

# OCCUPATIONAL HISTORY OF THE OLD WHALING SITE AT CAPE KRUSENSTERN, ALASKA

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**Abstract:** A three-person crew returned to the Old Whaling locality at Cape Krusenstern National Monument to assess the potential for remaining archaeological resources in 2003. Based on J. L. Giddings' (Giddings 1967; Giddings and Anderson 1986) original excavations of five "summer" houses and five "winter" houses, it was initially anticipated that features related to one shallow occupation of the summer settlement and one possibly deeper occupation of the winter settlement would be identified. However, evidence for as many as four separate occupations was revealed through a program of systematic auger testing and test excavations. Here we present the results of these investigations in terms of the formation of the beach ridge and the sequence of occupation of both the summer and winter settlements of the Old Whaling locality.

**Key words:** Alaska Prehistory, Old Whaling Culture, beach ridge stratigraphy

## INTRODUCTION

Cape Krusenstern is located just west of the town of Kotzebue in northwestern Alaska at the confluence of Kotzebue Sound and the Chukchi Sea. In his book *Ancient Men of the Arctic*, J. Louis Giddings (1967) painted a simple scenario for the Old Whaling occupation of Beach Ridge 53 at Cape Krusenstern, based on the arrangement of ten dwelling structures. Five of the structures, which were buried, semi-subterranean, and deemed winter houses, were found in one cluster, and the five other structures, which were shallow depressions found near the beach-ridge surface and deemed summer houses, were in another cluster approximately 100 m away (Fig. 1). Because of the mirror-like arrangement of the houses in each settlement, Giddings (1967:241) came to "the conclusion that people of the winter village simply moved into these other, summer, houses when melting ice flooded the floors of their winter homes."

In June and July of 2003, a three-person team from the University of California at Davis (UCD) returned to Cape Krusenstern with the objective of identifying and assessing archaeological features adjacent to the previously excavated houses on Beach 53 at the Old Whaling locality. The reasons for undertaking this work were based largely on assessing the adequacy of the Old Whaling faunal sample because Giddings only excavated and recovered materials from dwelling structures and did not use screens (Darwent 2003, 2005). In particular we were

interested in whether middens with preserved faunal remains were associated with the houses. In 2003, we devised a testing scheme in consultation with Robert Gal of the National Park Service (NPS) based on systematic auger testing supplemented by 50 X 50 cm test units and 1 X 2 m stratigraphic-control units to discover these features.

When beginning the project, we anticipated finding evidence for one shallow occupation of the summer settlement and one possibly deeper occupation of the winter settlement based on Giddings' (1967; Giddings and Anderson 1986) confidence in the contemporaneity of the houses both within and between the settlements. However, we quickly found that this was not the case; instead, there is evidence for multiple stratigraphically separated occupations in both Old Whaling settlements (Darwent and Darwent 2005).

Here we present the results of the 2003 UCD field investigations at the Old Whaling locality on Cape Krusenstern National Monument. We demonstrate that there were minimally three occupations of both the winter and summer settlements, and that the stratigraphic position of cultural material in the beach-ridge strata negates the possibility that five families moved directly from the winter houses into the summer houses as part of their seasonal round. The apparent pairing of the houses in

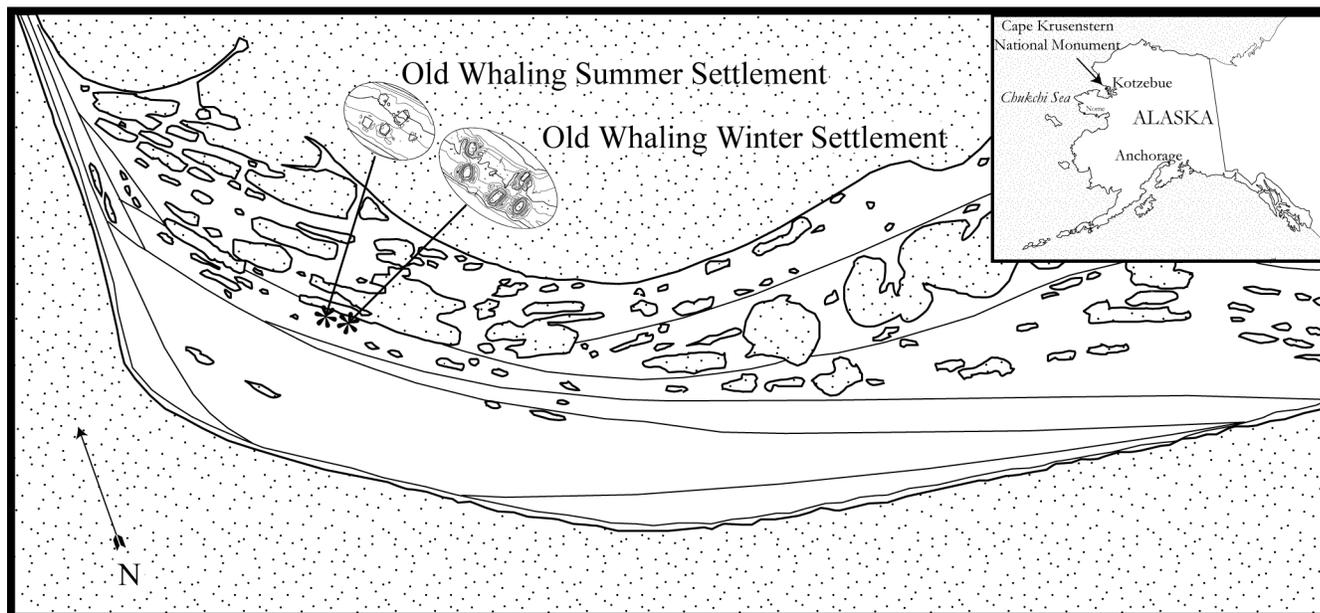


Figure 1. The location of the Old Whaling locality on Cape Krusenstern National Monument in northwestern Alaska.

each settlement is misleading because an additional dwelling feature was found underneath a previously excavated house in the summer settlement. The implications of these discoveries are discussed in terms of the interpretations surrounding the Old Whaling culture. Although Giddings' synchronic five-family-occupation scenario can be discarded, both the artifacts and radiocarbon dates associated with the Old Whaling occupation suggest that activities here occurred in relatively rapid succession and that the artifactual remains generated at this locality were deposited by the same group of people. In addition to Old Whaling use of Beach 53, we identify evidence for use of the area either later in time or by members of another cultural group. This evidence consists of two rectangular tent pads—one found adjacent to a winter house and the other in the inter-settlement area—along with a surface find of a finely worked chipped-stone biface not indicative of the Old Whaling culture but more typical of Arctic Small Tool tradition (ASTt) assemblages, such as Choris (e.g., Dumond 1987; Giddings 1967; Maxwell 1985).

## METHODS

The archaeological remains at Cape Krusenstern were placed on the National Register of Historic Places in 1973; the area in general was declared a National Monument in 1978. Cape Krusenstern is administered by the National Park Service and several other federal agencies. Because of this status, it was necessary to design a research strategy that would effectively meet our objective of feature discovery but at the same time minimize impact on cultural resources. After consultation with the NPS, we decided that a program of systematic auger

tests at 2 m intervals would provide adequate horizontal coverage while at the same time limit site impact. If soils or artifacts indicative of a feature were encountered during the auger testing, 50 X 50 cm test units were used to open a larger window and assess the nature of the deposit. In addition, because it is difficult to evaluate the depositional sequence of the beach ridge from auger tests or 50 cm units, we were permitted to dig up to four 1 X 2 m stratigraphic-control units per settlement peripheral to the intra-house areas.

A three-inch (7.62 cm) bucket auger was used for auger testing, and all soils and gravels brought up during the testing were screened through quarter-inch mesh. Depths were taken in instances when artifacts were recovered or when major strata changes were encountered. Initially, all auger tests were excavated to permafrost; however, because of time constraints, some auger tests were halted at a distinctive stratum change in the summer settlement. The 2m grids placed on each settlement for the auger testing were aligned with the beach ridge and tied to two baseline datums previously established by the NPS (Klingler 1995).

Excavation of both the 50 X 50 cm and 1 X 2 m units was carried out with trowels in natural levels. As with the auger tests, all excavated soils and gravels were screened through quarter-inch mesh. Artifacts were collected by natural level and quadrants. When formed tools or carbon samples were encountered *in situ*, three-point provenience was taken. Excavation of these units was halted when it became impractical which, in the case of the 1 X 2 m units, was at the water table or permafrost.

Profiles were drawn for three walls of the 1 X 2 m units and one representative wall of the 50 X 50 cm units.

