

# A MOUND OF DATA

## A Preliminary Investigation of the Seven Mile Creek Mound through an Analysis of Species Diversity and Intra-Specific Size of Shellfish Recovered

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The Seven Mile Creek Mound (SMCM), located on the coast of central Queensland just south of Gladstone, has been dated to 3,904 cal BP. The site is one of the earliest open archaeological sites on the Queensland coast and demonstrates high levels of marine resource exploitation. The SMCM reveals a pattern of discrete site use that terminates abruptly after only 300 years of occupation. As part of a larger study, intra-specific size and species diversity of shellfish were examined to explore possible reasons for site abandonment. Preliminary results suggest dramatic changes in the shellfish assemblage through time, including a change in species representation and shell size. In terms of weight, oyster (*Saccostrea commercialis*) dominates the shellfish assemblage throughout the deposit. However, a more complex pattern emerges when minimum numbers of individuals (MNI) and average shell length are examined. Analysis revealed that oyster MNI initially increased through time and then decreased rapidly, before undergoing another cycle of increase and decline. The average length and relative weight of oyster per excavation unit (XU) exhibits a similar pattern. This indicator of possible predation pressure on oyster coincides with increases in the deposition of hairy mussel (*Trichomya hirsuta*) and mud ark (*Anadara trapezia*). In the terminal XUs, however, overall shell MNI and weight per XU decreases with concomitant increases in the average length of *A. trapezia*. This pattern could imply a reliance on oysters, suggesting that when this resource diminished the value of the site as a place of shell discard waned leading to abandonment.



Fig. 1. Location of the study area (after Clarkson et al. in prep.).

### Seven Mile Creek Mound

The SMCM is located on the southern Curtis Coast in central Queensland (Fig. 1), lying within country that is associated with Gooreng Gooreng people (Lilley and Ulm 1999). The mound is situated on a residual beach ridge adjacent to the extensive tidal flats of Seven Mile Creek which support contemporary populations of hairy mussel and oyster (Fig. 2). The mound itself is fringed by mature *Eucalyptus tesselaris* trees and is covered by introduced pastoral grasses. The mound covers an area of 20m x 10m x 0.8m with an estimated volume of 43.91m<sup>3</sup>. Radiocarbon determinations date the commencement of mound formation to 3,904 cal BP with a discrete period of use that terminates abruptly after 300 years. The SMCM site is one of the earliest open archaeological sites on the Queensland coast exhibiting evidence for focussed marine resource exploitation. Information derived from this site may, therefore, contribute to discussions of Holocene coastal occupation and use.

A 1m x 1m pit was excavated at the SMCM, divided into 4 x 50cm x 50cm squares labeled Squares A-D. These excavations revealed a single unit of densely-packed shellfish remains. All of the 1,631kg of sediment removed were dry-sieved and retained for later wet-sieving and laboratory analysis (for further site details see Ulm 2000, in press).

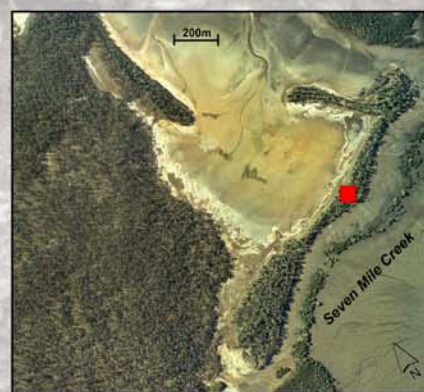


Fig. 2. General view of the site location (after BPA Run 18B/167, 30 July 1996).

### Methods

The shellfish remains recovered from Square A were analysed using weight and minimum number of individuals (MNI) per taxon. The large quantity of shell recovered from the SMCM lent itself to MNI analysis. The use of weight of taxa helps to give a broader picture but also counters the propensity of MNI to overestimate the dietary importance of small taxa. Intra-taxon average length analysis of *A. trapezia* and oyster was used to yield further information to supplement the MNI and weight data.

The analysis of the material recovered from Square A involved sorting sieve residues into generic categories within each XU such as *A. trapezia*, oyster, organic material etc. Each category was then weighed and recorded. The MNI for each shellfish taxon by XU was counted, the diagnostic features being lids and bases for oyster and umbo for *A. trapezia* and hairy mussel. For whole *A. trapezia* and oyster individual length, width, height, weight and umbo length were also recorded. For the purposes of this study only taxon weights, MNI and shell lengths have been utilised.

