

The Midden

MOUNTAIN NAMED AFTER DR. BORDEN

A B.C. mountain has been named after the late Dr. Carl Borden, who has sometimes been called the "father of B.C. archaeology.

The 2120-metre mountain (6,933 feet) is in the Kasalka Range, south-east of Tahtsa Lake, in the region between Smithers and Tweedsmuir Park. Dr. Borden had conducted archaeological work in the neighboring Nechako area.

The peak --which was un-named-- was selected by the Canadian Permanent Committee on Geographic Names, at the request of the B.C. Heritage Advisory Board. The board had hoped for a mountain near the Fraser Canyon --where Dr. Borden did much of his early work-- but there are no substantial mountains still lacking names there.

The mountain can be seen by visitors in the area from the end of the road south of Sweeney Lake. It is the highest peak in the area, and has icefields on its upper slopes.

NEW ST. MUNGO DIG PROPOSED

Approval of a huge new archaeological rescue project at the St. Mungo Cannery site, on the Fraser River delta, is now hanging on government funding.

The Heritage Conservation Branch invited proposals last Fall, following release of plans for a new river crossing to Annacis Island. The bridge's southern approaches would impinge on the site.

Early in 1982, the H.C.B. selected Provenance Research Inc. to do the work, partly because of the large-scale public involvement proposed. Provenance leaders Len Ham and Will Peacock suggested the dig should be augmented by school lectures, site tours, and A.S.B.C. participation.

H.C.B. and the Ministry of Highways have jointly recommended special government funding for the project, but at press-time no decision had been released. Ham and Peacock hope to turn the first sod May 1.

Back in 1975/6, the Archaeological Society of B.C. strongly urged the B.C. Government to "designate" the 4,000-year-old midden as a heritage site.

COQUITLAM LAKE RESERVOIR:

By M.J. Wright
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S.F.U.

Introduction

This report presents an initial assessment of DiRq-5, one of a series of prehistoric archaeological sites inventoried during the course of the Coquitlam Area Mountain Study (Wright 1980). The Coquitlam study is a large-scale interdisciplinary research project co-ordinated by the Environment and Land Use Committee Secretariat. The study was initiated in 1979 and is designed to assess the recreation development potential of a large tract of land immediately north of the present communities of Port Moody, Port Coquitlam, Pitt Meadows and Maple Ridge. (Much of the study area had never been surveyed for Heritage Resources, largely due to the remote and impenetrable terrain.)

The Coquitlam Lake basin, aside from being the largest sub-region, was also the least accessible. This derived, in part, from the extreme topographic relief and associated ground cover in the area, but also from the public access restriction that accompanies a Water Conservation Reserve. At the present time, the lake basin provides fresh water to approximately 100,000 people, a figure that is expected to increase several times by the close of this century. To maintain the water quality, public access is strictly forbidden; entry can only be gained by special permit. Coquitlam Lake is partially a man-made lake, by virtue of two dams constructed in 1905 and 1913. While the first dam raised the lake level only three metres, the second added a further 20 metres. These dams were designed to hold water both for diversion to the Indian Arm power generating stations, and to supply drinking water to New Westminster.

Fortunately, the timing of the archaeological assessment coincided with British Columbia Hydro's decision to reface the 1913 earthen dam with rip-rap, thereby necessitating the draining of the lake to its lowest level in more than 70 years. Owing to these circumstances, the two-person survey crew was presented with approximately 50 kilometres of recently exposed and eroded shoreline, and precious little time or equipment to facilitate the reconnaissance. Working within these constraints, the survey recorded three historic sites and six prehistoric sites. It is one of the

CULTURE HISTORY AND ARTIFACT DESCRIPTION

prehistoric sites that is the concern of this report.

Environmental Setting

The Coquitlam Lake basin is one of a series of north-south trending 'U' shaped valley depressions that drain into the Fraser Lowlands (Figure 1). The lake basins of Seymour Lake, Coquitlam Lake, Pitt Lake, Alouette Lake,

