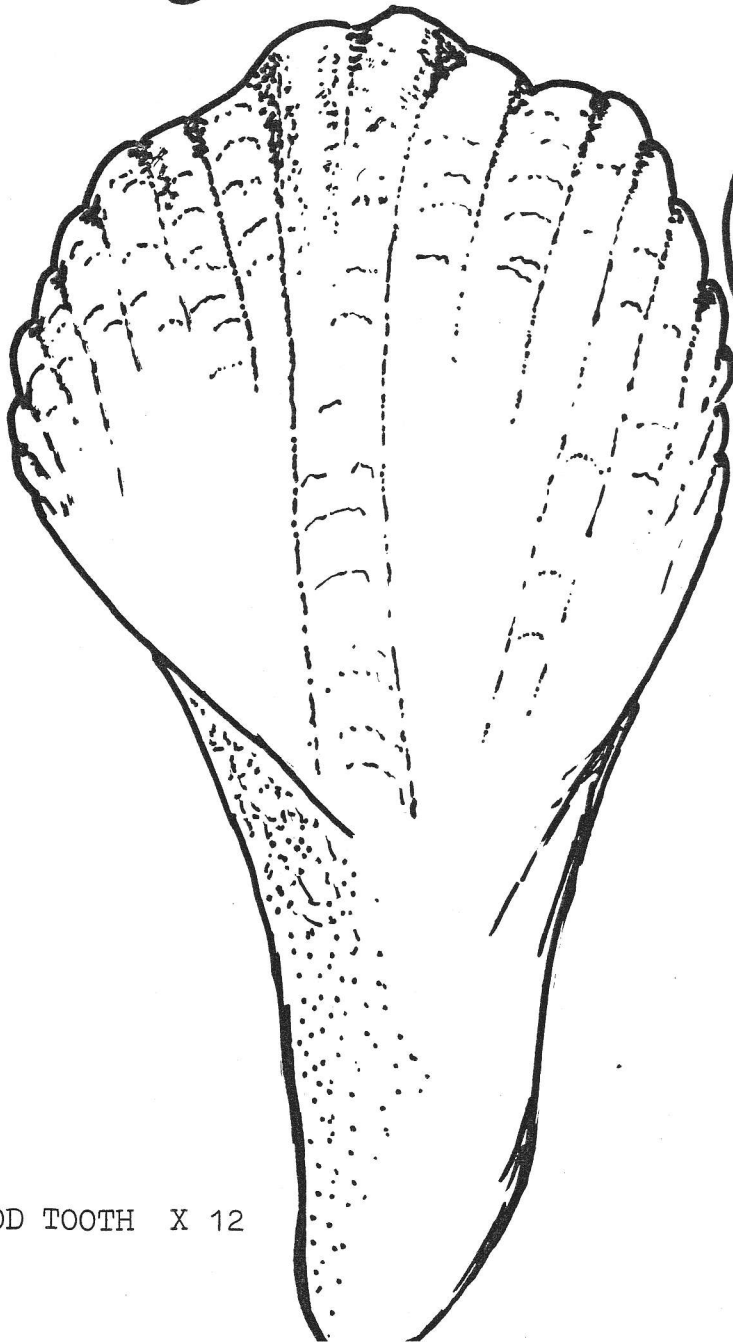


DIG AT
DINOSAUR
COVE



1984

Results of the Expedition to Dinosaur Cove,

8-26 February 1984

Summary

During February, 1984, an expedition from the Museum of Victoria confirmed the existence of a palaeochannel deposit at Dinosaur Cove rich enough in dinosaur bones to warrant extensive excavation. In addition, a second palaeochannel deposit, Dinosaur Cove West, almost as rich in fossils, was discovered and exploited. Both deposits are in the Otway Group and are of Aptian or Albian Age, late Early Cretaceous, about 110 million years old.

In the immediate future, the exposures of the Otway Group between Marengo and Johanna Beach should be reprospected in detail. Also, the most accessible parts of the fossil deposit at Dinosaur Cove West should be collected as soon as practical and experimentation should continue at the original site at Dinosaur Cove to develop the most appropriate method of excavation there.