### Results

By both MNI and weight oyster dominates the assemblage (Fig. 3.4). Three large spikes in the MNI of oyster occur in XUs 21, 11 and 7; *A. trapezia* peaks in XUs 20, 10 and 3; and, hairy mussel is most abundant in XUs 21, 13 and 5. These patterns of abundance appear to be related: whenever oyster decreases *A. trapezia* increases, as can be seen in XUs 20, 13, 9-10 and 2. Hairy mussel abundance generally tracks that of oyster in XUs 30-9. However, when oyster representation drops dramatically in XUs 6-4 hairy mussel abundance expands. This pattern suggests that hairy mussel representation is generally linked to oyster representation, whereas *A. trapezia* increases when oyster and hairy mussel decrease.

The average lengths of both oyster and *A. trapezia* decrease through time (Fig. 5.6). Within this overall trend there are marked decreases in the length of *A. trapezia* in XUs 21, 14 and 10 which coincide with increases in *A. trapezia* abundance. However, *A. trapezia* length increases over XUs 3-2, which is the opposite trend to the preceding pattern, suggesting qualitatively different patterns of site use.

### Conclusions

- Oyster was the main species discarded and the decrease in average length suggests the possibility of predation pressure.
- Hairy mussel appears to be collected as a companion to oyster as evidenced in the relationship of oyster and hairy mussel weight and MNI.
- The converse pattern seems to hold for *A. trapezia* that increases when oyster decreases.
- The increase of *A. trapezia* length over the terminal XUs, the increase in hairy mussel in XUs 4 and 5 combined with a concurrent rapid decrease in oyster points to pressure on oyster populations as a possible reason for site abandonment.

Further study of the material from the SMCM and other coastal sites on the southern Curtis Coast will focus on questions of coastal resource utilisation through the examination of shellfish remains.

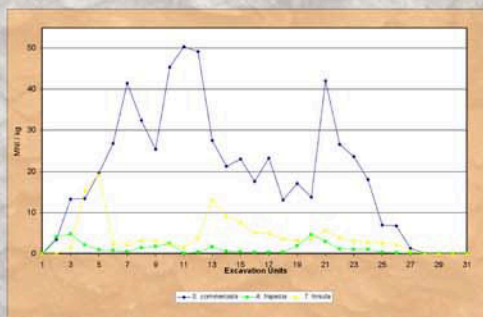


Fig. 3. Dominant shell taxa MNI by XU.

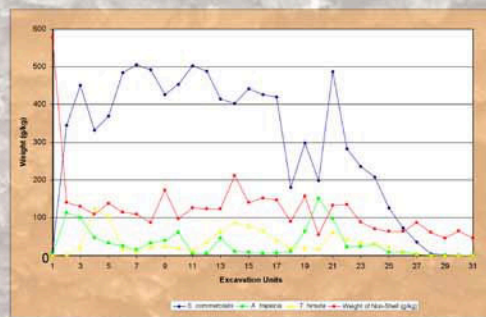


Fig. 4. Dominant shell taxa weights by XU and non-shell material.

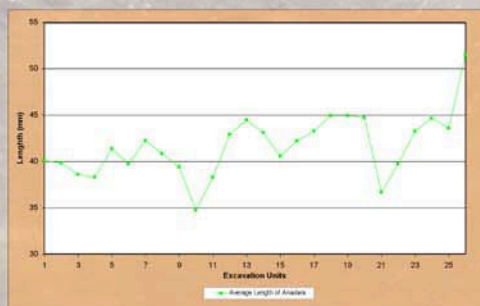


Fig. 5. Average length of *A. trapezia* by XU.

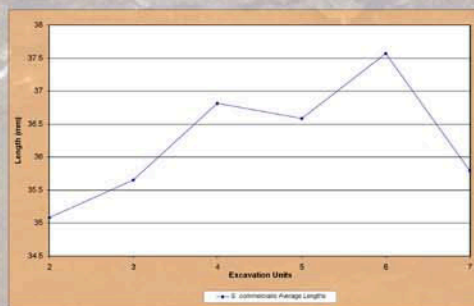


Fig. 6. Average length of oyster by XU.

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