

FOSSIL LABYRINTHODONT AMPHIBIAN FROM THE TRIASSIC OF PASTUN AREA, KASHMIR

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ABSTRACT

The paper records for the first time jaw fragments of the labyrinthodont amphibians from the nodular limestone (Middle Triassic) of Pastun area, Kashmir. This indicates continuous presence of labyrinthodonts from Permian to Triassic in Kashmir region and their widespread distribution during the Triassic in India.

INTRODUCTION

In course of the detailed study of the Triassic sequence of Kashmir valley in June-July, 1986, jaw fragments of labyrinthodont amphibians were recovered from the grey, nodular limestone exposed on the western slopes of Tindara hillock, 1 km northwest of the village Pastun

(75° 83' 30" : 33° 59' 00"), dist. Pulwama, Jammu and Kashmir (Fig. 1). Tindara hillock exposes a well developed sequence of Lower and Middle Triassic and also a part of the Upper Triassic sediments. The geology and fossils of this area have been studied earlier by Noetling (1905), Middlemiss (1910), Diener (1913), Bion (1914), Sastry and Verma (1962) and Kapoor (1977). Triassic sediments in the Pastun area were restudied during the present investigation and the section was measured along the Tindara hillock (Fig.2). The authors have found that the classification of Triassic sediments given by Middlemiss (1910) for Pastun area still holds good and hence, the same has been followed in this work.

GEOLOGY

Lower Triassic beds in the area consist of massive, grey limestone followed by pelletal limestone interbedded with thin shale bands; grey limestone contains such ammonite genera as *Ophiceras*, *Meekoceras*, etc. The Lower Triassic is in turn overlain conformably by 340m thick sequence of Middle Triassic beds comprising sandy limestone and siltstone in the basal part followed by a hard, grey, nodular limestone, earthy brown limestone and shales in the upper part. The amphibian jaw fragments have been collected from the nodular limestone exposed about 10m below the ammonite bearing earthy brown limestone. Earthy brown limestone is rich in cephalopods (*Gymnites*, *Ptychites*, *Orthoceras*, *Sturia*, etc.), bivalves and gastropods which are characteristic of Middle Triassic. Upper Triassic is represented in the area by 336m thick sequence of hard, grey, compact limestone forming escarpments which at places consist of rich bivalve-bearing beds.

DESCRIPTION

The collection of labyrinthodonts at the authors' disposal consists of a possible skull and fragments of

