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Studies on the Zoarcidae (Teleostei: Perciformes) of the southern hemisphere. IX. A new species of *Pachycara* from the southwestern Atlantic

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Abstract

A new species of deep-sea eelpout, *Pachycara alepidotum*, is described from four specimens, 199–282 mm SL, collected in the upper bathyal zone off Rio Grande do Sul state, southern Brazil, and is the first record of the genus in the southwestern Atlantic. It is characterized by its lack of scales and ventral lateral line, few caudal vertebrae and only 1–2 rakers on the upper limb of the first gill arch. The largest specimen is an adult female.

Key words: *Pachycara*, Zoarcidae, eelpout, Brazil, southwestern Atlantic

Introduction

Fishes of the eelpout genus *Pachycara* inhabit the upper slopes and abyssal plains of most regions, but are notably absent in the western Pacific, Mediterranean Sea and Arctic Ocean (Anderson 1989). Seven species have been described since the senior author's 1989 paper (Møller 2003; Anderson and Fedorov, 2004; Biscoito and Almeida, 2004). Less than half (38%) of the species occur in the bathyal zone; the rest are abyssal.

The bathyal ichthyofauna off southern Brazil is poorly known, but a few surveys have been initiated (e.g., Parin and Andriashev 1972; Roux 1973; Post 1978; Haimovici *et al.* 1994). During bottom-trap fisheries operations for the red crabs *Chaceon notialis* and *C. ramosae* on the upper slope off southern Brazil, the Japanese vessel KINPO MARU 58 captured four specimens of a new *Pachycara* species, the first record of the genus in the southwestern Atlantic. These and other fishes were sent to the second author by an onboard observer as a donation. The purpose of this paper is to describe this new species,

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the twenty-first for the genus. We are aware of a fifth specimen of this species held at the Museu Nacional, Rio de Janeiro, but it was unavailable for this study.

Materials and methods

Measurements were made with dial calipers to the nearest 0.1 mm. Features of the axial skeleton were made from radiographs. Definitions of characters and measurements follow those of Anderson (1982, 1989). Specimens are deposited at MOVI (Museu Oceanográfico do Vale do Itajaí, Itajaí, Brazil) and SAIAB (South African Institute of Aquatic Biodiversity, Grahamstown, South Africa; formerly RUSI, the J. L. B. Smith Institute of Ichthyology). Other abberviations are HL (head length) and SL (standard length). The sampling stations are shown in Figure 1.

