

Notes on Some Fishes of the Subfamily *Braminae*, with the Introduction of a New Genus, *Pseudotaractes*

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(Continued from vol. VIII, nos. 3/4, p. 99)

Adults of this species are shipped to the Central Wholesale Market of Tokyo from time to time, but so far exact data have hardly been available. They are brought in along with tunas taken by long-lines probably in the tropical parts of the Pacific. Only a few specimens have been collected.

An adult female (Cat. No. ABE '60-1497) (figs. 8,* 12** and 14) has been skeletonized. Total length 700 mm., fork length (measured from the tip of the upper jaw) 620 mm. and standard length *ca.* 585 mm. Collected on November 21, 1960, at the market just mentioned. The following proportional dimensions are given approximately in percentages of the standard length: greatest depth of body 38, least depth of caudal peduncle 6, breadth of caudal peduncle between center of formost enlarged scale on either side 7, breadth of caudal peduncle just behind foremost enlarged scale on either side 6, breadth of caudal peduncle between center of hindmost enlarged scale on either side 6, interorbital breadth above eye-centers 9, length of snout 8 (right), horizontal diameter of right eye 6, vertical diameter of right eye 8, length of longest gill-raker 3 (left) & 4 (right).

The interpelvic area is flat and horizontal. The belly is weakly keeled between the pelvic origins and the vent. The upper lobe of the caudal fin is longer than the lower lobe. The scales of the axillary process of the pectoral fin on either side are large. The lateral line is fairly distinct. There are 3 enlarged hard scales along the mid-lateral line on each side of the caudal peduncle. The ovaries are paired, each being triangular in shape and still fairly small.

D. 31 (=v+26; hindmost fin-ray bifid to base). A. 22 (=i+2; hindmost fin-ray bifid to base). P. 21 (=iii+17+i) (on either side). V. 1 5 (all fin-rays branched). C. ix 8/7 ix. Total number of vertebrae 40 (=18+22). The proximal segment of the foremost radial of the dorsal fin is situated between the skull and the neural spine of the 1st vertebra, and the 2 successive proximal segments of the radials are each placed between every two successive neural spines. The 4th proximal segment of the radial, which bears the 1st and 2nd dorsal fin-rays is placed, together with the 5th, between the neural spines of the 3rd and 4th vertebrae. The total number of the proximal segments of the dorsal radials is 33. The distal segments of the radials of the dor-

* The legend (p. 96) should read '60-1497 instead of '61-1497.

** The legend (p. 97) should read 700 mm. instead of *ca.* 800 mm.

sal fin is single for the 1st dorsal fin-ray, and paired for the subsequent dorsal fin-rays. The middle segments of the radials of the dorsal fin are found only for the hindmost 11 fin-rays of the dorsal. There are 5 (or 6) proximal segments of the radials of the anal fin in advance of the 1st haemal spine, and there is usually 1 proximal segment of the radial of the anal fin between every 2 successive haemal spines. The total number of the proximal segments of the radials of the anal fin is 19. The proximal segment of the foremost radial of the anal fin bears 4 fin-rays. The 1st anal fin-ray seems to lack distal segment of the radial, and the other fin-rays are provided with distal segments of the radials. The middle segments of the radials of the anal fin are found only for the hindmost 8 anal fin-rays (fig. 12).

The left branchiostegal membrane laps over the right one. The number of branchiostegals is 7 on either side. Gills 4; a slit behind the 4th gill. Pseudo-branchiae are well developed. The number of gill-rakers is $vii+2+1+7+i$ (left) & $xiv+4+2+7+v$.

The number of the scales along the lateral line on the left side is 2 or 3 (small; on pectoral girdle)+43+3 (enlarged)+1. The number of scales along the lateral line on the right side is 1 (small; on pectoral girdle)+1 (not pored)+42+3 (enlarged)+1 (slightly enlarged). There are 8 vertical rows of scales and another indistinct row on the right operculum.

The number of pyloric caeca is 8. They are thick and long, excepting for the lowermost, which is short.

The air-bladder is not large, curved ventrally, and located near the postero-dorsal corner of the body cavity.

The ribs are all attenuated. The parapophyses (the 1st pair begin on the 7th vertebra) become longer posteriorly (fig. 14). The pairs of the parapophyses of the 13th-18th vertebrae are fused medially. The neural spine of the 1st vertebra is not fused to the centrum.

The jaw teeth are small and curved inwards. The upper jaw teeth are arranged in 3 or 4 irregular rows anteriorly, and diminish in size posteriorly, forming a narrow band of very small teeth on the posterior 1/3 of the premaxillary. The lower jaw teeth are arranged in 3 irregular rows anteriorly, and in a single row posteriorly. The posterior teeth are not so small as in the corresponding teeth of the upper jaw. The vomer is edentate. The palatine on either side bears a single row of very small teeth, and there is a single tooth inside of this row.