## FIELD RESULTS

A total of 283 auger tests, six 50 X 50 cm units, and six 1 X 2 m units were excavated in the Old Whaling locality during the four-week period of the project in 2003. Based on the results of these tests, six distinctive zones of deposition were identified at the Old Whaling locality, which are depicted in a representative site profile (Fig. 2). Most auger tests could be taken to a depth of around 1 m below surface before permafrost was encountered, but in some instances, especially in the seaward or front portion of the beach ridge in the winter settlement, tests could be augered to a depth of up to 140 cm. Descriptions of William Simmon's initial discovery of the Old Whaling settlements in 1958 note that he was forced to halt excavations at approximately two feet (60 cm) below surface because of permafrost (Giddings 1967:227). Thus, permafrost levels have dropped substantially in the past forty-five years.

*Zone 1* was found at the start of most of the auger tests and all of the units and consisted of a layer of silty to sandy loam deposited since the stabilization of the beach approximately 2400 years ago. It varied in thickness from a few cm to 20 cm and usually was topped with a thin vegetation mat.

*Zone 2* consisted of alternating layers of wind-blown sand, water-deposited sand, and storm-deposited gravel. Although there are likely layers within this zone that cover large areas of the locality, there were no means to correlate individual layers within this zone between units or between settlements because of the complexity of deposition. Nor was it possible to determine the boundaries of the usually thin strata in this zone during auger testing because of mixing of sediments in the bucket auger, with one notable exception. The exception is a very dark grayish brown to black loamy sand layer that was identified in all the 1 X 2 m units and most of the 50 X 50 cm units toward the front of the beach ridge at approximately 28 cm below surface. The darker color of this stratum suggests a period of soil development; therefore, an open, stabilized surface characterized the beach ridge for some time after its deposition. Unfortunately, because the layer was usually less than 5 cm thick, it was not detectable by auger testing despite its darker color. Cultural material was recovered only in secure association with depositional Zones 1 and 2 in both the summer and winter settlements.

*Zone 3* became affectionately known as the "espresso-bean" layer because it typically consisted of coffee-bean-sized gravel virtually free of sand covered with a dark reddish-brown to black coating. The thickness of the layer varied throughout the settlement and was absent in some locations. However, the deposition of this layer was a widespread event found in both the winter and summer settlements. How this stratum was deposited is unclear, but the rounded and well-sorted nature of the gravel suggests water deposition, although not necessarily through wave action. In some instances, auger testing was halted in the summer settlement at this layer to save time.

*Zone 4* consisted of reddish-brown colored gravels and sands that were usually weakly bonded at the top of the layer by some form of cementum. In some units the red coloring of this zone was quite vivid and likely developed as the result of deposition of iron oxides carried by groundwater percolating above permafrost.

*Zone 5* was composed of coarse gravels with varying amounts of sand that were predominantly gray in color. Occasionally, sand layers were noted but none had any organic materials. During excavation of the auger tests, the water table and/or permafrost were typically encountered in this layer.

*Zone 6* was sporadically present to the front of the beach ridge in the winter settlement, largely depending on the depth to which permafrost levels would allow the auger to penetrate. This zone consists of well-sorted gray sand with intermittent gravels—likely the product of marine deposition, meaning that it was formed under water and not on a surface-exposed beach. However, further investigation is needed to confirm this hypothesis.

## Cultural Occupations

What constitutes an occupation in an archaeological site has been discussed thoroughly in the literature (e.g., Dunnell 1971; Lyman, O'Brien, and Dunnell 1999; Willey and Phillips 1958), and it is beyond the scope of this paper to critically evaluate the various notions and definitions. Here we borrow Dunnell's (1971:151) definition of an occupation as "a spatial cluster of discrete objects which can reasonably be assumed to be the product of a single group of people at that particular locality deposited over a period of continuous residence comparable to other such units in the same study."

For this project, we use strata deposited during beach-ridge formation as our primary means of telling time.

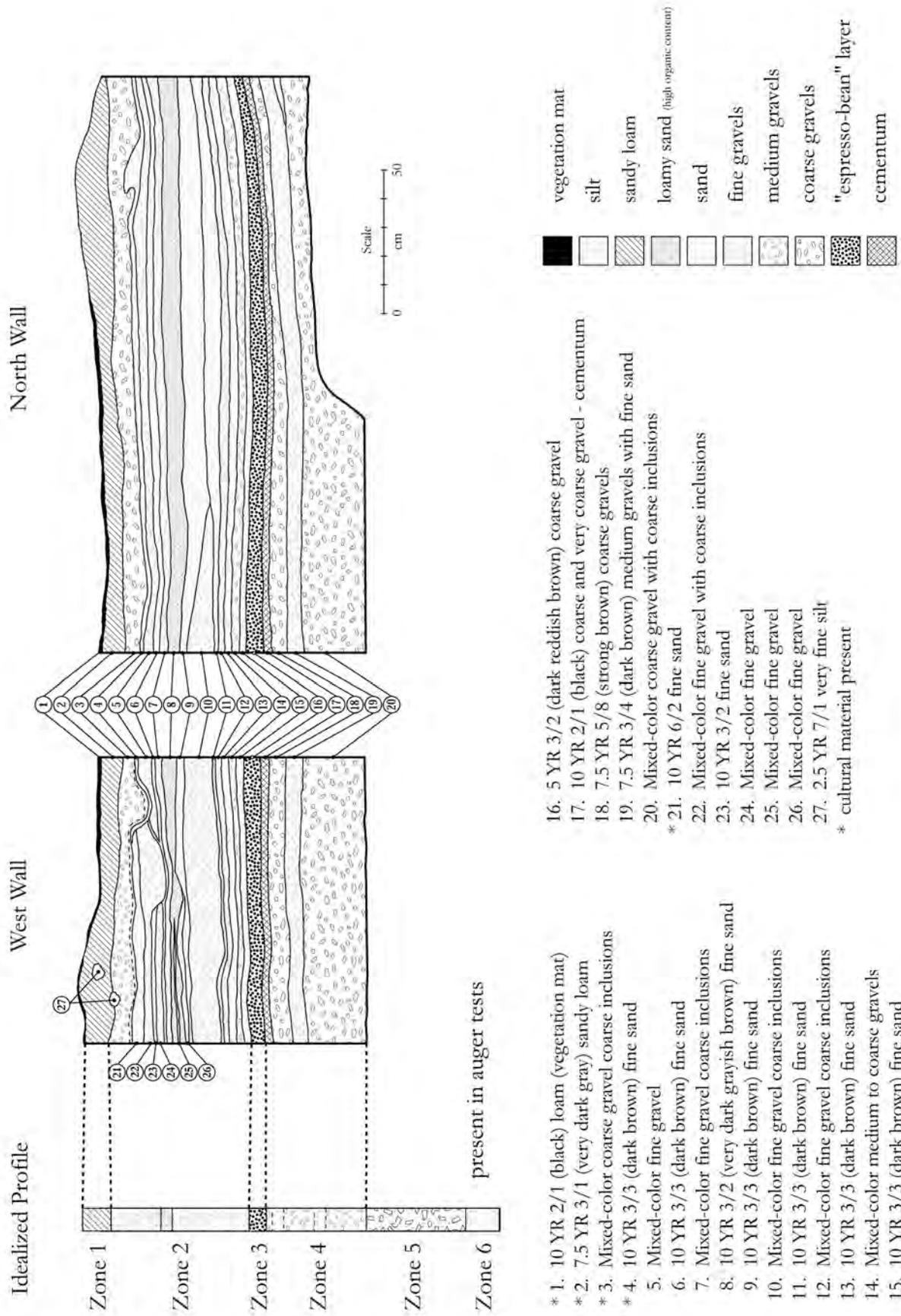


Figure 2. An idealized profile of Beach 53 at the Old Whaling locality compared to the stratigraphic profile of the north and west walls of 1 X 2m Unit B.

Therefore, we consider cultural material and features found at the same relative position in the beach ridge an occupation. Ideally, this position would be a single stratum found across the beach ridge, which, because it was deposited at the same time, would more likely contain artifacts generated at the same interval. In reality, it was not possible to obtain this level of precision—partly because of the accuracy of the bucket auger, but also because of the inability to trace many strata across the site due to discontinuity resulting from irregular deposition (i.e., there are more strata in the front of the beach ridge) and unconformity (i.e., scouring during storm events was evident in some of the unit wall profiles).

### *Summer Settlement*

Artifacts were recovered from Zone 1 (Fig. 3), which is consistent with the shallow dwelling structures excavated by Giddings in the summer settlement area. However, artifacts were also recovered throughout Zone 2 down to a depth of 80 cm below surface. There had to be multiple occupations of the beach ridge because the formation of Zone 2 was not a synchronic event, but rather a series of stable beaches punctuated by storm events. Based on data generated from the 2003 field season, we believe there were minimally three occupations of the summer settlement.

