

Recent Archaeological Research on the Northern Coast

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INTRODUCTION

A decade of archaeology on the northern coast of British Columbia passed in the 1980s without a "megaproject." The termination of the "North Coast Prehistory Project" (NCP), which investigated sites over a vast portion of Northwestern British Columbia in the late 1960s and early 1970s (MacDonald and Inglis 1981), left a void that has been filled in the past ten or twelve years by a few "pure research" projects of more limited scope and by numerous small-scale projects of the CRM or salvage variety. The purpose of this paper is to review this recent research to gain some sense of the direction(s) of archaeology on the northern coast during the 1980s. In the first part of the paper, I will review the results of more recent field investigations conducted on the northern coast, including a brief look at work done in Southeastern Alaska. Although it is technically outside the domain of the northern coast of British Columbia, Southeastern Alaska is part of the Northern Northwest Coast culture subarea, and archaeology in this region has provided some exciting new information in the past decade critical to understanding prehistoric developments on the northern British Columbia coast. In the second part of the paper I will turn to a discussion of some basic themes that have emerged in archaeological research on the northern coast in the past decade.

REVIEW: REGIONAL INVESTIGATIONS

Lower Skeena River

In the 1970s the NCP initiated research on the Lower Skeena River at Kitselas Canyon (Inglis and MacDonald 1979) (figure 1). Excavations at Gitaus revealed a deeply stratified archaeological deposit, from which Allaire (1978, 1979) proposed a prehistoric sequence ranging from about 4300 BP to at least 2400 BP. In the early 1980s investigations continued at Kitselas Canyon at the stratified Paul Mason site (Coupland 1985, 1988a, 1988b). Coupland has proposed a five-phase cultural sequence

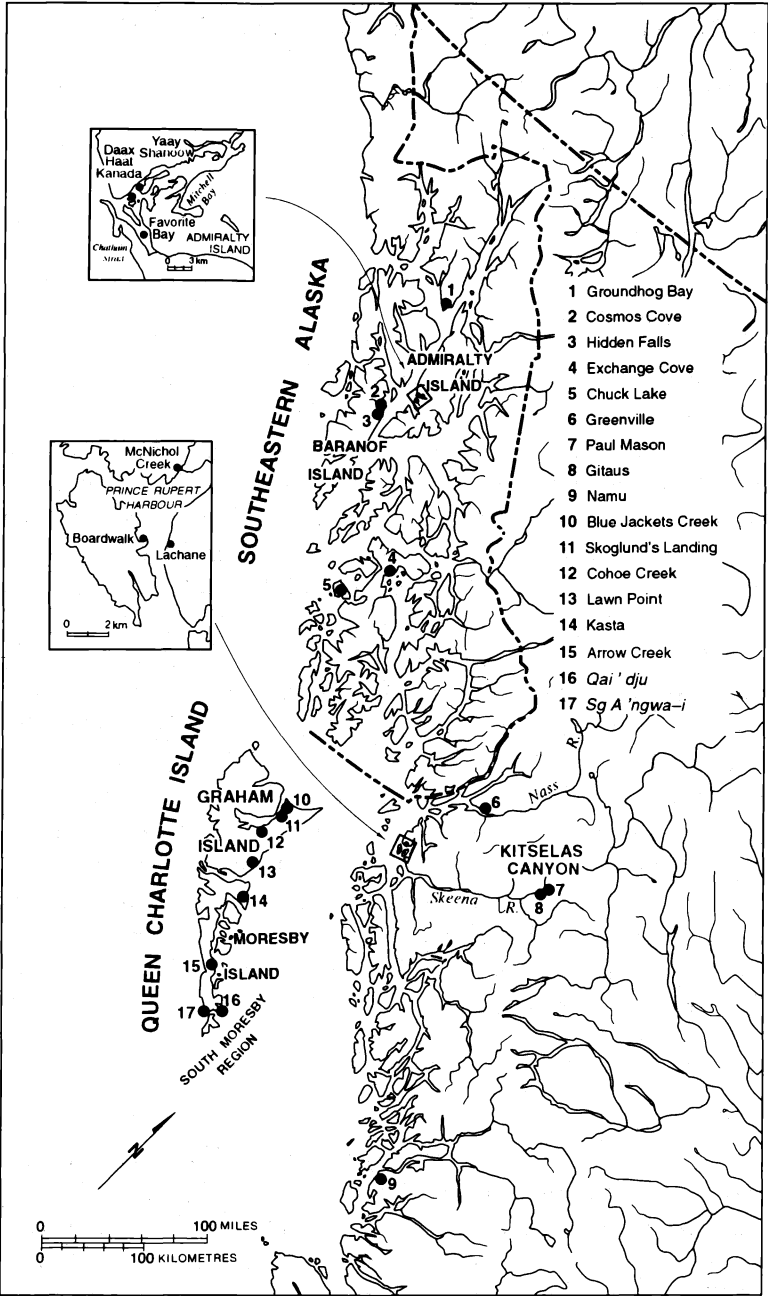


FIGURE 1

Archaeological sites and localities of the northern Northwest Coast.