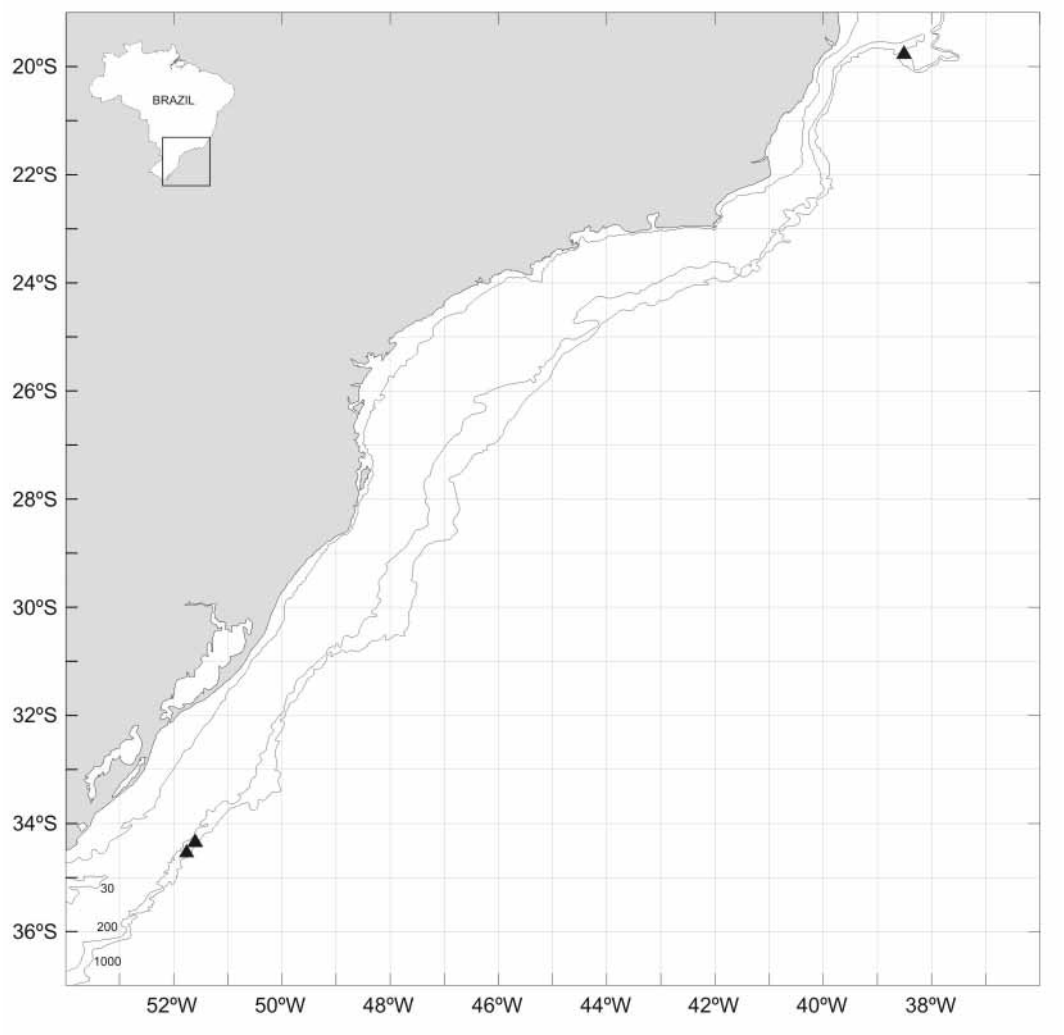

FIGURE 1. Map showing the collection sites of *Pachycara alepidotum*.

Holotype: MOVI 21033 (male, 255 mm SL); off Rio Grande do Sul state, Brazil; 34°31.4'S, 51°45.8'W; KINPO MARU 58, sta. 85; bottom trap; 807 m; C. M. Lima-Silva; 11 Feb. 2002.

Paratypes: SAIAB (RUSI) 75089 (male; 199 mm SL); same data as holotype. MOVI 21034 (male, 209 mm SL) and MOVI 21035 (female, 282 mm SL); off Rio Grande do Sul, Brazil; 34°19.7'S, 51°45.8'W; KINPO MARU 58, sta. 131; bottom trap; 788 m; C. M. Lima-Silva; 3 Mar. 2002.

Additional material: MNRJ 27754 (sex unknown, 250 mm SL); off Espírito Santo, Brazil; 19°42.7'S, 38°36.5'W; THALASSA, sta. D– 0504; GOV demersal trawl; 902–910 m; P. A. S. Costa; 29 Jun. 1999. Not seen.

Diagnosis. A species of *Pachycara* as defined by Anderson (1989, 1994) with the following combination of characters: scales and ventral lateral line absent; caudal vertebrae 67–69; gill rakers on upper limb 1–2.