Evidence for initial occupation of the summer settlement area stemmed from the discovery of an unrecorded and deeply buried dwelling structure during excavation of a 1 X 2 m stratigraphic control unit. A text pit, 1 X 2 m Unit E was situated 4 m in front of previously excavated House 204 (Giddings and Anderson 1986) in order to assess the stratigraphic sequence of the seaward portion of the beach ridge. Excavations of the upper strata of the unit were relatively unproductive (only one piece of debitage was recovered at a depth of 26 cm below surface). However, at approximately 60 cm below surface, and 40 cm below the base of House 204's excavation, we came upon a dark, reddish-brown sand layer that contained 61 pieces of fire-cracked rock (FCR), 18 bone specimens (17 ringed/small seal, and one caribou), 14 pieces of chert debitage, two utilized flakes, one core, one hammerstone, and one microblade-like flake.<sup>1</sup> Most of this material was found "sandwiched" between wood timbers on the western half of the unit (Fig. 4), which might have been roofing and/or flooring. Based on descriptions of the "winter" semi-subterranean houses given by Giddings and Anderson (1986:233–246), this material

could be associated with the edge of a similar form of dwelling structure.

Ten auger tests had cultural material greater than 40 cm below surface, and in two of the tests, E18 and F18, dark organic-rich sand was brought up between 40 and 60 cm below surface, which suggested the presence of a house structure (Fig. 5). These two tests were located immediately to the north of 1 X 2 m Unit E, and one test, F18, likely passed through a hearth as 14 pieces of FCR and one piece of debitage were recovered in conjunction with multiple charcoal fragments. Therefore, to confirm the presence of a house floor, 50 X 50 cm Unit E was excavated immediately adjacent to E18. Between 49 and 57 cm below surface, 48 pieces of FCR, 32 pieces of debitage, eight pieces of bone, and two retouched flakes were interspersed through black, loamy sand. Poorly preserved wood fragments were noted in the northwest corner of the unit. This deposit is consistent with descriptions of house floors from structures previously excavated in the winter settlement area (Giddings and Anderson 1986).

Because our permit was for inventory and assessment only, we did not open a larger "window" into the deposits in order to define the shape or collect more information concerning the nature of the buried structure. Although the potential roofing and flooring timbers suggest that the structure is similar to a semi-subterranean winter house, no upright timbers were identified. Based on our current information, the structure was minimally 4.5 m long north to south and 2 m east to west, but could be up to 6 m long. Two dates, 1188-810 BC (Beta-187946) and 902-794 BC (Beta-193490), which were obtained on wood charcoal collected from 1 X 2 m Unit E and auger test F18, respectively, are associated with this house floor (Table 1). Unfortunately, no distinctly "Old Whaling-style" artifacts were recovered from the house deposits; thus, while the two <sup>14</sup>C dates fall into the range estimated by Mason and Ludwig (1990) for Old Whaling, it is not possible at this time to conclusively ascribe this house to the Old Whaling culture.

With the exception of one auger test, all the deeply buried cultural material was recovered from the front part of the beach ridge (Table 2; Figure 3, left map). This material included debitage and fire-cracked rock that was likely related to activity areas associated with the newly discovered house, as no further evidence for dwelling floors was recovered from this depth. Why the occupa-

<sup>1</sup>Giddings and Anderson (1986:265) report that only seven possible microblades were identified in the "thousands of flakes . . . examined" despite cautious scrutiny. They refer to these specimens as ridged flakes rather than microblades because, although the specimens resemble microblades, they are not classic examples. Similarly, none of the potential specimens recovered in 2003 could definitively be identified as blades or microblades.

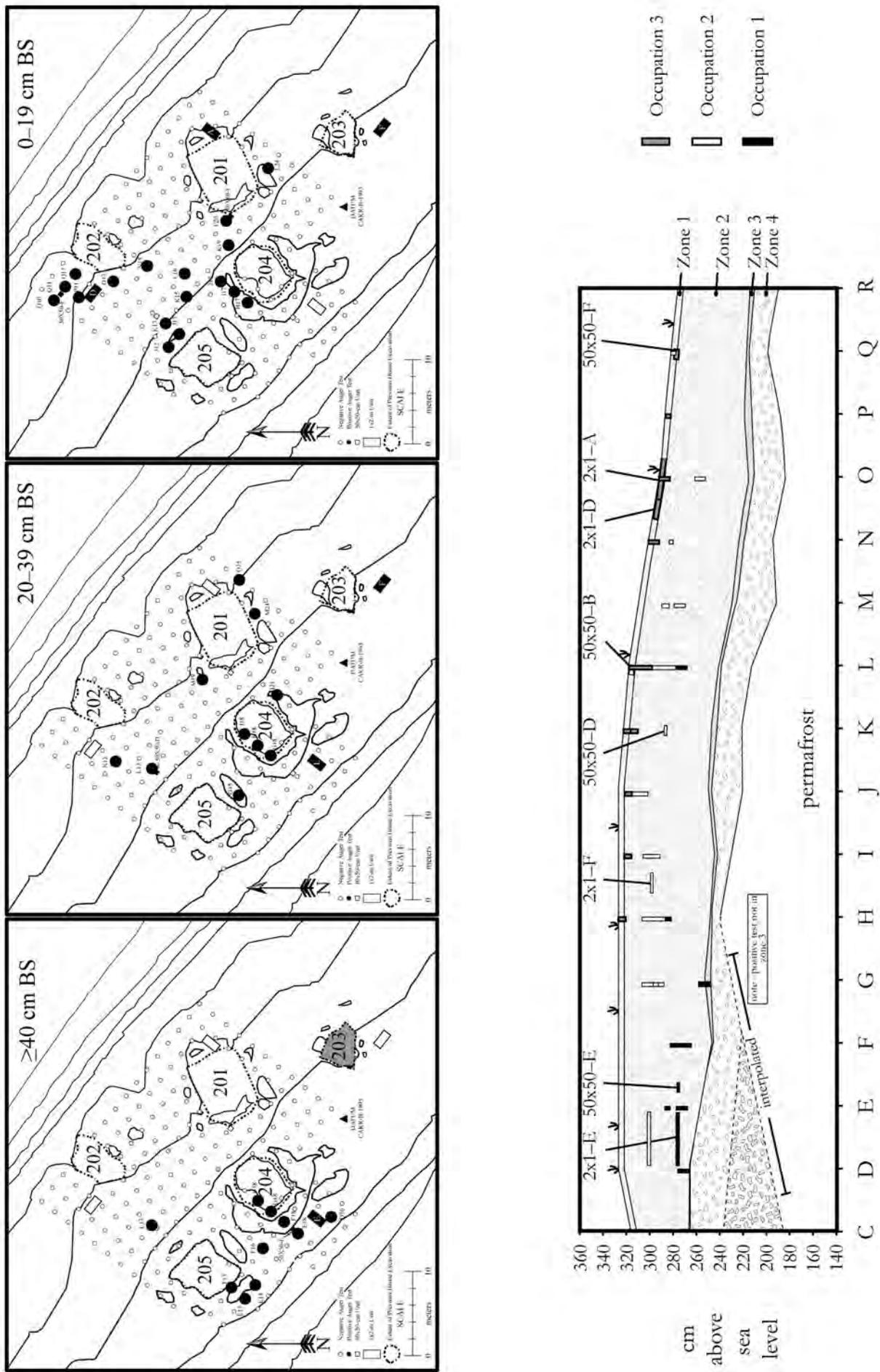


Figure 3. Location of positive auger tests at >40 cm, 20-39 cm, and 0-19 cm below surface across the summer settlement (top) and the depth of positive auger tests in relation to beach-ridge structure (bottom). In the lower diagram, the vertical bars represent positive auger tests and the horizontal bars represent positive excavation units. The association of the positive tests with one of the three occupations of the site is indicated.

