HEILTSUK STONE FISH TRAPS: PRODUCTS OF MY ANCESTORS' LABOUR

By

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Abstract

This thesis presents results of systematic research on Heiltsuk stone fish traps, which are poorly understood in academia. My research objective is unique: I de-emphasize empirical data such as length, width, and height in favour of the view that these stone fish trap are products of my ancestors' labour. My main goal was to work with the Heiltsuk political and cultural entities and 12 Heiltsuk oral historians to employ an Internalist archaeology investigation of a selective fishery system that began in antiquity. I linked oral history to ethnographic narratives about this ancient fishing technology. Using a novel method of videography, I captured 42 trap sites on video in order to become familiar with their locations, variations and their correlations of salmon to streams and rivers where a stone fish trap is found. I returned in August 2005 to map nine of them, especially the ones familiar to Heiltsuk oral historians.

Keywords: Heiltsuk Nation; Internalist archaeology; oral history; traditional fishing technology; videography

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To all the First Nations and Metis students in the FNSA common room, I thank you for your friendship, laughter and for your own Internalist insights, and to the First Nations Student Centre for placing a location, a beacon if you will, for First Nations and Metis students. And to my archaeology colleagues, I wish you the best practising Indigenous archaeology to ensure responsible research to the First Nations people, whose ancestors' labour compels you to know more about their recent and ancient past.

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Chapter One: Introduction

Yau, my name is Xanius. I am Heiltsuk. My ancestors were Heiltsuk. I am descended from various interrelated tribal groups who shared similar language dialects. Strict rituals and protocols called Gvi'ilas governed our geopolitical, social, economic, ideological and technological life ways (Hogan et al 2005: Waterfall 2001). Intermarriage saw their genetic pool weave through a complicated network of alliances with no decipherable start or end points. Across time and space, oral history communicated their ancestral origins over multiple generations. Only few ancestral narratives, however, survived to be recorded by ethnographers who came to the Heiltsuk village of Bella Bella in the late 19th and early 20th centuries. These surviving narratives and fragmented documentations represent the memories of a few informants who shared their knowledge with outside researchers. Implied in the surviving narratives are the important relationships my ancestors had with the environment, with salmon and with the fishing technology designed to capture them.

This thesis documents systematic research on Heiltsuk stone fish traps on the central coast of British Columbia. This ancient fishing technology is poorly represented in the archaeological literature. This thesis provides a collaborative research effort with the aid of local institutions or "entities", such as the Heiltsuk Tribal Council, to present a Heiltsuk perspective about our ancient and recent history through oral accounts. My thesis is the first attempt to bring archaeology into the scope of Heiltsuk thought with the intent of promoting that perspective in our dialogue with Canadian archaeology. I will

examine local knowledge and ethnographic narratives to enhance my understanding of stone fish traps from an internalist perspective as discussed by Yellowhorn (2002). Although stone fish traps are classified as material culture, my research objective is unique in that I de-emphasize empirical data such as length, width, and height in favour of the view that these stone fish traps are products of my ancestors' labour. I intend to link local knowledge to ethnographic narratives about this ancient fishing technology.

> The most important food for the First Generation was smoked and dried salmon..... There were three salmon traps in the creek at Mauwash. (Angus Campbell [1898-1948] in Storie and Gould 1973:53).

Told in his own words, Heiltsuk elder Angus Campbell, whose strength comes from Namu, an ancient Heiltsuk village site, informed an audience about the significance of a place name that once was commonly used for Namu. He called it Mauwash. Kenny Campbell, his descendant, graciously allowed me to share this story in my thesis. In his words, Campbell defined it as 'you just have to go and ask me' (Storie and Gould 1973:53). According to Campbell, salmon was plentiful during the days of the First Generation of ancestors. The river always had a continuous supply of salmon compared to the bigger rivers such as the Bella Coola, Rivers Inlet, Kitimaat, Nass and Skeena. The people who relied on their rivers for their salmon approached Campbell's ancestors asking for permission to obtain their salmon supplies, use their stone fish traps and apparently, smoke dry their salmon. One such narrative links salmon, salmon traps and smoke drying, all integral to my thesis research.

First Nations oral histories are considered credible sources of information. Elderly historians or scholars are a wealth of information of significant events, personal reminiscences, genealogies, and traditional knowledge (Calliou 2004: 73-75). Calliou

(2004) prefers to use the term 'Elders knowledge', which he did not define, whereas other researchers prefer "traditional ecological or environmental knowledge" or TEK (Carpenter et al 2000; Jones 2000; Turner 2005). Courts and social scientists are moving towards accepting oral histories as viable sources for understanding and interpreting the past, as required by the *Delgamuukw* decision (Calliou 2004:75; Marsden 2002: 101). Elder knowledge (oral history) and testimony can assist First Nations communities with land claims, restore balance to history with their perspective, and to teach future generations with these traditions and narratives (Calliou 2004; Tobias 2000).

First Nations people are interested in connecting with their ancient past. According to their oral narratives, they firmly believe their ancestors were responsible for creating the archaeological record. But they lack the opportunity and means to present their own perspectives under their own terms (Trigger 2003:65). In academia, archaeology is the career choice for a growing core of First Nations students who are confident with appropriating the methods of archaeology and feel fully able to construct or contest archaeological theories. They will become researchers whose internalist perspectives will balance the interpretations created in the mainstream (Linklater 1994; Ouellet 2005; Yellowhorn 2002). Their strength emanates from their ability to combine professional training with community collaboration to create an approach that encourages dialogue within their communities on the nature of antiquity (Yellowhorn 2002).

Each First Nation adapts particular research goals to conduct its internal pursuits to answer questions relevant to its cultural history. Archaeology provides the bundle of methods to access this information for analysis, which in turn leads to interpretation. First Nations archaeologists almost invariably return to their homelands to pursue their

research (e.g. Linklater 1994; Ouellet 2005; Yellowhorn 1993). Often community collaboration involving local institutions such as cultural centres, community schools, fishery co-management, and individuals help advance the research objectives to create meaningful and valued contributions toward the analysis and interpretation of their cultural history (Brown 1994; Jones 2000:5).

I collected oral accounts by appropriating the methods of ethnology to infuse my collaborative reach with greater meaning. The interviews with twelve Heiltsuk elderly scholars or consultants grew from my interest in contemporary oral history as a valid source of knowledge about stone fish trap location, function, operation, seasonal use, age, and ownership. The term ethnoarchaeology does not encompass this type of research since it is the archaeology of ethnic folks, whereas my research is wholly my community. Thus, the perspective presented here elaborates and expands upon previous research. Life-long familiarity with Heiltsuk traditional territory, with oral history, practical wisdom and life on the coast informs this vernacular discourse. It grows from lived experience in seafood gathering, camping excursions and work in commercial enterprises.

The Heiltsuk Nation, a relatively unknown and often misidentified cultural group in the anthropological literature, was once categorized erroneously as 'Northern Kwakiutl', due to their linguistic and cultural similarities to the Kwakwaka'wakw (Boas 1966; Drucker 1943, Jenness 1932; Olson 1955). This taxonomy became perpetuated through academia, thus, illustrating how visiting researchers could impose and circulate an erroneous Heiltsuk identity in scholarly publications and more general books. For example, in Hilary Stewart's, *Indian Fishing: Early Methods on the Northwest Coast*, six

Heiltsuk stone fish trap sites were listed as Northern Kwakiutl (Stewart: 1977:12,120-121). The Heiltsuk and their neighbours do not apply this false title.

From an internalist sense, the challenge is to re-interpret Heiltsuk culture using these same ethnographic methods. There is a notable change in describing the Heiltsuk identity, especially since elderly scholars regularly share their knowledge (consultants or informants) to add clarity to current research (Black 1997; Brown 1994; Harkin 1997; Jones 2000).

According to Heiltsuk oral history, we have used and occupied this diverse marine environment and landscape, including rivers and offshore waters, since time immemorial (Waterfall 2001). We are reminded continuously of our ancestors' presence. Old village sites, rock art visible on cliff faces and carvings on slippery rock surfaces, scars from bark strips on cedar trees, burial sites and stone fish traps are the remnants of their tenure. Archaeological evidence corroborates this knowledge; the excavations at the Heiltsuk village site of Namu revealed 10,000 years of continuous occupation (Cannon and Yang 2006; Carlson 1996).

The Heiltsuk Nation

The Heiltsuk village of Bella Bella, located about 400 kilometres north of Vancouver, British Columbia, Canada (Figure 1), is the modern center of the Heiltsuk Nation. Approximately 1100 Heiltsuk reside in Bella Bella, while many more, (about 1000 people), live in other parts of British Columbia and North America.

Figure 1 Location of Bella Bella village within British Columbia.

The village is located on Campbell Island, which overlooks Lama Passage in the inner waterways (Figure 2). Bella Bella is also my physical home; however, my ancestry follows a circuitous path through a tribal group, to a village group, to a house, and finally to my biological family.

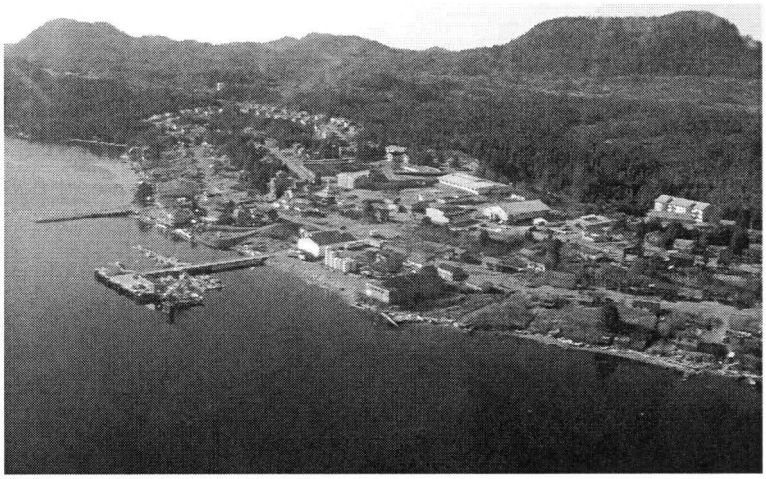

Figure 2 Aerial photograph of Heiltsuk village of Bella Bella on the central coast of British Columbia, Canada.

For Heiltsuk people, oral history transmission was and remains an important activity. Since time out of mind, oral history relied on memory and the spoken word to transfer details from one person to another and between generations. It had to be validated through some formal mechanism (Calliou 2004). Heiltsuk families drew their strength or 'lhaxvai' from their oral histories that told of family origins, family relationships to the supernatural world, to ancestor beings and to all living things. During the ceremonial potlatch era, a chief and his noble lineage transmitted oral history through hired speakers who related important family lineage and claims to attending guests. In return, guests would leave a potlatch house to spread the messages they heard to their own people and relatives or nation.

The Heiltsuk community is no stranger to academic research as various ethnographers, anthropologists, and archaeologists have visited to seek the services of knowledgeable informants to share their life history. Generally, these outsiders would descend upon the community and query local residents about heritage sites to learn information about them and generally to learn about the social, economic, political, technological and ideological systems that characterized traditional lifeways (Boas 1973; Drucker 1948; Olson 1955; Tolmie 1963). Researchers then reported that this life way had vanished (Boas 1973; Olson 1955). Subsequently, this fleeting documentation was analyzed and interpreted from outside the Heiltsuk realm without a thought to its fragmentary nature.

From an internalist perspective, re-interpreting ethnographic accounts is vital towards understanding the fractured quality of this descriptive information. Typically, cross-referencing is necessary and requires the input of knowledgeable elders and cultural

historians who can augment the written word with lived experience (Calliou 2004). Only then can it be useful to the Heiltsuk people for educational or ceremonial purposes (Brown 1994). This involves frequent feedback meetings and gatherings to go over initial assessments and for meaningful interpretation. Outside of the community, this dynamic re-telling does not reach an audience unless a researcher purposely includes their perspective (Black 1997; Harkin 1997; Jones 2000).

Thesis objectives

Therefore, my objectives are as follows:

1) To pursue internalist archaeology as a bridging device to help the Heiltsuk understand their recent and ancient history;

2) To become familiar with stone fish traps as the products of my ancestors' labour, their locations, variations, and types and, from this investigation, to determine specific function;

3) To correlate salmon with streams, especially ones with stone fish traps;

4) To expand and elaborate upon previous academic research about them.

Archaeology augments my role as oral historian of Heiltsuk cultural protocols, rituals and family lineages and supports my pursuit of inquiring about Heiltsuk fishing technology. Archaeological science alone would not provide the answers to my questions about the function, operation and use of stone fish traps, so I employed videography as a modern ethnographic recording device to visually document 42 stone fish trap sites. Edited video footage created a visual reference to show these stone fish trap sites during interview sessions with 12 Heiltsuk consultants. This mnemonic device elicited extensive knowledge about contemporary use of certain stone fish trap sites, specifically at Gullchuk Bay and Huyat Bay. Heiltsuk consultants related to me details about their

smokehouse days at these salmon rivers, where using stone fish trap technology was part of a sustainable fishery. In 2005, I returned to nine of the 42 sites to map them.

Given my personal ties to Heiltsuk culture, I have another motivation in doing this thesis research that in not strictly archaeological. I am compelled to situate my research within the broader discourse of aboriginal rights as they are manifested in Heiltsuk traditional territory. Although this thesis is not a legal analysis of heritage, my research employs archaeological methods to shed light on the nature of Heiltsuk rights to a share of the central coast fishery. Recent decisions handed down from the Supreme Court of Canada, such as the *Delgamuukw* decision, accept that Aboriginal people must often rely on oral history evidence in pursuing their land claims (Isaac 2004). The challenge then is to distinguish informed oral history from weaker forms of oral testimony such that it incites the confidence that eludes hearsay evidence. I contend that oral history will leave a visible signature in the archaeological record whereas hearsay will not. In conducting my research I have correlated oral history with specific sites where stone fish traps are found to strengthen the argument that the Heiltsuk fishery management system has great time depth.

Chapter progression

The results of my research are presented in the following six chapters, which discuss the different aspects I explored. Chapter Two presents the physical environment of Heiltsuk traditional territory, including the fauna and flora. It includes a fresh perspective about Heiltsuk identity that shares insights through examination of oral narratives about our history, and examines our continued use and occupation of our homeland. Chapter Three presents a brief overview of the diverse fishing technology

used by First Nations groups along the BC coastline. It examines Pacific salmon spawning behavior and distinguishes between stone trapping devices and wooden weirs. It includes a brief overview of the archaeological work that reveals the recent and ancient history of Heiltsuk exploitation of salmon. A specific overview of the relevant work on the stone fish trap research on the central coast closes this discussion.

Chapter Four introduces an internalist approach to archaeological research on Heiltsuk culture and my quandary to find a suitable theory approach to help benefit my inquiries and that of my people. I also suggest a reinterpretation of the oral narratives from a Heiltsuk perspective since visiting ethnographers only recorded the memories of few select individuals. Nonetheless, my examination of the surviving ancestral narratives demonstrates a vibrant salmon fishery and an elegant fishing technology to capture them.

Chapter Five presents a model to help visiting research scholars with guidelines to help them enhance their research inquiries and my steps towards ensuring responsible and respectful research with Heiltsuk elders who became my collaborators. This chapter describes Heiltsuk Tribal Council efforts to influence and assist outside researchers, especially when local knowledge is the target. It introduces my use of videography as a field method to support my archaeological inquiry. My camcorder helped enhance the quantity and quality of local knowledge data about stone fish trap function, use and operation. The chapter ends with the site descriptions of nine beach stone fish trap sites. In this chapter, I incorporate a cultural perspective from 12 Heiltsuk consultants who provide fresh insights about a selective fishery process at Gullchuk Bay and Huyat Bay. Chapter Six presents the results of the interview sessions with the twelve Heiltsuk participants. This chapter provides a brief biography of each participant, which

demonstrates their ancestral connection to the heritage sites I investigated during this research. Salmon is the significant link to the traps and the story about a time-honored fishery management system that sustained the Heiltsuk and their ancestors for millennia. The interviews provide insightful details of this fishing technology that I accrued during my academic research. I investigate oral history about a stone fish trap that people recall using to capture live chum salmon for smoke drying for winter storage. Chapter Seven and the conclusion summarize the results of this internalist research and discusses the prospects for Heiltsuk interests in salmon, streams and stone fish traps and summarizes the context of this internalist research and its potential contribution to broader archaeological research.

Chapter Two:
Environment and the Heiltsuk

Introduction

This chapter introduces the geographical marine environment and landscape of the central coast and the flora and fauna that live in the Heiltsuk homeland, including a brief overview of the Heiltsuk cultural tribal groups and the lifeways that have sustained them for generations. Since time immemorial, Heiltsuk ancestors have occupied the deep mainland inlets, protected inner waterways and outer islands in permanent winter villages and in small seasonal campsites. Ancestral stories narrate supernatural actions associated with the formation of villages, dwellings, people, slaves, material possessions and intangible rights to songs, dances and resource use areas (Hogan et al 2005; Waterfall 2001). They inform researchers of material culture such as shell middens, stone fish traps, rock art, including paintings and carvings, burials, culturally modified trees and canoe skids. These ancestral narratives can guide archaeological interest as we seek to understand the past lifeways of coastal peoples.

Recent generations of Heiltsuk people do as their ancestors once did in utilizing the land, salmon rivers and the sea. In the process, they have developed a long-term familiarity with the territory that they have proudly inherited. Of particular interest for this thesis are the more than 250 stone fish traps recognized in Heiltsuk traditional territory that allude to a fishery management strategy that began in antiquity. This chapter

reviews and summarizes previous research that examined the archaeological signature of this Heiltsuk fishery.

Heiltsuk traditional territory

Heiltsuk geography encompasses an expansive and diverse country full of mountains, beaches, islands and abundant freshwater streams. It is notable for its varied physical environment, the climate, streams, the flora and fauna, and especially Pacific salmon. Marine and terrestrial flora and fauna flourish in the 22,000 square kilometres within our territorial boundaries (Hogan et al 2005) (Figure 3).

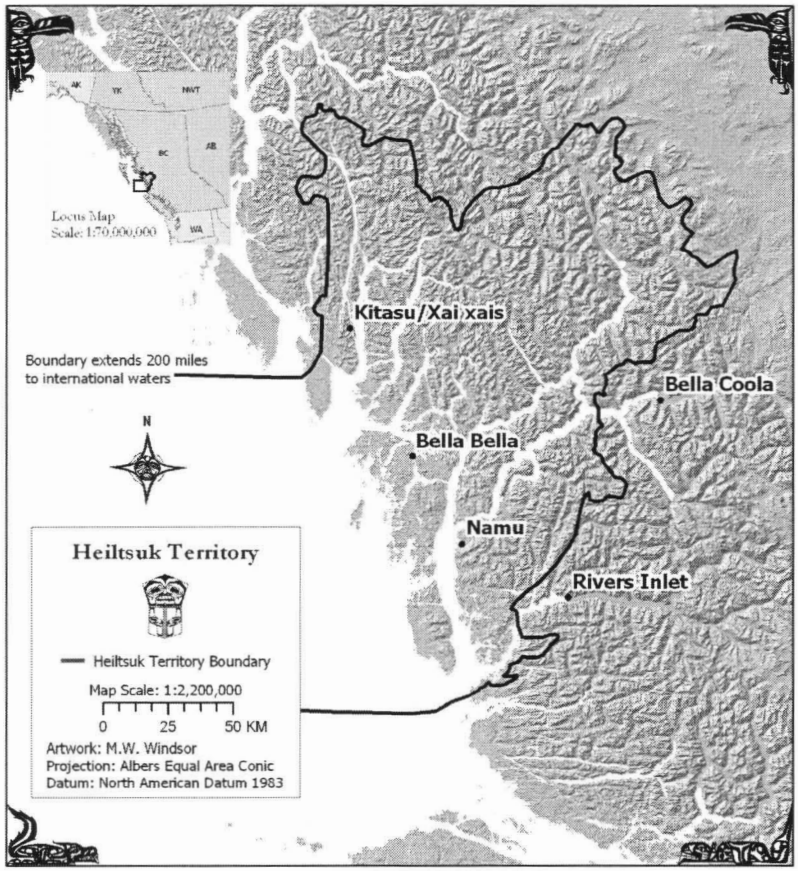

Figure 3 Heiltsuk Traditional Territory

The scenic landscape consists of three different physiographic zones: the inland inlets, inner waterways and outer coast islands (Carpenter et al 2000; Millennia Research Ltd 1997). Habitat areas such as temperate forests and subalpine forests further distinguish each zone. Non-forested areas such as wetlands complete the Heiltsuk landscape (Pojar and Mackinnon 1994: 14-17). The local seascape has islands and fjords to buffer the influence of the open ocean.

Rugged, snow-capped mountains that tower over the deep meandering fjords mark the eastern frontier of Heiltsuk country. Steep rocky shorelines drop precipitously along the lengths of these inlets, while ancient temperate rainforests grow wherever sediments will support a dense canopy. Western hemlock, western red cedar, Sitka spruce, and amabalis fir dominate the forest cover at the lower elevations and yield to mountain hemlock and yellow cedar at higher elevations (Pojar and Mackinnon 1994: 14-17). Edible berries, including salal, thimbleberry, huckleberries and blueberries, elderberry, gooseberry, salmonberry and high bush cranberry, thrive in the moister environment of the waterways. These shallow streams deliver ice-cooled waters from the higher elevations into the sea and spill across the expansive tidal flats that fan away from the stream mouths (Hilton 1990:312).

The islands strewn across the inner waterways reveal the heights of the region's submarine topography. On the mainland, low mountains separate one protected bay from another. Despite the undulating terrain, muskeg and bogs are visible on exposed areas on hillsides and mountain tops (Pojar and MacKinnon 1994:18). Dramatic topographic relief adds an austere veneer to the picturesque landscape. Cliff faces can be visible from great distances, which made them especially useful as land markers in Heiltsuk cognitive

geography. Island watersheds are necessarily constrained in their areal extent, as are the adjacent tidal flats. These islands also support dense forests of smaller cedars, pines and firs.

On the outer coast, saltwater lagoons, sea stacks and exposed rocky cliffs are common features of the numerous islands. Submerged rocky outcrops are common boating hazards that demand careful navigation through the intricate waterways. Island geography includes small saltwater lagoons, coves and bays, which are protected from oceans swells and ever-prevailing winds. Powerful ocean waves roll constantly to crash against exposed, rocky shorelines and spray salt water into stunted forests. Sandy beaches are common on the seaward side of the outer islands. Most face the Pacific Ocean and lay hidden underneath driftwood log jams. Gnarled lodgepole pine, yellow cedar, and hemlock trees form the canopy of island forests while salal bushes dominate the undergrowth along the shorelines (Pojar and MacKinnon 1994:18). Countless freshwater streams (rills), about 30 to 60 centimetres in width, drain into protected coves. Tidal flats change their shape from wide deltas into long, narrow silt-laden corridors.

Heiltsuk territory wears the effects of its geological history in its rugged contours. Different phases of glacial activity created this phenomenal landscape. Thick impenetrable ice masses flowed from higher lands and covered the central coast to varying depths. The biggest ice domes lay atop the fjords or inlets, thinning to its interface with the Pacific Ocean on the outer coast. At the end of the Pleistocene, a warmer climate melted these glacial masses to reveal the terrain that is visible today. Subsequently, sea levels fluctuated until reaching the present equilibrium. The sea level

history has not been fully assessed, as most research has focused on either side of the central coast (e.g. Fedje and Mathewes 2005).

Approximately 1800 rivers, streams and creeks of various sizes enter Heiltsuk waterways. They are typically short, narrow, shallow, and slow moving. Streambeds typically consist of flat surfaces laden with tiny pebbles, water worn cobbles and small boulders. The numerous inlet and inner island rivers and streams are the destination for migrating salmon. Long, slow geomorphic processes encouraged both expansive and modest deltas to form adjacent to these river systems. In contrast, the outer coast consists of a maze of smaller islands facing the great expanse of the Pacific Ocean. Here, creeks are found that are even narrower in width, shallower, and slower moving. Salmon may have once migrated to these systems especially the ones with lakes, but they are now considered non-salmon bearing streams (Carl Humchitt, personal communication, August 2004). The tides, related to the moon phases, occur in predictable daily, monthly and yearly cycles. On the central coast, tide levels vary only slightly between the inlets, inner waterways and outer islands (Suttles 1990:17). The tides play an important role in the lives of coastal people, especially in the capture of Pacific salmon.

