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ICHTHYOLOGY.—Kraemeria bryani, *a new species of trichonotid fish from the Hawaiian Islands.*[1] LEONARD P. SCHULTZ, U. S. National Museum.

The reference of genera of fishes to the family Trichonotidae by various authors from time to time has frequently been the result of inadequate material for comparison of their anatomical characters. The genera centering around *Kraemeria* have features that resemble the trichonotids more than the gobiids, and this has influenced me to place them in a subfamily. However, *Paragobioides* Kendall and Goldsborough has been referred to this group by Fowler, but it certainly does not resemble any of the trichonotids except by its elongated body and numerous fin rays. Some pores over the eye, no lateral line, and the restricted gill opening cause me to conclude that *Paragobioides* is nearer the Gobiidae than the Trichonotidae. Its true relationship will be determined no doubt from a study of its skeleton, and until that is done I propose to consider it tentatively as a distinct subfamily. Thus I am inclined to believe that Hora (Rec. Indian Mus. 27 (pt. 6): 455. 1925) in referring *Paragobioides* to the subfamily Taenioidinae under the Gobiidae is close to the true relationship of this species.

In order to separate the various genera referred to the family at various times (from a practical viewpoint) and to indicate some of the relationships between Hawaiian, Samoan, and Phoenix Island material, I have prepared a key and incorporated the various genera as noticed by me in the literature.

1*a*. Lateral line present, below the midaxis at least posteriorly; lower jaw shortest, snout projecting in front of the thin and weak lower jaw; tip of tongue free, narrow and pointed, not bilobed; gill membranes extending far forward, free from isthmus (LIMNICHTHYINAE).

[1] Published by permission of the Secretary of the Smithsonian Institution. Received March 25, 1941.

2*a*. Lateral line along midaxis anteriorly, below it posteriorly, meeting or nearly meeting its fellow behind the anal fin; snout much projecting in front of lower jaw, tip of snout fleshy, protractile; lips of lower jaw with cirri on sides.

3*a*. Sides of body fully scaled; pelvic rays I, 5; dorsal fin rays fewer than 30; fewer than 45 scales in lateral line.

4*a*. Dorsal fin rays about 25 or 26; anal 27 to 29; pectoral 13, the lower rays not separated and different from upper rays; scales in lateral line about 40................*Limnichthys*[2] Waite

4*b*. Dorsal rays 19; anal 29; pectoral $8+9=17$, lower rays longer than and somewhat separated from upper rays; scales in lateral line 37..............................*Schizochirus*[3] Waite

2*b*. Lateral line below midaxis anteriorly, abruptly decurved behind pectoral fin, then continuing about halfway from midaxis to base of anal fin along lower side but not meeting its fellow behind anal fin; snout a little longer than lower jaw and somewhat fleshy; dorsal origin behind that of anal, over third to fourth anal ray; dorsal rays 35; anal 42; pectoral 15; pelvics I, 5. . . *Tewara*[4] Griffin

3*b*. Sides of body not fully scaled, naked at least above and below lateral line anteriorly; dorsal fin rays more than 30; about 53 to 60 pores and scales in lateral line; dorsal rays 37 or 38; anal 35 to 37; pores in lateral line 54; pelvic rays I, 5; the only scales present occur along lateral line.................*Crystallodytes cookei*[5] Fowler

1*b*. Lateral line present or absent; if present its course is along midaxis and not below it; snout either shorter than lower jaw (the latter strongly projecting) or lower and upper jaws about same length.

5*a*. Body naked; gill membranes narrowly attached to isthmus free for some distance forward; tongue bilobed; dorsal rays about 19 or 20, about first 5 simple; anal about 13 to 15, the first ray probably simple; pelvics I, 5; inner rays longest; about 9 or 10 branched rays in caudal fin (KRAEMERINAE).

6*a*. Pectoral rays 3 to 5; dorsal rays 19 or 20; anal 12 to 14, rarely 15. *Kraemeria bryani*, n. sp.

6*b*. Pectoral rays 7 or 8; dorsal rays 19 or 20; anal usually 14 or 15. *Kraemeria samoensis* Steindachner

5*b*. Body fully scaled, although scales may be minute on *Paragobioides*, in which case dorsal rays about 60; tongue not bilobed but rounded or pointed.

7*a*. Gill membranes not widely joined to isthmus but free forward, gill opening not restricted to sides (TRICHONOTINAE).

8*a*. First one or two anterior rays of dorsal long and filamentous; inner rays of pelvics long and filamentous
Trichonotus[6] Block in Schneider; *Taeniolabrus*[6] Steindachner

[2] *Limnichthys* Waite, Rec. Australian Mus. 5(pt. 3): 178. 1904 (genotype, *Limnichthys fasciatus* Waite, *ibid.*, pp. 178–179, pl. 23, fig. 4, monotypic); McCulloch, Australian Zool. 2(pt. 3): 102, fig. 276a. 1922.