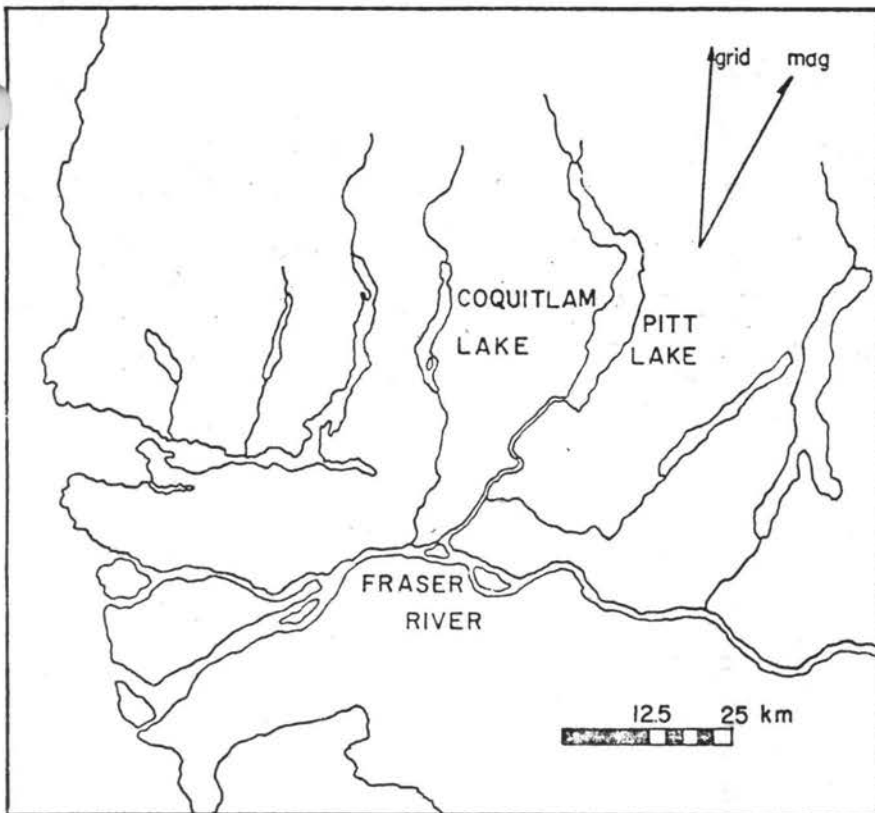


Figure 1

Stave Lake, Harrison Lake, and the marine inlet known as Indian Arm, are all partially formed through glacial scour and depositional events.

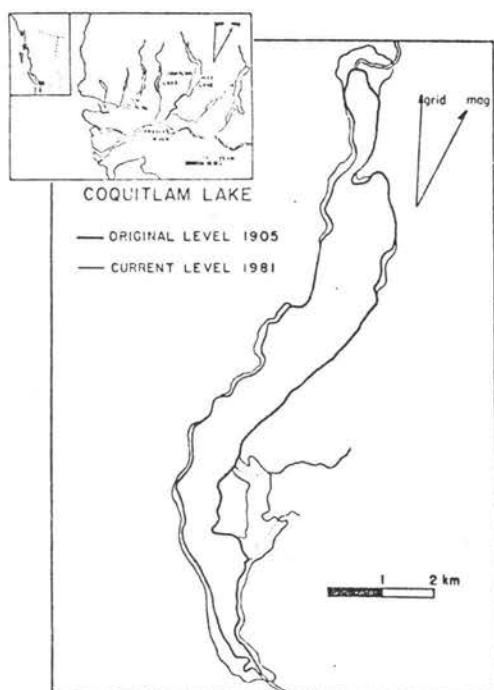
The most recent glacial sequence for this area can be briefly summarised as follows: the last maximum of ice cover occurred during the Vashon glaciation, dating to about 15,000 years before present and resulting in a maximum ice elevation of 6000 feet above mean sea level. The withdrawal of the Vashon ice sheet appears to have been extremely rapid, beginning sometime around 13,000 years ago (Mathews, Fyles and Nasmith 1970). The swift nature of this event is evidenced by marine inundations to the 575 foot contour level, indicating that the sea was able to invade the newly exposed land surface before isostatic rebound took place. It is noteworthy that the basal levels of the stratigraphic profile at DiRq-5 reveal evidence possibly reflecting such a marine invasion. The ice front had fully retreated from the Fraser Lowlands by 9500 B.P. Allowing sufficient time for both plant and animal species to colonize the newly exposed land mass, it may be postulated that man could have occupied the Fraser Lowlands area as early as 8500 years ago.

The lake systems north of the Fraser Lowlands all share certain characteristics, to greater or lesser extents, and all of these features stem from the glacial events in the area. Typically, these upland lakes possess very deep northern basins, but markedly shallow southern basins. This asymmetrical basin profile results from the glacial scouring of the northern basin, and subsequent deposition to the south. Dams built on Seymour, Coquitlam and Stave Lakes distort this pattern.

Despite the fact that Coquitlam Lake is a drowned lake basin, it retains much of its original configuration (Figure 2). This is an important feature when comparing the location of DiRq-5 relative to other topographic features within the lake basin. DiRq-5 occupies an outcrop of bedrock on the north side on an unnamed creek that rises from Widgeon Lake. This site is situated between the 490 and 497 foot contour intervals, and is periodically flooded by the reservoir, which oscillates around 494 feet above mean sea level. Prior to the artificial raising of the lake (see Wright and Williams, "Glub Glub: Experimental Archaeology ...," *Midden*, Dec. 1981, Figure 1), the site locale would have been approximately 20 metres above the pre-1905 lake level. The promontory on which the site is situated is the only major example of near flat ground surface in the immediate area. Furthermore, this location provides a vantage point for viewing a wide expanse of the lake and the nearby creek valley. The placement of DiRq-5 also affords a relative degree of shelter from the climatic extremes known on Coquitlam Lake.

The climate of Coquitlam Lake is very similar to that of much of the lower mainland, with the exception that the increase in elevation promotes more pronounced temperature fluctuations. Coquitlam Lake does freeze in the winter and snowfalls do accumulate. Owing to the north-south trend of the lake, winds tend to flow the length of the lake,

Figure 2



with pronounced cold air flows 'draining' from the interior and welcome warm air streams originating from the Fraser Lowlands. This 'push-pull' wind pattern determines the wave direction and amplitude on the lake, which at times are sufficient to capsize small craft. DiRq-5 is situated in the lee of these winds, thus offering one of very few safe moorages on the lake. Certainly its protective sunny location proved a welcome haven to archaeological surveyors in a somewhat unstable boat.

The biomass of the Coquitlam Lake area is not well known, but can be postulated to reflect similar plant and animal species recorded for adjacent areas. In fact, the number and variety of species within the lake basin are likely to be enhanced compared to other contiguous regions, because of the reserve status of the Water Conservation Area. Much of the fauna and flora currently in the lake basin would likely have been present at the time DiRq-5 was occupied. The only exception to this would be the anadromous fishes which no longer have access to the lake because of the dam. With no man-made impediment to interfere, the Coquitlam River would likely have supported a run of anadromous fish species in the past. Ethnographic evidence of fish runs at the mouth of the river supports this assumption (Suttles 1955:12).

