Material Culture Across the Aleutian Archipelago

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Abstract The material evidence from sites across the Aleutian Islands reflects colonization events, subsequent adaptations, and influxes of ideas and/or people from the east. The occurrence in the eastern Aleutians of bifacial technology around 7000 BP, of artifacts similar to the Arctic Small Tool tradition between 4000 and 3500 BP, and of slate and jet objects around 1000 BP reflects repeated surges of influence or movement of peoples from further east into the eastern end of the chain. In the central and western Aleutians, influence or perhaps colonization from east of the Aleutians is also marked by the occurrence of bifacial technology about 6500 BP and the appearance of slate artifacts after 1000 BP, suggesting the movement of ideas or people from further east. Basic trends across the archipelago include a decrease in formal chipped-stone tools, an increase in the use and the complexity of bone technology, and the increase in use and variety of ground-stone tools. In addition, increasing village site sizes and denser midden deposits are seen later in time throughout the archipelago. The similarity in sites and assemblages, albeit with regional variations, reflects trends that are seen across the chain and indicates that these island communities were not isolated from one another or from mainland Alaska.

By and large, early hypotheses, based on more than a century of Aleutian archaeological research, proposed that the Aleutian Islands were settled by a single cultural group, which expanded and subsequently developed in isolation (L. Black 1983; Jochelson 1925; Laughlin 1980). Hrdlička (1945) diverged somewhat, proposing two migrations into the Aleutians on the basis of craniometrics of prehistoric Unangan burials collected across the archipelago. Revelations regarding the prehistoric colonization, settlement, and sequence of material cultural developments in the Aleutian archipelago are emerging from research conducted over the past 20 years. Recent research indicates a complex settlement history with interactions and material cultural innovations introduced at various times throughout prehistory (Corbett et al. 2001; Dumond 2001; Knecht and Davis 2001; West et al. 2010) with far less isolation than previously believed.

Here I present the material evidence from sites across the Aleutians islands. Dated stone and bone artifacts, coupled with characteristics of house features,

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reflect colonization and adaptation across the archipelago. This material evidence also provides insight into the interactions between the eastern Unangan and cultures lying to both the east and the west. The occurrence of similar Unangan technologies through time suggests that communication (probably through trade) occurred across the archipelago. Although some variation occurs, clearly these island communities were not isolated from one another.

In the eastern Aleutians, Knecht and Davis (2001) documented technological and architectural characteristics of occupations extending from 8,000 to 200 years before present (BP). Eastern Aleutian research also has helped define influxes and interactions with mainland Alaska around 4000–3500 BP (Dumond 2001; Knecht and Davis 2001; Knecht et al. 2001) and around 1000 BP (Coltrain et al. 2006; Knecht and Davis 2003). In the central and western Aleutians, the oldest occupations include the Tutiakoff site, dating to 6500 BP on Adak Island, and ATU-061, dating to 3200 BP, on Shemya Island (Corbett et al. 2010; West et al. 2010). Artifacts from central and western Aleutian sites document trends similar to those at eastern Aleutian sites, but they still exhibit variability (Corbett et al. 2001, 2010; O'Leary 2001; Veltre 2001; West et al. 1999, 2010). The overall conclusion, based on current Aleutian material evidence, is relative continuity with regional variability and periodic changes through time that might be due to local innovations and/or technologies introduced from mainland Alaska. From these data I discuss the origins of the first migrants and the subsequent appearance of technologies representing new people or introduced ideas.

The First Aleutian Sites and the Northwest Coast Microblade Tradition

The oldest sites in the Aleutians date to 8480–7175 BP (Table 1) and are all located in the eastern Aleutians (Figure 1). These sites include the Anangula Blade site on Anangula Island (Aigner 1978; Laughlin and Aigner 1966) and the Russian Spruce (UNL-115) and Oiled Blade (UNL-318) sites on Hog Island (Dumond and Knecht 2001; Knecht and Davis 2001). All three sites are located on small islands within protective bays of larger islands, 17 to 35 m above sea level. Each site is buried 1–2 m below the modern ground surface and was revealed by erosion (Knecht and Davis 2001: 272). This earliest cultural manifestation is called the Early Anangula phase (Knecht and Davis 2001).

Early Anangula phase sites date between 9000 and 7000 BP. Tools associated with this phase include abundant blades and microblades, unifacial (blade) tools, large prismatic blade cores, transverse burins, large end scrapers, oil lamps, grooved sinkers, ocher grinders, and stone bowls (Knecht and Davis 2001: 272). No bifacial technology has been identified in the Early Anangula assemblages (Dixon 1975; Hatfield 2006; Knecht and Davis 2001). Features documented at these early sites include evidence of tentlike structures at the Anangula site (Aigner and Beiber 1976) and hearths and other shallow depressions on Hog Island (Dumond and Knecht 2001; Knecht and Davis 2001).

Table 1. Early Anangula Phase Sites and Radiocarbon Dates

Island and Site	*Date (BP ± σ)*	*Source*
Anangula, Anangula Blade	8480 ± 350	Mason (2001)
Hog, Russian Spruce	8320 ± 220	Dumond and Knecht (2001)
Anangula, Anangula Blade	8170 ± 240	Mason (2001)
Hog, Russian Spruce	8110 ± 50	Dumond and Knecht (2001)
Hog, Russian Spruce	8090 ± 50	Dumond and Knecht (2001)
Anangula, Anangula Blade	8060 ± 240	Mason (2001)
Hog, Oiled Blade	8050 ± 60	Knecht and Davis (2001)
Hog, Russian Spruce	8050 ± 80	Dumond and Knecht (2001)
Umnak, Sandy Beach Bay	8045 ± 390	Mason (2001)
Hog, Oiled Blade	8040 ± 50	Knecht and Davis (2001)
Hog, Russian Spruce	7950 ± 90	Dumond and Knecht (2001)
Hog, Russian Spruce	7930 ± 60	Dumond and Knecht (2001)
Anangula, Anangula Blade	7870 ± 260	Mason (2001)
Anangula, Anangula Blade	7793 ± 116	Mason (2001)
Anangula, Anangula Blade	7180 ± 250	Mason (2001)
Anangula, Anangula Blade	7175 ± 240	Mason (2001)

The blade and microblade technologies from the three sites include irregular, rotated, and extensively recycled cores (Knecht and Davis 2001: 272) (Table 2). Furthermore, Dumond and Knecht (2001) noted that the blades and microblades from the Hog Island sites separated into distinct size classes. In contrast, Aigner (1978: 88–89) found that the blades and microblades from the Anangula Blade site varied continuously and exhibited no distinct size groups. The Anangula Blade site stone tools were initially associated with Upper Paleolithic (nonmicroblade) technologies from Siberia (Aigner 1970: 63, 1978; Laughlin 1951b; Laughlin and Marsh 1954; McCartney and Turner 1966); however, later researchers have noted that the Anangula Blade technology is inconsistent with these Upper Paleolithic technologies (Ackerman 1992; Dixon 2001; Dumond 1986; Powers 1983).

Core shapes and microblades in particular set this early Aleutian assemblage apart from Siberian Upper Paleolithic industries. Dumond and Bland (1995: 408) determined that Anangula Blade site cores lacked standardization and, once expended, were recycled into irregular flake cores (McCartney and Veltre 1996: 446). This variability in core shapes and the presence of microblades are unlike the standardized Upper Paleolithic and Paleoindian industries. The Anangula Blade site assemblage is similar to the Hog Island sites in both age and technology, and all three assemblages document distinctive microblade technology (Dumond and Knecht 2001; Knecht and Davis 2001). The origins of the Early Anangula technologies may be from the Paleoarctic tradition (10,500–8000 BP). The Paleoarctic tradition emerged from the Upper Paleolithic microblade traditions of Eurasia and includes three North American variants: the American Paleoarctic tradition,

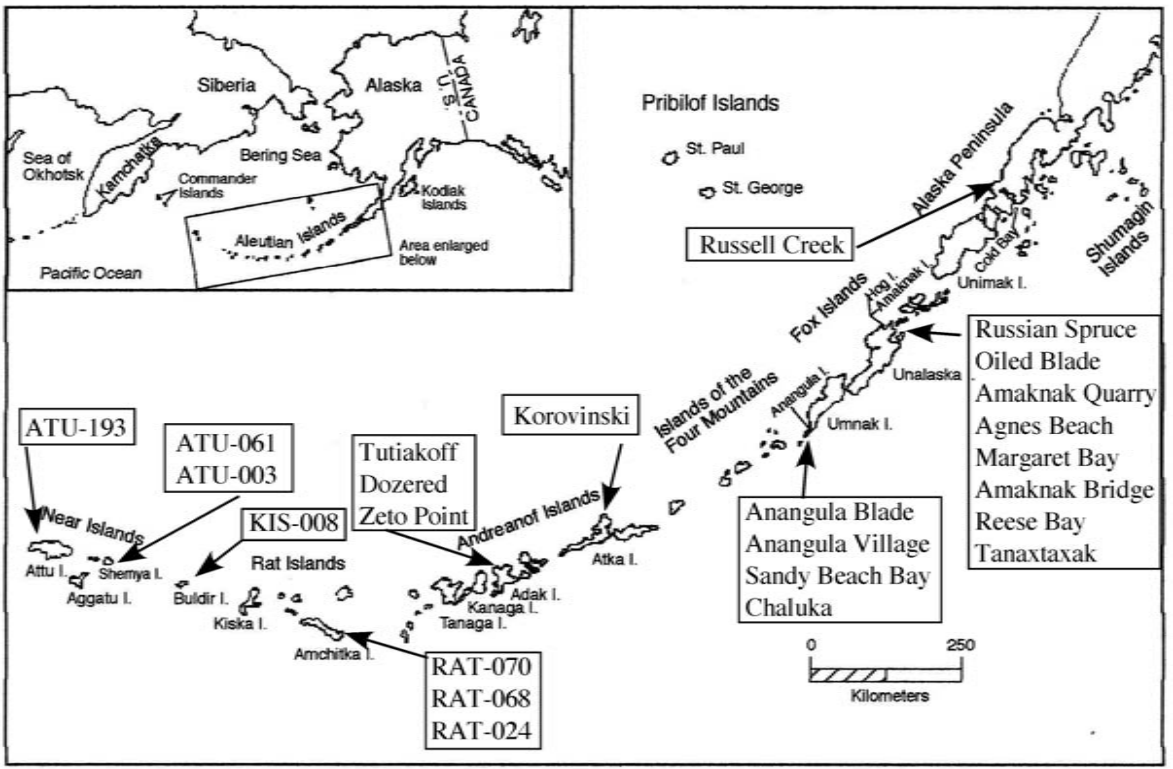

Figure 1. The Aleutians Islands (redrawn by Rohina Rubicz, with modifications) showing key sites mentioned in the text.