An adult (probably female) specimen (Cat. No. ABE '60-1509), measuring *ca.* 700 mm. in total length, was collected on December 11, 1960, at the Central Wholesale Market of Tokyo. The fork length is 600 mm., standard length 555 mm., greatest depth of body (at dorsal origin) 39.6% of standard length. P. 20 (uppermost 3 rays unbranched; uppermost ray very short) (left). The vomer is edentate. The pyloric caeca are thick, long, and number 10. The air-bladder is rather small, and the body cavity is compressed near the air-bladder. The ribs and haemal spines are reddish

while fresh.

An adult male (Cat. No. ABE '60-1474), measuring 800 mm., was collected at the same market as above on November 16, 1960. The fork length is 680 mm., and standard length *ca.* 630 mm. The upper lobe of the caudal fin is longer than the lower. The pit near the upper origin of the caudal fin and the ventral pit below the former are very distinct. The lateral line is conspicuous. The axillary process of the pelvic fin on either side is longer than 1/2 of the length of the pelvic fin. The axillary process of the pectoral fin on either side is broad, but not long. The left branchiostegal membrane on the left side laps over the right. Branchiostegals 7 on either side. Gills 4; a slit behind the 4th. The vomer is edentate. There are *ca.* 15 teeth on the palatine on either side. The number of the rows of jaw teeth diminishes posteriorly; anteriorly there are a few rows, and 1 row posteriorly.

An adult (Cat. No. ABE '60-1503), measuring *ca.* 840 mm. in total length and *ca.* 730 mm. in fork length, was collected at the same market as above on December 3, 1960. The number of the enlarged keeled scales along the mid-lateral line of the caudal peduncle is 5 on the left side. Of these, the hindmost is the much smaller than the others, and the foremost is smaller than the subsequent 3 scales. On the right side, the 4th and 5th enlarged scales are believed to have been lost; there are pockets which certainly received the scales.

4. *Taractes platycephalus* MATSUBARA

“Sagami-manzaiuo”

Figs. 15-21

As stated above (p. 92), *Taractes platycephalus* MATSUBARA may be a synonym of *Taractes asper* LOWE, but in order not to cause confusion, the present writer tentatively lists the former species here as distinct from the latter as is the case with *Taractes raschi* which may also be conspecific with *asper*, the type species of the genus *Taractes*. A single specimen referable to *platycephalus* (Cat. No. ABE '60-1720) (figs. 15-21) was taken by hand-line by Mr. Shûichi KOBAYASHI (Odawara City) on May 7, 1960, in the north-western part of Sagami Bay, at a fishing ground by the name of Seno-umi (off the town of Ninomiya). The bottom of the place where the fish was caught was *ca.* 670 m. deep, and the depth where the fish took the bait was *ca.* 230 m. (after Mr. KOBAYASHI). This specimen is believed to be the second to be recorded from the Japanese waters. The specimen is not in a good shape, and the proportional dimensions are given below approximately. The total length is *ca.* 212 mm., fork length *ca.* 210 mm, and standard length (the hind end of the vertebral column is supposed to be in the line where the caudal fin can be bent laterally; the line coincides with the hind end of the hindmost spined scale) *ca.* 165 mm. The proportional dimensions expressed in percentages of the standard length are: greatest depth of body (at vent) 47, least depth of caudal peduncle 9, breadth of caudal peduncle at base of foremost caudal fin-

ray (at a place where there are no spines or scales) 5, length of head 32 (left) & 31 (right), horizontal diameter of eye 9 (left) & 10 (right), vertical diameter of eye 10 (on either side), length of snout 8 (on either side), bony interorbital breadth above eye-centers 10, least bony interorbital breadth 9, length of longest (4th on either side) pectoral fin-ray 27 (left) & 28 (right), length of longest (innermost on either side) ventral fin-ray 22 (on either side), length of ventral spine 6 (on either side), length of scaly process in the ventral axil 7 (on either side).

The body is compressed and fairly deep. The ventral fin on either side originates in advance of a vertical with the pectoral origin. The dorsal and anal fins are high even posteriorly. The dorsal profile of the head is nearly straight and there is a mid-dorsal keel from behind the eyes (fig. 20). The pre-ventral (prepelvic) area is flat and triangular (fig. 16). The belly is not strongly keeled. The lower jaw is provided with a distinct projection at the symphysis, and projects beyond the upper jaw. The preoperculum on either side is strongly denticulated (fig. 17) as in the type of *Trachyberyx barretoii* ROULE (cf. MAUL, 1954). The scales are arranged regularly in longitudinal rows below the mid-lateral line of the side of the body. The scales of the mid-lateral series on the caudal peduncle are provided with distinct spines, but they are not specifically enlarged as in *Steinegeria rubescens*. The scaly processes in the axil of the pectoral fin and ventral fin on either side are fairly short (fig. 18 and 19).

The color in formalin is blackish, only the tips of the upper and lower lobes of the caudal and anal fins being whitish.

