

## A NEW GENUS AND SPECIES OF MORID FISH FROM SHALLOW COASTAL WATERS OF SOUTHERN AUSTRALIA

By C. D. PAULIN

National Museum of New Zealand, Private Bag, Wellington, New Zealand

### Abstract

Paulin, C. D., 1986. A new genus and species of morid fish from shallow coastal waters of southern Australia. *Mem. Mus. Vict.* 47: 201-206.

*Eeyorius hutchinsi*, a new monotypic genus and species is described from specimens collected in shallow coastal waters of Tasmania, Victoria and Western Australia. Affinities lie with *Pseudophycis* and *Lotella* but *Eeyorius* differs from those genera in dentition and otolith shape.

### Introduction

The family Moridae is represented in shallow coastal waters of Australia by *Pseudophycis* Günther and *Lotella* Kaup (Paulin, 1983). Both genera are readily distinguished on the basis of otolith shape (Karrer, 1971; Fitch and Barker, 1972) and dentition. Otoliths of *Pseudophycis* can be distinguished from those of *Lotella* by the expanded rather than smooth dorsal margin; a crista superior as long as crista inferior rather than two-thirds length; ostium equal to rather than shorter than cauda; and a flat rather than recessed colum.

*Pseudophycis* has a band of brush-like teeth whereas *Lotella* has an outer row of large widely spaced teeth and an inner band of smaller teeth (Kaup, 1858; Günther, 1862; Cohen, 1979).

Specimens of Moridae with otoliths characteristic of *Lotella* but with a band of brush-like teeth were reported from Victoria, Australia, by Paulin (1983). These, and a number of additional specimens are here described as a new genus and species.

### Methods

Methods of taking counts and measurements follow Paulin (1983). Counts of first dorsal fin rays include the minute rudimentary first ray. Osteological observations were made on a specimen cleared and stained by the trypsin-

alizarin technique, and supplemented by radiographs of other specimens.

Specimens examined are deposited in the following institutions: Australian Museum, Sydney (AM); Western Australian Museum, Perth (WAM); Museum of Victoria, Melbourne (NMV); National Museum of New Zealand, Wellington (NMNZ).

### *Eeyorius* gen. nov.

*Lotella*.—Paulin, 1983: 82 (not *Lotella* Kaup).

*Material examined.* *Pseudophycis bachus*, 6 specimens + 4 pairs otoliths, NMNZ P.7730; *P. barbatus* 10 specimens + 2 pairs otoliths, NMNZ P.6783, P.7707; *P. breviuscula* 8 specimens + 1 pair otoliths, NMNZ P.14301; *Lotella rhacinus* 12 specimens + 6 pairs otoliths, NMNZ P.4098, 4640; AM I15330-15; *L. phycis* 6 specimens + 1 pair otoliths, AM I20270-008, WAM P.26004-011.

*Diagnosis.* Snout obtusely rounded, not projecting beyond mouth. Maxillary extending to beneath rear margin of orbit. Barbel present. Teeth small, pointed, arranged in 5-6 irregular rows forming a brush-like band on jaws. Upper jaw with a graded series, the outer teeth only slightly larger. Lower jaw with teeth of equal size. No teeth on vomer or palatines.

Otolith pointed at both ends, ostium comprises 40.6% of otolith length and is shorter than cauda; Crista superior almost as long as crista inferior (Fig. 1).

*Type species.* *Eeyorius hutchinsi* sp. nov.

