

Shell Middens and Midden Burials in Southern Strait of Georgia Prehistory

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Introduction

Shell midden burials dominate the prehistoric burial population of British Columbia's southern Strait of Georgia region (Burley and Knusel 1989; Cybulski 1992), but the relationship between human burials and the shell middens in which they are found is unclear. Many archaeologists have long assumed that shell middens and the burials they contain represent concurrent events (Borden 1970; Burley 1980), implying that the ancient Coast Salish placed their dead in developing refuse middens at occupied sites. Others question the assumed contemporaneous relationship of burials to shell middens, and suggest instead that in some cases the dead were placed in abandoned shell middens sequestered from daily activities (Cybulski 1992; Arcas 1992). In this paper I examine the relationship between shell middens and midden burials using data from the Somenos Creek site, a small shell midden located on southeastern Vancouver Island. Archaeological evidence indicates that the Somenos Creek shell midden developed continuously over several centuries beginning around 2300 years ago, likely in association with a small settlement. Significantly, direct radiocarbon dates on a sample of burials interred in the midden show that the burials post-date the shell midden. These results imply that those living at Somenos Creek did not dispose of their dead in the accumulating refuse adjacent to occupied houses. Only after the settlement had been abandoned did people begin to bury their dead in the shell midden, an exclusive use of the site that continued for some 300 years.

Shell middens are the predominant site type forming the archaeological record of the southern Strait of Georgia region for the last 5000 years, and have provided much of the information used in the development of regional chronologies and archaeological reconstructions. In 1970, Charles Borden introduced a five-phase culture history sequence for the Fraser delta re-

gion covering the last 3000 years. All the information on what Borden then held to be the two earliest phases, Locarno Beach (ca. 800-200 B.C.) and Marpole (ca. 400 B.C.-A.D. 450), came from shell midden excavations (1970:97,99). Limited data from only two Locarno Beach phase sites provided Borden (1970:99) with few clues to the prevalent dwelling type or settlement pattern. However, the discovery of burials in shell middens at the Locarno Beach and Whalen sites led Borden (1970:99) to write that Locarno Beach phase mortuary practices "resemble those of later phases. The dead were buried, sometimes with a few grave additions, on the inland slope of the midden mound".

The much larger body of data available to Borden on the subsequent Marpole phase included information on architecture and settlement types. Borden is therefore more explicit in defining the relationship between mortuary practices, shell middens, and villages. Data from four sites prompted Borden to surmise that, in general, the historic Northwest Coast culture pattern was in place by the Marpole phase. Marpole people resided in villages, likely in large plank houses arranged in rows along the shore, and buried their dead "on the inland slope of the village midden" (Borden 1970:105). Borden understandably linked occupied villages with their accumulating shell middens. However, he associates occupied villages and active shell middens with shell midden burials, making all three coeval phenomena. Subsequent analyses of Marpole mortuary practices reiterate Borden's assertion (Burley 1980:28; 1988:59), giving rise to the untested though durable supposition that Marpole villagers buried their dead in the refuse midden accumulating behind occupied houses.

In an overview of Northwest Coast burial practices, Jerome Cybulski (1992:167) points out that there is little evidence on which to base the conclusion "that past, prehistoric midden burials on the British Columbia coast were con-

tiguous and coeval with village occupations, although this is generally assumed by most archaeologists". Drawing on evidence from the Greenville site in west-central British Columbia, Cybulski (1992:167) suggests that villages may have been abandoned periodically, "during which time the accumulated shell refuse was used as a repository for the dead from neighbouring occupied areas"; (see also Arcas 1992:130; 1999). In other words, the dead were not placed in active shell middens, but rather in abandoned middens that served as cemeteries.

Borden and Cybulski present contrasting reconstructions of ancient Coast Salish mortuary practices that can be restated with reference to a definition of a formal cemetery as a "permanent, specialized bounded area for the exclusive disposal of [a] group's dead" (Goldstein 1981:61). The use of some abandoned Coast Salish shell middens as bounded, specialized disposal areas for the dead can be taken to reflect a mortuary practice that included the creation and maintenance of formal cemeteries. Conversely, placement of the dead in accumulating refuse middens adjacent to occupied houses implies that the ancient Coast Salish did not create and maintain formal cemeteries removed from the day-to-day activities of the living. The deliberate nature of mortuary behaviour and the fact that all societies maintain cultural parameters for appropriate disposal of the dead (Carr 1995) means that the difference between burial of the dead in developing shell middens versus abandoned shell middens is not trivial in terms of reconstructing ancient mortuary practices and the inferences drawn from those reconstructions. Data from recent excavations at the Somenos Creek site support the view that in at least some cases, shell middens and shell midden burials represent distinct cultural events, and that the shell middens of some abandoned settlements were used as formal cemeteries.

The Somenos Creek Site

The Somenos Creek site is a small inland shell midden located on the north bank of Somenos Creek, a tributary of the Cowichan River (Figure 11:1). The site first came to the attention of archaeologists in 1992 when land development resulted in the disturbance of human burials. Archaeologists called to the site recovered skeletal remains of at least 11 individuals (Warner 1993; Cybulski 1993). More than half of the shell deposit had been removed and replaced with construction fill before construction came to a halt (Figure 11:2). The remaining portion of the shell midden situated north of the construction zone

formed a low 25x30 m by up to 0.50 m thick mound on the low-gradient creek bank.

The type of grave inclusions associated with five reasonably intact burials, evidence of fronto-occipital cranial deformation, and two radiocarbon assays, one of 1540 ± 70 years BP on human bone from an intact burial and another of 2510 ± 70 years BP (uncorrected) on marine shell indicated a Marpole phase occupation to Jane Warner (1993), the investigating archaeologist. In a report prepared for Warner, Cybulski (1993) notes the considerable discrepancy between the radiocarbon ages for the human bone and marine shell. As one possible explanation, Cybulski suggests that each of the two dates may represent culturally distinct events—an early date on a shell midden, and a later date on a cemetery. Subsequent extensive excavations and radiocarbon analyses supported this proposition.

Excavations and Analysis

An abbreviated description of the Somenos Creek field and analytical methods is provided here. A full presentation of methods and results can be found in the Somenos Creek site excavation report (D.R. Brown 2000).