D. III 30. A. 24 (probably III 21). D. and A. were counted of radiographs. P. 17 (uppermost 2 fin-rays unbranched) (on either side). V. I 5 (all branched) (on either side). Number of scales in a longitudinal series passing the mid-lateral line of caudal peduncle ca. 42. Total number of vertebrae ca. 41 (=18+23).

The jaw teeth are strong, and visible from outside. The vomer bears a single median tooth. The palatines are toothed. The tongue is edentate.

5. *Taractes raschi* (ESMARK)

“Rasch-etchiopia”, new Japanese name

Figs. 22-27

A single specimen* of the present species (Cat. No. ABE '60-1498) (figs. 22-27) was collected at the Central Wholesale Market of Tokyo on November 21, 1960. The total length is ca. 560 mm., fork length ca. 460 mm. (if measured from the tip of the lower jaw, ca. 490 mm.), and standard length ca. 405 mm. The right pectoral fin was lost while radiographing. The following proportional dimensions are given in percentages of the standard length: greatest depth of body ca. 43, length of dorsal base ca. 51, length of longest dorsal fin-ray ca. 35, length of anal base ca. 35.

* A few specimens collected prior to December, 1958, have been sent to Dr. MEAD without having been examined by the present writer.

The body is compressed. The caudal peduncle is somewhat compressed, and provided with a weak mid-lateral keel on either side. The dorsal and anal fins are produced anteriorly, and the caudal fin is deeply forked, the upper lobe being longer than the lower. The color of the body while fresh is lighter than in *Taractichthys longipinnis* (LOWE), and may be stated as dark grey. The vertical fins and the circumocular portion of the head are black. The interpelvic space is flat and horizontal. The pelvic origin on the left side is a little in advance of the pectoral origin. The lateral line descends abruptly near the tip of the pectoral fin on the left side. The maxillary is low. The anterior nostril on either side is fairly large. The spine of each scale is directed rearwards.

D. IV 27. A. 24. P. 18 (=ii+16) (left) & 18 (right; lost before careful examination as stated above). Total number of vertebrae 41 (=18+23) or 42 (=19+23). The number of the pored scales in the lateral line is 48 on the right side, of which the posterior 23 or 24 are nearly in a straight line.

There are two thick teeth on the vomer. The tooth-band of the palatine on either side is short. The lower jaw teeth are arranged in two rows, and there are one (left) and two (right) additional teeth between the rows.

There remains much to be discussed about the identity of the present specimen with the type specimen of *raschi* and several other specimens reported as *raschii* or *steindachneri* (PARIN, 1958) or *longipinnis* (ANDRIASHEV, 1954), and about the identity of *raschi* with *asper* or *platycephalus*, but it is thought better to leave further study at the hand of Dr. MEAD who is far ahead in the study of bramids.

6. *Taractichthys longipinnis* (LOWE)

“Manzaiuo”; “Hiredjiro-manzaiuo”

Figs. 13, 28-31

Adults of the present species are landed at the Central Wholesale Market of Tokyo rather commonly. A few specimens of the young of this species have been collected at Manazuru; they were taken by trap nets in Sagami Bay, off this town. As stated above (pp. 92 and 94), this species belongs to the genus recently introduced by MEAD & MAUL as a subgenus, which differs considerably from *Taractes* and the other genera of the subfamily *Braminae*. In the following pages brief accounts of the young examples, a skeletonized adult specimen and two partly dissected adult specimens will be given.

A specimen (Cat. No. ABE '59-40) (fig. 28), measuring 132 mm. in total length was taken off Manazuru during December, 1958—April 5, 1959. The fork length is 129 mm., the standard length *ca.* 114 mm., and the greatest depth of body (at the dorsal origin) 54% of the standard length. The belly is keeled. The inner membranous shelf of the upper jaw is well developed. The vomer and palatines seems to be eduntulous. P. 20 (left) and 21 (right).

A specimen (Cat. No. ABE '59-49), measuring 250 mm. in total length, was taken from the same locality and during the same season as the specimen listed just above. The fork length is 242 mm., standard length *ca.* 210 mm. and the greatest depth of body (at the dorsal origin) 59% of the standard length. The caudal peduncle is not compressed. The belly is keeled. The interpelvic area is medially keeled. The caudal pits above and below are fairly distinct. The anterior nostril on either side is small. The longitudinal scale row just below the mid-lateral line on either side is curved. P. 19 (=ii+16+i) (left) and 20 (=ii+17+i) (right). The number of the scales in the longitudinal row just below the mid-lateral line on each side of the body is *ca.* 35. Each scale bears a distinct spine which is directed forwards. The axillary process of the pectoral fin on either side is soft, and composed of *ca.* 3 scales.

