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A Chronology of Native Alaskan Subsistence Systems

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The earliest visible Alaskan subsistence pattern of 11,000 years ago was one of the hunting of large mammals in a steppe-like environment richer than that now obtaining. In the face of dramatic environmental change, remnants of those hunters avoided the newly formed Holocene tundra to turn after 9000 years ago either to the open Pacific coastline or to the spreading boreal forest, both choices to be accompanied by a population expansion southward. The new coastal inhabitants were probably ancestral to ethnographically known Aleuts, Pacific Eskimos, and Northwest Coast Indians. Those in the forest may have been ancestral to some recent peoples of interior British Columbia, but that they were so to later interior peoples of Alaska is doubtful, for widespread adaptation to the Alaskan interior forest can be seen only by about 5000 years ago, and many suspect the people of this time to have had their origin farther south in North America. Again, recent Athapaskan Indians became clearly identifiable in the interior only well after the beginning of the Christian era, and in that period some have expanded to the coast in south-central Alaska. Adaptation to the Holocene tundra that parallels the Alaskan coastline north of the Alaska Peninsula occurred only a little before 4000 years ago, when a people usually identified as ancestral Eskimos spread throughout the entire American arctic coastal region, giving rise to later Eskimos adapted variously to the maritime pursuits of the coast, to a balanced exploitation of both land and ocean edge, or to an almost exclusive focus on the interior. A simple concluding classification of recent native subsistence emphases shows them to cross-cut major ethnic divisions. [Alaskan Prehistory, Alaska Natives, Human Ecology, Prehistoric Economy, Subsistence]

The dichotomy in subsistence practices that common anthropological knowledge draws between Eskimos on the one hand and Indians on the other is based upon the obvious preference of certain Eskimos for the arctic coast, and the equally obvious preference of certain Indians for life in the forests. This distinction is especially noteworthy in much of Canada, where the boundary between Eskimos—Inuits—and Athapaskan or Algonkian Indians accords so well with the northern edge of the

I am indebted to R. D. Guthrie and W. R. Powers, of the University of Alaska, for unpublished information concerning the Dry Creek site, and to Carol Steichen Dumond for drawing the map in Figure 2.

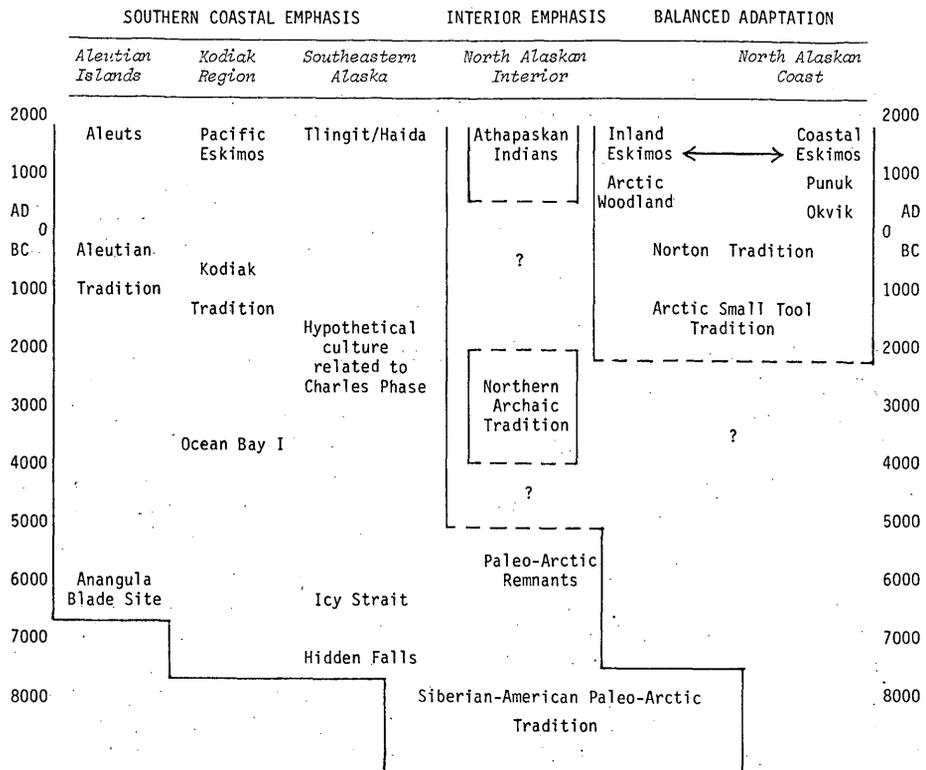


Figure 1. A chronological classification of subsistence patterns in prehistoric Alaska.

boreal forest, and where their prehistories as distinct ethnic units have apparently been remarkably straightforward [DUMOND 1979].

This dichotomy, however, is not so easily perceived in Alaska, where modern ethnic affiliations and basic subsistence patterns often cross-cut one another, and where the prehistory of modern ethnic groups is probably more complex and certainly less clear.

The archaeological background of Alaskan native subsistence systems will be presented here by means of a simple chronological classification (Fig. 1), which will lead to a similar categorization of recent patterns (Table 1), and then to some summary comments regarding apparent implications for native prehistory. In the text all dates, whether given in terms of the Christian calendar or as years before the present, are based upon radiocarbon determinations calculated from AD 1950, and using a half-life of 5568 years, and are uncorrected by tree-ring calibration factors. Locations mentioned are shown in Figure 2. The particular organization of data that is used here depends upon certain specific conceptions of Eskimo and Alaskan Indian prehistory, most of which are explained at considerable length elsewhere [DUMOND 1977b, 1978, 1979]. Other constructions of native prehistory, differing by various

degrees from that favored here, can be found in recent literature [e.g., AIGNER 1978; D. W. CLARK 1979; MCGHEE 1978; WORKMAN 1978a].

BEFORE 7000 BC: A LAND HUNTING BASE

Because of the uncertain nature of the putative artifactual assemblage, as well as the uncertainty of its relation to the relics of later Alaskan hunters, I pass over the mid-Wisconsinan bone remains from Old Crow Flats [IRVING and HARINGTON 1973; MORLAN 1978] by making the simple observation that Old Crow Basin may eventually provide acceptable evidence of a rich Pleistocene assemblage that was both contemporary with and preyed upon by early humans. I turn to later and presently more coherent sets of archaeological data.