The mitigation objectives for the Somenos Creek site were to locate and recover through controlled excavation all human remains, and to document other archaeological characteristics of the site. Locating unmarked burials in a large area quickly, effectively, and with minimal damage to the burial features poses a significant challenge in archaeological fieldwork. Faced with this challenge, one of the goals of the project was to test the effectiveness of electronic remote sensing in locating subsurface features, including human burials. An electronic survey of the Somenos Creek site identified 6 localized subsurface peculiarities defined by anomalous conductivity measurements (Cross 1994; D.R. Brown 2000). Unfortunately, controlled excavations at each of these locations exposed only one non-mortuary rock feature, and no burials. Nonetheless, these initial six 2 x 2 meter and 1 x 1 meter excavation units along with mechanical trenching and manual cleaning of the exposed edge of the shell midden provided information on stratigraphy, content and composition of the shell midden, and most of the radiocarbon samples used to date the midden.

An alternate approach to pinpointing burials with remote sensing was to excavate the site in thin arbitrary levels in order to expose burial features. Manual excavation of such a large area would have been prohibitively expensive and time-consuming, so we employed a small tractor

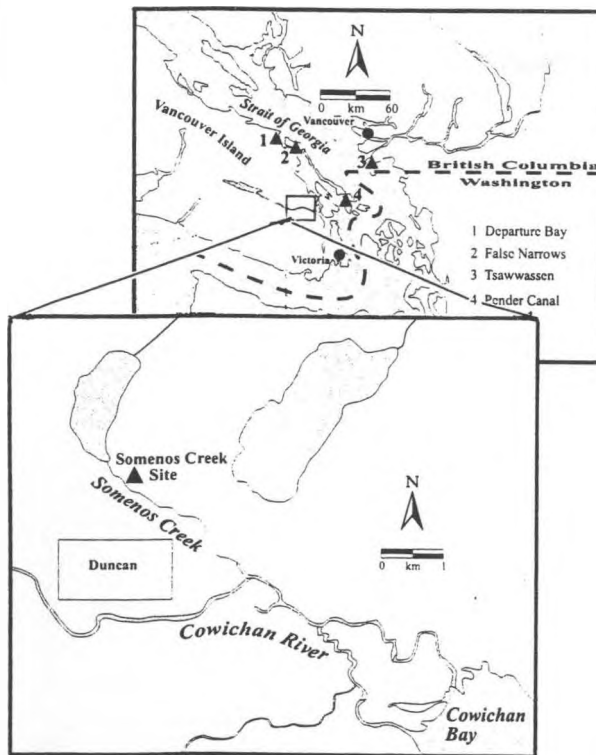


Figure 11.1. Location of the Somenos Creek Site and other referenced Sites in the southern Strait of Georgia Region.

equipped with a backhoe to expedite this stage of the excavations. The backhoe was equipped with a 62 cm-wide smoothing bucket (a wide backhoe bucket with a toothless cutting edge) that allowed us to remove material in 5-10 cm thicklayers. Archaeologists closely monitored the skimming operation and flagged any possible features that were then excavated by hand. With the permission of Cowichan Tribes, the recovered human remains were analyzed in the Laboratory of Archaeology at the University of British Columbia, and samples of human bone prepared and submitted for radiocarbon and stable carbon isotope analysis. Following analysis, all human remains, including those recovered in 1992, were re-interred at the Somenos Creek site in November 1994 under the direction of Cowichan Elders. Artifact and faunal analyses were also carried out in the Laboratory of Archaeology at the University of British Columbia.

Radiocarbon Dating and Site Chronology

Chronological information on the Somenos Creek site is provided by twelve radiocarbon assays (Table 11:1). Ten of the twelve radiocarbon samples were recovered during the 1994 excavations and sent to the Department of Geology Radiocarbon Dating Laboratory at Washington State University for analysis. Two of the twelve

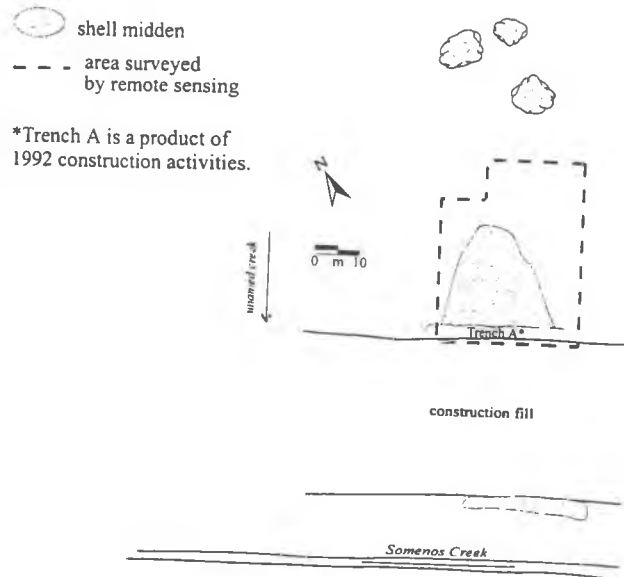


Figure 11.2. The Somenos Creek Site.

dates used here come from the 1992 salvage operation (Warner 1993).

Values on human bone collagen have been corrected for isotopic fractionation, as has the value for marine shell provided by Warner (1993). All dates were calibrated using Radiocarbon Calibration Program Rev 3.0.3c developed by the Quaternary Isotope Lab at the University of Washington (Stuiver and Reimer 1993). Uncorrected, corrected and calibrated values from radiocarbon assays appear in Table 11:1. With the exception of sample WSU-4618, each value is deemed to date the feature or stratigraphic unit with which it was associated. WSU-4618 was recovered from a stratum some 40 cm below the shell midden, yet is younger than the four other dates associated with the shell midden. I therefore rejected WSU-4618.

Results of the radiocarbon analysis show that prehistoric use of the Somenos Creek site divides into three periods, each reflecting a distinct cultural activity (Figure 11:4). Period I begins approximately 4000 years ago and ends around 2300 years ago when shell is first deposited at the site. Period I is the earliest, longest, and least understood segment of the archaeological sequence at the Somenos Creek site, and is discussed here only in brief. Period II follows Period I, and spans the 250-500 year period of shell midden development.