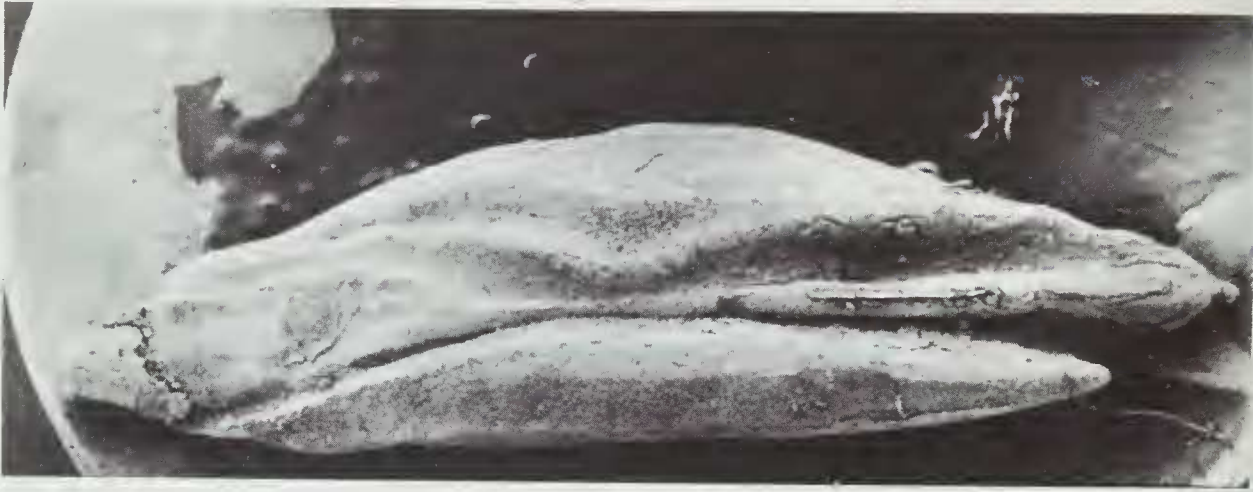


Table 1. Distinguishing characteristics of *Eeyorius*, *Pseudophycis* and *Lotella*

	<i>Eeyorius</i>	<i>Pseudophycis</i>	<i>Lotella</i>
Dentition	Brush-like band	Brush-like band	Outer series of large widely spaced teeth
Otolith: dorsal margin crista superior	smooth almost as long as crista inferior	expanded as long as crista inferior	smooth two-thirds length of crista inferior
Ostium	shorter than cauda	equal to cauda	shorter than cauda
Collum	recessed	flat	recessed

*Etymology.* Named for Eeyore, a literary character who lived in damp places.

*Remarks.* *Eeyorius* closely resembles *Pseudophycis* in external morphology and dentition and differs from that genus in otolith shape. Otoliths of *Eeyorius* are similar to *Pseudophycis* in thickness and in having a crista superior almost as long as, or as long as the crista inferior but differ in having a relatively smooth unexpanded mid-dorsal region, and an ostium shorter than the cauda.

*Eeyorius* is perhaps more closely related to

*Lotella* but differs from that genus in having a band of brush-like teeth and lacking an outer row of relatively large, widely spaced sharp pointed teeth. *Eeyorius* also differs in having a depressed head, oval in cross section whereas *Lotella* has a rounded head. Otoliths of *Eeyorius* differ from *Lotella* in being thinner, and in having a crista superior almost as long as the crista inferior (Table 1).

The use of otoliths in defining morid genera (Karrer, 1971; Fitch and Barker, 1972; Paulin, 1983) allows reliable identification of the genera which is often difficult using other

characteristics. Because of differences in otolith shape and dentition a new genus is here recognised, intermediate between two presently recognised genera.

To merge *Eeyorius* with either or both *Pseudophycis* or *Lotella* would require division at the subgeneric level and a complete revision of the taxonomy of the family, reducing 18 genera to subgenera within about seven genera, a taxonomy which would be unrealistic.

Karrer (1971) and Paulin (1983) considered that the affinities of *Lotella* possibly lay with the '*Physiculus*-group' of morids rather than the '*Pseudophycis*-group' as considered by Fitch and Barker (1972). Otoliths of *Eeyorius* show affinities with both *Lotella* and *Pseudophycis* as shown in Table 1.

*Eeyorius* and *Lotella* should both be considered part of the *Pseudophycis*-group of morids and not the *Physiculus*-group.

#### *Osteology.*

Neurocranium (Fig. 3a, b). Elongate, flattened dorsally, roughly triangular shape when viewed dorsally. Sutures readily visible. Sensory canals with very thin crests of bone. Pre-maxillary-ethmovomerine complex with some cartilage present. Prominent otic bullae enclosing very large otoliths and formed from pro-otic and basioccipitals. Circumorbitals (Fig. 3c) thin; preorbital long. First neural spine shorter than second but very broad.

Jaws and suspensorium (Fig. 3d). Maxilla relatively slender, curved, with prominent anterior pedicel for articulation with premaxillary-ethmovomer. Mandible broad, composed of dentary, retroarticular and angular. Quadrate triangular; symplectic blade like; hyomandibular flat with broad thickened regions leading to articular surfaces with the spherotic, pterotic, opercle and symplectic; metapterygoid roughly triangular; mesopterygoid broad, thin; ectopterygoid elongate; palatine complex with a straight anterior projection.