Heiltsuk country feels the full influence of a maritime west coast climate due to its close proximity to the Pacific Ocean. Rainfall averages from about 100 cm to 500 cm annually (Pojar and MacKinnon 1994:13). Heavier rainfall is common in the inlets, whereas the outer coast islands receive less precipitation (Suttles 1990:16). Weather patterns vary seasonally and may include any combination of unpredictable bursts of hail, snow and winds during the spring months, followed by foggy summer conditions and gale-force winter storms. While the climate is mild, daytime temperature can range

between 0 to 25 degrees Celsius depending upon the season (Pojar and MacKinnon 1994:13). Typically, winter and spring months are cooler and stormier. The weather heats up significantly during the summer months and then slowly cools in the autumn.

Each physiographic zone supports a unique assemblage of marine and terrestrial fauna. Black bears and grizzly bears inhabit the full sweep of environments from alpine to coastal regions. Blacktail deer, coastal wolves, mountain goats, porcupine, and small mammals such as the mink, marten, fisher, beaver and river otter inhabit the inland environment (Hilton 1990: 312). Mammalian habitat extends into the maritime region where harbour seals frequent the mouths of streams and rest on smooth rocky outcrops overlooking the bays. Killer whales and larger whales rarely enter these waterways, but they pass close to the outer islands. Migratory birds such as ducks, geese, herons, and loons enjoy the rainy inlets, and estuary conditions of inner waterways. Eagles, ravens and crows are common in varying numbers in all zones.

The outer coast islands form a complex maze of waterways and tidal rapids that often enter into small coves and lagoons. Land mammals include deer, mice, and wolves while mammals such as the river otter, and mink inhabit lagoons and streams. Beyond the outermost islands, sea otters, northern fur seals, Steller sea lions, porpoises and killer whales roam the salty waters. Beaver, once common to the outer island areas, were greatly reduced during the fur trade era. Many species of birds such as ducks, geese, loons, cormorants, blue herons, sandhill cranes and seagulls commonly reside in the outer islands (Hilton 1990).

The Heiltsuk

Linguistically, the Heiltsuk speak 'Hailhzaqvala' and are part of the Northern Wakashan Language Family along with the Xai xais, Haisla, Oweekeno, and Kwakwaka'wakw (Black 1997). Heiltsuk is an anglicised version of the name Hailhzaqv, which literally translates as 'to speak and act correctly' (Black 1997:9). The modern Heiltsuk population descended from a larger group of Hailhzaqv speaking tribes. Presently, only five surviving groups are recognized and remembered: the Wuyalitxv, the Yisdaitxv, the Wuithitxv, Qvuqva'aitxv and Xai xais (Hogan et al 2005:1) (Figure 4).

The Wuyalitxv are the 'outside people' or 'people from the seaward side'. They occupy the southern portion of the territory, from Namu to the east, Calvert Island to the south, and Goose Island to the southwest, and the inner waterways, where Bella Bella, Gullchuk Bay, Huyat Bay, Gunboat passage, Seaforth Channel and southern areas of Deer Pass (Troup Pass) lie. The Yisdaitxv are the 'people from 'Isda' whose territories overlap with their Nuxalk (Bella Coola) neighbours. The area encompasses Port John, Evans arm, Ocean Falls, Cascade Inlet, Elcho Harbour, and Kimsquit to the northeast, and Kwatna to the southeast. The Wuithitxv lived in the Roscoe Inlet area and are known as the 'people of the inlet' or 'inland people' They call Roscoe Inlet, the northeastern portion of Return Channel and Deer Pass and all of Johnson Channel their home. The Qvuqva'aitxv are called the 'calm water people' who occupied large tracts of waterways and land on the western edge of the territory that extends to Spiller Inlet, Bullock Channel, the western portion of Return Channel. Deer Pass, Seaforth Channel, and south to Stryker Island, Cape Mark and north to Moss Pass.

The Xai xais comprise a small group of people, some of whom merged with the Heiltsuk whereas others amalgamated with the Kitasu village of Tsimshian-speaking people. Xai xais means 'down-river people'. Their homeland is from Kynoch Inlet to the outer islands from Aristibal Island, and northwards to Butedale (Black 1997).

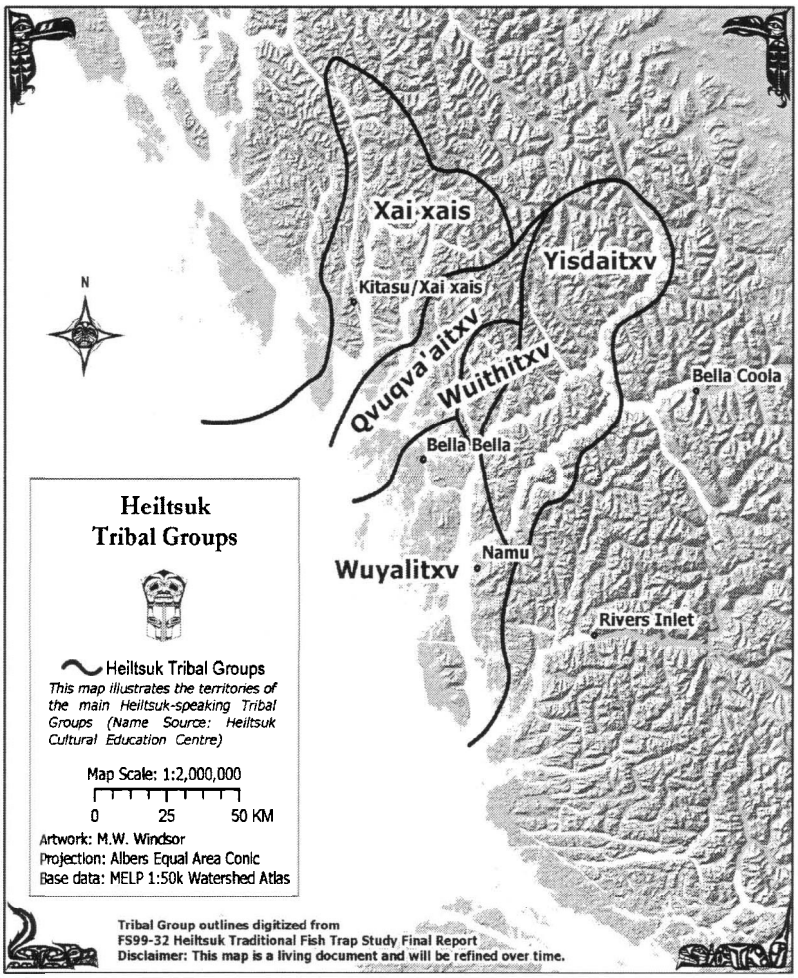

Figure 4 Five surviving Heiltsuk tribal groups

The territory boundaries are not fixed lines, but are subject to change (Hogan et al 2005). Other Heiltsuk tribal groups existed in ancient times but became extinct after smallpox epidemics literally killed entire villages. The ethnographer Ronald L. Olson (1955) learned of a village on the northeast side of Calvert Island called, Luxvbalis,

which was wiped out from one such infection. Population reduction struck other tribal groups, forcing their leaders to merge with neighbouring tribal groups; that began the first phase of amalgamation of the Heiltsuk descendants who now live in the modern village of Bella Bella.

The modern Heiltsuk trace their ancestry to four main crest groups: the Raven ("Gvui"), Eagle ("Wikv"), Killerwhale ("Hlxainuxv") and Wolf ("Kvsls"). Boas (1932), Drucker (1948) and Olson (1955) only recorded three crest groups - Raven, Eagle and Killerwhale - with each group having its own ranking system led by family chiefs. The wolf featured prominently in the Wuyalitxv tribal group when their members merged with the growing population at Fort McLoughlin in 1880 (Black 1997). Other notable family crests are the moon, sun, frog, copper, and tree of life, to name a few. Each tribal group consists of villages composed of families based upon crest affiliations. Each village has specific ancestral stories that narrate crest relationships and associations with supernatural beings that possessed transformation abilities and spiritual powers called 'nawalkv' (Black 1997; Waterfall 2001; Harkin 1997).

Households comprised large, rectangular plank-houses called Bighouses, or Gvukas, a term that captures these impressive house dimensions. Gvukas translates as the 'great house'. Therefore the houses are big more than long. A village site consisted of a number of Bighouses. Each house has a nuym, which translates as 'story' and resident families identify with a particular oral narrative. Therefore, members of each household recite their specific nuym to acknowledge hereditary chiefs, lesser chiefs and noble family members and their influence on social, political, and economical factors. Each

nuym cited its ancestral origins to specific creations, hereditary names, ceremonial privileges and rights to resource sites (Harkin 1997).

Heiltsuk kin families lived sedentary lifestyles occupying large permanent winter villages in the protected inner waterways and small seasonal spring and summer campsites (Hilton 1990; Tolmie 1963). During the damp, cold winters, the Heiltsuk had a whole season to repair and manufacture equipment, create works of art, store surplus food, such as dried salmon, and host or witness the elaborate ceremonial potlatches. During the milder seasons, smaller groups travelled to the inner channels and to the outer coast islands to family owned campsites to gather foods, such as herring, herring spawn, seaweeds, cod, halibut, sea mammals, various shellfish, waterfowl, terrestrial mammals, and of course salmon (Harkin 1997; Hilton 1990:314).

The Heiltsuk are descendants of observant marine-based people who acquired their primary subsistence from the sea and numerous salmon rivers and streams. Highly skillful at subsistence procurement, processing and storage, they gathered seafood for immediate consumption and for long-term storage. Along intertidal zones and at the mouth of streambeds, Heiltsuk ancestors left evidence of their labour dedicated to the salmon fishery. Salmon was the main food resource because of its predictable instinct to return to the natal spawning streams. The Heiltsuk have maintained a strong reciprocal relationship with salmon and had constructed this elegant fishing technology to capture them. In the deepest layers of the Heiltsuk village at Namu, there is ample evidence that salmon fishing has a time depth of at least 7000 years (Cannon 1991, Cannon and Yang 2006).

Chapter summary

Heiltsuk geography has undergone numerous morphological changes since massive ice sheets formed the local environment. Adjusting to sea level changes, ancient habitations and use areas became forever submerged under rising seas, while others remained to be discovered on raised terraces. The most familiar habitations, villages and resource use campsites form the archaeological record. The deep layers of one ancient village site, Namu, reveal evidence of a marine-based economy dedicated to exploiting salmon. However, only hints of the technology to capture them would remain for archaeologists to record. The ancient Heiltsuk successfully adapted to new challenges the environment posed and left their legacy through oral narratives that were transmitted over time and space to the present generations. The modern Heiltsuk, following their ancestors' example, recite these surviving narratives. They share their memories of past marine and land use and occupancy within their membership, which later became the focus of outside visitors fascinated with the lifeways of Heiltsuk ancestors. In relation to my thesis on stone fish traps, salmon, and smoke-drying lean salmon, I am the first Heiltsuk archaeologist who will appropriate the methods of inquiry of archaeology and ethnology to record further oral history representative of this key beneficial relationship.

Chapter Three:
Salmon, Antiquity, and Stone Fish Traps

Introduction

This chapter distinguishes between two types of fishing technologies, stone fish traps and wooden weirs that were used to capture large quantities of salmon. I concentrated my literature review to encompass the First Nations groups that neighbour the Heiltsuk. I also conducted an extensive review of previous archaeology work on the recent and ancient heritage of the Heiltsuk, especially the survey work on stone fish traps. The spawning behaviours of the four species of Pacific salmon that frequent Heiltsuk waters are discussed. This chapter also reviews the archaeological work on the ancient salmon bones found in the deepest layers of the Heiltsuk village of Namu.

Northwest Coast trapping devices

The dietary heritage of Northwest Coast First Nations emphasizes seafood, especially the anadromous fishes. Common seafood choices target salmon, herring, ooligans, halibut and cod, which are supplemented with shellfish and seaweeds. From Alaska to the lower mainland of Vancouver, people developed marine fishing technologies to catch and mass harvest the seafood important for their subsistence, for redistribution at ceremonial events, for trade purposes and for winter storage (Stewart 1977). Their customary menu extends into their oral history, wherein they celebrated their staple foods in the many stories told about their ancient past.

Their fishing equipment was either individually employed or communally operated, the latter type including trapping structures. Individual equipment included harpoons and trolling lures for salmon, rakes for herring, nets for ooligans and bottom hooks for cod and halibut. Hilary Stewart (1977) described a comprehensive inventory of fishing technology in use since ancient times along this coast. Her illustrations and text highlight the varied implements that made their fishing a success.

Fishing equipment also consists of trapping devices to catch and harvest large quantities of seafood at one time. These structures were designed to intercept migrating species that were seasonally abundant. In the archaeological record and ethnographic accounts, two common types are known: stone fish trap structures and wooden fish weirs and traps. Stone wall traps and wooden weirs are widely distributed in varying quantities along the Northwest Coast. The two terms have often been used interchangeably. However, there is a definite distinction between them and for this thesis, I will distinguish between the two at the outset to avoid any confusion.

Some groups built their trapping devices mainly out of wood, or built stone wall structures augmented by wood, while other trapping devices were built exclusively of beach cobbles from local sources placed in stream beds or on tidal flats. Weirs typically consist of hemlock and cedar stakes driven into the muddy sediment. Conical or funnel shaped baskets usually form part of a weir structure or they are used individually as a separate fishing implement. Stone and wooden materials were often combined (Boas 1909; Moss and Erlandson 1998; Stewart 1977). The following discussion introduces both structural types and lists types used by First Nations groups who live near the Heiltsuk on the central coast. All radiocarbon dates and calendar years are presented in

their original form found in publications. There have been no alterations or calibration attempts by the author.

Among the Nuxalk, or Bella Coola Nation, wooden fish weirs could be found spanning fast moving rivers and tributaries. Phil Hobler (1990), of Simon Fraser University, recorded few wooden fish weirs and noted an absence of stone fish trap structures in the Nuxalk region. McIlwraith (1992), an ethnographer who wrote a lengthy account of his observations of the Nuxalk people, recorded many ancestral stories that listed villages with wooden fish weirs at places such as the Bella Coola River and at Kwatna Bay. Furthermore, a knowledgeable local informant and well-known hunting guide, Clayton Mack, shared relevant information about wooden fish weirs and corroborated information recorded by Alexander Mackenzie (Thommasen 1994). Mack attributed his knowledge to the older generation of Bella Coola people:

> I know quite a bit about the old Indian ways because I spend a lot of time with them old Indian people when I was a kid (Thommasen 1994:24).

He identified about twenty-two fish weirs along the Bella Coola River with each village having its own fish weir. Clayton Mack stated that the weirs caught all salmon species during their seasonal migrations. He described how hemlock and cedar were used to construct them, and the various methods of capture. According to him (Thommasen 1994:130-131), when Mackenzie and his crew travelled down the Bella Coola River, they had to 'go around all the fish traps'. They respected Bella Coola protocol because if anyone went through a fish trap, it would result in bad luck with no more salmon returning that year. Mackenzie removed his canoe from the water at every fish trap and carried it around them. Significant to this research, in shared territory with the Heiltsuk,

Clayton Mack, described the location, function, and operation of a stone fish structure that lay across a creek close to Nascall Hot Springs. He said,

> 'old people make it with rocks, build up a big stone fence about three or four feet high at low tide, at high tide, fish go in there and people close off the opening, when the tide go out the fish are trapped, when they get enough fish, open up the trap, let the rest of the fish out' (Thommasen 1994:27-28).

The Ooweekeno Nation, situated in the Ooweekeno Lake area, built structures of wood and stone to trap migrating salmon, specifically sockeye (Olson 1955). Unfortunately, not much more than that is known about the fishing technology of this group.

Various groups of the large Kwakwaka'wakw Nation built distinctive trapping devices out of wood or stones or a combination of the two, which were in salt and fresh water. According to Boas (1909), they were designed for the ecological context such as a narrow river channel or open tidal flat. Each trap had a Kwakwaka'wakw name. Furthermore, elongated baskets acted as entrances into rectangular fish-baskets. Boas called the stone wall structures located on tidal flats 'wing-dams'. He briefly described how tidal action helped trap salmon.

On the west side of Vancouver Island, the Nuu-chah-nulth tribal groups relied on fishing technology made of wooden materials such as conical baskets placed in rivers, wooden traps on tidal flats or low stone weirs in shallow bays (Drucker 1951: 19). Drucker's collaborators informed him that many of these traps included wooden materials in the narrow chute openings that led into tidal enclosures (Marshall 1993). Drucker (1951:16) suggested these were designed to trap shiners, perch and similar small fish, as well as salmon. His research noted differential ownership by chiefs of fishing

technology and of sockeye, spring and coho rivers but he did not disclose the location of these rivers. Chiefly families lived in small fishing groups at specific sites seasonally to catch sockeye in midsummer, followed by springs and, then, in the fall for coho and chum (1951:58).

Although not an archaeologist, Hilary Stewart nevertheless contributed insightful research on archaeological materials produced by Northwest Coast peoples. Her volume *Indian Fishing: Early Methods on the Northwest Coast* (1977) is rich in oral history. She discussed fishing techniques practiced on the Northwest Coast and her numerous illustrations contained visual data on a variety of stone traps and wooden weirs. She defined stone traps as "basically wall-like rock alignments built singly or in a series in a river, at its mouth, or in a bay drained at low tide. These traps would either function as a trap or to funnel the fish towards the mouth of a trap" (Stewart 1977:99). Her volume serves as an invaluable reference for archaeologists and First Nations alike.

She listed salmon as the primary target species taken in large quantities. She described salmon behavior around river mouths, and the care taken with the tidal influence when operating the traps. She noted that variation in trapping devices depended upon fish species, environmental context, building materials available, and the cultural background of the people. Ownership of traps and weirs varied from cultural group to cultural group but she surmised that whole villages would jointly own one (Stewart 1977:99).

In summary, along the Northwest Coast, salmon was the main species targeted using trapping devices made of either stone or wood. The salmon were gathered seasonally at family owned fishing campsites. Trapping devices were strategically placed

on intertidal zones and stream mouths where salmon congregate before migrating up-river. Local knowledge about fishing technology can provide useful details about location, function, use, seasonality, ownership and age. Unfortunately, oral history sources are conspicuously absent, although some researchers mentioned examples of this knowledge about fishing technology to capture salmon species, which undoubtedly enhanced their research pursuits.

Pacific salmon

Pacific salmon are anadromous fishes that live the majority of their lives in the ocean but return to their natal freshwater rivers to spawn. The young also live in fresh water for varying periods before re-entering the ocean. This section describes the morphological characteristics and spawning behavior of four of the five Pacific salmon that regularly migrate to Heiltsuk rivers, streams and creeks. The species are the Chum (*Oncorhynchus keta),* Pink (*Oncorhynchus gorbuscha*), Coho (*Oncorhynchus kisutch*), and Sockeye (*Oncorhynchus nerka*). Chinook (*Oncorhynchus tshawytscha*) no longer spawn in Heiltsuk watersheds (Jones 2000; Pomeroy 1980). Each salmon species has a set of distinctive traits such as lifespan, spawning age, season of migrations, duration of seasonal migrations and morphological changes during spawning seasons. While in the ocean, Pacific salmon bodies are silvery bright with some subtle color variations mainly along their backs (Busch 2000). During the spawning season, each species exhibits distinctive color variation (Jones 2000).

Chum salmon is also known as the dog salmon due to the resemblance of its jaw to a dog's tooth morphology. Adult chum average about 63 cm (25 inches) and weigh less than 4.5 kilograms (10 pounds). Its flesh is considered bland with poor taste due to

its low fat content (Busch 2000). When chum are oily and healthy, they are called semi-brights. In this condition, they have small black dots on their back and faint vertical stripes along their sides. They spawn in great numbers in their third, fourth, and fifth years in the late fall. They are known to spawn in shallow streams with less than three feet of water often near tidal mouths (Busch 2000). They mill about in large schools, along with pinks specifically, around river mouth edges when their bodies change in preparation for their journey up river (Jones 2000). During spawning, male chum develop hooked jaws with pronounced large front teeth. When Chum salmon are lean, their color becomes dark green with dark purplish bars along their side. In this condition, they become highly prized by First Nations for smoke-drying for winter storage (Busch 2000; Jones 2000).

Pink salmon, commonly called humpbacks, derive their name from the color of their flesh (Busch 2000). They are the smallest of the five species with an average size of 50 cm (20 inches) and weigh less than 2.3 kilograms (5 pounds) (Busch 2000). Pinks congregate in sizeable schools. They live two years and always spawn in their second year in the early fall. They spawn in greater quantities at the lower reaches of slow-moving coastal streams close to the tidal waters (Busch 2000; Cannon 1988). At spawning seasons, the males develop humped backs and hooked jaws. The females become more greenish with no change in their morphology. During spawning season, their color becomes a pinkish brown with reddish yellow sides.

Coho have silvery sides and white bellies with green-bluish backs. Coho average length is about 60 cm (24 inches) and, they weigh less than 4.5 kilograms (10 pounds). They school up in tight clusters, and spawn latest in the fall, although some may begin

their ascent into rivers in early summer (Busch 2000; Suttles 1990). Coho usually spawn in their third year and prefer to spawn in small streams (Busch 2000). Their bodies become reddish in the freshwater.

Sockeye salmon are highly prized for their oily rich flesh, which is a very bright orange. Sockeye are blue on the back with silver sides. They typically measure about 60 cm (25 inches) and weigh between 1 to 4 kg (3 to 8 pounds) (Busch 2000). Sockeye begin their spawning journey in June and continue into December (Busch 2000). They spawn in their fourth or fifth year in major river systems such as the Fraser and Whonnock rivers (Suttles 1990). Sockeye are known to spawn on submerged lakebeds rather than streams (Busch 2000). Spawning males develop humped backs and have pale green heads, dark jaws, and bright red bodies. They are also the fattest of the species and are not suitable for smoke-drying (Jones 2000).

Archaeological research in Heiltsuk traditional territory

Early work by visiting researchers employed direct historical and cultural historical approaches. Aided by local Heiltsuk people (informants) on boat surveys or through interview sessions, they located various archaeological sites such as shell middens, burials, stone fish traps, and rock art. The initial period of archaeology in Heiltsuk traditional territory sought to illuminate the nature of the local archaeological record. Stone fish traps were recorded as secondary source material, but no systematic study focused on them. While limited prior investigation supplied some data, my research is the first to systematically survey stone fish traps as a primary research topic in Heiltsuk traditional territory.

Two archaeologists from the University of California at Berkeley, Philip Drucker and Richard Beardsley, conducted the first excavations in Heiltsuk land in 1938. They excavated at three different sites: Kynumpt Harbour (Strom Bay), Roscoe Inlet at Xvnees, and at the village of Qaba, a historic village site in Qvuqva 'aitxv territory under the noble lineage of Qa'ait. The informants related information of sites known to that generation. Unfortunately, Drucker then placed the Heiltsuk into his "Kwakiutl" category, as did Franz Boas and Ronald Olson. After this foray, no archaeologists visited the Heiltsuk region for three decades (Drucker 1943).

At the end of the 1960s, researchers from the University of Colorado and Simon Fraser University focused on locating and documenting sites in order to ascertain the cultural history of the central coast. Regional chronologies and cultural phases were suggested to collate sites and artifacts into a regional taxonomy. Three projects at Namu brought James Hester to the central coast from the University of Colorado between 1968 and 1970. In 1969, Simon Fraser University hosted the first field school excavation at Kwatna Bay in terrain shared between Heiltsuk and their Nuxalk relatives and neighbours. Table 1 lists the major excavations in Heiltsuk traditional territory since 1938.