Remnant Steppe-Tundra Hunters of Pleistocene Beringia

Such people represent some aspect of the Paleo-Arctic artifactual tradition. It is only fair to point out that no more than a part of the first of the archaeological remains to be discussed here was originally assigned to an American Paleo-Arctic tradition of biface and blade and microblade makers by that term's originator [ANDERSON 1968, 1970]. Recently a derived designator—the Siberian-American Paleo-Arctic tradition—has been applied to a much larger body of early blade and microblade makers [DUMOND 1977b], and it is in this latter, looser sense that the term is used here. Fauna are rare in the assemblages, which date in some cases from at least as long ago as 11,000 years, and which last in others as late as 7000 years ago (although environmental changes of the last two millennia of this period are such that some subsistence change would seem mandated). Those few sites or early assemblages with faunal remains follow.

a. *Trail Creek caves*. The earliest radiocarbon-dated bones pertain to a horse (about 16,000 years ago) and a bison (about 13,000 years ago), and may be—they are not certainly—related to the use of caves by Paleo-Arctic people. While much of the cave deposit is stratigraphically unreliable, Layer 3 of the foremost sections of Cave 2, dated about 9000 years ago, produced what may be a valid assemblage of caribou, moose, wolf, fox, hare, ptarmigan, and duck, and also produced remains of dog [LARSEN 1968].

b. *Dry Creek*. Although there is uncertainty about the relationship of two cultural layers in the site one to the other, an apparently valid assemblage of human-collected fauna consists of bison, sheep, elk, and ptarmigan, and dates from about 11,000 years ago [POWERS and HAMILTON 1978; THORSON and HAMILTON 1977]. Early reports included horse and possibly mammoth as assemblage components, but continuing analysis has caused these tentative identifications to be dropped [W. R. POWERS and R. D. GUTHRIE, personal communications, 1979].

c. *Chindadn*. A date of about 11,000 years ago was obtained from the apatite fraction of bones of small mammals and birds in this complex from the lowest levels of the Garden site at Healy Lake [COOK 1969].

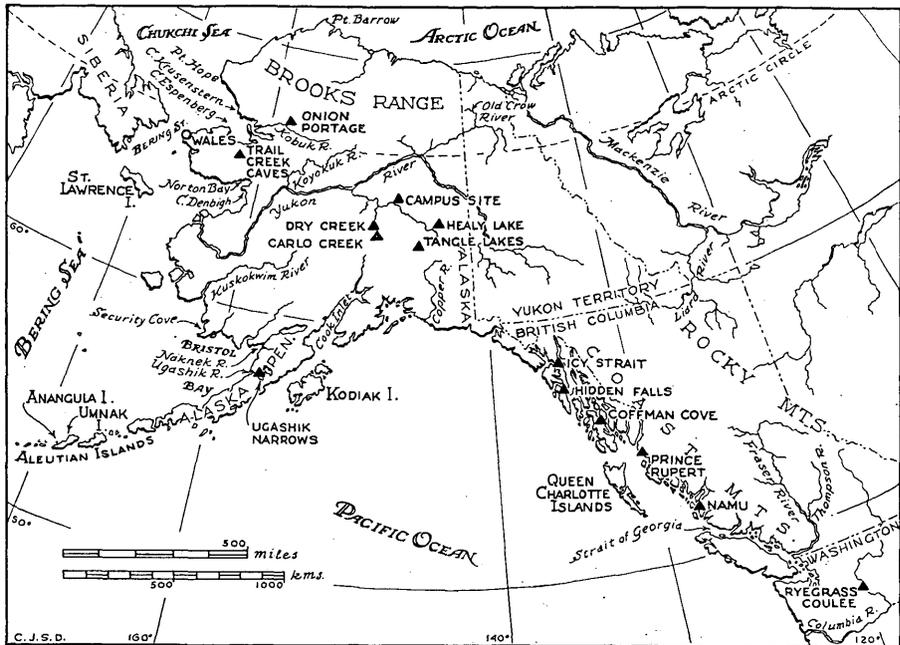


Figure 2. Locations mentioned in the text.

d. *Akmak*. No assemblage of fauna was preserved in the Akmak deposits of the Onion Portage site, but a caribou bone presumed to be related to Akmak occupation was directly dated around 9700 years ago [ANDERSON 1970, 1978].

e. *Carlo Creek*. Although affiliations of the artifactual assemblage are unclear (it may not pertain to the Paleo-Arctic tradition even as broadly defined), a date between about 10,000 and 8500 years ago applies to remains of caribou, sheep, and ground squirrel [BOWERS 1978].

Discussion

While in a few cases these faunal assemblages include species (horse, bison, and elk) now extinct in the region where found, in all other cases the fauna appears completely modern. Fishing cannot be ruled out, but on the basis of the remains, subsistence was land oriented. Other sites of the tradition, without fauna preserved, are known from both the north and south slopes of the Brooks Range, from interior Alaska, and from as far south as the Ugashik Narrows site on the Alaska Peninsula.

Four of the sites listed above—Dry Creek, Healy Lake, Onion Portage, and Trail Creek—as well as the obviously affiliated and famous Campus site, are in terrain that was not covered by late Wisconsinan glaciation, although the first three of them were very close to such glaciated terrain. But Carlo Creek and some other sites clearly of the Paleo-Arctic tradition—such as those around the Tangle Lakes [F. H. WEST 1976] and that at Ugashik Narrows [HENN 1978]—are in locations that,

although covered by glaciers in the Late Wisconsin, were deglaciated early in the accelerated ice withdrawal that began by 12,000 years ago.

A possible reason for locating near active glaciers stems from the proposed existence within late Wisconsinan Beringia (i.e., that area composed of the exposed Bering Platform and adjacent unglaciated portions of Alaska, Canada, and Siberia) of a relatively xerophytic steppe environment dominated by grass and *Artemisia*, upon which would have fattened herds of grazing animals such as elephant, bison, and horse, and which would have been significantly more productive than any portion of terrestrial Alaska was to be in the Holocene [GUTHRIE 1968; MATTHEWS 1974; 1976]. For with major climatic changes bringing the flooding of the Bering Platform and the decline of this arctic-steppe in the face of spreading taiga and tundra of modern type (according to one suggestion), the relicts of the steppes so suitable for grazing mammals could be expected to survive longest near areas of active glacial outwash [AGER 1976].