The edible floral resources currently in evidence within the lake basin are poor. There is a notable absence of the berry yielding bushes that are abundant in other nearby areas. It may be that the periodic inundation and drawdown events of the reservoir curtail the colonization of such species. It may also be that local soils are not suitable for their sustained growth.

Inundation Effects

Elsewhere (Wright and Williams, op. cit.), a detailed report is provided which discusses some experimental results from the observation of materials placed within an inundation context. Obviously, the position of DiRq-5 within the active zone (Garrison 1975) of a fresh water reservoir afforded an opportunity to study the effects of inundation on an archaeological site. Specific questions to be addressed included evidence of material deterioration, material transport, rate of erosion, wave energies, remaining site matrix and perhaps most important, the integrity of original site assemblage provenience after inundation and erosion have taken place. In order to answer these questions, a research design was assembled and a series of controlled surface collections and test excavations were undertaken to gather the necessary data.

Site Investigations

The existence of DiRq-5 was first noted on July 18, 1981 during a foot survey of the east shore of Coquitlam Lake. It became immediately apparent that a large number of artifacts were exposed on the surface, and that a controlled surface collection was in order. The precise horizontal provenience of the surface finds was deemed crucial to addressing questions of wave sorting of artifacts by weight, differential movement of artifacts within specific levels of the active zone, preservation of the original site context, and indications of sequential occupations by virtue of artifact and material type distributions. In conjunction with a controlled surface collection, limited subsurface test excavations were undertaken to determine the depth of the site deposit, the possible existence of strata, presence of features and the recovery of materials suitable for absolute dating.

Surface Collection

Prior to recording the artifact locations, the entire visible extent of surface finds was walked in both systematic and random paths so that all surface finds might be located. Once an artifact was found, a section of survey tape was placed

beneath the object for ready visual relocation. A permanent datum point was established at the edge of the current shoreline, and a five-metre-square grid, oriented to magnetic north, was established over the site. Utilizing a system of cross-tape triangulation, 144 surface finds were recorded with accurate horizontal provenience. Following the surface collection, a contour map of the site was completed, thus adding a third, albeit relative, dimension to artifact location.

Excavations

The excavations at DiRq-5 consisted of three one-metre square test pits placed judgmentally within the five-metre grid system. Owing to time constraints, only test units one and two were excavated to sterile substrate. The totals for the DiRq-5 artifact assemblage are presented in tables one and two. Table three provides the totals of raw lithic materials, identified numerically.

Table One

	Surface	Excavation	Other	Total
Debitage	75	36	6	117
Biface Thin/fk	29	22	3	54
Microcore	10	1	1	12
Microblade	8	16	1	25
Other	5	1		6
Bipolar core	3			3
Bipolar flake	3	3		6
Graver	3	1		4
Retouch flake	2			2
Pieces esquillees	2	1	1	4
Chopper	2		3	5
Core tool	2		1	3
Total	144	81	16	241

Table Two

	Excavation Units		Total
	One	Two	
Debitage	22 (46.8)	14 (41.2)	36 (44.4)
Biface thin/fk	12 (25.5)	10 (29.4)	22 (27.2)
Microblade	10 (21.3)	6 (17.1)	16 (19.8)
Bipolar flake	1 (2.1)	2 (5.9)	3 (3.7)
Graver	1 (2.1)		1 (1.2)
Other		1 (2.9)	1 (1.2)
Pieces esquillees		1 (2.9)	1 (1.2)
Micro core	1 (2.1)		1 (1.2)
Total	47 (99.9)	34 (100.0)	81 (99.9)

Table Three

Material type	Surface	Other	Ex/One	Ex/Two	Total
One	85	6	35	12	138
Three	2			2	4
Four	23	2	3	3	31
Five	2	1		1	4
Six	4	1	2	4	11
Seven	3				3
Eight			2	2	4
Nine	2				2
Ten			1		1
Eleven	16	5	3	4	28
Twelve		1	1	5	7
Thirteen	2				2
Other	5			1	6
Total	144	16	47	34	241

Artifact Edge Damage

The most remarkable characteristic of the site assemblage, in terms of edge damage, is the complete absence of this trait. The seemingly 'pristine' nature of most artifact margins might derive from two factors, one, that the site has only been recently eroded and minimally exposed to water mechanics, and two, that the active

reservoir zone in the immediate site vicinity is one of limited wave and current energies. The latter proposal seems most acceptable and is based on the view that there is simply insufficient wave energy present to seriously damage lithic artifacts.

Artifact Summary

In terms of summarising the artifact description the following observations are offered: first, there are some noteworthy omissions within the assemblage, specifically ground stone tools and bone and antler materials. The absence of bone and antler is thought to be indicative of the local acidic soils. The absence of ground stone may be the result of one, or two factors. Either the site was occupied too early in time to have included a ground stone industry, or there were functional constraints which precluded its use. The evidence in support of the former case, is presented in the concluding section of the paper.

A further anomaly at DiRq-5 is the presence of biface thinning flakes, but the absence of bifaces themselves. Bifaces do occur in nearby contexts however, and this apparent discrepancy in the site inventory may stem from sampling inadequacies, as well as the fact that such items were preferentially curated.

If there is one word that could effectively describe the DiRq-5 site assemblage, that word would be diverse, both in terms of tool types represented, and the lithic resource materials utilized. In fact, the study of the lithic source materials employed at the site is among the most useful lines of inquiry regarding the time period during which the site was occupied, and the cultural affiliation of its inhabitants. In the next section, an analysis is presented of spatial patterning seen in the site surface collection, followed by a consideration of the excavated test pit data.

