

A NEW GRENADIER, GENUS *TRACHIONURUS*, FROM NEW ZEALAND
AND AUSTRALIA (PISCES: GADIFORMES: MACROURIDAE)

TOMIO IWAMOTO¹ AND PETER McMILLAN²

¹California Academy of Sciences, Golden Gate Park, San Francisco, California 94118, USA

²MAF Fisheries, Greta Point, PO Box 297, Wellington, New Zealand

Abstract

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A new grenadier fish, *Trachionurus gagates*, is described from depths of 436-1240 m off New Zealand and Australia. The species is unusual in lacking a grooved lateral line, which differentiates it from all other known species of the genus. An undescribed species from Australia, however, also lacks a lateral line, but that species has much larger scales and differs in a number of proportional measurements and its paler colour.

Introduction

The generic relationships of *Trachionurus* has recently been considered by Sazonov and Sheherbachev (1985), and its worldwide distribution by Sheherbachev et al. (1979). The latter paper followed Marshall (1973) in treating the five nominal species as synonyms of *T. villosus* (Günther, 1877). Studies by TI, however, revealed that more than one of those five species are probably valid, and several other undescribed species are present. Here, a new species from New Zealand and Australia without a grooved lateral line is described.

Abbreviations and methods for making counts and measurements generally follow Iwamoto (1970) and Iwamoto and Sazonov (1988). Because the new species lacks a grooved lateral line and has only widely spaced free neuromasts, counts of scales above or below the "lateral line" were not possible. Total scale-row counts along a diagonal to the anal fin were useful and are used for this species. Institutional abbreviations follow Leviton et al. (1985) and Leviton and Gibbs (1988).

Trachionurus Günther

Trachionurus Günther, 1887: 142 (as subgenus of *Macrurus*; type species, *Coryphaenoides villosus* Günther, 1877).

See Marshall (1973: 619) and Sazonov and Iwamoto (1992: 77) for descriptions of the genus.

Trachionurus gagates sp. nov.

Figure 1

Trachionurus sp. B: Paulin et al., 1989: 125 (in key).

Material examined. Holotype: AMS I.24059-009 (70.2 HL, 430+ TL); Australia, NSW, off Norah Head; 33°32'S, 152°09'E; 978 m; 1983.

Paratypes: Australia, Qld. CSIRO H.1157-01 (73.4 mm HL, 430+ mm TL); WNW of Marion Reef; 1851.1'S, 149°33'E; 599-591 m; FRV *Soela* stn SO6-85-39, CSIRO H.1158-01 (70.0 HL, 412+ TL); NW of Marion Reef; 18°46.0'S, 150°32.1'E; 1188-1200 m; FRV *Soela* stn SO6-85-38; 25 Nov 1985.

NSW, AMS I.24355-001 (53.6 HL, 352+ TL) and CAS 82134 (2: 66.2-72.3 HL, 400+-400+ TL); off Shoalhaven; 34°54'S, 151°178'E; 1150 m; 1983. AMS I.24173-007 (3: 68.7-74.7 HL, 427+-478+ TL); off Shoalhaven Bight; 34°56'S, 151°13'E; 1115 m; 26 Oct 1983. AMS I.24356-007 (71.7 HL, 425+ TL); 34°51'S, 151°15'E; 1043-1061 m; FRV *Kapala* stn K83-14-05; 26 Jan 1983.

Vic. AMS I.24157-002 (76.0 HL, 450+ TL); off Cape Everard; 38°17'S, 149°47'E; 1015 m; 1983. CSIRO T538 (81.6 HL, 435+ TL); off Cape Martin; 37°48'S, 139°33'E; 1007 m; 25 Apr 1983. CSIRO H.2638-01 (49.5 HL, 305+ TL); SE of Portland; 38°53.8'S, 142°00.3'E; FRV *Soela* stn SO2-89-11; 1989.

Tas. CSIRO H.2640-01 (68.7 HL, 410+ TL); FRV *Soela* stn SO2-89-94; 1989. CSIRO H.2634-03 (45.5 HL, 305 TL); SW of Macquarie Harbour; 42°28.6'S, 144°44.0'E; 1000 m; FRV *Soela* stn SO2-89-85; 1989. CSIRO H.886-03 (71.0 HL, 430+ TL); E coast; 41°24.3'S, 148°43.7'E; 890-1052 m; FRV *Soela* stn SO4-87-09; 1987. CSIRO T829 (69.3 HL, 400+ TL); off Bicheno; 41°48'S, 148°38'E; 1099 m; *Challenger* stn 40/02; 21 Apr 1982. CSIRO T739 (60.6 HL, 342+ TL); off Cape Sorell; 42°24'S, 144°40'E; 1130-1150 m; FV *Margaret Phillipa* stn 03/07; 22 Oct 1983.