A relatively specialized subsistence adaptation may be responsible for the failure, upon deglaciation, of people of Paleo-Arctic cultural affiliation to move eastward beyond the Mackenzie River, despite the fact that by 8000 years ago most of northern Canada was free of ice and must have harbored herds of caribou not unlike those with which at least some such people appear to have been already familiar [IVES and others 1975] and that by that time or shortly thereafter the region was at least sporadically attractive to hunters from the south [GORDON 1976]. On the other hand, a specialized adaptation to large herds of grass-eating mammals does little to explain the direction in which Paleo-Arctic remnants did expand: to the coasts and into the forested zone.

7000 to 5000 BC: EXPANSION OF THE SUBSISTENCE BASE

By 9000 years ago the deglaciation of Alaska was substantially complete, and by the same date there is evidence of spruce forest in the interior [AGER 1975; MATTHEWS 1974]. By this same time—or even some centuries earlier—there is at least evidence from the distribution of artifacts that remnant Paleo-Arctic people had moved to expand their subsistence both along the coasts and in the forests.

Coastal People of the Eastern Aleutian Islands

The so-called “blade site” on Anangula Island, an islet off the coast of Umnak in the Fox Islands, has provided abundant artifactual material, as well as houses [AIGNER 1976], in a location that clearly was upon the coast at the time of occupation—8000 years ago or slightly more. And according to geomorphological arguments the site must have been inhabited by people who originally arrived there by boat. At least one piece of whalebone has been reported from the site, but the preservation of organic material is virtually nonexistent otherwise. In any event, the location alone suggests that a sea-edge or even maritime way of life was followed [AIGNER 1974, 1978; BLACK 1974; LAUGHLIN 1975; LAUGHLIN and AIGNER 1975].

It has been briefly argued elsewhere that the stone tool assemblage was probably derived from the Paleo-Arctic culture such as was present on the Alaska Peninsula a millennium earlier [DUMOND and others 1976].

First People of the Southeastern Coasts

Immediately north of Juneau, at Icy Strait, people with a Paleo-Arctic type of tool kit were located by 8000 years ago on what was then the coast. No faunal remains or other direct evidence of subsistence has survived [ACKERMAN 1974]. On Baranof Island, at Hidden Falls not far from Sitka, Paleo-Arctic remains have been dated as early as 9900 years ago [DAVIS 1979]. Again, no faunal trash has been reported, but from the locations of both this and the site at Icy Strait it is not far-fetched to suppose that their occupants practiced an economy similar to that hinted at by evidence from Namu.

Namu, on the central coast of British Columbia, provides evidence of people apparently of Paleo-Arctic-related culture who were present probably as early as 9000 years ago, their remnant garbage including remains of deer, bear, and river otter, as well as of seal, porpoise, and sea otter, and of dog [HESTER and NELSON 1978]. It has been presumed that boats would be necessary for the taking at least of porpoise and sea otter. Certainly boats would have been required for the occupation of the Queen Charlotte Islands, which occurred by blade-making people of peripheral Paleo-Arctic cast as early as 7000 years ago [FLADMARK 1970, 1971a, 1971b]. After 5000 years ago microblades were part of several otherwise varying assemblages in the Strait of Georgia region, but their use apparently never spread substantially farther south along the coast.

First People of the Interior Forests

On the basis of the rather scanty samples of both artifacts and radiometrically datable materials from most early interior sites, it is impossible to separate rigorously those Alaskan sites of Paleo-Arctic affinity that occurred in remnant steppe from those slightly later ones that occurred after reforestation was well advanced. Nevertheless the latest thoroughly dated Paleo-Arctic assemblages in north Alaska—such as the Kobuk complex [ANDERSON 1968]—appear to be little later than 8000 years ago, and by the same date in southwestern Alaska it is clear that changes had occurred in the morphology of cores [DUMOND and others 1976], presumably as food procurement systems changed somewhat. Seen this way, it seems reasonable to place 7000 years ago as the practical upper limit of clearly derived and immediate Paleo-Arctic descendants, at least in western Alaska.

On the other hand, some arguments have been made to the effect that the particularly characteristic microblade cores of the Paleo-Arctic tradition persisted for many millennia in the eastern interior, even lasting into the Christian era [e.g., COOK 1969, 1975; COOK and MCKENNAN 1970; see also DUMOND in press: note 3]. And it has been argued that in the Yukon Territory of Canada, in that region extending from the southern edge of the Mackenzie Delta in the north, to the Liard River in

the south, and from the Mackenzie River in the east to the Alaskan border on the west, a relict microblade technology derived from the Paleo-Arctic tradition that was in existence 5000 years ago or earlier, endured to the turn of the Christian era [D. W. CLARK 1975: 52–54; MACNEISH 1964], co-occurring with key artifacts of what has been termed the Northern Archaic tradition (and which will be discussed in a later section). Another worker, however, argues that the Paleo-Arctic-derived microblade technology was in use in southwest Yukon by 7000 years ago, and ceased to be used before 2500 years ago [WORKMAN 1978b], and that it was the property of the first post-glacial migrants to the area, although it co-occurred with some artifactual elements of Plano affiliation that apparently found their stimulus to the south. This latter view of the chronology seems most nearly in accord with the mass of the evidence from Alaska.

It is safe to say, in any event, that there is abundant evidence that people of derived Paleo-Arctic technology appeared in the region between the Mackenzie River and the present Alaskan border well after that region was covered by boreal forest. Blademakers were known southward in northern British Columbia probably equally early, although sites there are not clearly dated, and arrived as far south as the confluence of the Thompson and Fraser rivers in the southern interior of British Columbia by 7000 years ago, probably after having passed through the interior corridor between the Coast Mountains and Rocky Mountains in a movement parallel to that indicated on the coast [BORDEN 1975, 1979; SANGER 1969, 1970]. As early as about 6500 years ago microblades appeared as a part of an otherwise Columbia Plateau artifact assemblage at the site of Ryegrass Coulee near Vantage, in south-central Washington [MUNSELL 1968], near which point their southern spread appears to end.