Hyoid arch (Fig. 3f). Interhyal a flattened rod-like bone extending from the medial side of the hyomandibular-symplectic joint to the upper end of the epihyal; epihyal a triangular plate; ceratohyal clongate and broad, anterior and more slender; hypohyals of unequal size, the ventral hypohyal larger.



Figure 2. *Eeyorius hutchinsi*, paratype, 180 mm SL, WAM P.27545-001.

Pectoral girdle (Fig. 3g). Supracleithrum elongate, thin; cleithrum large, its leading edge folded to form a canal; scapula roughly rectangular, thin; coracoid rod-like.

Opercular apparatus (Fig. 3e). Opercle triangular with concave trailing margin bordered by strong points; subopercle flat, blade-like with numerous finger-like projections on trailing margin; interopercle broad, elongate with finger-like projections; preopercle very broad, its leading edge with a strong ridge, posterior to which is a thin roof of bone over the preopercular sensory canal.

### *Ecyorius hutchinsi* sp. nov.

#### Figure 2

##### Material examined

*Holotype*. Vic Port Phillip Bay (38°09'S., 144°52'E.), poison, 5 Mar 1981, B. Hutchins, WAM P.27128-001, 194 mm SL.

*Paratypes*. Vic Wilsons Promontory, Oberon Bay (39°04'S., 146°19'E.), poison, 7.6-12.2 m, 6 Feb 1982, M. Gomon and J. Jones, NMV A2360(6 specimens: 78-264 mm SL), NMNZ P.14578(1, 180 mm SL). Wilsons Promontory, Leonard Bay (39°01.5'S., 146°17.5'E.), poison, 7.6 m, 20 Feb 1982, R. Wilson, P. Forsyth and E. Floyd, NMV A2542(2: 178, 187 mm SL). Wilsons Promontory, Cape Wellington (39°04.1'S., 146°28.6'E.), poison, 5 Feb 1982, R. Kinter and M. MacDonald, NMV A2938(2: 184, 191 mm SL). Wilsons Promontory, Norman Point (38°56'S., 146°22'E.), poison, 25 Feb 1982, B. Hutchins, WAM P.27123-001(1: 105 mm SL). Wilsons Promontory, Norman Island (38°56'S., 146°22'E.), poison, 28 Feb 1982, B. Hutchins, WAM P.27126-001(2: 87, 209 mm SL).

Tas. Esperance Point (43°20'S., 147°51'E.), 8 Feb 1982, B. Hutchins, WAM P.27545-001, 002(4: 89-180 mm SL). Port Arthur (43°09'S., 147°51'E.), 14 Feb 1982, B. Hutchins, WAM P.27549-006(1: 245 mm SL). Bridport (41°00'S., 147°23'E.), 3 Mar 1982, B. Hutchins, WAM P.27564-003(1: 183 mm SL).

WA, Rottnest Island (32°00'S., 115°30'E.), 1 Jun 1982, B. Hutchins, WAM P.27646-003(1: 160 mm SL). Rottnest Island (32°00'S., 115°30'E.), poison, 5 May 1982, B. Hutchins, WAM P.25781-001(1: 145 mm SL).

*Description*. Meristics and morphometric measurements given in Table 2. Body elongate, compressed, greatest depth at origin of second dorsal; preanal length 2.1 times in standard length. Head broad, depressed oval in cross section about 1.7 times in preanal length and 3.6 times in standard length. Head as broad as body. Body completely covered in small scales. Head with similar scales; snout, lips and bran-

chiostegal membranes naked. Scales extending onto basal third of vertical fin membranes. Eye diameter equal to about two-thirds of snout length, 5.9 times in head length.

Posterior nostril a small simple pore, a short distance in front of eye; anterior nostril with a forward directed tube, immediately anterior to posterior nostril.

Mouth oblique, maxillary reaching vertical from centre of eye. Upper jaw overlapping lower. Chin with a barbel slightly longer than diameter of eye. Interorbital space flat, interorbital distance greater than diameter of eye. Gill rakers relatively short, the longest about two-thirds as long as gill filaments. Pyloric caeca moderately sized.

Lateral line, a continuous tube with about 30 pores, rises sharply above pectoral base then gradually descends in a slightly wavy path to midway down the body and extends on to the caudal peduncle.

