

Quantifying South Basin Salish Sea Midden Sites: Empirical Data for Cultural Resource Management

Bethany K. Mathews, MA, RPA



Abstract

Shell midden sites on the Salish Sea record the history of Coast Salish shellfish harvesting and can contain objects and features associated with seasonal camping and long-term residence. These places represent patterns of Coast Salish prehistory/history (Criterion A of the National Register of Historic Places), provide important archaeological data on Coast Salish heritage (Criterion D of the National Register of Historic Places), and are protected against unmitigated impacts in Washington State under RCW 27.53.060. Hundreds of these sites are recorded along the Puget Sound shoreline, where they are susceptible to impacts from development, shoreline armoring, erosion, and even shoreline restoration efforts. What methods are we using to identify these places in cultural resource management, and how can we better predict the locations of these sites? This poster presents the results of our research into shell midden archaeological site patterns in the southern Puget Sound.

Objective

- In support of cultural resource management survey planning, the goals of this study were to:
- 1) Summarize an average recorded midden site size to inform survey intervals; and
 - 2) Find average midden site distance to intertidal zone and feet above sea level to inform site pattern modeling.

Phase I CRM Survey Requirements

Phase I surveys are an important aspect of the cultural resource management work completed in this region every year in compliance with local, state, and federal processes. Although minimum survey standards are emerging within agencies and Tribes in the region, the technicality of completing any form of survey in response to archaeological risk too often supersedes conducting a survey according to professional due diligence. Intuitively, we know that shell midden sites are located near historical shellfish harvest locations. We also know that shoreline shell middens are often discontinuous because of the historical use of these places as well as the impacts of erosion and development.

Table 1. Archaeological Shell Midden Sites by County.

| County | County Size | | Archaeological Sites | | Site Rates | | | Feet Above Sea Level | | Distance to Intertidal Zone | | Smallest Dimension | | Largest dimension | |
|----------|----------------------|-----------------|--------------------------|--------------------|---------------------|----------------------------------|---------------------------------------|----------------------|-----------------|------------------------------------|--------------------------------------|---------------------------|-----------------------------|--------------------------|----------------------------|
| | Land Acres in County | Shoreline Miles | All Archaeological Sites | Shell Midden Sites | Sites per Land Acre | Shell Midden Sites per Land Acre | Shell Midden Sites per Shoreline Mile | Ft asl, range | Ft asl, average | Distance to Intertidal Zone, range | Distance to Intertidal Zone, average | Smallest dimension, range | Smallest dimension, average | Largest dimension, range | Largest dimension, average |
| Mason | 613,760 | 157 | 215 | 74 | 0.04 | 0.01 | 2.1 | 0-20 ft | 4.1 ft asl | 0-1,263 m | 42.0 m | 1-91 m | 14.6 m | 1-914 m | 79.6 m |
| Pierce | 1,068,800 | 180 | 1284 | 97 | 0.12 | 0.01 | 1.9 | 0-400 ft | 20.5 ft asl | 0-5,850 m | 170.9 m | 1-73 m | 17.0 m | 1-300 m | 49.5 m |
| Thurston | 462,080 | 90 | 409 | 94 | 0.09 | 0.02 | 1.0 | 0-80 ft | 5.2 ft asl | 0-651 m | 27.9 m | 1-167 m | 18.7 m | 1-717 m | 52.9 m |
| Total | 2,144,640 | 427 | 1,908 | 265 | 0.09 | 0.01 | 1.6 | 0-400 ft | 10.5 ft asl | 0-5,850 m | 84.1 m | 1-167 m | 16.9 m | 1-914 m | 65.8 m |

Methods for Summarizing Site Data

We limited our research area to Mason, Thurston, and Pierce counties, where most of our shoreline survey work occurs (Figure 1). We exported a list of recorded shell midden archaeological sites (n=265) from the Washington Information System for Architectural and Archaeological Records (WISAARD), which is maintained by the Washington State Historic Preservation Office. Information about the sites, such as the report length and width, feet above sea level, and distance to intertidal zone was tabulated. United States Geological Survey topographic maps were used to measure site distance to the intertidal zone and feet above sea level. Summary data is presented in Table 1.



Figure 1. Map of study area with site counts by county.