SA. NMV A.5880 (2: 54.9-59.4 HL, 334-381 TL); 38°31.67'S, 140°43.91'E; 1100 m. NMV A.5882 (56.8 HL, 350 TL); 38°36.1'S, 140°58.9'E; 1080-1110 m; FRV *Soela* stn SO10-88-83; 8 Feb 1988. NMV A.8995 (75.3 HL, 393+ TL); 33°57.7'S, 131°26.4'E; 1000-1030 m; FV *Comet* stn RP26; 19 Feb 1990.



Figure 1. Holotype of *Trachonurus gagates*, AMS I.24059-009, 70.2 mm HL, 430+ mm TL, from off New South Wales, Australia, in 978 m. Photograph by Susan Middleton.

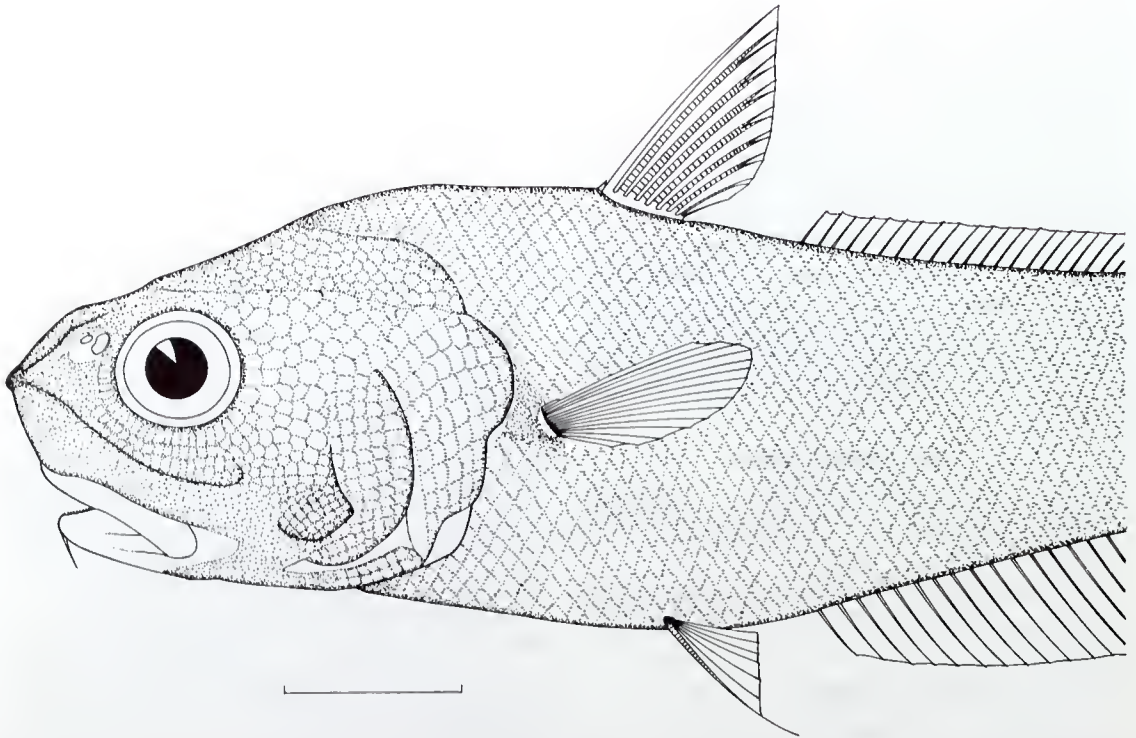


Figure 2. Paratype of *Trachonurus gagates*, NMNZ P.15855, 70.6 mm HL, 435+ mm TL, from west coast of North Island, New Zealand, in 800-848 m. Drawing by Peter McMillan.

CSIRO T316 (61.9 HL, 390+ TL); Great Australian Bight; 34°25'S, 132°05'E; 1175 m; FV *Margaret Phillipa* stn 6/19; 14 Feb 1984. CSIRO T747 (69.7 HL, 370+ TL); 33°49'S, 129°33'E; 1000–1052 m; *Endeavour* stn 04/09; 5 Jun 1983.