Introduction

The first dinosaur specimen found in Victoria was discovered near the turn-of-the-century near Inverloch. In 1978, Mr. Timothy F. Flannery began a concerted effort to locate additional dinosaur remains in the Cretaceous exposures on the shore platforms near Inverloch. This work on the flanks of the Strzelecki Ranges demonstrated that the fossil remains of dinosaurs and other terrestrial vertebrates could be found in those rocks if enough effort was put into locating specimens.

Recognising that Cretaceous rocks similar to those in the Strzelecki Ranges occurred on the shore platforms flanking the Otway Ranges, an attempt was made to locate fossil vertebrates in the latter area. Beginning at Eastern View in 1979, all the accessible shore platform outcrops of the Otway Group were examined in a reconnaissance survey that extended to Pebble Point. Significant fossil concentrations were found at four sites as a result of this work. Within three of the sites, the fossils were so widely scattered that in excavating a specimen, no others were found. This suggested that it was not practical at these to locate additional fossils by systematically digging through the rock. However, at the fourth site called Dinosaur Cove, the fossils were found concentrated in a small channel deposit where digging did result in the discovery of fossils that were not initially visible on the surface.

This fossiliferous channel deposit represented the course of a small stream that had flowed 110 million years ago and subsequently became filled with sediment. The sediment included sand, layers of plant material, clumps of clay, an

occasional rock, and an even more occasional fossil bone. Presumably, the bones had accumulated in the bottom of the stream just like the other particles of matter found there. No groups of associated bones or skeletons were found so it appears likely that the animals from which they came died elsewhere. After the carcasses had rotted, the bones of the skeletons were transported individually, some to eventually become buried in the channel at Dinosaur Cove and preserved as fossils. In the intervening 110 million years, the initially soft sediments that filled the stream channel became hardened into rock and the rock was uplifted as part of the Otway Ranges. Finally, the ancient stream channel was exposed by the erosion of the sea.

Once the readily accessible rock at Dinosaur Cove was excavated, there were two courses of action available. The first was to abandon the site. The second was to tunnel into the cliff where the channel deposit extended and attempt to determine the nature and extent of this fossiliferous unit. Despite the anticipated difficulties, the latter course was chosen because no other Cretaceous site in Australia was known that consistently yielded the remains of small, terrestrial vertebrates. If this site could be shown to be of such a nature, then there would be a basis at some future time to make a major effort to exploit this locality.

In addition to determining whether or not the locality was rich enough to warrant further work, other objectives of the pilot excavation were to test out procedures for doing the actual digging as well as collecting the fossils that were found.

Once the decision was taken to attempt to follow this channel deposit into the cliff where it appeared to be going, it was realised that a whole series of problems that had never been faced before by me would be encountered. Logistically, it was obviously going to be the most difficult excavation I had ever organised. This was primarily because normal access to the shore platform where the palaeochannel was exposed is by a foot track that descends 80 metres over a walking distance of 250 metres and because of the elaborate mining equipment necessary to dig an underground tunnel.

In order to obtain advice and help to solve these problems, a large number of organisations and individuals were contacted. Prominent among these were the Friends of the Museum of Victoria, the Council of the Museum of Victoria, the National Geographic Society, Atlas Copco Ltd., Telecom, the Surf Life Saving Association and its sponsors (Westpac Banking Corporation, Victorian Dairy Industry Authority, and Herald & Weekly Times Group), Department of Minerals and Energy, Mr. John McAllister, and Mr. Peter Mokos.

Diary of the Excavation

Late in 1982, the Friends of the Museum of Victoria

agreed to support the excavation at Dinosaur Cove both financially and by soliciting among their membership for volunteers to help with the fieldwork. Shortly thereafter, the Council of the Museum of Victoria provided matching funds to those offered by the Friends.

Contact was made with the hire division of Atlas Copco in July, 1983, and negotiations were begun to arrange for the supply of the pneumatic tools that were to be the mainstay of the mining equipment to be used for excavating the tunnel above the fossiliferous channel deposit.

At about the same time, Anderson Helicopters was contacted and discussions begun with regard to the technical details of lifting the equipment and specimens from the shore platform to the campsite.

In November, 1983, J. McEwen Mason and B. Wagstaff were engaged to carryout a palynological analysis in order to date the four principal fossil vertebrate sites in the Otway Group. In their report of March, 1984, they concluded that all the sites are late Aptian to Albian age within the late Early Cretaceous.