The first dated burial marks the transition to Period III some 1850 years ago. For the following three or more centuries, the Somenos Creek site was used exclusively as a place to bury the dead. There is no archaeological evidence of prehistoric use of the site following Period III.

Table 11:1. Radiocarbon dates for the Somenos Creek site.

Lab Number	Material	Archaeological Association	¹⁴ C Age (years BP)	Corrected for isotopic fractionation	Calibrated Age (years BP) 1 Sigma	Relative Contribution to Probabilities
¹ WSU-4618	charcoal	Layer D	2080 ± 70		2123-1952	1.00
WSU-4619	charcoal	shell deposit	2230 ± 70		2320-2284	0.21
					2276-2151	0.79
WSU-4620	charcoal	Feature A	3750 ± 190		4403-4370	0.05
					4356-3872	0.95
WSU-4621	charcoal	shell deposit	2220 ± 70		2317-2222	0.57
					2218-2147	0.43
WSU-4622	charcoal	shell deposit	2190 ± 85		2318-2108	0.97
					2084-2077	0.03
WSU-4623	charcoal	burial (Ind. 19)	1335 ± 60		1295-1226	0.69
					1215-1179	0.31
WSU-4624	bone	burial (Ind. 23)	1350 ± 60	1530 ± 60	1500-1466	0.22
					1450-1425	0.16
					1420-1344	0.63
WSU-4625	bone	burial (Ind. 15)	1540 ± 70	1720 ± 70	1699-1643	0.36
					1638-1541	0.64
WSU-4626	bone	burial (Ind. 20a)	1380 ± 70	1560 ± 70	1519-1385	0.94
					1368-1358	0.06
WSU-4627	bone	burial (Ind. 22a)	1660 ± 60	1775 ± 60	1738-1601	0.89
					1596-1574	0.10
² AECV-1689Cc	shell	shell deposit	2510 ± 70	2100 ± 70	2143-1981	0.95
					1971-1958	0.05
² Beta-58221	bone	burial (Ind. 1)	1540 ± 70	1690 ± 70	1696-1648	0.26
					1635-1520	0.74

¹ Rejected.² Samples recovered and reported by Warner (1993).**Period I (ca. 4000-2300 BP)**

The remains of what appears to have been a large steaming or roasting feature located just north of the shell midden marked the known initial use of the Somenos Creek site (Feature A, Figure 11:2). A sample of charcoal from this feature (WSU-4620) was recovered from a thin, continuous layer of charcoal, ash and oxidized silt near the bottom of a densely packed mat of fire-altered rock. This sample returned a date of 3750±190 radiocarbon years BP. Feature A is consistent with other archaeological roasting or steaming features used to process plant or animal resources. Evidence for the re-use of rocks forming the feature and the absence of evidence for other types of site use suggest that people

may have visited the site seasonally for short periods of time to harvest and process food resources. How long and how often the Somenos Creek site was used for this purpose remains unknown.

Period II, The Shell Midden (ca. 2300-1850 BP)

Three radiocarbon dates on wood charcoal recovered during the 1994 excavations and one corrected date on shell from the 1992 salvage project (AECV-1689Cc, Warner 1993) help define the period of shell midden development. Two of the dated charcoal samples, WSU-4619 (2230±70 BP) and WSU-4621 (2220±70 BP), were recovered from horizontally separated

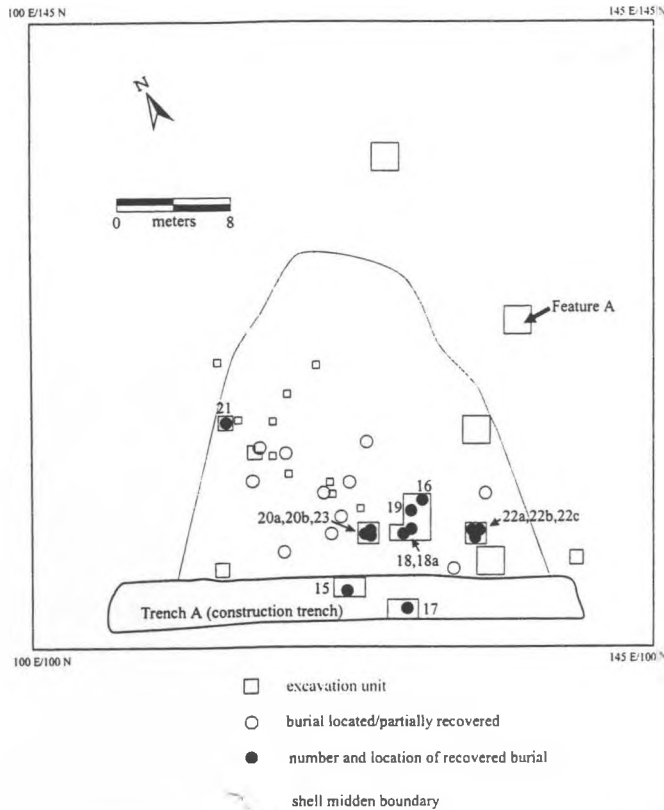


Figure 11:3. Excavation Units and Archaeological Features at Somenos Creek.

bands of charcoal and ash at the bottom of the shell deposit, and are assumed to correspond to the initial deposition of shell at the site. The third charcoal sample, WSU-4622 (2190±85 BP), was collected from a charcoal-rich lens at the approximate mid-level of the shell deposit. Taken together, the dates on charcoal represent a calibrated age range from 2077 to 2303 years BP for the lower half of the shell deposit (Table 11:1). At 1 sigma, the calibrated and corrected date of 1958 to 2143 BP on marine shell collected by Warner (AECV-1689Cc, 1993) overlaps with the date range for the three samples tested by the WSU radiocarbon lab. The stratigraphic position of the dated shell sample is unknown beyond the fact that it was associated with a human burial (Warner 1993:22).

No dates are available from the top of the shell midden to indicate when deposition of the shell ceased. Nonetheless, the close correspondence of the four available shell midden dates and the absence of any stratigraphic breaks that would signal a hiatus in midden accumulation suggest midden at the Somenos Creek site developed over a 250 to 500 year period beginning around 2300 years ago. This age range corresponds to the first half of the Marpole culture phase.