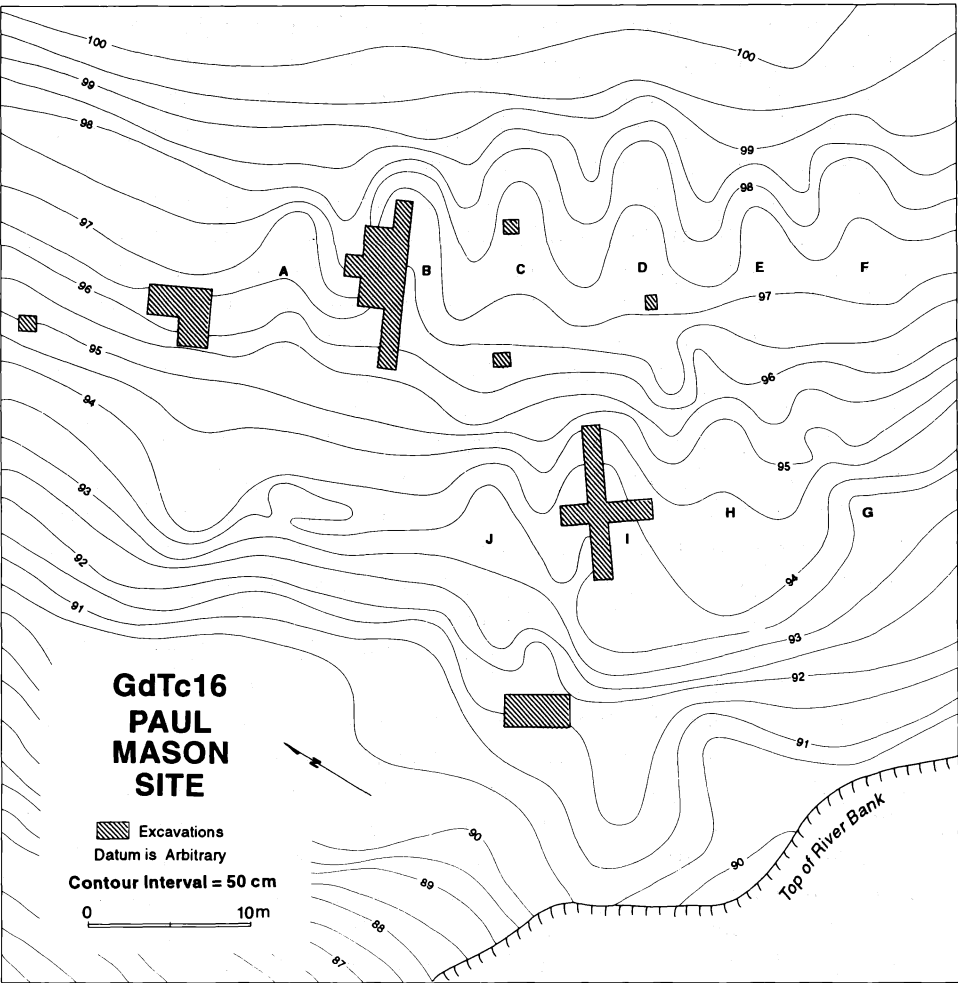


FIGURE 2
The Paul Mason site, GdTc 16.

for the canyon based on evidence from both sites. The earliest, the Bornite Phase (5000-4300 BP), was identified only at the Paul Mason site, and is characterized by pebble, flake, and microblade tools. Ground stone abraders and chipped stone points occur at both sites in the Gitaus Phase (4300-3600 BP), but microblades are absent. Formed unifacial and bifacial chipped stone tools predominate at Gitaus in the Skeena Phase (3600-3200 BP). Chipped stone declines sharply in the ensuing Paul Mason Phase (3200-2700 BP), which is characterized by pebble, flake, and ground stone tools and inferred bone tools. Rectangular house floors of this phase were also identified at the Paul Mason site. The Kleanza Phase (ca. 2500 BP-?), identified at Gitaus, includes items of personal adornment which may relate to the evolution of status differentiation.

The Bornite Phase and the Paul Mason Phase were both defined on evidence from the Paul Mason site. The Bornite Phase component (Coupland 1988a: 230-232) is interpreted as a limited activity occupation, probably associated with salmon fishing, although faunal evidence to support this inference is lacking. The presence of microblades is unique, so far, among mainland components on the northern coast of British Columbia. Coupland includes the Bornite Phase as a late manifestation of the North Coast Microblade Tradition (Matson and Coupland n.d.) or Early Coast Microblade Complex (Fladmark 1975, 1982), which include sites with microblades throughout the north coast region.

The rectangular house floors of the Paul Mason Phase, with radiocarbon dates just older than 3000 BP, constitute the earliest known evidence of a formalized village on the Northwest Coast (Coupland 1988a: 237) (figure 2). Ten house floors were identified, arranged side by side in two rows facing the water, a pattern consistent with ethnographic Northwest Coast villages. The houses were small by historic standards, averaging about 10 m long by 6 m wide. Two excavated house floors each had two hearths. From this evidence, Coupland (1985, 1988a) estimates an average household size of about twelve people. Food storage pits and a large outdoor processing hearth were also part of this component. Burned faunal remains collected from all excavated hearths included 80% salmon bones. The Paul Mason Phase village is interpreted as a winter village, if not a year-round occupation, with an economy based largely on stored salmon.

Prince Rupert Harbour

Field research in the Prince Rupert Harbour area declined dramatically, but not entirely, following the end of the NCPP in the 1970s, the final report for which has just been completed by Kenneth Ames (Ames n.d.).

In addition, recent fieldwork (Archer 1992; Coupland, Bissell, and King n.d.) has contributed important new information on prehistoric settlement patterns and village organization in the harbour.

Perhaps the most significant result of Ames' analysis is the suggestion that human occupation of the harbour area may have begun before 5000 BP (Ames n.d.). North coast archaeologists have long been puzzled by the fact that existing radiocarbon dates from Prince Rupert are no older than 5000 BP, despite evidence of much earlier human settlement to the west on the Queen Charlottes, to the north in Southeastern Alaska, and to the south on the central coast of British Columbia. Ames offers no new dates, but he does note the presence of archaeological deposits as much as one metre below current water levels at two sites, Lachane and GbTo 19. Sea levels on the northern coastal mainland were lower than at present from about 8500 to 5000 BP (Clague, Harper, Hebda, and Howes 1982). It now seems likely that the harbour area was occupied during this period, but evidence of this settlement is presently submerged.