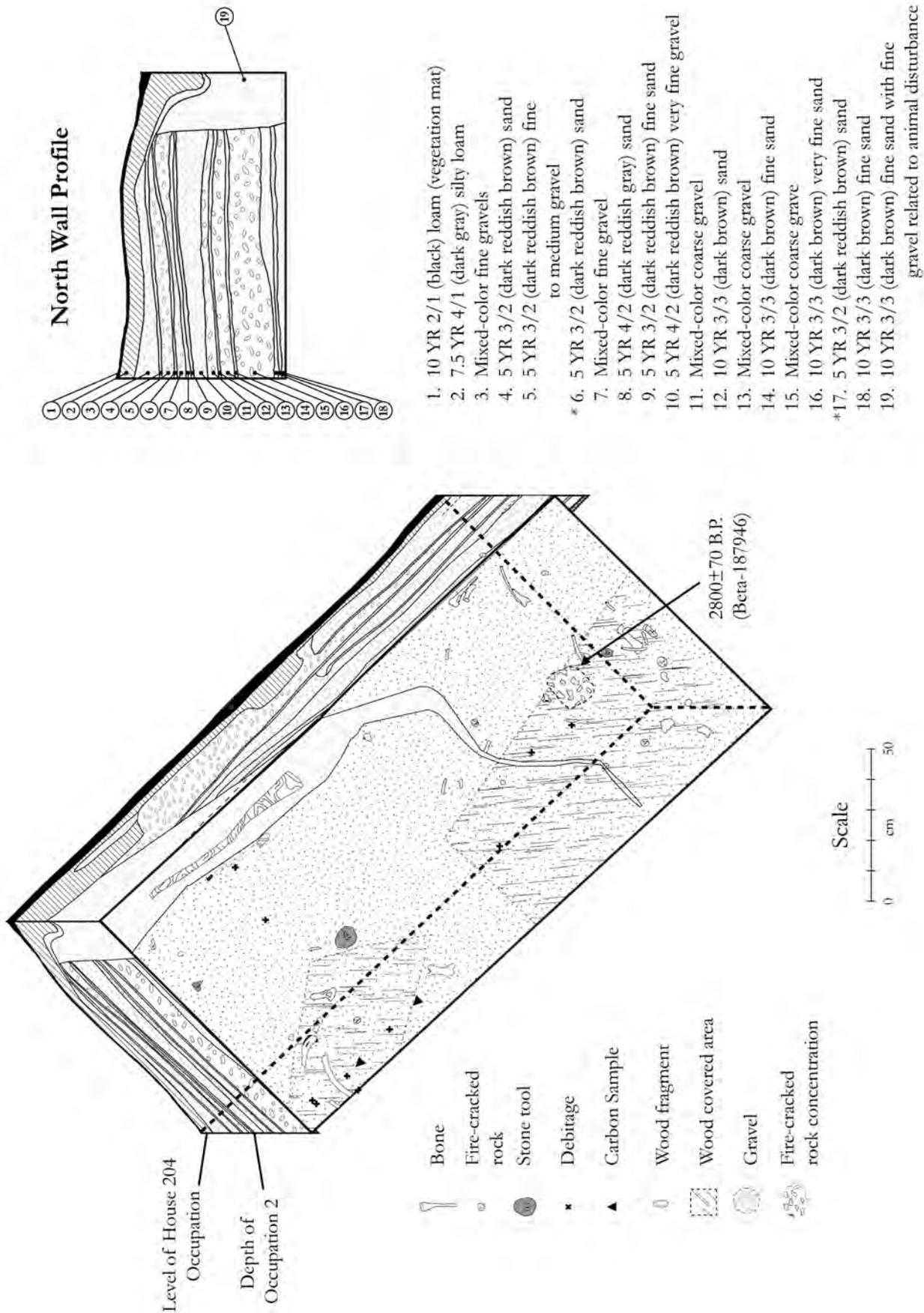


Figure 4. Three-dimensional profile-planview of 1 X 2m Unit E at the depth of first occupation of the summer settlement demonstrating the distribution of artifacts and wood timber. The north wall profile is illustrated on the right.

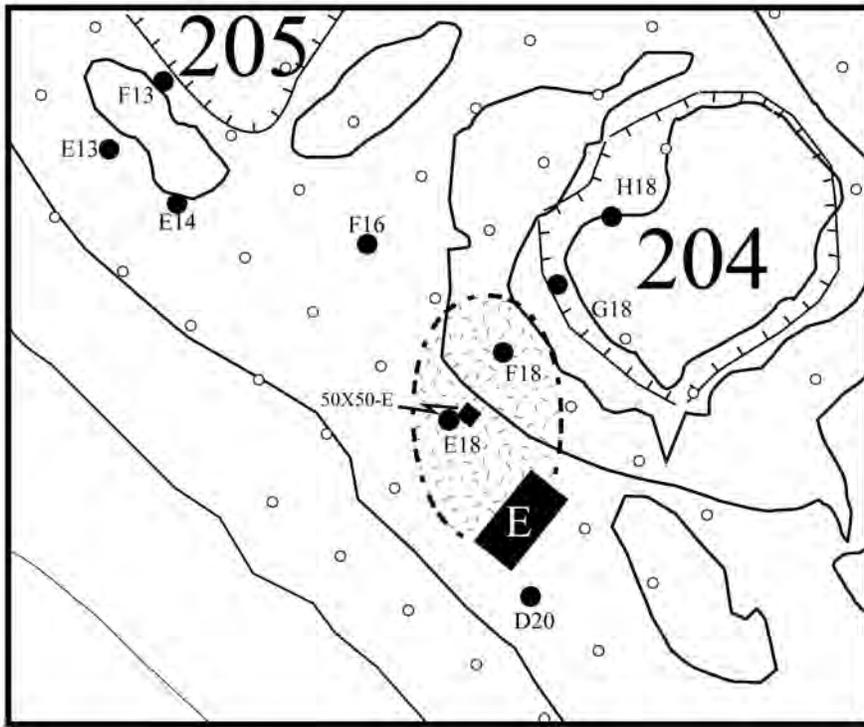


Figure 5. Location of potential house structure (dashed-line stippled area) in the summer settlement in relation to positive auger tests (black-filled circles) with material greater than 40 cm below surface.

tion of the ridge was primarily confined to the front part of the beach ridge at this time is unclear. This area is the highest section of the beach and may have been the only inhabitable part of the ridge, as the water levels associated with the lake behind the beach might have been higher than today. However, further investigation of the beach ridge is needed to test this possibility.

The second occupation of the summer settlement is represented by cultural material found between 20 and 39 cm below surface in eleven auger tests, one 1 X 2 m unit, and one 50 X 50 cm unit. Although this seems like an arbitrary cutoff, the distinct stratum mentioned for Zone 2 occurs at approximately 28 cm below surface in the front of the beach ridge. Because the bucket auger generally has an accuracy of  $\pm 5$  cm, artifacts associated with this layer could have been recovered from anywhere within this range.

Most of the cultural material related to Zone 2 occupation came from 1 X 2 m Unit F, which is situated on the far southeastern side of the settlement. Here, nineteen pieces of debitage, two pieces of FCR, one utilized flake, one core fragment, one microblade-like flake, and one small seal radius were recovered between 26 and 34 cm below the surface in association with dark brown loamy sand. Unfortunately, time constraints dictated that the auger testing could not be extended into the area sur-

rounding Unit F, but artifacts did show up at around this depth across the middle of the settlement during augering (Fig. 3, center map). In several instances, artifacts were found directly below or immediately adjacent to previous excavations at this depth. In auger test F14, a very dark brown midden-like soil was encountered at roughly 35 to 40 cm below the original ground surface, which suggested the presence of a buried feature. Based on depth, this feature may be associated with a second occupation. However, because cultural material was not found in association with the soil and because of time limitations, a 50 X 50 cm unit was not placed in proximity to this probe.

One relatively large piece of debitage was also recovered from 50 X 50 cm Unit D at around 38 cm below surface at the contact between a gravel layer and an underlying sand layer. Unlike the sand layer at 28 cm below surface in 1 X 2 m Unit F, this sand layer was not particularly rich in organic material, which, in combination with depth, suggests that the piece of debitage is associated with a different occupation. Our knowledge of the second occupation of the summer settlement is limited to the few artifacts recovered and the one possible buried feature. There is a distinct possibility that there are several occupations of the beach ridge represented between 20 and 39 cm below surface. Future investigations will be needed to sort this issue out.

Undoubtedly, most of the artifacts recovered from the first 19 cm below surface are associated with the features excavated in 1960, which represent the third occupation of the summer settlement. Giddings and Anderson (1986:249) report that the back two houses (201 and 202) may have been built directly on the surface of the beach ridge and that the front three houses were slightly excavated into the beach crest. As evidenced by the still-opened excavation blocks, excavation of the front houses into the beach ridge was less than 20 cm below the surface. Therefore, it should be expected that artifacts related to this occupation should be in Zone 1, or possibly the upper portions of Zone 2.

Eighteen auger tests had cultural material present between 0 and 19 cm below surface, as well as three 1 X 2 m units, and two of the 50 X 50 cm units, which were

Table 1. Conventional radiocarbon years BP and Calibrated BC dates at the two-sigma range (95% confidence). Dates were calibrated using IntCal04 (Stuiver and Reimer 1993). Samples obtained from 2003 excavations are italicized and were run by Beta Analytic. Other conventional dates for Old Whaling are from Giddings and Anderson (1986), but exclude samples that might be marine contaminated (following Mason and Ludwig 1990). The approximate age range for the Old Whaling site is 850 to 1110 BC (ca. 2700 to 2900 BP) with an average age of 1000 BC; this excludes the youngest date for the site as it has a standard deviation more than twice that of the other dates.