Table 2. Artifacts Associated with Aleutian Sites and Phases

Phase	*Site*	*Artifacts*	*References*
Early Anangula	Anangula Blade, Russian Spruce, and Oiled Blade	Blade tools, blades, blade cores, microblades, microblade cores, irregular flake debitage, transverse burins, end scrapers, oil lamps, grooved sinkers, ocher grinders, stone bowls	Knecht and Davis (2001)
Late Anangula	Margaret Bay, level 5	Blades, microblades, large stemmed points, bifaces, and irregular flake debitage	Knecht et al. (2001: 54)
	Margaret Bay, level 4	Blades, microblades, bifaces (bipointed and stemmed), and irregular flake debitage; bone tools include needles, harpoons, atlatl hooks, and fishhooks	Knecht et al. (2001: 53)
	Amaknak Quarry	Blades, microblades, burin spall, biface, flake tools, irregular flake debitage, and pumice	Rogers et al. (2009)
	Sandy Beach Bay	Unifacial and bifacial points, scrapers, burins, burin spalls, burinized scrapers, adzes, sharpening stones, anvils, hammer stones, net sinkers, and irregular flake debitage; ulus and asymmetric knives	Aigner et al. (1976: 84)
	Agnes Beach	Microblades, bifacial tools, stemmed points, oil lamps, bone tools	Knecht and Davis (2001)
	Tutiakoff	Stemmed projectile points, biface fragments, wedges, unifacial scraper, flake tools, irregular flake debitage, bipolar cores, abraders, griddle stones; bone tools include a point, awls, and needle preform	Wilmerding and Hatfield (2010)
	Amchitka sites (RAT-070, RAT-068, and RAT-024)	Bifacial and flake tools, including burin, burin spalls, projectile points, gravers, scrapers, and abraders	Young (n.d.)
Margaret Bay	Margaret Bay, level 3	Blades, microblades, large bifaces, unifacial scrapers, asymmetric knives, square knives, polished burins, piercers, bullet-shaped (qaxaq) points, other stemmed points, flake tools, irregular flake debitage, stone bowls, plummets, grooved net sinkers, ground slate lances, and an ulu	Knecht et al. (2001: 51)
	Margaret Bay, level 2	Blades, microblades, flakes, bifaces, flake tools, points (bipointed, bullet-shaped, and square-stemmed), angle burins, piercers, gravers, polished adzes, beaked end scrapers, small thumbnail scrapers, bell-shaped end scrapers, asymmetric scrapers, bowls, lamps, net sinkers, ocher grinders, incised pumice, incised siltstone, chipped-stone animal effigies, labrets; bone tools include harpoons	Knecht et al. (2001: 47)

Table 2. (*continued*)

Phase	*Site*	*Artifacts*	*References*
	Amaknak Bridge	Asymmetric knives and scrapers, points, chisels, some blades and microblades, bifaces, net sinkers, plummets, pumice floats, oil lamps, hones, labrets, pins, pendants and beads (some made of jet); bone tools include fishhooks, harpoons, foreshafts, lance tips, throwing board pins, root picks, socketed drill caps, and eyed bone needles	Knecht and Davis (2008: 73)
	Chaluka, lower component	Projectile points (stemmed and lanceolate points), bifacial tools (stemmed knives, rectangular knives, drills, adzes, and scrapers), unifacial tools (stemmed scrapers, side scrapers, end scrapers, asymmetric scrapers, small engravers, flake knives, other scrapers and engraving tools), choppers, net sinkers, hammer stones, other grinding stones, abraders, bowls, and lamps	Denniston (1966: 111)
	Russell Creek	Projectile points, flake tools, blades, microblades, a microblade core, ground-stone tools, polished adzes, stone bowls, lamps; bone tools include fishhook parts (leister prongs), harpoons, harpoon fragments, and bird bone awls	Maschner and Jordan (2001)
	ATU-061	Several bifaces, unifacial scrapers, flake tools (a chisel and wedges), hammer stones, choppers, abraders, anvils, an ulu, a lamp, griddle stones; bone tools include wedges, bird bone awls, bird bone-splinter points, and a flaker	Corbett et al. (2010)
Amaknak	Chaluka, middle component	Projectile points (stemmed and lanceolate), bifacial adzes, bifacial knives, bifacial stemmed knives, asymmetric bifacial knives, unifacial scrapers, choppers, notched and grooved sinkers, hammer stones, an ocher grinder, abraders, stone lamps	Denniston (1966)
	Chaluka, upper component	Projectile points (stemmed and lanceolate), several bifacial tools (stemmed and unstemmed knives, asymmetric knives, adzes, drills, scrapers, saws, chisels), unifacial scrapers, choppers, notched net sinkers, ocher grinders, abraders, hammer stones, labrets; bone tools include bone awls, beads, clubs, diggers, drill pivots, fishhooks, fishhook shanks, bone flakers, harpoons, labrets, eyed needles, notched needles, points, socket pieces, spatulas, spears, wedges, and bone tubes	Denniston (1966)

	Dozered	Projectile points, flake tools, net sinkers, hammer stones, abraders, griddle stones; bone tools include awls, needles, a fishhook shank, cut bird bone, and wedges	Wilmerding and Hatfield (2010)
	Zeto Point, component 1	Bifaces, flake tools, abraders, a possible blade tool, a hammer stone, griddle stones	Wilmerding and Hatfield (2010)
	Korovinski	Stemmed and unstemmed projectile points, scrapers, flake tools, flakes, cores, net sinkers, hammer stones, flakers, abraders, adzes, labrets, ocher palettes, lamps, stone bowls; bone tools include points, socket pieces, bird bone spears, fishing shanks, fishhooks, needles, awls, wedges, and root diggers	Veltre (2001)
	ATU-003	Stemmed points, parallel-sided points, net sinkers; bone artifacts include harpoon foreshafts, unilaterally barbed bone points, toggles, fishhook shanks, and fishhook points	Corbett et al. (2010)
Late Aleutian	Reese Bay	Projectile points, unifacial tools, flaked knives, scrapers, drills, gravers, adze blades, cores, flakes, ground-stone knives, pumice/scoria abraders, faceted gravers, lamps, whetstones, palettes, hammer stones, notched sinkers, ornaments; bone tools include points, foreshafts, socket pieces, wedges, root diggers, awls, and ornaments; trade items include glass beads, other beads, glass, nails, spikes, other metal items, and wood objects	Veltre and McCartney (2001)
	Tanaxtaxak	Projectile points (a bipointed point, a qaxaq style point, another bullet-shaped point, and several point fragments), chipped adze blades, retouched ulu blades, other bifacial tools, unifacial scrapers, drills, flake knives, hammer stones, ground slate points, ground slate ulu knives, net sinkers, oil lamps, ground adze blades, ocher palettes, hones, stone bowls, pumice and scoria abraders; a copper knife; bone tools include barbed harpoons (bilaterally barbed with keystone shaped bases, some with line holes), toggling harpoons, bone foreshafts, prongs for fish spears or bird darts, bone arrow points, socket pieces, a sea mammal bone that was worked into an inflator valve, fishhook shanks and barbs, and gorges; root picks, awls, needles and needle blanks (all stages of manufacture), flakers, wedges, a handled spatula; kayak parts made of bone; several miniature artifacts/toys included miniature lamps, miniature barbed harpoons, a miniature complete ulu, a complete unsharpened adze blade, a notched miniature projectile point fragment; a single anthropomorphic figurine made from whalebone with a human face on a limbless torso; jet beads, labrets made from bone, ivory and various kinds of stone; griddle stones	Knecht and Davis (2001)

Table 2. (*continued*)

Phase	*Site*	*Artifacts*	*References*
	Zeto Point, component 2	Bifacial projectile point/knives (one laurel leaf shaped point and five stemmed points), a unifacial point, flake tools, ulus, abraders, lamps, plummets, net sinkers, anvils, hammer stones, and griddle stone; bone tools include bone pendants, fishhooks, bilaterally carved harpoon point, asymmetrically barbed bone points, flat bone point, awls, a needle preform, a gorge, bone wedges, and bird bone with scoring (possibly a bead)	Wilmerding and Hatfield (2010)
	KIS-008	Bifacial and flake tools such as projectile points, scrapers, adzes, and knives; ulus, net sinkers, anvils, hammer stones, griddle stones; wooden artifacts include points, shafts, slats, tapering cylinders; bone tools include foreshafts, a blunt, a slab, a paddle, a button, wedges, and awls; ivory artifacts include scraper and adze haft	Corbett et al. (1997b)
	ATU-198	Ocher associated with one of the burials, a net sinker, a biface, a barbed harpoon point, spoons made from cormorant breast bones	West et al. (2003: 73)

the Denali complex, and the Northwest Coast Microblade tradition (Dixon 1999, 2001).

The American Paleoarctic dates from 10,500–8000 BP and is defined by wedge-shaped microblade cores, microblades, blades and blade cores, bifaces, antler arrow points slotted to receive microblades, grooved stone abraders, and waste flakes (Dixon 1999: 173). American Paleoarctic populations were distributed along the Bering Sea, Chukchi Sea, and Arctic Ocean coasts and were adapted to a maritime economy.

The Denali complex dates from 10,500–8000 BP and is located in the interior of Alaska; it does not have any maritime component (Dixon 1999). The characteristic artifacts include bifacial knives, blades and blade cores, microblades, prepared (wedge-shaped) microblade cores, burins, and flake tools (Dixon 1999: 176).

