AUSTRALIAN MUSEUM SCIENTIFIC PUBLICATIONS

Anderson, M. Eric, 1994. Studies on the Zoarcidae (Teleostei: Perciformes) of the southern hemisphere. VII. A new species of *Dieidolycus* Anderson, 1988 from the Bismarck Sea. *Records of the Australian Museum* 46(2): 121–124. [28 July 1994].

doi:10.3853/j.0067-1975.46.1994.9

ISSN 0067-1975

Published by the Australian Museum, Sydney

Studies on the Zoarcidae (Teleostei: Perciformes) of the Southern Hemisphere. VII. A New Species of *Dieidolycus* Anderson, 1988 from the Bismarck Sea

M. ERIC ANDERSON

J.L.B. Smith Institute of Ichthyology,
Private Bag 1015, Grahamstown 6140, South Africa

ABSTRACT. A new species of abyssal eelpout is described from two specimens trawled north-west of Rabaul, New Britain. It is the second species of the genus *Dieidolycus*, previously thought to be endemic to the antarctic. The new species is distinguished from its congener by its fewer pectoral-fin rays and more posterior dorsal-fin origin.

ANDERSON, M.E., 1994. Studies on the Zoarcidae (Teleostei: Perciformes) of the southern hemisphere. VII. A new species of *Dieidolycus* Anderson, 1988 from the Bismarck Sea. Records of the Australian Museum 46(2): 121–124.

In September and October 1991 several deep-water trawls were made from the Australian national research vessel *Franklin* in the Bismarck Sea. In one haul north-west of Rabaul, New Britain, two small eelpouts (Zoarcidae) were taken by zoologists of the Australian Museum, Sydney. The specimens were sent to the author for study in April 1992 and although they had suffered some net damage, they were found to be diagnosable as a new species of the genus *Dieidolycus*, recently described from the antarctic abyss (Anderson, 1988).

Materials and Methods

Measurements were made with dial callipers to the nearest 0.1 mm. Definitions of characters, their measurement and quantification follow those of Anderson (1988), the first part of this series. Standard length (SL) and head length (HL) are used in morphometric proportions. Types are deposited at the Australian Museum, Sydney (AMS). Other institutional abbreviations follow Leviton *et al.* (1985). Counts of fin rays, vertebrae, and other osteological observations were taken from radiographs. Drawings were made with the aid of photographs and a camera lucida.

Dieidolycus adocetus n.sp.

Figs 1, 2

Type material. HOLOTYPE, AMS I.32236-001, 88 mm (immature female), RV *Franklin*, Bismarck Sea, 3°41.5'S 151°52.2'E, 1957 m, 24 Sept.-14 Oct. 1991. PARATYPE, AMS I.32236-002, 73(+) mm (immature male), captured with holotype.

Diagnosis. A species of *Dieidolycus* as defined by Anderson (1988) with P 13; first dorsal-fin pterygiophore associated with vertebrae 5-6.

Description. The 2 specimens are damaged juveniles, with the skin torn away and, in the paratype, the tail tip missing and gill slits ripped. Head pore patterns cannot be determined. Counts and measurements are those of the holotype, paratype in parentheses.

Vertebrae 23 + 56 = 79 (23 + 40+); D 72; A 55; C 8; P 13 (13); pelvics 2 (2), gill rakers 2 + 12 (2 + 10); pyloric caeca 2 (2); branchiostegal rays 6 (6); vomerine teeth 7 (4); palatine teeth 3-4 (3-4); pseudobranch absent. Following measurements in percent SL: predorsal length 26.1; preanal length 47.3; prepelvic length 16.7; body depth 8.0; pectoral length 12.6; pectoral base height 4.7; head length 22.5; head width 8.9, head depth 9.1; gill slit length 4.4. Following measurements in percent HL: head width 39.4 (37.6); head depth 40.4 (37.6); pectoral length 56.1 (60.2); pelvic length 19.2 (17.7); upper jaw length 37.9 (34.5); snout length 15.7 (13.8); eye diameter 11.1 (10.5); orbit diameter 27.8 (27.6); gill slit length 19.7; interorbital width 7.6 (8.3); interpupillary width 19.2 (20.4).

Head triangular, dorsal profile gently inclined anteriorly; nape flattened. Head large and robust, snout short and broad. Eye small, rounded, orbit large, ovoid. Six suborbital bones in L-shaped pattern around eye (Fig. 2). Single pair of short nostrils at snout tip, not reaching upper jaw. Pectoral fin origin just below body midline, insertion on abdomen. Gill slit extending ventrally to midpectoral height, slit vertical above that, no siphonal fold evident. Body short, ovoid in cross section.

Mouth moderately large, terminal. Upper jaw extending posteriorly to vertical through middle of eye. Teeth in palate sharp, conical. Vomerine teeth in small patch in holotype. Palatine teeth in single series, full complement not present in these juveniles. Outer teeth of both jaws larger than teeth of palate, in single series except just at symphysis where 3-6 teeth form second row (holotype).