Shell Midden Stratigraphy and Composition

The internal stratigraphy of the Somenos Creek shell midden exhibited some continuous discrete strata, but for the most part consisted of discontinuous layers and lenses of consolidated coarse to finely crushed shell in a very dark gray (10YR 3/1) silt matrix. Intact and large fragments of shellfish valves were found scattered throughout the deposit. Occasionally, we encountered a discrete cluster of whole and nearly whole shellfish valves of a single species presumed to represent a single discard event. Shell content of the deposit ranged from 5-85 percent by volume. The shell fraction consisted of the remains of cockles (*Clinocardium nuttallii*), bay mussel (*Mytilus edulis*), little-neck clam (*Protothaca staminea*), butter clam (*Saxidomus giganteus*), a variety of barnacle species (*Balanus spp.*), and limpets (*Fissurella volcano*) ranging from fine fragments to intact valves and plates. A seasonality study using a small sample of 9 pieces of shell (3 each of butter clam, little neck clam, and basket cockles) shows they were gathered sometime between early spring and late summer (Vanags 1996).

Shell Midden Cultural Contents

The shell deposit produced artifacts of stone and bone consistent with the Marpole culture phase (Burley 1980; Mitchell 1971). Abraders of various sizes and shapes dominate the artifact assemblage, followed by the products of ground stone and bone industries, including ground stone and bone points, ground stone knives, celts, bone awls and toggling harpoon valves. Celts and perhaps palm-size abraders indicate that woodworking activities likely took place at the site. One of the most interesting artifact types associated with the shell midden is represented by a collection of chipped slate bifaces. Some of these have abraded surfaces, and all appear to be preforms for large ground stone blades or points. The abundance of abraders and slate preforms and a dearth of chipped slate debitage suggest tool blanks were roughed out elsewhere and brought to the site to be finished.

NISP (number of identified specimens) values for vertebrate fauna show that fish remains dominate the shell midden faunal assemblage. They are represented by such species as Pacific herring (*Clupea harengus pallasii*), salmonid (*Oncorhynchus sp.*), and spiny dogfish (*Squalus acanthius*). Mammalian remains include those of deer (*Odocoileus sp.*), harbour seal (*Phoca vitulina*), and unidentified fragments of large and

small land mammals. Recovered bird remains were mostly waterfowl (Family *Anatidae*).

Fire-altered rock was found dispersed throughout the shell deposit and in several dense lenses. Lenses and thin, continuous bands of charcoal and ash were also encountered, as were lenses of burned shell and ash. Fragments of charcoal were ubiquitous in the shell midden.

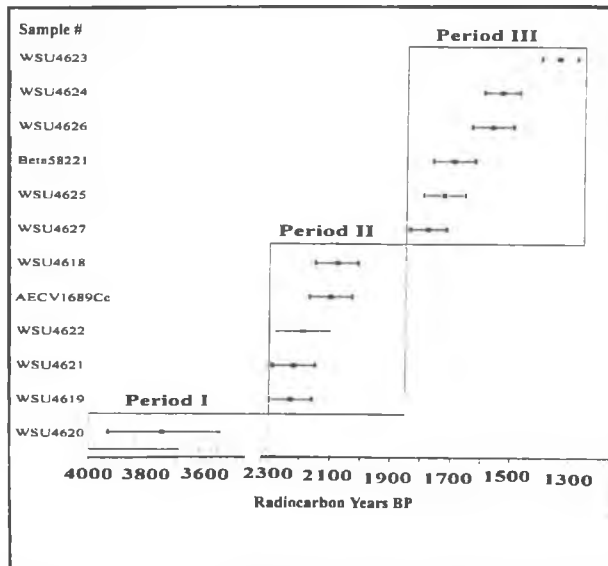


Figure 11:4. Radiocarbon Dates and Period-boundary Estimates.

Period III, Human Burials (ca. 1850-1250 BP)

Shortly after accumulation of the shell midden ceased, the Somenos Creek site began to be used as a place to bury the dead. Five corrected dates on human bone collagen from five individuals range from 1530±60 (WSU-4624) to 1775±60 (WSU-4627) radiocarbon years BP (Table 1). The addition of a sixth date on wood charcoal associated with Individual 19 (WSU-4623) shifts the late end of the range to 1335±60 BP. The use of old wood for the cremation event would make the actual date for this burial even younger. In any event, disposal of the dead was an activity carried out at the Somenos Creek site for at least 300 years. Mortuary activities at the Somenos Creek site mark the last known prehistoric use of the site.

Human Osteology and Stable Carbon Isotope Analysis

The remains of fourteen individuals fully excavated in 1994 are the focus of this paper. I will not discuss the ten burials encountered but not fully excavated, other than to note that at least

four were slab burials and the rest unelaborated shallow pit burials.

The human remains recovered at Somenos Creek in 1994 were in generally poor condition. In many cases the cranium and long bones were crushed and fragmented. Some elements dissolved into powder during recovery, and some skeletons were incomplete. Moreover, all of the burials were encountered in the course of mechanical skimming, an operation that all too frequently disturbed the burials prior to controlled excavations. The overall poor condition of the human remains set limits on the obtainable data. Nonetheless, analyses produced enough information to make some useful statements regarding the Somenos Creek burial population.

Appendices A and B in the site report (D.R. Brown 2000) contain, respectively, the reports on the osteological and stable carbon isotope analysis of the Somenos Creek population conducted by Brian Chisholm at the University of British Columbia. Some of the results of Chisholm's analyses are presented in Table 11:2.

Chisholm found the Somenos Creek individuals to be generally more robust in comparison to the individuals of the Marpole period recovered from the Tsawwassen site on the British Columbia mainland (Figure 11:1). He is quick to caution however, that the measurable Somenos Creek sample contains only five poorly preserved adults, making it impossible to state definitively whether the two groups represent the same or different populations. Non-metric traits, on the other hand, provide no indications that the Somenos Creek individuals were from a different population than those from the Tsawwassen site. Chisholm (2000a) thinks the two samples may represent different lineages within the same population.