The Northwest Coast Microblade tradition, dating from 9500 to 8000 BP, is adapted to a maritime economy and is distributed along the North Pacific coast, the Kodiak archipelago, and along the coasts of southeast Alaska, British Columbia, Washington, and Oregon (D. W. Clark 1991: 40; Dixon 1999: 176). The distinctive features of this microblade technology include blocky (not wedge-shaped) microblade cores, microblades, flake tools, flake cores, bifaces, scrapers, gravers, and choppers. These populations possibly traded in obsidian and fished in deep sea, and they are believed to have been adept at year-round ocean navigation (D. W. Clark 1991: 40; Dixon 1999: 178).

The Early Anangula tradition can also be compared to the northern Asian stone tool complexes of the Sumnagin and Puturak cultures (Dumond and Bland 1995; Slobodin 1999). The Sumnagin tradition is found in northeast Asia from the Okhotsk Sea to Chukotka and Kamchatka and dates between 10,000 and 6200 BP. The Sumnagin stone tools include conical and prismatic cores, blade tools (end scrapers, knives), microblade tools (angular burins), blades, microblades, and variable-shaped blade cores as well as bifacially retouched axes. With the exception of the bifacial retouch, no bifacial technology is documented within the Sumnagin tradition (Dumond and Bland 1995: 410; Slobodin 1999). The Puturak culture, dating to 8000 BP, is located on Chukotka, near the Bering Sea, and is associated with charcoal concentrations and stone hearths (Slobodin 1999: 493). Puturak assemblages include blade tools (points, knives, end scrapers), blades, blade cores (prismatic and subprismatic), and microblades. This culture also has no bifacial tools (Slobodin 1999).

A number of similarly adapted cultures are found on both sides of the Bering Strait. Possibly trade and other interactions across the strait maintained these similarities following a common origin, most likely in northeastern Asia, and variations between these cultures reflect changes over time following a divergence. Although the Northwest Coast Microblade tradition does include bifacial technology, it shares similarly shaped microblade cores and other characteristics found in Early Anangula phase sites. Also, because of its proximity, it is likely that the Northwest Coast Microblade tradition is the most closely related culture to the

Early Anangula tradition, possibly sharing a common ancestor. Give the lack of bifaces in the north Asian microblade traditions of the Sumnagin and Puturak, it is also possible that one of these traditions is ancestral to the Early Anangula tradition.

Thus far, no central and western Aleutians sites date within the Early Anangula phase. Geological factors—tectonic uplift, isostatic rebound, and sea-level changes—make the discovery of sites dating earlier than 7000 BP extremely rare. Sampling strategies throughout the Aleutians have targeted sites located on the first or second terrace and are biased by ground features visible under thick vegetation. Consequently, archaeologists conducting surveys predominantly documented large village sites dating to within the last 3,000 years. It is possible that there are Early Anangula sites in the central and western Aleutians that have yet to be found.

Adverse Climate, the First Central Aleutian Sites, and Bifacial Technology

Given the rarity of sites dating between 7000 and 6000 BP, it has been suggested that catastrophic events, such as volcanic eruptions, severely affected the Early Anangula phase sites, possibly leading to their demise (L. Black 1981; R. F. Black 1976; Dumond 2001: 290; Mason 2001: 117–118; McCartney and Turner 1966). There is evidence for extremely cold temperatures, for example, at the Tutiakoff site on Adak Island, dating to 6500 BP (Savinetsky et al. 2010). Another cold period, the Neoglacial dating from 4700 to 2500 BP, was documented at the Margaret Bay site and the Amaknak Bridge site (Crockford and Frederick 2007). The faunal remains from these sites also indicate that the eastern end of the Aleutian chain was ice-bound much of the year or perhaps year-round during the Neoglacial (Crockford and Frederick 2007). Tectonic and climatic factors may also have prohibited early settlements. The paucity of sites is more likely attributed to problems in locating early deeply buried sites. Two recently documented sites, the Amaknak Quarry site and the Tutiakoff site (O'Leary 2001; Rogers et al. 2009; West et al. 2010), dating between 7000 and 6000 BP, support the probability that more sites have yet to discovered.

About 7000 BP, bifacial technology appears in the eastern Aleutian tool kit, marking (1) an autochthonous innovation, (2) interactions with neighbors, or (3) new migrants to the area. Because previous technologies continue, innovation or new influences are the most parsimonious explanation for the appearance of this technology. The earliest site with bifacial technology is the Amaknak Quarry site in the eastern Aleutians (Rogers et al. 2009). Bifacial technology also makes up part of the lithic assemblage at the earliest known central Aleutian site—the Tutiakoff site (ADK-171) (Wilmerding and Hatfield 2010).

The appearance of bifacial technologies marks the beginning of the Late Anangula phase, which dates to 7000–4000 BP (Knecht and Davis 2001) (Table 3). The period dating between 6000 and 4000 BP has also been called the Aleutian

Table 3. Late Anangula Phase Sites and Radiocarbon Dates

Island and Site	*Date (BP ± σ)*	*Source*
Eastern Aleutians		
Amaknak, Amaknak Quarry	7160 ± 40	Rogers et al. (2009: 155)
Amaknak, Amaknak Quarry	6820 ± 40	Rogers et al. (2009: 155)
Amaknak, Amaknak Quarry	6220 ± 40	Rogers et al. (2009: 155)
Amaknak, Amaknak Quarry	6150 ± 40	Rogers et al. (2009: 155)
Amaknak, Amaknak Quarry	6000 ± 40	Rogers et al. (2009: 155)
Anangula, Anangula Village	5920 ± 80	Laughlin (1975: 512); Mason (2001: 109)
Anangula, Anangula Village	5750 ± 65	Laughlin (1975: 512); Mason (2001: 109)
Amaknak, Margaret Bay	5470 ± 140	Knecht et al. (2001)
Umnak, Sandy Beach Bay	5370 ± 240	Mason (2001: 110)
Anangula, Anangula Village	5340 ± 80	Laughlin (1975: 512); Mason (2001: 109)
Amaknak, Margaret Bay	5250 ± 70	Knecht et al. (2001)
Anangula, Anangula Village	5180 ± 100	Laughlin (1975: 512); Mason (2001: 109)
Unalaska, Agnes Beach	5120 ± 120	Knecht et al. (2001)
Amaknak, Margaret Bay	4700 ± 40	Knecht et al. (2001: 42)
Amaknak, Margaret Bay	4660 ± 80	Knecht et al. (2001: 42)
Umnak, Sandy Beach Bay	4655 ± 160	Mason (2001: 110)
Anangula, Anangula Village	4550 ± 125	Mason (2001: 109)
Amaknak, Margaret Bay	4520 ± 60	Knecht et al. (2001: 42)
Anangula, Anangula Village	4510 ± 125	Laughlin (1975: 512); Mason (2001: 109)
Umnak, Sandy Beach Bay	4385 ± 200	Mason (2001: 110)
Umnak, Sandy Beach Bay	4295 ± 200	Mason (2001: 110)
Umnak, Sandy Beach Bay	4205 ± 180	Mason (2001: 110)
Umnak, Idaliuk Bay	4165 ± 170	Mason (2001: 110)
Amaknak, Margaret Bay	4130 ± 40	Knecht et al. (2001: 42)
Central Aleutians		
Adak, ADK-171, Tutiakoff	6525 ± 94	West et al. (2010)
Adak, ADK-171, Tutiakoff	6410 ± 60	O'Leary (2001: 221)
Adak, ADK-171, Tutiakoff	6180 ± 60	O'Leary (2001: 221)
Adak, ADK-171, Tutiakoff	6141 ± 123	West et al. (2010)
Adak, ADK-171, Tutiakoff	6172 ± 192	West et al. (2010)
Adak, ADK-171, Tutiakoff	6005 ± 20	West et al. (2010)
Adak, ADK-171, Tutiakoff	5960 ± 60	West et al. (2010)
Adak, ADK-171, Tutiakoff	5750 ± 60	O'Leary (2001: 221)
Adak, ADK-171, Tutiakoff	5735 ± 30	West et al. (2010)
Adak, ADK-171, Tutiakoff	5405 ± 15	West et al. (2010)
Adak, ADK-012 and ADK-013	4620 ± 100	O'Leary (2001: 221)
Adak, ADK012 and ADK-013	4530 ± 150	O'Leary (2001: 221)
Western Aleutians		
Amchitka, RAT-070	4780 ± 270	U.S. Bureau of Indian Affairs (1985)
Amchitka, RAT-068	4610 ± 110	U.S. Bureau of Indian Affairs (1985)
Amchitka, RAT-068	4510 ± 230	U.S. Bureau of Indian Affairs (1985)
Amchitka, RAT-024	4440 ± 90	U.S. Bureau of Indian Affairs (1985)
Amchitka, RAT-070	4330 ± 100	U.S. Bureau of Indian Affairs (1985)

tradition (McCartney 1984). According to Knecht and Davis (2001), eastern Late Anangula phase sites are located 8–29 m above sea level. These sites are characterized by blade, microblade, and irregular flake technology, with unifacial retouch of blades and flakes, and the addition of bifacial technology into the Aleutian tool kit (Knecht and Davis 2001: 274). Tools include stemmed projectile points, bell-shaped scrapers, gravers, and transverse, polished, and mitten burins. Bone technology also appears during this phase (Knecht and Davis 2001: 274).

The eastern Aleutian Late Anangula sites include the Amaknak Quarry site (UNL-469) and levels 4 and 5 of the Margaret Bay site (UNL-048) on Amaknak Island, the Sandy Beach Bay site on Umnak Island, the Anangula Village site on Anangula Island, and the Agnes Beach site (UNL-046) on Unalaska Island (see Figure 1 and Tables 2 and 3). These sites document charcoal stains, hearths, red ocher concentrations, post molds, shallow semisubterranean dwellings, and midden deposits (Aigner et al. 1976: 84; Knecht et al. 2001: 54; Laughlin and Aigner 1975; Mason 2001; Rogers et al. 2009). Almost all these sites include blade and microblade technology, with the exception of the Anangula Village site, which has no evidence for this technology. The Amaknak Quarry site has the earliest biface yet recovered from the Aleutians (Rogers et al. 2009) (see Tables 2 and 3). At the Sandy Beach Bay site, Aigner et al. (1976: 88) emphasized the large size of the bifacial and unifacial chipped-stone points, which are similar to the large unifacial tools found in the Anangula Blade site and are significantly different from the smaller stemmed projectile points in later eastern Aleutian sites.