Spatial Patterning

This section of the report is divided into two parts. The first deals with the analysis of the DiRq-5 surface collection and utilizes the graphics computer program SYMAP for interpretive purposes. The second part considers the excavated data from DiRq-5 which were derived from two, one-by-one-metre test squares. Comparisons and contrasts are formulated between the two data sets that assist in addressing questions of the representativeness of surface finds at the site.

Surface Distributions

The point provenience surface collection was undertaken with a number of research goals and questions in mind. These questions were: does inundation and subsequent wave action act to sort surface artifacts? If so, what attributes of the artifact affect sorting? If no sorting evident, does the spatial distribution of artifacts reflect clustering? Does this clustering relate to tool use, material type, or other controlling factors?

1) Spatial distribution by weight

Studies of both wave dynamics, stream (current) flow, and results of other experimental projects, strongly suggested that one might expect sorting of artifacts located within the active zone of a fresh water reservoir (Issac 1967, Lever and Thijssen 1968). This seemed a reasonable assumption in the case of DiRq-5, as it is located within that zone and is comprised of various sizes and weights of artifactual remains. Other studies, and inundation mechanisms, suggested that weight would likely be the major factor in determining which items moved, and how far. It was recognized

that shape would also play a significant, though secondary role, in that objects exposed to a water current will probably align themselves parallel to the direction of flow. These suppositions are supported by studies dealing with the movement of marine shell valves, both within wave activity zones and stream currents (Lever and Thijssen 1968, Nagle 1967).

The evaluation of the weight factor was interpreted using a SYMAP program for computer graphics (Dougenik and Sheehan 1975). Very simply, the program plots the location of the artifact in a two-dimensional plane, and then assigns a value to this point based on some attribute of the object. In order to address the question of sorting, the attribute of weight was entered into the program, and a map produced which prints a weight value SYMBOL for each artifact on the surface. The space between artifacts of different weights is symbolized by an interpolated contour surface. Assuming that active wave patterns and lake shore currents would be sorting surface artifacts, there should be a pattern to the SYMAP weight contour map. Heavy artifacts should not be sorted, but lighter artifacts would likely be shifted into bands, defined on the basis of weight. However, no sorting is evident. This situation was not unexpected given the unaltered state of most artifact margins, and strongly suggested that little secondary movement of artifacts had occurred since exposure through sediment erosion.

The absence of sorting, based on artifact weights, suggested the possibility that the artifacts discovered on the surface of the site were in proximity to the original artifact distribution. Layers of sediment could have been gradually stripped from the site, and artifacts might have settled onto newly eroded surface, with little, or no, horizontal dislocation. Support for this speculation is found in the observation that some artifacts located by the surface collection were actually protruding from the sediment. This may have occurred when artifacts slipped into a crevice caused by the removal of lighter sediments from around heavier particles. The till matrix of DiRq-5 would readily lend itself to such a scenario, and is offered as the most plausible explanation of the vertical attitude of some artifacts.

2) Spatial distribution by material type

Once again the SYMAP program was employed to assess whether lithic material types were distributed randomly over the site surface, or whether discrete (presumably man-made) clusters of material types existed. It was hypothesized that the existence of patterned distributions of lithic material types could stem from two circumstances. In the first case, isolated distributions of a single material type might represent a discrete occupation such as a single knapping event. The alternative would be an absence of discrete patterning, reflective of a group that employed several lithic resource materials, distributed over the entire site surface. The absence of patterning suggests that no distinct occupations are evident, at least insofar as lithic materials are concerned. Fortunately, there is one additional avenue of approach to the question of spatial patterning. This final approach involves the assessment of the major tool type distributions over the site surface.

3) Spatial distribution by tool type

It was postulated that clustering of artifact types would provide the strongest argument for a case of intact horizontal provenience at DiRq-5. Such clustering could not be the result of wave sorting, as waves do not recognize, and selectively distribute types of tools. A possible exception might exist if all the tools were morphologically similar (ex. microblades); clustering might then be attributed to wave and current mechanisms. There is a bimodal distribution of microcores and microblades. It is noteworthy that the distribution is lineal, and oriented

parallel to the direction of wave fetch, or exactly opposite to the lineal arrangement expected from wave sorting (Lever and Thijssen 1968, Nagle 1967). It might be suggested that this distribution could be the result of sampling bias, in that, owing to their small size, microblades may not be totally represented in the surface collection. However, it is unlikely that the random process of surface sampling bias could be the cause of a non-random artifact distribution. At this stage of the analysis, it is unclear why the bimodal distribution exists. It does indicate, however, that patterning is present at DiRq-5, and that a priori assumptions of disturbed spatial patterning on inundated sites should not be accepted. A very real chance exists that some contextual data remains intact, even in the active zone setting of a fresh water reservoir.

CONTINUED IN NEXT ISSUE: Why DiRq-5 is threatened and is unusually important.

FREE LECTURES ANNOUNCED

A new diploma program in Classical Studies, being offered by Vancouver Community College, now includes a number of special lectures open to casual participants.

The colloquia --on Wednesday afternoons-- are free, and will be held in Auditorium A136 at the Langara campus:

- February 17: Hagia Sophia (by George Karas)
- February 24: Gods and Goddesses of Greek Mythology (Ted Langley)
- March 3: Continuity from Classical to Renaissance
(Bruce Hanbury)
- March 10: Movie: "The Ship of Kyrenia, Captain and Sailors Three."

