 mm SL, all collected from 25°44'S, 34°43'E at a depth of 280 m, on Nov. 28, 1970, using bottom trawl.

Description. Counts and proportional measurements are shown in Table 1.

Body elongate, compressed, and covered with large, thin cycloid scales. Head scaly except around nostrils and near tip of snout. Premaxillary with one to three strong canines

near symphysis, not surrounded by small canines except in two specimens (FSFL Q846 and FSFL R274), and with a broad band of villiform teeth on each side. Dentary usually with one or two, or rarely without strong canines near symphysis, surrounded by a patch of villiform teeth; a patch of villiform teeth on posterior part, and a single series of 13~26 canines on lateral side of lower jaw. Vomer with a horseshoe-shaped patch of villiform teeth, occasionally enlarged at both ends. Palatine teeth arranged variably from a single row to a narrow band. Maxillary reaching below center of eye. A single supramaxillary. Subocular shelf present. Posterior margin of preopercle thin. Opercle with two flat spines. Pseudobranchiae well developed.

First and ninth spines of first dorsal fin very short, about equal in length; third and fourth spines longer than the others (0.71~0.94 in eye diameter). Distance between first and second dorsal fins variable, 3.40~7.00 in eye diameter. First dorsal naked, depressible in a groove; base of second dorsal fin covered with two or three horizontal rows of scales. First anal spine short, third spine longest (0.77~0.94 in eye diameter). Base of anal fin covered with two or three horizontal rows of scales; no minute scales above the scale rows. Caudal fin covered with small scales near its base. Least depth of caudal peduncle in relation to standard length represented by a curve, changing between 9.09 (ca. 150 mm SL) and 9.84 (ca. 50 mm SL) in a range of standard length of 57~206 mm (Fig. 2). The relationship is shown by the following equation:

$$SL/CPD = 10.82 - 2.36 \times 10^{-2} SL + 8.03 \times 10^{-5} SL^2$$

CPD: least depth of caudal peduncle in mm.
SL: standard length in mm.

Specimens preserved in 10% formalin uniformly dark pulplish or yellowish brown.

Designation of neotype. The original description of *N. annectens* by Gilchrist (1922) does not designate type specimens, nor does it indicate the number and size of specimens used. The only material data shown in the description are collection localities, indicating 20 stations off Natal, South Africa. It is certain from this that the

description of *N. annectens* was based on syntype specimens from the Natal coast. I asked Dr. P. Alexander Hulley of the South African Museum about the deposition of Gilchrist's syntypes. Dr. Hulley replied that the syntypes were not found in the Museum but there was a specimen of *N. annectens* (SAM 16749) collected from the type locality a year after the publication of the original description.

I compared this SAM specimen with the FSFL South African specimens and found that these African specimens are in complete agreement with regard to morphological characters (Table 1). The original description of *N. annectens* shows inconformity with these African specimens in lateral line scale and second dorsal fin-ray counts (Table 1). However, the difference in the lateral line scale count is not significant if the scale count of 47 given in the original description is regarded as indicating the total number, and the difference in the second dorsal soft ray count by one may be attributed to Gilchrist's failure in counting separately the close-positioned last two rays. There are also differences between Gilchrist's figure of *N. annectens* and the African specimens at hand in the position of the dorsal and pectoral fin bases and in the shape of the opercle. However, the figure of *N. annectens* in the original description does not agree with the written description (Barnard, 1927).

The above examination indicates that the SAM and FSFL specimens from South Africa dealt with in this study are *N. annectens*. The specimen SAM 16749 is herewith designated as neotype of *Neoscombrops annectens*.

Comparison of *N. pacificus* and *N. annectens*

The Japanese percichthyid *N. pacificus* morphologically resembles the South African *N. annectens* in many respects. However, *N. pacificus* is clearly discriminated from *N. annectens* by the following characters: 1) scales in lateral series in *N. pacificus* are 49~51 to the hypural end, 4~5 on the caudal fin, and 54~56 in total, instead of 38~41, 3~4, 42~45, respectively, as in *N. annectens*; 2) transverse scale counts are 5/11~ca. 13 in *N. pacificus*, against 3~5/9~11 in *N. annectens*; 3)

depth of the caudal peduncle in standard length increases linearly with growth from 7.83 to 8.47 in *N. pacificus*, while it changes between 9.09 and 9.84 in *N. annectens* (Fig. 2).

The two species of *Neoscombrops* appear to differ also in body depth in relation to the standard length. However, accurate comparison could not be made due to differences in the range of body size of specimens between the two species (205~339 mm SL for *N. pacificus* and 57~206 mm SL for *N. annectens*).

The affiliation of *N. analis* Katayama, 1957, in the genus *Neoscombrops* is questionable. In any case *N. analis* is distinguishable from both *N. pacificus* and *N. annectens* by having 28 scales in the lateral line, about 5 canines on each side of the lower jaw, and 18 pectoral fin rays.

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(Department of Fisheries, University Museum, University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113, Japan)

日本産スズキ科の 1 新種 バケムツ *Neoscombrops pacificus* の記載と南アフリカ産 *N. annectens* の再記載

望月賢二

青ヶ島及び沖縄近海から得られた標本に基づき、新種バケムツ *Neoscombrops pacificus* を記載した。また、このバケムツが南アフリカから報告されている *N. annectens* とは別種であることを明確にするため、*N. annectens* の新模式標本を指定し、再記載を行った。この両種は、側線鱗数、横列鱗数、尾柄高などの形質で明瞭に区別される。

(113 東京都文京区本郷 7-3-1 東京大学総合研究資料館水産動物部門)