Discussion

Given the distribution that has been outlined, it seems impossible not to conclude that the appearance of blade-making peoples in the northwestern corner of America in early Holocene times was directly related to their Paleo-Arctic predecessors in Alaska, and that it represents an expansion by—or at least reflects contact with—these early northerners [DUMOND 1978]. This is not to argue necessarily that all blade-makers in the northwest were the genetic descendants of Paleo-Arctic people, for that matter is here immaterial. What is significant is simply this: Although faunal remains are not adequate to support directly a large number of specific inferences in regard to subsistence, and even though a number of the examples cited here do not pertain actually to Alaska (which is the focus of this paper), the evidence clearly combines to say unmistakably that the land hunting base of the Alaskan Paleo-Arctic peoples had been expanded by 7000 years ago in two directions: toward the sea coast, and toward the forested interior. It can be further observed that in both of these kinds of regions the local economy would almost certainly include the harvesting of migrating fish from the streams with which the northwest is so richly endowed.

5000 BC TO AD 800: ADAPTATION TO ICE-FREE COASTS

The Kodiak Region

Here there are two sets of related cultural remains that date shortly after 6000 years ago, one from the Kodiak group of islands, the other from the nearby Alaska Peninsula. Each is represented by multiple sites.

In the Kodiak Island group, the Ocean Bay I cultural complex is represented in one site that has yielded an oil lamp, suggesting the regular use of sea mammals, while it and another are both located near the mouths of modern salmon streams, probably indicating that salmon fishing was important. Interestingly, one of these sites has also yielded evidence interpreted as indicative of the last stages of a dying tradition of microblade production [D. W. CLARK 1979].

On the Alaska Peninsula, one site of the Takli Alder phase has yielded fairly extensive faunal remains, consisting of hair seal, sea otter, sea lion, porpoise; some fragments of larger whales; a few cervids—principally or entirely caribou—and a few bears; numerous water birds, including albatross; shellfish; and cod, salmon, halibut, and flounder [DUMOND 1977a, and later unpublished research]. The presence of cod, halibut, sea otter, porpoise, and albatross implies the use of boats, as does the location of the site on a small offshore island. The artifact series, in which bone implements are preserved, includes examples of harpoon paraphernalia quite suggestive of artifacts very common in later times [G. H. CLARK 1977]. Clearly, these people were already specialized for coastal life.

The Ocean Bay I and Takli Alder cultures have been referred to together as constituting the Ocean Bay tradition [DUMOND 1977b], and the view favored here is that the later cultural tradition of the Kodiak region developed predominantly from it. There is no demonstrable change in gross subsistence orientation through later time, and although the artifact samples are not really adequate to demonstrate it, one must suppose that there was at least some gradual improvement in sea-hunting and fish-taking efficiency through time, with improvements in related technology. Stone technology did change by means of an increased emphasis upon slate polishing at the expense of chipping, but the major classes of bone artifacts appear—given the limitations of the samples—to have changed more for stylistic than for functional reasons. In any event, by no later than about 1000 BC the entire basic bone tool inventory of later people of the area seems to have been present. In one site on the Alaska Peninsula that represents particularly well the period from AD 500 to 1000, the faunal evidence suggests the possibility of some increase in the use of land mammals—especially cervids—over earlier times, but heavy reliance upon seal, sea otter, sea lion, birds, shellfish, cod, salmon, and halibut continued with at least some use of small and large whales [DUMOND 1977a].

The Aleut Region

It has been suggested that people of the same basic culture as that of the Ocean Bay tradition, and presumably of the same ethnic affinity, were present about 6000

years ago in the eastern Aleutian Islands [DUMOND 1977b]. Although there is no obvious ecological reason why this should not be the case, on archaeological grounds the possibility has neither been fully substantiated nor eliminated.

At any rate, in later centuries the use of sea products in the Aleutian Islands was even more pronounced than in the immediate Kodiak Island region. Only in the easternmost of the islands and on the tip of the Alaska Peninsula can the use of land mammals naturally be expected to have paralleled that found on the south coast of the Alaska Peninsula, but for most of this region there are no adequate reported samples of faunal remains.

Westward, the occupation of the Aleutian Island chain all the way to the Near Islands had been completed by at least the middle of the first millennium BC, and of course this westward movement involved a total reliance upon marine and insular resources.

Emphasis was upon seal—both hair and fur—and sea otter, with lesser quantities taken of sea lion, porpoise, and larger whale. The fishes identified in available archaeological samples are restricted to forms found in near-coastal locations (that is, to those that would not have required substantial offshore operation) and did not include the more important anadromous species such as are in evidence for the Alaska Peninsula, although it is widely presumed that all Aleuts harvested salmon and char, which migrate into some streams on all of the major islands [DENNISTON 1972; DESAUTELS and others 1970; cf. SCHEFFER 1959].

As was the case in the Kodiak region, the bone artifact technology within the last three millennia seems to have involved changes that were more stylistic than fundamental. Yet here the basic pattern of the chipping of stone artifacts persisted without slate polishing until the end of the first millennium AD [MCCARTNEY 1971; TURNER and TURNER 1974].

The Northwest Coast

Material of the appropriate age is not yet firmly in hand from southeastern Alaska, but preliminary results of work in two different sites, Coffman Cove and Hidden Falls [G. H. CLARK 1979; DAVIS 1979], make it possible to extrapolate with confidence from areas farther southward.

It has already been intimated that in central and southern British Columbia elements of the Paleo-Arctic tradition were being amalgamated with other elements from the south—in particular those from the Columbia Plateau—before 5000 BC. By 3000 BC there began the accumulation of the large coastal middens well known from later time; evidence of this comes from the Queen Charlotte Islands, Prince Rupert, and elsewhere [MACDONALD 1969]. At Namu at this time, sea mammal faunal trash is abundant—although not in so great a quantity as are remains of land mammals—and shellfish first appear in the rapidly accumulating middens. Harpoon dart heads and other paraphernalia appear, while microblades disappear [HESTER and NELSON 1978].

At the same time and still farther south, in the vicinity of the Fraser River mouth,

the chipped, stemmed projectile heads of the stone assemblages are joined by those of polished slate in what has been called the Charles phase of the Strait of Georgia sequence [BORDEN 1975]. In form, these artifacts are quite comparable to contemporary tools of the Kodiak region (Takli Birch phase, or Ocean Bay II), and on artifactual grounds this British Columbia cultural phase can be said to represent what was one geographical terminus of a common Northwest Coast cultural horizon of the third millennium BC, a horizon marking the existence of a great sphere of interaction stretching from southern British Columbia to Kodiak Island [DUMOND 1978; see also CARLSON 1970]. It is in this context that the initial finds from the sites at Coffman Cove and Hidden Falls are important, because those artifacts support this comparison [G. H. CLARK 1979].