Surveying of the harbour area by Archer during the 1980s has raised the number of recorded aboriginal sites from 100 to 171 (see table 1). In 1990 Archer conducted small-scale test excavations at twenty-three village sites (i.e., sites with shell midden deposits and surface house depression features) in the harbour. The aim was to collect at least two dateable shell samples from different parts of the top of each midden, the assumption being that these samples would date the abandonment of the sites. Of the forty-five dates, corrected for the reservoir effect inherent in shell and calibrated to the dendrochronological curve, twenty-two (from twelve sites) overlap between 2000 and 1500 BP. Archer interprets this as a period of large-scale village abandonment in the harbour (see also Ames n.d.), suggesting that intensifying conflict and warfare may have led to population displacement or to the coalescence of smaller villages into larger ones.

To Archer's data we may add recent evidence from the McNichol Creek site (Coupland et al n.d.) (figure 3). The McNichol Creek site has 15 house depressions, one of which is dated at about 1600 BP based on two radiocarbon estimates from hearth samples. These house depressions average about 11 m long by 6 m wide, quite similar in size and shape to the 3,000-year-old house depressions at the Paul Mason site, but significantly smaller than Tsimshian lineage houses of the historic period. Average household size at McNichol Creek is estimated at ten to twelve people, the same as at the Paul Mason site, whereas the larger historic Tsimshian lineage houses usually held twenty to twenty-five people (Garfield 1951:

TABLE 1
Archaeological Sites in the Prince Rupert Area (from Archer 1992)

<i>Site Class</i>	<i>Number</i>	<i>Percent</i>
<i>Shell Midden Sites</i>		
villages	59	34.5
camp	85	49.7
<i>Isolated Finds</i>		
lithic scatters	6	3.5
canoe runs	1	0.6
<i>Rock Art Sites</i>		
pictographs	2	1.2
petroglyphs	16	9.4
pictographs and petroglyphs	1	0.6
<i>Burial Sites</i>		
cave burials	1	0.6
Total	171	

10; McNeary 1976: 78). The difference suggests that the ethnographic model of Tsimshian household organization (Garfield 1939, 1951; Drucker 1965; McNeary 1976; Halpin and Seguin 1990) may not provide an appropriate analogue for understanding prehistoric household organization in the area before 1500 BP.

One house depression at McNichol Creek is much larger and deeper than the others. This house depression O is 13 m long by 10 m wide, more than double the size of most other house depressions at the site. Historically, in the Tsimshian area, large dwellings with partially dug out floors were invariably the residences of lineage heads (Drucker 1965: 119; Halpin and Seguin 1990: 271).

The McNichol Creek site was a small village with a maximum population of perhaps 150 people. Although one large house, possibly belonging to a chief, existed, all other dwellings were small by historic standards. The evidence from McNichol Creek supports Archer's assertion that significant changes occurred in settlement pattern and village organization in the Prince Rupert Harbour area after 1500 BP.