A specimen (Cat. No. ABE '60-1293) (figs. 29-31), measuring 410 mm. in total length, was collected on November 4, 1960, and skeletonized. The fork length is 375 mm., standard length 328 mm., and the proportional dimensions expressed in percentages of the standard length are: greatest depth of body (at dorsal origin) 52.4, length of head 25.9 (left) & 26.2 (right), least depth of caudal peduncle (at pits) 6.1, least width of caudal peduncle (at pits; spines of scales not included) 5.8, horizontal diameter of eye 5.6 (left) & 6.7 (right), vertical diameter of eye 6.9 (left) & 7.0 (right), length of ventral fin 8.2 (left) & 7.9 (right), and length of axillary process of ventral fin 4.9 (left) & 4.3 (right).

The dorsal and anal fins are anteriorly much produced. The interpelvic area is wide. The hind margin of the caudal fin is white. The lining of the gill-cavity and peritoneum is whitish. The lining of the buccal cavity is mostly white; a narrow area inside of the jaw teeth, the membrane of the shelf (or pocket) of the lower jaw and the upper side of the tongue are black; the membrane of the shelf (or pocket) of the upper jaw is dark gray.

D. 34 (=iv*+30). A. 30 (=iii*+27) (1st ray very short; 5th ray longest, its length 56.1% of standard length; last ray bifid to base). P. 22 (uppermost 2 rays unbranched) (left) (right fin partly damaged; more than 20, of which 2 uppermost rays and 1 lowermost ray unbranched). V. 15 (all rays branched.) C. vi 8/7 vi. Total number of vertebrae 45 (=20+25). Gills 4; a slit behind the 4th. Pseudobranchiae well developed. Branchiostegals 7 on either side. Gill-rakers thick and short; their number ii+2+1+6+*ca.* v (left) & iii+2+1+6+*ca.* v (right).

Number of scales (counted back to a point near hind end of vertebral column) in a longitudinal row running a little below mid-lateral line of caudal peduncle ii (on pectoral girdle)+36 (+ small scales which are difficult to count) (left) & ii (on pectoral girdle)+37 (+ small scales which are difficult to count) (right); number of scales in a longitudinal row just above the row just mentioned ii (on pectoral girdle)+41 (left); number of scales in a longitudinal row just below the first mentioned

* Divided, but not branched.

row *ca.* 34 (left). There are 3 keeled scale rows on either side of the caudal peduncle; upper 2 rows extend to the caudal base while the lowermost row terminates in advance of the caudal pit. Number of keeled scale rows on the left side of the body is 5/6, and there are 2 1/2 rows of unkeeled scale rows above the vent.

The vomer is edentate. The palatine on either side is provided with distinct teeth. The preorbital is rather small, and there are 7 or 8 suborbitals. There is no subocular shelf. The shape of the parapophyses and ribs are very remarkable (*cf.* TROSCHER, 1863). The 1st pair of parapophyses which project obliquely rearwards from the 4th vertebra are short, and the 2nd to 4th pairs of parapophyses become longer. The 5th to 13th pairs of parapophyses are broader than the neural spines and nearly of the same length, embracing a deep longitudinal, vertical space (fig. 31). The posterior pairs of parapophyses are inclined forwards, and there is a wide gap between the hindmost pair of parapophyses and the 1st haemal spine which projects from the 21st vertebra. Each of the hindmost 3 pairs of parapophyses are fused medially. The ribs attached to the 5th vertebra and the subsequent ribs back to the rib of the last precaudal vertebra (20th vertebra) are compressed antero-posteriorly, broad and crescent-shaped (fig. 29), forming a fine swollen basket embracing the large ovoid air-bladder. There is a flattened layer of muscle between every two successive expanded ribs. There is a small window on the wall of the air-bladder*.

The 1st proximal segment of the dorsal radial is inserted between the skull and the neural spine of the 1st vertebra, and the subsequent 3 proximal segments of dorsal radials are each inserted between every two successive neural spines. The 5th and 6th proximal segments of dorsal radials are placed together between the neural spines of the 4th and 5th vertebrae, and the 7th proximal segment, which is still free (that is, bears no dorsal fin ray), is situated between the neural spines of the 5th and 6th vertebrae. The 8th proximal segment of the dorsal radial, which bears the 1st dorsal fin-ray, and the subsequent proximal segments of the radials are each placed between two neural spines excepting for the 10th and 11th proximal segments of the radials and 19th and 20th proximal segments of the radials; these pairs are inserted between two neural spines of the 8th and 9th vertebrae, and 16th and 17th vertebrae, respectively. The hindmost (39th) proximal segment of dorsal radial is situated between the neural spines of the 35th and 36th vertebrae. The 6th and the subsequent dorsal fin-rays are each placed on the paired, cartilaginous distal segments of the radial, which are attached to the middle segment at the end of the proximal segment of the radial. The 2nd to 5th dorsal fin-rays are each supported by a pair of cartilaginous distal segments, and there is no middle segment below the latter. The 1st dorsal fin-ray is connected directly with the proximal segment. The middle segments of the dorsal radials for the hind dorsal fin-rays are fairly long, while for the anterior dorsal fin-

* The present writer is not familiar with the terminology of such windows. He has found similar windows in *Beryx* spp. Whether they may be called ovals or not, the writer wishes to decide after study of the structure of air-bladders in other fishes (*cf.* MARSHALL, 1960).

rays they are very short, and often conical in shape.