Stable carbon isotope analysis showed that, with two exceptions, the eleven measurable individuals from the Somenos Creek site obtained about 80±10 percent of their protein from marine sources (Chisholm 2000b). This is about 5 percentage points lower than the expected values for people living in the southern Strait of Georgia region, and indicates that the individuals interred at Somenos Creek were subsisting on lower trophic resources than others in the region. For example, the stable carbon isotope values for 14 individuals found at the Departure Bay site near Nanaimo (Figure 11:1) averaged -13.4 (Arcas 1994) compared to a mean value of -14.2 for the Somenos Creek burial sample. The variation in the two values represents a difference of one trophic level in the dietary practices between these two groups (Chisholm 2000b).

One explanation for the unexpectedly low carbon isotope values for the Somenos Creek individuals is that they were consuming relatively less salmon and more lower trophic level marine foods such as shellfish. Another possible explanation is that the people buried at Somenos Creek had relied more heavily on plant foods and/or terrestrial animals than other people in the region. The two outliers in the sample, Individuals 16 and 22a, had marine protein intake values of 52 percent and 32 percent respectively.

C:N ratios for these two individuals are within the acceptable range, which means that these values are the result of actual dietary differences; they ate more terrestrial protein than the other individuals (Chisholm 2000b). Individual 16 is an infant of about 2.5 years of age. Individual 22a is an adult male of about 45 years and the oldest member of the group.

The possibility that age was a factor in diet cannot be ruled out (see for example Jenness 1934-35:71 on historic variability by age in Coast Salish diets). However, it is worth noting that Individual 18, an infant of approximately 16 months, Individual 23, an infant of three or four years, and Individual 22c, a child of approximately five years of age, all exhibit stable carbon isotope values that correlate closely with

most of the adult members of the burial population. In addition, Cybulski (1993) reports a single carbon isotope value from the 1992 salvage project (Individual 1) of -15.5 per mil that translates to a protein intake from marine sources on the order of 65 percent. This individual was an adult male between 24 and 28 years of age. The fact that remarkably low stable carbon isotope values cross-cut age and sex lines suggests that these factors alone cannot explain the apparent dietary differences, at least in this small sample.

A gradual shift in emphasis on resource exploitation may explain the three incongruous stable carbon isotope readings for Individuals 1, 16, and 22a. Direct radiocarbon values are available on two of these three individuals (Individuals 1, Beta-58221 and Individual 22a, WSU-4627). The radiocarbon values show the individuals to have been among the earliest dated burials for the site, with Individual 22a the earliest burial (Table 1). The difference in diet reflected in the stable carbon isotope values may therefore represent a change in dietary practices over time rather than variability in diet among members of the group at a particular moment. Again, resolution of this question is hampered by the small sample size.

Table 11:2. Burial features and population data for the Somenos Creek site (1994 excavations).

No.	Age	Sex	$\delta^{13}\text{C}$	Radiocarbon Age (years BP)	Interment Type	Body Pos.	Cranial Deformation	Grave Inclusions
15	17-25	female	-13.9	1715 ± 70	pit(?)	flex	?	175 ground stone beads
16	2.5	?	-16.6	?	cairn	flex	?	no inclusions
17	15-20	female	-14.8	?	pit(?)	flex	?	no inclusions
18	15.5-16.5	?	-13.6	?	multiple/pit	flex	possible fronto-lamb.	no inclusions
18a	2.5	?	?	?	multiple/pit	disartic.	fronto-lamb.	332 ground stone beads; 71 pieces dentalia shell
19	?	?	-19.9 ¹	1335 ± 60	cairn	semi-flex	?	?
20a	35-39	female	-13.9	1560 ± 70	multiple/pit	disartic.	fronto-lamb.	1 hammerstone
20b	16-25	?	-14.6	?	multiple/pit	flex/disartic.	fronto-lamb.	?
23	3-4	?	-14.6	1515 ± 60	multiple/pit	flex	?	693 ground stone beads
21	?	?	?	?	slab	flex	?	1 worked bone fragment; 1 obsidian microblade
22a	~45	male	-18.3	1765 ± 60	multiple/pit	disartic.	none	22 ground stone beads
22b	25-35	female	-13.7	?	multiple/pit	flex	?	1 nephrite adze
22c	~5	?	-14.8	?	multiple/pit	disartic.	?	9 ground stone beads
25	?	?	?	?	box	semi-flex	?	no inclusions

¹ Rejected

Burial Patterns

As mentioned above, land modification activities destroyed most of the southern or down-slope section of the shell deposit (Figure 11:2). A 1992 site survey revealed the presence of a narrow strip of shell along the bank of Somenos Creek (Figure 11:2) (Warner 1993), a feature that no doubt marks the original southern extent of the shell deposit prior to land development. The number of burials interred in the missing portion of shell deposit is not known. However, extrapolating from the number of burials recovered and/or encountered in the 1992 and 1994 excavations, it seems likely that at least fifty individuals were interred in the intact portion of the site north of Trench A (Figure 11:2).

With one exception (Individual 25), each the burials excavated in 1994 was found in a shallow burial pit, though a number of variations on this theme occurred. In all cases where it was possible to make a determination, the burial pits appear to have been excavated into the surface of the shell deposit, though most pits, because the shell layer was thin, intruded into the underlying non-shell strata. Most of the burials were located within 10 meters of Trench A (Figure 11:2). This may reflect relatively better preservation conditions due to a thicker layer of shell in this area rather than the reality of an ancient burial arrangement.

Five interment types characterize the excavated burials from Somenos Creek: (1) unelaborated individual shallow pit burial, (2) slab burial, (3) cairn burial, (4) box burial, and (5) multiple interments in a shallow pit (Table 11:2). With one exception, this typology follows that used by Burley (1988) for the False Narrows burial sample. In a departure from Burley (1988:56), I treat multiple burials as an exclusive burial form. I take this approach based on evidence from Somenos Creek that shows multiple burials to be a deliberate mortuary practice, with examples occurring throughout the period during which the site was used as a cemetery.