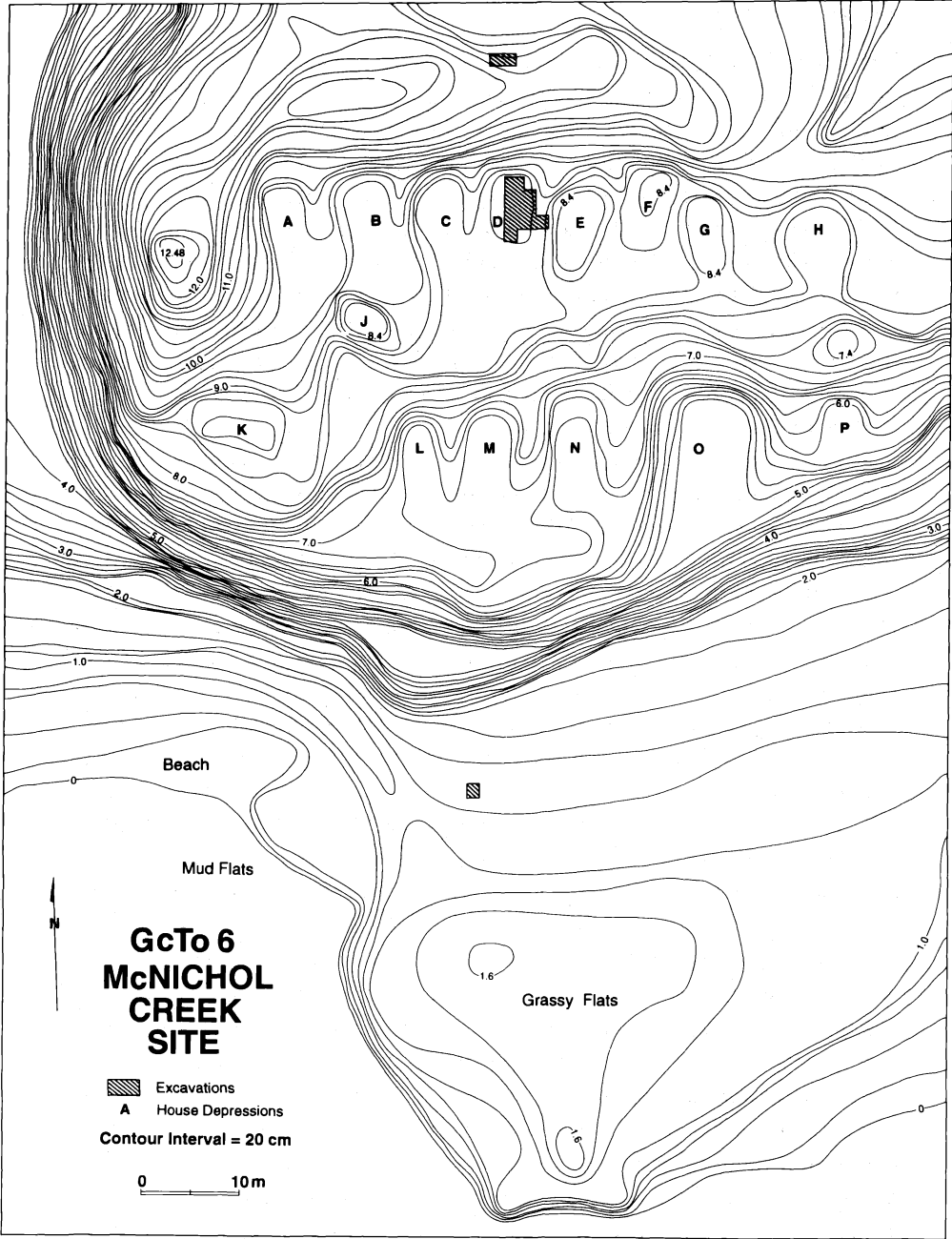


FIGURE 3
The McNichol Creek site, GcTo 6.

Lower Nass River

The lower Nass River area, home today to the Nisga'a Indians, is poorly known from an archaeological perspective. A survey of the area, designed to assess its archaeological importance, located thirty-seven sites (Carlson 1976). The first, and only, significant excavation of a site on the lower Nass River occurred in 1982 and 1983 at Greenville (Cybulski 1992). This was a salvage project, initiated by discovery of human remains during construction activity. Excavations yielded 36 human burial features, skeletal remains of 57 individuals, 231 artifacts, and just under 20,000 pieces of non-human bone. The archaeological deposit at this site included a lower shell zone with radiocarbon dates ranging from 1410 to 1045 BP, and an overlying soil zone dated between 790 and 510 BP (Cybulski 1992: 19). Both zones contain human burials.

All intact or partly intact human skeletons at Greenville were flexed, and most appear to have been placed in square burial boxes. Since all of the Greenville burials date to the late prehistoric period (post-1500 BP), when pronounced differences in social status are thought to have existed, it is interesting that no objects of personal adornment or wealth were recovered from any burial. Elsewhere on the northern coast, articles of personal adornment made of dentalia shell, amber, and copper have been recovered from human burials at Prince Rupert Harbour dated 3500 to 1500 BP (Cybulski 1992; MacDonald 1983). The Greenville burials were not devoid, however, of cultural associations despite the absence of adornment (Cybulski 1992: 62-74). Dog remains, mainly cranial parts, were associated with at least two, possibly three, burials. Nine skeletons, all adult females, had evidence of "labret wear" on the lower anterior teeth. Interestingly, evidence of labret wear in the older Prince Rupert Harbour burials strongly favours males (Cybulski 1992: 72). The Greenville artifact assemblage includes three labrets, none of which were recovered from human burials. There is also evidence that food was offered at some Greenville burials. Elderberry seeds were associated with sixteen individuals, and a concentration of eulachon bones was associated with another burial.

Greenville faunal remains are strongly represented by anadromous resources (over 80% of identified bone as measured by the number of individual specimens), including mainly salmonids and Osmeridae (eulachon and smelts). Marine resources (fish, mammals, shore birds) account for less than 20% of identified bone, and terrestrial resources are rare (Cybulski 1992: 105). The range and diversity of species reflects an orientation to local resources. Of particular interest are the anadromous fish. Osmeri-

dae account for almost 40% of identified bone, and Cybulski argues that these remains at least partly represent food for the dead. Salmonids, which account for 44% of identified bone, are represented almost entirely by vertebrae, many of which bore evidence of cut marks. This strongly suggests that salmon was a stored resource, used as food for the living at Greenville.

The Greenville artifact assemblage, described by P. Sutherland (Appendix B in Cybulski 1992: 208-223), includes tools of chipped stone, ground stone, and bone. Among the more diagnostic items are 2 large splitting adzes, a ground slate mirror, small triangular chipped stone points which may have been arming points for composite harpoons, three soapstone labrets, and seven small barbed-bone points. All of these forms are represented in late period artifact assemblages from Prince Rupert Harbour sites.

Queen Charlotte Islands

Recent research on the Queen Charlotte Islands has contributed to our understanding of the early and late periods of occupation. Fladmark has published the results of fieldwork undertaken in 1969 at the Skoglund's Landing site (Fladmark 1990) and 1970 at Lawn Point and Kasta (Fladmark 1986). The material of interest at Skoglund's Landing is a small assemblage of pebble and flake tools recovered from raised beach deposits, 10 to 15 m above present sea level, which formed 8,000 to 9,000 years ago. Fladmark (1990: 192) argues that the undated material is at least this old, and maybe older if the artifacts washed out of a previously existing site as the sea level rose.

The multiple stratified microblade components at Lawn Point and Kasta, radiocarbon dated between 7,400 and 5,500 BP, form the basis of Fladmark's definition of the Moresby Tradition (Fladmark 1975). The tool assemblages from these sites reflect the reduction of beach pebbles and chert blocks into pebble tools, flake tools, unifaces, microblade cores, and microblades. Bifacial and ground stone tools are absent, as are faunal remains and bone tools, due to the absence of shell and the poor conditions of organic preservation.

