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EDITORIAL

This issue is largely devoted to a series of papers on Hawaiian prehistory, and specifically on aspects of the chronology of Hawaiian prehistory as established by radiocarbon dates. The papers were first given at a session convened by Dr Tom Dye at the 17th Pacific Science Congress in Honolulu in May and June 1991.

The New Zealand Journal of Archaeology welcomes papers on all aspects of Pacific as well as New Zealand archaeology and need not apologise for devoting an issue to Hawaiian prehistory. However, there are a number of reasons why the chronology of Hawaiian prehistory should be of particular interest to New Zealand prehistorians.

New Zealand and Hawai'i are the two largest Polynesian island groups, and two of the most isolated and recently settled. The chronology of occupation and particularly the date of first settlement are topics of perennial interest in both groups. Periods of Expansion (Hawai'i) or Growth and Rapid Change (New Zealand) have been postulated for approximately the same time in both groups. The volume of archaeological work has resulted in radiocarbon data bases in both places which are now large enough to be interrogated and analysed in their own right.

Yet according to present orthodoxies, the settlement histories are significantly different. Hawaiian archaeologists, by and large, have been content to accept radiocarbon dates well back in the first millennium A.D. as indications of initial settlement. In New Zealand, with an internationally renowned radiocarbon dating laboratory and a long standing research interest in the radiocarbon dating method, there has been a greater awareness among archaeologists of the problems associated with early dates. Thus, although a few writers have recently argued for earlier settlement of New Zealand, orthodox opinion has continued to hold to "1000 years of human occupation". Most recently, it has been suggested that virtually no dates older than about 700 years B.P. are acceptable.

At present then, the first settlement of Hawai'i appears to be considerably older than the first settlement of New Zealand, although the identifiable period of expansion is much the same. Why should this be? Hawaiian archaeologists should perhaps consider the reasons why early dates are often rejected in New Zealand and take a more critical approach to their own early dates. New Zealand archaeologists should consider whether they are throwing out the baby with the bath water.

Assuming, however, that the long Hawaiian chronology and the short New Zealand chronology stand, the reasons for the differences have to be explored. Was there something about the New Zealand environment which led to immediate and rapid population growth? Or were the initial colonising groups which reached New Zealand much larger than those which reached Hawai'i; and if so, why?

The papers in this issue contain many other points for New Zealand and Hawaiian archaeologists to ponder. Among them may be mentioned the nature of forest clearance and the processes by which charcoal is incorporated in garden soils, the tendency for gardens and temporary settlement to precede permanent 'inland' settlement (although inland on O'ahu may be only a few kilometres from the coast), the small size of excavated adzes compared with those in museum collections; the tendency for dates to peak around A.D. 1400–1500; the postulated cessation of population growth in Hawai'i during the period in which *pā* warfare flourished in New Zealand; and the continuing dearth of archaeological information from Hawai'i comparable to that on bird exploitation and extinction in New Zealand.

In recent years, there has been much greater awareness of the need for standardised reporting of radiocarbon dates, and a number of attempts to introduce 'chronometric hygiene' in archaeological reviews of date lists. Even so, it has been our experience in

publishing this Journal that many archaeologists and some laboratories still do not follow widely accepted conventions in reporting radiocarbon dates. It is our own clearly stated policy that all newly reported radiocarbon results (and as far as possible all earlier results) should list the material dated, the $\delta^{13}C$ value where measured, and the Conventional Radiocarbon Age as defined by Stuiver and Polach (1977). Authors may then make whatever corrections they choose to obtain calendrical ages, in addition to this strict formal requirement.

Dye and Komori in this issue have drawn attention to the very wide range of $\delta^{13}C$ values in Hawaiian charcoal samples where this measurement has been taken, and the apparent presence of a significant minority of samples derived from C4 pathway plants. Assuming a $\delta^{13}C$ value of -25‰ for a sample with an actual value of -9‰ will make a considerable difference to the age. This points to the desirability for $\delta^{13}C$ to be routinely measured on all Hawaiian wood and charcoal samples, even if the measurement is an extra cost at some commercial laboratories.

In the appendices of dates accompanying a number of papers in this volume the actual value of $\delta^{13}C$ is given, where measured. For dates where $\delta^{13}C$ was not measured, we have distinguished between those dates where the laboratory has confirmed that a $\delta^{13}C$ value of -25‰ was assumed, and those where this confirmation has not been obtained. Particularly in the case of dates obtained many years ago, it cannot be taken for granted that a value of -25‰ was assumed. Very few of the dates listed are on material other than charcoal; Dye in his paper on South Point discusses the particular case of dates from that area on material other than charcoal.

The main reason New Zealand archaeologists reject many of their older dates is because of the likelihood of 'inbuilt age' in charcoal samples derived from long lived species, where the sample may not date the cultural event. The general lack of charcoal identification in Hawaiian samples or of knowledge about the longevity of species contributing to the archaeological charcoals may mask an inbuilt age problem comparable to that experienced in New Zealand. The apparent representation of C4 pathway plants in the charcoal samples is intriguing, given the present distribution of C4 grasses in Hawai'i. However, the important findings of Athens and his colleagues in this volume about the former lowland forest on O'ahu show that there is still much to be learned about the pre-human vegetation of Hawai'i.

The vast majority of dates in the Hawaiian radiocarbon data base are on charcoal samples and therefore the specific problems associated with shell dates, much used in New Zealand and increasingly used elsewhere in the Pacific, are less relevant. It is worth noting here, however, that there is wide variation in the suggested correction for the marine reservoir effect in different parts of the Pacific. Stuiver *et al.* report individual ΔR values ranging from +117±51 years for Hawaii to -280±41 from New Zealand (1986: 1021).

It is essential, therefore, that laboratories processing shell dates do provide clients with the Conventional Radiocarbon Age as defined by Stuiver and Polach as well as their suggested correction for the marine reservoir effect. As information increases about local variations in the marine reservoir effect in different island groups, and indeed in different parts of larger island groups, shell dates from different parts of the Pacific can be compared with greater confidence.

The difficulties still attending both charcoal dates (inbuilt age and variation in $\delta^{13}C$) and shell dates (variations in the marine reservoir effect) should always be borne in mind in developing radiocarbon based chronologies.

The late appearance of this issue is partly due to the time involved in ensuring that all radiocarbon dates listed conform, as far as possible, with the reporting criteria mentioned above. We believe that the effort has been fully justified. This series of papers provides a timely and important assessment of the chronology of Hawaiian prehistory.

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Stuiver, M. and Polach, H.A. 1977. Reporting of ^{14}C data. *Radiocarbon* 19(3): 355–363.

Stuiver, M., Pearson, G.W. and Braziunas, T. 1986. Radiocarbon age calibration of marine samples back to 9000 CAL YR BP. *Radiocarbon* 28(2B): 980–1021.