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PA EXCAVATION AND RADIOCARBON DATING IN NEW ZEALAND ARCHAEOLOGY: A BRIEF PRESENTATION OF RESULTS

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INTRODUCTION

Three site types have dominated New Zealand archaeology: settlements with evidence of moa-hunting, pa sites, and sites of the historic period. Anderson (1989) and Smith (1990) have provided extensive reviews of archaeological research regarding moa hunting and historic sites respectively, and so a review of pa archaeology has been long overdue. This paper reports briefly on some important aspects of a review undertaken on pa excavation and radiocarbon dating in New Zealand archaeology by the author in 1993. The full review will be forthcoming in two more extensive papers, which will include the 1994 data. This paper is intended to provide 'up to date' results for the general audience.

PA EXCAVATION AND ITS ASSOCIATED LITERATURE

This review was based upon a database developed by the author containing a variety of information regarding pa excavations in New Zealand archaeology (Schmidt 1993). Information contained in the database includes the old and new site location numbers of excavated pa; the pa name in Maori and European; the year the pa was excavated; the class of pa excavated based on Groube (1970) and Fox's (1976) pa classifications; and finally references to published and unpublished literature on the excavations.

From the references regarding reports on the excavation of pa, an analysis of literature available followed that of Smith (1990). Figure 1 shows the number of published and unpublished literature available on pa excavations in New Zealand archaeology based on 181 references in the database. These references are made up of final and preliminary excavation reports, as well as literature which briefly describes excavations that have not as yet received excavation reports of any kind. It can be seen that the number of formal publications have declined through the decades. The number of unpublished reports is probably well under-represented due the difficulties of tracking them down. It is predicted that the amount of literature on pa excavations will increase in the 1990s, the proportions of formal publications, 'grey' literature and unpublished literature being similar to that of the 1980s.

PA EXCAVATION AND RADIOCARBON DATING

One hundred and ten pa have been excavated in New Zealand constituting 200 seasons of excavation. (Schmidt (1993:16-17) provides a distribution map, of these excavated pa throughout New Zealand). Figure 2 shows both the trend in the number of pa excavations for each decade of this century as well as the forms of pa which have been investigated based on Groube (1970) and Fox's (1976) classifications. The first recorded excavation was around 1900 by Henry Berries at Waikakahi pa near Christchurch, but pa investigations did not follow a methodological avenue until the mid 1950s. Pa excavation peaked in the 1960s, dropped off in the 1970s, and then showed a gradual rise during the 1980s which is predicted to continue during the 1990s.

In recognising these trends in pa excavation, the focus of research on particular classes of pa has also changed during the decades. It can be seen that the most excavated pa have been the Class II (transverse ditch and bank) and Class III (transverse and lateral ditch and bank including ringditch) (Figure 2). However, the Class I (terraced) pa received the most research during the 1970s, the Class IV (palisaded only) being predominantly investigated in the decades prior to 1950.

DATING THE COMMENCEMENT OF PA CONSTRUCTION IN NEW ZEALAND PREHISTORY

A database of 'all' radiocarbon dated pa in New Zealand archaeology was constructed. This contains the old and new site numbers; the name in Maori and European; whether the pa has been archaeologically excavated or not; the Class of pa dated; the number of radiocarbon dates from the site as well as the sample types dated; and finally references in the literature on information concerning the archaeological relevance of the date, its provenance etc.

One hundred and sixteen pa have been radiocarbon dated in New Zealand (Schmidt 1993:34-35 provides a distribution map of these sites). Two hundred and sixty five radiocarbon dates have been derived from these pa, of which 221 were available from published sources for analysis. To draw out "acceptable" radiocarbon dates from this sample, a "discard protocol" was constructed based on that of Anderson (1991) and Spriggs and Anderson (1993). This process rejects, in terms of the radiocarbon method, dubious dates based on factors such as inbuilt age for charcoal and recrystallisation for shell. Also important are the archaeological considerations. For pa, the provenance of the samples dated is vital as the material used must actually date the construction or use of the fortification.

After undertaking this protocol, 56 "acceptable" charcoal and shell radiocarbon dates remained for further analysis. The number of dates discarded was high because the majority of charcoal samples used to date pa were