Table 1 Major excavations in Heiltsuk traditional territory

Researcher	Sponsoring Agency	Year	Location
Philip Drucker/Richard Beardsley	University of California	1938	1. Qaba (FbTb 4) 2. Kynumpt 3.Roscoe Inlet (FbSx 6)
James Hester	University of Colorado	1968 to 1970	1. Namu (ElSx 1) 2. Kisameet (ElSx 2) 3. Roscoe Inlet (FbSx 6)
Philip M. Hobler	Simon Fraser University	1969	Kwatna

Researcher	Sponsoring Agency	Year	Location
Roy L. Carlson	Simon Fraser University	1970	Kwatna
Philip M. Hobler	Simon Fraser University	1971/2	Kimsquit
Tony Pomeroy	Simon Fraser University	1972	McNaughton (ElTb 10)
Roy L. Carlson	Simon Fraser University	1974	McNaughton (ElTb 10)
Roy L. Carlson	Simon Fraser University	1977/78	Namu (ElSx 1)
Philip M. Hobler	Simon Fraser University	1978	Joashila
Philip M. Hobler et al.	Simon Fraser University	1983	McLoughlin Bay (FaTa 4)
Roy L. Carlson	Simon Fraser University	1983	Deer Pass (FbSx 9)
Roy L. Carlson	Simon Fraser University	1994	Namu (ElSx 1)

Simon Fraser University professors, Dr. Roy Carlson and Phil Hobler, led all excavations except for the one in 1972. Tony (John) Pomeroy, a graduate student at Simon Fraser University, conducted his thesis research on McNaughton Island at Hnsdakv (ElTb 10) in 1974. Simon Fraser University became the repository for the numerous artifacts and over forty human skeletal remains uncovered during those years (Curtin 1985).

Observations from the archaeological record indicate an unbroken occupation on the central coast from 10,000 years ago to the present day (Carlson 1996). Five field seasons at Namu revealed a variety of stone, wood and bone artifacts that were adapted to a marine-based life, and an impressive four-meter deep stratified shell midden. A wall from this midden is on the display at the Simon Fraser University Museum of Archaeology and Ethnology. Roy Carlson's last excavation at Namu in 1994 was a joint

effort between Simon Fraser University and the Heiltsuk Nation, which anticipated a future working relationship that is outlined in a negotiated Memorandum of Understanding (MOU) and Research Agreement found in Appendix 2 in Permit Report 1994-063 (1995:53-59). One section of this MOU states:

> Identification and consideration of oral traditions and other forms of indigenous knowledge such as environmental knowledge, are recognized not as an alternate to archaeological investigation, but as a valid part of scientific inquiry about the past, including archaeological investigation

More recently, Dr. Aubrey Cannon from McMaster University employed a unique sampling strategy that consisted of core sampling and bucket augering in the Namu region. His effort increased the number of dates by sixteen. He compared his sixteen samples with the time frame extant for Namu. His radiocarbon dates do not prove cultural use in the same manner as a traditional excavation, but they do corroborate the general chronology. Cannon separated his categories into temporary campsites, permanent campsites and resource use sites. On the outer islands, in Kildidt lagoon, he obtained a very old date of 9,600 years BP, while his youngest dates fell in the early historic period (Cannon 2000). Various publications resulted from his research, including such topics as assessing sea levels, offering new methodology techniques, and arguing for long-term cultural continuity of the Namu region (Cannon 1988, 2000, 2001). Recent research on DNA analysis of salmon bone samples has led to further contributions to the understanding of the archaeological record at Namu and the type of fishery that was present in ancient times (Cannon and Yang 2006).

Excavations were conducted at Fort McLoughlin and at a traditional plank house (Bighouse) village site in Deer Pass, two historic sites occupied by Heiltsuk people. Phil

Hobler directed the excavation at the fort, concentrating on three different houses: a traditional plank house (Bighouse), a one-bedroom house and a house inside the fort walls. A small group of Heiltsuk students joined the project (Hobler et al 1983). From this excavation, a graduate student, Alexandra Maas (1994), conducted a comprehensive analysis of ceramics absorbed into the culture. She commented that Bella Bella elders were very curious about the type of ceramic patterns their ancestors adopted. Carlson (1983) had excavated a similar traditional plank house (Bighouse) in the Deer Pass region to learn about their construction. Heiltsuk elders visited the site and their discussion related family history for the area and details of its final occupation. After these projects, academic archaeology waned just as contract archaeology grew in prominence.

Archaeology classifies cultural materials into recognizable categories in organized systems called typologies. These lists are based upon similar attributes such as length, width, height and weight. Types can be further subdivided into phases that cross time and space. They become part of permanent classification schemes for other archaeologists to cite. Typologies exist to organize large numbers of observations, and analyzing the trends and tendencies can reveal new insights.

As a result of this exploratory survey work and excavations, the central coast archaeological history has been divided into three time periods. To no great surprise, they were titled Early, Middle and Late periods, and they have received only minor revision since first proposed (Carlson 1981). The Early period spans the dates 10,000 years to 5,000 years. A maritime people living a marine-based lifestyle in small groups characterize this period. Few occupational sites are known from this time. Pebble tools and microblades are characteristic of this time period. The Middle period ranges between

5,000 years and 2500 years ago. Group populations became larger and continued to live off marine subsistence leading to an increase in occupational sites. The Late period begins circa 2500 years ago and persists to the ethnographic period. Large populations occupied bigger villages, and the ubiquity of cedar is a significant characteristic (Carlson 1984).

Stone fish trap research in Heiltsuk traditional territory

Most archaeological work in Heiltsuk traditional territory has focused on terrestrial sites. Stone fish trap research is restricted to a few studies. During the first half of the 20th century, a number of researchers employed archaeological methods to study Heiltsuk stone fish traps (Apland 1982; Drucker 1943; Hester and Nelson 1978; Hobler 1970, 1977; 1988, Millennia Research 1997; Pomeroy 1980; Simonsen 1973).

As a result of this work, over 250 stone fish traps have been recorded and are known throughout Heiltsuk traditional territory The traps are not evenly distributed throughout the territory with the highest concentration on the west and south outer island areas (Figure 5).

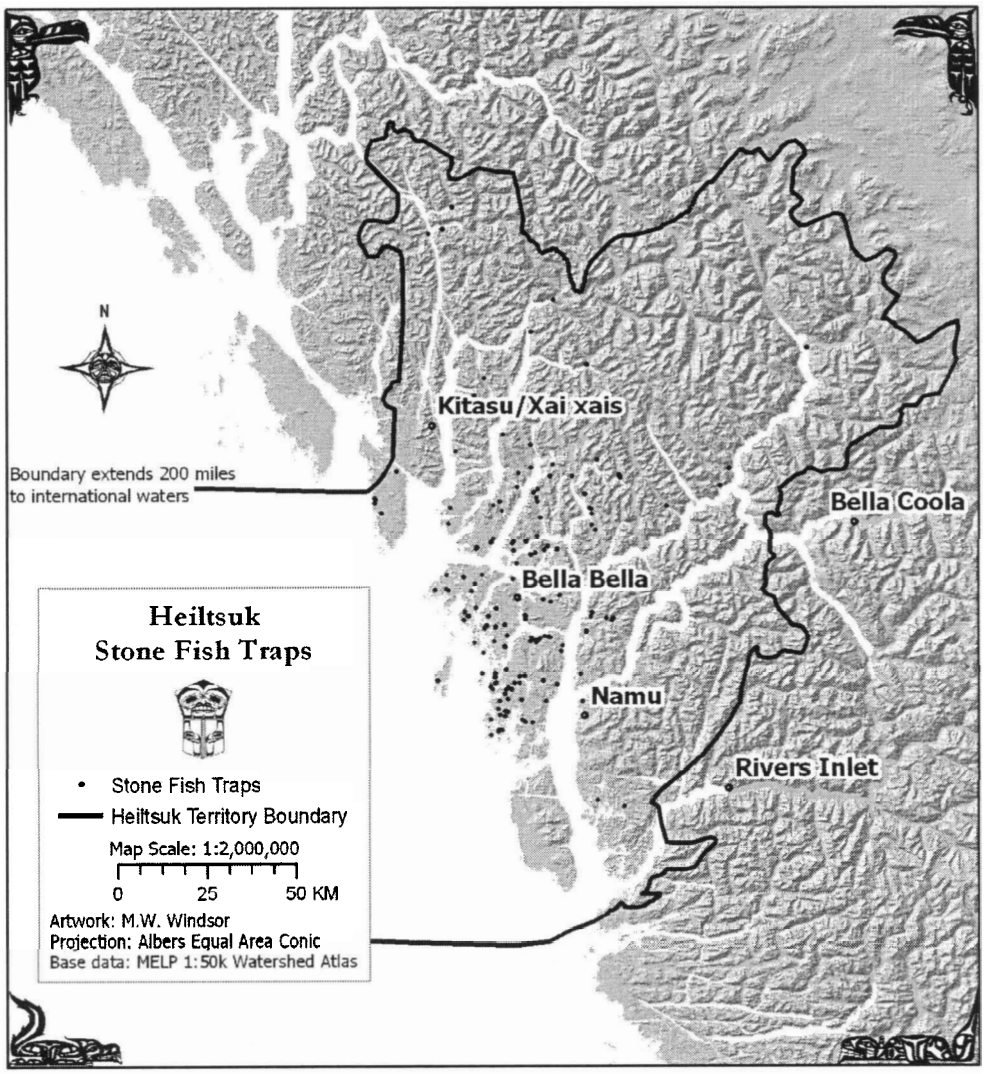

Figure 5 Products of my ancestors' labour: 250+ stone fish traps in Heiltsuk traditional territory.

Philip Drucker, from the University of California at Berkeley, whose survey followed the classic direct historical approach, conducted the first investigation. He provided the initial, albeit brief description, of stone fish traps on the central coast during his Northern Archaeological research expedition in 1938. His slight discourse on stone fish traps resulted in an incidental mention of "not very elaborate stone walls" (Drucker 1943: 109). From Bella Bella informants, he learned of other cobble structures with variable shapes south of Hunter Island. He did not observe these trap locations. He

presented no empirical measurements nor did he obtain any local knowledge about them except for their presence in Heiltsuk waters.

After Drucker's cursory survey, no researchers worked there until University of Colorado and Simon Fraser University archaeologists recorded some traps during the cultural historical research projects in the 1960s and 1970s. The Colorado research team recorded sites on the west side of Heiltsuk traditional territory whereas Simon Fraser University researchers recorded some along the eastern edge, in the area shared with the Nuxalk (Hester and Nelson 1978; Hobler 1970). Tony Pomeroy directed the University of Colorado effort as part of the Bella Bella Prehistory project from 1969 to 1971 and became familiar with the central coast archaeological record on four subsequent projects. He recorded 140 of the 250 sites identified during various field surveys and developed a simple typology for these 140 stone fish traps.

Assisted by Tony Pomeroy, Brian Apland, then a graduate student at Simon Fraser University, recorded 42 stone fish traps while surveying intertidal beach sites for his graduate research in the Bella Bella region. His brief observations supplied basic sketch maps and site reports with few details. Apland included a generalized list of potential functions. Salmon was identified as the primary target. He surmised that traps, which he described as low unelaborate walls, operated best with tidal action. He listed broad geographic information for their locations such as ponds, coves, bays and lagoons, and suggested a trap correlation with salmon streams.

In 1973, Bjorn Simonsen recorded 40 'tidal trap' sites attributed to the amalgamated Kitasu/Xai xais tribal group. He concluded that stone traps were common in the Hecate area. He observed no wooden materials at any of the stone fish trap sites.

Locals did not aid him in this research expedition; however, he noted that the people inhabiting this area were shrewd seafood gatherers and storage specialists (1973:31/32). He concluded no long-term occupations were associated with tidal traps. These areas were used on a short-term seasonal basis to procure, process and smoke-dry salmon (1973:76-77).

In Roscoe Inlet, Rick Rollins and Michael Blake (1975) documented five stone fish traps and expanded the previous research produced by the Bella Bella Prehistory project. The traps were recorded on tidal flats adjacent to streams and creeks and measured between 50 to 70 cm in height and from 10 to 350 meters long. Their boat surveys and site location and documentation was greatly improved with the aid of local elders familiar with the area. Specifically they could recite family lineages that originated in the great ancestral stories. Although cursory, their information provided the knowledge that stone fish trap sites were associated with major salmon bearing streams. While acknowledging the aid of local informants, the report lacked any oral narratives to specifically situate Heiltsuk families in Roscoe Inlet. The traps all exhibit semi-circular shapes and appear to be in disrepair. Department of Fisheries and Oceans bears much responsibility for this disrepair in its efforts to increase salmon runs. Nancy Turner (pers.comm. 2006) states that she interviewed Marven Robinson from Hartley Bay who corroborated this observation.

The search for intertidal lithic sites led to documentation of nine 'fish traps' in the 'Bella Bella Area' that were considered productive subsistence devices (Hobler 1977). The traps were well constructed and maintained. The largest trap sites were found at the best streams in the inlets and were "usually far from the winter village localities" (Hobler

1977:5). Hobler noted that style variation was related to the ecological context rather than from temporal or cultural variations. He classified three types based upon appearance rather than function. The types are 'bag-shaped or U-shaped', long curved walls, and short straight walls. Average empirical observations noted 0.5 to 1 meter wide walls with 70 cm high walls.

The 1980s represent a pause in documentation aside from a few individual efforts, such as Pomeroy's dissertation titled *Bella Bella: Settlement and Subsistence* (1980) and the Hakai Recreation survey by Hobler (1988). Pomeroy's (1976) descriptive analysis provides good reference material for future research on stone fish traps and he included excellent aerial photographs of some that topographically illustrate the distinct forms and lengths of the wall alignments in relation to the ecological context and simple schematic drawings of the fish trap types.

Pomeroy's survey resulted in the recording of over 140 stone fish traps or 56 percent of today's total of 250. He defined stone fish traps as:

> ...alignments or low walls of stone strategically placed on beaches and in streams creating traps which captured fish stranded in them during an ebbing tide or while ascending spawning streams (1980:103-104).

He observed that some traps were at least 200 meters long, while most traps averaged about 10-40 meters in length. He saw considerable height variability, although assessing actual height was difficult due to the large amount of silt accumulation behind the trap walls.

Pomeroy noted that salmon was the main target, but that cod could be caught in these stone alignments. He posited that seals were lured into these traps, but he does not

provide any evidence for this task (1980:104). From his observations, he noted that the traps consisted of various beach rocks, and even natural features such as large immovable boulders. By inference, he suggested wooden materials comprised part of the stone alignments, as described by Boas (1909) in ethnographic reports on the Kwakwaka'wakw people.

He listed traps either as simple or complex. Simple types consisted of a single rock alignment and made up the largest number of his sample. These were found at the mouths of small streams or across rocky streambeds, but most were not associated with midden sites. Most were found in lagoons among the outer coast islands. For example, simple types were commonly found in Kildidt lagoon on the southern side of Hunter Island, and generally exhibited a bow shape pattern.

Large complex traps occupy the intertidal zones of flat beaches. They consist of a few semi-circular rock alignments connected to each other, thus forming one large trap on either side of streams (Pomeroy 1976:166-168). This concentration is commonly found in the inlets and the outer islands south of Bella Bella.

One local source, Willy Gladstone, told Pomeroy that traps were used for salmon and "any species of fish which might be caught in them" (Pomeroy 1976:168). Other local sources indicated trap ownership was by village groups, which suggested that traps might have been used recently, and "some of them look as though they've been repaired and are still being used" (Pomeroy 1976:173). He correlated traps to middens he found nearby and suggested that they were probably contemporaneous with them, especially those with salmon remains found in the lower layers, such as at Namu. He hypothetically

suggested traps might be as old as the last sea level stabilization at 1000 B.C (Pomeroy 1976: 173).

Despite this growing site documentation, stone fish trap research remained slight. Pomeroy's typology for stone fish traps on the central coast remains the only one created. Although vague and offering minimal information from a small sample of stone fish trap sites, it is still in use. For these traps, he based his typology on function correlated to location rather than to marine prey species such as salmon, herring, shiners/perch, seals, porpoise and shellfish. He divided his 140 samples into 3 categories:

1) Intertidal Beach
2) Stream
3) Intertidal Beach-Stream

1) Intertidal Beach

Pomeroy's intertidal beach category makes up 46 percent of the 140 observations. These traps are directly influenced by tidal action. They are the largest and most complex and are usually associated with larger streams. These traps may be found on either side of stream mouths or on both sides. In his study, he noted they could be found individually (single) or as part of a complex formation of interconnected walls. The largest and most complex traps are located in the inner and outer channel zones. Shape varied from straight, curved, U-shaped and partial, meaning only a portion is observable. Intertidal beach traps are found on both expansive and modest tidal flats, either individually or linked together forming an interconnected network of semi-circular stone walls. These wall traps are impressive features when viewed at low tide. Some of these trap types are

found on raised terraces, perhaps indicating a former sea level. The area inside stone walls varies by location (Pomeroy 1980:113).

2) Stream

His sample of stream traps accounted for 45 percent of his observations. Stream traps are located on streambeds and are not directly affected by tidal action. Instead, they function best when in mid-stream. These traps are found in or across streams and often in proximity to smaller streams. They are the smallest of the three types. A majority of these traps are in the outer island zones either in lagoons, coves, bays and at the confluence of streams. Stream trap formations are similar to Intertidal Beach traps: they can be straight, curved, U-shaped, partial, funnel or square. Funnel-shaped traps are common. Pomeroy suggests U-shaped and funnel-shaped traps had basketry strategically placed in low sections near their centres (Pomeroy 1980:115).

3) Intertidal Beach-Stream

As the name implies, this type is a combination of the two first types. It made up only 9 percent of Pomeroy's sample. He recorded only 15 such traps during his surveys. Pomeroy states:

> the necessity of including this third type is because some traps were built partially on the beach, on one or both sides of a stream and also extend across the mouth of the stream (1980:115).

This category is the weakest in his typology and almost seems superfluous. Reviewing his observations and schematic drawings, these traps can easily fall into either of the first two categories. They are affected by tidal action to a lesser extent because

they are located directly on streambeds at their point of discharge into the bays and coves. During low tide levels, they are clearly visible.

During Phil Hobler's boat survey in the Hakai Luxvbalis Conservancy Area (HLCA), formerly the Hakai Recreation Area, he recorded 43 archaeological sites such as middens, fish traps, canoe runs, artifacts, structures, modified trees, rock art and burials. From this survey, he identified 18 stone fish trap sites, which represent the second most common site type in the southern outer islands shared by the Heiltsuk and the Ooweekeno. His main objective was to determine whether an original survey had satisfied its scientific objective and if any changes in the archaeological signature could be observed. He included no interviews or ethnographic narratives in the report.

The site reports generated by the project list the stone fish traps either as stone wall fish trap, fish trap, and stone wall intertidal fish trap. All traps were located on the intertidal zones and influenced by tidal action. He produced simple sketch maps. He included no detailed empirical measurements. The traps exhibit variable shapes, such as V shaped, concave-bowl shaped, and funnel shaped. His observations noted that tiny creeks discharging into coves seemed impossible for salmon to spawn. Some had stone walls that remained intact, but were not associated with shell middens. He opined that the traps were probably not used in this century, although some traps appeared to have been repaired.

Hobler, following Pomeroy's lead, divided the traps into two types, beach and stream, based upon their location. Beach traps were located on tidal flats and were not associated with streams while stream traps were located at the tidal reaches of small streams. Stream traps were the more common type. For beach traps, human intervention

was needed to scare the fish into the trap enclosure. Stream traps apparently are more complex and difficult to understand. Hobler (1988) suggested these traps operated with short nets or basket traps. However, he noted no wooden materials, such as stakes and posts, except at one location in front of a shell midden.

Beginning in the 1990s, with the advent of consulting archaeology, additional surveys increased the total number to over 250. Archaeological consultants typically included plan maps of trap sites. As a project liaison, I supervised a small group of local Heiltsuk trainees under the direction of Millennia Research Ltd, and I was in communication with Simon Fraser University professors Dr. Roy Carlson and Phil Hobler as well as Bjorn Simonsen of Bastion Group. The team recorded and mapped 20 stone trap sites in two of the five tribal groups. Ethnographic narratives were analyzed to help search for clues to find more trap sites. Interviews with local Heiltsuk people contributed to the project. Elders and oral historians Reginald Moody Humchitt and Edward Martin Sr assisted on our last field trip.

Jennifer Carpenter, the director of the Heiltsuk Cultural Education Centre of Bella Bella, led a local team in conducting a multidisciplinary, theoretical research of Heiltsuk stone fish traps that de-emphasized the functional and technical aspect while placing more emphasis on the traps as part of an ancient management system (Carpenter et al 2000). They suggested that the abundance of salmon noted in ethnohistorical journals was the result of an elaborate set of stewardship principles. The authors suggest that Heiltsuk familiarity with their material culture is the result of Heiltsuk intuition. The report makes numerous recommendations to improve upon the documentation and management of these stone fish traps and to conduct a case study at one of the major

salmon streams in order to reconstruct a model of a functioning stone fish trap. The intent is to operate it under the guidance and direction of Heiltsuk elderly scholars to capture lean salmon for smoke-drying. From this comprehensive research, a Fish Trap atlas (2000) was produced showing the location of 190 trap sites with their Borden numbers plotted on NTS maps that became an invaluable reference in my quest to search for stone fish trap sites (Carpenter et al 2000).

Jim Jones (2000), a graduate student in environmental studies from the University of Victoria, followed this research with his oral history project about contemporary Heiltsuk traditional salmon stewardship for his thesis. His research determined that Heiltsuk ancestors maintained and monitored salmon populations. He suggested that streams and stone fish trap sites were part of a complex stewardship system during the smokehouse days. During this food fishery era, lean salmon were selected and smoke-dried for extended lengths of time. For example, hereditary chief Clarence Martin shared this knowledge about the significance of selecting dark, lean chum salmon compared to the oilier ones for smoke drying:

> that's the way I've seen, even in my parents' time, it was because it needed to be completely dry... all of its flesh oil all weeps out of its flesh, because if it's bright, then it's got a lot of oil in it yet. So, it's no good for the purpose it's wanted for . . . If it had too much oil weeping out of its flesh, it will go rancid... moldy. So, it's not, worth to save, not even to dogs, so they were very particular in getting the dark ones at that time (Jones 2000:96)

Jim Jones interviewed fifteen local residents about their knowledge of stone fish traps and garnered a wealth of information about location, function, operation, use, ownership and about the time-honored transmission of oral history. He compiled over 20 hours of audio recordings and 300 pages of interview transcripts. From his informants, he learned details of a communal selective fishery management system that relied on stone fish traps

and continued into the smokehouse days of the early 20th century. His consultants identified 20 trap locations, and identified three trap sites - Gullchuk Bay (FaTa 2), Huyat Bay (FaTa 11) and Neekas (FcTa 6) - used by many Heiltsuk families to trap chum salmon. For example, from hereditary chief Carmen Humchitt, he documented generalized data about wall height, form, location and salmon species targeted:

> Some of them are about four feet high up to about six feet high, just like a stone wall, along side of the river. And they build it up when it's time to use them about another foot or so and after they finish with it, they open it up and put all these rocks down again on each side of the walls of the trap so it can be used again the following year. And they would open up the size of a big wide door, so the fish wouldn't be trapped in there when they were not using it. . . They just use it for chums. (Jones 2000: 95)

Two other trap sites targeted herring. Examples of his interviews can be read in his detailed audio verbatim transcriptions deposited at the Heiltsuk Cultural Education Centre. From contemporary local knowledge, Jones (2000) learned that salmon was the main target and that stone fish traps at major salmon rivers and streams were used from late summer through to late fall into the first week of November.

Salmon and archaeology

Archaeologically, salmon is the most abundant species found at the Heiltsuk village of Namu (Cannon 1991). In the deepest layers, salmon bones date to about 7000 years old. Cannon used a radiographic technique to count the rings of vertebrae, and inferred seasonality and age. Initial age profiling at Namu suggested three of the five species were present in varying quantities, with a greater proportion being coho, followed by chum and pink. Sockeye bones were originally considered to be absent from the sample (Cannon 1991:17). Initially, salmon bones with two rings were thought to be pink

and bones with three rings were coho, chum or sockeye. With the absence of sockeye, they inferred that Namu was occupied during the late summer, the fall and the winter when pink, chum and coho spawn (Cannon 1988).