First dorsal origin slightly behind pectoral base, first ray minute, longest (3rd) equal in length to snout. Second dorsal commences immediately behind first, height greater than first, uniform throughout length. Anal fin origin immediately behind anus, beneath 10th ray of dorsal. Both dorsal and anal fins enveloped in loose membranes with minute scales. Caudal fin rounded. Pectoral inserted midway down body, rounded, more than half length of head. Ventrals with a flat base, two outermost rays longest, falling short of anus by a distance equal to diameter of eye.

Colour (in formalin and isopropyl alcohol). Head and body brownish grey, slightly paler on ventral surface of head. Fin uniform brownish grey. Buccal and branchial cavities pale.

*Etymology*. The species is named for Barry Hutchins of the Western Australian Museum's Department of Fishes.

*Remarks*. *Ecyorius hutchinsi* is known from Port Phillip Bay (38°09'S, 144°52'E) and Wilsons Promontory (39°04'S, 146°19'E) in Victoria, from Port Arthur (43°09'S, 147°51'E) and Bridport (41°00'S, 147°23'E) in Tasmania and from Rottnest Island (32°00'S, 115°30'E) in Western Australia, in depths of 7.5-12.0 m.

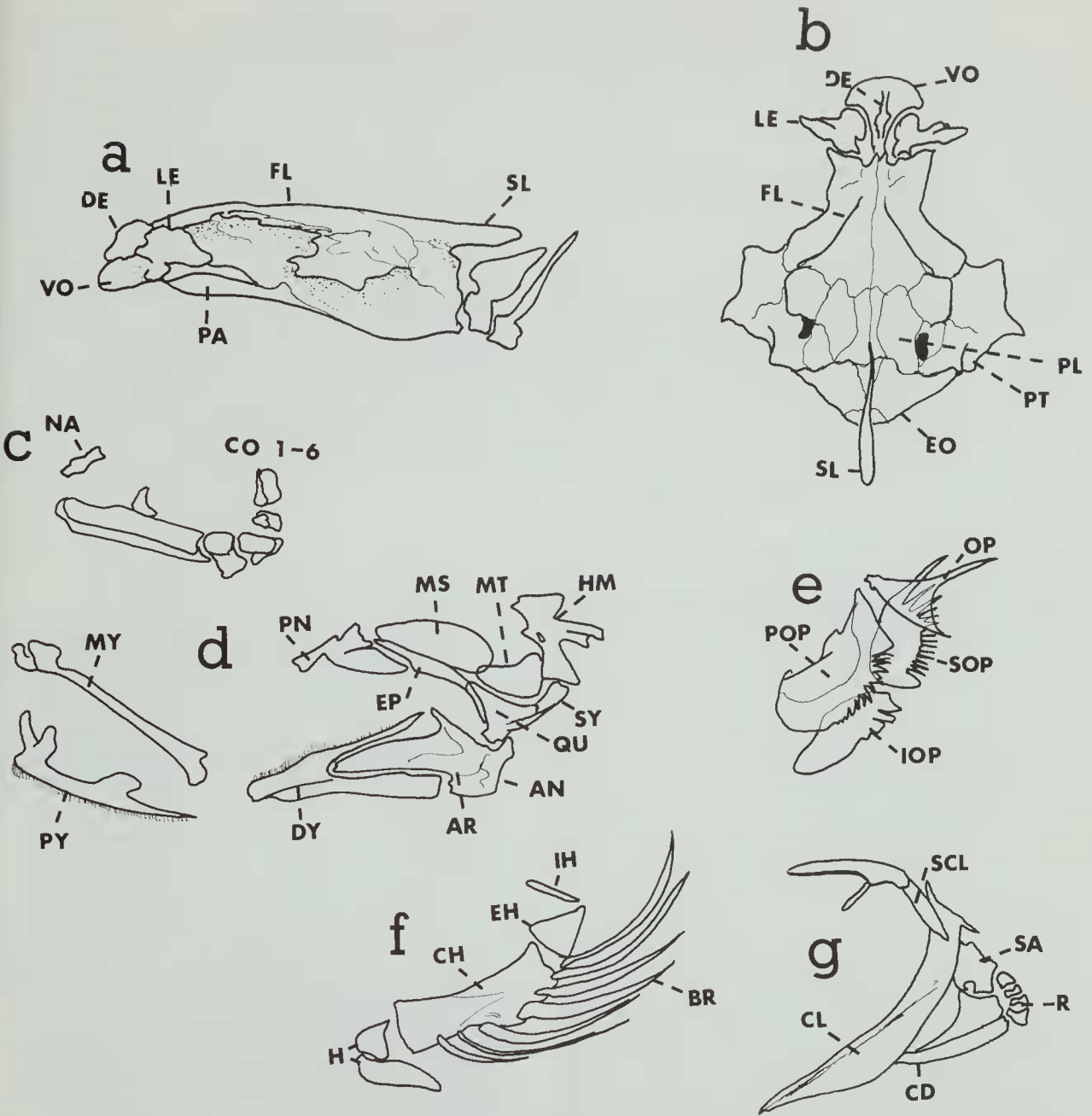


Figure 3. *Eeyorius hutchinsi*, paratype, WAM P.27126-001. Osteology. a, neurocranium, lateral view; b, neurocranium, dorsal view; c, circumorbital, left; d, mandibular and palatine arches, left; e, opercular apparatus, left; f, hyoid arch, left; g, pectoral girdle, left.

Abbreviations: AN, angular; AR, articular; BR, branchiostegal ray; CD, coracoid; CH, ceratohyal; CL, cleithrum; CO, circumorbital; DE, dermothmoid; DY, dentary; EH, epihyal; EO, epiotic; EP, ectopterygoid; FL, frontal; H, hypohyal; HM, hyomandibular; IH, interhyal; IOP, interopercle; LE, lateral ethmoid; MS, mesopterygoid; MT, metapterygoid; MY, maxillary; NA, nasal; OP, opercle; PA, parasphenoid; PL, parietal; PN, palatine; PT, pterotic; POP, preopercle; PY, premaxillary; QU, quadrate; R, radial; SA, scapula; SCL, supracleithrum; SOP, subopercle; SY, symplectic; VO, vomer.

