

CERATODUS NARGUN, A NEW EARLY CRETACEOUS CERATODONT LUNGFISH FROM CAPE LEWIS, VICTORIA

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ABSTRACT: A new species of Early Cretaceous lungfish, *Ceratodus nargun*, is described, based on a lower tooth plate from Cape Lewis, Victoria. The tooth plate is unusually high, with simple punctations, radiating ridges and a narrow occlusal surface.

Cretaceous ceratodont tooth plates have been described from New South Wales (*Neoceratodus pattinsonae* (White 1926) and *Neoceratodus forsteri* (Kreffit 1870)) and from Victoria (*Ceratodus wollastoni* Chapman 1914 and *Ceratodus avus* Woodward 1906). There are also records of skull elements and parts of the axial skeleton from Koonwarra, Victoria (Waldman 1971) and a scale from Gippsland, Victoria (Chapman 1912).

A tooth plate which does not fit the description of any known species has been found in Early Cretaceous (Aptian) deposits at Cape Lewis, Victoria. It is housed in the palaeontological collection of the National Museum of Victoria, Melbourne (prefix NMVP).

SYSTEMATICS

Order DIPNOI Muller 1844

Family CERATODONTIDAE Gill 1872

Genus *Ceratodus* Agassiz 1838

Ceratodus nargun sp. nov.

Fig. 1

DIAGNOSIS: Tooth plate high crowned and narrow with a straight lingual border and long narrow radiating ridges separated by deep wide clefts which reach the lingual edge of the toothplate; occlusal surface narrow and interrupted by the clefts between the ridges; ridge crests faceted; punctations simple round pits, randomly distributed; enameloid having growth lines; cusps persistent at the labial ends of the ridges and reaching to the top of the ridge crest; pulp cavity narrow and extending into each ridge.

TYPE SPECIMEN: NMVP157247, a left lower tooth plate.

TYPE LOCALITY: Shore platform at Point Lewis, Victoria (38°50'20"S, 143°34'46"E).

STRATIGRAPHICAL POSITION: Early Cretaceous, (Aptian) zone C of Otway Formation (Gleadow & Duddy 1981).

ETYMOLOGY: The species is named for the rock monster in aboriginal mythology.

DESCRIPTION: All of the characters listed in the diagnosis are present in the holotype, which can be identified as a left lower tooth plate by the supporting jaw bone.

The specimen is not complete as part of the first ridge is missing (Fig. 1). There are 4 other ridges, 2 almost complete. The posterior part of the tooth plate is well preserved. The tooth plate measures 4 mm across the occlusal surface in the broadest part behind the second ridge, and the longest ridge is 11 mm in length. The

tooth plate is about 18 mm long, and the breadth/length ratio is 0.20. Tooth material is 8 mm deep and the underlying bone 4 mm. Angles between the ridges are given in Table 1.

The lingual border is straight (Fig. 1A). Presence or absence of an inner angle is hard to determine as the anterior part of the tooth and bone is incomplete (Fig. 1A). However an inner angle is likely. The ridges radiate from a point. The crests of the ridges are faceted i.e., worn into an angular shape, with equal wear on the anterior and posterior faces (Fig. 1A). Clefts between the ridges are deep and wide and extend to the lingual edge of the tooth plate (Fig. 1A) effectively dividing the occlusal surface along its length. The ridges are 3 to 4 times as long as the width of the tooth plate. There is no posterior heel.

Enameloid with growth lines is present on the labial surface of the tooth plate. The growth lines are continuous with persistent laterally compressed cusps on the complete ridges (Fig. 1B). The broken anterior part and the damaged third ridge show that a narrow pulp cavity extending down each ridge was present (Fig. 1A, B). Punctations on the occlusal surface consist of simple round pits randomly arranged (Fig. 1A). The bone supporting the tooth plate has the loose trabecular structure typical of lungfish jaw bone. There is a shallow sulcus in the bone below the posterior part of the tooth plate.

REMARKS: NMVP157247 is very different from other Australian Cretaceous lungfish. *C. avus* from the Early Cretaceous of Victoria has tooth plates with parallel ridges and complex punctations (Woodward 1906). *C. wollastoni* tooth plates have radiating ridges and simple punctations, but the tooth plates have broad occlusal surfaces and thick ridges with rounded crests, even in small specimens (Chapman 1912). This is also true of *N. pattinsonae* (White 1926). The other ceratodont from the Cretaceous of Australia is *N. forsteri* (Kemp & Molnar 1981). This species has low-crowned tooth plates with radiating ridges and simple punctations, enameloid, growth lines and persistent cusps, but the occlusal surface is comparatively wide. *C. nargun* has an unusually high crowned tooth plate with a narrow occlusal surface divided up by wide deep clefts between the radiating ridges.