However, with the application of DNA analysis to 20 salmon bones from Namu, pink, chum, coho and sockeye species have been identified, although originally sockeye was discounted. However, local knowledge had suggested that the "Namu river supported a robust sockeye fishery and still supports a major spawning run" (Yang et al 2004: 11). Thus scientific testing verified local knowledge about salmon and stream correlation (Yang et al 2004). Furthermore, DNA testing revealed higher abundance of pink salmon when chum was expected (Cannon and Yang 2006:133). To account for the diversity of the Namu salmon fishery, the authors suggest "that it represents deliberate selection of a range of available species for their richness (sockeye) and preservation qualities (pink and chum)" (Cannon and Yang 2006:134). There is usually brief mention of the type of fishing technology employed, such as traps and weirs, to catch salmon as the most efficient method to exploit them as a large-scale communal effort (Cannon 1991:18; Carlson 1998:24). From their DNA results, hints of a selection process to preserve pink and chum for long term storage and for the capture of fresh sockeye for immediate consumption falls short of describing the operation of fishing technology such as traps and weirs and the communal cooperation required for their construction and maintenance and about the oral history knowledge the First Generation possessed about spawning salmon behavior (Cannon and Yang 2006:134).

Chapter summary

Archaeological survey and excavation projects have explored the ancient material culture of the Heiltsuk. Shell midden excavations in the deeply stratified midden at Namu resulted in numerous radiocarbon dates that demonstrate a time depth of 10,000 years for habitation. Core sampling and bucket augering revealed a well-established fishery of pink salmon that dates back as far as 7,000 years (Cannon and Yang 2006). Within the vicinity of Namu, salmon and herring were key marine species (Cannon 2001). Archaeology also resulted in the creation of one taxonomy to situate the historic and ancient material culture of the Heiltsuk into time and space. Outsider researchers grew more sensitive about the necessity for including oral history as the decades passed, especially as Heiltsuk became pro-active in dealing with these research objectives and results.

Different First Nations groups utilized unique trapping devices of wood and stone or both to trap fish. Specifically, salmon and herring were the preferred target species. However, salmon was the primary prey species. For most groups, chum salmon is the main target that was taken seasonally in the late fall and were caught or trapped in stone wall structures, mostly on the beach on modest tidal flats along river mouths. Stream traps and weirs are common at river and stream mouths or along rivers and streams. Stream stone fish traps exhibit incredible variation in size and shape compared to the typical semi-circular beach traps. Traps and weirs were built to suit the terrain where they are located and the species targeted.

The most notable research on stone fish traps was produced by Tony Pomeroy (1976; 1980) and Phil Hobler (1977; 1988), although Brian Apland (1982) is featured as a main recorder on provincial site forms as result of his own survey work. Pomeroy's

typology has been often cited. It is a good starting point and is easy to assess upon observation when searching for stone fish traps. As for the Intertidal Beach name, the name refers to the context, but, for my research, I used Hobler's Beach category instead. Also, Pomeroys' schematic drawings need revision (1980:108-112) for clarification purposes and his Table 11 listing his 140 samples into simple and complex traps also needs updating (1980:107), perhaps collating it with a map showing the trap locations. Finally, I believe Pomeroy may have made an error processing his data into the appropriate categories when reviewing his Stream and Beach-stream categories. In the videographic section of my thesis, I place my 42 samples into two of his categories and find that 36 sites or 86 % of my total, comprises the Beach category, and only six sites or 14% fall into the Beach-Stream category. I did not observe any traps that would be classified into the Stream category.

Chapter Four:
Internalist Archaeology
and Heiltsuk Ancestral Narratives

First Nations people have endured researchers entering their respective territories to conduct research on behalf of others. Questions are aimed at perpetuating academic criteria that are usually irrelevant to the First Nations whose ancestors created the archaeological record. Competing theories attempt to describe the past, but seldom to link the present populations to the sites. The direct historical approach may seem the appropriate theory for First Nations archaeologists to utilize. However, the approach is limited to the recent past dedicated to the motives of outside researchers. Often place names, family lineages and ancestral narratives are not deemed as evidence to connect current populations to the land, and sea, and to their use and tenure. Heiltsuk oral history states the current population has lived in their territory since time immemorial. However, the cultural historical approach offers migration and diffusion of both people and ideas across time and space, while regional chronologies emphasize the analysis of tool kits and archaeological cultures (Trigger 2003:197).

Therefore, employing methods to investigate the Heiltsuk archaeological record was a quandary. Maintaining objectivity remained a critical concern since I am conducting research about the material culture of my Heiltsuk ancestors. However, unlike other archaeology researchers, my heritage situates me closer to the archaeological

record. In effect, my heritage is expressed in the villages, burials, Culturally Modified Trees, rock art and the ancient fishing technology evident at sites.

According to Heiltsuk oral narratives and local knowledge, I accept the view that my ancestors created the diverse aspects of the archaeological record. In my pursuit to better understand the Heiltsuk archaeological record, I employ the theoretical framework of internalist archaeology, which is an approach developed by Dr. Eldon Yellowhorn, who is my supervisor. This grew from an imbalance of respectful dialogue between First Nations and many of the researchers interested in the products of their ancestors' labour. First Nations strongly believe that their past has been denigrated and their cultural heritage appropriated. Moreover, my spiritual association with my ancestors has been ignored since past research tended to separate the modern populations from their ancestors and their material culture (Trigger 2003:197-198). Although some researchers, such as George Nicholas suggest this entails decolonising archaeology as it pertains to intellectual property rights (Nicholas and Bannister 2004).

This theoretical framework offers the following benefits for the original researchers investigating their area of study (Yellowhorn 2002:117). Hence, internalist archaeology:

1) is a research paradigm that is sensitive to the reflexivity of people studying their culture. It appropriates (incorporates) the methods of archaeology to pursue this research. It recognizes that the archaeological record embodies labour of their ancestors.

2) Posits that oral history represents more than hearsay or folklore.

3) Incorporates science for analytical purposes to help the indigenous researcher to interpret the archaeological record, thus reconciling oral history and science.

4) Allows researchers to avoid becoming overly loyal to archaeological classification systems common to their area

5) Offers a context for Aboriginal researchers to understand their material cultural heritage on their own terms.

Oral history guides my research goals. It is more than a means of locating potential archaeological sites. It animates a Heiltsuk worldview that begins with creation and includes stories describing intricate relationships to the marine environment and land, including use, occupancy, wildlife stewardship and placating supernatural beings. As modern residents in First Nation villages reflect on their ancient history, they engage in a dialogue with their ancestors with this time-honoured tradition (Yellowhorn 2002). This foundational knowledge is the most accessible form of oral history about a culture that has great time depth. Other types include songs and dances, as well as visual art, such as on house posts, totem poles, burial boxes, masks and accompanying regalia, and rock art, such as paintings and carvings (Waterfall 2001; Marsden 2002).

Heiltsuk stories transcend entertainment value. They impart valuable information to family members about crest figures, village locations, supernatural power acquisition, family names, and dance privileges. These stories follow a plot line and introduce characters who are the ancestral family members who possessed supernatural powers called 'nawalkv'. These spiritual helpers descended from the sky, emerged from the sea, exited the forest or returned from the land of the living dead. These places are called 'Naqvlai' or horizons. Family members who possessed 'nawalkv' could control movement between worlds in ritualized activity.

The late David Gladstone, a Heiltsuk historian, played a key role in revitalizing Heiltsuk potlatch ceremonies. He aided in reconstructing family lineages connected to

certain ancestral villages, which are now categorized as archaeological sites. Yet he cautioned Heiltsuk cultural leaders and families interested in rekindling their potlatch ambitions about relying too heavily on ethnographic accounts. He noted that an outside ethnographer such as Franz Boas, who recorded ancestral stories, could provide valuable historical information for Heiltsuk people who wish to decipher these texts about their cultural group. He also stated that this information appeared in fragments that would require an inside perspective for an accurate interpretation. In most cases, Heiltsuk people have difficulty reading this textual information because of the shallow and naive information it contains. Yellowhorn calls this process "rehabilitating the oral tradition" (2002: 118).

Interpreting oral narratives began in antiquity. A set of skills is required to accurately orate information about family lineages, relationships with other families and with supernatural figures. Heiltsuk consultants, or more appropriately elderly scholars, trace their ancestry through oral history to one or more of the tribal groups. In the oral narratives, ancestral figures either descended in various forms from the sky or migrated great distances from neighbouring lands to settle in permanent villages in Heiltsuk country. Other stories narrate incredible contests between the four main crest figures to determine who would be the eldest.

Heiltsuk ancestral narratives

The American anthropologist Franz Boas made brief visits to Bella Bella, first at Old Town (Fort McLoughlin – FaTa 4) at McLoughlin Bay in the 1880s and again in 1923 (Boas 1973: VII). His other recordings resulted from interviews aboard a steamer with an unnamed Rivers Inlet woman who claimed to be familiar with Heiltsuk stories

(Bouchard and Kennedy 2002: 479). In contrast to his detailed description of the ceremonial, social, economic, technological and ideological systems of the Kwakwaka'wakw tribal groups, this detail is notably absent in his ethnography on the Heiltsuk. Nonetheless, his ethnographic research led to the documentation of oral history from a few knowledgeable sources such as Andrew Wallace, Lucy Windsor, Samuel Jackson and Odzestalis about salmon fishing technology. Many of the Heiltsuk consultants have continued this legacy of sharing their oral history as participants in my research.

Following Boas, ethnographers, Ronald L. Olson (1955) and Philip Drucker (1948), both from University of California, Berkeley, conducted their own fleeting research from 1935 to 1949. Olson (1955:319) commented that the "time when a complete picture of Bella Bella culture could be reconstructed has long since passed". He attributed the lack of information that he sought to intensive assimilation pressures from missionary and hospital staff. He quoted Boas to underscore his opinion that "the whole culture of the Bella Bella has practically disappeared" (1928: preface, p.ix). He accepted as true this statement despite the fact that Heiltsuk informants proved to be worthy of their ancestors by sharing extensive knowledge on a lifeway that existed prior to their own. While their material culture resembled that ancient culture to a minor degree, they continued to orate histories that linked family lineages to villages and to resource use areas. At the time Olson and Drucker entered the Heiltsuk village, modernity was quickly enroaching and the activities associated with the old smokehouse days were slowing changing.

Pam Brown, a Heiltsuk researcher, investigated the old Heiltsuk fishery as part of her Masters of Arts thesis entitled *Cannery days: a chapter in the lives of the Heiltsuk* (1994). Her quest to give voice to the Heiltsuk about their involvement in the fishery and the role Heiltsuk women played at the Namu cannery was central to her thesis. Her work is notable as it captures an internalist sense of oral history documentation that stands in contrast to researchers who had their own agendas but required the aid of local people as informants (Black 1997; Harkin 1997; Storie and Gould 1973; Hilton 1990; Jones 2000).

Heiltsuk narratives with fish traps

Ancestral figures are not generic to all Heiltsuk and do not represent all villages or tribal groups. For example, the 'Eagle man' from Clatse Bay was an eagle with human face and feet, who descended from the sky and became ancestor of the Wuithitxv people. The 'Eagle-nosed' ancestral figure originated in Wuyalitxv tribal history on Goose Island. Cumqlaqs is an ancestress who made her home at Huyat village, from which a chiefly lineage and large village became their home. Hence, ancestral figures are a prominent motif in the culture's cognitive geography because a village is a group of people who share strong kinship ties of descent from that ancestor. For my thesis, I will present four surviving oral narratives containing references to fishing technology used to capture salmon. These four stories take place in the tribal groups of the Wuyalitxv and the Wuithitxv and were narrated by Heiltsuk elderly scholars whose lineages originated from these areas (Figure 6).

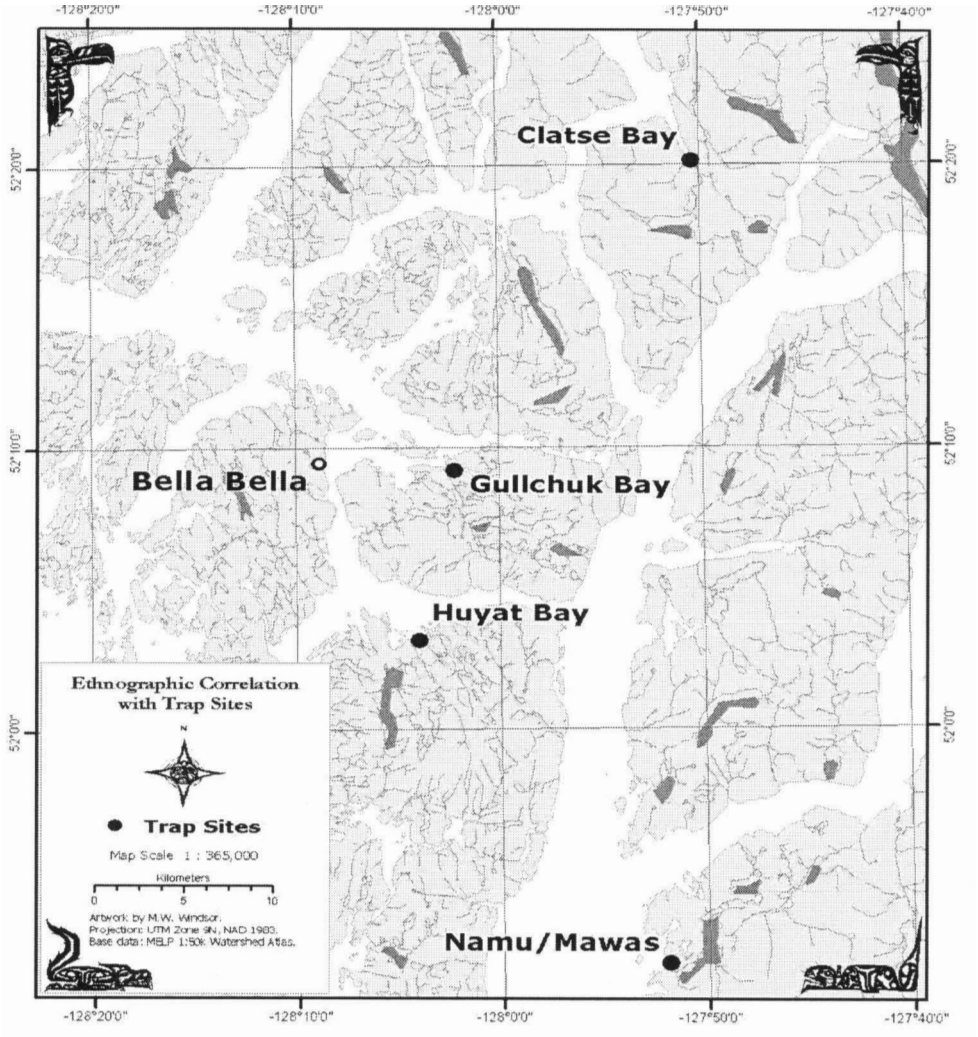

Figure 6 Locations of four surviving Heiltsuk ethnographic narratives with stone fish trap references.

The names of these fishing devices vary: salmon weir, salmon trap, stone salmon trap with convergent dams, stone salmon weir, and salmon weir with a winged dam (Boas 1973: 64-65). Although the primary marine species targeted is salmon, no exact reference identifies the salmon species except in one story. Ten of the stories mention salmon as primary target, two do not include salmon as part of their narratives. Six refer to traps, and four refer to interchangeable use of the traps/weirs for stone fish trap technology, but the main theme narrated stories familiar to family heritage. Mrs. Lucy Windsor, also known by her ancestral name as "Magaga", and Mrs. Emma Starr both raised numerous

grandchildren during the smokehouse days at Huyat (FaTa 11). Table 2 illustrates the Heiltsuk narratives, narrator, trap location and correlation to a Borden Number, type of trap described and their functions. The location, operation, use and seasonality were incidental to the overall narrative. Ownership is mentioned in a few stories, though more detailed accounts likely informed families of their fishing rights to specific traps.

Table 2 Heiltsuk ethnographic accounts with fishing technology references

Story	Narrator	Location/ Borden Number	Type	Function
Mawas (Storie and Gould 1968)	Angus Campbell	Namu (ElSx 1)	Stone	Salmon
Ravens Feast (Boas 1973:24-25	Omaiga	Gullchuk Bay (FaTa 2)	Trap	Salmon
Eagle man from La'latsa (Boas 1973:64)	Samuel Jackson Andrew Wallace	Clatse Bay (FbSx 3)	Trap	Salmon
Eagle man from La'latsa (Boas 1973:65)	Odzestalis Charley Windsor	Clatse Bay (FbSx 3)	Trap with convergent dams	Salmon
Tsumclaqs (Boas 1973:33-38)	Odzestalis	Huyat Bay (FaTa 11)	Tsekwa (trap)	Salmon (Sockeye)
Tsumclaqs (Boas 1973:41)	Mrs Windsor/ Charley Windsor	Huyat Bay (FaTa 11)	No	No
Tsumclaqs (Boas 1973:42)	Qalagoyewis	Huyat Bay (FaTa 11)	No	No
Emma Starr (Olson 1955)	Emma Starr	Could not locate	Rock weir	Salmon

The following section briefly offers a summary of the story content and context in relation to fishing technology to capture salmon. 'Raven's Feast' told by Omaiga is a short story that occurs at Q!eltsut, (FaTa 2), otherwise known by its anglicized name of Gullchuk (Boas 1973: 24-25). Two stone salmon traps are mentioned. A chief, who had

two wives, gives the larger of the two traps to his first wife who was his favorite, and the smaller trap to his second wife.

Four different narratives converge around the Eagle Clan of La'tstsa (Clalhja) story (Boas 1973: 64-66). Samuel Jackson provided two similar versions; Andrew Wallace also gave two similar versions; Odzestalis tells one version, as does Charley Windsor. Both Samuel Jackson and Andrew Wallace drew their strength or 'lhaxvai' from the ancestral narrative. Their family lineages originated in Roscoe Inlet. Samuel Jacksons' parents were members of the Eagle crest. Odzestalis' mother was from the village of Bella Bella and his father was from the Kwakwaka'wakw village of Fort Rupert. The ancestral narrative began at the village of Clatse Bay (FcSx 3) in Roscoe Inlet. The ancestral figure is a male eagle with a human face and human feet. There are three references to a salmon weir. Samuel Jackson's second version called, 'Galoyakume', mentions a salmon trap instead of a weir. His second version is much shorter and appears to summarize his first. Andrew Wallaces' narration includes a stone salmon weir, which has the name aai'xps and has fine white sand inside it. Wallaces' second version excludes details such as traps and weirs. The Odzestalis version contains a detailed name for a stone salmon trap, particularly that it had convergent dams, at the river mouth. Charley Windsor told the sixth version of this narrative. The context of this story resembles that told by Odzestalis except that Windsor identifies the fishing technology as a salmon weir with a winged dam. The ancestral figure of the narrative built the weir structure. The two separate narratives mention salmon as the main target for these traps or weirs, but neither goes go beyond identifying the traps for their function.

The ancestral narrative of Tsumqlaqs is a long story (Boas 1973: 35-38). There are four versions of this narrative recorded in *Bella Bella Tales*. Odzestalis told two versions. The first he told to Boas through his helper, George Hunt, in 1895, and the second version he related in 1920. Mrs Windsor and Charley Windsor also knew this story, as did Qalaqgoyewis, a Hauyatidex woman, who told the fourth version. Odzestalis mentioned a salmon trap located in a river and gave the Heiltsuk word for the trap as 'Tsekwa', which targeted sockeye (Boas 1973:35). One of the main figures of the narrative is Qalaqgoyewis, who created the watershed from the river in which the trap is located to the lake that drains into the sea, and the sockeye trap in the river. Twenty-five years later, Odzestalis narrated a similar version. Salmon trapping is featured in this story as in the first one. None of the Windsor family members mentioned traps or weirs. The Qalagoyewis story also lacks mention of a trap or weir.

Ronald Olson recorded Mrs. Emma Starr identifying 'rock weirs' at several locations (1955: 321-322). Unfortunately, Mrs. Starr did not elaborate on function, operation, age, construction, and seasonal use. Olson (1955: 345) recorded another short story about men building two stone salmon weirs at Kainet, which is located in Xai xais tribal territory. Many Xai xais family lineages reside in the Klemtu village and draw their ties to Kainet, which was a major village site. Unfortunately, the stone salmon traps are not mentioned again in the narrative. No details relate specifically the salmon species targeted, nor any other marine species such as herring, seals, shiners, perch and clams. Absent in the narrative are references to locations of these traps in relation to the village sites, seasonality, operation, use, any technical aspects, shape formation and age.

Although different stories feature specific ancestors, the common theme includes a sense of ownership in the chiefly lineages and their kin as mentioned in the 'Raven's Feast' story and in Mrs Starr's memory for the Huyat area. The story that took place in Clatse Bay was told by numerous narrators with the common theme of an eagle ancestor offering itself to be their crest, salmon as the main food supply and fishing technology to capture them. In June 2004, Heiltsuk youth guided by native language instructors, chiefs and elders, oral historians, and singers visited the Clatse Bay village that attest to the importance such ancestral sites to the Heiltsuk. As an emerging academic guided by their oral traditions and my own ancestral origins, I witnessed their quest to know more about the stone fish traps at this site (Figures 7 and 8).

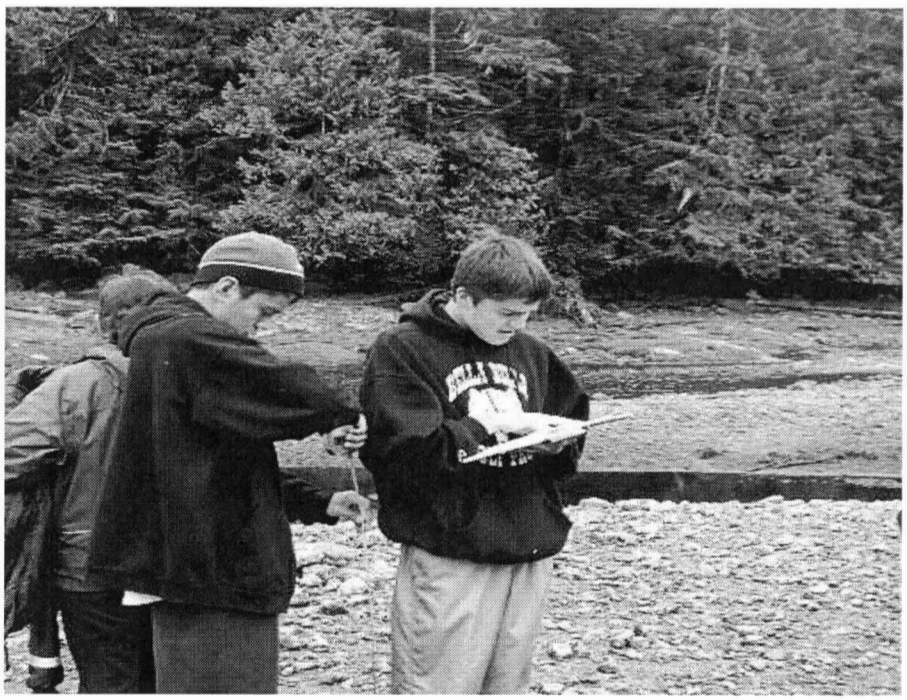

Figure 7 Heiltsuk youth, Clint Gerymn and Charlie Brown, appropriating the methods of archaeology and ethnology to help them understand their heritage at Clatse Bay (FcSx 3), home of the Eagle man ancestor in Wuithitxv.

Figure 8 William Housty, emerging Heiltsuk orator, led ancestral songs reminding the Heiltsuk delegation about their relationship to the village and the products of their ancestor's labor, the stone fish traps that were placed here in antiquity.

Chapter summary

Only four surviving narratives are available for review. This does not represent the total number of the narratives with fishing technology references. When these narratives were recorded, assimilation pressures of the potlatch ban, the residential schools era, language loss, change from subsistence fishery to commercial fishery, entrance into the cash economy and generational gaps were erosive factors. In addition, mistrust, lack of respect and suspicion of outside researchers played a big part. Nonetheless, the narratives express an ancestral connection with the first generation of Heiltsuk ancestors to salmon, stone fish traps and smoke drying. The story of Mawas provides a rarely used name, especially to the younger Heiltsuk generations and researchers, for the village of Namu. The story seems to imply the river was named Mawas, which always supported a vast run of migrating salmon. Angus Campbell

mentions the generosity of his ancestors to allow others to obtain their salmon supplies when salmon failed to return to their large, fast flowing rivers at the Skeena, Knight and Bella Coola.