Faunal remains from one Charles phase component in the Fraser Delta, at a site some distance from the sea coast, show that while land forms predominated among mammals, there was a substantial reliance on the taking of seal, and there was also a relative increase over earlier times in the taking of shellfish and fish, principally salmon [MATSON 1976]; as the evidence was interpreted, the period after about 5000 years ago was one in which river and foreshore resources were gaining in intensity of use. Such a pattern can probably be extended to all of the coastal areas proper; the emphasis involved a balance between land and sea, but one in which the regularly migrating salmon became the principal resource from at least this time onward [see also FLADMARK 1975].

Discussion

In the southern Alaskan regions of open sea coasts—that great arc from the Aleutian Islands past Kodiak to southeastern Alaska—the development was long ago toward a significant or even heavy reliance upon marine products. With the early appearance of the barbed bone harpoon head and the evident interest in the taking of deep water fish such as halibut, much of the basic toolkit must have developed quickly. The apparent absence of major and fundamental changes in most aspects of toolkits of the Aleutians and Kodiak region from as early as the third millennium BC suggests that the techniques were effective. For example, although the toggling harpoon was long known, it appears never more than sporadically. There also such changes in artifacts as are most apparent seem to be within the realm of style, rather than for the improvement of function. One may suppose that an increased sample of artifactual remains will show the same to be true for southeastern Alaska.

At the same time there remains a major difference between the subregions. In the southeast, along the North American mainland, reliance was heavily upon wood for watercraft and for dwellings, with wood-working techniques well developed before the beginning of the Christian era. In the largely timber-free island region to the southwest, however, reliance for effective watercraft was upon the skin boat having a frame of wood (and to some extent bone), and for dwellings upon semi-subterranean houses having frameworks of drift logs; this pattern was shared with more northerly Eskimos.

One implication of the foregoing presentation is that all of the recent occupants of the open coasts of the Alaskan south were descended as siblings from a common Paleo-Arctic parent, and an explicit suggestion approximately to this effect has been made [DUMOND 1978] despite the paucity of evidence now available from much of the area, and despite the difficulties inherent in any situation of such time-depth. Regardless, it is reasonable to think that most recent ethnic groups of the coasts have deep roots in those locations, roots which would include ancestral Eskaleutian-speaking peoples west of the Copper River mouth, and the ancestors of Tlingit and Haida east of the same region. At the mouth of the Copper River itself, however, the Eyak Indians can be presumed on linguistic grounds—being closely related to the interior Athapaskans [KRAUSS 1973]—to have probably moved into their recent territory less than a millennium before the beginning of the Christian era, proceeding from within the forested zone of the interior; this is supported by the relative attenuation of their actual devotion to the seacoast, and their emphasis upon river products [BIRKET-SMITH and DE LAGUNA 1938]. Thus to that extent, at least, the recent coastal dwellers have had more complex origins than might be implied by the earlier discussion.

5000 BC TO AD 800: ADAPTATION TO INTERIOR FORESTS

The earliest developments within the forests were summarized earlier, in the context of the discussion of the Paleo-Arctic tradition and the expansion of its subsistence sphere.

By 5000 years ago—and perhaps by a thousand years earlier—there were present in Alaska assemblages of what has been termed the Northern Archaic tradition, which is characterized in particular by relatively large side- and corner-notched projectile points. The ancestry of this tradition is not agreed upon. As originally conceived, it was the mark of a major Indian incursion into the post-glacial boreal forest of Alaska from North America to the south [ANDERSON 1968; see also WORKMAN 1978b], but other investigators have chosen to stress the presence of microblades in some of the assemblages as indicative of a major ancestry within the earlier Paleo-Arctic tradition [e.g., COOK 1969, 1975; cf. HENN 1978]. Either view, or a combination of both, is possible, in terms of archaeological evidence.

The distribution of these assemblages is virtually pan-Alaskan, with the exception of the southern ice-free coastal regions already discussed, and although it is customary to describe these tool complexes as the remains of an interior people, they appear at or within a very few miles of the coast in at least four locations: Cape Krusenstern [GIDDINGS 1967], Security Cove [ACKERMAN 1964], and two sites on the Alaska Peninsula [DUMOND and others 1976]. There is, however, no evidence more direct than this of any real interest in coastal resources as such.

Unfortunately, faunal remains as well as organic artifacts from sites yielding such assemblages are virtually nonexistent. Based upon distributional evidence entirely, then, the people represented are presumed to have been generalized hunters of whatever game was available after the development of the modern and relatively im-

poverished ecological regime of the interior: caribou, moose, bear, and smaller animals. The attribution to them of some interest in fishing has been made on the basis of occasional notched stones interpreted as sinkers, but evidence from both the Ugashik and upper Naknek river drainages on the Alaska Peninsula does not tend to support these suppositions at all: in both of these localities the patterns of Northern Archaic site distributions seem to suggest no interest whatever in river resources as such, and in that respect these people differ from virtually all other occupants of those drainages throughout their long and complex histories [e.g., HENN 1978].

The last clear vestiges of the Northern Archaic tradition known occur in two widely separated locations at about 4000 years ago, represented by the Portage complex of Onion Portage on the Kobuk River [ANDERSON 1968], and by the Brooks River Beachridge complex of the upper Naknek drainage of the Alaska Peninsula [DUMOND and others 1976]. Both occupations are characterized by plentiful smashed mammal bone fragments that are apparently from large animals such as caribou. After that time, continuity with any later remains within the forest region of the main body of Alaska is poor. Indeed, although the existence of a coherent and unbroken interior sequence including this period has been argued for by means of a construct that requires the resurrection of certain stone-working techniques from the period of the Paleo-Arctic tradition [e.g., COOK 1969, 1975], the results seem flimsy.

Based upon evidence of linguistic differentiation between groups [KRAUSS 1973], by the end of the first millennium AD Athapaskan-speaking Indians can be assumed to have been present throughout the interior region in substantially their modern distribution, although some expansionist movements by them—such as the occupation of the Cook Inlet region by the Tanaina [DUMOND and MACE 1968] and possibly the completion of the spread down the Yukon and Kuskokwim Rivers by the Ingalik and others—apparently occurred even later. Sites clearly representing pre-contact age Athapaskan occupations are of almost legendary scarcity, however, and it is by no means certain that they were anywhere in Alaska before the late first millennium BC. And so the ethnic identification of their much earlier predecessors, of the Northern Archaic tradition, remains much in question.