“What are the chances you will find a site on my property?”

For landowners and project managers in need of a cultural resource assessment, a common question is: What are the chances there is a site on my project? The simple answer is that the intertidal zone and shoreline provided abundant resources for millennia, so there is a high risk that there are archaeological materials on a shoreline property. Relatively little survey work has been completed systematically in this area, but the rates of recorded sites per acre or shoreline mile provide a low estimate of the risk (see Table 1, “Site Rates”). Our summary statistics indicate that on average 1.6 shell midden sites have been recorded for each shoreline mile. On average, the likelihood of encountering an archaeological site on any property in this area is 0.09% while the likelihood of encountering a shell midden site is 0.01%. We caution that this is based only on reported and available data and should be viewed as a conservative estimate of risk.

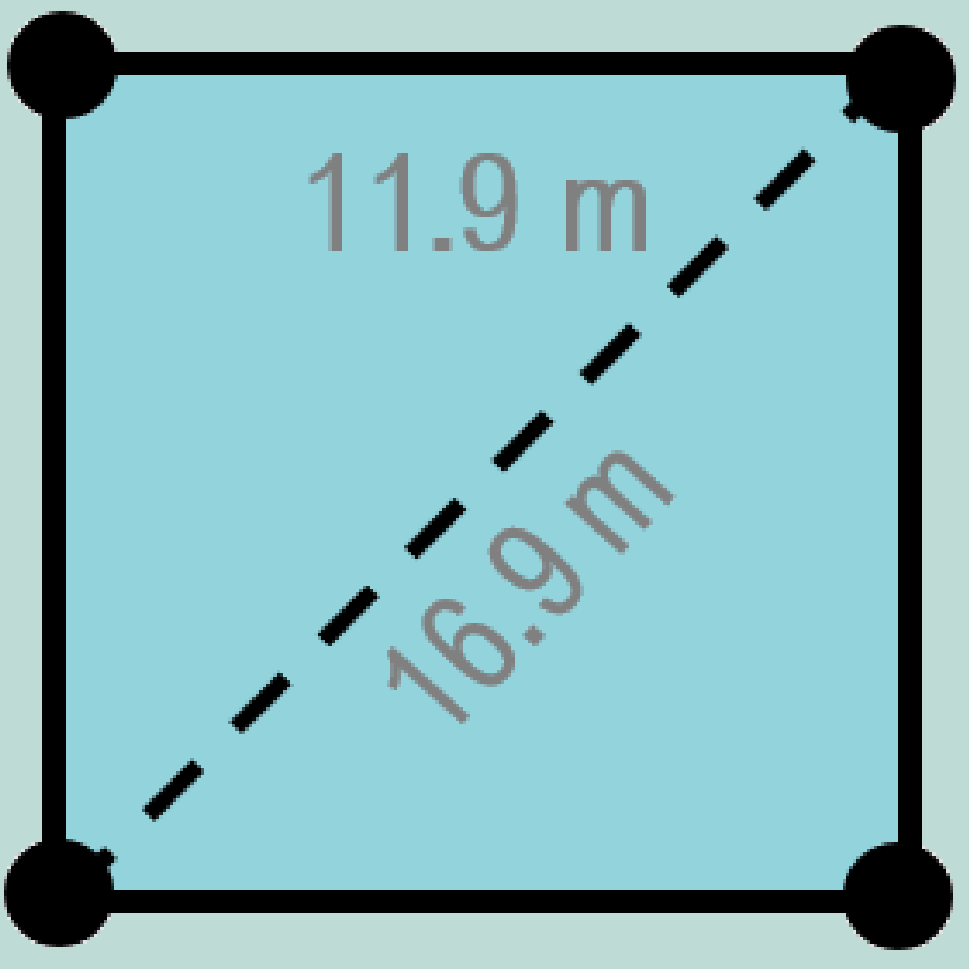
Feet Above Sea Level

As a proxy for understanding how far shell midden sites typically are from the shoreline, we examined where sites were situated relative to sea level. Site elevation ranged from 0 to 400 feet above sea level (asl), but on average was 10.5 feet asl (see Table 1, “Feet Above Sea Level”).