The Tutiakoff site (ADK-171) is the oldest central Aleutian site, dating to 6525–5405 BP (O'Leary 2001; West et al. 2010) (see Figure 1 and Table 3). This site is located on a second terrace, 20 m above sea level, overlooking a large lagoon (Luttrell and Corbett 2000). Savinetsky et al. (2010) identified saffron cod from ADK-171 and diatoms from a nearby lake that revealed extremely cold and highly bioproductive conditions during the time that the site was occupied (Savinetsky et al. 2010; West and Crockford 2010). The site includes stemmed projectile points, bifaces, and bone tools from a shell midden and other cultural layers approximately 70–100 cm below ground surface (West and Hatfield 2010; Wilmerding and Hatfield 2010) (Table 3). No blade or microblade technologies are identified in this assemblage. Obsidian artifacts (one tool and several pieces of debitage) from this site likely came from Okmok volcano on Umnak Island in the eastern Aleutians (Nicolaysen et al. 2010). In the western Aleutians, three sites on Amchitka Island date within this time period (see Figure 1 and Tables 2 and 3) and are lithic scatters and midden deposits, all located 30 m or more above sea level (U.S. Bureau of Indian Affairs 1985; Young, n.d.).

At this time, the central and western Aleutians appear to be remotely related to the eastern Aleutians. The Tutiakoff site assemblage is consistent with the Late Anangula phase, except for the lack of blade and microblade technology, which separates this site from the characteristic traits of this phase. However, the Anangula Village site in the eastern Aleutians also has no reported blade or microblade technology, indicating that variation occurs in both the eastern and central

Aleutians. This variation may be due to sample size of excavated materials, differences in site function, or other variables. Obsidian is common to several of the sites at this time. The occurrence of obsidian (originating from Okmok volcano on Umnak Island) at the Tutiakoff site on Adak indicates (1) that this material arrived with the earliest migrants to Adak, (2) was a part of a system of trade with eastern Unangan who had access to this material, or (3) was acquired by Adak occupants who made special long-distance voyages to the east to acquire it firsthand (West et al. 2010).

Stabilizing Sea Level, Cultural Continuity, and the Arctic Small Tool Tradition

Around 4000 BP, worldwide sea levels began to stabilize at modern levels (Hopkins 1973). Sea-level changes variably affected the coastal landscape evolution of all islands, eroding or inundating coasts, resulting in both the eradication of previously occupied locations and the formation of new locations suited for human occupation (Aigner 1976; R. F. Black 1976; R. F. Black and Laughlin 1964; Mason 2001). The estimation of sea level was based on Hopkins's (1973) data on postglaciation sea-level rise in the Bering Sea. Additional but limited studies of sea-level change have been conducted for individual Aleutian Islands and the Alaska Peninsula [see R. F. Black 1980: 233, Table 1; for citations by island, see R. F. Black (1974a, 1974b, 1975, 1976, 1977, 1980) and R. F. Black and Laughlin (1964)]. R. F. Black and Laughlin (1964: 134) estimated sea-level changes since 14,000 BP and argued that few sites dating before 5000 BP escaped the rising sea level. However, according to J. W. Jordan (2001: 512–513), "regional variations in glacio-tectonic setting and the elevations of raised marine terraces have precluded the correlation of sea level trends throughout the arc (Gard 1980; Thorson and Hamilton 1986; [J. W.] Jordan 1997)." No pattern can be applied to all Aleutian islands because of the complexity of sea-level changes in concert with isostatic rebound, tectonic and volcanic uplift, volcanic eruptions, and other factors (J. W. Jordan 2001: 512).

Also occurring during this time are new lithic technologies similar to the Arctic Small Tool tradition (ASTt) in the assemblages of one or two sites in the eastern Aleutians and on the Alaska Peninsula (Denniston 1966; Knecht and Davis 2001; Maschner and Jordan 2001). Irving (1957) initially defined the Arctic Small Tool tradition and described sites with microblades, distinctive types of burins, and certain types of bifacial projectile points, including tiny unstemmed points. These sites extend from the Bering Strait to Greenland (Dumond 2001: 298; Irving 1962: 56). Several regional traditions have since been included within the ASTt, such as Denbigh, Saqqaq, Independence I, Choris, Norton, Ipiutak, Dorset, and Pre-Dorset (Dumond 2001: 300–301; Giddings and Anderson 1986: 313–316; Irving 1969–1970; Maxwell 1985). The ASTt appeared in about 4000 BP and possibly is derived from populations in North America or northeast Asia and may be associated with the arrival of ancestral Eskimo peoples.

Powers and Jordan (1990: 666) noted an expansion in northern Asia of the Bel'kachi culture, which is characterized by small bifacial triangular points, diagonally retouched bifacial points, microblades and microblade cores, burins, adzes (flaked and polished), chisels, unifacial and bifacial scrapers, flake knives and scrapers, perforators, gravers, and net sinkers. The Bel'kachi assemblages also have pottery and bone tools (including polished tips), awls, needles, and slotted arrows (Powers and Jordan 1990: 666). Powers and Jordan (1990: 666) argued that a variant of this same culture without pottery spread across the Taimyr, throughout north Alaska, the Canadian High Arctic, and Greenland and that the Bel'kachi were the origin for the ASTt. Possibly the ASTt expansion influenced the eastern Aleutians, but this influence was limited to the eastern Aleutians, reflected in the chipped-stone tools and architectural elements of only a few sites.

Knecht and Davis (2001) refer to the period between 4000 and 3000 BP as the Margaret Bay phase (Table 4). Eastern Aleutian sites of this period are located on terraces 8–10 m above sea level (Knecht and Davis 2001). During this time, there was a significant decrease in the use of blade and microblade technologies, which became rare or were absent by 3000 BP (Knecht and Davis 2001). Well-flaked, mostly pressure-flaked tools—points (e.g., qaxaq), polished adze blades, polished burins, end scrapers (round and beaked), bell-shaped scrapers, polished burins, and adze blades—are associated with the ASTt in a few sites in the eastern Aleutians at this time (Knecht et al. 2001: 51).

Eastern Aleutian sites include levels 2 and 3 of the Margaret Bay site (UNL-048) and the Amaknak Bridge site (UNL-050) on Amaknak Island and the Chaluka site on Umnak Island (see Figure 1 and Tables 2 and 4). The Russell Creek site (XCB-022) on the Alaska Peninsula also shares similarities with these sites. Features include semisubterranean houses with stone-lined interiors, stone-lined storage boxes, stone-lined hearths, and stone-lined chimneys (e.g., at Margaret Bay, levels 2 and 3; Amaknak Bridge; and Russell Creek). Arctic Small Tool tradition artifacts include the bullet-shaped qaxaq points from Margaret Bay, levels 2 and 3 (Knecht et al. 2001: 47, 51); the beaked end scrapers from Margaret Bay, level 2; and small tools from Chaluka, levels VI and V (Denniston 1966: 111), and from the Russell Creek site (Maschner and Jordan 2001).

In the central and western Aleutians, sites dating to this time are located on Adak, Amchitka, and Shemya islands (see Table 4). The Shemya Island site (ATU-061) is a small site along the southwestern coast and dates to 3500–3000 BP (Corbett et al. 2010; Lefèvre et al. 2001) (see Figure 1 and Tables 2 and 4). This is the earliest known occupation in the Near Islands group, situated more than 20 m above sea level. Debitage analysis documents blades and microblades among the irregular flake-core and bifacial debitage (Hatfield 2006). The small amount of blade and microblade technology at this western Aleutian site suggests trade with or colonization by people to the east.

The site on Shemya Island is the only site with definitive blade and microblade technology; otherwise, evidence for blade and microblade technology in the

Table 4. Margaret Bay Phase Sites and Radiocarbon Dates

Island and Site	*Date (BP ± σ)*	*Source*
Eastern Aleutians		
Umnak, Chaluka	3674 ± 55	Corbett (1991: 48)
Amaknak, Margaret Bay	3630 ± 70	Knecht et al. (2001: 42)
Amaknak, Margaret Bay	3610 ± 110	Knecht et al. (2001: 42)
Umnak, Chaluka	3603 ± 60	Corbett (1991: 48)
Amaknak, Amaknak Bridge	3470 ± 70	Knecht and Davis (2008)
Umnak, Chaluka	3460 ± 150	Corbett (1991: 48)
Amaknak, Amaknak Bridge	3470 ± 70	Knecht and Davis (2008)
Unalaska, Agnes Beach	3450 ± 60	Knecht and Davis (2001)
Amaknak, Amaknak Bridge	3370 ± 60	Knecht and Davis (2008)
Amaknak, Amaknak Bridge	3360 ± 95	Davis and Knecht (2001)
Alaska Peninsula, Russell Creek	3335 ± 55	Maschner and Jordan (2001: 153)
Alaska Peninsula, Russell Creek	3335 ± 55	Maschner and Jordan (2001: 153)
Alaska Peninsula, Russell Creek	3315 ± 45	Maschner and Jordan (2001: 153)
Amaknak, Amaknak Bridge	3310 ± 1100	Knecht and Davis (2008)
Amaknak, Margaret Bay	3280 ± 70	Knecht et al. (2001: 42)
Amaknak, Margaret Bay	3270 ± 70	Knecht et al. (2001: 42)
Amaknak, Amaknak Bridge	3240 ± 90	Knecht and Davis (2008)
Alaska Peninsula, Russell Creek	3240 ± 55	Maschner and Jordan (2001: 153)
Alaska Peninsula, Russell Creek	3210 ± 45	Maschner and Jordan (2001: 153)
Alaska Peninsula, Russell Creek	3165 ± 50	Maschner and Jordan (2001: 153)
Alaska Peninsula, Russell Creek	3160 ± 70	Maschner and Jordan (2001: 153)
Umnak, Chaluka	3148 ± 60	Corbett (1991: 48)
Umnak, Chaluka	3113 ± 60	Corbett (1991: 48)
Amaknak, Margaret Bay	3110 ± 60	Knecht et al. (2001: 42)
Alaska Peninsula, Russell Creek	3110 ± 50	Maschner and Jordan (2001: 153)
Umnak, Chaluka	3106 ± 60	Corbett (1991: 48)
Umnak, Chaluka	3070 ± 60	Corbett (1991: 48)
Umnak, Chaluka	3031 ± 60	Corbett (1991: 48)
Amaknak, Amaknak Bridge	3000 ± 70	Knecht and Davis (2008)
Central Aleutians		
Adak, ADK-187	3600 ± 50	O'Leary (2001: 225)
Adak, ADK-187	3590 ± 50	Luttrell and Corbett (2000)
Amchitka, AA-12090	3300 ± 70	O'Leary (2001: 225)
Adak, ADK-012 and ADK-013	3300 ± 200	O'Leary (2001: 225)
Adak, ADK-181, Grassy Knoll	3300 ± 50	Luttrell and Corbett (2000)
Adak, ADK-171, Tutiakoff	3210 ± 20	West et al. (2010)
Adak, ADK-194	3050 ± 70	O'Leary (2001: 225)
Adak, ADK-194	3050 ± 70	Luttrell and Corbett (2000)
Western Aleutians		
Amchitka, RAT-017	3640 ± 90	Young (n.d.)
Amchitka, RAT-024	3520 ± 130	Young (n.d.)
Shemya, ATU-061	3540 ± 60	Corbett et al. (2010)
Shemya, ATU-061	3255 ± 60	Lefèvre et al. (2001: 239)
Shemya, ATU-061	3120 ± 80	Corbett et al. (2010)
Shemya, ATU-061	3096 ± 155	Corbett et al. (2010)
Shemya, ATU-061	3080 ± 110	Corbett et al. (2010)