WA. CSIRO T289 (59.4 HL, 370+ TL); Great Australian Bight; 33°27'S, 128°36'E; 1027 m; FV *Margaret Phillipa* stn 7/3; 24 Feb 1983. CSIRO H.3022-04 (69.1 HL, 405+ TL); 3317'S, 11413'E; 976 m; 1989. CSIRO H.3023-08 (81.8 HL, 465+ TL); W of Bunbury; 33°20'S, 114°30'E; 435 m; 25 Dec 1989. CSIRO H.3002-05 (51.2 HL, 333+ TL); SE of Albany; 35°23'S, 118°27'E; 1030 m; 21 Dec 1989. CSIRO H.2617-07 (64.5 HL, 420+ TL); W of Bunbury; 33°15.8'S, 114°11.1'E; 982 m; FRV *Southern Surveyor* stn SS1-91-85; 1991.

New Zealand. NMNZ P.11303 (72.3 HL, 425+ TL); off Hawke Bay, 39°41.7'S, 177°58.4'E; 1160–1240 m; 24 Nov 1981. NMNZ P.11415 (75.8 HL, 470 TL); W of Cape Reinga; 34°57.4'S, 171°53.2'E; 1060–1080 m; 19 Nov 1981. NMNZ P.11561 (65.7 HL, 392+ TL); off Wairarapa; 41°04.5'S, 176°32.6'E; 960–1100 m; 18 Dec 1981. NMNZ P.12969 (62.0 HL, 355+ TL); NE of Chatham I.; 42°49.9'S, 176°08.2'W; 1050 m; 7 Aug 1982. NMNZ P.14763 (53.0 HL, 327+ TL); Challenger Plateau; 3830.3'S, 17041.9'E; 827–836 m; 25 Oct 1983. NMNZ 14770 (48.8 HL, 300+ TL); Challenger Plateau; 39°31.8'S, 167°47.0'E; 804–817 m; 1 Sep 1983. NMNZ P.15855 (70.6 HL, 435+ TL); west coast, North Island; 37°41.3'S, 173°53.1'E; 801–848 m; 25 Apr 1981. NMNZ P.15856 (73.4 HL, 428+ TL); off Wairarapa; 41°11.0'S, 176°40.0'E; 1070–1180 m; 4 Apr 1984. NMNZ P.15857 (72.4 HL, 432+ TL); north Chatham Rise; 42°37.4'S, 176°19.0'E; 1065–1070 m; 18 Aug 1982. NMNZ P.15858 (70.0 HL, 404+ TL); north Chatham Rise; 42°42.3'S, 175°32.6'E; 1060–1070 m; 29 Aug 1982. NMNZ P.16105 (70.3 HL, 423+ TL); Challenger Plateau; 40°01.9'S, 168°10.9'E; 865–870 m; 14 Jul 1984. NMNZ P.16106 (73.2 HL, 423+ TL); Challenger Plateau; 39°57.5'S, 167°59.5'E; 886–900 m; 11 Jul 1984.

Diagnosis. *Trachonurus* without a grooved lateral line; chin barbel short, 4–8% of head length (HL); suborbital width 13–15%; postorbital length of head 50–55%; gill rakers on first (outer) arch (mesial) 11–13 total, gill rakers on second arch (lateral/mesial) 10–13 total/10–12 total; scale rows below mid-base of first dorsal fin 25–31; scale rows below origin of second dorsal fin 20–25; scale rows over distance equal to predorsal length usually 35–42; scale rows between pelvic fin base and gill cover 11–14.

Measurements and counts. Total lengths 300–478+ mm; head lengths 45.5–81.8 mm. The following in percent of head length (figures in parentheses are exceptions to the usual range): postrostral length 75–80; snout length 24–27; preoral length (height) (12)14–17; internasal width 20–23; interorbital width 31–38 (40);

orbit diameter 25–30; suborbital width 13–15; postorbital length 50–54; distance orbit to preopercle angle 36–42; length upper jaw 34–39; length barbel 4–8; length outer gill slit 13–17; preanal length 149–174; distance outer pelvic to anal-fin origin 26–40; distance isthmus to anal-fin origin 86–107; greatest body depth 74–102; 1D-2D interspace 14–35; height 1D, 45–53; length P, 38–54; length V, 30–42; length posterior nostril 4–8.

1D, II, 7–9; P, (i9, i11) i12-i16; V, 6–7; total gill-rakers outer arch (lateral/mesial) 3–8 / 11–13, second arch 10–13 / 10–12; scales below 1D, 8–10, below mid-base of 1D, (to A.) (25) 27–31, below 2D, (20) 21–25, over distance equal to predorsal length 35–42; scales from pelvic base to gill cover 11–14; pyloric caeca 10–14.