The shape of the middle and distal segments of the anal radials is similar to that of the corresponding segments of the dorsal radials. The position of the foremost proximal segments of the anal radials is quite different from that of the corresponding segments of the dorsal radials; the 1st to 9th (or 8th) proximal segments of the anal radials are placed together in advance of the 1st haemal spine (that is, the haemal spine of the 21st vertebra); the 10th and 11th (or 9th to 11th) proximal segments of the radials are placed together between the haemal spines of the 21st and 22nd vertebrae; the 12th and 13th proximal segments of the anal radials are placed together between the haemal spines of the 22nd and 23rd vertebrae, and the subsequent proximal segments of the radials are each placed between every two successive vertebrae. The hindmost (26th) proximal segment of the anal radial is situated between the haemal spines of the 35th and 36th vertebrae, thus the position in relation to the vertebral column of the hindmost proximal segments of the dorsal and anal fins is corresponding. The distal segments of the radials of the anal fin are paired for the 3rd and subsequent anal fin-rays, while they are single for the 1st and 2nd anal fin-rays. The middle segments of radials of the posterior anal fin-rays are fairly long, and those for anterior (not the foremost which was not examined carefully) fin-rays are short and sometimes conical in shape.

An adult specimen (Cat. No. ABE '60-1511), measuring 450 mm. was collected at the Central Wholesale Market of Tokyo on December 13, 1960. The fork length is 394 mm., and standard length *ca.* 350 mm. This has been partly dissected to examine the structure of the ribs and the air-bladder. The mid-ventral keel proceeds beyond the pelvic bases. The axillary process of the pelvic fin on either side is longer than the base of the fin. The scales of the axillary process of the pectoral fin on either side are numerous and large. The dorsal and anal fins are much produced. Pyloric caeca are 5 in number, of which one is much longer than the others. The peritoneum is white. Posterior ribs are expanded as in the specimen mentioned above. There seem to be a dorsal window and a ventral window on the wall of the air-bladder. The stomach is oval in shape and swollen.

An adult specimen (Cat. No. ABE '61-131), measuring *ca.* 745 mm. in total length and 655 mm. in fork length, was fished during March 24-April 12, 1961, in 2°41' S-5°48' N; 120°40' W-126°54' W. It has been partly dissected. The air-bladder is strongly curved, and covered with a fairly thick outer sac which seems to be open postero-ventrally. The small "window" is located near the antero-dorsal corner of the inner, soft wall of the bladder. The pyloric caeca are fairly thick, and number 5.

References

- ABE, T. 1952. Records of the "Midzu-uo-damashi" (new Japanese name), *Anotopterus pharao*, and a record of the "Etchiopia", *Brama raii*, from near the surface of the north-western Pacific. Jap. Journ. Ichth., ii, nos. 4/5, pp. 230-238.