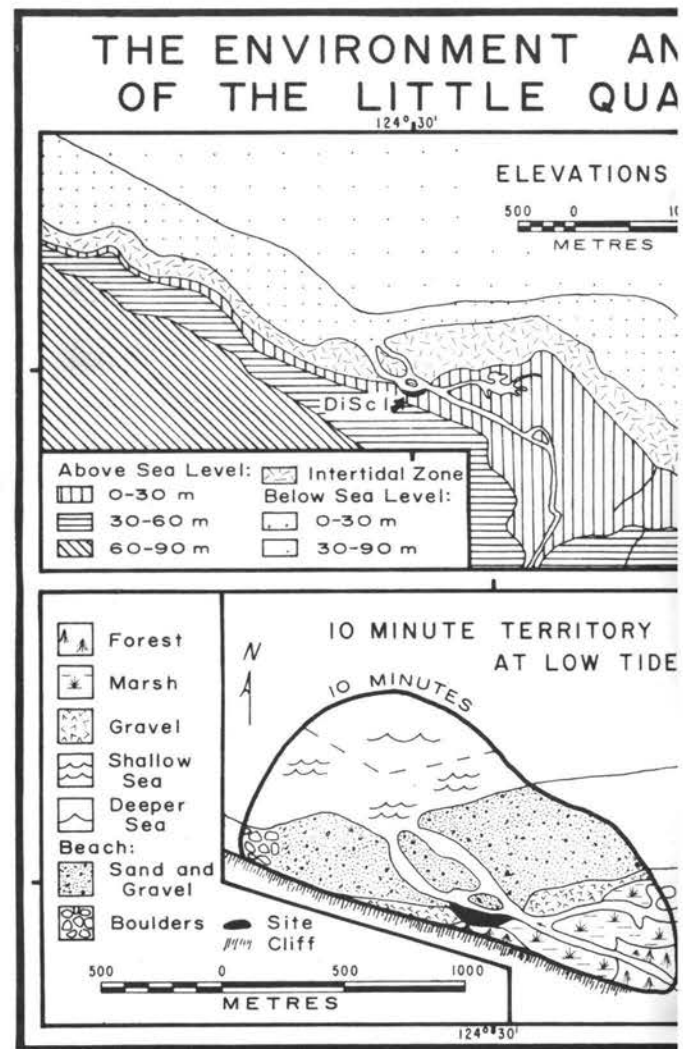
Inspiration for the present article derives from being asked: "Well, you've (at long last) finished your thesis; what is it about?" When I answer that it is a site catchment analysis, professional archaeologists smile knowingly. Most people frown and say, "What's that?". The hardest part of writing this is to concede that several years of my life can be dealt with in a few pages.

The following, then, is a description of the analysis I did for my M.A. thesis (University of Victoria, Department of Anthropology 1980). If anyone is interested in a more detailed discussion of the theory of site catchment analysis, or of the particular study of the Little Qualicum River site, I refer them to the thesis manuscript and the references listed therein. The thesis also includes detailed descriptions of the site, the excavation, and the material recovered (artifacts, faunal remains, etc.). An article on the wood and bark material appeared in the Feb. 1981 Midden.

"Site catchment analysis" is the archaeological version of a form of locational analysis which was popular among geographers during the 1960's. It is used to study the relationships between technology and natural resources, or in other words it is a way of looking at the economy of a group of people in terms of the technology available to them and the natural environment located nearby. Archaeologists also use site catchment analysis to predict the locations of particular kinds of sites, and to reconstruct regional patterns of prehistoric land use. As with many other kinds of analysis, the conclusions are not likely to be startling; they may in fact merely confirm -- in a scientifically

acceptable fashion-- that which seemed obvious at the outset.

The Little Qualicum River site is situated on the east coast of Vancouver Island, at the mouth of a river with a large spawning run of chum salmon (see Figure 'A'). Several features make this site particularly suited to a site catchment analysis: a large variety of materials was preserved (including wood, bark,



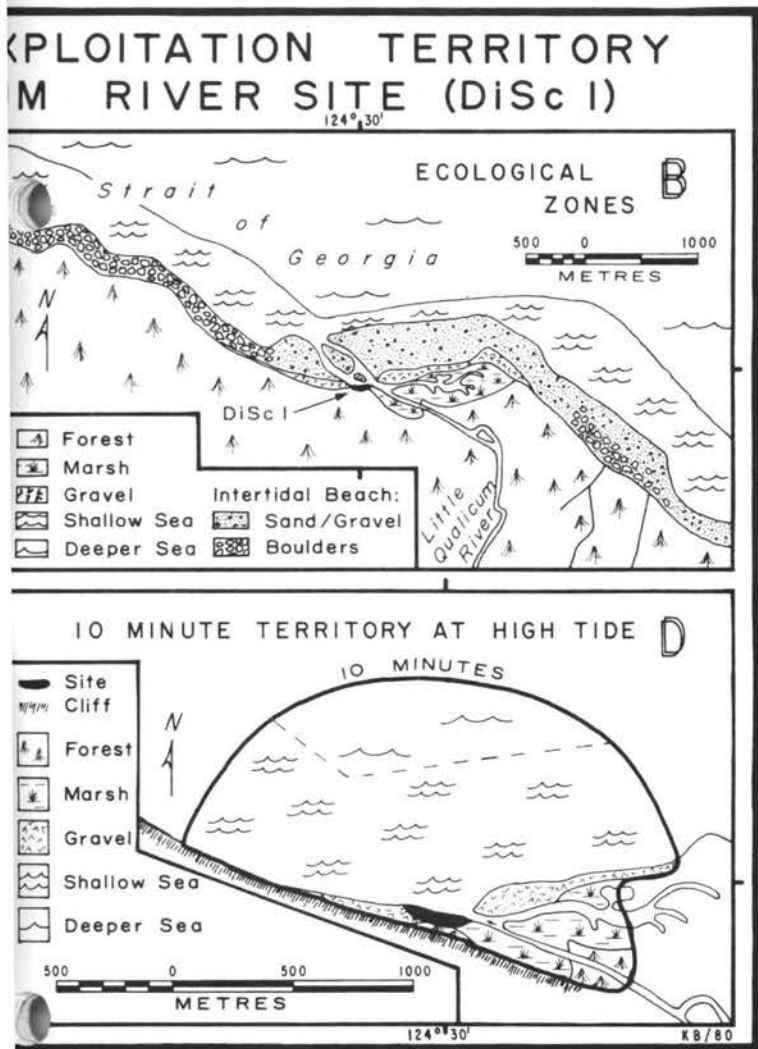
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bone, antler, shell and stone) giving a reasonably broad picture of the natural resources exploited by the inhabitants; the relatively recent age of the site (about 1,000 years old) permits the use of present day descriptions of the natural environment and of the behaviour patterns of wild animals; identification of the culture types as "Gulf of Georgia," which is considered to be the prehistoric version of the Coast Salish, allows credible com-