Also in November, the Bureau of Minerals and Energy was contacted with regard to the problem of safety in carrying out an excavation of this kind. This resulted in visits to the site by several members of that organisation. Eventually, as a result of extensive consultations, it was arranged for Mr. John McAllister, a lecturer in mining at Ballarat CAE, to act as the onsite supervisor of the excavation. In addition, it was decided to construct a portico over the entrance to the excavation to reduce the potential hazards owing to rocks falling off the cliffs above.

In January, 1984, the Surf Life Saving Association offered to provide gratis helicopter support. This was for both lifting equipment into the site and retrieving equipment and specimens from the site at the end of the excavation. Anderson Helicopters was contacted and informed that their services would not be needed. A gratuity was paid for the professional advice that had been offered over the previous six months concerning the forthcoming helicopter operations.

Prior to the beginning of the actual excavation, an advanced party arrived to set up the camp and put in telephone lines, electrical lines and generators, and a compressor with its attendant pneumatic hoses. A cookhouse was constructed with built in shelves, stove, oven, griddle, copper, and refrigerator. Atlas Copco delivered a truck load of mining equipment to be used for the excavation including an air compressor with hoses, rock drills, jack hammers, as well as 15 drums of diesel fuel and one of standard petrol.

On 11 February, a helicopter from the Surf Life Saving Association transported the bulk of the equipment needed to

carryout the excavation from the campsite down to the shore platform on Dinosaur Cove. Because there was more equipment than was anticipated, the helicopter ran short of fuel. Fortunately, the helicopter of the ABC television channel 2 was at the site and enough fuel could be transferred to complete the mission. The portico over what was to become the entrance to the excavation was built the same day.

Actual quarrying at the site began the following day under the guidance of Mr. McAllister. Unfortunately, there were several difficulties with the hired mining equipment that became apparent at this stage. Very little progress was made for the next five days and only after nearly a week was most of the equipment functioning at a high degree of effectiveness. A workable arrangement was finally achieved by both hiring substitute equipment and purchasing other items.

During this initial period when the mining equipment was not functioning well, many members of the crew carried out a test excavation at Point Franklin, another site where bones had been found in a palaeochannel deposit in the Otway Group. Despite collecting about one-fourth a tonne of rock from this palaeochannel, nothing was found in it.

This group also prospected another previously known site, Eric the Red. There bones were found on the surface including one nearly complete limb bone. But no additional bones were found by breaking open rock surrounding the bones visible on the surface.

From 18 through 23 February, the mining equipment at Dinosaur Cove worked reasonably well. By the end of that period, the excavation had penetrated 2 metres into the cliff. When that point was reached, it was apparent that the palaeostream channel had been crossed. Bones and clay galls had become less frequent and the channel deposit was thinner. It then became evident what the direction of the palaeochannel was. With this information, the direction of the excavation was turned 90 degrees and extended for a total distance of 2 1/2 metres along the axis of the channel. Presumably, the deeper part of the palaeochannel which was the side closer to the surface where the excavation began was the outside of a bend. There the water flowed more swiftly and the stream was capable of transporting clay galls, occasional stones, and even rarer bones to that point. On the side of the stream where the deepest part of the excavation reached, the flow of water was only strong enough to bring in sand and floating plant matter.

From the deeper part of this palaeostream channel, about sixty fossil bones and bone fragments were recovered. Most will not be scientifically valuable as they will probably be merely waterworn bits of bone. However, preparation of only a few specimens has shown that some are limb bones of small ornithopod dinosaurs. When all the rock is removed from the specimens, more dinosaurs and other tetrapods will undoubtedly be

recognised.

Dr. Pat Rich, a coinvestigator on this project, and Miss Leaelyn Rich found another fossiliferous palaeochannel deposit on the west side of Dinosaur Cove, about 200 metres from the original locality which has consequently been dubbed Dinosaur Cove East. The channel of Dinosaur Cove West is 14 metres wide and the axis of the channel is perpendicular to the cliff face. It was possible to collect a large quantity of rock at this site without going underground. Before it would be necessary to dig a tunnel there, a quantity equal to that already excavated could yet be collected. Although the fossil bones were not as concentrated at Dinosaur Cove West, about 40 bones or bone fragments were found. The most interesting aspect of these specimens was that they include bones of animals as small as the living brush-tail possum. This is in the size range that Cretaceous mammals and birds might reasonably be expected to be. To my knowledge, there is no other site in Australia between the late Triassic and late Oligocene where the bones of terrestrial vertebrates in that size range are sufficiently concentrated to warrant systematic excavation. Unfortunately, the remains in this size range are in the minority. Most bones are of small dinosaurs, turtles, and crocodiles. Amongst the specimens in this category is an isolated tooth of a small ornithomimid dinosaur. This tooth may be conspecific with two other specimens of a small ornithomimid from Point Lewis, about 5 kilometres to the northeast of Cape Otway.