Chapter Five:
Researching Heiltsuk Heritage

> Oral tradition - a valid part of scientific inquiry about the past, including archaeological investigation (MOU section 2.c 1995:54)

This chapter introduces the steps that I followed to ensure responsible and accountable research regarding Heiltsuk intellectual property rights and respect for the interview participants' oral history knowledge. As noted in the archaeological review, informants' knowledge supplements and complements written information and helps others learn about its archaeological signature. However, with my research on Heiltsuk stone fish traps, I am seeking primary research material where written evidence is lacking (Calliou 2004: 74; Yellowhorn 2002). Skepticism about the unreliability of human memory or the possibility of misunderstanding events as retold over a number of generations is always a concern because there is the belief that oral history is incapable of providing truth about the past (Calliou 2004: 77). I feel that archaeology introduces a complementary viewpoint that allows the Heiltsuk to appreciate our customs afresh (Yellowhorn 2002). In addition, this chapter includes a review of 42 provincial site inventory forms, introduces videography as a novel recording device and contains the descriptions of nine stone fish traps.

Heiltsuk approval and research guidelines

The Heiltsuk Tribal Council is responsible for the business and administration of Heiltsuk affairs. I presented my thesis proposal to the council, which consists of 12 elected members and a chief councillor who meet on a regular basis. My proposal focused on the methodologies, benefits to the Heiltsuk and the invitation to band members to contribute as a collaborator. Afterwards, they posed questions about stone fish traps, and suggested visits to specific stone fish trap sites and invitations to approach specific people for interviews and as boat operators. This last point proved to be invaluable advice since boat charter operators of my village possess incredible marine and landscape knowledge about salmon, streams, and stone fish traps.

On June 4, 2004, the Heiltsuk Tribal Council approved my research (Appendix A) to conduct interviews and archaeological research on Heiltsuk stone fish traps on the condition that I abide by research guidelines developed by the Heiltsuk Cultural Education Centre (Appendix B). My research falls under the auspices of a non-Heiltsuk organization, Simon Fraser University, which is a public education institution with its own concerns. Researchers are welcome in Heiltsuk traditional territory provided they commit themselves to observing certain rules of conduct. These guidelines were created on behalf of the keepers of the Heiltsuk culture who are the Himas (Chiefs), elders and advisors. The purpose of the guidelines is to ensure fairness and clarity for the researcher and his/her supporting institution and funding sources, especially when Heiltsuk people are the sources of information.

In brief, the guidelines ask for written proposals to be submitted in advance for their consideration, review and approval. Mutually agreed upon conditions between researchers and the Heiltsuk Tribal Council include respecting Heiltsuk input into research, enhancing the local repository, respecting intellectual property and the option of a resolution process for conflicts with Heiltsuk perspectives. The guidelines also request researchers to present the results of their research to the Heiltsuk advisory committee, Heiltsuk Tribal Council and to community members, especially the consultants or elderly scholars involved in the research. This provides Heiltsuk direct involvement and allows comments and suggestions and, of course, revisions if needed. By agreement, this local 'defence' took place on May 24, 2006, in Bella Bella with collaborators in attendance including the Himas and elders, several months prior to my academic defence at Simon Fraser University. By consensus, my defence was ratified and a letter sent to my supervising committee.

Informed consent form

There are three purposes for the informed consent form (Appendix C):

1) To provide information about the details of the research project such as purpose, confidentiality, time required, compensation, contact and consent;
2) To provide guidelines for the researcher; and,
3) To provide guidelines for the interview participants to address concerns and/or issues about the nature of the interview sessions.

Interview questions

I devised a series of open-ended interview questions (Appendix D) that consisted of the following topics: oral history/knowledge transmission, and location, function,

operation, language, construction, age and ownership of stone fish traps. These interrelated topics permitted the interview process to flow smoothly from one question to the next. For function, I created a generalized list of marine species, such as salmon, herring, cod, shiners and perch, porpoise, and clams. I elaborated and expanded upon the inquiry about salmon, asking the participants which salmon species were targeted such as pink, chum, sockeye, coho and spring. I followed that question with when (season), where (location), why (use), and how (operation). The interviews proceeded with each of the listed species. All interviews were conducted in English. To conduct the sessions in the Heiltsuk language, I would have required a translator. Due to lack of funds, I was unable to hire one or access one at short notice.

My thesis research gave me the opportunity to practise the tradition of transmitting oral history, while introducing novel methods. My consultants, all elderly scholars, provided in-depth information about the origins of their knowledge; when they learned it, why it was transmitted, and the location and context in which this transmission occurred. Some consultants listed several sources, whereas others only named one or two. This thesis does not present an exhaustive treatment of oral history sources; rather it samples Heiltsuk elders who recall memories of stone fish traps, and/or of smoke-drying salmon, and who participated directly in this customary fishery.

Documenting oral history

Several related documentation methods were useful guidelines when conducting interviews (Calliou 2004; Tobias 2000). These authors specifically provided guidelines to follow for both visiting and local researchers in all aspects of the interview process to assist First Nations communities' documenting vast knowledge, and to act as a guide

through the interviews. Responsible research is emphasized at both academic and community levels. Each suggests following a methodological format that includes pre-interview arrangements, background research, post-interview data analysis, cataloguing of evidence, final report writing and making data available for future use. They also address proper protocols for approaching elders (Calliou 2004:73-74; Tobias 2000).

Prior to each interview session, either I read the guidelines to the participants or they read it themselves. To proceed with the interview, a signature was needed indicating the consultant understood the guidelines and would abide by them. Consultants or elderly scholars were informed that all raw data would be added to the Heiltsuk Cultural Education Centre and to the Heiltsuk College resource collection and that it would provide audio and visual data for my research. Information from individual consultants is kept anonymous according to their wishes and direction. This portion provides them the opportunity to review and correct my analysis and interpretation of their oral history.

They set the time frame for interviews at roughly an hour and they had the option to stop the interview at any time for any reason such as tiredness, if they did not like the way the interview was preceding or if they felt they were being violated. As compensation, the interview participants received an honorarium of $30.00 per hour of tape-recorded interview, for which the Heiltsuk Cultural Education Centre generously donated funds. I interviewed twelve people, and the compensation amounted to about four hundred dollars. The contact portion instructs the consultants who to contact at the Heiltsuk Cultural Education Centre or at Simon Fraser University if they have any concerns about their rights as research subjects. All consultants agreed to sign the form,

which was copied in triplicate with the original going to the Heiltsuk Cultural Education Centre, one form to the consultant and one form to the researcher.

Selection of participants

There was no shortage of participants since oral history knowledge about stone fish traps is extensive throughout the village. The topic involves salmon, which continues to be a staple food supply, especially jarred, barbecued and half-smoked. The food fishery for all salmon species continues in modern form using gillnets, seines and rod and reel. Depending upon the season, salmon is processed, preserved and stored immediately. One can tell the type of season by the type of activity related to food gathering, processing and storage. My research was not restricted to those individuals who participated in the customary fishery using stone fish traps, or were observant of the process. I also invited participants who were the recipients of oral history from their older generations who told them about their personal reminiscences or were recipients too of oral knowledge. This was not surprising since the practice of oral history continues in modern times, especially when participating in food fishery activities or during local potlatch ceremonies. I also invited participants familiar with smoke-drying lean chum salmon due to the strong interrelationship between this elegant fishing technology, salmon and long-term storage of specific salmon species.

Limitations

Travel logistics, time constraints, sample size (many knowledgeable people), duplication of data, cancellations, and equipment failure were several limitations to the interview format. The Heiltsuk Cultural Education Centre supports an on-going

Traditional Use Study oral history project, which began in 1993. There was fear of duplicating previously collected data in addition to the TUS database. Although there were plenty of Heiltsuk familiar with stone fish traps, convincing them to consent to an interview was a challenging venture. Jim Jones interviewed some of the participants in the late 1990s, so I reassured them that this information elaborated and expanded on the existing data and any information they supplied still has tremendous value. Cancellation of interviews was a potential issue since a majority of interviews were conducted in Waglisla (Bella Bella) near the end of September 2004. During this time, preparations for smoking fish (salmon) were in progress. People were preparing catch them by net, clean them, and hang them on the racks inside the smokehouses, so ensuring an adequate wood supply was available and monitoring the fires were the main priorities. This last one is the key to smoking fish. If a fire stops smoking or goes out, the hanging fish pieces are susceptible to rot and waste. In the Heiltsuk village, this is especially frowned upon.

In addition, the village is a very busy place, especially now that Heiltsuk are initiating control of their economy, social development, and administration of their own institutions. Every day, a new event was taking place that usually required some potential interview participants to be pre-occupied and therefore inaccessible. Flexibility is always needed when dealing with personal interviews. The consultants dictated the time frame per interview. Finally, video equipment failure was a problem that I encountered during my first interview. A video machine temporarily jammed the master copy of my edited footage. Regardless, the interviews proceeded without the video footage with the expectation of interviewing consultants again at a future date. Although subsequent re-visits for interviews was a major suggestion, I sensed a polite frustration

from some of the participants, especially the ones who found themselves being targeted to share their knowledge. Others did not mind the process and even encouraged it. These were some of the conditions that could affect the quality of knowledge shared.

Four of the twelve interview participants cooperated with Jim Jones' (2000) oral history research on Heiltsuk salmon and stream stewardship and were highly recommended. They are Reginald Moody Humchitt, Carmen Humchitt, Don Vickers and Emma Reid. Their own peers recommended the remaining eight participants and of this group, my father became a participant when he happened to recognize and remember oral history about a stone fish trap in one of the published reports that I had left open. My experience reassured me that Heiltsuk continued to practice their customs, recite their narratives, share their recollections (oral history) and sing their songs (Harkin 1994; Hilton 1990; Waterfall 2001).

Collaboration

The Heiltsuk Tribal Council, Heiltsuk Cultural Education Centre, Heiltsuk College, Bella Bella Community School, and local volunteers invested substantial time, money and labour into my fieldwork and interview sessions. Furthermore, their protocol agreements with Heiltsuk Tribal Council, Hakai Parks and Ecotrust Canada made valuable contributions to my research. For example, Hakai Parks provided boat transportation and accommodation for my low tide survey in both August 2004 and 2005 (Figure 9). The staff rangers were able to visit other locations and to gain a better understanding of the Heiltsuk archaeological record especially the stone fish traps in this co-management area. In return, I submitted un-edited video footage, photographs and any field notes for their departmental files.

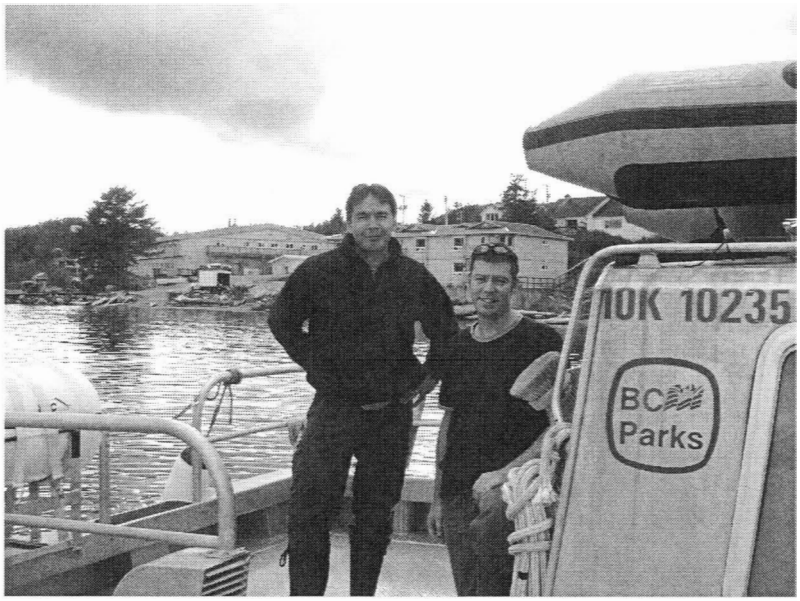

Figure 9 The author with HLCA Parks Area supervisor, Alan Hobler, prior to our departure to conduct collaborative field trips in the newly created co-management area.

In addition, Ecotrust Canada GIS staff contributed to this thesis with Heiltsuk map templates of tribal territory boundaries and stone fish trap distribution. GIS staff members Greg Kehm and Elaina MacDonald kindly offered their expert assistance with this particular endeavour since they had access to GIS software programs and the necessary skills associated with map production (Figure 10).

Figure 10 The author meeting with Ecotrust GIS staff Greg Kehm and Elaina MacDonald to discuss site mapping options.

Provincial site inventory review

The purpose of my visit to the Provincial Archaeology Branch at the Victoria office was to review the site inventory record of the 42 stone fish traps that I captured on video. This makes up 16.8 percent of the 250 total. Only 32 are listed in the inventory and one of them, FaSx 8 trap site in Evans Arm in Isdaitxv, is listed as a 'midden' and another trap at ElSx 1 (Namu) is not included in the original site form (Table 3). Of the ten sites not included in the inventory, seven lacked Borden Numbers. I recorded four of them in my study sample, and three sites were recorded. Hobler's (1988) report mentions H-88-6 (Triquet Island), H-88-7 (W.Manley Island) and H-88-11 (Spider Inlet) in his Appendix 2. Table 3 illustrates the information previous archaeologists used: Borden Numbers, site types, names of the researchers and their affiliations. I also included type and shape that appeared to be directly associated with function to capture specific species

of salmon. Absent in this list is correlation with salmon streams and salmon species migrating to each stream. Local knowledge could have provided this detailed information. Also, herring, cod, seals, shiners/perch, porpoise and clams are missing from this list of potential target prey species.

Table 3 Review of Provincial site inventory of 32 sites with their Borden Numbers, sites as named, including function, type , shape, researchers, and their affiliation

Borden Number	Site	Type	Shape	Researcher	Affiliation
FaTa 2	Fish trap	Beach	J-shaped	Hobler and Hester	Simon Fraser University/University of Colorado 1968
FaTa 11	Fishtrap	Beach	J-shaped	Payson Sheets	University of Colorado 1968
FaTa 34	Fish	Beach	Straight	Apland and Pomeroy	Simon Fraser University 1974
FaTa 37	Salmon	Beach	Semicircular	Pomeroy and Hester	University of Colorado 1968
FaTa 46	Fishtrap	Beach	Semicircular	Brian Apland	Simon Fraser University
FbTa3	Fishtrap	Beach	Semicircular		
FbTa 8	Salmon	Beach	Semicircular	Tony Pomeroy	University of Colorado 1970
FbTa 9	Salmon	Beach	Semicircular	Pomeroy and Masao	University of Colorado 1970
FaSx 1	Fish	Beach	Semicircular	Hobler and Stryd, Palmer	Simon Fraser University 1968
FaSx 8	Reported as Midden	Beach	Semicircular	E. Pearson	University of Colorado 1970
FbSx 2	Salmon	Beach	Semicircular	Hester and Pomeroy	University of Colorado 1968
FbSx 3	Salmon	Beach	Semicircular	Stoutamire and Pomeroy	University of Colorado 1969
FcSx 14 (a)	Fish	Beach	Semicircular	Pomeroy	University of Colorado 1970
FdSx 11	Fish	Beach	Semicircular	Rollins	Not listed
FaSw 1	Fish	Beach	Semicircular	Truell	Not listed
FaSw 2	Fish	Beach	Semicircular	Truell	Not listed
FaSw 3	Fish	Beach	Semicircular	Truell	Not listed
ElTa 3	Salmon	Beach, beach/stream	Straight	Not recorded	Observed by Capt L. Peck
ElTa 6	Fish	Beach	Semicircular	Pomeroy	University of Colorado 1971

Borden Number	Site	Type	Shape	Researcher	Affiliation
ElTa 8	Fish	Beach plus beach/stream	Funnel, U and straight	Pomeroy m.	University of Colorado 1971
ElTa 11	Fish	Beach	Funnel	Apland	Simon Fraser University 1974
ElTa 19	Fish	Beach	Semicircular	Pomeroy	Simon Fraser University 1974
ElTb 2	Fish	Beach/Stream	Straight	Pomeroy	University of Colorado 1971
ElTb 10	N/A	Beach	Straight	Pomeroy	University of Colorado 1971
ElTb 15	Fish	Beach	Straight	Apland and Pomeroy	Simon Fraser University 1974
ElTb 18	Fish	Beach	Funnel	Apland and Pomeroy	Simon Fraser University 1974
ElTb 20	Fish	Beach/stream	Funnel and U	Apland et al	Simon Fraser University 1974
ElTb 21	Fish	Beach/stream	Straight and U	Apland et al	Simon Fraser University 1974
ElTb 24	Fish	Beach	Funnel and straight	Apland and Pomeroy	Simon Fraser University 1974
ElTb 32	Fish	Beach/stream	Straight	Maxwell et al	HARO 1996
ElTb 33	Fish	Beach/stream	Variable	Maxwell et al	HARO 1996
ElSx 1	Salmon	Beach	Semicircle	Not recorded	University of Colorado 1971

Field visits

There were three purposes to my field trips.

1. To become familiar with the stone fish trap locations, type, and variation;
2. To conduct a video survey footage;
3. To create site maps of stone wall features and ecological contexts such as rivers and reserves.

Videography

Videography is the visual recording of an important event or story that follows a story line, often with full narration either by the author or by cast members. Video documentation is gaining wide use by First Nations people at local ceremonial events, such as potlatches, feasts and cultural gatherings. This modern ethnographic recording device can permanently and visually document the many important family rituals, protocols, dances and speeches for posterity. As an informal educational resource at the Heiltsuk Cultural Education Center, videos are popular items requested for viewing at later dates. Cultural historians and family members view them to augment their memories in preparing for potlatches.

Videography has seen limited use in archaeology (Morley Eldridge pers. comment November 21, 2005). It is not widely recognized as a field method in archaeology, mostly because its entertainment value is seen to supercede its educational application and quantifying the visual data is difficult. Employing it as a field method (Figure 11) is simultaneously challenging and invigorating because it is an appropriate medium to visually document trap sites to show to the interview consultants. A total of 42 stone fish trap sites were recorded by digital video camera (Figure 12).

Figure 11 **Photo of digital camera used during video survey in June of 2004**

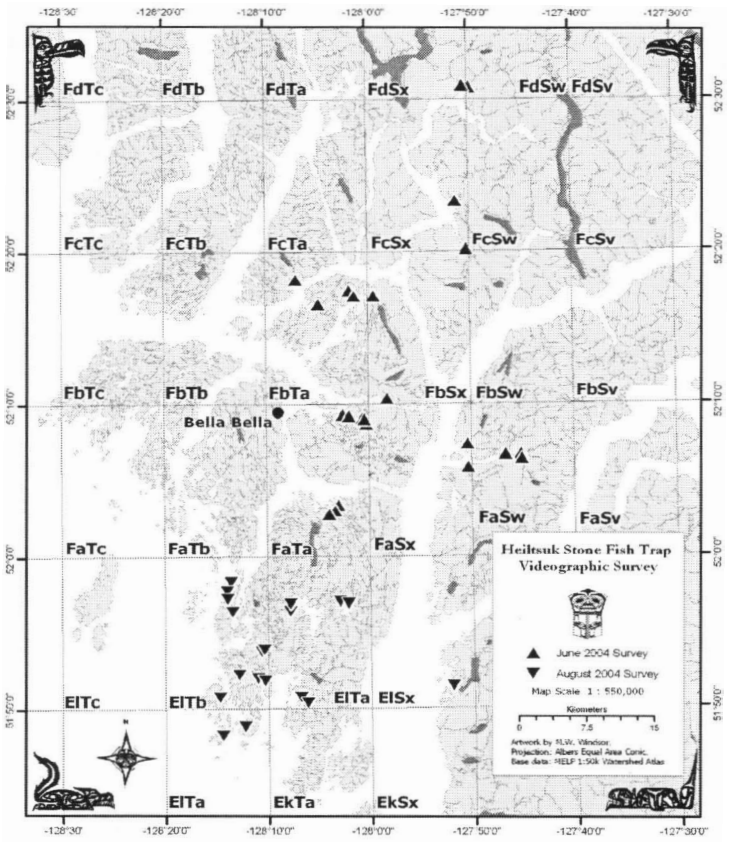

Figure 12 **Locations of forty-two sites in Heiltsuk traditional territory captured on digital video camera.**

During my first field trip in June 2004, I operated the digital video camera, but on my second field trip in August 2004, a local field assistant, Carl R. Humchitt (Heiltsuk GPS/GIS technician), who is familiar with archaeology, stream assessments and forestry surveys, took over the control of the camera on our trips to the outer islands (Figure 13). As a stream assessment surveyor, Carl assesses rivers, streams and creeks as salmon or non-salmon bearing. His anecdotal information transmits local knowledge of his observations of the Heiltsuk environment, and its flora and fauna.

Figure 13 Carl R. Humchitt, Heiltsuk GPS/GIS Technician, operating digital camera at ElTb 18, on August 1, 2004

The videography survey preceded the interviews. My familiarity with the archaeological record, especially stone fish traps, impressed upon me the importance of videotaping these trap sites in preparation for the interview sessions. Furthermore, from my review of Jones' (2000) oral history transcriptions, I learned of other locations that

could be discussed. However, I particularly focused on three locations: two trap sites in Gullchuk Bay (FaTa 2 and FaTa 46) and a trap site in Huyat Bay (FaTa 11).

Table 4 June 2004 Videographic survey results

Site	Borden Number	Location	Tribal group	Video capture	Type
1	FaTa 71	GB coho river	Wuyalitxv	0 -.38 seconds	Beach
2	FaTa 2	GB Indian Reserve #9	Wuyalitxv	0.39 – 4:30	Beach
3	FaTa 70	GB sockeye river	Wuyalitxv	4:31	Beach
4	FaTa 46	GB Fish Ladder	Wuyalitxv	5:05	Beach
5	FaTa69	GB coho river	Wuyalitxv	8:20	Beach
6	FbTa 8	Deer Pass	Wuithitxv	8:48	Beach
7	FbTa 59	Deer Pass	Wuithitxv	11:04	Clam Garden
8	FbSx 2	Deer Pass	Wuithitxv	11:45	Beach
9	FcSx 3	Clatse Bay Indian	Wuithitxv	13:39	Beach
10	FcSx 14 (b)	Shack Bay	Wuithitxv	18:10	Beach
11	FdSx 11	Quartcha Bay	Wuithitxv	19:33	Beach
12	Unrecorded	Rainbow Island	Wuyalitxv	22:42	Beach
13	Unrecorded	Gunboat Pass	Wuyalitxv	23:33	Beach
14	FaSx 1	Port John	Yisdaitxv	26:25	Beach
15	FaSx 8	Evans Arm	Yisdaitxv	28:51	Beach
16	FaSw 1	Evans Arm	Yisdaitxv	35:20	Beach
17	FaSw 2	Evans Arm	Yisdaitxv	36:30	Beach
18	FaSw 3	Evans Arm	Yisdaitxv	37:42	Beach
19	FaTa 34	Huyat	Wuyalitxv	40:02	Beach
20	FaTa 11	Huyat Indian Reserve #9	Wuyalitxv	53:42	Beach

The 42 samples with Borden Numbers, tribal groups, trap amounts, their type and the video capture for cataloguing purposes are itemized in Tables 4 and 5. Two sites

recorded in June 2004, one at Rainbow Island and one in Gunboat Passage (nos. 12 and 13 in Table 4), were not listed in the provincial archaeology branch inventory. Therefore, they represent new sites resulting from my research (Table 4).