[3] *Schizochirus* Waite, Rec. Australian Mus. 5(pt. 4): 240. 1904 (genotype, *Schizochirus insolens* Waite, *ibid.*, pp. 242–243, figs. 33, 34, pl. 26, fig. 3, monotypic); McCulloch, Australian Zool. 2(pt. 3): 102, fig. 277a. 1922.

[4] *Tewara* Griffin, Trans. Proc. New Zealand Inst. 63(pt. 2): 174–176, pl. 25, upper fig. 1933 (genotype, *Tewara cranwelli* Griffin).

[5] *Crystallodytes cookei* Fowler, Occ. Pap. B. P. Bishop Mus. 8: 390–392. 1923 (type locality: Laie Beach, Oahu), Fowler, Fishes of Oceania, Mem. B. P. Bishop Mus. 10: 426, fig. 60. 1928; Pietschmann, B. P. Bishop Mus. Bull. 156: 44, pl. 16, B. 1938.

[6] *Trichonotus* Bloch in Schneider, Syst. Ichthy., p. 179. 1801 (genotype, *Trichonotus setiger* Bloch in Schneider).

8*b*. First rays of dorsal and last rays of pelvics not elongate or filamentous...........*Hemerocoetes*[7] Cuvier and Valenciennes; *Creedia*[7] Ogilby; *Lesueurina*[7] Fowler; *Squamicreedia*[7] Rendahl

7*b*. Gill membranes broadly joined to isthmus, gill opening mostly restricted to sides; dorsal rays 60; anal 37; pectoral 14 or 15; pelvics? I, 4; scales minute, not visible on young; no lateral line; anus under twenty-fifth dorsal ray; 11 branched rays in caudal fin (15 jointed rays) (PARAGOBIOIDINAE)....................................*Paragobioides*[8] Kendall and Goldsborough

Kraemeria Steindachner

Kraemeria Steindachner, Akad. Wiss. Wien **115** (Abt. 1): 41. July 1906 (type, *Kraemeria samoensis* Steindachner).
Vitreola Jordan and Seale, Bull. U. S. Bur. Fish. **25**: 393. Dec. 1906 (type, *Vitreola sagitta* Jordan and Seale, *ibid.*, pl. 37, fig. 1).
Psammichthys Regan, Trans. Linn. Soc. London (ser. 2), Zool., **12**(pt. 3): 246. 1908 (type, *Psammichthys nudus* Regan, *ibid.*, pl. 31, fig. 1); Psammichthyidae Regan, Ann. Mag. Nat. Hist. (ser. 8) **8**: 733. 1911.

Kraemeria bryani, n. sp.

Kraemeria samoensis Fowler (not of Steindachner), Fishes of Oceania, B. P. Bishop Mus. Mem. **10**: 425, fig. 68. 1928; Pietschmann, B. P. Bishop Mus. Bull. **156**: 43, pl. 16, A. 1938.

Holotype.—A specimen, 15.1 mm in standard length, collected by C. M. Cooke, Jr., March 1928, at Malaekahana, Oahu, Hawaiian Islands, U.S.N.M no. 109380. The following paratypes, 18 to 20 mm, were studied: 10 from Malaekahana, Oahu, May 30–31, 1926, collected by C. M. Cooke, Jr.; 7 bearing the number 4905 in the Bishop Museum and 2 now catalogued as U.S.N.M. no. 116181; 6 from Laie, Oahu, taken June 4, 1923, by C. M. Cooke, Jr., 4 having number 4904 in the Bishop Museum and 2 U.S.N.M. no. 116180; 3 from Laie Beach, Oahu, collected by C. M. Cooke, Jr., November 2, 1922, no. 4902 in Bishop Museum.

Description based on the holotype and paratypes. All measurements are expressed in hundredths of the standard length, those for the holotype out-

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Taeniolabrus Steindachner, Sitzb. Akad. Wiss. Wien **55**: 713. 1867 (type, *T. filamentosus* Steindachner).

Taeniolabrus marleyi Smith, Trans. Royal Soc. South Africa **24**(pt. 1): 4–6, pls. 1, 2. 1936 (type locality: Durban).

[7] *Hemerocoetes* Cuvier and Valenciennes, Hist. Nat. Poiss. **12**: 311. 1837 (type, *Callionymus acanthorhynchus* Forster).