Recent archaeological investigations in the South Moresby Park Reserve have resulted in the discovery and test excavation of a new Moresby Tradition site at Arrow Creek, yielding radiocarbon dates in the 8200 to 5650 BP range, the earliest dated evidence of human occupation on the Queen Charlottes (D. Fedje, pers. comm. to Fladmark 1993).

The Lawn Point, Kasta, and Arrow Creek assemblages seem similar to

early microblade assemblages from Southeastern Alaska and the Skeena River at Kitselas Canyon. Thus, despite the relative insularity of the Queen Charlottes, the Moresby Tradition appears to fit securely into a more inclusive North Coast Microblade Tradition.

The Cohoe Creek site (Ham 1990) on southern Graham Island, radio-carbon dated between 6150 and 4990 BP, gives some insight into the economic organization of the late Moresby Tradition. This site contains the oldest dated shell midden on the Queen Charlottes, although the date of 6150 ± 70 BP (Ham 1990: 206) appears to be from a beach deposit underlying the shell midden. The beginning of shell deposition at this site probably dates to about 5000 BP. The most common shellfish remains in column samples were of bay mussels, basket cockles, and little-neck and butter clams. Unfortunately, bones from column samples could not be identified. Surface collected bones included the remains of black bear, caribou, harbour seal, porpoise, and shore birds. Among the fish, remains of Carangidae (jack mackerel?) were prominent. Analysis of sectioned clamshells indicates a late winter/early spring season of occupation, but jack mackerel are found in northern waters only between May and October. If the Carangidae remains are associated with the shell midden, we may infer that the site was occupied "off and on" through the year on a multi-seasonal basis.

Until recently, the later prehistory of the Queen Charlottes was poorly known. However, survey and test excavations at the southern end of the islands in the South Moresby region (Acheson 1991) have revealed a large and diverse late prehistoric record, including habitation sites, fish traps, lithic scatters, and burial sites (see table 2). The oldest of thirty-nine radio-carbon dates from fourteen excavated sites is 1725 ± 70 BP (Acheson 1991: 117). The habitation sites include open and rockshelter locations, and appear to range from small, limited-activity camps to large villages. Sixty-eight per cent of the sixty-three open sites are under 500 square metres, while 17% are larger than 1,750 square metres. The largest sites, *Qai'dju* and *Sga'ngwa-i* (also known as Ninstints village, a designated World Heritage Site) have sixteen and seventeen surface house depression features respectively. Fifty-eight per cent of habitation sites are located on open coastlines.

Since excavation of the South Moresby sites was very limited (Acheson 1991: 115-117), artifact inventories are small. Bone tools greatly outnumber stone tools. Faunal remains were recovered from all eighteen excavated sites, and provide some surprising evidence. California mussel was the most common shellfish, accounting for 95-100% of shell by weight

TABLE 2
Archaeological Sites in the Southern Queen Charlotte Islands
(after Acheson 1991)

<i>Site Class</i>	<i>Number</i>	<i>Percent</i>
<i>Shell Midden Sites</i>		
>1000 m ² (villages)	20	17.5
<1000 m ² (with house features)	4	3.5
<1000 m ² (without house features: camps)	39	34.2
<i>Rockshelters and Caves</i>		
habitation rockshelters	18	15.5
habitation caves	18	15.5
<i>Fish Traps</i>		
weirs	7	6.1
stone walls	2	1.7
weir/stone wall	2	1.7
<i>Isolated Finds</i>		
lithic scatters	4	3.5
Total	114	

in thirteen of sixteen middens. Interestingly, shellfish diversity is greater in the early Coho Creek midden than in the later South Moresby middens. This is probably a reflection of differences in shellfish habitat between the northern and southern Charlottes. Salmon and rockfish were the main fish taxa, followed distantly by halibut. Halibut remains exceeded 10% of identified fish at only one site, which is interesting inasmuch as ethnographies (Murdock 1934; Blackman 1990) indicate that halibut was the main subsistence resource of the Haida. These ethnographies may represent the situation on the northern Charlottes rather than the extreme south. The most surprising results of the faunal analyses are seen in the mammal remains. Sea mammals were hunted almost exclusively, and at five of eleven open habitation sites, whale bones were the most abundant. At two sites, the number of whale bones exceeded 64% of identified mammal bones. Some of the whale bone may have come from drift whales, but the surprisingly high proportions strongly suggest that the late prehistoric occupants of the southern Queen Charlottes hunted whales on a regular basis (Acheson and Wigen 1989).

Southeastern Alaska

Recent archaeological research in Southeastern Alaska has made a number of important contributions to Northern Northwest Coast prehistory. The final report of the Hidden Falls site on Baranof Island (Davis 1989) is the culmination of fieldwork undertaken in 1978 and 1979. The site has three main cultural components, the earliest of which (Davis 1989a: 159-198) contains microblades, and has a radiocarbon date on charcoal of 9060 ± 230 BP (Davis 1989a: 194). A number of other dates, ranging from 10345 to 7175 BP, were obtained on unburned wood samples of uncertain cultural association. These dates notwithstanding, the charcoal date is one of the oldest clearly associated with microblades on the northern coast. In addition to microblades and microblade cores, the Component I assemblage includes pebble and flake tools, burinized flakes, and a variety of retouched unifacial tools. It is assignable to the North Coast Microblade Tradition, and is generally similar to the Lawn Point and Kasta assemblages, with the following exceptions: the microblades at Hidden Falls are made mainly from obsidian, and there is slight evidence of bifacial workmanship (one biface tip).