Andreanof, Rat, and Near island groups is unknown. The dominance of irregular flake technology and the use of ground-stone tools and bone tools in both the central and western Aleutians is similar to the findings in the eastern Aleutians at this time. Although the increase in the use of ground-stone and bone tools and the predominance of irregular flake technology indicate similarities in tool technologies, the house construction techniques are different in the eastern Aleutians. The stone-lined houses, stone-lined hearths and chimneys, and stone-lined subfloor features in the eastern Aleutians and the Alaska Peninsula are not observed in the central and western Aleutians. The chipped-stone tools characteristic of the ASTt are also not seen in the central and western Aleutians.

The expansion of the ASTt into the Alaska Peninsula and into the eastern Aleutians is a matter of debate because the ASTt is typically associated with the Arctic settlements (Dumond 2001; Knecht and Davis 2001, 2008; Maschner and Jordan 2001). The ASTt evidence from Margaret Bay levels 2 and 3 dates to 3200 BP and 3600 BP, respectively. The Amaknak Bridge site, which is close to the Margaret Bay site and dates close to Margaret Bay level 2 deposits, lacks any lithic evidence of the ASTt but does have the stone-lined features. The ASTt was also associated with the lower levels of the Chaluka deposits, dating to 3500–3000 BP (Denniston 1966), and the Alaska Peninsula, dating to 3500 BP (Maschner and Jordan 2001). The lack of any other definite ASTt in the archipelago combined with continuity of other technologies suggests that the ASTt was adopted into existing developing technologies and did not replace them (Dumond 2001: 300–301). This limited influence also did not filter past the eastern Aleutians, as it is not found in the central or western Aleutians.

Continuity and Population Growth

Perhaps the stabilization of sea levels between 4000 and 3000 BP (Hopkins 1973) allowed for populations to be increasingly successful, because after 3000 BP settlement density increased. Across the Aleutians, sites dating after 3000 BP are far more common than during any previous time. This may be a product of sampling strategies because these sites are more likely to be located on terraces close to sea level, compared to earlier sites, which are situated on landscapes altered by tectonic activity, isostatic rebound, or sea-level changes. The limited landscape alteration and/or a substantial increase in population in the archipelago resulted in the discovery of more and larger village locations. Changes in technology also occurred with decreasing emphasis on formal chipped-stone tools, the disappearance of microblade and blades, and the increase in the use of expedient chipped-stone tools, ground-stone tools, and bone tools. These trends are seen across the Aleutian archipelago, reflecting continuity in material culture, as well as trade, through time and across the chain. Knecht and Davis (2001) referred to this period as the Amaknak Phase.

The Amaknak Phase includes sites dating between 3000 and 1000 BP in the eastern Aleutians (Table 5) and located 8–10 m above sea level (Knecht and Davis

Table 5. Amaknak Phase Sites and Radiocarbon Dates

Island and Site	*Date (BP ± σ)*	*Source*
Eastern Aleutians		
Amaknak, Amaknak Bridge	2970 ± 60	Knecht and Davis (2008)
Umnak, Chaluka	2908 ± 60	Corbett (1991: 48)
Umnak, Chaluka	2902 ± 60	Corbett (1991: 48)
Umnak, Chaluka	2896 ± 60	Corbett (1991: 48)
Umnak, Chaluka	2853 ± 60	Corbett (1991: 48)
Umnak, Chaluka	2844 ± 60	Corbett (1991: 48)
Amaknak, Amaknak Bridge	2840 ± 90	Knecht and Davis (2008)
Amaknak, Amaknak Bridge	2780 ± 70	Knecht and Davis (2008)
Amaknak, Amaknak Bridge	2670 ± 70	Knecht and Davis (2008)
Amaknak, Amaknak Bridge	2590 ± 90	Knecht and Davis (2008)
Amaknak, Amaknak Bridge	2540 ± 60	Knecht and Davis (2008)
Unalaska, Summer Bay	2470 ± 190	Knecht and Davis (2001)
Unalaska, Summer Bay	1860 ± 60	Knecht and Davis (2001)
Umnak, Chaluka	1444 ± 46	Corbett (1991: 48)
Central Aleutians		
Adak, ADK-193, Ocean Bluff	2900 ± 40	Luttrell and Corbett (2000)
Adak, ADK-013, Ocean View	2900 ± 40	West et al. (2010)
Adak, ADK-011, Zeto Point	2590 ± 20	West et al. (2010)
Adak, ADK-012, Dozered site	2510 ± 50	West et al. (2010)
Adak, ADK-011, Zeto Point	2490 ± 50	Luttrell and Corbett (2000)
Adak, ADK-012, Dozered site	2470 ± 15	West et al. (2010)
Adak, ADK-012, Dozered site	2455 ± 20	West et al. (2010)
Adak, ADK-011, Zeto Point	2440 ± 20	West et al. (2010)
Adak, ADK-011, Zeto Point	2420 ± 15	West et al. (2010)
Adak, ADK-011, Zeto Point	2395 ± 15	West et al. (2010)
Adak, ADK-011, Zeto Point	2390 ± 15	West et al. (2010)
Adak, ADK-102	2310 ± 50	Luttrell and Corbett (2000)
Adak, Came Cove, house	2250 ± 130	O'Leary (2001: 225)
Adak, ADK-011, Zeto Point	2160 ± 40	West et al. (1999)
Adak, ADK-012, Dozered site	2085 ± 15	West et al. (2010)
Adak, Clam Lagoon	2060 ± 40	Luttrell and Corbett (2000)
Adak, Clam Lagoon Peninsula	2020 ± 40	West et al. (2010)
Adak, ADK-181, Grassy Knoll	1950 ± 40	Luttrell and Corbett (2000)
Atka, Korovinski	1930 ± 100	Veltre (2001: 207)
Adak, Lake, ADK-182	1920 ± 40	Luttrell and Corbett (2000)
Atka, Korovinski	1910 ± 90	Veltre (2001: 207)
Adak, ADK-182, Lake site	1900 ± 40	West et al. (2010)
Adak, ADK-009, Sweeper Cove	1888 ± 50	Savinetsky et al. (2010)
Adak, ADK-012, Dozered Site	1865 ± 15	West et al. (2010)
Adak, ADK-013 Ocean View	1850 ± 60	West et al. (2010)
Atka, Korovinski	1830 ± 175	Veltre (2001: 207)
Adak, ADK-009, Sweeper Cove	1710 ± 70	Luttrell and Corbett (2000)
Adak, 3 Arm Bay	1530 ± 50	O'Leary (2001: 225)
Adak, ADK-012, Dozered Site	1515 ± 15	West et al. (2010)
Adak, ADK-009, Sweeper Cove	1505 ± 73	West et al. (2010)
Adak, ADK-009, Sweeper Cove	1360 ± 74	West et al. (2010)
Adak, ADK-178, Sweeper Cove 3	1360 ± 40	West et al. (2010)

Table 5. (*continued*)