- 1959. New, rare or uncommon fishes from Japanese waters. VII. Description of a new species of *Beryx*. Jap. Journ. Ichth., vii, nos. 5/6, pp. 157-163, pls. 4-6. (In reference to the terminology of the segments of the radials of dorsal and anal fins).
- 1960. Description of a new lutjanid fish of the genus *Paracaesio* from Japan. Jap. Journ. Ichth., viii, nos. 1/2, pp. 56-62. (In reference to the terminology of the segments of the radials of dorsal and anal fins).
- ANDRIASHEV, A. P. 1954. Ruibui severnuikh morei SSSR. Opredeliteli po faune SSSR, izdavaemuie Zoologitscheskim Institutom Akademii Nauk SSSR. 566 pp. Moscow and Leningrad. In Russian.
- BARNARD, K. H. 1925-1927. A monograph of the marine fishes of South Africa. Ann. South African Mus., xxi, 1065 pp., 37 pls.
- 1948. Further notes on South African fishes. Ann. South African Mus., xxxii, pp. 341-406.
- BIGELOW, H. B. & SCHROEDER, W. C. 1929. A rare bramid fish (*Taractes princeps* JOHNSON) in the northwestern Atlantic. Bull. Mus. Comp. Zool., Harvard Coll., lxxix, pp. 41-50, 1 pl.
- 1953. Fishes of the Gulf of Main. Fishery Bulletin 74 (Fishery Bulletin of the Fish and Wildlife Service, vol. liii), 8+578 pp.
- BLOCH, M. & SCHNEIDER, J. G. 1801. Systema ichthyologiae.... 584 pp., 110 pls. Berlin.
- BOULENGER, G. A. 1904 (1922). Fishes (systematic accounts of Teleostei). In Cambridge Natural History, vii, pp. 539-727. London.
- COLLETT, R. 1897 (1896). Om *Pterycombus brama*, FRIES. Bergens Museums Aarbog 1896, no. 6, pp. 1-16, pls. 1 & 2.
- CUVIER, G. & VALENCIENNES, A. 1831. Histoire naturelles des poissons. ., vii, 531 pp. Paris. (Pp. 1-440 by CUVIER; pp. 441-531 by VALENCIENNES).
- ESMARK, L. 1862. Deskriivelse over en ny fiskeart, *Brama raschii* ESM. Forh. Vidensk. Selsk. Christiania, 1861 (1862), pp. 238-247.
- FITSCH, J. E. 1953. Extensions to known geographical distributions of some marine fishes on the Pacific coast. Calif. Fish and Game, xxxix, no. 4, pp. 539-552.
- FWLER, H. W. 1928. The fishes of Oceania. Mem. Bernice P. Bishop Mus., x, 540 pp., 49 pls.
- 1936. The marine fishes of West Africa based on the collection of the American Museum Congo Expedition 1909-1915. Bull. Amer. Mus. Nat. Hist., lxx, pts. 1 and 2, pp. 1-1493.
- GOSLINE, W. A. & BROCK, V. E. 1960. Handbook of Hawaiian fishes. ix+372 pp. Honolulu.
- GÜNTHER, A. 1860. Catalogue of the acanthopterygian fishes in the collection of the British Museum, ii, 22+548 pp. London.
- HILGENDORF, F. M. 1878. Über das Vorkommen einer *Brama*-Art und einer Fischgattung *Centropholis* aus der Nachbarschaft des genus *Brama* in den japanischen Meeren. Sitzber. Gesell. Naturforsch. Freunde zu Berlin, 15, Jan. 1878, pp. 1 & 2.
- JORDAN, D. S. & EVERMANN, B. W. 1889. Description of six new species of fishes from the Gulf of Mexico, with notes on other species. Proc. U. S. Nat. Mus., ix, pp. 466-476.
- 1896. The fishes of North and Middle America, a descriptive catalogue of the fish-like vertebrates found in the waters of North America, north of the isthmus of Panama. Bull. U. S. Nat. Mus., no. 47, pt. 1, pp. 1-1240.
- JORDAN, D. S. & JORDAN, E. K. 1922. A list of the fishes of Hawaii, with notes and descriptions of new species. Mem. Carnegie Mus., x, no. 1, pp. 1-92; pls. 1-4.
- KAMO HAR A, T. 1938. On the offshore bottom-fishes of Prov. Tosa, Shikoku, Japan. 86 pp. Tokyo.
- 1941 (1940). Scombroidei (exclusive of Carangiformes). Fauna Nipponica, xv, fas. ii, no. 5, 8+225 pp. Tokyo, In Japanese.
- 1952. Revised descriptions of the offshore bottom-fishes of Prov. Tosa, Shikoku, Japan. Rep. Kôchi Univ. Nat. Sci., no. 3, pp. 1-122.
- KANAZAWA, R. H. 1952. More new species and new records of fishes from Bermuda. Fieldiana, Zoology, xxxiv, no. 7, pp. 71-100.
- KRAMER, D. 1960. Development of eggs and larvae of Pacific mackerel and distribution and abundance of larvae 1952-56. Fishery Bull. 174 (Fishery Bull. of the Fish & Wildlife