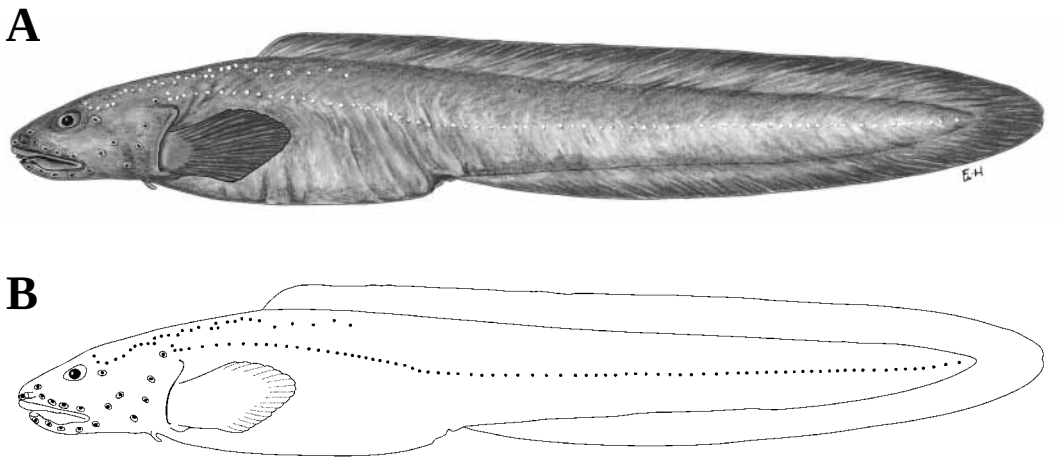

FIGURE 2. A) *Pachycara alepidotum* sp. nov., holotype, 255 mm SL, off southern Brazil; B) Lateral line pattern of holotype of *Pachycara alepidotum*.

Description. Counts and measurements, holotype first followed in parentheses by range of variation in paratypes: vertebrae 25 + 67 = 92 (25–26 + 67–69 = 92–95); D 87 (87–90); A 67 (67–70); C 9 (8–9); P 18 (18); pelv. 2 (2); vomerine teeth 2 (2–3); palatine teeth 4 + 4 (4–6 + 3–5); gill rakers 1 + 14 (1–2 + 12–16 = 13–18); branchiostegal rays 6 (6); pseudobranch filaments 4 (4). Following measurements in percent SL: head length 17.8 (16.3–17.8); head width 10.9 (9.6–11.1); head depth 11.1 (8.8–10.7); pectoral fin length 10.9 (9.4–12.5); predorsal length 20.0 (18.5–23.9); preanal length 45.3 (44.8–47.5); body depth 12.1 (10.6–12.3); gill slit length 6.5 (5.4–6.1); caudal fin length 7.1

(4.6–7.0). Following measurements in percent HL: head width 61.6 (55.1–67.5); head depth 62.3 (53.7–63.9); upper jaw length 56.1 (36.0–51.8); pectoral fin length 61.6 (57.4–76.5); snout length 22.7 (20.8–24.4); eye diameter 17.9 (16.2–19.9); gill slit length 36.4 (33.2–36.6); interorbital width 9.3 (8.9–12.4); interpupillary width 29.1 (29.3–35.9); pelvic fin length 13.3 (10.8–17.6). Pectoral base/length ratio: 39.4 (36.7–50.2).

Head ovoid in young, more dorsoventrally depressed in adult male holotype. Scales and epidermal prickles absent. Spectacle of eye circular or slightly ovoid. Gill slit extending ventrally to opposite fourth or fifth ventralmost pectoral ray. Lobe at dorsal margin of gill slit weak, not extending anteriorly one-quarter eye diameter. Pectoral fin origin below body midlne, insertion on abdomen; posterior margin of fin wedge-shaped; middle pectoral rays longest; ventralmost four thickened, tips very slightly exserted.

Mouth subterminal, slightly oblique, upper jaw extending to middle of eye or its posterior margin (holotype). Rear lobe of lower lip well developed in holotype. Oral valve very weakly developed, well separated from anterior margin of vomer. Jaw teeth small, conical; dentary with three irregular rows anteriorly, blending into single posterior row; premaxilla with two anterior rows, blending into single posterior row. Vomerine and palatine teeth relatively few; palatine teeth in short anterior patch.

Cephalic lateralis system in primitive state for *Pachycara* (Anderson 1989), with two postorbital pores (numbers one and four), two pairs of anterior supraorbitals (nasals), six suborbitals, eight preoperculomandibulars and no occipitals or interorbital. Body lateral line with complete mediolateral branch originating directly behind last postorbital pore (Fig. 3). Predorsal branch with 17–20 neuromasts running from above or just behind eye to dorsal fin origin. No ventral or dorsolateral branches, few neuromasts in these regions on body and tail.

