Tasmanian Ice Age Sites Threatened by Dam

Archeological sites spanning the last glacial maximum in Tasmania promise a detailed record of life in that important transition. But . . .

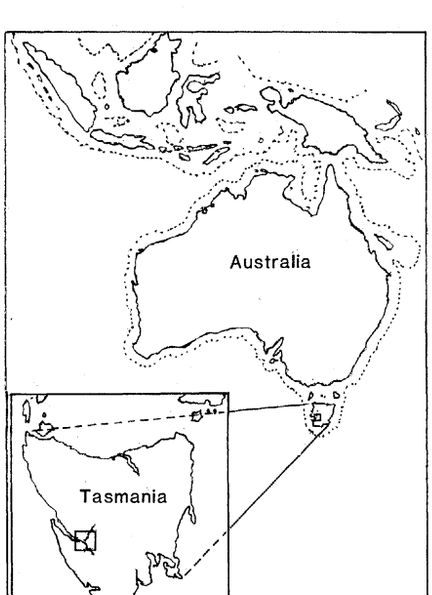
A series of exceptionally rich archeological sites discovered recently in Tasmania is under imminent threat of destruction from a massive hydroelectric scheme just approved by the state government. Rhys Jones, an archeologist at the Australian National University (ANU), Canberra, states that a preliminary excavation at one of the sites "has yielded more than one hundred times the entire stone artifacts recovered so far from all other Tasmanian ice age sites combined." John Mulvaney, another ANU archeologist who has been leading the campaign to save the sites, says, "Although salvage work could recover some of the material from these sites, we strongly believe it would be a national and international disaster to flood them."

The fight over the hydroelectric scheme, which would flood 400 kilometers of steep-sided river valleys in the vast wilderness area of southwest Tasmania, is further complicated by ecological and political considerations. In November 1981 the national government nominated the area for inclusion on the World Heritage list, a move that was supported by the recently overturned state government. A decision on listing will be made by the Unesco organization at its meeting in Paris on 13 December. If the nomination is approved, the national government will be morally, and some think legally, obliged to block the state government's plans for the hydroelectric project. Such intervention in state affairs is considered a very delicate constitutional matter in Australia.

The winding limestone valleys at the heart of the wilderness area have for some years been considered likely locations for archeological sites, a suggestion that was apparently ignored by the state's Hydro Electric Commission when it reported on its survey of the area in 1979. A team of speleologists found during the late 1970's a number of limestone caves in the Franklin and Gordon river valleys. Then, inspired by the discovery in January 1981 of a relatively recent living site in the area, geomorphologist Kevin Kiernan revisted a cave he and other explorers had found in 1977. In addition to a large deposit of bones which he had seen on the first visit, Kiernan also found stone artifacts. Jones and the Tasmanian state archeologist, Don Ranson, immediately mounted an expedition that was to establish Fraser Cave, as the speleologists had named it, as an extremely rich site. During 1982 a second similarly rich cave site was found, in addition to eight rock-shelter habitations. "Any one of these would be marked as a ranking archeological site if it were in the Dordogne region of France," notes Mulvaney.

The preliminary excavation at Fraser Cave revealed the exceptionally well-stratified deposit to be densely packed with animal bones and stone artifacts and debris. The moist alkaline conditions have maintained the bones in a good state of preservation and have trapped and preserved pollen throughout. "There is therefore a fine opportunity for monitoring the change in fauna and flora over the long period during which the cave was occupied," says Mulvaney.

Radiocarbon dates from charcoal in the thick hearth deposits show the earliest occupation to be about 20,000 years ago and the latest 15,000 years ago. This is an especially interesting period because 20,000 to 18,000 years ago marks the peak of the Pleistocene glaciation, with substantial amelioration of climates occurring by 15,000 years ago. "The change from tundra conditions to a much more temporate environment would presumably have been matched by a change in the ecological adaptions of the people who lived in these caves," says Mulvaney. "Evidence of that change will be found in the cave deposits."



Ice age occupation in Tasmania

The Franklin-Gordon archeological sites represent the most southerly occupation of Homo sapiens *at the last glacial peak.*

So far the artifacts unearthed fit the established pattern of the Australian core tool and scraper tradition found elsewhere on the continent on sites of similar antiquity. In addition, one bone point has been found which, following inferences from European sites, was probably used in sewing skins for clothing. The occupants of the cave also made use of Darwin glass, a brittle but sharp material found in a meteorite crater 50 kilometers northwest of the Franklin Valley. Most intriguing of all is the discovery of lumps of red ochre, a natural pigment often used in rock painting.

Geoffrey Bailey, of Cambridge University, England, is one of 24 archeologists of international repute who have written to Malcolm Fraser, the Australian Prime Minister, to protest the threat to the cave sites. "These sites are important for several reasons," he told *Science*. "They represent the most southerly occupation of *Homo sapiens* at this interesting period in prehistory. It was a period when humans were expanding geographically and in numbers. Economic and social activities were becoming more and more extensive. Because the Franklin River caves have been unaffected by agriculture or industrialization, there is a very good chance of getting some very valuable information from them using the modern methods of archeological research."

Early humans appear to have entered Australia about 40,000 years ago, but access to Tasmania probably was not possible until some 23,000 years ago when the expanding polar caps lowered sea levels substantially. "The exploitation of these very cold southerly latitudes is an interesting mirror image of what was happening in the northern hemisphere," comments Paul Mellors, another Cambridge archeologist. Tasmania was once again isolated from continental Australia about 13,000 years ago.

Given the terrible treatment meted out to the native Tasmanians by the European settlers, it is somewhat ironic that the government of that state may have to be overruled by the national government if these important aboriginal remains are to be saved.—**ROGER LEWIN**

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