Shell Midden Site Distance to the Intertidal Zone

Shorelines in the southern Puget Sound have been affected by subsidence events and sea level rise, complicating a simplification of site location relative to the intertidal zone. However, as a rough estimate of the likely distance of shell midden sites to the intertidal zone, the range of 0-5,850 meters or an average of 84.1 meters can be used to estimate a zone of high risk for encountering archaeological shell middens (see Table 1, “Distance to Intertidal Zone”).

Smallest dimension hypotenuse



Largest dimension hypotenuse

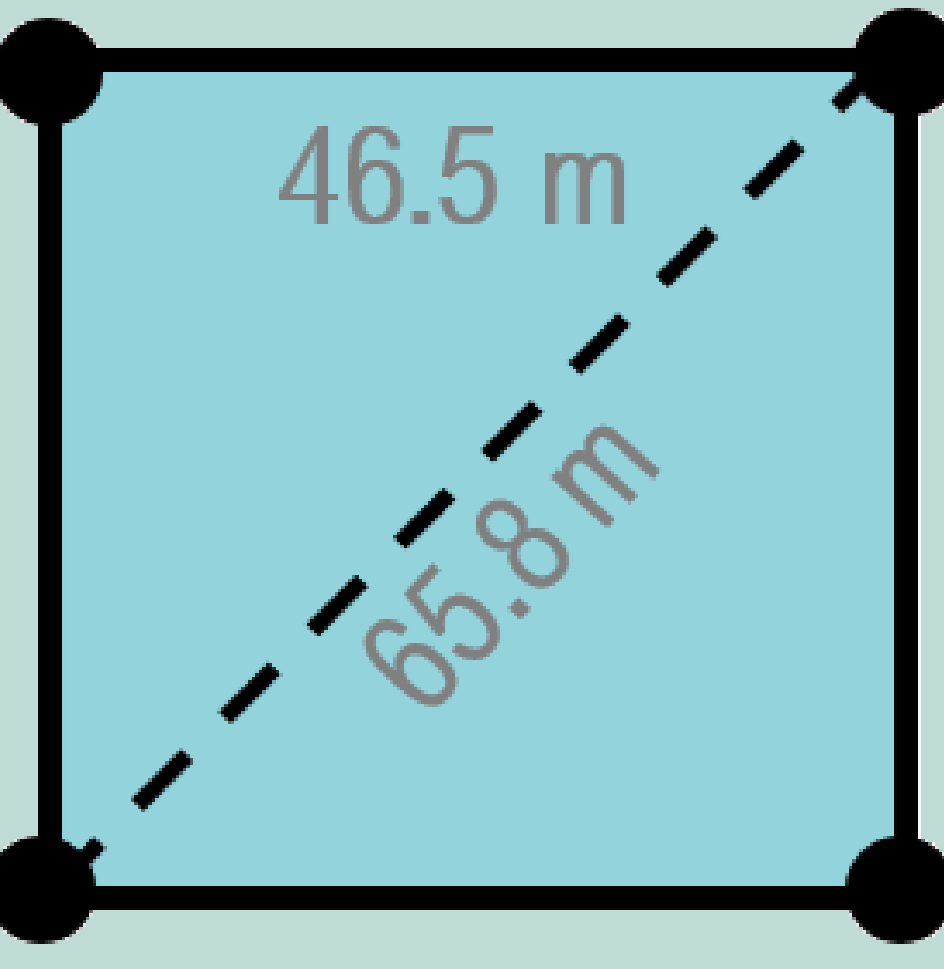


Figure 2. Survey interval suggestions based on site dimension averages.

Midden Site Dimensions

Not all site forms have information on site dimensions, but where possible we collected information from site forms as well as site maps. Here, we present ranges and averages of the smallest and largest dimensions of a site, as reported. There are numerous factors that influence how sites are surveyed and reported, so we again caution that these should be viewed as conservative estimates. On average, site dimensions range from 1 meter to 914 meters. The average smallest site dimension is 16.9 meters, which suggests that a minimum survey interval of less than 11.9 meters might be effective for managing these resources (Figure 2). The average largest dimension is 65.8 meters, which suggests that a survey interval of 46.5 meters may be enough to observe a shell midden site, but not with poor confidence that risk is assessed.

References Cited

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