Island and Site	*Date (BP ± σ)*	*Source*
Adak, ADK-011, Zeto Point	1325 ± 14	West et al. (2010)
Adak, ADK-009, Sweeper Cove	1240 ± 70	West et al. (2010)
Adak, ADK-011, Zeto Point	1240 ± 70	West et al. (2010)
Adak, ADK-011, Zeto Point	1235 ± 15	West et al. (2010)
Adak, Staten Island	1190 ± 60	O'Leary (2001: 225)
Adak, ADK-009, Sweeper Cove	1180 ± 80	West et al. (2010)
Adak, ADK-009, Sweeper Cove	1180 ± 90	West et al. (2010)
Adak, ADK-011, Zeto Point	1180 ± 20	West et al. (2010)
Adak, ADK-009, Sweeper Cove	1180 ± 40	Luttrell and Corbett (2000)
Adak, ADK-009, Sweeper Cove	1126 ± 103	West et al. (2010)
Adak, ADK-171, Tutiakoff	1062 ± 16	West et al. (2010)
Adak, ADK-009, Sweeper Cove	1040 ± 70	West et al. (2010)
Western Aleutians		
Shemya, ATU-023, pit 2	2905 ± 80	Lefèvre et al. (2001)
Shemya, ATU-061, pit 1	2880 ± 155	Lefèvre et al. (2001)
Shemya, ATU-061, house	2865 ± 110	Lefèvre et al. (2001)
Agattu, AG-3	2680 ± 70	Corbett (1991: 48)
Shemya, ATU-023	2680 ± 70	Corbett (1991: 48)
Agattu, Krugloi Point	2630 ± 300	Spaulding (1962)
Shemya, ATU-061	2630 ± 60	Corbett et al. (2010)
Shemya, ATU-061	2570 ± 140	Corbett et al. (2010)
Shemya, ATU-003	2555 ± 126	Corbett et al. (2010)
Agattu, AG-2	2550 ± 300	Corbett (1991: 48)
Amchitka, RAT-031	2550 ± 95	Corbett (1991: 48)
Agattu, Krugloi Point	2500 ± 300	Spaulding (1962)
Amchitka, RAT-017	2430 ± 190	Corbett (1991: 48)
Shemya, ATU-613	2380 ± 40	Corbett et al. (2010)
Shemya, ATU-061, house	2355 ± 140	Lefèvre et al. (2001)
Buldir, KIS-008, pit 7	2350 ± 85	Savinetsky et al. (2010)
Buldir, KIS-008, pit 7	2347 ± 84	Young (n.d.)
Shemya, ATU-003	2340 ± 125	Lefèvre et al. (2001)
Amchitka, RAT-031	2250 ± 95	Desautels et al. (1971)
Amchitka, RAT-036, 2N	2245 ± 95	Desautels et al. (1971)
Shemya, ATU-066	2244 ± 182	Savinetsky et al. (2010)
Attu, ATU-193, F44	2210 ± 60	Lefèvre et al. (2001)
Amchitka, RAT-036, 2N, 1E	2190 ± 95	Desautels et al. (1971)
Shemya, ATU-003	2148 ± 70	Corbett et al. (2010)
Shemya, ATU-613	2110 ± 40	Corbett et al. (2010)
Shemya, ATU-062	2110 ± 90	Corbett (1991: 48)
Shemya, ATU-062	2060 ± 90	Clark (1992)
Amchitka, RAT-036, 3N/1E	2055 ± 90	Desautels et al. (1971)
Shemya, ATU-022, pit 2	2047 ± 82	Savinetsky et al. (2010)
Shemya, ATU-033, pit 3	2030 ± 70	Lefèvre et al. (2001)
Shemya, ATU-066, pit 1	2030 ± 180	Savinetsky et al. (2010)
Shemya, ATU-022	2020 ± 110	Lefèvre et al. (2001)
Shemya, ATU-021	1980 ± 60	Lefèvre et al. (2001)
Shemya, ATU-003	1935 ± 70	Lefèvre et al. (2001)
Amchitka, RAT-031	1890 ± 95	Corbett (1991: 48)
Amchitka, RAT-032	1865 ± 135	Cook et al. (1972)

Table 5. (*continued*)

Island and Site	*Date (BP ± σ)*	*Source*
Attu, Cairn Creek, F43	1860 ± 70	Lefèvre et al. (2001)
Attu, Murder Point	1860 ± 70	Lefèvre et al. (2001)
Shemya, ATU-003	1860 ± 90	Lefèvre et al. (2001)
Shemya, ATU-022	1856 ± 69	Corbett et al. (2010)
Shemya, ATU-022	1830 ± 80	Lefèvre et al. (2001)
Shemya, ATU-003	1810 ± 60	Lefèvre et al. (2001)
Shemya, ATU-003	1790 ± 60	Corbett (1991: 48)
Shemya, ATU-003	1790 ± 70	Lefèvre et al. (2001)
Shemya, ATU-003	1770 ± 120	Lefèvre et al. (2001)
Shemya, ATU-003	1720 ± 70	Lefèvre et al. (2001)
Shemya, ATU-021	1700 ± 70	Corbett et al. (2010)
Shemya, ATU-003	1700 ± 70	Lefèvre et al. (2001)
Shemya, ATU-022	1640 ± 70	Lefèvre et al. (2001)
Attu, Rocky Point	1630 ± 60	Lefèvre et al. (2001)
Shemya, ATU-062	1625 ± 105	Lefèvre et al. (2001)
Attu, Ballentine Creek	1590 ± 70	Lefèvre et al. (2001)
Shemya, ATU-022	1589 ± 60	Corbett et al. (2010)
Shemya, ATU-613	1570 ± 40	Corbett et al. (2010)
Shemya, ATU-022	1375 ± 60	Lefèvre et al. (2001)
Attu, Waterfall, F24	1320 ± 70	Lefèvre et al. (2001)
Attu, Ballentine Creek	1310 ± 100	Lefèvre et al. (2001)
Agattu, Krugloi Point	1300 ± 150	Corbett (1991: 48)
Attu, Ballentine Creek	1190 ± 70	Lefèvre et al. (2001)
Attu, ATU-198 site, Burial 1	1160 ± 60	Lefèvre et al. (2001)
Attu, Rocky Point	1160 ± 50	Lefèvre et al. (2001)
Buldir, KIS-008	1160 ± 50	Corbett et al. (1997b)
Attu, Waterfall	1030 ± 80	Lefèvre et al. (2001)
Attu, Loran site	1030 ± 60	Lefèvre et al. (2001)

2001: 271). Lithic tools include stemmed projectile points, asymmetric flake knives, flake scrapers, and symmetric bell-shaped knives (Knecht and Davis 2001: 271). Ground slate tools (ulus) become abundant during this time. Bone technology is more diverse and elaborate with multiple harpoon types (some now with line holes), toggles, sockets, and/or wedge-shaped bases (Knecht and Davis 2001: 271, 277–278). In addition to the increase in number of sites recorded, umqans (burials on mountain slopes marked by A-shaped trenches) appear, suggesting a shift in social organization or belief system (Knecht and Davis 2001:277). Absent from all the sites after 3000 BP are blade or microblade technologies (Knecht and Davis 2001:278). Amaknak Phase sites include Chaluka's middle and upper components on Umnak Island, a component of the Sandy Beach Bay site on Umnak Island, and the Summer Bay site on Unalaska Island (see Tables 2 and 5). The Sandy Beach Bay occupation dating after 3000 BP is associated with an umqan (Aigner et al. 1976). These sites document more diversity in both lithic and bone tools, including decorative items such as labrets (see Table 2).

Sites in the central Aleutians dating to the Amaknak phase include the Dozered site (ADK-012) and component 1 of the Zeto Point site (ADK-011) on Adak Island and the Korovinski site on Atka Island (see Figure 1). The Dozered site assemblage (see Tables 2 and 5) is notable in its absence of ulus (Wilmerding and Hatfield 2010), which otherwise are common to this phase. A few features that are characteristic are house floors and house or storage depressions. The Korovinski site includes precontact (1830 to 1930 BP) and postcontact deposits with depressions, walled structures, gardens, drainage ditches, umqans, a Russian Orthodox cemetery, boat slips, a stone circle, sod-walled enclosures, and a church area (Veltre 2001: 196). In the western Aleutians, site ATU-003 on Shemya Island and the Cairn Creek site (ATU-193) on Attu Island date to this phase (see Table 5). These sites include midden deposits, house and storage depressions, and hearths (Corbett et al. 2010) as well as stone and bone artifacts (see Table 2).

Irregular flake and bifacial technology continue in these central and western Aleutian sites much as before, but bone technology is increasingly complex (Corbett et al. 2001; Lefèvre et al. 2001; O'Leary 2001:226). Across the Aleutians, sites at this time are more similar than during any previous time, as they all have stemmed and lanceolate projectiles and see an increasing use of expedient chipped-stone tools, ground-stone tools, and bone technologies. The distinctive umqans are noted in the eastern and central Aleutians. It appears that the populations occupying these islands maintained enough connections with each other to share changes in technology and ideology.

Trade, Raids, War, and "Neo-Aleuts"

Population growth and increasing social complexity continued in the Aleutians after 1000 BP (Corbett et al. 1997a). Considerably more variation is noted within sites, including large, thick midden deposition and longhouses. Fortified sites also occur at this time. Thus it appears that populations were increasing in size and interacting (perhaps violently) with each other, especially in the eastern Aleutians. The growth and complexity in the Aleutians correspond with widespread cultural change throughout Alaska (Dumond 1986). Ground slate artifacts, associated with the Thule Eskimo (Anderson 1984), spread from Alaska to Greenland. Iron also became increasingly available around this time (Corbett et al. 1997a). Both of these materials are documented in the Aleutians after 1000 BP.

Hrdlička (1945) identified cranial distinctions in Unangan burials, defining "Neo-Aleut" and "Paleo-Aleut" populations. This evidence suggests the arrival of new people in the Aleutians around 1000 BP. Coltrain et al. (2006) examined the skeletal remains recovered from sites in the eastern Aleutians (Chaluka and Ship Rock) and noted that those older than 1000 BP belonged to Paleo-Aleut populations, but after 1000 BP Neo-Aleuts coexisted with Paleo-Aleuts. Based on physiological and mtDNA traits, the "Neo-Aleuts represent an influx of relatively closely related people migrating westward along the island chain and characterized by elaborate mortuary practices and heightened social and economic

complexity" (Coltrain et al 2006: 545). Thus the Neo-Aleut population represents an influx of people from the east moving into the eastern Aleutians. This influx may also be associated with the movement of ground slate and jet artifacts into the eastern Aleutians and with an increase in competition for resources, raids, and warfare. The period between 1000 and 200 BP is referred to as the Late Aleutian phase in the eastern Aleutians (Knecht and Davis 2001). This period has also been called the Late Aleutian Trait Complex (Corbett et al. 1997a).

The eastern Late Aleutian phase sites (Table 6) mark the appearance of massive midden deposits and longhouses (Knecht and Davis 2001). These sites occur on terraces close to modern sea level. Technologically, this period is characterized more by ground-stone technologies than by chipped-stone technologies. In the eastern Aleutians ground slate straight and semilunar ulu blades and lance heads are common (Knecht and Davis 2001:279). Irregular core and flake industries occur but less frequently than before, and chipped-stone tools are poorly formed (Knecht and Davis 2001: 279). Bone technology reflects elaborate harpoon morphologies (with and without line holes) and cylindrical socket pieces (Knecht and Davis 2001: 279).