2500 BC TO AD 800: BALANCED ADAPTATION TO THE NORTHERN COASTS AND THEIR IMMEDIATE HINTERLAND

Initial Development

The spread of people of the Arctic Small Tool tradition through northern coastal Alaska around or slightly before 2000 BC involved the tundra-covered strip of land that forms the immediate coastal hinterland and the Brooks Range, suggesting an emphasis on interior resources, probably very importantly the caribou; the few winter houses known are from interior sites [DUMOND 1969]. But in season their occupants appeared also at coastal locations such as Cape Denbigh, Cape Espenberg, and Cape Krusenstern [GIDDINGS 1964, 1967], apparently drawn by spring sealing, for which they seem to have possessed at least rudimentary toggling harpoon heads.

Their choices of settlement location imply an interest in river fishing, and on the Alaska Peninsula the presence of trout bones and teeth of larger salmonids—probably red or sockeye salmon—supports such a supposition for that region. In general, the desirable faunal remains have not survived, nor has the organic tool kit. Nevertheless it is possible to infer on distributional grounds within Alaska that these were people adept at the use both of the coast and its immediate hinterland. And such an inference is borne out by their distribution throughout arctic Canada—the first people to spread themselves so—where they clearly devoted themselves both to a coast that was ice-bound in winter, and to more interior regions.

There is no convincing evidence of continuity of people of the Arctic Small Tool tradition with their predecessors of the Northern Archaic tradition, who are also sometimes presumed—but not yet demonstrated—to have been their contemporaries farther within the Alaskan interior. Although some students argue for the development of the Small Tool tradition within northern Alaska from a Paleo-Arctic base [e.g., ANDERSON 1972], there is as yet no broadly acceptable evidence of this, and an alternative suggestion is that the small-tool makers represent an influx of new people from Asia [IRVING 1970]. Whatever their ultimate origin, it is they who are now most often cited as the ancestral Eskimos.

Elaboration

This pattern of subsistence showed no significant change for around a thousand years, until sometime in the second millennium BC it was disrupted generally. Indeed, changes are dramatic and widespread enough to cause question whether there was any real continuity between these people and their successors in coastal Alaska, although for various typological and distributional reasons such continuity is likely [DUMOND 1977b]. In any event, in the first millennium BC certain changes in habitation location and in technology manifest what has been suggested to be an increasingly effective adaptation to the seacoast [e.g., DUMOND 1969, 1977b], nor was this apparently the only economic turn that was taken, as subsistence specialties of more than one sort appeared, foreshadowing the lifeways of later Eskimos. That is, within a unified pattern of flexible use of a broad spectrum of resources of land and sea that was familiar to all members of the society, certain situational emphases appeared as seasonal or locational variants. In all of these variants, a fairly elaborate tool kit was employed.

a. *Coastal emphasis.* An increased interest in the coast was manifested by people of the ensuing Norton tradition of the centuries immediately before the turn of the Christian era, as settlements sprang up in virtually all favorable locations on the mainland coast of Alaska from the Alaska Peninsula to a point on the Arctic Ocean somewhat east of the U. S.-Canada border [DUMOND 1969]. Artifactual evidence from Point Hope suggests that whaling may have begun at this time [LARSEN and RAINEY 1948]. Although faunal and organic artifact remains are generally scarce in Norton sites proper, Norton deposits of the first millennium AD at the typesite on Norton Bay [GIDDINGS 1964: Table 13] yielded a high predominance of sea mammal

bone (seal, bearded seal, white whale, and walrus) over other bone (chiefly caribou), and the related Ipiutak people of Point Hope of about the same time have left a rich artifactual record that clearly indicates a heavy focus upon the seacoast, although just as clearly shows no loss of seasonal movements into the interior hinterland [LARSEN and RAINEY 1948]. Artifacts in both Ipiutak and Norton deposits that are at least tentatively identified as harpoon ice picks suggest that winter sealing through the ice was practiced at those sites.

The coastal focus is most marked, however, upon St. Lawrence and the other islands about Bering Strait, and upon the coast of the adjacent Siberian mainland, where, after the turn of the Christian era, people of Old Bering Sea and Okvik culture developed an almost sole reliance upon marine resources—in particular on seal, walrus, and whale—and also partook in the development of specialized darts and other devices for the hunting of birds, and of a plethora of sea-hunting equipment. Both the umiak and kayak were present, and there is unmistakable evidence for the famous Eskimo technique of seal hunting through the winter ice [e.g., COLLINS 1937]. By succeeding Punuk times (AD 800) whaling had gained in importance.

b. *Interior emphasis.* As indicated earlier, arguments for continuity in interior Alaska just after 2000 BC—that is, from the time of the Northern Archaic tradition to a later period—are weak. Fortunately, evidence now appearing shows promise of throwing more light into the interior in times after that, but it also shows promise of revealing a situation different from that so often postulated, which presumes the descent of modern Athapaskan Indians directly from much earlier Northern Archaic hunters.

At Itivlik and Tukuto Lakes near Howard Pass in the east-central Brooks Range; at Desperation and Feniak Lakes in the Noatak River drainage; at Onion Portage and Norutak Lake in the Kobuk River drainage; at Hahanudan Lake in the Koyukuk River drainage; and at Lake Minchumina in the upper Kuskokwim River drainage, there have been found remains dating from the first millennia BC and AD that can reasonably be interpreted as falling within a continuum of material culture that most of us see as leading from the Arctic Small Tool tradition to the culture of the historic Eskimos [ANDERSON 1968; D. W. CLARK 1974, 1977; HALL 1973; IRVING 1962, 1964; C. E. WEST 1978]. That is, given a certain set of premises concerning Eskimo prehistory, these particular peoples of the interior could be interpreted as ancestral Eskimos of some sort, even though they are now either near the edge of Eskimo territory or (in the Koyukuk and Kuskokwim drainages) in Indian territory [DUMOND 1979].

