

SHORT REPORTS

Palaeodietary inferences from bone collagen stable carbon isotopes at Roonka Flat, South Australia

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The Roonka Flat archaeological site on the lower Murray River of South Australia provides one of the largest well provenanced prehistoric Aboriginal skeletal populations in Australia. Bone specimens from a large sample of the population were submitted for stable carbon isotope paleodietary analysis to address:

1. relative access to foods from coastal, riverine and arid interior habitats and
2. dietary variability within the population (Pate 1994a, 1994b).

Distinct stable carbon isotope signatures in marine foods, C₃ terrestrial plants (trees, shrubs, temperate cool season grasses/herbs) and C₄ terrestrial plants (tropical and warm season grasses/herbs) are passed up the food chain and maintained in consumer tissues. Because bone is a dynamic tissue with a long biochemical turnover rate, it provides a record of long-term dietary averages (Pate 1994c). As the Roonka Flat site is located in an inland C₃ environment, bone collagen stable carbon isotope values can be used to assess the relative quantities of local C₃-based foods and marine/ inland C₄-based foods in prehistoric Aboriginal diets. Plant and animal foods obtained from the Murray River are included in the C₃ terrestrial category.

The stable isotope results ($X \delta^{13}C = -19.6\text{‰}$, $n = 45$) indicate that individuals interred at Roonka Flat during the late Holocene (5 ka BP – c. AD 1840) had limited access to marine and inland C₄-based foods. Baseline $\delta^{13}C$ values from modern South Australian fauna (Pate and Schoeninger 1993) suggest that prehistoric Aboriginal diets at Roonka consisted of at least 80% C₃-based terrestrial foods. Thus, on the basis of diet there appears to have been limited movement between the inland riverine site and adjacent coastal and arid interior habitats during the late Holocene. Comparisons between the early and late Holocene Roonka Flat populations could not be made due to extensive collagen degradation in the older interments.

There were no significant differences between mean $\delta^{13}C$ values for sub-adults ($-19.5\text{‰} \pm 1.9$, $n = 7$), adult females ($-19.6\text{‰} \pm 1.9$, $n = 17$) and adult males ($-19.7\text{‰} \pm 1.2$, $n = 21$). Thus, all members of the burial population obtained a majority of their food from the river and adjacent plains. Because bone collagen stable carbon isotopes

relate to general dietary regime, i.e. C₃-based terrestrial foods, differential access to particular foods within the C₃ ecosystem cannot be evaluated.

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Coastal morphodynamics and the archaeological record: Further evidence from Upstart Bay, North Queensland

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The principal aim of research at Upstart Bay, on the northeast Queensland coast, is to document the impact of tropical cyclones and concomitant storm surge on the coastal archaeological record. Baseline surveys at Upstart Bay in 1987 were followed by two cyclones in 1988 and 1989. The devastating impacts of these cyclones on coastal shell middens have been described in detail (Bird 1992). Annual surveys at Upstart Bay over the past seven years have highlighted the often dramatic changes which can occur in the archaeological record as a result of dynamic coastal geomorphic processes.