On the night of 23 February, the crew that was working the 6:00 p.m. to midnight shift suffered the first breakdown of the Darda hydraulic rock splitter that had occurred in six days. In addition, the electrical lights became too dim to be effective, probably owing to corrosion of the contact with the earth. In any event, the shift terminated at 10:00 p.m. The tide had been high that day and the water did not seem to be falling as low tide was being approached when the crew pulled out. However, the condition of the sea did not seem abnormal.

At 7:00 a.m. the next morning when the first shift of the day went down to start work, it was obvious that during the intervening nine hours, the sea had risen to a great height. The portico constructed of logs 18 centimetres in diameter and 4 metres long over the entrance to the excavation at Dinosaur Cove East had been entirely swept away. The tools had been thrown about, some as much as 20 metres. An air bottle which had been one of the highest pieces of equipment in the Cove was torn off the air hoses and swept away. Hessian bags filled with rock were hurled as much as 30 metres and lodged at the point of contact between the bare, wave-swept rocks and the overlying vegetation. Wooden cases for tools were smashed to matchwood.

The crew managed to salvage the bulk of the tools. Fortunately, the relatively few items lost were not expensive. In order to insure that damage owing to corrosion would be reduced to a minimum, the tools were disassembled and cleaned where possible. In the case of the pneumatic tools, the standard

air-oil mixture was put through them under pressure as when they are operating normally.

It was fortunate that no one was on site when the heavy seas battered Dinosaur Cove. Whether it was a single wave or the sea came up gradually could not be determined. The seas the following morning were still quite high. A local resident whose family had lived in the area for five generations remarked that he had seen the sea as high only twice before in his life. February had been chosen as the time to carryout this excavation in order to minimise the risk owing to this possibility. However, although less likely at that season of the year, high seas are a possibility at any time.

There is no way to take advantage of the scouring action of the sea which makes the shore platforms of the Otways a prime area for the recovery of dinosaurs and other Cretaceous tetrapods without running this risk. As money can replace equipment, such potential losses must be accepted as part of the price for working these deposits.

The risk to people is there and always will be. However, this does not prevent fisherman and others from visiting these areas. One must accept a certain amount of irreducible risk doing anything. The nearest brush the fieldparty had with a possible fatality occurred not at the site or in the camp but on the Great Ocean Road where one worker was involved in a side-swiping incident.

The incident with the high water was fortunate in another way: it occurred the evening before what was to have been the last day of excavation. Had it occurred earlier, it would have been a major problem. As it was, it was more in the category of a annoyance.

On Sunday, 26 February, three tonnes of rock from the two channel deposits at Dinosaur Cove were lifted by helicopter from the shore platform to the campsite along with the bulk of the tools that had been used in the course of the excavation. The cookhouse was dismantled that day and the bulk of the fieldparty left for their homes. The final cleanup occurred on the following Monday when Atlas Copco collected their equipment and the used and unused drums of fuel and the last members of the fieldparty departed.

Evaluation of Equipment and Procedures Used

The excavation was a test excavation in two separate senses. In the first place, it was intended to determine whether there was enough fossil material at Dinosaur Cove East to warrant a major excavation there at some time in the future. Second, it was to be a trial of techniques so that a major excavation could proceed efficiently. It is this latter aspect that will be addressed in this section.

From the outset, it was apparent that there was no single individual who had a grasp of all aspects of the problems to be encountered. Simply put, the miners did not understand exactly what the objectives of the vertebrate palaeontologists were and the vertebrate palaeontologists were in a totally alien field in trying to carryout an underground excavation. After discussing the matter at length with a number of people, the only way finally to marry the two fields was to try to carryout an excavation together. This was done.