Lab No.	<sup>14</sup> C Yr Years BP	Cal BC at 2 Sigma (intercept)	Old Whaling Feature	Material
B-267b	2530 ± 150	1005 to 232 (620)	House 21 (winter)	wood
<i>Beta-193490</i>	2670 ± 40	<i>902 to 794 (850)</i>	<i>Auger test F18 (adjacent to House 204)</i>	<i>wood charcoal</i>
<i>Beta-187947</i>	2740 ± 40	<i>976 to 810 (895)</i>	<i>50 X 50 cm Unit A (between houses 20 and 23)</i>	<i>wood charcoal</i>
P-627	2775 ± 50	1042 to 817 (930)	House 20 (winter)	wood
<i>Beta-187946</i>	2800 ± 70	<i>1188 to 810 (1000)</i>	<i>Ix2-E (adjacent to House 204)</i>	<i>wood charcoal</i>
P-404	2829 ± 63	1193 to 834 (1015)	House 24 (winter)	wood
P-403	2850 ± 63	1252 to 845 (1050)	House 23 (winter)	wood
P-621	2859 ± 63	1258 to 850 (1050)	House 23 (winter)	wood
P-618	2865 ± 49	1207 to 913 (1060)	House 24 (winter)	wood
P-615a	2907 ± 55	1286 to 929 (1110)	House 23 (winter)	wood

Table 2. Depth and type of cultural material recovered from positive auger tests in the summer settlement area.

Auger Test	Depth Below Surface	Cultural Material
<i>0–19 cm BS</i>		
H17	0–5 cm*	1 piece fire-cracked rock
I17	5–10 cm*	1 piece debitage
J12	15–20 cm*	1 utilized flake
J13	10–25 cm*	2 pieces debitage 3 pieces fire-cracked rock
J17	5–10 cm*	1 utilized flake 1 piece fire-cracked rock
K13	0–5 cm*	1 piece debitage
K15	0–10 cm*	1 piece debitage
K19	0–5 cm	1 piece fire-cracked rock
L16	10–25 cm	1 piece debitage
L20	3–20 cm	1 piece fire-cracked rock
L24	10–15 cm*	1 piece fire-cracked rock
L24	15–20 cm*	1 piece debitage
N15	0–10 cm	1 piece debitage
O13	0–10 cm	1 piece debitage
P11	0–5 cm	1 piece fire-cracked rock
Q10	0–5 cm	1 piece fire-cracked rock
Q11	0–5 cm	1 piece debitage
Q12	0–5 cm	1 piece debitage
<i>20–39 cm BS</i>		
G15	30–35 cm*	3 pieces debitage
G18	20–40 cm**	3 pieces fire-cracked rock
H18	20–40 cm**	2 pieces fire-cracked rock
I18	25–40 cm**	1 piece debitage
I21	15–25 cm*	1 piece fire-cracked rock
L13	20–30 cm	2 pieces debitage
L13	30–40 cm	2 pieces debitage

Table 2 (continued). Depth and type of cultural material recovered from positive auger tests in the summer settlement area.

M19	30–40 cm	2 pieces debitage
M24	20–25 cm	1 blade-like flake
N12	20 cm	1 piece fire-cracked rock
O25	30–40 cm	1 piece fire-cracked rock
<i>40–75 cm BS</i>		
D20	50–60 cm	2 pieces debitage
E13	45–55 cm*	3 pieces fire-cracked rock
E14	40–45 cm*	1 piece fire-cracked rock
E18	50–60 cm	2 pieces debitage 1 piece fire-cracked rock 1 <i>Phoca sp.</i> metatarsal
F13	50–65 cm*	1 piece fire-cracked rock
F16	45–50 cm	1 piece fire-cracked rock
F18	40–50 cm*	1 piece debitage 14 pieces fire-cracked rock 1 carbon sample (2670 ± 40 B.P., Beta-193490)
G18	70–80 cm**	1 piece debitage
H18	40–45 cm**	1 piece debitage
L13	40–50 cm	1 piece debitage
<i>Artifacts from positive auger tests associated with Giddings' previous investigations</i>		
H16	0–10 cm	1 piece debitage
I15	0–5 cm	1 piece debitage
J17	0–25 cm	1 piece debitage
P17	0–20 cm	1 piece fire-cracked rock
Q12	0–5 cm	2 pieces debitage 1 piece fire-cracked rock

\* Depth adjusted to reflect original surface level by removing Giddings' backdirt.

\*\* Depth adjusted to reflect original surface by adding the depth of the previous excavation below surface.

distributed throughout the settlement (Fig. 3, right map). Two new features were identified.

In the northern part of the settlement, a thin midden deposit was identified in auger tests Q10 through 12 and P11, and 1 X 2 m Unit D and 50 X 50 cm Unit F. This area is covered with vegetation associated with midden deposits described for other localities on Cape Krusenstern (Giddings and Anderson 1986). When tested, artifacts were recovered only in the top ten cm of the beach ridge and exclusively with soils associated with Zone 1. However, the soils were thicker here than in other parts of the settlement, which suggests a high organic content in line with a midden deposit. Similarly, the type and quantity of artifacts—this area was the most productive for the 2003 investigations—suggest a midden. One hundred and forty-one pieces of debitage, sixty pieces of FCR, three microblade-like flakes, two utilized flakes, one blade-like flake, and one flake-knife were recovered, mainly from 1 X 2 m Unit D. The flake-knife (Fig. 6) was made on a large blade-like flake of greenish-gray chert and is simi-

investigate the nature of the feature because hearths were reported to be at the center of each of the excavated summer houses (Giddings and Anderson 1986). Although 156 pieces of FCR in conjunction with 15 manuports, 10 flakes, and one utilized flake were recovered from the unit—all from the top 11 cm in Zone 1 contexts—the charcoal, heat alteration, and soil staining that should accompany a hearth were not present. In addition, there was no apparent patterning to the FCR. Therefore, the material was probably dumped by the occupants of House 201 and became a midden accumulation. While this feature per se does not add greatly to our knowledge of Old Whaling, its presence does suggest that there are other shallow features to be found at the site.

### Winter Settlement

The “footprints” of Giddings’ previous excavations in the winter settlement of the Old Whaling locality are reminiscent of craters produced during a bomb strike. The five previously excavated houses at the settlement

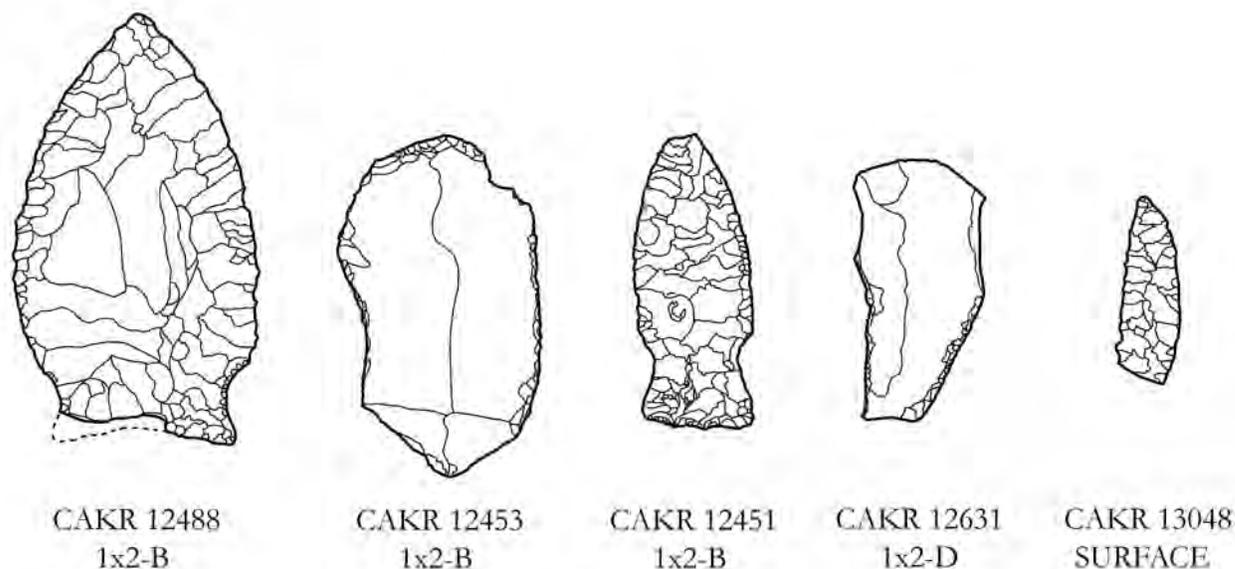


Figure 6. Diagnostic artifacts recovered during the 2003 investigations. The two projectile points and two flake-knives are artifacts typically associated with Old Whaling, whereas the asymmetrical knife on the far right is likely associated with Choris.

lar to flake-knives reported by Giddings and Anderson (1986:262). Based on proximity and the recovery of an artifact stylistically similar to Old Whaling forms, it is likely that the midden is associated with House 202.

