

Report of Fieldwork at
Dinosaur Cove & in the Strzelecki Ranges

January-February 1992

Carried out by a Combined Fieldparty of Monash University
& the Museum of Victoria

During the past decade, more than sixteen months have been devoted to excavating the early Cretaceous rocks at Dinosaur Cove, Victoria. As a result, the terrestrial vertebrate fauna from there is now the most extensive from any site of this period in Australia. In preparation for the last major excavation planned for this locality, to take place in 1993, three days were spent on site in early January. The purpose of the work was to trim back a sandstone block above the entrance to the Slippery Rock site.

A rock pillar supporting the roof at the entrance to the Slippery Rock site has had numerous fossils of high quality collected on all its flanks. Two dinosaur skeletons were found on one side, three dimensional fish skulls on the other, and a myriad of isolated bones collected all around it. It is therefore likely that numerous additional high quality fossils are presently buried within it. Had the sandstone block not been pared back, when the rock pillar would have been excavated to get at the fossiliferous layer, the sandstone block would have been cantilevered about 5 metres directly over the work area putting the workers collecting fossils there at risk. By removing the outer 2 metres of this rock, the danger of a sudden collapse without warning was removed.

The trimming of the sandstone block was successfully carried out by use of explosives. The event was recorded by both the Museum photographer, Mr. Frank Coffa, and a film crew from the ABC.

Beginning in mid-January and continuing for a month, fieldwork was directed at testing a number of known fossil sites on the flanks of the Strzelecki Ranges between Inverloch and San Remo. The objective was to determine whether or not any of these sites were fossiliferous enough to warrant their systematic excavation for specimens not visible on the surface. All potential sites were selected because they had previously yielded material to surface collecting.

One or more days were spent at six sites. From west to east these were Rowell's Beach, Punchbowl, Tree Stump, The Arch, Black Head, and Flat Rocks (see map, p. 2). In addition visits were made to three other sites where fossils were known to occur. On the basis of firsthand examination, none of these appeared to warrant excavation because what few fossils were seen were too widely scattered.

In 1991, Rowell's Beach had yielded the left and right mandibles of an unequivocal labyrinthodont amphibian. This is the youngest record of this major group from anywhere in the world. It was disappointing that no further material of this individual or any other vertebrate fossils were recovered in the time spent at this site. Although it is unlikely that more of the skeleton will turn up, the importance of these specimens which form the type of a

soon to be described new genus and species is such that one further effort will be made to locate additional parts of this individual. However, further general excavation at this area for the remains of other fossils is not justified at this site.

The first hint of early Cretaceous labyrinthodonts came from the Punchbowl locality when an edentulous, enigmatic jaw was discovered there in 1979. Collecting at this site yielded several more labyrinthodont bones which were all clustered at one end of a single large block of sandstone. After a passage of thirteen years, it is not absolutely certain to T. Rich who was present when the original jaw was found, whether or not it came from this same block but it is quite likely that this was the case. This grouping of specimens suggests that the remains recovered were part of a single individual. The only other bone that has been found in the Punchbowl area is a single ornithomimosaur or emu-like carnivorous dinosaur vertebral fragment recovered about 100 metres away. Because there is no other indication of fossil bones at this site, further general excavation does not appear to be warranted at the Punchbowl.

The Tree Stump locality has yielded a few isolated labyrinthodont vertebral centra on the surface. Three days excavating there yielded only two additional fragments. No further work is planned at this locality.

The Arch had previously yielded a few bones on the surface. A single day spent there digging through the fossiliferous rock unit yielded four additional specimens. Comparison with the ulna of the Canadian late Cretaceous (Maastrichtian) Leptoceratops gracilis revealed a remarkable similarity. As ceratopsians which include such familiar forms as Triceratops and Protoceratops, have previously been recorded only in the late Cretaceous of North America and Asia with a dubious record from South America, this record of one from the early Cretaceous of Australia must be regarded with suspicion. However, just as labyrinthodonts were not thought to have survived into the Cretaceous until they were found in these same rocks, the apparent implausibility of this occurrence is no reason to reject it out of hand. Fortunately, an additional six tonnes of fossiliferous rock can be excavated at The Arch without the necessity of tunnelling. Processing that rock might yield a specimen capable of corroborating this as yet tentative ceratopsian record.

A day spent at Black Head yielded about twenty bone fragments. None of these were particularly informative.

The most easterly site worked was the Flat Rocks locality near Inverloch. This site was discovered in March, 1991. It was only found then because a storm had removed the sand cover which normally conceals the fossiliferous rock only the day before a visit to the area by qualified fossil collectors. What was found was a band of fossil-bearing sandstone about 4 metres wide and 30 metres long from which seventeen fossils were collected from the surface on the day of its discovery.

Because of the richness of the Flat Rocks locality, thirteen days were spent there. Between 40 and 60 specimens were recovered each day. After eight field seasons at Dinosaur Cove, only one theropod or carnivorous dinosaur tooth has been collected at that locality. Two such teeth were found at the Flat Rocks locality in the much shorter time spent there.

Such results portend well for the Flat Rocks locality. About 40 tonnes of fossiliferous rock occur there, approximately twice that which will have been recovered from Dinosaur Cove by the end of the 1993 season. Whereas nine seasons effort will have been required to collect the fossils from Dinosaur Cove, probably two to four years will suffice to process twice as much fossiliferous rock from the Flat Rocks locality. Because no tunnelling will be required there, both the physical and logistical effort and the total excavation costs over the entire duration of the dig at the Flat Rocks locality will be much less. It will therefore be possible to work this site and The Arch during the Summer and carryout a programme to search for and collect Mesozoic and Cainozoic terrestrial vertebrates in central and northern Australia during the Winter. Because of the much greater effort required to excavate at Dinosaur Cove, working there during the Summer together with prospecting for other sites during the Winter has proven to be all but unfeasible.

In addition, Flat Rocks promises to provide an in depth look at a dinosaur fauna from southeastern Australia about five million years prior to when the assemblage at Dinosaur Cove were living animals, thus giving a second glimpse in time at this polar dinosaur fauna.

In summary, this fieldwork programme has completed the preparations necessary for the final excavations at Dinosaur Cove in 1993 and laid the groundwork for major new initiatives in the research programme to understand the Mesozoic and Cainozoic terrestrial vertebrate biota of Australia, a part of Gondwana until the mid-Cainozoic.

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