The following equipment was used and the results with each are evaluated.

Compressor and airhoses supplied by Atlas Copco and Coates Hire. The compressor was 100% reliable. It always started easily and never suffered a mechanical breakdown. It was easily serviced by any member of the crew with brief instruction. An airbottle was added after it was found that the drop in air pressure over 500 metres was too great to drive the jack hammers. Initially, only 390 metres of hose were supplied although the amount requested was 500 metres.

Panther pneumatic drill supplied by Atlas Copco. Worked without a single failure the entire time. Was able to work on the reduced pressure that was available until an air bottle was supplied by Atlas Copco. As an airleg was not supplied with it and the drilling was horizontal, one was purchased. Without an airleg, drilling was inefficient and so arduous as to be barely feasible.

The airleg purchased from Compair worked with a high degree of reliability. The only difficulty encountered was owing to some grit that got into one valve which was readily cleaned.

A light pneumatic drill was originally to have been supplied by Atlas Copco. Hired from Bulldog Hire Service. Worked well for a few days and then failed. Returned to Bulldog Hire and serviced and afterwards returned to site where it did not work. When returned to Bulldog Hire at end of excavation, it worked satisfactorily.

Heavy jack hammer supplied by Atlas Copco. Worked satisfactorily once the air bottle was supplied by Atlas Copco. Too heavy to readily utilise except for drilling vertically on floor of excavation.

Light jack hammer supplied by Atlas Copco. In condition supplied, the steel fell out of the hammer. Did not get it running until three days before the end of the dig. Then quite useful as it was readily brought to play on vertical surfaces.

Darda hydraulic rock breaker supplied by Atlas Copco. Hydraulic hoses supplied were heavily worn in places, supposedly

interchangable couplings did not match, only one rock breaking unit initially supplied when two were ordered, when second unit supplied it lacked hydraulic fluid and no indication was given what the proper fluid was, although rated as capable of driving more than two rock breaking units the hydraulic pump was only capable of handling one at a time and then the pressure had to be reduced in order to lower the frequency of bursting hoses to an acceptable level.

Telephones supplied by State Emergency Services. Technical advice supplied by Telecom. The telephone communication system was established between the camp, the excavation site at Dinosaur Cove East, and the compressor-generator station. This link was particularly vital during the initial stages of the excavation when there were a myraid of difficulties with the mining equipment. The system was highly reliable and only one difficulty was encountered: the bell was not sufficiently loud to be readily heard against the noise of the mining equipment.

The helicopter service provided by the Surf Life Saving Association sponsored by the Westpac Banking Corporation, the Victorian Dairy Industry Authority and the Herald & Weekly Times Group was an invaluable contribution to the work. Both for the put in when heavy timbers had to be taken down to the wave platform and the take out when 3 tonnes of rock plus about half a tonne of equipment were removed, the work done with the helicopter in one or two hours meant the saving of days of toil by the fieldcrew. Moving some of the heavy items such as the timbers down the steep slopes would not only have been laborious but highly dangerous as well. Fortunately, on both occasions when the helicopter operations were underway, the weather was favourable.

Cookhouse and electrical systems supplied by Messrs. Robert, Lindsay, and John Moore. The cookhouse, complete with gas stove, refrigerator, griddle, copper and builtin shelves made the cook's job considerably easier than it would have been working in a tent or a caravan. The 12 volt electrical system in camp worked reliably and with a battery backup, there was always light available when needed. The 240 volt system to the fossil site worked required technical servicing from time-to-time in order to maintain it at maximum efficiency. When working properly, it enabled night operations to be carried out efficiently. Without the lights, much less progress would have been made in the tunnelling work.

Recommendations for Future Work

The excavation undertaken at Dinosaur Cove East determined that there is a fossiliferous palaeochannel deposit about 2 metres wide and 1/2 metre thick which is oriented in a north-south direction. The palaeochannel was found to yield a large number of useful specimens and undoubtedly if followed more bones of small dinosaurs can be recovered. The deposit could continue

for less than 50 millimetres or more than 50 metres. Only by following it and excavating as one goes along will its extent be determined. With this in mind, an approach in the future to dig at this site should be designed with the idea in mind that the fossiliferous deposit could be exhausted at any time.