A second midden was identified in the wall of the previous excavation of House 201 where eroding FCR was observed. Initially, the feature was thought to be a hearth, and thus a 50 X 50 cm unit was excavated to

are represented by gaping holes surrounded by mounds of backdirt; most hold pools of water that are now home to the larvae of multiple species of mosquitoes that abound at Cape Krusenstern. In addition, there are at least nineteen unfilled test pits scattered through the settlement. Because of the extent of disturbance—particularly the high backdirt piles—the amount of work undertaken was curtailed compared to the summer settlement.

Determining the point at which the beach ridge was first occupied in the winter settlement is complicated. Unfortunately, little information was recorded by Giddings about the construction of the winter houses in relation to the beach-ridge strata. The floors of the houses were recorded as being between 1 and 1.2 m below the current surface, but:

The upper layers of gravel in the excavation were nearly free of cultural material.... As in other Old Whaling houses, the gravel started where the timbers were first uncovered in the walls and extended down to the floor region. A strong, red stain coated the rocks and impregnated the rotten wood, yet did not emanate from the house ruins themselves. The same stain was found outside the house excavation areas at about the same levels as the house pits. Near or at the floor level, this red discoloration gave way to the black charcoal. However, tests into the adjacent pure gravel disclosed a stratification of a velvety black coating on the gravels immediately below the zone of red stain (Giddings and Anderson 1986:234).

Comparing this description to our findings, it appears that Giddings and Anderson (1986) transposed the stratigraphic position of the red and black gravel layers, as we always found the red-stained gravel layer (Zone 4) *below* the “velvety” (espresso-bean) black layer (Zone 3) in our excavations and auger tests (Fig. 2). Nevertheless, it would appear that minimally the house depressions were dug by their builders into Zone 4 based on the red color of the stained timbers and surrounding gravel. Whether the house depressions extended into Zone 5 is unclear, but based on the reported depths of the house floors and the lack of red staining of the floor deposits, it is entirely possible that this was the case.

Giddings and Anderson’s (1986) account does not indicate whether the house depressions were hollowed out by the past occupants from the level of the current beach surface or from a deeper buried surface. The houses were reported to be barely visible before excavation and a considerable amount of overburden, most of which was gravels, needed to be removed before cultural material was encountered (Giddings 1967; Giddings and Anderson 1986). These materials must have accumulated through storm events that filled and subsequently

buried the house depressions after their abandonment. Undoubtedly, there would have been deposition of gravels on the adjacent beach ridge as well during these events. Therefore, the original ground surface at the time of the house occupation must be buried. A good candidate for this original surface was found in three of the four excavation units—Layer 8 in 1 X 2 m Units B and C and 50 X 50 cm Unit A—and consists of black to very dark, grayish-brown loamy sand at a depth of between 23 and 30 cm below surface. This layer was also present in the summer settlement. One complication, which will likely never be resolved, is that there could have been staggered occupations of the winter houses. Some of the previously excavated houses (e.g., House 24) did not show any traces on the beach surface (Giddings 1967:237), a condition that may indicate that these houses were originally deeper in the beach ridge and therefore older.

In auger tests B21, I19, and M21 (Table 3, Fig. 7), cultural material may have been recovered from depths of 75, 103, or as deep as 145 cm below surface, which would place these finds either in Zone 4 or 5. However, we are doubtful that these tests actually represent “true” hits, mainly because there was no evidence in the excavation units or the auger testing to suggest that the beach could have been inhabitable below Zone 3. In the case of M19, a 50 X 50 cm unit was placed adjacent to the auger test to investigate the hit. This unit was sterile, and no evidence was present below 30 cm for a stable beach surface. Similarly, stable surfaces were lacking in the deeper strata of both 1 X 2 m Units B and C. Although it is possible that the artifacts from the three auger tests were marine deposited from features eroded elsewhere or trickled down through the beach gravels (unlikely), the most plausible scenario for the presence of these artifacts was that they were knocked in from above during testing.<sup>2</sup>

Four auger tests had artifacts present between 20 and 39 cm below surface, located mainly in the front portion of the beach ridge between houses 20 and 23. Another four tests produced artifacts between 35 and 45 cm below surface in the same area. These materials, in conjunction with artifacts found in 50 X 50 cm Unit A at 28 cm below surface, most likely constitute the first occupation of the winter settlement. Despite being spread over 25 cm, we associate these artifacts because of the poor resolution of the bucket auger and the lack of organic-rich strata at this depth, other than the layer found

<sup>2</sup>The artifacts from B21 and I19 were recovered just before termination of the auger tests, and in both cases there were difficulties in bringing up the sediments from the lower depths because of the water table. Essentially, the saturated gravels and sands would drain out of the auger bucket before it could be brought to the surface for screening unless it was brought up rapidly. Inevitably rapid removal would result in soils from the sides of the auger test being knocked down by or scooped up into the bucket, and thus potentially introducing artifacts from higher layers.

Table 3. Depth and type of cultural material recovered from positive auger tests in the winter settlement area.

Auger Test	Depth Below Surface	Cultural Material
<i>0–19 cm BS</i>		
A17	0–20 cm	1 piece debitage
A18	0–20 cm	1 piece debitage
A22	15–20 cm*	1 piece debitage
D23	0–20 cm	1 piece debitage
E24	10–15 cm	1 piece fire-cracked rock
K23	0–20 cm	1 piece debitage
<i>20–39 cm BS</i>		
A17	20–30 cm	1 piece debitage
D23	25–35 cm	1 piece debitage
E21	25 cm	1 piece fire-cracked rock
H21	20–30 cm	1 piece debitage
	30–40 cm	1 piece debitage
<i>40–145 cm BS</i>		
A18	35–45 cm	1 piece debitage
C22	35–45 cm	1 piece debitage
H20	35–45 cm	1 piece debitage
D20	35–45 cm	1 piece debitage
M21	50–75cm	1 piece debitage**
I19	83–103 cm	1 piece debitage**
B21	120–145 cm	1 piece debitage**
<i>Artifacts from positive auger tests associated with Giddings' previous investigations (backdirt)</i>		
G19	0–25 cm	1 piece debitage

\* Depth adjusted to reflect original surface level by removing the thickness of Giddings' backdirt.

\*\* Artifact likely displaced, see text for explanation.