Description of holotype (with additions from paratypes). Body long and gradually tapering from trunk to end of tail. Head about sixth total length; laterally compressed, completely lacking strong sharp ridges. Snout bluntly rounded in lateral profile, scarcely extending beyond jaws; snout narrow in dorsal view, obtusely conical, broadening notably above nostrils at anterodorsal corner of orbits. Interorbital space broad, mostly flat, dorsal orbital margin forming shallow curved incursion into interorbital space. Suborbital region vertical, flattened, and lacking well-developed horizontal ridge. Mouth moderately large, jaws extending to vertical slightly behind midorbit; lips thick and fleshy. Preopercle broadly rounded, without developed ridge. Opercle and subopercle forming deep, narrow, inverted triangle. Interopercle broadly exposed laterally and posteriorly, densely scaled and connected to similarly densely scaled lower jaw. Chin barbel short, thick at base, tapering rapidly to tip. Abdominal cavity long, extending posteriorly to over 8th–10th anal ray. Gill rakers on outer side of first (outer) arch few small nubs; mesial rakers more tubercular, with forwardly directed tufts of long, recurved spinules.

Fins all small and typical of genus. Second spinous ray of first dorsal fin slender, flexible, tapering to thin tip and wholly lacking serrations on leading edge. Second dorsal scarcely developed anteriorly and consisting of short unconnected rays over most of posterior length. Pectoral fins small, short, tips fine and easily broken (about half head length in better specimens). Pelvic fins small, outer ray with fine tips that barely extend to anal fin origin; origin far posterior, almost vertical to hind edge of first dorsal fin.

Teeth small but relatively stout, in narrow bands in both jaws; about 3 or 4 teeth wide near symphysis in upper jaw, narrowing to 2 rows and then 1 row at extreme posterior end; outer series slightly larger than inner series. Lower jaw in 3 irregular series at symphysis, narrowing rapidly to 2 rows, continuing well posterior to end of rictus; inner series slightly larger than outer series.

Body scales relatively small, covered with fine, slender, conical, erect spinules, some spinules over dorsum with strongly curved tips. Spinules generally arranged in a row along anterior edge of exposed field, those posteriorly in somewhat "V" arrangement. Spinules with shallow buttresses or "roots," some interconnected with adjacent spinules. Gular membrane in holotype with dense, elongated patch of small spiny scales; scales absent over bases of lowermost branchiostegal rays. (In paratypes scale cover on gular and branchiostegal membranes variable, but generally heavily present on both membranes.) Ventral scales along base of anal fin somewhat stouter, larger, and with larger spinules than other scales. Dorsal scales along second dorsal fin scarcely larger than scales more ventrad, but with some slightly enlarged and strongly recurved spinules. Scales of head highly variable in shape and size. Those along posterior margin of orbits somewhat larger and more elongate; series along dorsal edge of preopercle larger and slightly stouter. Scales over opercle and subopercle somewhat larger than others of head. Scales on snout, suborbital, mandible, interorbital, and interopercle small. Scales abruptly absent under gill cover, as typical of genus and characteristic of most genera related to *Cetonurus* (as discussed by Sazonov and Sheherbachev, 1985).

Periproct region broad, extensive, subtending most of distance between pelvic and anal fins (as typical of genus). Pyloric caeca short, thick, and simple; length about equal to least suborbital width or much shorter, length usually two to three times caecum width.

Colour in alcohol overall dark brown to blackish. Fins, lips, lining of mouth and gill chambers black. Gill membranes and barbel dark. Abdominal region not noticeably darker externally than adjacent areas.

Size. To about 48 cm total length.

Distribution. New Zealand and Australia (Qld, NSW, Vic., SA, Tas., WA) in 435–1240 m. In New Zealand waters it is found between 32°24'S and 43°30'S (i.e., in central and northern waters

on both coasts) at depths of 801–1240 m. It occurs sympatrically with the rarer *Trachonurus* sp. A of Paulin et al. (1989) in waters north of latitude 40°S.

Etymology. From the Greek, *gagates*, velvety black, with reference to the dark scale covering of the body.

Remarks and comparisons. A second undescribed species from Western Australia also lacks a lateral line, but is readily distinguished from *T. gagates* by its much larger scales, longer chin barbel, narrower internasal and suborbital, wider orbits, shorter postorbital and orbit-to-preopercle distances, and generally paler colour.

Aside from the absence of a lateral line, *T. gagates* appears most similar to *T. villosus* from Australian waters, the two agreeing in almost all counts, proportional measurements, and squamation and dentition features. The exceptions are few and slight with much overlap: the snout length in *T. gagates* is slightly shorter (24–27% HL vs 25–31%), the postorbital length is slightly greater (50–55% HL vs 46–52%), the orbit-to-preopercle distance slightly longer (36–42% HL vs 32–38%), and the chin barbel is shorter (4–8% HL vs 8–14%). Additionally, the number of scale rows along the lateral line over a distance equal to the predorsal length amounts to about 35–42 for most individuals of *T. gagates*, but 39–50 in *T. villosus*.

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