Pit Burials (n=2)

Unelaborated pit burials formed perhaps the most problematic burial type at the Somenos Creek site. It was difficult to gauge whether the absence of a boulder over a burial pit reflected the actual burial practice, or was attributable to historic land modification and agricultural activities. Mary Stone (personal communication, 1994) reported that her grandfather was the first to farm the land on which the site is located. She related how, after especially cold winters, human remains and artifacts would appear on the

surface. Given how close the shell deposit/burials are to the ground surface, boulders capping burials probably would have projected from the surface as well. It therefore seems likely that such boulders would have been removed to prevent damage to farm implements.

In addition, two burials (Individuals 15 and 17) were encountered in Trench A, where a bulldozer had removed most of the shell deposit in 1992. Though categorized as pit burials, this assignment carries with it the caveat that any boulders would have been displaced prior to our excavations. In short, the known and probable historic disturbance of boulders capping burials makes the so-called unelaborated pit burial at the Somenos Creek site the most analytically problematic of the five burial types.

Slab Burial (n=1)

The fully excavated slab burial at the Somenos Creek site featured a single, 18 kg stone slab over a shallow burial pit. Some of the partially excavated slab burials appeared to follow this pattern as well. In all cases where body position could be determined, the individual had been interred in a flexed or semi-flexed position.

Cairn Burials (n=2)

Two cairn burials represent the third burial type. They were located within half a meter of each other, and both were partially disturbed by the backhoe. Three boulders dislodged by the backhoe were associated with these two burials, though there is no way of knowing to which burial each boulder belonged. Controlled excavations exposed additional boulders *in situ* over each burial. Several cobbles and two boulders each weighing approximately 20 kg were found in place over Individual 16, an infant interred in a flexed position. One of the boulders forming the intact portion of the cairn showed heavy abrasion on one surface. No other artifacts were found in clear association with this individual.

The intact portion of the cairn capping Individual 19 featured four boulders, again each weighing approximately 20 kg. Carefully positioned atop the burial cairn was a charred, upturned fragment of a large mammal cranium. Though unusual, this detail is similar to a False Narrows burial described by Burley (1989:56) where a number of intact horse clam valves were found clustered on top of a small cairn.

The remains of Individual 19 were extremely fragile and showed evidence of having been burned *in situ*. Oxidized soil lined the burial pit and overlaid the burial itself. The hottest portion of the fire appears to have been concentrated near the cranium, which was white. Sub-cranial

elements were black and yellow-brown, colours indicative of lower burning temperatures (McCutcheon 1992). Several large chunks of charred wood accompanied the burial, giving the impression that the body was burned after being placed, in a semi-flexed position, in a shallow pit. Incomplete combustion of the wood and oxidization of some of the overlying pit fill indicate that the burial pit was probably filled in before the fire died out. No artifacts were found interred with this individual.

High variability within the small sample of burned human remains reported for Strait of Georgia sites makes it difficult to explain their occurrence. Even though they are rare, burned human remains have been recovered from all three of the most recent mound and cairns (Pickford 1947), caves and rock crevices (Curtin 2002) and, of course, shell middens (e.g. Mitochondell 1971; Arcas 1994). These and other problems notwithstanding, one advance in the interpretation of burned human remains comes from Joanne Curtin's (2002) comparative analysis of the Marpole burial population from the False Narrows midden with a roughly contemporaneous set of burials discovered nearby in a series of inland rock crevices and small caves (Figure 11:1). Curtin found no discernable differences in the demographic and social profiles of the two populations. She did, however, find a high frequency of certain pathologies (perimortem trauma and treponemal disease) in the cave/crevice population and evidence for a corresponding pervasive use of fire in the mortuary treatment of cave/crevice individuals with these pathologies. Instances of burning focused on obvious pathologies suggested to Curtin that the application of fire may have been designed to ritually cleanse the deceased or heal the spirit. This may have been the case for the individual cremated at Somenos Creek, although the condition of the remains precluded a search for pathologies.

Box Burials (n=1)

The fourth interment type found at Somenos Creek is represented by a single box burial. Individual 25 was found in a semi-flexed position embedded in a fine silt matrix stained several shades darker than the surrounding sediments. This dark patch was clearly rectangular in shape with three straight sides and three distinct right-angle corners. The end near the head was irregular rather than straight. A single boulder disturbed by the backhoe was associated with this burial. Burley (1989:55) suggests that such boulders may have served as lid weights for box burials or lids for box burials without wooden

lids, though he questions the practical need for a lid weight for below ground burials. Alternate explanations for the use of single slabs/boulders and rock cairns include the symbolic suppression of the spirit of the deceased (e.g. McIlwraith 1948, vol.1:437), grave markers, and the durable remnant of some sort of funerary ritual. The association of a burned fragment of large mammal cranium at Somenos Creek and shellfish valves at False Narrows with burial cairns adds some weight to the latter explanation.

Multiple Interments (n=3)

Two shallow-pit multiple interments of three individuals each, and one burial containing two individuals, were encountered in the course of the 1994 excavations. A careful reading of the report on the 1992 salvage operation (Warner 1993) suggests that at least one group of individuals recovered at that time also may be interpreted as a multiple burial.

One of the multiple interments excavated in 1994 included an adult female, and an infant and juvenile of indeterminate sex (Table 11:2). The partial, unarticulated remains of Individual 20a, an adult female, were found adjoining, almost touching, the articulated lower skeleton of Individual 20b, a juvenile. Found immediately above these remains was the flexed, fully articulated skeleton of an infant, Individual 23. Clustered adjacent to Individual 23 were the missing skeletal elements, including the crania, of Individuals 20a and 20b. It appears as though the inhumation of Individual 20b resulted in an initial disturbance of Individual 20a. In turn, the interment of Individual 23 resulted again in the disturbance of Individual 20a, and the partial disturbance of Individual 20b. The skeletal elements of these two individuals removed in the course of digging the burial pit for Individual 23 were re-interred with Individual 23. However, the re-interred remains of Individuals 20a and 20b were not scattered in a haphazard fashion within the burial pit. Rather, the tight clustering of the remains suggests they were probably wrapped in a blanket or mat, or otherwise bound together prior to re-interment with the remains of Individual 23. Radiocarbon analysis of two of these three individuals shows that, in all likelihood, they were buried within a short time of each other (Table 11:2). The details of this multiple interment point to a series of deliberate acts as opposed to the random, accidental disturbance of burials. Finally, 693 ground stone beads formed a multi-strand necklace around the neck of Individual 23, the infant, making it the richest burial encountered in the 1994 excavations. Two other artifacts are assigned to this multiple bur-

ial—a hammer stone and a partially worked bone fragment found near the lower-most remains of Individual 20a.