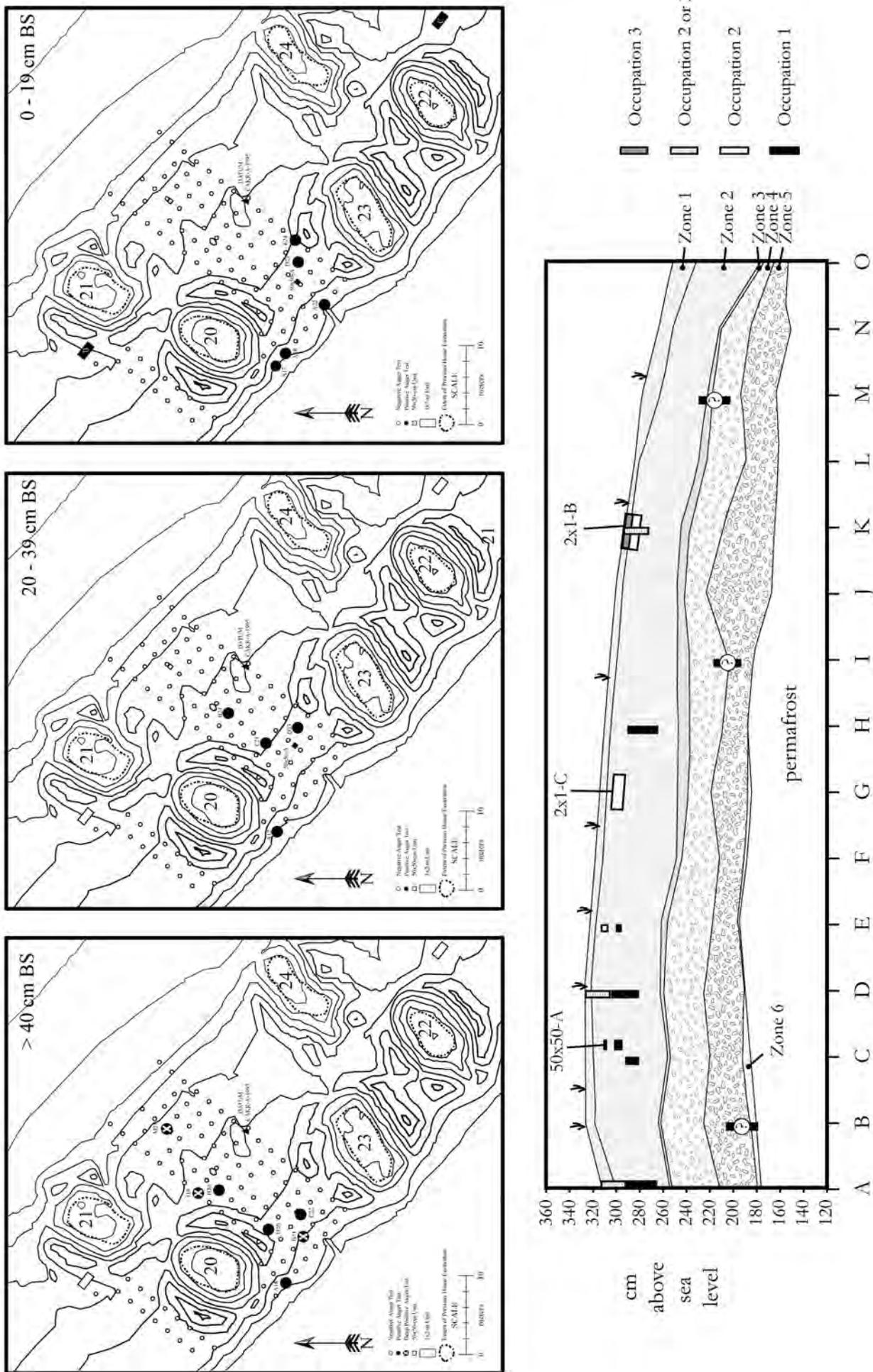


Figure 7. Location of positive auger tests at >40 cm, 20–39 cm, and 0–19 cm below surface across the winter settlement (top) and the depth of positive auger tests in relation to the beach-ridge structure (bottom). In the lower diagram, the vertical bars represent positive auger tests and the horizontal bars positive units, with the association of the positive tests with one of the three occupations of the site indicated.

23 to 30 cm below surface in the excavation units (1 X 2 m units B and C). The loamy sand layer present 25 to 30 cm below surface in 50 X 50 cm Unit A (Fig. 7) and associated with the artifacts was particularly black and flecked with carbon. The dark color may be due to human activity. Seven pieces of debitage, one utilized flake, and one nodule of wood charcoal were recovered, the latter of which was dated to 2740±40 BP (Beta-187947) (Table 1). Although it was not possible to define a specific feature in this area, it is likely that 50 X 50 cm Unit A is intrusive into an activity area or midden associated with the occupation of House 20 or 23.

The second occupation of the beach ridge in the winter settlement is represented by artifacts recovered down to 19 cm below surface. The artifacts were present in six auger tests, one 50 X 50 cm unit, and both 1 X 2 m units. All of the auger tests were located in the inter-house area between houses 20 and 23; however, the most significant finds at this depth were in 1 X 2 m Unit B, located to the west of House 21. Here in a gravel layer immediately beneath the silt loam of Zone 1 (Fig. 2, Layer 3), forty-three items were recovered, including two projectile points, one unifacially retouched flake-knife, three blade-like flakes, one utilized flake, one core fragment, thirty-five pieces of debitage, and one piece of FCR. Based on comparisons to previously excavated specimens reported by Giddings and Anderson (1986), the two projectile points and the flake-knife are Old Whaling-style artifacts (Fig. 6).

An additional twenty-nine artifacts (twenty-six pieces of debitage, one retouched flake, one blade-like flake, and one humanly transported stone) were recovered from Layer 2 (Zone 1) of 1 X 2 m Unit B. In all likelihood these finds relate to the second occupation of the settlement. However, the perimeter of 1 X 2 m Unit B crosses a small projection—interpreted as an entrance—of a larger rectangular area of cleared sod, which appears to be a tent pad cut slightly into the beach-ridge surface. A second similar but better-defined example was identified in the inter-settlement area with nine pieces of debitage and six pieces of FCR in association, as well as several larger likely human-transported stones (Fig. 8). There was also one piece of debitage noted on the surface in association with the tent-pad feature next to 1 X 2 m Unit B. Although these associations would seem to be of prehistoric origin, at present it is not clear whether the debitage and fire-cracked rock were exposed by cutting into a previously existing deposit or generated during use of the tent-pad features.

One possible clue to the age of these tent-pad-like features was the discovery of an asymmetrical bifacial knife on the surface of the inter-settlement area that appears to be Choris rather than Old Whaling in cultural affiliation (Fig. 6). There is no direct association between the knife and the tent pads, but the find demonstrates that Beach 53 was used by members of cultural groups besides Old Whaling. Future research of the inter-settlement feature should resolve the chronological position of the tent pads. Nevertheless, even with an unknown date (Choris or later?), the tent pad feature adjacent to Unit B represents the third and likely final occupation of the winter settlement.

## DISCUSSION

Based on the results of the 2003 investigations, it is time to put aside the simple picture painted for the Old Whaling locality of five families moving seasonally from winter homes into summer homes. There are clearly multiple occupations at each settlement that may or may not be associated. Based on superposition, the occupation of the winter houses excavated by Giddings cannot be associated with the occupation of the summer houses because the winter houses were found buried in the beach ridge and the summer houses were found on top. The only scenario that could connect the occupations is one where occupants of the winter houses were forced to abandon them because of storm activity, which destroyed and buried the houses, and they subsequently built and moved into the summer houses. However, this scenario is improbable in light of the multiple layers of deposition separating the two, some of which may have been stable open beach surfaces for some period of time.

Because the summer and winter beach structures are so similar, it is possible to propose a sequence of occupation for the Old Whaling locality (Fig. 9). Based on its position in the beach ridge, the new dwelling structure identified deep in the summer settlement is probably the first occupation of the locality. Unfortunately, because no diagnostic artifacts were recovered, it is not clear whether this is an “Old Whaling” occupation or represents use by some other cultural group. One radiocarbon date associated with the occupation of this feature suggests that it could date to between 1188 and 810 BC (2800±70 BP; 1 X 2 m Unit E); however, a second date of 902 to 794 BC (2670±40 BP; auger test F18) indicates that this may be too early (Table 1). This transposition might indicate a problem with the dates, but because of the overlap between the two dates it is more likely that both are related to a single occupation.

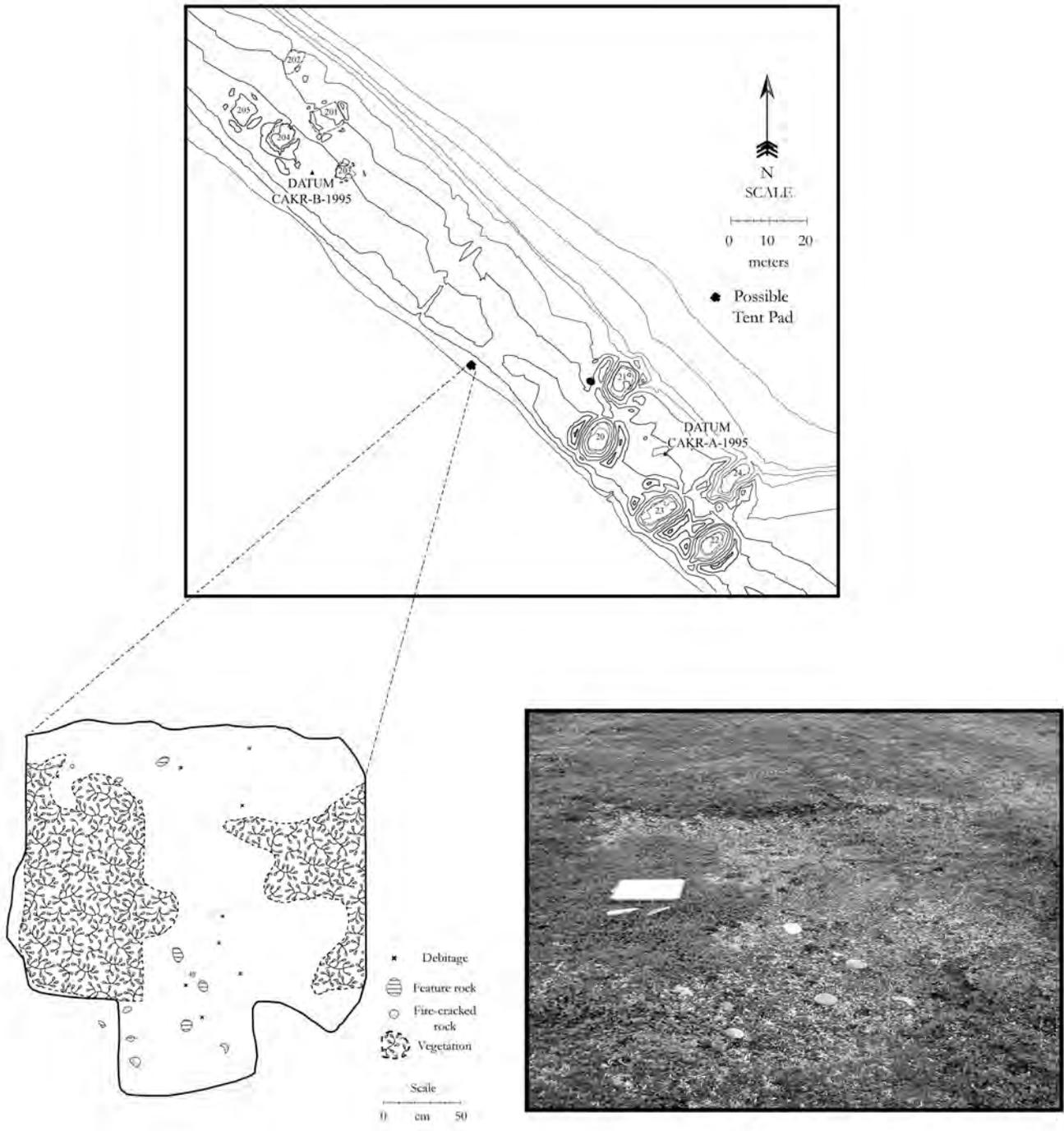


Figure 8. The location of two possible tent-pad features (Choris or later) at the Old Whaling locality (above) with the planview and photograph of the inter-settlement tent-pad feature (below).