Unpaired fins low, caudal fin of holotype worn (net damage), with 1 epural, 4 upper hypural and 3 lower hypural rays. First dorsal-fin pterygiophore associated with vertebra 5 (holotype) or 6 (paratype); last dorsal ray associated with third preural vertebra. No free dorsal-fin pterygiophores. First and second anal-fin pterygiophores set anterior to haemal spine of first caudal vertebra; last anal ray associated with second preural vertebra (holotype). Pectoral fin large, wedge-shaped (middle rays longest), lowermost rays not appreciably thickened in these juveniles. Pelvic fins relatively long for a rudimentary feature, greater than eye diameter, of 2 rays each; no spine rudiment. All fin elements segmented soft rays except first flexible spine of dorsal.

Gill rakers on upper limb (epibranchial) small, blunt; upper rakers on lower limb (ceratobranchial) with tips squared off, lower rakers pointed, triangular. Branchiostegal rays 6, 4 articulating with ceratohyal and 2 with epihyal. Oral valve weak, not reaching anterior edge of vomer and nearly completely coalesced anterolaterally. Pseudobranch absent. Pyloric caeca 2 small, vestigial nubs.

Accurate colour description not possible because of the damage to these specimens. Still, small patches of black skin adhere to the head, throat, abdomen and unpaired fins (more extensive in paratype) that indicates the species is probably uniformly dark in life, like its congener. Lining of orobranchial chamber black.

Comparisons. Because of the damage to the new specimens, the thought that they might represent a new species of the monotypic *Taranetzella* Andriashev, 1952 was at first considered. *Taranetzella* differs from *Dieidolycus* in possessing scales, nine preoperculomandibular pores, and low papillae between the mandibular and suborbital pores. None of these characters could be verified in the new specimens. However, they also differ from *Taranetzella* in their significantly different vertebral counts (19-20 + 70-78 in *Taranetzella*), six suborbital bones (8 in *Taranetzella*), two pelvic rays (3 in *Taranetzella*) and lack of a pseudobranch. Other important characters the new species shares with its congener, *D. leptodermatus* Anderson, 1988, are a greatly reduced oral valve, small eyes and restricted gill slit (the latter also the condition in *Taranetzella*).

Etymology. From the Greek *adoketos* (unexpected, surprising) alluding to the species' capture in the central Indo-west Pacific region.

Remarks. The finding of specimens of Zoarcidae under tropical seas is of great interest since these

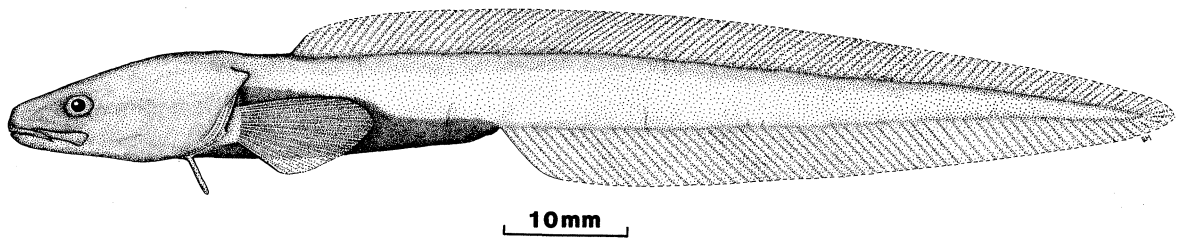

Fig. 1. *Dieidolycus adocetus* n.sp., holotype, AMS I.32236-001, Bismarck Sea.

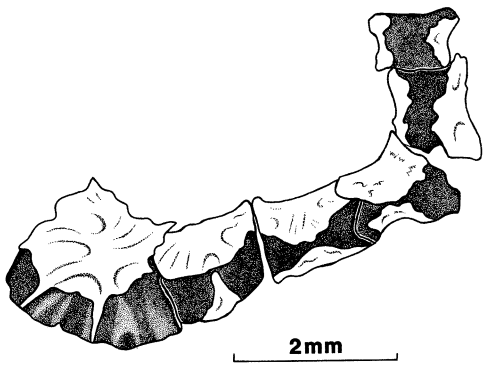

Fig. 2. *Dieidolycus adocetus* n.sp., left suborbital bones of paratype, AMS I.32236-002.

fishes are primarily found in the cold waters of high latitudes (Anderson, 1984). However "tropical" an influence the waters of lower latitudes has on the distribution of shore fishes, temperatures at the great depths that tropical zoarcids encounter are within the realm of temperatures found in other areas they inhabit. Thus, tropical slope areas are not well demarcated zoogeographic barriers to this family, and many species are now known to range through both temperate and tropical regions (4 species each of *Lycodapus* Gilbert, 1890 and *Melanostigma* Günther, 1881 and three species of *Pachycara* Zugmayer, 1911 [Anderson, 1989a, 1989b, 1990]). Vaillant (1888) reported the first zoarcids (*Pachycara crassiceps* [Roule, 1916]; see Anderson, l989a) from tropical slope waters from the 1883 eastern Atlantic cruise of the *Talisman*, recording a temperature of 4.5°C at their maximum capture depth of 1493 m. Garman (1899) reported the second occurrence of zoarcids from tropical seas, these from the 1891 *Albatross* cruise in the eastern Pacific. Twelve nominal species were found between 838 and 3281 m at temperatures between 5.5 and 2.1°C, respectively.