Component II at Hidden Falls has radiocarbon dates ranging from 4035 to 3010 BP (Lightfoot 1989: 202), and has a stone tool assemblage featuring pebble, flake, and ground stone implements similar to the Gitaus Phase at Kitselas Canyon and Period II at Prince Rupert. The small faunal assemblage suggests a generalized adaptation that included deer, sea mammals, and anadromous and marine fish (Lightfoot 1989: 270). There is no evidence of storage, and although a small structure was found, no evidence of permanent winter occupation. Lightfoot suggests that Hidden Falls II represents the spring/summer encampment of a small, foraging group.

Component III at Hidden Falls is dated from about 3200 to 1300 BP, and includes a diversified assemblage of chipped stone, ground stone, bone, and shell tools (Davis 1989b: 275-318). A number of items of personal adornment, including labrets, were recovered. A deep shell deposit appears for the first time at Hidden Falls in Component III, affording good bone preservation. Shellfish are represented mainly by bay mussel in the lower midden layers, but the upper layers contain a more diverse range of species with clams and cockles predominating (Erlandson 1989: 155). Vertebrate faunal remains (Moss 1989) show that salmon and Pacific cod were of primary importance. Salmon were represented entirely by vertebrae, which suggests storage (Moss 1989: 109), and the presence of cod indicates late winter/spring occupation. Hidden Falls III is best interpreted as a limited activity spring encampment, devoted to cod fishing and shellfish gathering.

Although many North Coast Microblade Tradition sites were located on coastlines, faunal evidence of a maritime economic adaptation was lacking. Recent research, however, in Southeastern Alaska at the Chuck Lake site on Heceta Island (Ackerman, Reid, Gallison, and Roe 1985; Ackerman, Reid, and Gallison 1989) has revealed a shell midden component with microblades, dated from 8220 to 7360 BP, that reflects a subsistence pattern based on primary use of intertidal to deep offshore marine resources. These are the earliest dates on a shell midden from anywhere on the Northwest Coast. Shells of bay mussels, butter clams, and littleneck clams were recovered, indicating exploitation of rocky foreshore and sandy bottom intertidal habitats. Vertebrate faunal remains were mainly from fish, and over half of these were from Pacific cod, indicating spring occupation. Greenling, sculpin, and rockfish were also present, but salmon, herring, and flatfish, all important Northwest Coast subsistence resources in later times, occurred only rarely at Chuck Lake. Remains of sea mammals, including sea lion, were present, but not abundant. Terrestrial resources appear to have been of only minor importance.

Recent research in Southeastern Alaska has yielded new evidence with profound implications for the evolution of the prehistoric economy of the Northwest Coast. Remains of fish weirs dated between 3500 and 3000 BP, built across the mouths of salmon streams at Favorite Bay on Admiralty Island (Moss, Erlandson, and Stuckenrath 1990), Cosmos Cove on Baranof Island (Autrey 1989), and Exchange Cove on Prince of Wales Island (Ream and Saleeby 1987), provide early evidence of mass harvesting of salmon from both the northern and southern ends of Tlingit territory.

Finally, two sites in the Angoon area, *Daax Haat Kanada* and *Yaay Shanoow*, first excavated by de Laguna (1960), were thought to be early historic occupations, and have long been used as the standards of Tlingit material culture. Recent re-investigation of these sites by Moss, Erlandson, and Stuckenrath (1989) has produced dates ranging from 1230 to 710 BP, suggesting that the antiquity of Tlingit culture in the area is much greater than previously believed.

DISCUSSION: MODELS AND THEMES IN NORTH COAST PREHISTORY

The foregoing review has highlighted results of some of the more important field investigations conducted on the northern coast during the 1980s. At the same time, archaeologists have been using these newly acquired data to formulate and test models of prehistoric cultural developments in the area. A number of important research themes stand out. In the remainder

of this paper I will consider three of these themes; not an exhaustive treatment by any means, but one which does reveal the diversity of research interests current in north coast archaeology.

Early Colonization and Settlement of the Northern Coast

The northern coast has featured prominently in models of early human colonization of the New World. Fladmark first proposed the possibility of a late Pleistocene coastal migration route in the 1970s (Fladmark 1975, 1979), and refined the model, at least in terms of paleoenvironmental conditions for migration, through the 1980s (Fladmark 1983a, 1983b). The notion of a Pacific coastal human migration into the New World south of the ice even during the height of the Late Wisconsinan glaciation remains an intriguing possibility, but one that continues to suffer from two problems. First, despite Fladmark's detailed modelling of late Pleistocene ice movements, sea level fluctuations, and changes in shoreline location, there is still no consensus on the inhabitability of the North Pacific coast much before 10000 BP. Fladmark's review of existing geological and paleoenvironmental evidence demonstrates convincingly that the Queen Charlotte Islands were an unglaciated refugium and that unglaciated headlands and emergent land masses may have existed on the coast of British Columbia south of the Queen Charlottes even during the climax phase of the Late Wisconsinan glaciation (ca. 20000–12000 BP). However, farther north the Late Wisconsinan glaciation of Southeastern Alaska is still poorly known (Fladmark 1983a: 25), and it is quite possible that ice complexes in this region may have prevented or impeded southerly human migration before 10000 BP (see Mathews 1979).