Late Aleutian sites in the eastern Aleutians include Reese Bay on Unalaska Island and Tanaxtaxak (UNL-055) on Amaknak Island (see Figure 1 and Tables 2 and 6). Both sites are located on spits and include thick middens and distinctive house and storage features. The Reese Bay site features include longhouses that predate Russian contact, establishing this unique house construction technique as prehistoric in origin (Veltre and McCartney 2001). The Tanaxtaxak site also has a flexed burial (Knecht and Davis 2003). Both sites document a rich artifact assemblage, with more diversity in bone tools than seen previously (Veltre and McCartney 2001; Knecht and Davis 2003) (see Table 2). Trade items were noted at Reese Bay [glass beads and other glass as well as metal (Veltre and McCartney 2001)] and at the Tanaxtaxak site [a prehistoric copper knife blade (Knecht and Davis 2003: 40)]. Slate points, slate ulus, ground adze blades made from a greenish silicified slate called greenstone, and jet beads and labrets were recovered from the Tanaxtaxak site (Knecht and Davis 2001). The jet beads and labrets are believed to originate in the Alutiiq culture, where they occur closer to the jet source (Knecht and Davis 2003; Simon and Steffian 1994). The influx of slate artifacts is similarly associated with influence or movements coming from east of the Aleutians (Anderson 1984; Knecht and Davis 2003).

In the central Aleutians, component 2 from the Zeto Point site (ADK-011) on Adak Island dates to this time (see Table 6) and includes midden deposits and house areas. Artifacts (see Table 2) include a slate ulu (Kay 2010). In the western Aleutians, Corbett (1991: 46) described the continuance of chipped- and ground-stone technologies and increasingly complex bone technology with distinctive foreshaft and socket pieces and elaborately barbed harpoon and lance points. On Amchitka, around 1000 BP, ground slate tools, bone awls, needles, symmetrically barbed harpoon heads, conically tanged projectile tips, and conical socket pieces occur (Corbett 1991: 47; Desautels 1971: 249; Laughlin 1951a). On Buldir Island,

Table 6. Late Aleutian Phase Sites and Radiocarbon Dates

Island and Site	*Date (BP ± σ)*	*Source*
Eastern Aleutians		
Amaknak, UNL-055	560 ± 50	Knecht and Davis (2001)
Amaknak, UNL-055	530 ± 50	Knecht and Davis (2001)
Amaknak, UNL-055	520 ± 50	Knecht and Davis (2001)
Amaknak, UNL-055	500 ± 50	Knecht and Davis (2001)
Amaknak, UNL-055	470 ± 50	Knecht and Davis (2001)
Umnak, Chaluka	424 ± 46	Corbett (1991: 48)
Amaknak, UNL-055	410 ± 50	Knecht and Davis (2001)
Unalaska, Reese Bay	380 ± 50	Veltre and McCartney (2001)
Amaknak, UNL-055	380 ± 50	Knecht and Davis (2001)
Amaknak, UNL-055	360 ± 70	Knecht and Davis (2001)
Unalaska, Reese Bay	360 ± 50	Veltre and McCartney (2001)
Unalaska, Reese Bay	340 ± 50	Veltre and McCartney (2001)
Umnak, Chaluka	318 ± 46	Corbett (1991: 48)
Unalaska, Reese Bay	250 ± 60	Veltre and McCartney (2001)
Unalaska, Reese Bay	240 ± 50	Veltre and McCartney (2001)
Unalaska, Reese Bay	210 ± 50	Veltre and McCartney (2001)
Unalaska, Reese Bay	190 ± 60	Veltre and McCartney (2001)
Unalaska, Reese Bay	170 ± 70	Veltre and McCartney (2001)
Central Aleutians		
Adak, ADK-011, Zeto Point	840 ± 40	West et al. (1999)
Adak, ADK-177, Sweeper Cove 2	840 ± 40	West et al. (2010)
Adak, ADK-185	810 ± 40	Luttrell and Corbett (2000)
Adak, ADK-185, Ow-ee site	790 ± 40	West et al. (2010)
Atka, Korovinski	785 ± 65	Veltre (2001: 207)
Adak, ADK-014, Lake Andrew	760 ± 50	Luttrell and Corbett (2000)
Adak, ADK-009, Sweeper Cove	755 ± 72	West et al. (2010)
Adak, ADK-193	2485 ± 20	West et al. (2010)
Adak, Shagak Bay, base	660 ± 100	O'Leary (2001: 225)
Adak, ADK-011, Zeto Point	615 ± 15	West et al. (2010)
Atka, Korovinski	535 ± 80	Veltre (2001: 207)
Adak, Andrew Bay	520 ± 40	Luttrell and Corbett (2000)
Adak, Bay of Waterfalls	500 ± 70	O'Leary (2001: 225)
Adak, ADK-084, Andrew Lake	500 ± 40	West et al. (2010)
Adak, Clam Lagoon	460 ± 40	Luttrell and Corbett (2000)
Adak, ADK-011, Zeto Point	440 ± 40	West et al. (1999)
Adak, ADK-183, Clam Lagoon Overlook	450 ± 40	West et al. (2010)
Adak, ADK-011, Zeto Point	435 ± 20	West et al. (2010)
Adak, ADK-011, Zeto Point	415 ± 20	West et al. (2010)
Adak, ADK-011, Zeto Point	410 ± 20	West et al. (2010)
Adak, ADK-011, Zeto Point	400 ± 20	West et al. (2010)
Adak, ADK-011, Zeto Point	390 ± 20	West et al. (2010)
Adak, ADK-011, Zeto Point	385 ± 25	West et al. (2010)
Adak, ADK-011, Zeto Point	375 ± 20	West et al. (2010)
Adak, ADK-011, Zeto Point	370 ± 20	West et al. (2010)
Adak, ADK-011, Zeto Point	365 ± 20	West et al. (2010)
Adak, ADK-014, Andrew Lake	340 ± 50	Luttrell and Corbett (2000)
Adak, ADK-011, Zeto Point	340 ± 15	West et al. (2010)
Adak, ADK-011, Zeto Point	340 ± 20	West et al. (2010)

Table 6. (*continued*)

Island and Site	*Date (BP ± σ)*	*Source*
Adak, ADK-014, Andrew Lake	340 ± 50	West et al. (2010)
Adak, ADK-011, Zeto Point	335 ± 15	West et al. (2010)
Adak, ADK-011, Zeto Point	335 ± 20	West et al. (2010)
Adak, ADK-084, Andrew Bay	335 ± 20	West et al. (2010)
Adak, ADK-011, Zeto Point	325 ± 20	West et al. (2010)
Adak, Campers Point	320 ± 40	O'Leary (2001: 225)
Adak, ADK-011, Zeto Point	320 ± 20	West et al. (2010)
Adak, ADK-011, Zeto Point	320 ± 25	West et al. (2010)
Adak, ADK-011, Zeto Point	315 ± 20	West et al. (2010)
Adak, ADK-084, Andrew Bay	290 ± 40	Luttrell and Corbett (2000)
Adak, ADK-011, Zeto Point	285 ± 15	West et al. (2010)
Adak, ADK-011, Zeto Point	285 ± 20	West et al. (2010)
Adak, ADK-084, Andrew Bay	280 ± 20	West et al. (2010)
Adak, ADK-011, Zeto Point	265 ± 20	West et al. (2010)
Adak, Boot Bay	230 ± 60	O'Leary (2001: 225)
Adak, Shagak Bay	230 ± 40	O'Leary (2001: 225)
Adak, ADK-011, Zeto Point	220 ± 50	Luttrell and Corbett (2000)
Adak, Shagak Bay	210 ± 40	O'Leary (2001: 225)
Adak, ADK-011, Zeto Point	180 ± 60	Luttrell and Corbett (2000)
Adak, ADK-011, Zeto Point	170 ± 25	West et al. (2010)
Adak, Airport site	160 ± 30	O'Leary (2001: 225)
Adak, ADK-011, Zeto Point	160 ± 20	West et al. (2010)
Adak, ADK-010	150 ± 60	Luttrell and Corbett (2000)
Adak, Eddy Island	102 ± 1.1	O'Leary (2001: 225)
Adak, ADK-011, Zeto Point	75 ± 20	West et al. (2010)
Western Aleutians		
Shemya, ATU-023	980 ± 70	Lefèvre et al. (2001)
Attu, Goltsov Point	960 ± 60	Lefèvre et al. (2001: 247)
Attu, Ballentine Creek	950 ± 100	Lefèvre et al. (2001: 247)
Amchitka, RAT-031	890 ± 90	Desautels et al. (1971)
Attu, ATU-198, burial 1	790 ± 90	Lefèvre et al. (2001: 247)
Agattu, ATU-036	760 ± 70	Corbett et al. (2001: 263)
Buldir, KIS-008	760 ± 60	Corbett et al. (1997b)
Buldir, KIS-008	630 ± 60	Corbett et al. (1997b)
Attu, Northeast Bluff	540 ± 80	Lefèvre et al. (2001: 247)
Buldir, KIS-008	530 ± 60	Corbett et al. (1997b)
Buldir, KIS-008	530 ± 60	Corbett et al. (1997b)
Attu, Ballentine Creek	490 ± 60	Lefèvre et al. (2001)
Buldir, KIS-008	460 ± 50	Corbett et al. (1997b)
Attu, Ballentine Creek	430 ± 60	Lefèvre et al. (2001: 247)
Buldir, KIS-008	420 ± 60	Corbett et al. (1997b)
Attu, coastal plain	390 ± 50	Lefèvre et al. (2001: 247)
Attu, ATU-198	390 ± 40	Lefèvre et al. (2001: 247)
Buldir, KIS-008	380 ± 190	Young (n.d.)
Little Sitka, RAT-085	360 ± 60	Corbett et al. (2001: 263)
Agattu, ATU-036	360 ± 60	Corbett et al. (2001: 263)
Attu, Northeast Bluff	360 ± 60	Lefèvre et al. (2001: 247)
Rat, RAT-079	360 ± 90	Corbett et al. (2001: 263)
Buldir, KIS-008	350 ± 80	Corbett et al. (1997b)

Table 6. (*continued*)

Island and Site	*Date (BP ± σ)*	*Source*
Buldir, KIS-008	320 ± 60	Corbett et al. (1997b)
Amchitka, RAT-035	310 ± 60	Young (n.d.)
Kiska, KIS-010	310 ± 60	Corbett et al. (2001: 263)
Attu, Ballentine Creek	280 ± 70	Lefèvre et al. (2001: 247)
Buldir, KIS-008	280 ± 50	Corbett et al. (1997b)
Buldir, KIS-008	250 ± 70	Young (n.d.)
Buldir, KIS-008	240 ± 60	Corbett et al. (1997b)
Attu, Goltsov Point	230 ± 60	Lefèvre et al. (2001: 247)
Rat, RAT-079	230 ± 90	Corbett et al. (2001: 263)
Buldir, KIS-008	220 ± 70	Young (n.d.)
Rat, RAT-079	180 ± 50	Corbett et al. (2001: 263)
Attu, ATU-198	150 ± 60	Lefèvre et al. (2001: 247)
Attu, ATU-198	100 ± 70	Lefèvre et al. (2001: 247)

site KIS-008 (see Figure 1 and Table 6) is a large site with midden and house features and a variety of tools (see Table 2), including ground-stone ulus and well-preserved wooden artifacts (Corbett et al. 1997b: 106). Two of the wooden artifacts were decorated. Some unusual ivory artifacts (a scraper and an adze haft made from sperm whale teeth) were also recovered (Corbett et al. 1997b). In the Near Islands, a burial in a cave documents the first cave burial reported west of the Delarof Islands in the central Aleutians (West et al. 2003) (see Tables 2 and 6).

