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RADIOCARBON DATES FOR SOUTH ISLAND ROCK SHELTERS

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In Prehistoric Rock Art of New Zealand we stated that radiocarbon dates from the few South Island rock shelter sites that had been dated lay between A.D. 1100 and A.D. 1500 (Trotter and McCulloch, 1971). In presenting details of these dates, plus others that have been obtained recently, we feel that a brief comment on their use and accuracy is warranted.

Although New Zealand archaeologists have been using radiocarbon dates for almost twenty years, it is apparent from the way these have been treated in publications that the dating process is not well understood. The general attitude is neatly summed up by the statement attributed to Professor Brew who said, "If a C.14 date supports our theories, we put it in the main text. If it does not entirely contradict them, we put it in a foot-note. If it is completely 'out of date', we just drop it." (Rafter, 1971: 15).

Results of radiocarbon analyses are usually expressed in terms of years before present. It should be understood that these are the result of calculations, involving certain assumptions and corrections for known sources of error, based on the C.14 activity of samples, and cannot be accurately converted to calendar years. Many of the factors affecting the accuracy of the dating method are not yet fully understood, and others require the collection of more data before corrections can legitimately be applied. It has been pointed out that samples of plant remains from New Zealand archaeological sites generally give dates that are several centuries earlier than those from contemporaneous animal remains (Trotter, 1968; Rafter et al, 1972). Although the difference varies from less than a century to over 600 years, charcoal on the average gives a date about 300 years earlier than bone collegen or shell, and this effect is noticeable in these rock shelter dates.

In the following list charcoal samples are calculated with respect to the 0.95 NBS oxalic acid reference standard, marine shell with respect to Protothaca collected live in A.D. 1955, and moa bone with respect to 1955 cow bone (see Rafter et al 1972 for details of these standards). As there is not yet any reliable reference standard for fresh-water shell, results for this material have been calculated with respect to 0.95 NBS oxalic acid, but they appear to be too early.

Apparent incongruities in these dates are mostly resolved if the known discrepancy in charcoal and the suspected error of fresh-water

shell are taken into consideration. An exception is the marine shell date from Glen Gynk which is far too recent when compared with the charcoal date, and on the evidence of other data alone is unacceptable for the main occupation of the shelter. It could possibly represent a subsequent occupation or it could be an error. This is being investigated further.

Apart from this one result, the evidence of radiocarbon dating suggests that the rock shelter sites (all of which contain drawings) were occupied between about 450 and 1,000 years ago.

In the following list we give together with laboratory results our estimate of the probable time of occupation of each shelter. This estimation takes into account the inconsistently early results from charcoal samples and also consideration of occupational material in the shelters and comparison with other known sites both dated and undated in the same area.

May we stress that these dates are in radiocarbon years before present (A.D. 1950), and as these only approximate calendar years, their conversion into precise calendar dates A.D. would imply a degree of exactitude which we feel would be misleading.

Pentland Downs, North Canterbury (Site No. S.61/20)

NZ1534	Marine Shell	910 ± 132 years B.P.
NZ1535	Charcoal	1315 ± 80 years B.P.

Estimated time of occupation about 1,000 years B.P.

Glen Gynk, North Canterbury (Site No. S.61/24)

NZ1532	Marine shell	238 ± 53 years B.P.
NZ1533	Charcoal	932 ± 76 years B.P.

Estimated time of occupation about 600 years B.P.

Timpendean, North Canterbury (Site No. S.61/4)

NZ892	Marine shell	436 ± 50 years B.P.
NZ893	Fresh-water shell	704 ± 40 years B.P.

Estimated time of occupation about 500 years B.P.

Gooseneck Bend, South Canterbury (Site No. S.117/8)

ANU48	Charcoal and twigs	850 ± 150 years B.P.

Estimated time of occupation 500-600 years B.P.

Ahuriri, North Otago (Site No. S.117/4)

ANU47	Charcoal	625 ± 65 years B.P.

Estimated time of occupation about 500 years B.P.

Junction Point, North Otago (Site No. S.117/7)

ANU49	Charcoal	695 ± 135 years B.P.

Estimated time of occupation about 500 years B.P.

Awamoko, North Otago (Site No. S.127/40)

NZ1377	Fresh-water shell	1190 ± 40 years B.P.

Time of occupation possibly about 800 years B.P.

Takahe Valley, Fiordland (Site No. S.140/2)

NZ52	Bark	820 ± 60 years B.P.
NZ52	Bark (duplicate)	840 ± 60 years B.P.
NZ51	*Tussock	230 ± 60 years B.P.

Estimated time of occupation 500-600 years B.P.

*This very recent date (NZ51) was obtained from a specimen of tussock found in the shelter on the assumption that it had been used as bedding (Duff 1956: XII). As we have found similar masses of seemingly cut tussock occurring naturally in rock overhangs which have never had human occupation we cannot accept this date as representing the age of occupation, particularly as the other two dates fall so closely into line with those from other rock art shelters.

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