The Indo-west and South Pacific are newly discovered distributional areas for the Zoarcidae. Andriashev & Fedorov (1986) reported the first two species in the region from specimens trawled from the New Zealand Plateau. Anderson (1989a) described the first benthic Indo-west Pacific zoarcid, *Pachycara shcherbachevi*, from 2600 m in the Bay of Bengal. Anderson (1990) reported on additional specimens from the south-western Pacific, three species of which (genus *Melanostigma*) are mesopelagic. *Dieidolycus leptodermatus* from the Antarctic, one specimen of which was taken directly south of New Zealand, was not discussed by Anderson (1990), as it was thought to be an Antarctic abyssal endemic.

Although the ichthyofauna of the basins of the tropical western Pacific is poorly known, future trawling may reveal a presently unknown zoarcid fauna, although it may not be very diverse. This seems the most likely hypothesis for this area, since the relationships of the currently known forms (*Dieidolycus*, *Melanostigma* and *Pachycara*) are with widespread congeners of the southern hemisphere and not with lineages of the adjacent cold-temperate north-western Pacific. This latter area is dominated by different genera of Lycodinae (*Bothrocara*, *Lycenchelys*, *Lycodes*, etc) and Gymnelinae that are limited in their southerly distribution to the temperate waters of the Japanese archipelago (Anderson, 1984). Still, as yet unknown species of the broadly distributed *Lycenchelys* may be found in abyssal waters of the western tropical Pacific in future.

Comparative material. *Taranetzella lyoderma* Andriashev, 1952: CAS 53876, sex unknown, 98 mm SL, 45°09.3'N 125°38.3'W, 2669 m, off Oregon, USA; OSUO 2072, immature female, 158 mm SL, 44°34.8'N 125°33.6'W, 2816 m, off Oregon.

Dieidolycus leptodermatus Anderson, 1988: see Anderson, 1988: 72.

ACKNOWLEDGMENTS. I thank Daniel M. Cohen, Los Angeles County Museum of Natural History, for alerting me to the collection of this new eelpout, Mark McGrouther and John R. Paxton of the Australian Museum for information and curatorial help, Elaine Heemstra of the J.L.B. Smith Institute of Ichthyology for her fine drawing of a difficult specimen, and Robin Stobbs, also Smith Institute, for technical assistance.

References

Anderson, M.E., 1984. On the anatomy and phylogeny of the Zoarcidae (Teleostei: Perciformes). Unpublished Ph.D. dissertation, College of William and Mary, Williamsburg, 254 pp., 60 figs, 15 pls.

Anderson, M.E., 1988. Studies on the Zoarcidae (Teleostei: Perciformes) of the southern hemisphere. I. The Antarctic and subantarctic regions. Antarctic Research Series 47: 59–113.

Anderson, M.E., 1989a. Review of the eelpout genus *Pachycara* Zugmayer, 1911 (Teleostei: Zoarcidae), with descriptions of six new species. Proceedings of the California Academy of Sciences 46(10): 221–242, 14 figs.

Anderson, M.E., 1989b. Records of rare eelpouts of the genus *Lycodapus* Gilbert in the North and southeastern Pacific Oceans with an addition to the California marine fish fauna. California Fish and Games 75(3): 148–154.

Anderson, M.E., 1990. Studies on the Zoarcidae (Teleostei: Perciformes) of the southern hemisphere. III. The southwestern Pacific. J.L.B. Smith Institute of Ichthyology, Special Publication 50: 1–17, 4 figs.

Andriashev, A.P. & V.V. Fedorov, 1986. On the first finding of fishes of the family Zoarcidae in New Zealand waters. Voprosy Ikhtiologii 26(1): 24–32, 4 figs.

Garman, S., 1899. Reports of an exploration off the west coasts of Mexico, Central and South America, and off the Galapagos Islands, in charge of Alexander Agassiz, by the

Albatross during 1891. XXVI. The fishes. Memoirs of the Museum of Comparative Zoology 24: 1–431, atlas.

Leviton, A.E., R.H. Gibbs, jr, E. Heal & C.E. Dawson, 1985. Standards in herpetology and ichthyology: Part I. Standard symbolic codes for institutional resource collections in herpetology and ichthyology. Copeia 1985(3): 802–832.

Vaillant, L., 1888. Poissons. Expédition Scientifique du *Travailleur* et du *Talisman* pendant les Anneés 1880, 1881, 1882, 1883. G. Masson, Paris, 406 pp, 28 pls.

Accepted October 26, 1992