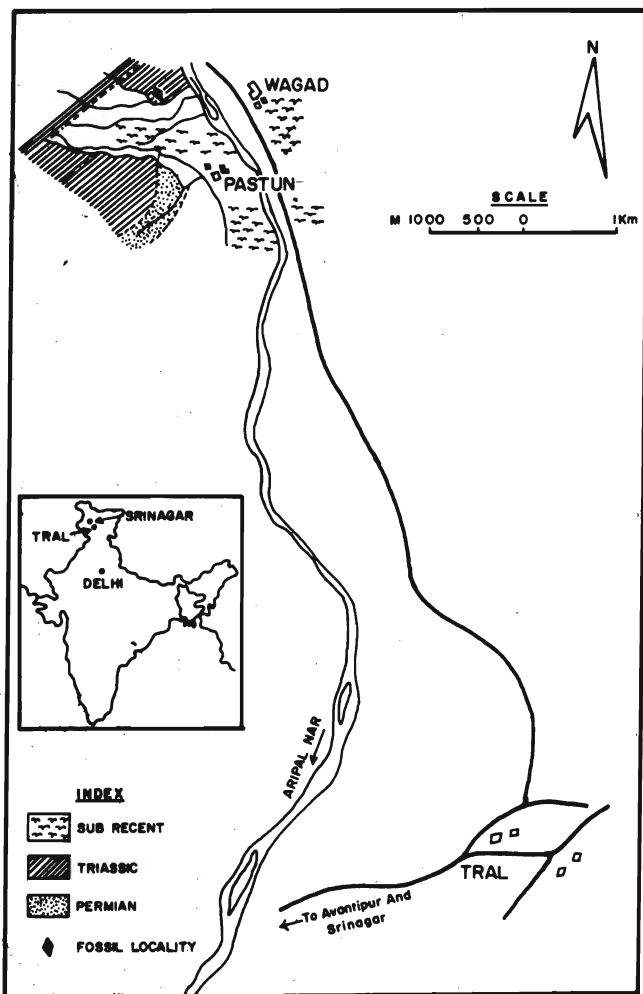


Fig. 1. Map showing fossil locality.

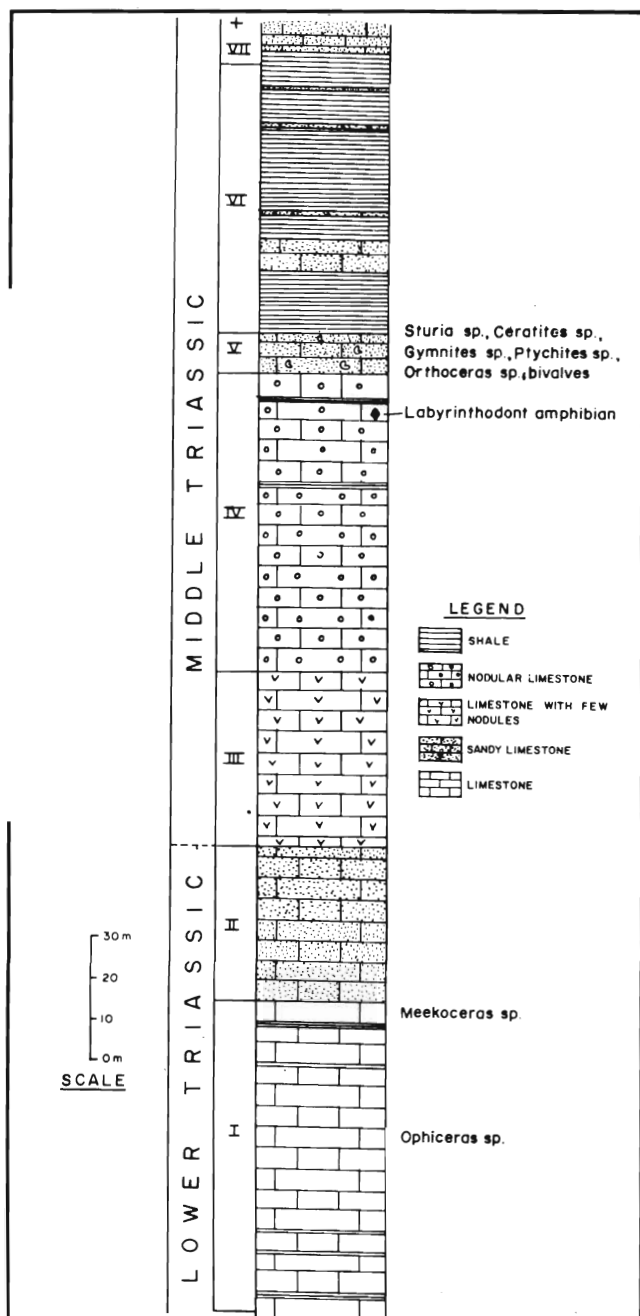


Fig. 2. Tindara Hillock section, NW of Pastun.

mandibles (Plate 1), which probably belonged to the same individual. The dentary in the collection (Fig. 3a) is 6 cm long and shows sections of six teeth which are slightly conical, closely spaced and arranged in a straight line. Longitudinal striations are visible in the sections of the teeth. The teeth are 10 to 12 mm high from their bases. Of the skull, the fore part of the snout between the orbit and nostrils is preserved. The fragment of snout (Fig. 3b) is 10 cm long and 3.25 cm wide in the anterior part and about 1.75 cm high. The snout seems depressed

in proportion to its length and breadth. In the anterior part of the snout the maxillae of both the sides are preserved. The teeth were closely spaced as exhibited by their alveoli which are about 5 mm in diameter. From the size of the snout and lower jaw it appears that the animal was quite large and probably belonged to a capitosaurid labyrinthodont.