The *later* existence of interior Eskimos who seldom or never visited the coast, although always making use of some traded coastal products, has long been known from rivers such as the Kobuk [GIDDINGS 1952, 1961], where their presence gave rise to the concept of the Arctic Woodland Culture, and from the north slope of the Brooks Range, where the caribou hunting Nunamiut have been ethnographically famous [e.g., SPENCER 1959]. Some have been inclined to see all of these as relatively late developments—of after AD 800, certainly—which were related to Eskimo popula-

tion increases and developing subsistence versatility [DUMOND 1972]. As indicated above, however, it now seems possible that this pattern may be at least a thousand years older than this date—indeed, that it may be a pattern with direct roots in the interior preferences of people of the Arctic Small Tool tradition of 2000 BC.

AD 800 TO THE ETHNOGRAPHIC PRESENT: ELABORATION, EXPANSION, CONVERGENCE

For this period the ethnographic literature is of direct relevance, and sources are fairly plentiful—both individual studies and more general, summary works [e.g., DRUCKER 1965; OSWALT 1967; VANSTONE 1974]. With these forming what is essentially common knowledge, extensive documentation will be dispensed with in the following section, as three fairly definite categories of subsistence orientation are distinguished (not without some arbitrariness) within what is, in fact, a continuum. The results are shown graphically in Table 1.

Coastal Emphasis

This category includes all coastal people who make regular use of deep, off-shore waters, such as in fishing for cod or halibut, or in pursuing the large whales, whether or not their major subsistence staple is actually obtained by maritime techniques. It also includes those island dwellers who make no effective use of large land tracts.

a. *The south.* Here this category embraces the Northwest Coast Indians who must have developed their recent subsistence pattern from a base that was similar to the Charles phase of the Strait of Georgia region of southern British Columbia. Farther north, in the Kodiak area of the southern Alaskan coasts, it includes the Pacific Eskimos, who developed largely upon a base provided by the early Ocean Bay tradition, probably also through contacts with the Charles phase just mentioned. Farther west, the Aleuts pursued a slightly different but related path (in terms of artifact technology) toward their maritime adaptation of the historic period that was

Table 1. A rudimentary classification of recent native Alaskan subsistence systems.

	<i>Coastal Emphasis</i>	<i>Balanced Economy</i>	<i>Interior Emphasis</i>
North	Eskimo Whalers and Islanders	Mainland Eskimos of Chukchi Sea Coast	Brooks Range Eskimos
			Athapaskans
	Island Eskimos of Southern Bering Strait Region	Mainland Eskimos of Bering Sea Coast	Mainland Up-River Eskimos
			Non-Tanaina Athapaskans
South	Aleut	Tanaina	
	Koniag	Eyak	
	Tlingit		

to be so fully exploited by Russian fur hunters of the 18th century. Although the arguments are too long to be recapitulated here, it seems possible that all of these people developed from a common cultural base in the Paleo-Arctic tradition, despite the modern classificatory difference accorded to Eskimo-Aleut on the one hand and Indian on the other [DUMOND 1978].

b. *The north.* Here this category includes some of the ocean-edge Eskimos of the Bering and Chukchi Seas who developed presumably upon the base provided by people of the Arctic Small Tool tradition. Some of them—located in favorable spots on the Alaskan mainland—obviously emphasized coastal hunting over more interior hunting, although still visiting the interior hinterland in season; here would be included the major whaling villages at Point Hope, Point Barrow, and other peninsular locations from Wales northward. In addition, it also includes people with an almost total dependence upon sea products, such as those of the islands about Bering Strait and south to the St. Lawrence Island group. With an extreme maritime focus that evolved only since the beginning of the Christian era, these people have nevertheless shown themselves to be the equals of their more experienced southern neighbors of the open Pacific coasts, and indeed apparently converged with those neighbors in the development of effective subsistence practices for use in open water, while they also maintained a series of skills especially adapted to use at the ice edge or through the winter ice itself. It must be emphasized, however, that there is reason to believe that the northerners developed their culture on the base provided by a predecessor that they did not share with their Pacific coastal counterparts.

Interior Emphasis

This category includes all people who never, or virtually never, visit the sea coast for direct subsistence activities, whether or not they trade for coastal products.

a. *Primary hunters.* Here are those interior Athapaskans not on major rivers, in particular the Kutchin. Here also are the Nunamiut Eskimos of the Brooks Range, and those along the upper portions of such northern streams as the Kobuk who seldom travel to the coast, although they trade for coastal products. Unlike the recent peoples discussed up to this point, before the introduction of firearms the subsistence techniques of these two interior groups—Eskimo and Indian—were relatively divergent, with Eskimos emphasizing an essentially Eskimo technology based upon a plethora of specialized tools, and with Athapaskan Indians making use of effective but less immediately spectacular properties such as skills in snaring and trapping. Supremely portable, these intangible properties have left little evidence of their existence to be exhumed by the archaeologist.

b. *Primary fishermen.* Here this category includes Eskimos of the upper drainages of all the larger rivers around Bristol Bay and the Bering Sea, many of whom seldom visit the coast, as well as the Athapaskan Indians living along the major streams draining the interior—the Kuskokwim and Yukon and their major tributaries—on which significant runs of anadromous fish, especially salmon, can be exploited. Generally speaking the fishing apparatus of Eskimos and Indians of recent

times tends to be more similar than is their hunting equipment. Indeed, it is along the rivers in particular that evidence of contact between Eskimos and Indians is especially marked by artifactual indications of diffusion or acculturation. In particular the Indians of the lower Kuskokwim and Yukon Rivers appear to have been strongly influenced by their Eskimo neighbors [DE LAGUNA 1947; OSGOOD 1940].

Balance Between Coast and Interior

This category includes those people who practice few or no true maritime techniques, although regularly using some subsistence products obtained by direct activities on the coast, and who also make regular use of interior exploitation techniques.

a. *The south.* This category includes the Eskimos living along the shallow coast of the Bering Sea, who apparently developed from the same Arctic Small Tool cultural base as their northern maritime relatives. Barred by geography from easy access to rich marine resources, yet endowed by nature with the bounty of migratory fish runs of enormous magnitude, these regular salmon fishermen also consistently resorted to the shallow coast in the pursuit of seals, white whales, and occasionally walrus or large sea lions. Here would also be included at least some of the Tanaina Athapaskans, who must have moved to the coast around Cook Inlet in relatively recent times—slightly before contact, and certainly well after the onset of the second millennium AD. Of these the coastal Tanaina, and not the entire group given that name, apparently borrowed from their Pacific Eskimo neighbors and predecessors at least a rudimentary set of techniques for taking seals, sea lions, and white whales. It might also be reasonable to place here the Eyak Indians of the Copper River mouth, who while concentrating upon resources of the river, did make use of the coast and may be suspected to have made more use of it earlier, before expansion of Tlingit and Eskimo tended to exclude them from the open seaside. Like the southern Bering Sea Eskimo, and like the Pacific Eskimo and Northwest Coast Indians, Tanaina and Eyak were fishermen.

b. *The north.* The category includes those coastal Eskimos north of Bering Strait who were not situated in locations favorable to the hunting of large whales, and who were not in locations so insular or otherwise restricted that seasonal inland pursuits were impracticable. The year was, as a result, divided between residence in the interior and residence upon the coast. Heavy runs of salmon were lacking from the northern streams, and fishing tended to assume a position subsidiary to that of land and sea-mammal hunting.