parisons with the ethnographic literature in interpreting the archaeological evidence.

The following definition of the site was arrived at after examining the various categories of data recovered during excavation. The Little Qualicum River site was a chum salmon fishing encampment occupied annually during the late fall spawning season and for an unknown period of time before and after. Large quantities of salmon were preserved, and perhaps also clams. A variety of other fish and shellfish, as well as mammals and birds were gathered for immediate consumption. The community size is not known, but there would have been at least one large extended family with several able-bodied adult men, women and children --and domesticated dogs. A fish weir and trap complex was constructed at the river-mouth, and on the flat bench under the trees a bark-covered house served as both dwelling and smokehouse. Travel was by canoe, and the people brought with them to the site household and personal belongings, as well as tools, and hunting and fishing gear. Whether or not all material items were imported to the site, at least some would have needed repair or replacement, and indeed there is evidence of tool manufacture at the site.

For the site catchment analysis it was necessary to determine the specific habitat (micro-environment) of each type of plant and animal identified among the excavated remains (see 'B'). Seven different "resource zones" were represented: the Little Qualicum River, ocean frontage and riverbanks, climax forest, marsh, intertidal sand/gravel/boulder beach, intertidal rock outcrop, and the sea. These constitute a minimum and sufficient set: every resource known to



have been procured by the inhabitants while at the site is accounted for, and all resources necessary for prolonged seasonal occupation are present (food, raw materials for construction and manufacture, drinking water and firewood).

A map showing the various ecological zones near the site was prepared from actual observation, topographic maps, and air photos. On this same map a line was drawn around the area lying within a 10-minute paddling or walking distance of the site, and another with a 30-minute radius (see 'C' and 'D'). These are of course not exact boundaries, since it is only possible to estimate the speed of walking or paddling. The choice of 10 or 30 minute intervals is not, however, arbitrary: according to studies of present day peoples, these particular time/distances correspond to differences in patterns of land use. The idea is that people will exploit the area nearest the site more intensively than outlying areas, and that in fact they will normally not go farther than two hours (about 12 km) in search of food. Following through with the argument, assuming there are no extenuating circumstances such as warfare or natural disasters, a group will choose to live at a location which is most efficient in terms of the work-effort required to pursue daily tasks. With the location of resources given, and the technological means of exploiting them given, then the way to reduce the work-effort is to minimize the time/distance required to get to them. This is all based on the fundamental assumption that people are rational and will choose to do things in the way which involves the least effort.

Getting back to the Little Qualicum River site, all but one of the seven resource zones are present within a 10-minute radius of the site. Most of the resources recognized from the excavated material were available in sufficient quantities within that area. In fact salmon, the most important resource, were taken at the rivermouth --which is in effect at the site itself. The major exception is clams. Although a large

number of shells are present in the midden, clams are not plentiful on the beaches near the site. The closest good clam beds are about 30 minutes away by canoe. The assumption then is that regular 30-minute excursions were made (at least by the women, since clam digging was women's work), but that most of the people most of the time did not go farther than about 10 minutes (or one km) from the site. There were, in addition, some longer excursions --probably to the mouth of French Creek 12 km distant, perhaps to visit another group fishing at that location. Only two kinds of food (sea urchins and chitons) were obviously collected from that far away, but in such small quantities as to suggest casual or at least infrequent acquisition.

The prediction is that the sites located up-river (with access to salmon but requiring longer travel time to reach the sea and the intertidal beach) represent either a less privileged group which had to settle at an inferior location because the preferred spot was occupied by others; or an earlier occupation dating from a time when environmental conditions were different and the site was actually on or very near the coast; or exploitation of another set of resources than those evident from this excavation --a different season, or a different economic adaptation.

The conclusions of the analysis are technically only valid for chum salmon fishing encampments of the "Gulf of Georgia culture type" on the east coast of Vancouver Island. Similar sites are likely to be found near salmon spawning rivers in the most sheltered area of firm ground that is at the juncture of the several coastal resource zones, and that is easily accessible by canoe. Conversely, any sites farther than about 10 minutes by canoe from the river, are not likely to have been occupied during the salmon fishing season.

All of which is a roundabout way of saying that the aboriginal inhabitants of the Gulf of Georgia region knew what they were doing: arranging their lives so that they got the maximum returns for energy expended.

"HISTORIC ROUTES" MAY BE SUBJECT OF CONFERENCE

The B.C. Heritage Conservation Branch is exploring the possibility of a symposium on the province's historic routes.