Table 5 August 2004 Videographic survey results

Site	Borden Number	Location	Tribal group	Video capture	Type
21	ElTb 15	McNaughton Island	Wuyalitxv	54:30	Beach
22	ElTb 18	McNaughton Island	Wuyalitxv	57:15	Beach
23	ElTb 24	McNaughton Island	Wuyalitxv	1:02:56	Beach
24	ElTa 11	Kinsman	Wuyalitxv	1:06:56	Beach
25	ElTb 21	S. Kinsman	Wuyalitxv	1:09:30	Beach
26	ElTb 20	S. Kinsman	Wuyalitxv	1:11:05	Beach
27	ElTa 19	NE Kildidt Lagoon	Wuyalitxv	1:12:13	Beach
28	ElTa 6	N Kildidt Lagoon	Wuyalitxv	1:14:40	Beach
29	ElTa 8	NW Kildidt lagoon	Wuyalitxv	1:15:13	Stream
30	ElTb 32	NE Spitfire Channel	Wuyalitxv	1:25:18	Beach
31	ElTb 33	NE Spitfire Channel	Wuyalitxv	1:28:51	Beach
32	ElTb 2	NW Spitfire Channel	Wuyalitxv	1:32:40	Beach
33	ElTa 3	Watt Bay	Wuyalitxv	1:38:30	Beach
34	H-88-6 (Hobler 1988)	Triquet Island	Wuyalitxv	1:44:16	Beach
35	H-88-7 (Hobler 1988)	W. Manley Island	Wuyalitxv	1:47:19	Beach
36	H-88-11 (Hobler 1988)	Spider Island	Wuyalitxv	1:48:16	Beach
37	FbTa 9	Return Channel	Wuyalitxv	1:52:00	Beach
38	FbTa 3	Kwakiusdis	Wuyalitxv	1:53:08	Beach
39	ElTb 10	Hnsdakv	Wuyalitxv	1:57:10	Beach
40	New site	Bremner Bay	Wuyalitxv	2:01:48	Beach
41	FaTa 37	Jane Cove	Wuyalitxv	2:03:00	Beach
42	ElSx 1	Namu	Wuyalitxv	2:04:55	Beach

My video survey of August 1- 4, 2004, when I recorded 22 sites (Table 5), was made possible with boat accommodation and transportation from Hakai Luxvbalis Conservancy Area (HLCA) staff rangers, Alan Hobler and Jim Glenn. Sites 34, 35 and 36 were not recorded in the provincial site inventory, although Phil Hobler listed them in Appendix 2 of his report (1988). Site 40, a beach trap site, is a new site that needs to be recorded.

In addition to its strong ethnographic context, video documentation of stone fish trap sites suddenly became a valuable resource management tool for decision makers in the Heiltsuk Tribal Council and for the Provincial Archaeology Branch. The video footage proved its worth for such purposes as co-management in fisheries, as visual aids in school curriculum at all levels and as an important archival document portraying traditional use information extant among Heiltsuk members. It also served important archaeological benefits as a visual mnemonic aid. It captured details of the site that I could view on the video at my leisure, show at presentations, or review frequently.

For mapping purpose, I narrowed the sample from 42 to nine beach stone fish trap sites that are known among the Wuyalitxv tribal group (Figure 14). My small sample size for site mapping was based upon the results of interviews with 12 Heiltsuk consultants who identified three sites as traps that were used by Heiltsuk families in the early 20th century, and correlated salmon species to three streams where a trap is located. Of the remaining three sites, one Heiltsuk consultant suggested it was a herring trap in the outer coast and by inference, I mapped another similarly shaped trap and; finally, the last trap has a unique wall morphology that seems to have been the result of deliberate construction rather than natural processes.

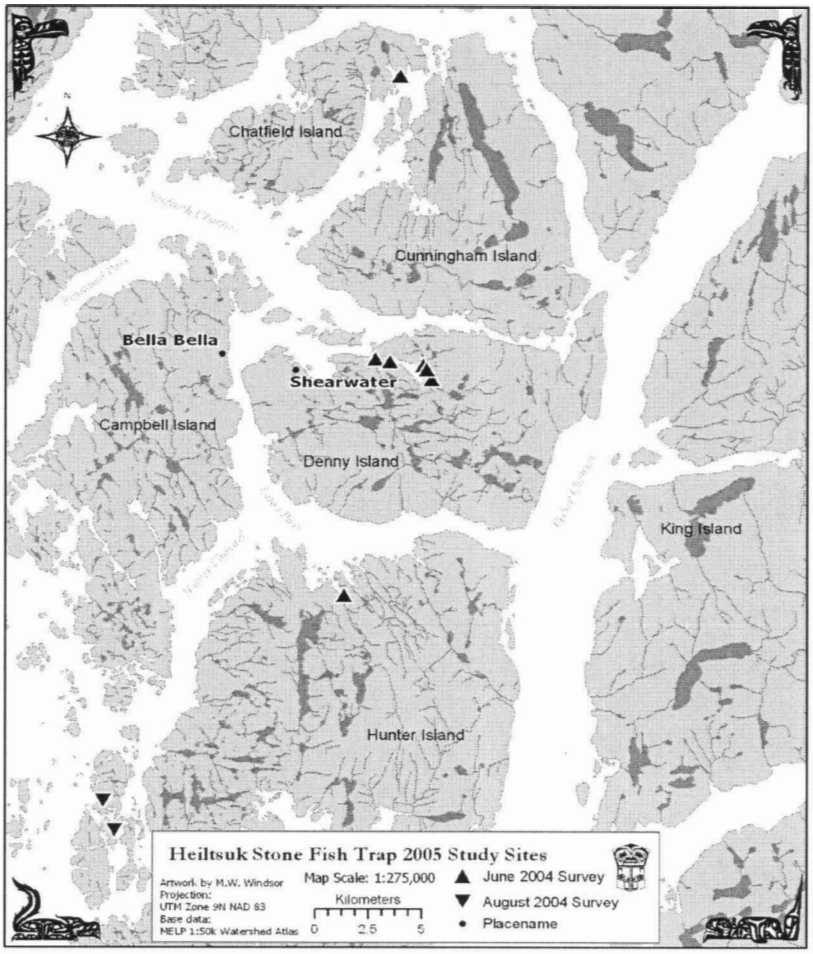

Figure 14 Locations of nine beach stone fish trap sites

Mapping stone fish traps

My mapping program featured total station technology to construct detailed stone fish trap features such as length, width, height, openings and elongated wall arms (Figure 15). This technique accurately captured ecological context with features such as freshwater sources, high tide marks, stone clusters, and any wooden stakes hammered into the mud. Mapping stone traps required its own plan of action since each poses challenges to deal with, such as length of low tide levels, variable weather conditions, and travel delays from the village to the sites. Tide levels in the mainland inlets, inner waterways and the outer islands vary slightly.

Figure 15 Mike Green of MGTS setting up his total station at ElTb 18 on August 18, 2005. Funnel-shaped beach stone fish trap site is located in the background.

Mapping took place during extreme low tides in the early morning hours of each day when the trap walls were completely dry and conveniently exposed. Arriving at the trap sites at least one hour prior to low tide or at the predicted low tide level was extremely important. This allowed two to three hours to obtain my mapping objectives. The Canadian Tide and Current Tables website provided hourly tide level predictions for each day that enabled us to organize our limited time at each trap site. Because of the detailed nature of the mapping objectives, only one trap location per morning low tide was accomplished.

Chapter summary

Appropriating the methods of archaeology benefited my oral history research to learn about stone fish traps. I felt acquiring visual supporting data would enhance the interview sessions. Conducting a video documentary revealed its potency when I showed

the footage of my field trips to visitors at my Aunt Madi's house in June, August and September 2004. Its application as an archaeology field method also proved useful for resource management. The Heiltsuk have gone to great lengths to develop research guidelines to aid researchers and to monitor and protect the material culture of their ancestors. The discussions usually resulted in placing more dots on the Heiltsuk geographic map of stone fish trap sites. Because of my familiarity with the Heiltsuk archaeological record, I was able to either corroborate or refute their discoveries or feel elated that a potential new site awaited observations.

My main concern in the interview process was to ensure the utmost respect for the people sharing their knowledge, recollections, and observations. I wanted to conduct the interview sessions in an organized format. I felt that I had obtained their respect since I am a mature Heiltsuk student in both academia and Heiltsuk oral history. I have assisted many of them as an orator, singer, dancer and historian at local potlatches and large cultural gatherings. For my thesis, I was able to combine my academic and oral history research on their behalf.

The interview results benefited the Heiltsuk and myself equally. As an academic, scholarly research serves the Heiltsuk community. However, as an academic, I do realize some benefits too with this research. I gain recognition by my peers and academic mentors. I gain the opportunities to conduct research for the Heiltsuk people for future collaborative efforts with both local entities and outside research individuals and groups. I anticipate my thesis will become a useful guide for outside researchers to help in their academic aspirations while respecting the material culture created by the ancestors' of the modern Heiltsuk populations.

Chapter Six:
Heiltsuk Oral History and Archaeology

Introduction

This chapter introduces my 12 Heiltsuk collaborators, our oral historians, or elderly scholars. I connect their testimonies to nine beach stone fish trap sites that I mapped. I follow this with a discussion about their observations of stone fish trap use at smokehouse sites in Gullchuk and Huyat bays.

During the interviews, I noticed they used 'fish' in a generic sense to designate salmon species - pink, chum, sockeye, coho and spring, but they used specific names for cod, halibut, ooligans, shiners and perch. Also, food fishing meant catching salmon, and included most other fish species. This probably led to confusion and speculation by early researchers, who undoubtedly heard similar terminology and led to the introduction of the phrase, stone fish trap.

I included a short biography of each consultant, who is listed according to tribal group in respect to his or her family lineal origins. Each participant is the successful product of his or her ancestors' knowledge. They regularly cited their sources and often correlated knowledge to other archaeological sites that make up the material culture history of the Heiltsuk. All have participated in both the commercial and food fisheries in various capacities. Nine of the participants live in Bella Bella and three call Vancouver their home (Figure 16).

Figure 16 The author with three of the twelve Heiltsuk interview consultants from left to right: Billy Wilson (Mnigalis), Edward White Sr (Haimadzalas), and Reginald Moody-Humchitt (Woyala).

Wuyalitxv – Outside People

Reginald Moody Humchitt

Reginald Moody Humchitt (Woyala or Flowing Outward) is the current hereditary head chief of the Heiltsuk Nation. He has influential relationships with head chiefs of the other four tribal groups. His family ancestry originates from Huyat (FaTa 10). His father was Charlie Moody, who shared his knowledge with James Hesters' Bella Bella Prehistory project in 1968 and was listed on archaeology site forms as one of their main informants. Like his late father, Reginald shared memories about stone fish traps function, use and operation at the Gullchuk Bay trap site (FaTa 2). He shared additional information about other salmon trap locations and about the operation and use of a herring trap that has not been recorded, only reported. He cooperated with Jim Jones (2000) in the oral history research on Heiltsuk salmon stewardship.

Edward Martin Sr.

Edward Martin was 73 when we sat down for our interview. Unfortunately, he joined his ancestors in the spirit world on November 27, 2005. He attributed his subsistence and linguistic education to his grandmother, Emma Starr, who shared her knowledge with ethnographer Ronald Olson in 1935 and 1949. Edward was from the village of Huyat (FaTa 10), where he grew up from 1935 to 1940. His family drew their strength from other important Wuyalitxv places such as Nulu (ElTb 1), Spider Island, and Goose Island. He held a high-ranking hereditary chieftainship (Himas) as Gviustijas ('where the person comes out from'). Ed's ancestry is rooted in the story of Tsumqlaqs (Cumqlaqs). At Huyat, he observed his immediate and extended family members catch, process (clean) and smoke-dry thousands of lean chum salmon for their winter food supply. Ed described herring trap operations and criteria for locating them, and correlated specific salmon to their natal streams, where a salmon trap can often be found.

Peggy Housty

Peggy is a high-ranking woman, an Umaqs, whose ancestral name comes from the story of Tsumclaqs (Cumqlaqs). The name translates as 'house beam supporting figure'. Peggy and her family members met with me to discuss their knowledge about this ancestral narrative and granted me permission to use her story in my research. Peggy shared her memories about the operation of the salmon trap (FaTa 2) at Gullchuk Bay.

Qvuqva' aitxv – Calm Water People

Carmen Humchitt

Carmen Humchitt (Qa'ait) is the hereditary chief (Himas) of the Qvuqva'aitxv. He is 75 years old. He traced his ancestry to villages at Qaba (FbTb 4), Gale Creek (FbTb 13) and Gayaxti (FbTb 3). Philip Drucker (1943) conducted a minor excavation at Qaba (FbTb 4) in 1938 as part of his archaeological research. In the early 1930s, as a child, Carmen observed his family using a stone trap to catch chum and pink at Kunsoot River at the head of Gullchuk Bay (FaTa 2). He is aware of a herring trap location and described its operation. Carmen's knowledge is extensive about seasonal seafood gathering for shellfish, bottom cod, and herring. Carmen participated in Jim Jones' (2000) oral history research on Heiltsuk salmon stewardship. Carmen correlated specific salmon to their natal streams where a stone fish trap can be found.

Don Vickers

Don Vickers' ancestry is from the Qvuqva'aitxv. He is related to the Qa'ait family. He grew up under the watch of his wise granny, Magaga (Lucy Windsor), while living in a small smokehouse camp at Huyat (FaTa 10) in the early 1930s. Lucy and her husband Charley Windsor shared their knowledge with ethnographers Boas (1973:41) and Olson (1955). Don noted the location and function of several herring traps in the southern Wuyalitxv territory. He correlated salmon species to numerous streams where a stone fish trap can be found. He witnessed a non-First Nations fishery officer dismantle a stone fish trap at Huyat (FaTa 10) and shared his painful experience about an imbalance of authority and statutory appropriation of streams and salmon care. Don shared his knowledge with Jim Jones (2000) on his research about Heiltsuk salmon stewardship

Emma Reid

Emma Reid grew up at Huyat (FaTa 10) during the smokehouse days of the 1950s. She lived in a sectioned smokehouse with an extended family network. She recalls Don Vickers' family living in the same house and other families living in close proximity to them. Her main recollections were about salmon processing and storage after modern conveniences were introduced. Her family gathered other food items such as berries, fruits, and Indian medicines along the riverbanks and she fondly recalled cleaning salmon eggs in the river. During our conversation, Emma shared information about smaller stone fish traps. These traps are no longer visible along the shorelines. Emma shared her knowledge with Jim Jones (2000) on his research about Heiltsuk salmon stewardship.

Yisdaitxv – People of Isda

Fred Reid

Fred Reid is from the Yisdaitxv. He is a Heiltsuk historian whose local knowledge base is extensive. His attention to detail of names, dates, places and relationships to land, water and people are his strong points. Fred identified many Heiltsuk elders who were his sources of knowledge. Many of them were alive when researchers such as Philip Drucker and Ronald Olson visited the Heiltsuk village of Bella Bella, but they were not interviewed. Fred correlated salmon species to Heiltsuk rivers, streams and creeks. Stone fish traps are found at many of these locations. He shared insights about marine subsistence locations, fishing methods, food storage and resource use and ownership. He shared his recollections about the excavations at Namu (ElSx 1) and Hnsdakv (ElTB-10), and acted as an interpreter during interview sessions for Tony Pomeroy in 1974. Fred provided the Heiltsuk name, Hun!suk (Hnsdakv), for ElTb 10 (Carlson 1976:103).

and acted as an interpreter during interview sessions for Tony Pomeroy in 1974. Fred provided the Heiltsuk name, Hun!suk (Hnsdakv), for ElTb 10 (Carlson 1976:103).

George Housty

George Housty held the chiefly name, Naci, which means 'wisdom place'. George now carries the family name, Dukaiaisla, 'looking either onto or out from shore'. George shares this high-ranking name with one of his grandsons, William Housty, who has emerged as a skillful oral historian and is quickly becoming a leading cultural historian. George shared knowledge about the operation of a Gullchuk Bay stone fish trap (FaTa 2) at Kunsoot River. George's family member, Andrew Wallace, shared an ancestral story from Clatse Bay (Boas 1973:65)

Edward White Sr

Edward, my father, is sixty-five years old. He holds a chief name (Haimadzalas or destined to be chief) that originated from his Martin lineage. His name is associated with the Heiltsuk village of Port John (FaSx 1) in Yisdaitxv terriory. Through his kin ties to Gviustijas (the late Edward Martin Sr.), he traces his family ancestors to Huyat (FaTa 10), Nulu (ElTb 1) and Goose Island. Edward traces his lineage through four generations to his great-grandfather, Jacob White Sr, (Bala'au). His grandfather, Jacob White Jr, (Adia'au), generally shared his oral history knowledge with Fred Reid and Don Vickers. Edward is very well informed about the salmon smoking process and has an acute relationship with his environment as a result of his education as a child in the subsistence seafood gathering. Later in his life, he participated in the commercial fishing industry. He

attributes his familiarity with the central coast to his uncles, grandfathers and to his maternal grandmother, Annie Larsen.

Wuithitxv – People of the Inlet

Bobby Jackson

Bobby Jackson is 75 years old. His family smoke-dried both pink and chum salmon in October and November at Kadjusdis River (FaTa 46) and Neekas (FcTa) where a stone fish trap can be found. He is also familiar with the salmon traps (FcSx 3) at Clatse bay in Roscoe Inlet. His grandfather, Samuel Jackson, participated with Franz Boas, who recorded the Eagle man from La'latsa (Clatsa) story (Boas 1973:64).

Xai xais – Downriver People

Bill Wilson

Bill Wilson (Mnigalis or only one at a place) traces his ancestry to the Xai xais. When he was six or seven years old, around 1951/52, his family made frequent day trips or weekend trips to Huyat (FaTa 10) in September and October. Like Emma Reid's family, Bill's family did not use the long stone fish trap (FaTa 11). His family members built smaller salmon traps near the grassy flats. These traps are no longer visible and thus have not been recorded. Bill recalled fond memories of assisting his grandmother, Magaga (Lucy Windsor), who directed all smokehouse activities, including salmon trap construction and dismantling, smoke-drying and jarring large quantities of salmon. Lucy Windsor narrated stories to the ethnographers Franz Boas and Ronald Olson.

Ooweekeno – Rivers Inlet Nation

Evelyn Windsor

Evelyn Windsor (Nuakawa or wise one) is a high-ranking woman with the title of an Umaqs, from Rivers Inlet of the Ooweekeno Nation. She is a certified linguist and native language instructor with considerable knowledge of culturally related topics such as potlatch ceremonies, oral history, family genealogies, medicinal plants, place names, salmon harvesting and processing and seafood subsistence gathering. She has worked with ethnobotanist, Nancy Turner and other researchers such as anthropologist Michael Harkin and linguist John Rath. Evelyn is familiar with wooden fish weirs and stone fish traps in the Rivers Inlet Lake and shared memories about her late husband, Marshall Windsor, who spent his youth at Huyat (FaTa 10). Before his death, Marshall participated in Jim Jones' (2000) research on Heiltsuk salmon stewardship. Evelyns' perspective on the Namu (ElSx-1) place name, Mauwash, provides insight about the significance of owning a productive salmon stream and the willingness of that Heiltsuk family lineage to generously share their resources – stone fish traps, stream, salmon and possibly smokehouse use. She differentiated between Heiltsuk small streams and the much larger river, the Whonnock that drains from the Ooweekeno Lake.

Salmon stream correlation with stone fish traps

Initially, my objectives directed me to learn about function, whether the target was salmon, herring, seal, cod, shiner/perch, porpoise or clams, and to focus on technical details about stone fish traps. My literature review suggested these prey species may have been targeted (Jones 2000). Pomeroy (1980:104) wrote, "there is some evidence that seals were sometimes lured into these traps". However, he doesn't specify which of the

140 traps that he observed to function in this manner. Therefore, in my interviews, I included seals. For the Nuu-chah-nulth, Drucker recorded shiners and perch as potential prey species in 'low stone weirs on shallows dried at ebb tide for shiners and similar small fish' (Drucker 1951:19). From inference, this information has been applied to the Heiltsuk archaeological record. One Heiltsuk historian, Eva Starr, mentioned a rock wall of some sort that was used by family members to trap porpoise at one of the outer island campsites in the Qvuqva'aitxv territory. Recent research on the Kwakwaka'wakw revealed 'clam gardens' walls by local members who shared this information to outside researchers but no publications have been available for review on this topic. Nonetheless, by comparison, clam gardens were suggested as possible features located in Heiltsuk traditional territory. In fact, some of the trap sites may have been converted into clam gardens as long-term siltation created desirable habitation conditions for clam growth. Therefore, I included the above into my question outline.

After reviewing the Heiltsuk interview data, salmon stood out as the main prey species, followed by herring. Seals, cod, shiner/perch, porpoise and clams were not considered primary targets and may have been trapped incidentally (Table 6). Edward Martin Sr, Fred Reid, Reginald Moody Humchitt and Carmen Humchitt are aware of trap locations for herring and shared insightful information about their operation and wall morphology. Unfortunately, I was unable to visit these traps to capture footage of them or to include them into my site mapping.

Table 6 Beach stone fish trap correlation with function by Heiltsuk consultants

Consultants	Salmon	Herring	Seals	Cod	Shiner/perch	Porpoise	Clams
Edward Martin Sr	Yes	Yes	No	No	No	No	No
Carmen Humchitt	Yes	Yes	No	No	No	No	No
Evelyn Windsor	Yes	No	No	No	No	No	No
Don Vickers	Yes	Yes	No	No	No	No	No
Emma Reid	Yes	No	No	No	No	No	No
Fred Reid	Yes	Yes	No	No	No	No	Yes
Reginald Moody Humchitt	Yes	Yes	No	No	No	No	No
Bill Wilson	Yes	No	No	No	No	No	No
Peggy Housty	Yes	No	No	No	No	No	No
George Housty	Yes	No	No	No	No	No	No
Bobby Jackson	Yes	No	No	No	No	No	No
Ed White Sr	Yes	Yes	No	No	No	No	No

I also concentrated on learning the details about the operation of a stone fish trap to catch marine species. For example, I wanted to discern the height of walls when traps were still actively used and how much of the area inside trap walls was used. After reviewing the oral history data, I soon realized the Heiltsuk consultants focused their attention on smoke house activities; they also expressed their conservation ethic, oral history transmission from older generations, and correlating salmon species to streams. They also revealed their frustration with outsider interference in monitoring their resources and heritage sites within Heiltsuk traditional territory. For the remainder of the

thesis, I will focus on these topics rather than on the operation and technical details of stone fish traps.

Table 7 depicts the salmon seasonal runs to Heiltsuk streams and the preferred method of preparation, either for long term for winter use or if they were prepared for immediate consumption. However, the oilier salmon such as sockeye and coho could be smoke dried but would have required more work. If the smoking process was not fully completed, there was the risk of the food product becoming mouldy and rotten and unfit for consumption. This is based upon a consensus from the oral historians on practices prior to the introduction of modern conveniences such as deep freezers, gas boats, drag seines and jarring and canning methods. As for the salmon migrations, some runs began earlier or occurred later than others at specific streams.

Table 7 Heiltsuk salmon seasonal migrations and salmon smokehouse preparation and storage techniques prior to the introduction of modern conveniences.

Salmon	Migration Season	Technique	Consumption
Pink	Late August, September and into October	Smoke dry	Winter supply
Chum	September, October and into November	Smoke dry	Winter supply
Coho	Late Fall - October	Half smoke	Immediate
Sockeye	Spring – June	Half smoke	Immediate

Tony Pomeroy boldly stated that "one can predict fairly accurately where fish traps will be found. Almost every stream, small or large, has some type of stone fish trap associated with it" (1976:166). Considering over 1800 freshwater sources empty into Heiltsuk waters, his prediction was an exaggeration. Only 250 traps have been documented. I can only surmise that when he means fish, he actually referred to salmon

as did the participants in my interviews. Using the generic term, fish, could lead to many speculations about the actual function of traps found at these rivers, streams and creek sites. In addition to salmon, fish includes ooligans, herring, cod, halibut, shiners and perch. Therefore, by inference alone, the traps could theoretically have been used to capture all types of fish. In order to resolve this speculation, in my interviews, I included all the fish types and found that traps in question were not multifunctional to capture all fish, and that fish actually meant salmon. All interview participants used the common term, fish, in reference to salmon and I was careful to ensure that they actually specified salmon. All other researchers had noted this pattern of targeting salmon. For example, Ronald Olson concluded from his research that all people of Hunter Island secured "most of their salmon in Kildidt lagoon" (Olson 1955: 320-321). However, he failed to list which people of Hunter Island trapped which salmon species. According to Heiltsuk consultants, there are coho and sockeye streams on the northwest side and chum on the northeast side of Kildidt lagoon.