The second problem with the coastal migration route model is that there is no convincing archaeological evidence to support it, nor are we likely to ever recover such evidence. Sea levels were considerably lower during the last glaciation, and if sites of Late Wisconsinan age do exist along the northern coast, they must now be submerged by as much as 100 m.¹

Who were the first occupants of the northern coast? Fladmark (1990: 194) raises the possibility that the water-rolled pebble and flake tool assemblage from the lower level of Skoglund's Landing may have been left by an early population who migrated out of Beringia at or before the end

¹ There is also presently no convincing archaeological evidence of human migration at the end of the Pleistocene through the alternative route, the "ice-free corridor" east of the Rocky Mountains. The main difference here is that if human migration through the ice-free corridor did occur, archaeological evidence of such a movement should be recoverable. Archaeological evidence of a coastal migration may never be recoverable.

of the Pleistocene (see also Hobler 1978). This material, which on the basis of geological context appears to predate the microblade assemblages at Lawn Point and Kasta, may relate to an occupation of the northern coast that is older than the North Coast Microblade Tradition. The oldest radiocarbon dates from Groundhog Bay in Southeastern Alaska (Ackerman, Hamilton, and Stuckenrath 1979) and Namu on the central coast of British Columbia (Carlson 1979, 1988) range from 10000 to 9000 BP, and are from components that include bifacially chipped projectile points and knives, but lack microblades. Microblades were not introduced at Groundhog Bay or Namu until after 9000 BP. The antecedents of this pre-microblade culture on the north coast are uncertain, but one possibility — the Nenana Complex — has recently been reported (Powers and Hoffecker 1989). The Nenana Complex is known from sites in the Nenana Valley of central Alaska, and has radiocarbon dates older than 11000 BP. The assemblages include lanceolate projectile points, and large and small prismatic blades, but no microblades. At one site, Dry Creek, Nenana Complex material was found stratigraphically underneath microblade assemblages of the Denali Complex. This summary is far too brief to resolve the situation, but it does raise some interesting questions. Is the Nenana Complex ancestral to the earliest occupation of the northern coast represented at Groundhog Bay, Namu, and possibly Skoglund's Landing? Did the Denali Complex give rise to the later North Coast Microblade Tradition?

Evolution of the Developed Northwest Coast Pattern

Another basic theme in archaeological research on the northern coast in the 1980s has been attempts to understand the evolution of the Developed Northwest Coast Pattern, that distinctive complex of cultural traits including large permanent villages with multifamily dwellings, a storage-based economy focussing on salmon, and ranked societies. Research at the Paul Mason site (Coupland 1988a) confirms the presence of permanent villages on the northern coast by 3200 BP. Fish weirs in Southeastern Alaska indicate intensive harvesting of salmon at about the same time (Moss et al 1990), while salmon storage is reflected in the high ratio of salmon postcranial to cranial parts at Hidden Falls III (Moss 1989). In all probability ranked societies evolved on the northern coast some time between 3000 and 2000 BP, but clear archaeological evidence of this remains elusive. The well-studied Greenville burials (Cybulski 1992) do not include items of personal adornment that might suggest status differences. Richly interred burials, dated 3500 to 1500 BP, were found at Prince

Rupert Harbour, and Ames (n.d.) suggests three classes of burials based on type and quantity of grave offerings, but it is not clear if these included subadult burials. Richly interred subadult burials would be expected if social status was hereditarily determined (Saxe 1970; Binford 1971). A thorough archaeological study of northern coast mortuary patterns, similar to the recent study by Burley and Knusel (1989) for the Gulf of Georgia area, is a high priority for future research.

Models of the evolution of the Developed Northwest Coast Pattern based on northern coast research have been proposed by Ames (1981, 1985) and Coupland (1985, 1988a, 1988b). Ames uses Information Theory to explain the emergence of ranked society. He notes that after 3500 BP north coast societies began to expand in size, become more sedentary, and become more dependent on stored resources. Binford (1980) refers to these changes as an increase in "logistical organization," and he argues that hunter-gatherers are likely to become more logistically organized if the distribution of resources in their territory is patchy in time and space. The northern coast is a good example of such an environment (Schalk 1982). Logistically organized groups may also intensify resource production to support alliances with other groups if a risk is perceived to the self-sufficiency of households or local groups as producing units (Bender 1981). Ames argues that these changes related to logistical organization often produce an increase in the flow of information through the society, which can be a source of stress, sometimes referred to as "scalar stress" (Johnson 1982). According to Ames, problems of scalar stress on the northern coast may have led to the formation of vertical social hierarchies (ranked societies) which are able to process large amounts of information more efficiently and make more complex decisions. This transformation is thought to have occurred at Prince Rupert Harbour between 2500 and 2000 BP (Ames 1985: 174).

Coupland also emphasizes the importance of storage and intensification of production in the rise of cultural complexity, but treats these variables in a manner quite different from Ames. Storage and intensification are commonly associated with more sedentary patterns of settlement (Testart 1982), as exemplified in the Paul Mason Phase village at Kitselas Canyon. Sedentary people who are dependent on storage and intensive production may become strongly tied to their location of residence, especially if it coincides with a major resource extraction location. They may have invested in fixed or permanent resource extraction facilities in or near their location of residence, with the expectation of long-term energy return (Gilman 1981), and are therefore reluctant to leave. Alternatively, the options of

where to go may be unappealing for a variety of reasons, not the least of which is that moving away from a highly productive location may lead to a lowered standard of living. Under these conditions, people may be unwilling or unable to leave their traditional territory if an aspiring socio-political élite among them tries to consolidate a position of permanent leadership. They may have no choice but to accept conditions of inequality and exploitation in return for economic security.

It remains to be explained how an aspiring élite would go about consolidating his position against the wishes of his followers. In a case study from the subarctic, Legros (1985) argues that Tutchone élites accomplished this by effectively using cross-cousin marriage to form tightly knit corporate support groups, and by occasionally resorting to the use of violent force. The same techniques may have been used by emerging sociopolitical élites on the northern coast, which might explain why a significant number of the Prince Rupert burials contain osteological evidence of skeletal trauma and even violent death (MacDonald 1983; Cybulski 1992).