The second multiple interment encountered in the 1994 excavations included an adult male, an adult female, and a child of approximately 5 years of age (Individuals 22a, 22b and 22c). The remains of all three were largely disarticulated and intermingled. Artifacts associated with this burial include a nephrite celt and a number of ground stone beads (Table 11:2).

Individuals 18 and 18a, an adolescent and an infant of unknown sex, form the third multiple interment recovered in 1994. Unfortunately, the burial was disturbed by the backhoe in the course of excavating Trench B. Several hundred ground stone beads and 71 dentalia shell fragments recovered from the backdirt of Trench B have been assigned to Individual 18a, the infant, based on the fact that no beads were found with the intact upper skeleton of Individual 18.

A possible fourth multiple interment is reported by Warner (1993) that includes the richest burial recorded during the 1992 salvage operation. A necklace composed of 17 dentalia shell fragments adorned Individual 4, a 2.5 year old of indeterminate sex. In addition, a small copper wafer found in the screen was attributed to Individual 4 based on copper salt stains on the front of the mandible (Cybulski 1993; Warner 1993). Warner does not indicate whether the remains of Individual 4 were articulated. She does report, however, that the remains of Individual 4 "were interred directly below those of Individual 1" (Warner 1993:14), represented by the articulated, flexed *post-cranial* remains of a 24-28 year old adult male. The cranium of Individual 1 was recovered along with the disarticulated remains of two adults, one female and one probable female, and a juvenile of approximately 10 years of age. A radiocarbon assay on bone collagen from Individual 1, the only dated burial from the 1992 salvage operation, returned a corrected date of 1690 ± 70 BP (Beta-58221) (Cybulski 1993; Warner 1993).

Radiocarbon dates on Individuals 23 and 20a show that they were interred around the same time, perhaps within a few decades of each other. This suggests a similar pattern for the other multiple interments, whereby each represents a series of inhumations over a fairly short period of time intended to group a particular set of individuals. In addition, available radiocarbon values on the multiple interments (Table 11:2) suggest this was an ongoing practice at Somenos Creek during the entire period when the site was used as a cemetery.

Summary of Periods II and III

Figure 11:4 illustrates how radiocarbon dates for the Somenos Creek site cluster in accordance with three distinct activities. Of interest in this study is the temporal relationship between the activities related to shell deposition and those related to disposal of the dead. Exactly when people stopped depositing shell on the site is not clear. However, the dates for the shell midden and the dates for the human burials form two discrete clusters that show the shell deposit to be older than the burials. A Monte Carlo two sample test for significance using a mean value of 2213 for the three wood charcoal radiocarbon dates on the shell deposit against the six values on human burials showed that the mean value (2213) came up only 13 times out of 500, or 2.6 percent of the time. This translates to a probability of only 0.0026 that the two sets of dates come from the same population. These results are compelling, and provide the basis for the inferences to follow. It must be remembered, however, that the sample of radiocarbon dates for the shell midden and burials is small.

A comparison of the ranges for radiocarbon dates on wood charcoal associated with the shell deposit (WSU-4619, WSU-4621, WSU-4622) shows that all three dates overlap significantly at 1 sigma. *In situ* development of the shell midden is demonstrated by discontinuous layers and lenses of crushed shell interlaced with thin bands of charcoal and ash, the presence of small, discrete clusters of shellfish valves of a single species, and intact or nearly intact shell valves lying in a horizontal position. *In situ* midden development is also demonstrated by the presence of burned shell and ash lenses within the shell deposit. The absence of buried A horizons or other stratigraphic breaks suggest continuous, uninterrupted midden accumulation.

Taken together, the radiocarbon and stratigraphic evidence supports the view that the Somenos Creek shell deposit is a refuse midden that developed gradually over the course of at least three centuries, likely in association with a small settlement. The relatively high frequency of abraders and chipped slate preforms is consistent with a base camp type of settlement, as is the wide range of faunal remains, including the relative abundance of marine fish species and, of course, the shell debris itself. The most plausible scenario is that the shell midden developed in association with a permanent, year-round settlement that likely featured substantial houses.

Significantly, none of the recovered burials is associated temporally with the occupation that resulted in the shell midden. Instead, about 1850

years ago site use shifted from a settlement to a cemetery. The radiocarbon date distribution shows development of the shell midden ceased at or about the time the first of fifty or more individuals was interred at the site (Figure 11:4). This type of shift in site use contradicts the widely accepted view of Marpole burial practices in which the dead were buried in accumulating shell middens behind occupied houses (Borden 1970:105; Burley 1980:28). The Somenos Creek data show that at least in some cases, burial practices involved placement of the dead in abandoned shell middens.

The hypothesis that some abandoned shell middens served as cemeteries appears to account for observations reported for other southern Strait of Georgia sites. For example, stratigraphic evidence from excavations at the Departure Bay site near Nanaimo (Figure 11:1) indicates "the burials were placed into the midden deposits after the deposition of the shell during the early Marpole period" (Arcas 1994:130). Radiocarbon dates show that 5 individuals were interred in an abandoned shell midden at the Tsawwassen site on the British Columbia mainland (Figure 11:1), and suggests people were using abandoned shell middens as cemeteries as early as 4000 years ago (Arcas 1999). These examples do not imply that burials were placed only in abandoned shell middens, or that all Northwest Coast shell middens containing burials were formal cemeteries. Clearly, the full scope of the relationship of shell midden burials to shell middens has yet to be determined.

Discussion

Independent radiocarbon analyses of the shell midden and burial assemblage at the Somenos Creek site demonstrate that the shell deposit and human burials were not contemporaneous. At some point people abandoned the settlement at Somenos Creek and the site became a cemetery, a function it served for at least 300 years. This challenges the long-held assumption that southern Strait of Georgia shell midden burials are coeval with active refuse middens and occupied settlements. The evidence instead supports the view that the presence of burials in a shell midden may reflect a period during which the site was used exclusively as a cemetery.