Table 2. Counts and measurements for type specimens of *Eeyorius hutchinsi* sp. nov.

	Holotype Paratypes (n = 22)		mean
Counts			
1st dorsal fin	6	6	6.0
2nd dorsal fin	52	52-58	54.6
Anal fin	47	43-48	45.7
Pectoral fin	24	24-25	24.8
Vertical scale rows	233	218-240	230.0
Transverse scale rows			
above lateral line	20	19-22	20.1
Gill rakers	1+6	1-2+5-6	1.1+5.6
Pyloric caeca	10	11-12	11.9
Vertebrae	44	42-44	43.4
Standard length (mm)	194.1	89.0-263.0	
Measurements (percentage of SL)			
Body depth at ventral			
insertion	18.6	15.5-18.6	17.6
Body depth at anal origin	22.6	18.5-22.6	21.2
Head length	27.2	26.2-28.9	27.1
Orbit diameter	4.6	4.7-5.9	5.1
Snout length	8.2	7.6-9.4	8.2
Maxillary length	13.6	12.5-14.6	13.7
Interorbital width	6.8	5.9-7.4	6.6
Predorsal length	29.7	29.0-32.5	30.8
Preventral length	27.9	22.6-32.3	25.9
Preanal length	46.3	43.6-53.4	47.8
Pectoral fin length	16.3	14.9-17.8	16.3
Barbel length	5.9	4.8-7.1	5.9

### Acknowledgements

I thank Barry Hutchins (WAM) for bringing these fish to my attention and for comments on the manuscript; I also thank Martin Gomon (NMV) for the loan of additional specimens, Warwick Wilson (NMNZ) for photography, Frank Climo (NMNZ) for SEMs of otoliths, and Clive Roberts (Victoria University, Wellington) for assistance with radiographs.

The manuscript was read by Dan Cohen (Los Angeles County Museum) and Graham Hardy (NMNZ).

### References

- Cohen, D.M., 1979. Notes on the morid fish genera *Lotella* and *Physiculus* in Japanese waters. *Jap. J. Ichthyol.* 26: 225-30.
- Fitch, J.E. and Barker, L.W., 1972. The fish family Moridae in the eastern North Pacific with notes on morid otoliths, caudal skeletons and the fossil record. *Fish. Bull. U.S.* 70: 565-84.
- Güther, A., 1862. *Cat. Fish. Brit. Mus.* Vol. IV. 350 pp.
- Karrer, C., 1971. Die otolithen der Moridae (Teleostei, Gadiformes) und ihre systematische Bedeutung. *Zool. Jb.* 98: 153-204.
- Kaup, J., 1858. Übersicht der Familie Gadidae. *Arch. Naturgesch.* 24: 85-93.
- Paulin, C.D., 1983. A revision of the family Moridae (Pisces: Anacanthini) within the New Zealand region. *Rec. natn. Mus. N.Z.* 2: 81-126.