The western and central Aleutian material culture trends in a similar way to the eastern Aleutian material culture with increasing bone and ground-stone tools and more expedient than formal chipped-stone tools. Larger sites with extensive midden deposits are also common across the archipelago at this time. After 1000 BP, a significant increase in imported items, such as ground slate, jet, iron, and occasional copper, has been noted in the eastern Aleutians (Knecht and Davis 2003) and slate has been identified on Adak Island in the central Aleutians and on Amchitka Island in the western Aleutians. According to Knecht and Davis (2003: 57), finished ulu blades arrived in the eastern Aleutians in large numbers after 1000 BP. Some of the new artifacts appeared to be derived from the Kodiak Alutiiq (Knecht and Davis 2003; Simon and Steffian 1994) and from the Alaska Peninsula or Alaskan mainland (Holland 2001), possibly associated with the Thule culture (Corbett et al. 1997a).

Burial patterns across Alaska also suggest changing ideology between 2500 and 500 BP, and after 1000 BP burials became increasingly complex (Corbett et al. 1997a). This is also seen in the Kodiak Islands (D. W. Clark 1984). In the Aleutians, the complex and varied burial practices have little patterning across the chain, with bundled burials in houses, isolated extended burials, and some dismemberment and skull curation all occurring somewhat earlier than cremations, bundled and extended burials in caves, above-ground sarcophagi, and

umqans (Corbett et al. 1997a: 465; Hrdlička 1945; Jochelson 1925). By 800 BP, intentional mummification occurred in the eastern and central Aleutians (Corbett et al. 1997a). Many of the burials in the Aleutians were not widespread traditions shared with the western islands, and some of the burials in the eastern Aleutians appear to be similar to burials on the Alaska Peninsula and Alaskan mainland.

There is also evidence of fortified sea stacks and refuge islands in the eastern and central Aleutians after 1000 BP, suggesting increased interactions between Unangan groups and between Unangan and Alutiiq peoples of Kodiak (Knecht and Davis 2003: 57). Raids between Unangan and Alutiiq have been noted in oral histories recorded during the 19th century (Knecht and Davis 2003). Between 800 and 500 BP, radical changes occurred in the Aleutians and in the Kodiak Islands. These changes include quadrupled house sizes, increased village size, and changes in tool technology, subsistence, and ceremonialism (Fitzhugh 1996; J. W. Jordan 1994; R. H. Jordan and Knecht 1988; Knecht 1995; Maschner and Reedy-Maschner 1998: 27; Saltonstall 1996). Many of these changes are associated with the expansion of Yupiit or Alutiiq peoples down the Alaska Peninsula (Maschner and Reedy-Maschner 1998).

Evidence of violence before 1000 BP is noted only around the Gulf of Alaska (Maschner and Reedy-Maschner 1998: 28); however, after 1000 BP this violence evidently spilled into the Aleutians. A site on Unimak Island, UNI-067, includes an Unangan skeleton with an Alutiiq point that damaged the cervical vertebrae (Maschner and Reedy-Maschner 1998: 30). Splitrock, off the north coast of Unalaska Island, has four burials, one of which one has skeletal damage indicative of a violent death (Maschner and Reedy-Maschner 1998: 30). Other sites include cave sites on the southern end of Kagamil Island with 60 mummies, of which 30 indicate that death was caused by some kind of weapon (Maschner and Reedy-Maschner 1998: 30). The artifacts recovered from sites at this time that reflect war and raiding include clubs, shields, armor, and projectiles (Maschner and Reedy-Maschner 1998).

Sites with fortifications or that relied on defensive locations also appear after 1000 BP, such as Splitrock, Tunularalur (AA-12199) on the southwest coast of Amlia Island, several sites on Amchitka Island (AA-12018 and AA-12019) located on refuge rocks, and defensible fortifications above villages (Maschner and Reedy-Maschner 1998: 34–35). These sites are similar to Alutiiq sites, such as Awa'qu, at which the Alutiiq people were able to keep the Russians at bay for 20 years (Maschner and Reedy-Maschner 1998). There are also villages on a point or spit with water retreats, such as Uyux (AA-12218) on Umnak's Pacific coast. According to Maschner and Reedy-Maschner (1998: 39), "Alutiiq and Unangan warfare was well organized, well equipped, and played and important role in late prehistoric and early historic times."

Other changes in the eastern Aleutians and on the Alaska Peninsula and the Kodiak islands include evidence of village size increases and multiroomed houses (Corbett et al. 1997a). Longhouses are found in the eastern and central Aleutians as well as further east on the Alaska Peninsula. Many of the communal houses in

the central and western Aleutians are associated with historic contact with Russians (Corbett et al. 1997a), although Veltre (2001) noted that longhouses on Unalaska occurred before contact. Also appearing after 1000 BP are elaborate masks and bentwood hats with design elements suggesting connections to the Alaska Peninsula and southeast Alaska (Corbett et al. 1997a).

Clearly, this period witnessed myriad interactions, including trade, raiding, and war. The movement of slate and jet materials and the evidence for violence is most closely associated with the Alutiiq people of the Kodiak Islands. The Aleutian material culture across the chain is similar, reflecting elaborate bone and ground-stone tools from large sites with extensive midden deposits. This array of evidence indicates that people across the chain were in contact with each other and that the people of the eastern Aleutians were in contact, sometimes violently, with the people in the Kodiak Islands and the Alaska Peninsula.

Conclusions

The earliest people to colonize the Aleutian archipelago arrived from the east, through the Alaska Peninsula, sometime after 9000 BP. These people shared many attributes with people who also settled the Northwest Coast, and it is likely that these groups shared a Paleoarctic origin in Siberia or mainland Alaska. The lack of bifaces is interesting because this technology occurs in most other Paleoarctic assemblages. These earliest colonizers do not appear to have made it farther than the Fox Islands group, based on the absence of any sites older than 6500 BP in the central or western Aleutians. However, it is likely that early sites have yet to be discovered, given the various effects of isostatic rebound, eustatic sea-level rise, and tectonic activity in these islands and the high probability that sites associated with this early period would be deeply buried and not easily discovered.

Following the initial settlement, subsequent colonization occurred that included movement of people, with bifacial technology, into the central Aleutians by 6500 BP. This event probably originated from the eastern Aleutians; however, the appearance of bifacial technology in both the eastern and central Aleutians around the same time suggests a much more complicated process involving influence from east of the Aleutians and resulting in the colonization of the central Aleutians. This influence has yet to be isolated, and assemblage comparison of the bifacial tools between Late Anangula sites and sites further east is needed. The preexisting technologies in the eastern Aleutians appear intact, with the continuance of blade and microblade technologies; thus the bifacial technology was incorporated into the preexisting technologies.

As the sea levels stabilized around 4000–3000 BP, a new influx from the east occurred; the Arctic Small Tool tradition was incorporated into select areas but was not adopted large scale across the Aleutians. There is no evidence of any influence from the ASTt in the central or western Aleutians. The ASTt in the eastern Aleutians at best reflects a number of traits that were adopted into

an existing cultural manifestation, and this influence was limited and of short duration (Dumond 2001). The ASTt influx appears to have arrived from the Alaska Peninsula into the eastern Aleutians. The origin of the ASTt is still not well established but may be derived from the Bel'kachi in northern Asia (Powers and Jordan 1990).

Otherwise, a general trend across the Aleutians reflects increasingly common irregular flake technology, with decreasing emphasis on bifacial technology and, in the eastern Aleutians, the disappearance of blade and microblade technology. Other technologies increase at this time, including ground-stone tools. In the eastern Aleutians polished adzes, slate ulu blades, lances, and ground jet ornaments appear. The increasing complexity in bone tool technology also occurs across the archipelago. Umqans are noted in the central and eastern Aleutians, but burial practices appear to be highly variable across the chain. Interactions between islands must have occurred for these trends to co-occur. It is also likely that interactions, such as trade, occurred with the Kodiak Islands and the Alaska mainland, but these influences did not filter past the eastern islands.

A surge of ground slate tools and jet artifacts occurred late in prehistory, around 1000 BP, as ground-stone (usually slate) ulus became a common tool found across the chain, although slate is less common farther west. Jet artifacts were also more common in the eastern Aleutians after 1000 BP. Increasing evidence for raiding and war becomes apparent, predominantly in the eastern Aleutians, as evidence for violent deaths and defensive sites appear after 1000 BP. Some of this eastern influence is associated, loosely, with the Thule expansion across the northern parts of Alaska. This influence corresponds with skeletal and mtDNA evidence for the arrival of Neo-Aleut populations from the east (Coltrain et al. 2006).

It is interesting that several influxes of people or ideas push into the eastern Aleutians at different times. These begin with the introduction of bifacial technology and colonization of the central Aleutians, followed by a brief appearance of the ASTt, and ending with the appearance of Neo-Aleut populations bringing new materials (slate and jet) and new burial practices, such as mummification (Coltrain et al. 2006). Population pressure from the east may have driven these surges from the east, especially after 1000 BP.

The Aleutian material evidence from across the chain reflects a complex history of population movements from east to west, with continuity maintained by trade and interactions, resulting in localized variations enveloped within similar technological strategies. Architectural differences are also apparent, with stone-lined features in the east but not in the west, at certain times. However, houses across the chain were predominantly semisubterranean. Whether or not these people shared an overarching ideology, they definitely relied on similar technological strategies for hunting and fishing as well as for housing.

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