Tentatively scheduled for Robson Square, May 14-16, the conference would be co-sponsored by the Branch, other ministries, the Outdoor Recreation Council, the B.C. Historical Association and the Okanagan and Similkameen Parks Society.

The event will come to pass if sufficient people indicate an interest --by contacting Dave Suttill or Pauline Rafferty at the H.C.B., 1016 Langley Street, Victoria, V8W 1V8.

An exploratory mailing from H.C.B. defines historic routes as land or water trails significant to B.C. history, such as "grease trails", gold rush routes, and early railroads.

Such a conference could increase public awareness of the need to preserve historic routes, and could provide an information exchange for those interested in the field.

C O M I N G S O O N !

The annual meeting of B.C. archaeologists will be held Saturday, April 10, at Simon Fraser University.

The 35th Northwest Anthropological Conference will meet April 8,9 & 10 at S.F.U.

For more information on either event, contact Dr. Roy Carlson, Dept. of Archaeology, S.F.U.

THE student of fossil man, standing amongst the debris of a million-year-old site, is very much the detective. But he is in a much more difficult position than the policeman at the scene of a murder. The policeman has his body, clues that are relatively fresh, dental records to follow up, suspects to interview, alibis to check. And he has relatively simple aims: to identify the victim and discover who dunnit. The palaeontologist has far fewer clues to go on, usually just a few bones and some stone tools. And his brief is much wider. The fossil hunter is committed to discovering everything about his long-dead subjects. He must reconstruct the whole life-style of his subjects in as detailed a form as possible. He wants to know what they looked like, how they acted, what their beliefs were, even what they had to eat.

Diet is not as trivial as it seems. Much can be inferred from the foods a creature consumes. At present an academic battle rages around the question of early man's meat-eating proclivities. A hunting ancestor might help to explain our seemingly innate tendency to violence. Many different theories about man's life in prehistoric times have been proposed, but in the absence of hard evidence, the arguments have drifted aimlessly. Recently, archaeologists have come up with a new technique that makes use of the stone tools so often found with the remains of early man, and that produces evidence as solid as the artefacts themselves. Using the new method it is now possible to discover just what each stone tool was used for thousands, even millions, of years ago.

The technique is so simple it is surprising no one has thought of it before. It is based on the fact that all stone tools, even the hard, glass-like flints, are still subject to wear and tear during their working life. Hard particles in the material upon which the tool is used, cut into the stone, producing microscopic polishing, and abrasions that become permanent features of the stone. After suitable cleaning and by using microscopes at high magnification, it is possible to detect these features and to photograph them for further analysis.

Such "scarring" has been known for several years, but it was not until another development in archaeological technique that the

The tiniest marks on a flint or bone tool can tell a lot about early man. Keith Laidler on the original chips off the old block

In the bones

microwear on the stone tools could be put to use. It all became possible when archaeologists set themselves the task of rediscovering the ancient skills of flint-knapping, all but lost since the end of the Stone Age. Several archaeologists can now produce hand axes and arrowheads that are indistinguishable in shape and size from those of the Palaeolithic hunters. When these modern Stone Age Men tried out their new flint tools on various objects (one man even tried to cut up a circus elephant) the modern flints began to show the same sort of scarring as tools that had lain in the ground for half a million years or more.

More important, under the microscope, the scarring and polishing was found to be diagnostic: each material, be it bone, wood, hide, or vegetation, produced a characteristic stoneprint, an easily identified marking on the stone, regardless of the pressure applied or the movement involved when it was in use.

By using modern tools on a variety of materials it was possible to set up a reference collection of micro-scratches, against which the microwear on prehistoric tools could be compared. Most of the early work concentrated on Stone Age tools from Europe with an age of not more than half a million years. But recently, Lawrence H. Keeley, of Illinois University, and Nicholas Toth, of the University of California at Berkeley, have greatly extended the use of this method, studying a site at Koobi Fora, in Kenya, used 1.5 million years ago by Man's remote ancestors.

What they found has created quite a stir in

archaeological circles. Keeley and Toth claim that the early hominids at Koobi Fora used a number of stone tools for a variety of specific purposes. Microwear analysis has shown that some tools were used for scraping wood, others used for scraping the fat and muscle from hide. Several were flesh-cutting knives, showing that meat did indeed form part of the human diet very early in our evolution. But the analysis also showed that other knives had scarring and polish associated with plant-cutting, the first direct evidence that these creatures also gathered or processed vegetation.

Keeley and Toth hope to use the scanning electron microscope to identify the plants collected, by examining the small fragments of silica (phytoliths) that plants carry inside their cells. If this is possible, we should soon be in a position to say just what greens our ancestors had with their meat. Another surprise was the discovery of a tool that had all the microwear signs of being used as a wood-saw. The anthropologists speculate that this was used to manufacture digging sticks, sharp pointed pieces of wood that could be used to root out edible tubers. If so, this saw may be the earliest modified tool used to make another tool.

Once more archaeologists begin to use this technique to study the stone tools at their own work sites it should be possible to document the appearance of various technological innovations during the Old Stone Age. Such a body of information will put the ideas about the evolution of human behaviour into a far stronger theoretical framework. One intriguing piece of information has already been uncovered during work at Meer, in Belgium. The site, and its associated tools are 9,000 years old.

Lawrence Keeley, working with Daniel Cahen of the Musee Royale de L'Afrique Central, has shown that almost all the flint tools used to bore holes in antler had microwear that showed they had been twisted in a clockwise direction when they were in use. Only two had been turned counter-clockwise. This is true of flint borers in other stone tool collections also. As right-handed people tend to turn today's screwdrivers, awls, and similar instruments in a clockwise direction, it seems that cack-handed cavemen were in short supply 9,000 years ago.