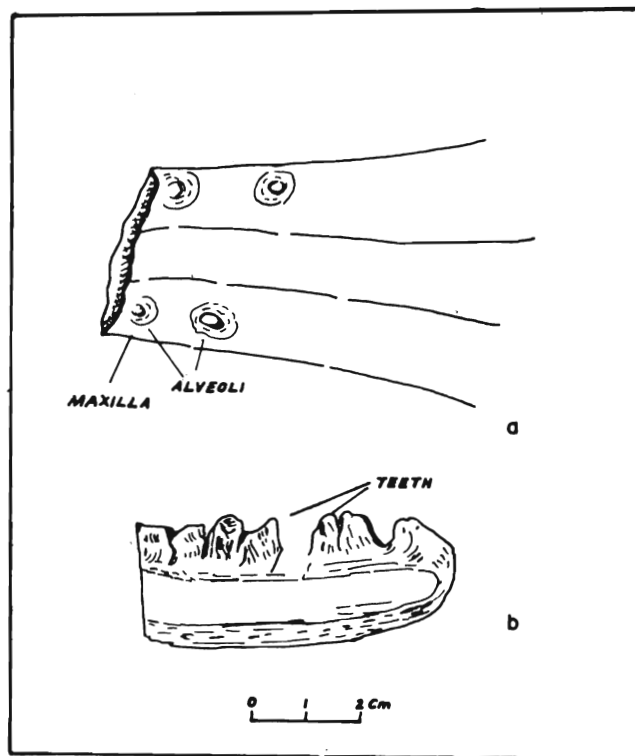


Fig. 3a. Sketch of part of snout.

Fig. 3b. Sketch of part of dentary.

REMARKS

From Kashmir Himalaya, a number of amphibians have been recorded from Lower Gondwana plant beds of Permian age. These are *Archegosaurus ornatus* (Woodward 1905), *Actinodon resinensis* (Wadia and Swinton 1928), *Lysipterygium deterrai* (Branson 1935), and *Archegosaurus kashmiriensis* (Tewari 1962) from the *Gangamopteris* bed of Risin Spur near Zewan in Vihi district (now Srinagar district). Verma (1962) recorded *Chelydosaurus marahomensis* from the *Gangamopteris* Bed of Marahom, dist. Anantnag. However, from the Triassic of Kashmir Himalaya, this is the first report of the labyrinthodont amphibian. The only other Triassic amphibian known from Himalayas in India is a recent record of capitosaurid labyrinthodont vertebrae from Lower Triassic limestone of Matauli section in Girthi valley in Kumaon Higher Himalaya of Uttar Pradesh (Tripathi, Dass and Jamwal 1983). In peninsular India, the Triassic amphibians are known from Lower Triassic



Panchet beds of West Bengal (Tripathi 1968); and Middle and Upper Triassic of Pranhita-Godavari valley in Andhra Pradesh (Roychowdhury 1965, 1970).

The present record of Triassic labyrinthodont amphibian in Kashmir is indicative of their continuous presence from Permian to Triassic in this region. During Triassic, labyrinthodont amphibians had quite widespread distribution in South Asia as their presence has been recorded from Kumaon Himalaya in Uttar Pradesh, Panchet in West Bengal, Pranhita-Godavari Valley in Andhra Pradesh and now from Kashmir in India and from the Lower Triassic of Salt Range (Huene 1920) and Lower and Middle Triassic of China (Zhengwu 1981).

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EXPLANATION OF PLATE

PLATE I

1. Ventral view of the snout of labyrinthodont (Specimen no. NRV₂/386).
2. Side view of the dentary of labyrinthodont (Specimen no. NRV₂/387).