Dorsal fin origin associated with fourth vertebra, with no free pterygiophores anteriorly. Anal fin origin associated with ultimate precaudal or first caudal vertebrae, with two pterygiophores inserted anterior to haemal spine of first caudal vertebra. Last dorsal ray associated with fourth preural vertebra, last anal ray associated with second preural vertebra. Caudal fin with one epural, four upper and four lower hypural rays. Gill rakers short, triangular, dorsalmost three in holotype shallowly furcate; single gill raker on epibranchial in three specimens, two in MOVI 21035, directed anteroventrally. Pseudobranch filaments long, simple.

Color uniformly dark chocolate brown, unpaired fins black. Eye blue. Abdomen with bluish tinge.

Distribution. Southern Brazil, from Espírito Santo to Rio Grande do Sul, in 788–910 m.

Etymology. From the Greek λεπιδωτος covered with scales, and the negative prefix referring to the species scaleless condition.

Comparisons. *Pachycara alepidotum* is the second of 21 known species of the genus without scales, the other being *P. shcherbachevi* (Anderson 1989; Møller 2003), suggest-

ing possible relationship. However, the two differ in several trenchant features including the more numerous vertebrae in *P. shcherbachevi* (120–122 vs 92–94 in *P. alepidotum*), pelvic fin rays 3 in *P. shcherbachevi* vs 2 in *P. alepidotum,* smaller head (length 11.4–12.0 in *P. shcherbachevi* vs 16.3–17.8), more posterior dorsal fin origin (origin associated with vertebrae 7–8 in *P. shcherbachevi* vs 4), presence of the ventral branch of the lateral line system in *P. shcherbachevi* vs its absence, and presence of an interorbital pore in *P. shcherbachevi* vs its absence. In addition, the habitats of *P. shcherbachevi* and *P. alepidotum* are different, the former is an Indian Ocean abyssal species, taken at 2600–3190 m, while the latter is an upper bathyal (788–807 m) Atlantic species. On the basis of its low vertebral counts, two pelvic fin rays and lack of ventral lateral line, *P. rimae* Anderson, an eastern Pacific abyssal species, seems close to *P. alepidotum*, but it differs in the presence of scales, its fewer branchiostegal rays (4–5 in *P. rimae* vs 6), more posterior dorsal fin origin (associated with vertebra 8 in *P. rimae* vs. 4), fewer pectoral fin rays (15 in *P. rimae* vs 18) and lack of a pseudobranch. Other bathyal southeastern Pacific (i.e., *P. mesoporum* Anderson and *P. pammelas* Anderson) or eastern Atlantic (*P. crassiceps* Roule, *P. crossacanthum* Anderson) species do not seem close to *P. alepidotum* on the basis of their complete squamation, higher vertebral counts and more complex lateral line systems. Thus the relationships of *P. alepidotum* are presently unclear.

Remarks. The single trawl-caught specimen (MNRJ 27754) was taken in a Great Opening Vertical (GOV) net, mouth size measuring 36 x 47 m. The bottom temperature at 900 m was 3.4°C. The trap-caught specimens were collected from galvanized circular crab pots baited with fish. The benthic fauna was diverse in deep-sea corals, echinoderms, mollusks and crustaceans. Fishes observed at and near the trap locations were hag fish (*Eptatretus menezesi* Mincarone), sharpnose sevengill shark (*Heptranchias perlo* (Bonnaterre), freckled catshark (*Scyliorhinus haeckelii* (Miranda Ribeiro), dogfish (*Squalus* sp.), an undescribed *Conger*, dragonfish (*Idiacanthus atlanticus* Brauer), Marini's grenadier (*Caelorinchus marinii* Hubbs), Atlantic grenadier (*Nezumia aequalis* (Günther), common fangtooth (*Anoplogaster cornuta* (Valenciennes), banded yellowfish (*Centriscops humerosus* (Richardson), sculpin (*Cottunculus granulosus* Karrer), tilefish (*Lopholatilus villarii* Miranda Ribeiro), and corocoro grunt (*Orthopristis ruber* (Cuvier).

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