SOCIETY OPPOSES HYDRO'S PLAN TO DAM PEACE RIVER



THE SOCIETY AT WORK

The Archaeological Society of B.C. presented an impassioned brief to the B.C. Utilities Commission in January, urging due consideration be given to the heritage potential of the upper Peace River valley, threatened by the proposed "Site C" dam.

The five-man Commission, holding hearings expected to last some four months, listened patiently to one of the shortest briefs they had ever received (one scant page, compared to some tomes of 500 pages), and a short oral presentation, made by executive member Nick Russell and president Shirley Veale.

The brief described how Asia and North America were connected for most of the last 60,000,000 years, and how early man wandered across that land bridge some 30,000 years ago, gradually spreading across northern B.C., only to be stopped by the Rockies.

Subsequently, man discovered a route through that barrier, via the upper Peace River valley, and possibly emerged thence to people North America. Probably, suggested the presentation --backed up with notes from many archaeologists-- people have been using that route for much of the last 10,000 years.

Citing Heritage Conservation Branch reports and site surveys, the Society contended that some 200 important heritage sites will be wiped out if the dam and its lake are built --more sites than have ever been excavated in the entire province. The solution was --ideally-- to leave the valley undisturbed, to be protected as a major migration route, and --much less ideally-- to dedicate 1% of the total project cost to heritage research and interpretation.

Sceptical Hydro lawyers pointed out that a mere 1% represented \$26,000,000, and tried to persuade the ASBC speakers to put a dollar value on the heritage sites. Resisting that temptation, the speakers did point out that not only were there mammoth sites and ancient campsites in the pondage area, but white man's earliest site on the entire B.C. mainland --Rocky Mountain Fort-- was also doomed.

Purpose of the presentation was simply to draw attention to the heritage importance of the area, which has not been exactly a top priority in the debate of whether B.C. needs another giant dam.

The A.S.B.C. presentation was shown later on Channel 10 TV.

REviews & PREviews

ARCHAEOLOGY PERIODICAL IS DISAPPOINTING

North American Archaeologist. Vol. 2, No. 3, 1980-81.
Robert L. Schuyler (ed.).
Baywood Publishing Company, Inc. Farmingdale, N.Y.
\$15.00 (special rate) for Vol. 2 (4 issues).

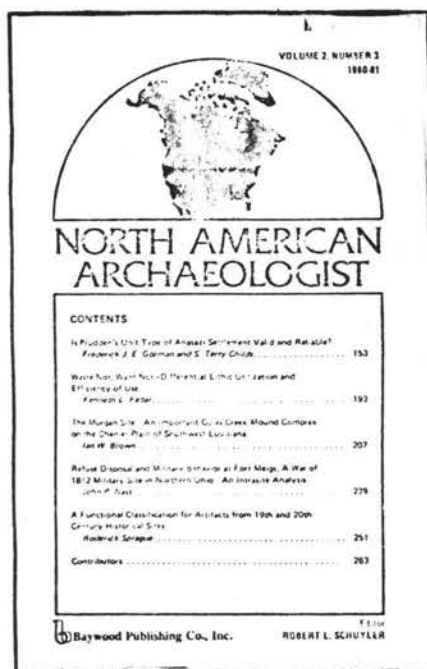
North American Archaeologist, a new journal in its second year of publication, is designed to bridge the gaps between different kinds of archaeologists and to bring a measure of unity into the discipline. To this end North American Archaeologist publishes original articles on any kind of archaeological research that is based on North American data, whether it be by academics, museum researchers, government agents, or members of local archaeological societies. Papers which cut across regional or topical boundaries are particularly solicited.

James Haggarty, reviewing the first issue of North American Archaeologist for Datum (summer 1980) questioned the practicality of the enterprise and reserved judgement on the publication. He noted that in order to have a unifying effect on the discipline the articles would have to deal with issues that are relevant to more than just one kind of archaeology.

Vol. 2, No. 3 (1980-81) which was sent, on request, to The Midden for review does not measure up to either the splendid printing job or the stated intent of the journal. Part of the problem may be that some of the articles are from papers presented at regional conferences, not the type of forum known to encourage a continental perspective. Another facet of the problem is the poor quality of many of the articles.

The offer of a reduced subscription to members of local archaeological societies implies that the journal would be of interest and of use to amateurs and to the "general public." The articles, however, are very definitely written for academic readers, be they in universities, museums, or wherever. Moreover, even the most dedicated scholar would have trouble wading through the jargon: some of the writing is simply unintelligible.

Certainly for a \$28 US subscription (4 issues--single copies not available) one could expect something more vital. The special rate offered members of archaeological societies (\$15US for Vol. 2) is a bargain. . .and it would look good in the front parlour bookcase, so it all depends on whether you would plan to read it. Personally, I'll pass.



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The Midden would like to thank Sharon Russell for preparing this annual Index. Our intention is to publish a 15-year Index next year, so any additions or corrections to this or previous indices would be welcome. Ed.

THE MIDDEN is produced by the Publications Committee of the Archaeological Society of British Columbia. Editor: Nick Russell.

Submissions and exchange publications should be addressed to the Editor, P.O. Box 29, Whonnock, B.C., V0M 1S0. Contributions on subjects germane to B.C. Archaeology are welcomed. They should be relatively brief, with no footnotes and only a brief bibliography (if necessary at all).

Subscriptions (\$5.00 a year) should be addressed to Ms. H. Braches, 1020 Lillooet Road, North Vancouver, B.C. V7J 2H8. The next issue of THE MIDDEN will appear April 1982.

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