Excavating underground is expensive. In light of the discovery of another palaeochannel deposit, Dinosaur Cove West, during the course of this expedition, the following things should be done before work is resumed at Dinosaur Cove East at a scale comparable to that of the recent expedition.

First, the reconnaissance survey of 1979-1980 which located Dinosaur Cove East was just that and nothing more, a reconnaissance. Discovery of Dinosaur Cove West demonstrates that it was not an exhaustive survey. The 1979-1980 reconnaissance did establish, however, that the most promising area to search is between Marengo and Johanna Beach. A month or more could be spent by a small team of qualified palaeontologists carefully going over the outcrops in that area.

Second, further excavation at Dinosaur Cove West is warranted on two grounds. Because it is not yet necessary to go underground there, digging there is much easier and cheaper than at Dinosaur Cove East. Also, rare though they are, bones of tetrapods occur at Dinosaur Cove West that are smaller than any others known in Australia between the late Triassic and late Oligocene.

On site experiments with equipment that would enable the excavation at Dinosaur Cove East to be continued in a more suitable manner than on the recent expedition should also be carried out. Then if it is decided to make a major effort there at some future time, a more appropriate method will be known.

As a result of suggestions from a number of people during the course of this project, the feasibility of four alternative mining methods should be explored. One is to cut out blocks of rock using a moving wire to cut grooves around the blocks. This might be suitable for both advancing the tunnel above the fossiliferous deposit and cutting out the fossils as they are exposed. A second method is to use a lime compound that expands with great compressive force when water is added. Poured into a series of interlocking holes, it might enable tunnel advances to be made more efficiently than in the past. Other methods that might be utilised would be to employ a high pressure jet of water or a carbide tipped chain saw to literally cut a groove in the rock.

The problems with breakdowns of the mining equipment that plagued the expedition, particularly during its first half, can be overcome in two ways. If equipment is hired, a technician from the firm which does the hiring must be on site for the first few days until the operation is up and running without more than minor breakdowns which can be serviced by the other members of

the fieldparty. Even better, the technician should remain on site for the full duration of the excavation.

Equipment must be hired at normal commercial rates, not at a markedly reduced one or charity rate. This way if things go wrong and other equipment must be hired or purchased to fill in the gaps, the money will be available to do so. With a charity rate, one is in the position of looking a gift horse in the mouth if there are legitimate complaints about the equipment provided.

Alternatively, new equipment should be purchased. It is a simple fact that such equipment is more reliable than hired equipment. The customers that Atlas Copco normally deals with are primarily of two kinds. Either they are located in the Melbourne metropolitan area and thus close to the point of hire and service in case anything breaks down or is unsuitable for anyother reason. Or they are in country areas and have a well-equipped workshop on site with people employed who are experienced at servicing the particular tools hired. Thus they are not normally dealing with customers in the circumstances that this excavation was carried out and it is unlikely that anyother hiring agencies are either.

Depending on the quantity of equipment involved, a point in time is reached where it is cheaper to purchase new, reliable equipment than to pay for the hire of equipment and a technician to service it. This must simply be calculated on a case-by-case basis.

Finances

The original estimated cost for this expedition was \$6 100. Counting as worth \$3 000 the helicopter support provided gratis by the Surf Life Saving Association, the total actually spent on the expedition was \$12 500. This discrepancy was caused by two things. First, in order to satisfy the mine safety requirements of the Department of Minerals and Energy, it was necessary to hire a qualified supervisor of the mining operations and to build a timber portico over the entrance to the excavation as well as have timber available for shoring up the roof. Second, repeated failures of the equipment required that it be replaced at short notice.

Much administrative difficulty was caused by the fact that I was not authorised to spend funds of the Council of the Museum of Victoria in excess of \$200 for a specific item without approval although a total of \$6 500 had been authorised through that source. In future where field operations are likely to demand spending decisions on the spot in remote areas, the final responsibility of accounting for those funds to the Museum Council should be given to me. In addition, where novel conditions are expected to be encountered, a contingency fund equal to 50% of the remaining budget would be realistic.

Morale of the Fieldcrew

One of the most pleasant memories of this expedition, one that will stay with me long after the problems have faded from my mind, was the way everyone on the fieldcrew really tried to do their best. Despite the discouraging events at the beginning when the equipment was not working properly and the fossils were not turning up, there was no serious grumbling that came to my ears. Many changes had to be made throughout the dig in the way things were done and when they were done. Again, everyone accepted these things and the work went ahead. I would dig again with that crew anywhere.