Cross-cultural studies of mortuary practices among small-scale societies have demonstrated a strong correlation of formal, permanent and specialized disposal areas for the dead with corporate group control of crucial resources. Anthony Saxe (1970), using ethnographic data on societies from around the world, developed a set of hypotheses correlating mortuary practices with

social action and societal organization. Saxe's Hypothesis 8 states that when control of restricted resources is crucial, groups are more likely to maintain formal places for the disposal of their dead than dispersed or random grave sites (1970:119). Lynn Goldstein (1981:61) reviewed the ethnographic data studied by Saxe and restated Hypothesis 8 in three interrelated sub-hypotheses. She is precise in her definition of a cemetery and the conditions under which the cemetery hypothesis accounts for details of ethnographic societies. Goldstein points out that corporate group control over crucial resources does not necessarily mean the group will have a formal disposal area, but does note that

if a permanent, specialized bounded area for the exclusive disposal of the group's dead exists, then it is likely that this represents a corporate group that has rights over the use and/or control of crucial but restricted resources. This corporate control is most likely to be attained and/or legitimized by means of lineal descent from the dead, either in terms of an actual lineage or in the form of a strong, established tradition of the critical resource passing from parent to offspring

Goldstein also discovered the more organized and formal the disposal area, "the fewer alternative explanations of social organisation apply".

The Somenos Creek site during the period of its use as a burial repository is consistent with Goldstein's (1981) concept of a cemetery. The permanent and specialized nature of the site is demonstrated by an absence of archaeological evidence of other kinds of site use during the extended period of burial interment, and the separation of the site during this time from any potentially contemporary settlement. Defining the site as a bounded space and assigning group affiliation to the Somenos Creek burial population on the basis of archaeological evidence are more challenging problems. We found no burials outside the boundaries of the shell midden at Somenos Creek, but the question remains whether this represents enhanced preservation conditions within the midden or instead reflects the deliberate placement of burials within the confines of the shell deposit. Given the association of rock cairns and individual rock slabs with many of the burials, one potential test for determining if burials extend beyond the shell midden would be to search for individual rocks and rock clusters that may cap burial pits. In the absence of contradictory information, it seems reasonable to surmise that the Somenos Creek shell midden served as the focal point if not the demarcated area for burial placement.

I infer group affiliation of the Somenos Creek burial population based on the long-term use of an abandoned settlement as a burial site, and the presence of multiple burials. By its very nature a village site would be synonymous with the ancestors who established and occupied it, and it seems unlikely that the historical significance of a living group's ancestral village site would be diminished even if it were no longer occupied. Instead, burial of the dead in such a place would serve to express group identity and confirm an individual's ancestral connection to a people and place.

As noted multiple interments occurred throughout the period in which the Somenos Creek cemetery was in use, and their appearance seems to reflect a deliberate practice designed to place related individuals, no doubt kin, together as opposed to the accidental disturbance of older burials (see also Burley 1988:56). L Wason (199:89) in a study of the few available ethnographic examples of collective or multiple burials, found that the "groupings were always 'family' based, either extended or lineage". Such groupings were also true for the mortuary houses of the Tlingit (Krause 1956:91), and appear to be true for the historic use of mortuary houses among the Coast Salish (Barnett 1955; Duff 1952:49, 94; Suttles 1974). Certainly DNA analysis would have helped to clarify the genetic relationship of individuals in the multiple burials, the possible relationships among the individuals in the Somenos Creek burial population, and how these individuals might be related to other groups in the region.

Based on the Saxe/Goldstein hypothesis then, the existence of a cemetery at Somenos Creek and perhaps other Northwest coast sites implies a form of socio-economic organization in which corporate groups "function as individuals in relation to property" (Hayden and Cannon 1982:134; Hayden et al. 1996). These groups would be expected to invoke ancestral connections to validate membership rights of access to assets and resources controlled by the group, and inheritance schemes. Not surprisingly, these characteristics describe the ethnographic Coast Salish "genealogical family" (Jenness 1934-35:52) or household (Suttles 1990:464).

Many archaeologists find the Saxe/Goldstein hypothesis to be useful in the analysis of mortuary sites (e.g. Buikstra and Charles 1999; Morris 1991; see also J.A. Brown 1995). Nonetheless, the Saxe/Goldstein hypothesis is limited in its ability to account for mortuary behaviour. Operating within the processualist assumption that social organization was the proximate cause of mortuary patterning (Tainter 1978; Rothchild

1979), Saxe and Goldstein incorporated aspects of social organization and circumstances of death into their cross-cultural study to the exclusion of contextual and cultural factors. A more recent cross-cultural study by Christopher Carr (1995) found that the causes of mortuary behaviour were typically more complex and multivariate than often assumed. Carr discovered that nearly all of the aspects of the archaeological record used to reconstruct social organization were frequently influenced by balanced combinations of religious/philosophical factors (i.e. beliefs and assumptions regarding things like disease, dying, death, the soul, the afterlife, the cosmos, and so on) and social factors.

Roy Carlson (1999) provides the necessary religious/philosophical counterbalance to the discussion of shell midden burials in the southern Strait of Georgia. According to Carlson the view that shell middens are trash heaps and that midden burials represent nothing more than the expedient disposal of bodies is inconsistent with ethnographic Coast Salish religious beliefs about the sacred nature of burials and the dead. As evidence that shell midden sites containing burials are sacred sites, Carlson describes artifacts and features recovered at the Pender Canal (Figure 11:1) site that are manifestations of ethnographic Coast Salish religious beliefs and practices. Perhaps taken together, the inferences drawn from the Somenos Creek and Pender Canal sites will give rise to further questions about the role of shell middens and shell midden burials in southern Strait of Georgia prehistory.

Notes

¹ The band of shell midden close to Somenos Creek (Figure 11: 2) is within a protected zone and was therefore not included in the mitigation excavations.

¹ Unless stated otherwise, I will use corrected, uncalibrated radiocarbon values throughout this paper. Uncorrected, corrected, and calibrated values are shown in Table 11:1.

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