Table 8 illustrates the extent of this correlation of the 42 sites that form my video footage. The following participants provided this correlation for each site and the target species. I used the following abbreviations: P= pink, Ch= chum, Co= Coho, Sp=spring and So=sockeye. This represents the correlation of salmon to rivers, streams and creeks. In areas with no data, this means that the consultants only provided salmon and stream correlations when asked about them. Therefore, this table does not attempt to capture the full extent of their knowledge in this capacity. My main objective was to specifically asked my consultants questions about stone fish trap operation and about their technical aspects. Carmen Humchitt, Reginald Moody Humchitt, Peggy Housty and Bobby

Jackson contributed data about the Gullchuk Bay traps. Don Vickers, Bill Wilson, George Housty, Edward Martin Sr, Evelyn Windsor, Emma Reid related their knowledge about the Huyat Bay traps. Fred Reid and Edward White Sr, answered my questions about stream and salmon correlation.

Table 8 Salmon, stream and Borden Number correlation from 8 Heiltsuk sources.

Borden Number	Edward Martin	Carmen Humchitt	Don Vickers	Fred Reid	Reginald Moody Humchitt	Bill Wilson	Bobby Jackson	Edward White Sr
FaTa 2 - Kunsoot River		P, Ch			P, Ch, Co			P,Ch
FaTa 11 - Huyat	P, Ch, Co		So,	So	P, Ch, So, Co	P, Ch, So, Co		P, Ch, So, Co
FaTa 34	Co							Co
FaTa 46		So, Co			So		Ch, Co, So	P, Ch, So, Co
FaTa 69								So
FaTa 70	Co				Co			Co
FaTa 71								Co
FbTa 3								P, Ch, So, Co
FbTa 8								P, Ch
FbTa 9								P, Ch
FbSx 2								Ch
FcSx 3					P, Ch			P, Ch,
FdSx 1								P, Ch,
FaSx 1				Ch	P, Ch, So, Co			P, Ch, So, Co
FaSw 1				Ch				Ch

Borden Number	Edward Martin	Carmen Humchitt	Don Vickers	Fred Reid	Reginald Moody Humchitt	Bill Wilson	Bobby Jackson	Edward White Sr
FaSw 2				Ch				Ch
FaSw 3				Ch				Ch
ElTb 2				So, Co				So, Co
ElTb 10								So
ElTb 15								So, Co
ElTb 18								So
ElTb 20								So, Co
ElTb 21								So, Co
ElTb 32	So, Co		Co	So, Co				So, Co
ElTb 33	So		Co	So, Co				So, Co
ElTa 3								Co
ElTa 6	Ch							Ch
ElTa 8	So, Co		Co	Co				So, Co
ElTa 19	Ch		Ch					Ch
ElSx 1 (Namu)					P, So			P, So, Co

Heiltsuk consultants identified the outer islands of the Wuyalitxv as having more sockeye and coho creeks and the inner waterways and inlet to have all species especially pink and chum (Figure 17).

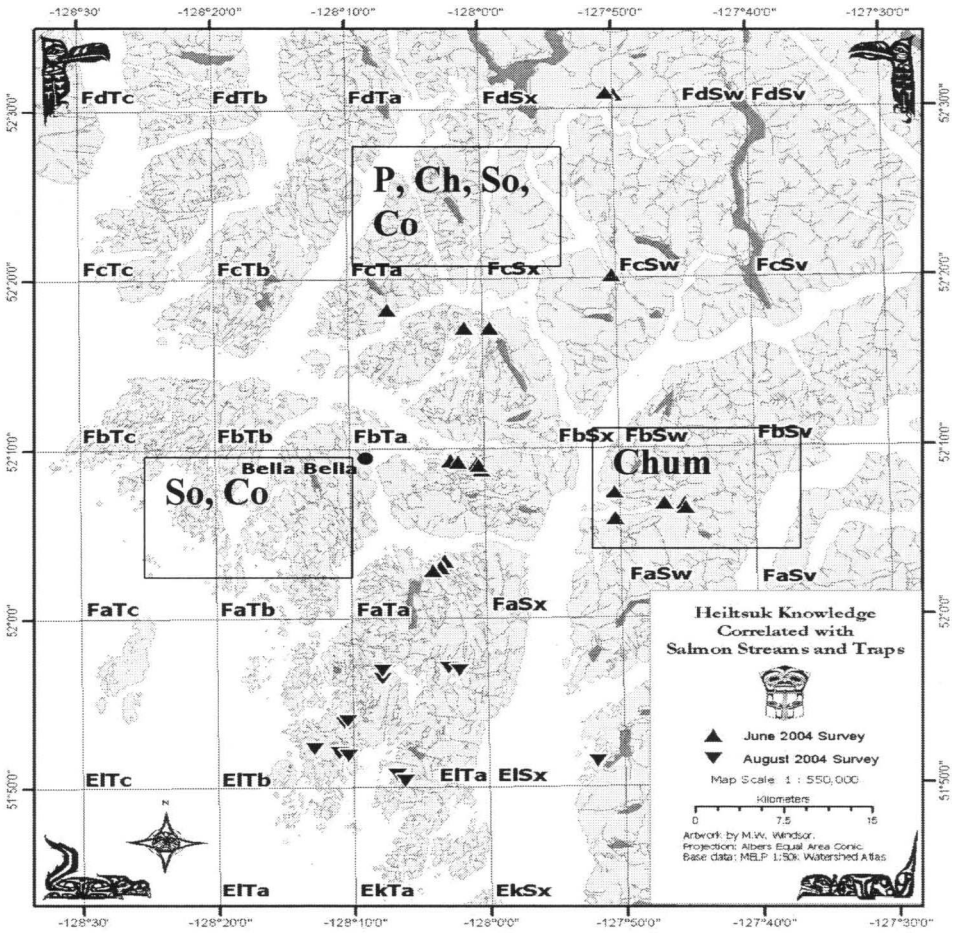

Figure 17 **Salmon stream correlations with stone fish traps.**

Earlier, I stated that in Heiltsuk traditional territory, sockeye migrate to their natal streams in June and coho in October. These species are found in other locations in Heiltsuk traditional territory but, for this thesis, the consultants placed the streams in my study area as frequented by sockeye and coho. In the inner waterways and inlets, all species are present, with pink and chum being more common, especially at Gullchuk Bay (FaTa 2, 46) and Huyat Bay (FaTa 11), Clatse Bay (FcSx 3), and Port John (FaSx 1). In Evans Arm, chum are most common to streams at sites FaSw 1, 2, 3 and FaSx 8. Finally, Namu (ElSx 1) is known for its productive sockeye runs in June, followed by pink in August and September and coho in October. Rarely is there mention of chum.

Products of my ancestors' labour: stone fish traps

> The fact is that searching for clues about our ancestors' lives is fascinating (Yellowhorn 2002:325).

This survey was conducted without a permit, therefore I did not conduct excavations or obtain samples for radiocarbon dating. The nine sites were mapped from August 17 – 21, 2005. The nine stone fish traps I mapped are permanent reminders of the "human side of the investigation" (Yellowhorn 2003:74). Since my ancestors' were responsible for their creation, our oral history preserves a record in the memories of Heiltsuk historians. This is the important message that I wanted to convey to my village.

This section combines site mapping and a review of previous archaeological surveys. A discussion follows to present the Heiltsuk voice about stone fish traps, and their operation at smokehouse sites in Gullchuk Bay and Huyat Bay. Table 6 lists the following information about the nine beach stone fish traps: Borden numbers, locations, number, shape and salmon stream correlation.

Table 9 Nine Beach stone fish traps showing location, type, shape and salmon stream correlation.

Borden Number	Location	Number	Shape	Salmon
FaTa 2	Gullchuk Bay at Kunsoot River	3 definite, 1 possible	Semicircular	Pink ,chum
FaTa 11	Huyat Bay on Northern Hunter Island	1 definite, 2 possible	Semicircular	Pink, chum, coho, sockeye
FaTa 46	Gullchuk Bay at Kadjustis River	1 definite, 4 to 5 possible ones	Semicircular	Pink, chum, coho, sockeye
FaTa 69	Gullchuk Bay at unnamed creek	1 definite	Bow	Coho
FaTa 70	Gullchuk Bay at unnamed creek	2 definite	Parallel rows	Coho

Borden Number	Location	Number	Shape	Salmon
FaTa 71	Gullchuk Bay at unnamed creek	1 definite	Bow	Sockeye
FaTb 59	Deer Pass	1	Unique wall morphology	Clam habitat
ElTb 18	McNaughton Island	2	Funnel	Undetermined
ElTb 24	McNaughton Island	2	Funnel	Undetermined

Five of the nine stone fish trap sites (FaTa 2, FaTa 46, FaTa 69, FaTa 70, FaTa 71) are located in the inner waterway of the Wuyalitxv in the Gullchuk Bay area (Figure 18). Three of these sites are new and have now received new Borden Numbers (FaTa 69, 70 and 71). No wooden materials were observed at any of these sites. I searched for either individual or rows of pointed stakes protruding from the beach sediments. Of the five trap sites, only FaTa 2 is associated with a recorded ethnographic narrative, although local knowledge is featured for all of them. FaTa 11 is located south of Bella Bella in Huyat Bay (FaTa 10) and ElTb 18 and 24 are located on the west side of McNaughton Island and finally, FbTa 59 is a new site that received a new Borden Number and may represent a new site type possibly as a clam garden, because its stone wall morphological characteristics distinguish it from the rest of the nine sites. First, I will discuss the trap sites that are featured in local knowledge: FaTa 2, 11, 46, 69, 70 and 71 and end the discussion with the three trap sites ElTb 18 and 24, and FaTb 59.

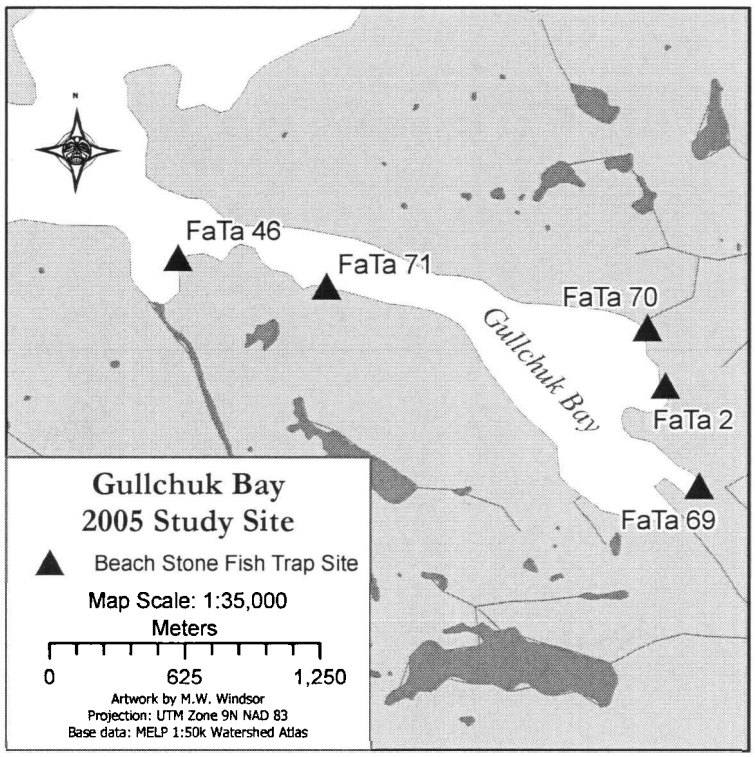

Figure 18 Gullchuk Bay showing locations of five stone fish trap sites.

FaTa 2

FaTa 2 (Figure 19) is located about 12 kilometres east of Bella Bella on the north side of Denny Island at the head of Gullchuk Bay. The beach trap was used in historic times, and is recorded in the ethnographic account of the 'Raven's Feast' story (Boas 1973:24-25), and appears extensively in local knowledge (Jones 2000).

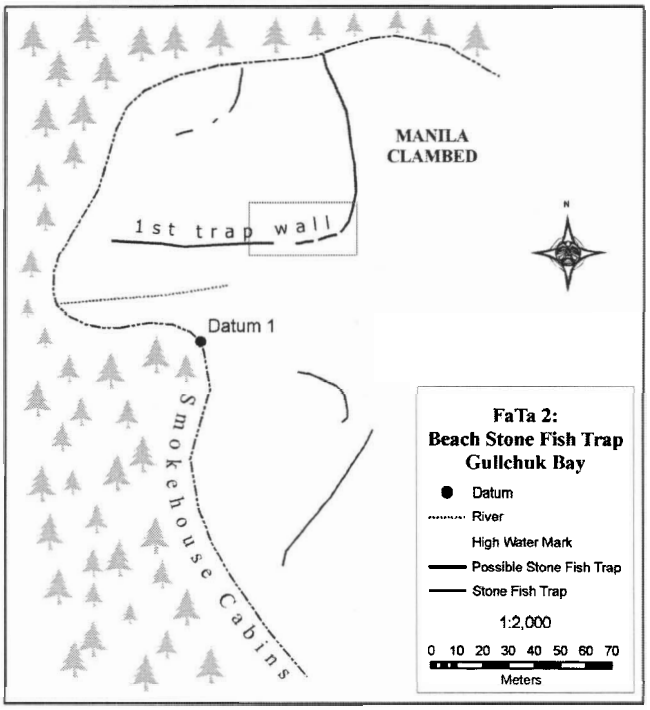

Figure 19 Site map of FaTa 2 at Kunsoot River at the head of Gullchuk Bay showing two definite trap wall formations and a possible trap wall formation inside the 1st trap wall.

A major salmon river, the Kunsoot River, empties into the bay here. Kunsoot is the anglicised version of the name, Qilhtsuk. A semicircular beach stone fish trap (FaTa 2) lies adjacent to Federal Indian Reserve #9 that takes the name of the river. Youth summer camp buildings have replaced the family smokehouse cabins that once were occupied during this busy time of the year. Phil Hobler and James Hester, aided by local resident Charlie Moody, originally documented the site on June 14, 1968. A simple sketch map shows the location and shape of two trap walls that are located on either side of the river mouth. Also included is a V-shaped stone wall formation that was directly placed in the river. Included at this site were three smokehouse ruins.

Figure 20 The author standing inside FaTa 2, which is a long semicircular beach stone fish trap that was placed on a modest tidal flat next to the mouth of Kunsoot River.

At this location, I observed two definite trap wall formations located on either side of the river mouth and a possible one that is located near the shoreline inside the main trap wall. The main beach stone fish trap is located on the opposite side of the river mouth on a modest tidal flat. FaTa 2 is a long semicircular beach stone fish trap that measures 150 meters in length, and on average measures 1.5 meters wide and 55 centimetres (20 inches) in height (Figure 20). Mussels and barnacles grow on the tops and sides of the stone walls. I captured video images on June 9, 2004, and re-visited again in September 2004 to observe the salmon migration and again a year later in August 2005 for site mapping.

Three openings that measure approximately one meter wide are found along the bend or curved portion of the wall (Figure 21). There are three possible reasons to account for these openings. First, wooden features such as gates were placed in these openings that acted like doors. To release the salmon, the doors were opened and when

salmon were trapped inside the pool enclosure, doors were closed to prevent salmon from escaping. Second, Department of Fisheries and Oceans were responsible for kicking wall openings for fear that these traps were still catching salmon although they were no longer used by Heiltsuk families (Blake and Rollins 1975). The third possibility is that the openings were intentionally created by Heiltsuk families as an escape route for salmon, especially when the traps were used when the tides dropped lower than the wall formations. The trapped salmon could swim through these openings when the salt water drained from the tidal flat into the bay. Carmen Humchitt; Bobby Jackson, Bill Wilson, and Emma Reid shared their recollections about such practices. When the tides were smaller, the tidal flats never dried up so that salmon could remain inside this pool enclosure until the next rising tide could drain back into the wall enclosure allowing the non-selected salmon to swim away. This practice comes from the memories of Reginald Moody Humchitt and Peggy Housty.

Figure 21 Location of three openings on FaTa 2 on the curvature part of the stone wall observed at a rising tide. Inside these walls, salmon were trapped alive and lean ones were selected for smoke drying.

Near the shoreline, a stone wall formation peeks out from the intertidal zone. The wall formation is not very distinctive and appears to have been either dismantled, buried or it could be a natural formation (Figure 22).

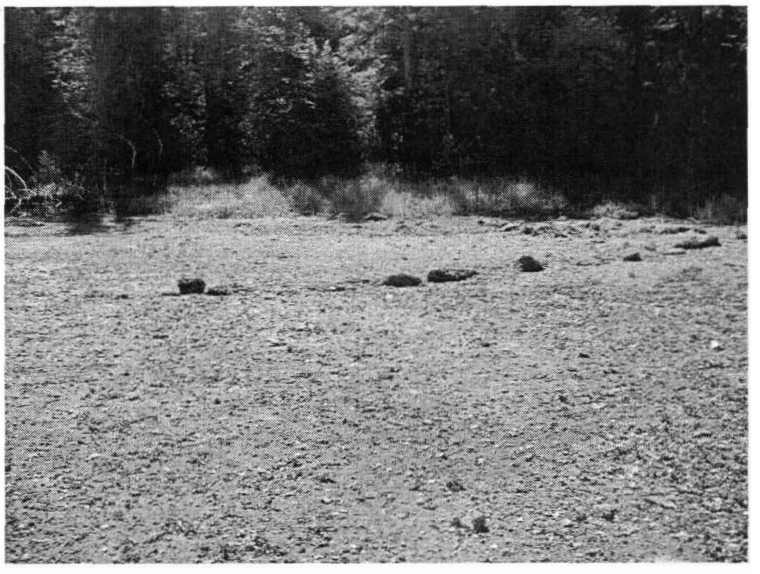

Figure 22 Possible stone wall formation at FaTa 2 near the shoreline on the south side.

Below the summer camp, there is a possible stone wall formation located on an uneven tidal zone (Figure 23). It appears to have been dismantled, possibly due to natural processes such as weather and tidal activity. According to interview consultants in Jones' (2000) research, the participants may have used this trap as they described a trap below the smokehouse cabin. The youth summer camp has taken over the original smokehouse cabins and the trap formation may have eroded due to boat and human traffic.

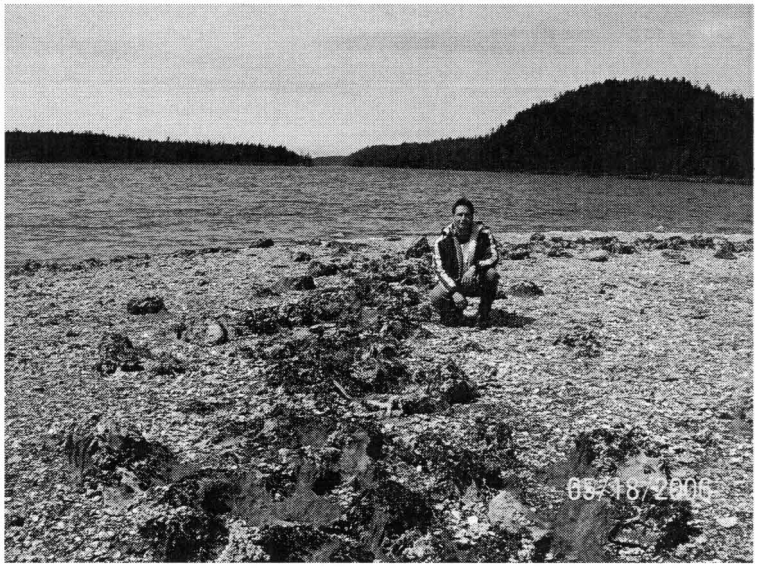

Figure 23 The author inside a stone fish trap that is located below the summer campsite where several smokehouses once stood.

FaTa 46

FaTa 46 (Figure 24) lies 10 kilometres east of Bella Bella at the entrance to Gullchuk Bay on the north side of Denny Island. It is associated with a major salmon stream known as Kadjusdis River. Pink, chum, coho and sockeye migrate to this area. Federal Indian Reserve #10 was a smokehouse campsite familiar to local residents. There are no recorded ethnographic narratives associated with this site. Local knowledge identified this site as a popular smokehouse site. No wooden features were observed.

Tony Pomeroy and Brian Apland originally recorded the site as 'fish traps' on July 6, 1974. The largest trap is approximately 130 meters long. Siltation was a concern. I visited the site on June 9, 2004 during the videographic survey and again in August 19, 2005 for site mapping. Six different straight wall arrangements define this site. One of the trap walls is located in front of a small sockeye creek (Figure 24).

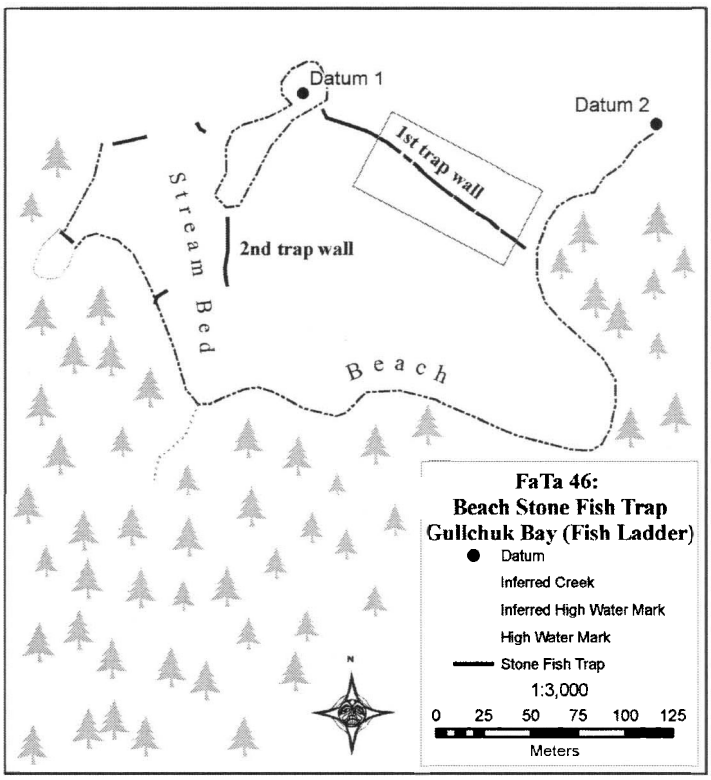

Figure 24 Site map of FaTa 46 at Kadjusdis River at the entrance into Gullchuk Bay.

The first trap wall measures 133 meters long (Figures 25 and 26). The wall has five separate openings or 'gates' at various intervals along its length. It measures on average about 1.5 meters wide except where the end walls meet the shoreline. The stone wall height is quite uniform along the entire length, measuring about 46 centimetres (18 inches high).

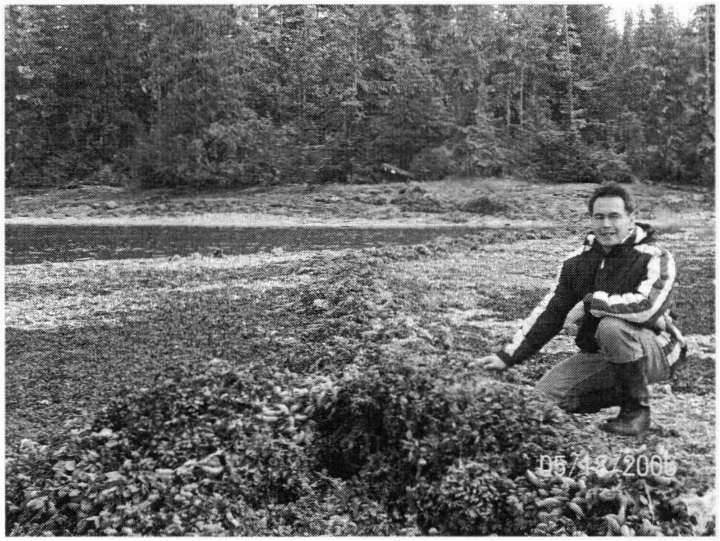

Figure 25 The author inside the main beach stone fish trap at Kadjusdis River at the head of Gullchuk Bay.