Ames' model emphasizes the integrative, system-serving benefits of social hierarchies with respect to alleviating scalar stress. Social élites are seen as resource managers, who gather information and make decisions on behalf of the group. Coupland's model emphasizes the self-serving interests of social élites, who are concerned mainly with amassing wealth and labour for their own immediate benefit through conflict and other exploitative means. It seems quite reasonable to suggest that the emergence of ranked societies in the Developed Northwest Coast Pattern may have involved aspects of both models, reinforcing the notion that social inequality may be simultaneously system-serving and self-serving.

Ethnicity

The theme of identifying prehistoric ethnicity has been pursued in recent archaeological research on the northern coast from the perspectives of stylistic analyses of artifacts, particularly prehistoric basketry and cordage (Croes 1989a, 1989b), and osteological analyses of human skeletal remains in burials (Murray 1981; Cybulski 1992).

The recovery of basketry from the Lachane site (Inglis 1976) in Prince Rupert Harbour, dating to within the last 2,000 years, has allowed the testing of models concerning the continuity of Tsimshian culture in the area. In a detailed comparative study, Croes (1989a) found that Lachane basketry was very similar to historic Coast Tsimshian basketry in terms of construction materials, manufacturing techniques, forms, and sizes. Both the prehistoric occupants of Lachane and the historic Tsimshian preferred

cedar bark for basket-making. Both groups used similar twining techniques for basket bodies, although people at Lachane often used checker plaiting for basket bases. Square-based cylindrical baskets were commonly made by both groups.

Sharp contrasts existed between Lachane and historic Tsimshian basketry on the one hand, and Haida and Tlingit basketry on the other. The Haida and Tlingit most commonly used cedar boughs and roots rather than bark for basket-making. Twining was preferred to plaiting, and their baskets typically had round bases with centre points. All Lachane and historic Tsimshian basketry was woven with a lean to the right, while all Haida and Tlingit basketry had a lean to the left (Croes 1989a: 175).

The close similarity between Lachane and historic Tsimshian basketry provides sound support for the model, first proposed by MacDonald (1969), of ethnic and cultural continuity in the Tsimshian area for a period of at least 2,000 years (Croes 1989a: 199). The marked contrast between Tsimshian area basketry and that of the Haida and Tlingit, a contrast that may have considerable antiquity, suggests that a certain amount of technological and hence cultural distinctiveness was maintained along the northern coast, even during the late prehistoric period.

Cybulski (1992: 112-128) has compared the skeletal biology of twenty-five individuals recovered from fourteen burials at the Blue Jackets Creek site (Severs 1974) on northern Graham Island in the Queen Charlottes to prehistoric human remains from Namu, Boardwalk, and Greenville. The Blue Jackets Creek and Namu samples include some of the oldest burials from anywhere on the Northwest Coast, ranging from 4000 to 4800 BP. The Boardwalk burials are thought to date from 3500 to 1500 BP, while the Greenville burials date to within the last 1,500 years. Despite the time span of almost 4,500 years, the Namu, Boardwalk, and Greenville samples were consistently similar in both metric and non-metric analyses. The Blue Jackets Creek population was clearly so distinct that "one could conclude that the sample is biologically unrelated to the others . . . [the data] do not present an image of a common north coast human biological complex which might have existed in British Columbia for 4,000 or 5,000 years, traceable to historic times" (Cybulski 1992: 128).

In an earlier study of skeletal biology, Murray (1981) compared the Blue Jackets Creek material to historic Haida skeletal remains. The results of this comparison showed more differences than similarities. The Blue Jackets Creek population tended to dolicocephaly or "long-headedness," while historic Haida and other Northwest Coast groups are predominantly brachycephalic or "round-headed." Cybulski (1990: 56) cautions against

interpreting this as evidence of population replacement on the Queen Charlottes, however, noting that an evolutionary trend to round-headedness has been observed in many other parts of the world, "and the northern coast of British Columbia may be no exception." In summary, the people buried at Blue Jackets Creek may be ancestral to the historic Haida despite important differences in skeletal biology, but the early Queen Charlottes burial population is definitely different from mainland material.

SUMMARY

Despite the lack of a "megaproject," the 1980s was an exciting decade in archaeology on the northern coast, as researchers continued to develop and refine their understanding of the prehistory of the region. Early human occupation continues to be a topic of interest for many north coast archaeologists. An exciting area for future research on this topic is the accumulating evidence for a pre-microblade occupation of the northern coast, and the possible cultural relationships between this early culture and the Nenana Complex of central Alaska.

Evolution of the Developed Northwest Coast Pattern has also emerged as a central research theme on the northern coast, with new explanatory models offered by Ames and Coupland. As is often the case, these models tend to outdistance the data available to test them, but this is a healthy situation, and the gap is beginning to close. I look forward to the results of future field research that will undoubtedly lead to modification and refinement of these models, and perhaps even to an attempt to combine some of the ideas presented by Ames and Coupland, which could only result in hybrid vigour. Of particular interest is the emerging evidence of large-scale upheaval in settlement patterns on the northern coast, including village abandonment and perhaps even population displacement, between 2000 and 1500 BP. I see this as an issue of great importance for future research.

Finally, studies of ethnicity are beginning to sort out cultural differences that may relate to the historical development of the three major ethno-linguistic groups of the northern coast: Haida, Tsimshian, and Tlingit.

In this paper, I have highlighted some of the more important archaeological research efforts conducted on the north coast during the 1980s. The past decade witnessed a decline in the amount of archaeology undertaken in the region. In the present climate of budget cuts and uncertain funding, we can only hope that this trend will not continue in the 1990s.

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