- life Service, lx), pp. 393-438. (In reference to the terminology of the segments of the radials of dorsal and anal fins).
- LOZANO Y REY, L. 1952. Peces fisoclistos, subserie Toracicos. Seg. Parte. Ordenes Labriiformes y Escumbriformes. Mem. Real. Acad. Cienc. Madrid, ser. Cienc. Nat. tomo xiv, pp. 386-703, +1 (erratas), pls. 31-51.
- LUNEL, G. 1865. Révision du genre castagnole (*Brama*) et description d'une espèce nouvelle *Brama saussurii*. Mém. Soc. Physiq. Hist. Nat. Genève, xviii, pt. 1, pp. 165-196, pls. 1 & 2.
- MARSHALL, N. B. 1960. Swimbladder structure of deep-sea fishes in relation to their systematics and biology. Discovery Rep., xxxi, pp. 1-122, pls. 1-3.
- MATSUBARA, K. 1936. A new bramid fish found in Japan. Bull. Jap. Soc. Sci. Fisher., iv, no. 5, pp. 297-300.
- 1955. Fish—morphology and hierarchy, i, 4+12+879 pp.; iii, 14 pp., 135 pls. Tokyo.
- MAUL, G. E. 1954. Monografia dos peixes do Museu Municipal do Funchal. Ordem Berycomorphi. Boletim do Museu Municipal do Funchal, no. VII, art. 17, pp. 5-41.
- MEAD, G. W. 1957. On the bramid fishes of the Gulf of Mexico. Zoologica, xlii, pt. 2, pp. 51-61, pls. 1-3.
- MEAD, G. W. & MAUL, G. E. 1958. *Taractes aspers* and the systematic relationships of the Steinegeriidae and Trachyberyidae. Bull. Mus. Compar. Zool. Harvard Coll., cxix, no. 6, pp. 393-417, 1 pl.
- NORMAN, J. R. 1957. A draft synopsis of the orders, families and genera of recent fishes and fish-like vertebrates (excluding Ostariophysii, Scleroparei, Ammodytidae and a few other families, notably Centrarchidae, Percidae and Cichlidae) covering literature up to 1938, and, as far as it was available to the author, from 1939 to 1944. 649 pp. Not published; mimeographed. British Museum (N. H.), London.
- OKADA, Y. & SUZUKI, K. 1956. Notes on the young of rare fish, *Tarates steindachneri* (DÖDERLEIN). Report of the Faculty of Fisheries, Prefectural University of Mie, ii, no. 2, pp. 195-198.
- PARIN, N. V. 1951. O nakhodkakh morskogo leshtscha-bramui - novoi ruibui dria faunui vostotchnovo poberedjia Kamtchatki. Priroda, 1951, no. 6, pp. 52 & 53.
- 1958. Redkie pelagitscheskie ruibui sbernozapadnoi tschasti Tikhogo okeana (*Taractes steindachneri*, *Parinulichthys japonicus* i *Centrolophus lockingtoni*). Voprosui Ikhtologii, 11, pp. 162-170. In Russian.
- POEY, F. 1856-1858 (1861). Memorias sobre la historia natural de la isla de Cuba, vol. ii, 442 pp., 19 pls.
- ROULE, L. 1929. Description de poissons abyssaux provenant de l'île Madère et des parages du Maroc. Bull. l'Inst. Océan. (Monaco), no. 546, pp. 1-19.
- SCHMIDT, P. 1931. Fishes of Japan collected in 1901. Trans. Paific. Comm. Acad. Sci. USSR., ii, pp. 1-176.
- 1948. Ruibui Tikhogo Okeana. Otscherk sovremennuikh teorii i vozzenii na rasprostranenie i razvitie faunui ruib Tikhogo Okeana. 124 pp. Moscow. In Russian.
- SMITH, J. L. B. 1949 (2nd impression in 1950). The sea fishes of southern Africa. 16+564 pp., 107 pls.
- SNYDER, J. O. 1904. A catalogue of the shore fishes collected by the steamer Albatross about the Hawaiian Islands in 1902. Bull. U. S. Fish Comm., xxii (for 1902), pp. 513-538, pls. 1-13.
- STEINDACHNER, F. & DÖDERLEIN, L. 1883. Beiträge zur Kenntniss der Fische Japans (I). Denkschr. mathem.-naturw. Class. kaiser. Akad. Wiss. Wien, xlvii, pp. 211-242, pls. 1-7.
- 1884. Beiträge zur Kenntniss der Fische Japans (III). Denkschr. mathem.-naturw. Class. kaisen. Akad. Wiss. Wien, xlix, pp. 171-212, pls. 1-7.
- TROSCHEL, F. H. 1863. Ueber *Brama raii* und *Brama longipinnis*. Sitzb. Ver. Preuss. Rheine (Sitzb. niederrhein. Gesellschaft in Bonn), xx, pp. 51 & 52.
- WHITLEY, G. P. 1938. RAY's bream and its allies in Australia. Australian Zoologist, ix, pt. 2, pp. 191-194, pl. 19.
- WOODWARD, A. S. 1942. Some new and little-known Upper Cretaceous fishes from Mount Lebanon. Ann. Mag. Nat. Hist., 11th ser., vol. 9, no. 56, pp. 537-568, pls. 3-7.

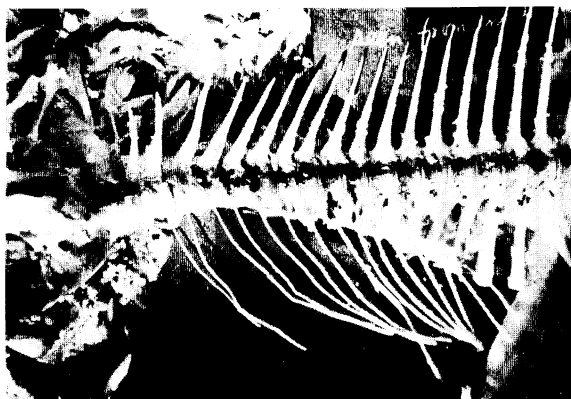


Fig. 14. *Steinegeria rubescens*. Adult. Cat. No. ABE '60-1497.



Fig. 15. *Taractes platycephalus*. Cat. No. ABE '60-1720. Total length *ca.* 212 mm.