There are similarities with the Russian Triassic lungfish, *Ceratodus donensis donensis*, *C. donensis gracilis* and *C. multicristatus* (Vorobyeva & Minikh 1968). However, *C. nargun* has higher narrower tooth

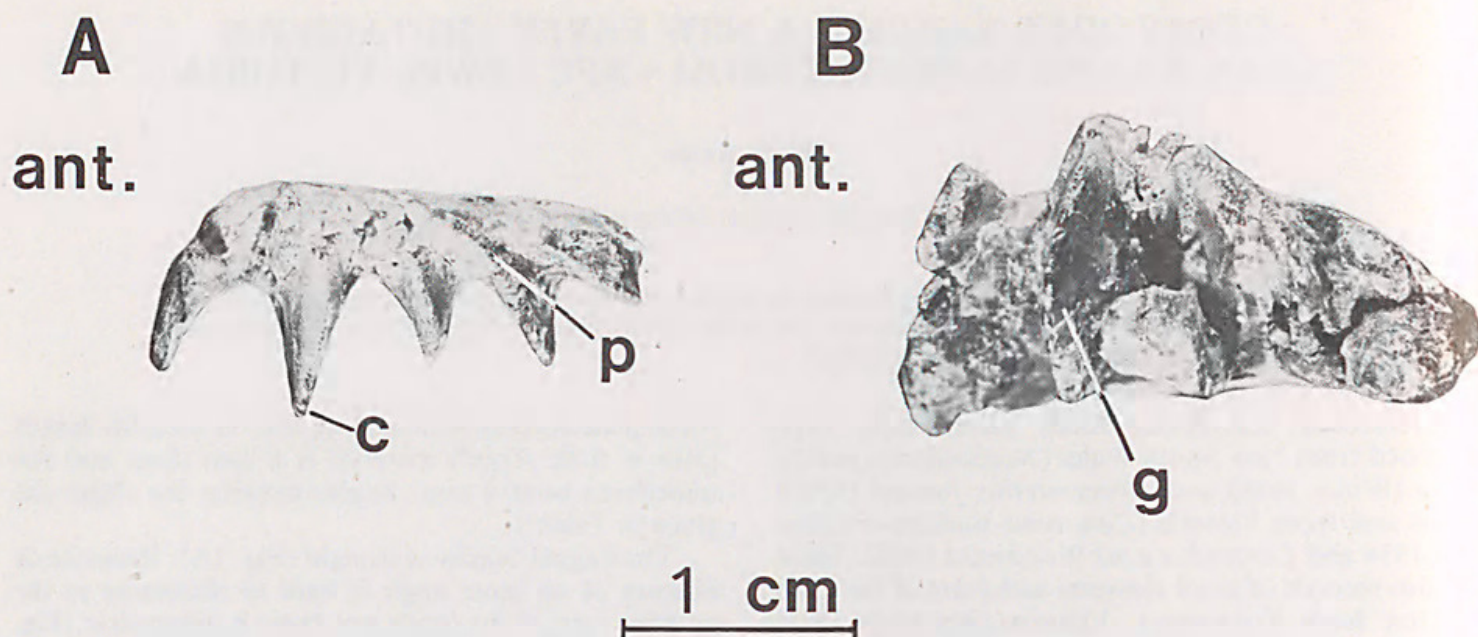


Fig. 1—*Ceratodus nargun* sp. nov., holotype NMVP157247. A, occlusal view showing cusps, straight lingual edge, narrow occlusal surface interrupted by deep wide clefts between the radiating ridges, faceted ridge crests, pulp cavity, absence of posterior heel and simple round punctations randomly arranged. B, labial view showing cusps, enameloid with growth lines, height of tooth and pulp cavity at the end of the third ridge. c.—cusps, g.—growth lines, and p.—pulp cavity.

plates with relatively shorter less strongly radiating ridges and comparatively shallower clefts and is therefore given separate specific status.

TABLE 1
ANGLES BETWEEN THE SUCCESSIVE RIDGES OF THE TOOTH PLATE
OF *C. nargun*.

ridge	1-2	2-3	3-4	4-5	1-5
	13	21	20	27	82

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