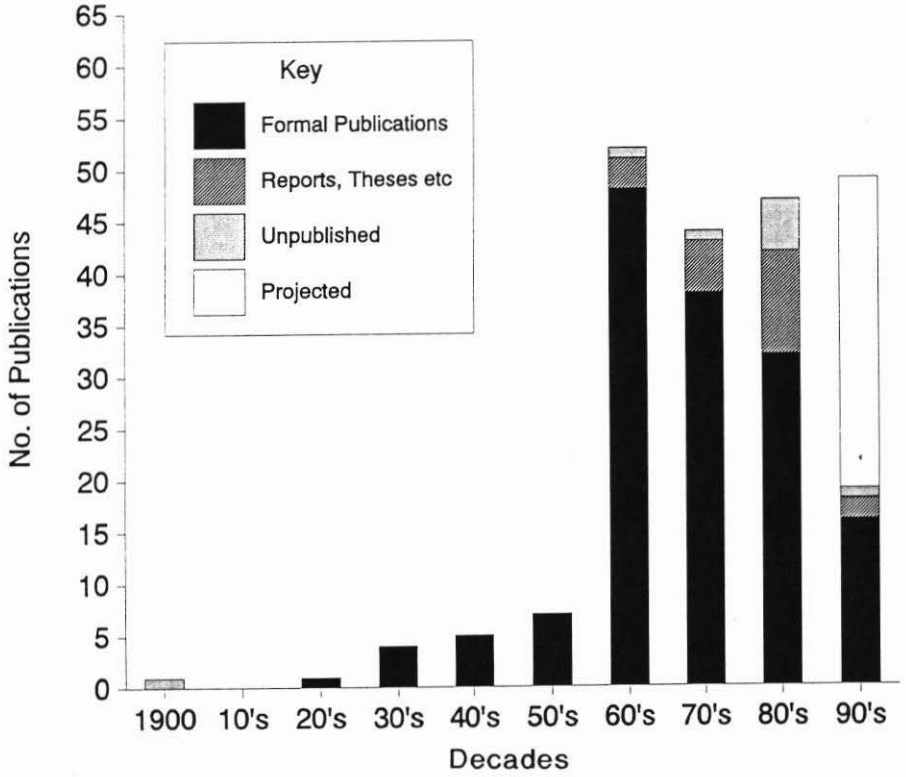

Figure 1. Pa excavation literature 1900 - 1990s.

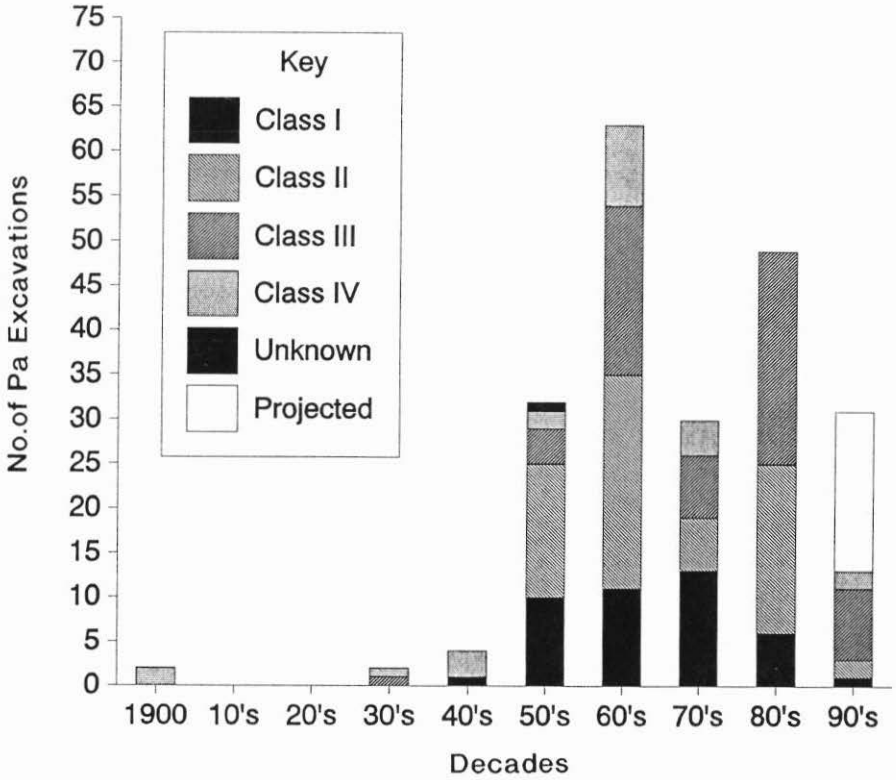

Figure 2. Pa excavations 1900 - 1990s.

undertaken before 1976 (when charcoal was not regularly identified to tree species) and many dates being 'modern' (< 250 BP).

The "acceptable" dates were divided into a robust group of dates, which contained ages expressing a close or minimum time of fortification construction or use, and a maximum group. For charcoal, 9 robust and 2 maximum ages were derived, and for marine shell, 19 robust and 26 maximum dates. These conventional ages were then calibrated to the 95% confidence level using the 1993 CALIB programme (Stuiver and Reimer 1993). The 28 robust charcoal and shell calibrated ages strongly supported a pre-1550 AD commencement of pa construction, the 28 maximum ages showing that this event probably occurred before 1525 A.D. (Schmidt 1993:43-48).

To determine the actual beginning of pa building, the 21 charcoal and shell calibrated ages which fell before 1550 AD were averaged for each group using CALIB. This date was chosen as it was at this division that over three quarters of all "acceptable" calibrated pa dates had the lower end of their standard errors falling. The results showed that pa construction probably began around 1500 AD and was well underway by 1525 AD (see Schmidt 1993:37-53 for further details).

DISCUSSION AND CONCLUSIONS

In undertaking this review of pa excavations and its accompanying literature, reasons for trends in their increase and decline in number were identified. For example, the number of formal publications have dropped markedly over the decades since 1950. One reason identified for this was a shift in pa research from a more public atmosphere of study during the 1950s and 60s, to centralised research sectors such as the universities, Historic Places Trust and the Department of Conservation in the following decades. This change saw an increase in unpublished literature in the form of theses and internal reports etc.

The great increase of pa excavation in the 1950s and 60s was seen as being due to factors such as the arrival of such archaeologists as Roger Green, Jack Golson, Les Groube and Wilfred Shawcross. The decline in the 1970s was a result of a number of influences, a lack of research funding being an important issue. Also, changes in the investigation of particular pa classes have been related to shifts in pa research direction, as well as changes in pa excavation methodology.

The study of the current radiocarbon chronology for pa not only determined a possible time for the commencement of pa construction, but also found that all forms of pa, from terraced to ring-ditch, were contemporary

(Schmidt 1993:53-59). The analysis also supported earlier theories on the beginning of pa construction as commencing after 1300 AD (Groube 1970:135).

With the full presentation of results from the review on pa excavations, literature and radiocarbon dating in New Zealand archaeology, implications for future pa research will be discussed (Schmidt in prep). Also, as the databases from which this analysis was undertaken are still being added to, these should provide a stepping stone for continuing research on pa in New Zealand archaeology.

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