Creedia Ogilby, Proc. Linn. Soc. New South Wales **23**(3): 298. 1898 (type, *Creedia clathrisquamis* Ogilby, McCulloch, Australian Zool. **2**(pt. 3): 101, pl. 31, fig. 275a, of *Creedia clathrisquamis* Ogilby. 1922).

Hemerocoetes haswelli Ramsey, Proc. Linn. Soc. New South Wales **6**: 575. 1881. (type locality: North Head of Port Jackson).

Lesueurina Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1907, p. 440 [type, *Lesueurina platycephala* Fowler (*Lesueurella platycephalus* Fowler, misprint)].

Squamicreedia Rendahl, Svenska Vet. Hand. **61**(9): 20. 1921 (type, *Squamicreedia obtusa* Rendahl).

[8] *Paragobioides* Kendall and Goldsborough, Mem. Mus. Comp. Zool. **26**(7): 324, pl. 6, fig. 2. 1911 (type, *Paragobioides grandoculis* Kendall and Goldsborough); Fowler, Acad. Nat. Sci. Philadelphia Monog. **2**: 206–207. 1938.

side the parentheses and for the paratypes within parentheses. Standard length 15.1 (19.5; 19.7; 20.3 mm); length of head 29.8 (25.4; 25.4; 27.0); greatest depth 10.0 (11.6; 9.7; 11.8); diameter of eye 1.3 (2.0; 1.5; 2.0); length of snout 3.3 (3.5; 5.1; 4.4); length from tip of lower jaw to rear edge of maxillary 5.8 (–; –; 6.9); length from tip of lower jaw to rear edge of maxillary 8.6 (8.1; 8.6; 9.4); length from tip of snout to anus 53 (–; 56.4; 57.2); length from snout to origin of dorsal fin 31.7 (–; –; 30.3); length of longest pelvic fin ray (10.6 (10.1; 11.6; 11.8); length of longest pectoral fin ray 4.0 (4.6; 4.0; 3.9); length of longest caudal fin ray 15.9 (14.7; 16.3; 15.7); postorbital length of head 22.5 (19.8; 18.8; 19.7).

The following counts were made: Dorsal fin rays 19(4); 20(12); the numbers in parentheses indicate the number of counts; anal rays 12(2); 13(3); 14(12); 15(1); pectoral rays 3(9); 4(24); 5(2); pelvics always I, 5.

The dorsal fin almost equal distance between rear border of orbit and origin of anal fin or over the tips of the pelvic fins; the anal fin origin is under the 8 or 9 dorsal fin ray; the operculum covers the base of the pectoral fin and is attached to it dorsally; the opercular apparatus is not emarginate to fit around the bases of the pelvic fins; gill membranes are narrowly attached to the isthmus, and the gill opening does not extend as far forward as in *Crystallodytes* or *Chalixodytes;* the body and head are scaleless, and there is no trace of a lateral line; the rays in the dorsal, pelvic, and pectoral fins are unbranched; the first 6 dorsal rays and the first anal ray lack the cross marks or joints; the next to the inside ray of the pelvic fin is longest and the fifth

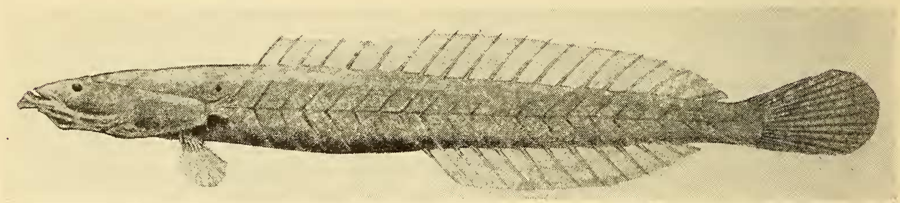

Fig. 1.—*Kraemeria bryani*, n. sp. (not *K. samoensis* Steindachner), after Pietschmann, 1938, pl. 16, fig. A.

ray is of about equal length; the lower margin of the lower lip, the lower margins of the suborbital and the lower margin of the preopercle are papillate; the lower jaw is longer than upper and the mouth is oblique, the tip of the lower jaw is fleshy and is pyramidal in shape with the apex pointing forward and ventrally; the eyes are close together in the top of the head; the premaxillary is not protractile, the tip of the snout has a frenum; tongue bilobed at tip.

The color has faded in alcohol and no pigmented areas are visible. The eyes are blackish.

This species differs from others in the genus *Kraemeria* in having but 3 to 5 pectoral fin rays instead of 7 or 8 as found in *Kraemeria samoensis* Steindachner and *Kraemeria samoensis merensis* Whitley (Rec. Australian Mus. 19: 244–246, fig. 11. 1935).

Named *bryani* in honor of my good friend E. H. Bryan, curator of collections, Bernice P. Bishop Museum, Honolulu.