Fieldcrew

Kerrie Aulsebrook	John Moore
Gavin Bastiensz	Julie Moore
Kathleen Bastiensz	Robert Moore
Trevor Beardsmore	Valda Moore
Linda Brownscombe	Wendy Moore
Francoise Bussat	Sylvia Morrissey
Craig Cleeland	Brian Munro
Michelle Colwell	Margaret Newman
Caroline Copley	Richard O'Neill
Anne Cowan	Robert Piper
Lori Duncan	Simon Platts
Ian Gault	Neville Pledge
Lachlan Gault	Emma Poole
Patricia Gault	Rosalind Poole
Torquil Gault	Martin Ryan
Andrew Haines	Jon Saul
Lucinda Hann	Kenneth Smit
Dermot Henry	Dean Stewart
Robert Jones	Frank Stewart

Richard Kay	Pamela Stuart
Dean Kemp	Irene Sturgess
Stephen Kerr	Gavin Swayn
Lesley Kool	Siew Tan
Joan Lamond	Elizabeth Thompson
Stephen Learmonth	Robert Tranter
Martin Lyons	Sanja van Huet
John McAllister	Peter van Wyk
Richard McKean	Hans van Vlodrop
Sandra Mackiewicz	Keryn Walshe
Nicholas Marosfalvi	John Whitelaw
Peter Mokos	Gregory Wickham
Lindsay Moore	Susan Wilkie

Other Contributors to the Expedition

The following persons assisted the excavation at Dinosaur Cove in many ways. Without their help, the expedition could not have taken place.

Andrew Anderson, Anderson Helicopters
 John Angel, Lavers Hill Consolidated School
 Phillip Boyd, P & J Shelton and Associated Kiln Driers
 Pty. Ltd. Trading Assoc., Colac
 John Carpenter, Atlas Copco
 Graham Cato, Surf Life Saving Association
 Graham Cavanagh, G & K Productions
 Anthony Cooney, Department of Minerals and Energy
 David and Margaret Dennys, Castle Cove
 Robert Dundas, ABC TV
 Don Evans, Coates Hire
 Stuart Flamer, Surf Life Saving Association

Kevin Goodram, Atlas Copco
Keith Hainesworth, Telecom
Arnis Heislars, National Parks
Ken Laycock, Surf Life Saving Association
Ian Levershaw, National Parks
Patrick Lang, Titanga, Lismore
William Loads, Atlas Copco
Ronald McLeod, Department of Conservation, Forests,
and Lands
James Moriarty, Allsafe Safety Industries Pty. Ltd.
Pat O'Neill, Department of Minerals and Energy
Malcolm Pollite, Lavers Hill Consolidated School
Richard Poole, Department of Minerals and Energy
Alan Rampell, National Parks
Alan Richards, Mining Consultant
John Robertson, Surf Life Saving Association
Kevin Roderick, Surf Life Saving Association
D. S. Saunders, National Parks
Craig Simpson, Surf Life Saving Association
Ian Smith, National Parks
Richard Sweet, Compair
William Thomas, Springvale
Ray Tiecher, Surf Life Saving Association
Neil Vaughan, Telecom
James Wilson, Puuyniyart, Camperdown

Conclusions

The recent expedition to Dinosaur Cove confirmed that

there is a concentration of fossil bones, particularly those of small dinosaurs, at Dinosaur Cove East. As a result of this work, much information was gained which will make it possible to continue excavating there in a more efficient manner.

Particularly important is the fact that there are now a group of people with a variety of technical backgrounds who have had firsthand experience with digging at this site.

Another result of this expedition was the discovery of a second fossiliferous palaeochannel deposit, Dinosaur Cove West. A most important aspect of this site is that fossil bones of animals much smaller than those at Dinosaur Cove East have been recovered. These small bones are the right size to suggest that Dinosaur Cove West may eventually yield the remains of birds or mammals.

The discovery of a new palaeochannel deposit suggests that the area between Marengo and Johanna Beach should be reprospected in much greater detail than was done during the initial reconnaissance of 1979-1980. Such reprospecting may yield additional rich deposits that were missed in that initial effort.

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