Fig. 16. *Taractes platycephalus*. The same specimen as above.

Figs. 17-21. *Taractes platycephalus*. The same specimen as above.



Fig. 17



Fig. 18



Fig. 19



Fig. 20



Fig. 21

Figs. 22-27. *Taractes raschi*. Cat. No. ABE '60-1498. Total length ca. 560 mm.



Fig. 22

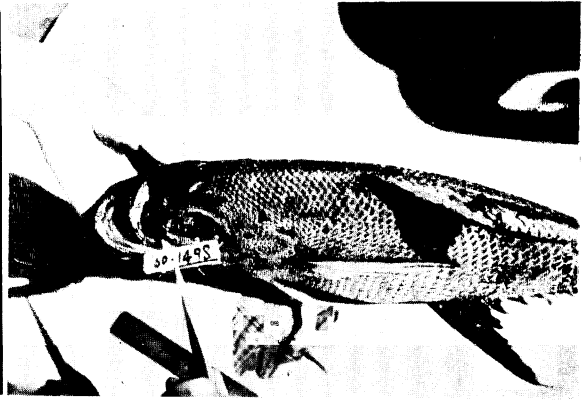


Fig. 23

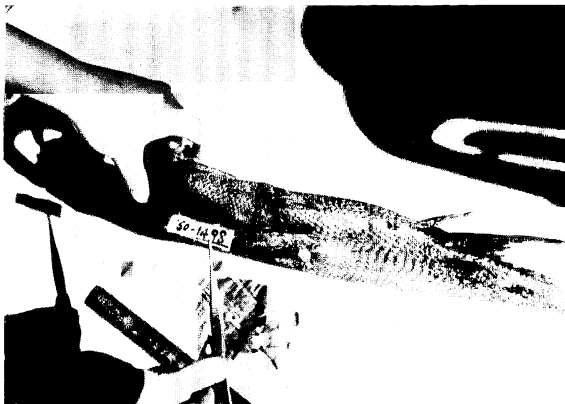


Fig. 24



Fig. 25



Fig. 26



Fig. 27

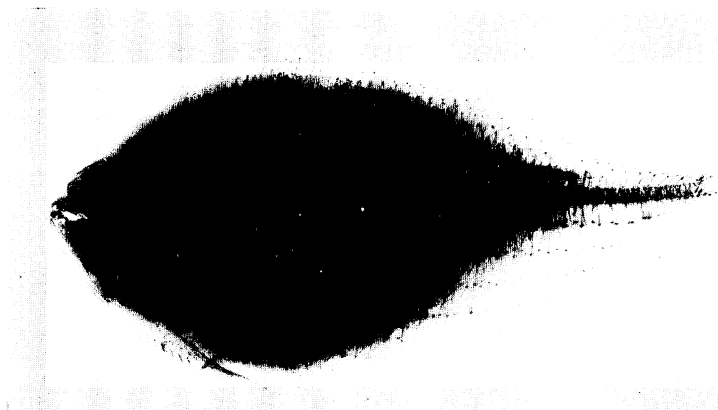


Fig. 28. *Taractichthys longipinnis*. Cat. No. ABE '59-40. Total length 132 mm.

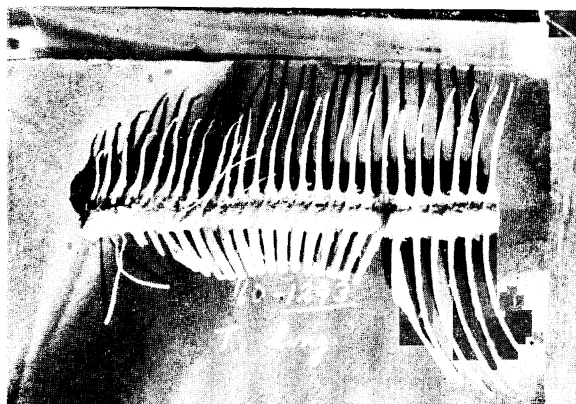


Fig. 29



Fig. 30

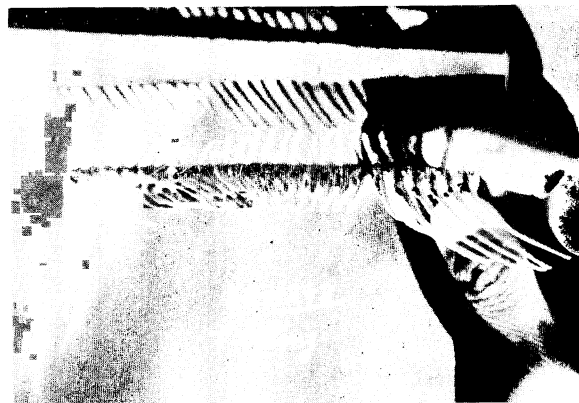


Fig. 31

Figs. 29-31. *Taractichthys longipinnis*. Cat. No. ABE '60-1293. Total length 410 mm.