CONCLUDING DISCUSSION

It was my aim to set out some cross-cutting features in the ecology of native peoples of Alaska, and to touch on some chronological information that relates to the development of those features. In so doing, the discussion has seemed to call for coverage of two additional points.

Prehistories of the Major Subsistence Pursuits

The earliest subsistence pattern clearly evidenced in Alaska seems to be one involving primarily the taking of grazing animals who lived in herds in an environment substantially more productive than any that has existed in Alaska for the past ten millennia at least. Upon decisive change of the climatic and vegetational regime—a change beginning probably by 14,000 years ago, but continuing over some millennia—the cultural (and presumably genetic) descendants of the early Beringian hunting people seem to have done one of two things. They turned to the southern coasts, presumably first to river and inshore resources, later to more maritime ones. Or they turned to the spreading boreal forest—an ecological zone of substantially less faunal productivity than the grassy steppe-tundra it replaced—and in that forested zone they also drifted southward, finally to arrive beyond the limits of the arctic and even the subarctic. Biotically, these two choices were not equal, for the southern coasts came to support the highest population densities in native Alaska, while the forests—at least the northern ones—in general supported the lowest.

But these early remnant peoples apparently did not turn to the Holocene tundra, which despite a marked loss of productivity over the arctic steppe, provided mosses to support herds of migrating caribou, an animal with which the Beringian hunters were already familiar. For if these hunters had entered the new tundra zone, they would doubtless have found their way eastward far enough to arrive in north-central Canada, which was by 8000 years ago caribou country of sufficient richness to be at least seasonally attractive to other hunting peoples from the south. One must conclude from this simply that both the forest and the coast provided an easier livelihood for people with the technology of relict Beringia. Indeed, despite their presumably long-term adaptation to an area of marked seasonal cold, one must suspect that the new northern tundra zone was impossible for them from a subsistence point of view.

Regular exploitation of the region of Holocene tundra began only a little before 4000 years ago, with the advent of what here was supposed to be new people, but who in all events must have been people with new insights. Although it is tempting to try to invoke some climatic change as the efficient cause for this turn of events, the various but relatively minor fluctuations in climate between 8000 and 4000 years ago in the arctic simply do not appear dramatic enough to be convincing. Yet once present, these Arctic Small Tool tradition people were so successful that in a time that is too short for archaeologists to control with the gross tools available to them, they expanded from western Alaska to northern Greenland, covering arctic islands of Canada that had never before been occupied by humans. Only after this did they also expand southward to more closely pursue the caribou of the Barren Grounds west of Hudson Bay. Surely not climate but rather intellectual equipment—knowledge—was important here, and surely it is no accident that the territory these people occupied so explosively has continued to be occupied to the present day by people identified as Eskimos. It is this remarkable new adaptation to the landscape that is

referred to here, lamely enough, as the balanced adaptation to the northern coasts and their immediate hinterland.

Whatever the genius that established this way of life, it continued to be successful. Its further development on the Alaskan coast, with an increase in abilities to make use of both the open and the seasonally frozen seacoast, led its people sometime around the turn of the Christian era to a gradual expansion southward to the shores of the Pacific, at the expense of ancestral Pacific Eskimos with whom in the first millennium AD they amalgamated and apparently came to some extent to dominate. And at about the end of the same millennium the continuing identical genius led to another, more explosive expansion, again eastward across northern Canada at the expense of ancient relatives of that region, the Dorset people, direct descendants of the original settlers of the Arctic Small Tool tradition. Only in the interior forests were these active people probably not successful in an expansionist way, for it now appears more likely that interior Indians had made recent moves at the expense of upriver Eskimos, than the reverse.

Situation, Subsistence, and Psychological Set

Last of all, it would be unfair to abandon the discussion without one final series of observations. Despite the similarity in gross subsistence orientation between Eskimos and Indians in the Alaskan interior, or between Pacific Eskimos and Indians on the southern coasts, in a broad sense the adaptations of the various ethnic groups recently distinguishable in native Alaska are never identical. The skin boats of the Eskimos and the carved wooden craft of the Tlingit stand starkly apart when seen together—figuratively—at Kayak Island, their mutual frontier, despite the similarity of many of their subsistence techniques. More strikingly, even in the Eskimo-like material culture of the Ingalik Athapaskans there is no real doubt of their Indian affinity. This sort of contrast is even more marked when it is drawn between the Kutchin Athapaskans and the Nunamiut Eskimos.

For the archaeologist, the basis of much of this ethnic difference in material culture does not always bring comfort. For while the latter people—the Eskimos—almost inevitably leave a certain abundance of material trash if they have been around for a while, the former—the Athapaskans—do not. As mentioned briefly earlier, Athapaskan sites are notoriously lacking in material remains that can provide information for the archaeologist. Yet both Eskimos and neighboring Indians not only managed to survive, they both expanded into the landscape, often in conflict with one another and sufficiently well matched that the outcome of any such conflict was in doubt.

Although it is never fair to generalize too far when characterizing any people in brief compass, one cannot escape the feeling that while the mechanically oriented Eskimos increased and multiplied, they were ever more bowed down with weighty possessions. Burdened with their growing array of specialized and necessary tools, the Eskimos were driven to invent first the umiak and then the dogsled, having to

make payment for the latter ever after in extensive hunting and fishing directed only at finding dogfood.

The Athapaskans, in their different genius, did as well but more simply with less property and less dogfood: burdened only with their snowshoes, their loose rabbit-skin robe, a ball of string, and the crucial ideas in their heads.

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