A second occupation of the Old Whaling locality corresponds with the proposed second occupation of the summer settlement and the first occupation of the winter settlement, which associates it with the winter houses excavated by Giddings. This assessment is based on the relative depth of the cultural material in the beach ridge 20 to 40 cm below surface. The third occupation of the locality is associated with cultural materials found in and immediately below the sod layer in the beach deposits. In the

summer settlement this includes the occupation of the summer houses and corresponds to the occupation of 1 X 2 m Unit B with the two Old Whaling-style projectile points. The fourth occupation of the Old Whaling locality is the most tenuous and consists of the two tent-pad impressions that were noted in the winter settlement and in the inter-settlement area (Fig. 8). These features may be associated with Choris material, but further work needs to be completed to establish their origin.

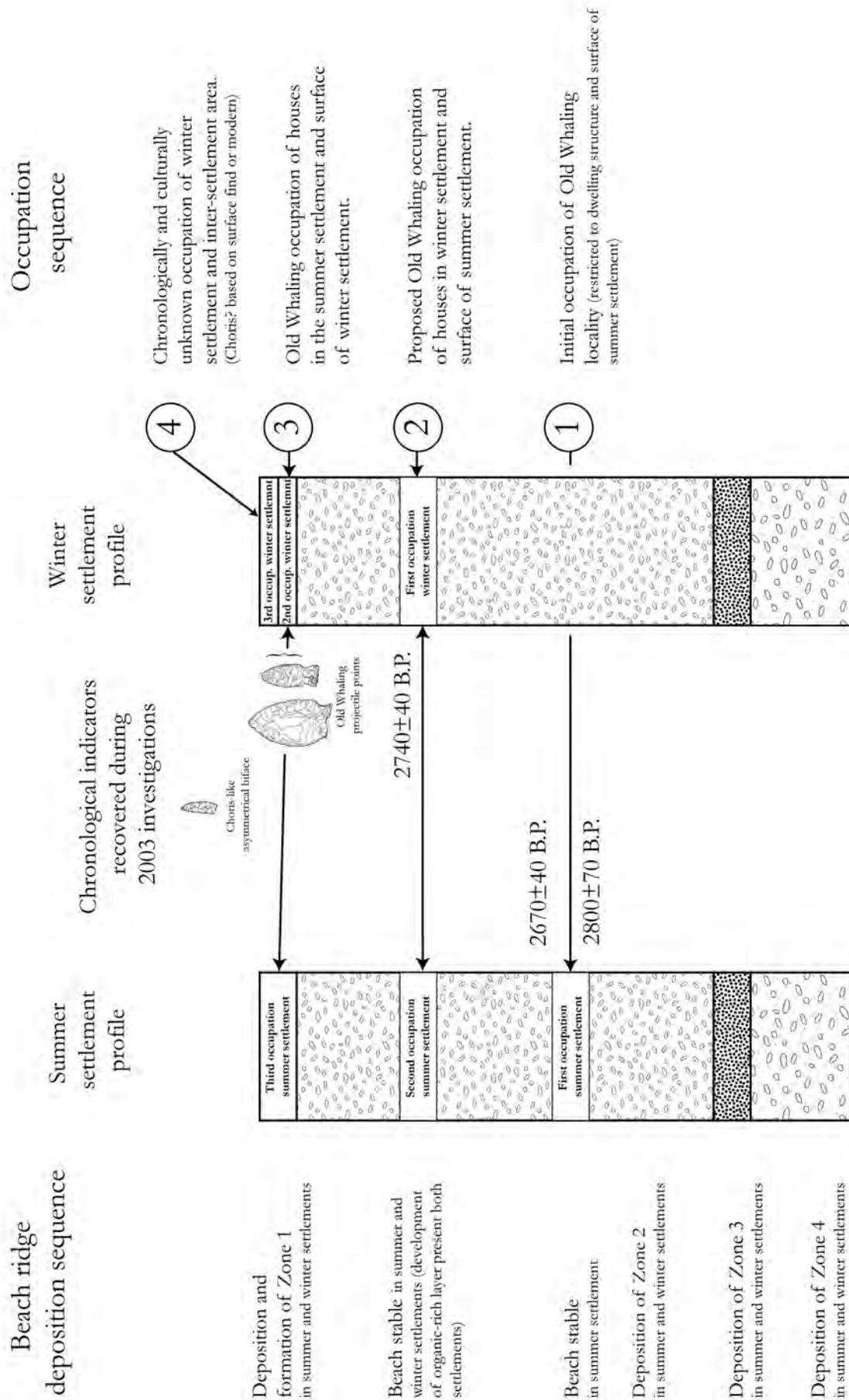


Figure 9. Proposed occupation sequence of the Old Whaling locality in relation to the formation of Beach 53.

Despite the fact that there is now evidence for repeated occupations of the Old Whaling locality, most of the artifacts were likely generated by the same archaeological “culture” over several generations. The 2003 radiocarbon dates overlap one another at the 2 sigma range. When compared to previous radiocarbon dates for this site (Giddings and Anderson 1986), the dates from the 2003 season fall within the conservative range for Old Whaling estimated by Mason and Ludwig (1990) (Table 1), which excludes materials that might have marine contamination. The age range for the Old Whaling site is approximately 850 to 1110 BC (ca. 2700 to 2900 BP) with an average age of 1000 BC; this excludes the youngest date for the site as it has a standard deviation more than twice that of the other dates. The narrow age range for these dates reinforces the notion that the Old Whaling occupations occurred over a short period of time—so short that radiocarbon dating is unlikely to have the resolution to sort them out. Although radiocarbon dating gives a range for general site occupation at Old Whaling, the results reinforce the need to use stratigraphy to tease out the sequence of cultural occupations and beach ridge formations.

Thus, instead of seeing five families moving seasonally from winter dwellings into summer dwellings, we envision a group of people that repeatedly returned to the same beach ridge over several generations. Reanalysis of the faunal remains recovered from Giddings’ excavations of the Old Whaling houses indicates a different seal demographic profile between the winter and what have been called the “summer” settlements (Darwent 2005). Ringed seals from the winter settlement appear to have been hunted through breathing holes in the sea ice, whereas seals from the “summer” settlements appear to have been hunted at ice leads. Thus, the shallow tenting dwellings are most likely spring settlements since Kotzebue Sound is typically ice-free by July, and ringed seals are ice-obligatory animals. Based on this seal demographic evidence, it appears that the coast would have been abandoned each year shortly after ice thaw, perhaps to follow the annual caribou migration inland in early August.

Although not fully addressed in this paper, the side-notched style of the projectile points from Old Whaling and the black chert from which many of the artifacts were made<sup>3</sup> suggest that people from the Interior, possibly associated with the Northern Archaic archaeological culture (Anderson 1968), returned to Cape Krusenstern

seasonally to make use of coastal ringed-seal resources in the winter and then returned to the Interior after the late spring/early summer caribou migration and fishing season. Future research will be needed to assess this supposition. However, the 2003 investigations demonstrate that the Old Whaling locality still has archaeological research potential, especially in terms of sub-surface features, which could shed light on this issue.

## ACKNOWLEDGEMENTS

Research at Cape Krusenstern was funded by University of California at Davis faculty research grants. Our thanks are extended to Bob Gal, Steve Klingler, Jerry Post, Chris Young, and Sabra Gilbert-Young of the National Park Service in Anchorage and Kotzebue who provided logistical and intellectual support for this project. We thank Doug Anderson and the Haffenreffer Museum at Brown University for allowing access to the Old Whaling faunal material excavated by Giddings. Thank you to Laura Smith for field assistance.

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<sup>3</sup>Natalia Malyk-Selivanova has sourced black chert from Old Whaling to Wrench Creek in the Noatak drainage some 150 km to the interior (Robert Gal 2003, written communication).

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