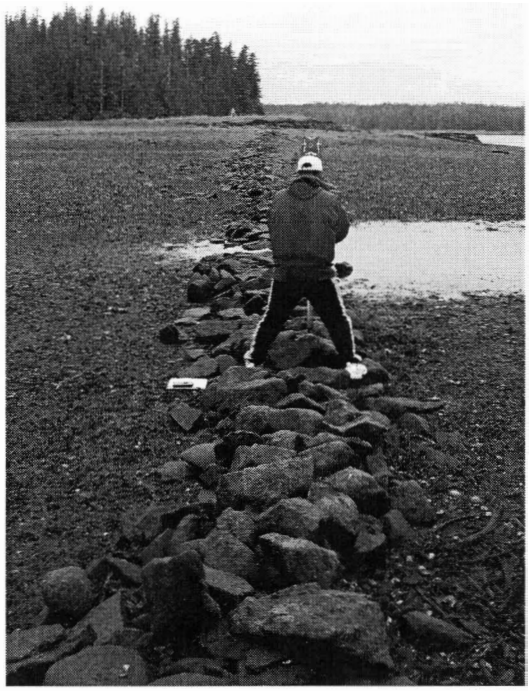

Figure 26 First trap wall observed from east wall at low tide. Heiltsuk field assistant, Rodnal P. Brown, assisted with site mapping.

FaTa 69

FaTa 69 was previously unrecorded (Figure 27). It is located 9.5 kilometres east of Bella Bella on the north side of Denny Island. It sits about 1.5 kilometers east of FaTa

2 on the southeast side of Gullchuk Bay. The author visited the site on June 9, 2004 during the videographic survey and again in August 19, 2005 for site mapping. The trap was not used in historic times and is not recorded in ethnographic accounts, nor does it appear in local knowledge. No wooden features were observed. A coho salmon creek flows into the protected bay.

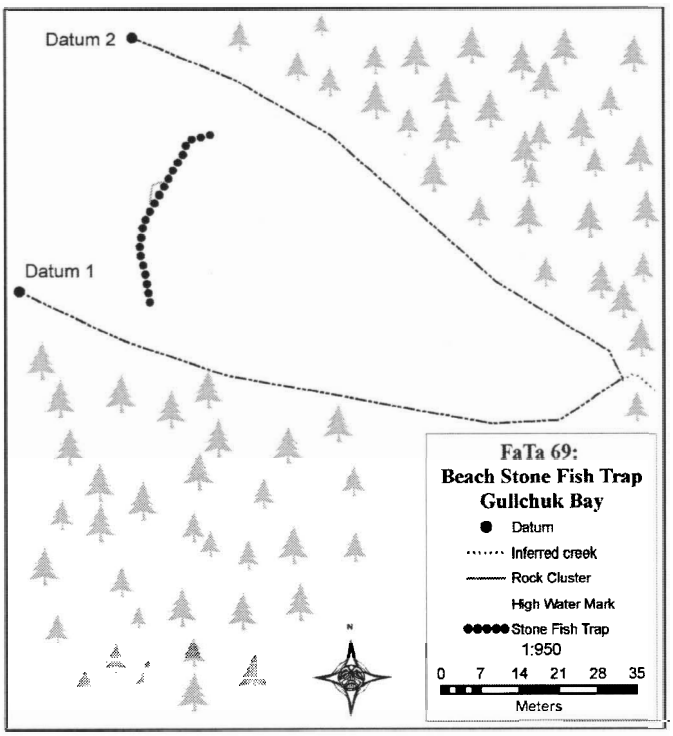

Figure 27 Site map of FaTa 69 at a coho creek in Gullchuk Bay.

FaTa 69 (Figure 28) is a long straight stone fish trap that measures 30 meters long. The wall measures 80 cm wide. The height is also much lower with an average height of about 30 cm (12 inches). The trap wall ends do not meet the shoreline. There is one opening where the stream flows into the channel. A small stone cluster that was once a part of the stone wall rests on a lower elevation.

Figure 28 The author at FaTa 69, a new stone fish trap south of FaTa 2. A coho creek empties into this bay.

FaTa 70

FaTa 70 (Figure 29) is located less than 10 kilometres east of Bella Bella at the north end of Denny Island. It lies about two kilometres east of FaTa 46 at the head of Gullchuk Bay. According to local sources, coho migrate to this stream in late October.

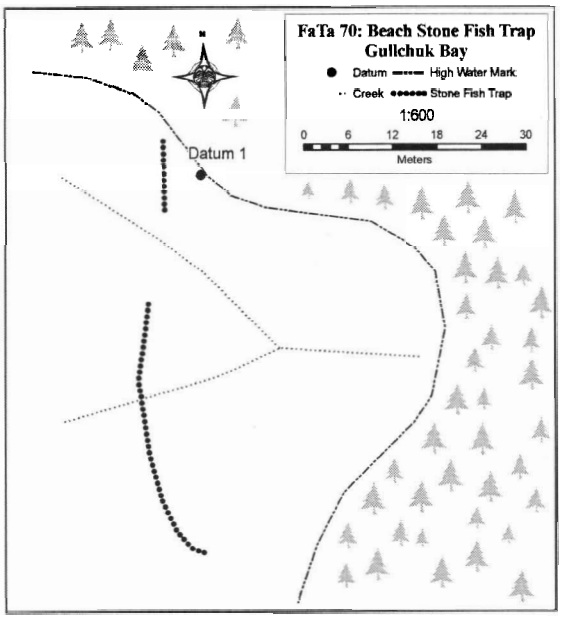

Figure 29 Site map of FaTa 70 at a coho creek in Gullchuk Bay.

The trap is located on the beach in front of a small fast moving stream. FaTa 70 is a long straight wall arrangement that measures about 30 meters in length, 1.5 meters in width and 40 cm (16 inches) in height (Figure 30). Along the middle of the wall, there is a large opening.

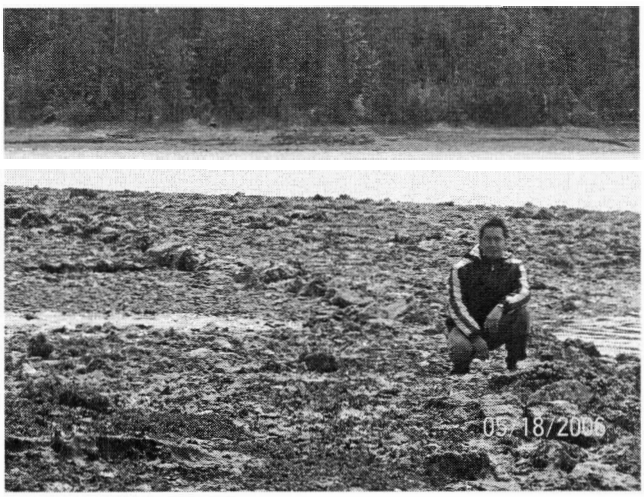

Figure 30 The author at FaTa 70, a newly discovered site, that is located north of FaTa 2 at the head of Gullchuk Bay. A coho creek empties here.

FaTa 71

FaTa 71 is located approximately nine kilometres east of Bella Bella on the north end of Denny Island (Figure 31). It is located about 750 meters east of FaTa 46 on the south side of the channel leading into Gullchuk Bay. Local consultants were unaware that it existed and no ethnographic accounts were available. No wooden features were observed. The trap is associated with a stream sockeye once ascended during their migration.

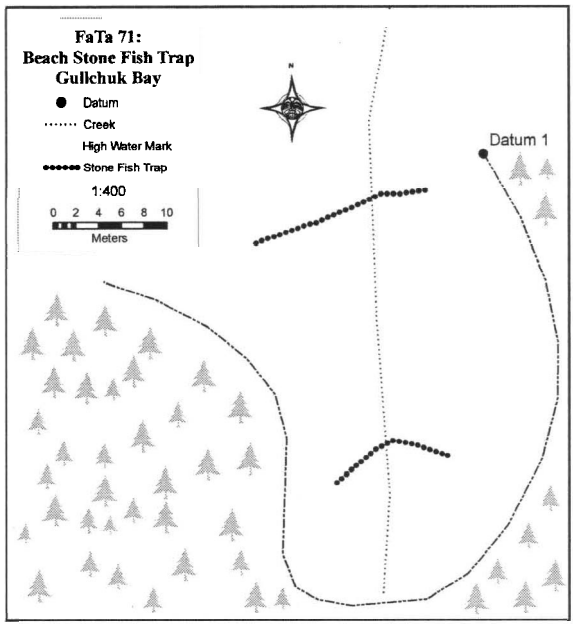

Figure 31 Site map of FaTa 71, a stone fish trap, at a sockeye creek in Gullchuk Bay

Compared to FaTa 46, these stone wall arrangements are shorter in length, narrower in width and lower in height. Both traps enclose a small area on a tidal flat. The first trap is located closer to the channel and the second wall is located closer to the shoreline. The distance between the first wall and the second wall is approximately 15 meters. The first stone wall arrangement measures 10 meters long and does not have any openings or 'gates' along its entire length. It measures less than one meter wide, except

where it meets the shoreline. The stone wall height is quite uniform as well, measuring about 30 centimetres high (12 inches high). The enclosed area is relatively small. The Frank Wilson and Charlie Moody family smokehouse once stood at this location but there is no physical evidence remaining in the forest.

FaTa 11

FaTa 11 is located 15 kilometers south of Bella Bella in Fannie Cove on North Hunter Island (Figure 32). The trap lies adjacent to Federal Indian Reserve #8, where a river spills into the cove.

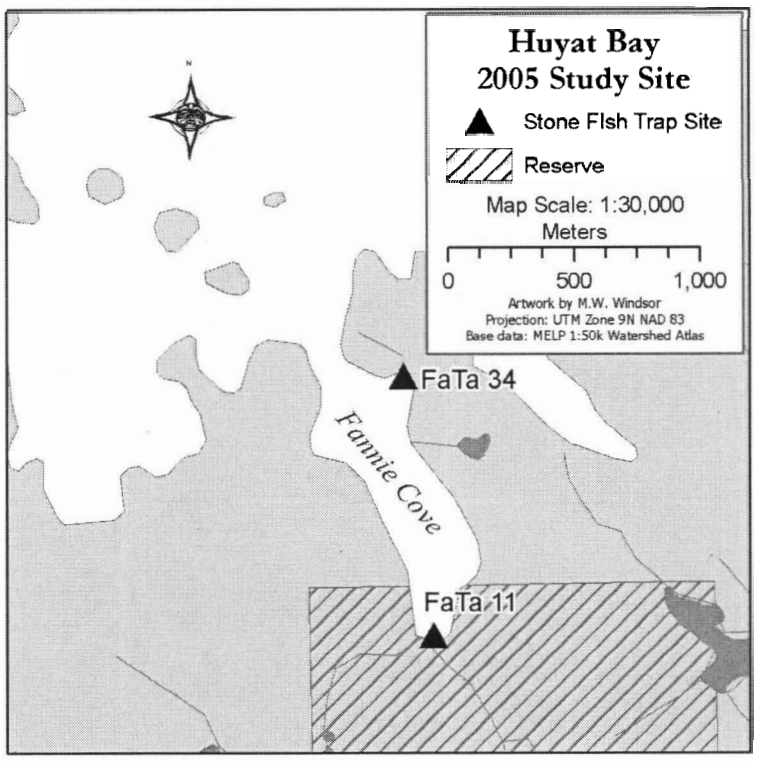

Figure 32 Location of FaTa 11 and FaTa 34 in Huyat Bay (Fannie Cove).

On June 23, 1968, Payson Sheets, a University of Colorado archaeologist who was part of the Bella Bella Prehistory study, reported FaTa 11 as a beach 'fishtrap'. He did not measure it nor produce any sketch map since he observed it at high tide. He noted

that more traps might be located nearby. The author revisited the site in June 2004 during the videographic survey and again in August 2005 for site mapping (Figure 35). The site consists of one well-defined trap wall, which I labelled as '1st trap wall'. Considering the expansive area of FaTa 11, only the top walls were mapped.

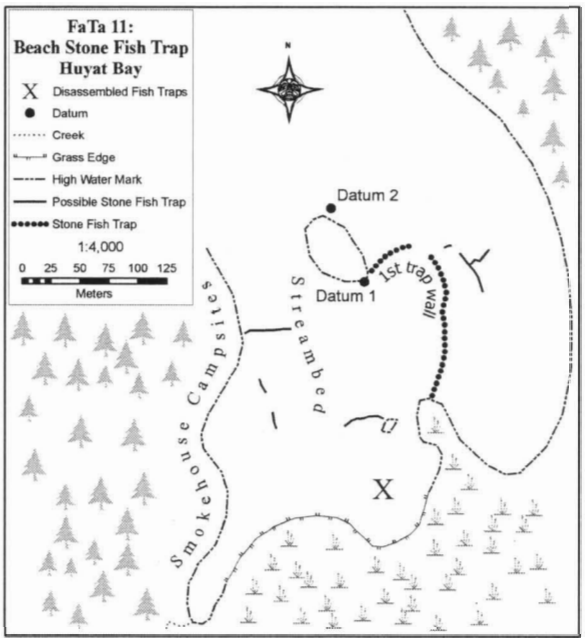

Figure 33 Site map of FaTa 11 at Huyat Bay in Fannie Cove.

Figure 34 The author at FaTa 11 in Huyat Bay. The trap was part of a selective fishery.

Figure 35 1st trap wall at FaTa 11 in Huyat Bay in Fannie Cove.

The 1st trap wall is semicircular with an opening at the middle portion (Figure 35). It is 133 meters long and about 1.7 meters wide from inside to outside wall. Tidal water drains through this opening where a cluster of stones is found at the bottom of the outside wall. The southern end wall begins at the grass edge of an estuary and the northern end wall comes to a stop at the southeastern side of an island known to locals as 'the orchard'. The wall height is consistently at about 6 centimetres or 2 feet high. However, the northern wall height is much lower where there is evidence of more siltation accumulation. If this process continues, the walls may eventually become buried.

Four other stone wall formations were mapped as possible wall arrangements. According to a local knowledge source, stone trap walls were once located in the area labelled 'X' and also along the shoreline parallel to the smokehouse campsites on the northwest side of the bay. During field visits, I noticed straight wall formations that crossed a stream flow near the shoreline where the smokehouses once stood. One of the

trap walls on the east side of the curvature of the 1st trap wall appears at risk of becoming completely covered with beach sedimentation. The tops of walls are nearly flush with the beach surface (Figure 38).

Figure 36 Possible wall formation that is almost covered with beach sedimentation in Huyat Bay

Several visits took me to the outer islands in the Wuyalitxv group. Anecdotal information suggested a potential herring trap might be located here due to lack of freshwater sources. This prospect was exciting since previous archaeologists have not documented a herring trap. The two sites (Figure 37) lie on tidal beaches on the northwest side of McNaughton Island less than two kilometers south from ElTb 10, an excavated village site that was dated to about 2500 years (Carlson 1976).

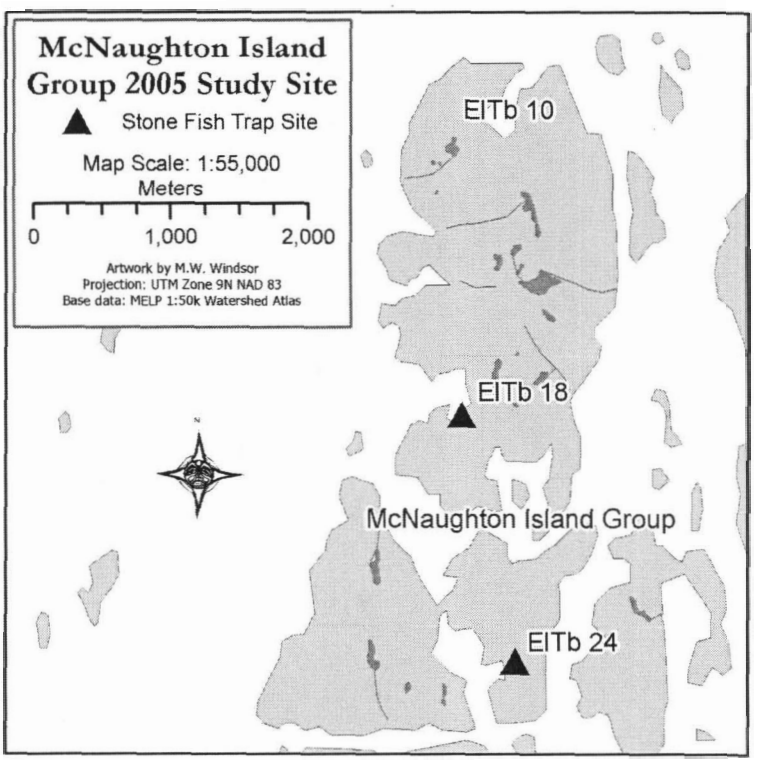

Figure 37 Locations of ElTb 24 and ElTb 18 on west side of McNaughton Island Group.

ElTb 18

The site (Figure 38) is located less than 20 kilometres south of Bella Bella on the central side of McNaughton Island Group and about two kilometres north of ElTb 24. The trap is not associated with any occupation sites, ethnographic accounts, local knowledge, or with a major salmon stream or has no visible wooden features. A small narrow creek trickles into this protected bay. It consists of two separate stone wall formations that are located on the upper and middle intertidal zones.

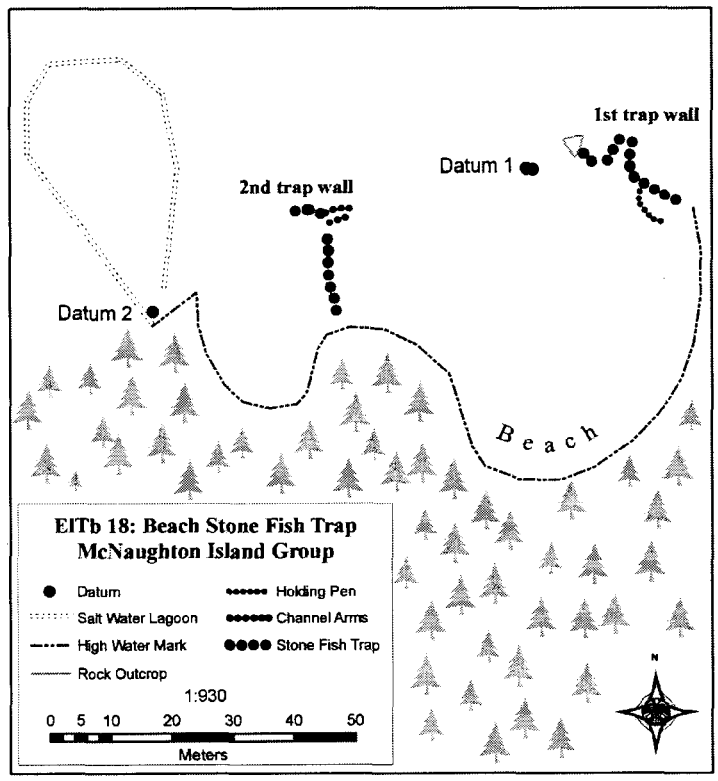

Figure 38 Site map of EITb 18 showing location of traps in relation to each other.

Simon Fraser University archaeologists, Tony Pomeroy and Brian Apland originally recorded this site on June 5, 1974, as 'fish traps' and included a simple sketch of two traps with estimated measurements of 17 meters across for the first trap and 22 meters across for the second. The author revisited the site on August 1, 2004 during the videographic survey and again in August 18, 2005 for site mapping. The first trap wall is completely covered with orange rock weed and spans the channel. At the middle, there is a very wide entrance that leads out towards the bay. The walls measure twenty meters long on either side of the channel arm with a five meter gap between channel arms. The stone wall measures on average about two and half meters wide at its widest and tapers towards the ends of the channel arms.

The second stone wall trap is located 30 meters south of first wall on the upper intertidal zone. It is narrower, shorter and lower in height. It averages about 20 meters in length, about 1 meter in width, and about 46 centimetres high (18 inches high). The walls are free of the orange rockweed. Like the first one, a channel section with two arms leads away from the enclosure.

ElTb 24

The site is located less than 25 kilometres south of Bella Bella on the northwest side of the McNaughton Island Group. The trap is not associated with any occupation sites, ethnographic accounts, local knowledge, or with a major salmon river and has no visible wooden features. A small narrow creek trickles into this protected bay. Hakai Parks staff provided boat transportation.

From Simon Fraser University, Tony Pomeroy and Brian Apland originally recorded the site as a fish trap and included a simple sketch with estimated measurements of two traps on June 10, 1974. The first trap wall is closer to the water and measured approximately 40 meters, whereas the second wall is closer to the shore and measured approximately 20 meters. Phil Hobler and his crew revisited the site on August 22, 1988. He listed it as a "stone wall fish trap" that consisted of a "single short wall with a funnel shaped gap in the middle" that measured 20 meters (Hobler 1988). No photo records were taken, but a simple sketch map accompanied the site form.

The author revisited the site on August 1, 2004 during the videographic survey and again on August 17, 2005 for site mapping (Figure 39).

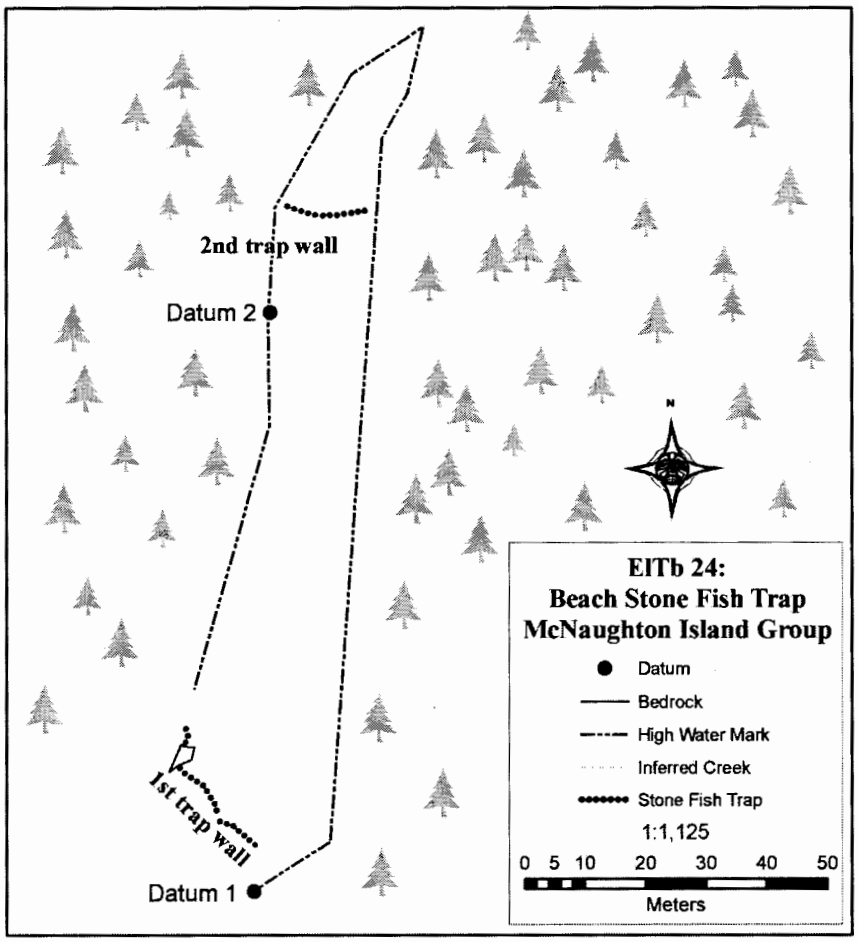

Figure 39 Site map of EITb 24 showing location of two traps in relation to each other

Both stone trap walls are located on the intertidal zones or beach but at different places. The first wall at EITb 24 is funnel shaped, and is located on the lower intertidal zone that spans straight across the channel. Since the trap site was mapped during a rising tide, the lead arms on the first trap wall (funnel shaped) were not included. There is a large opening in the middle section that has two tapering rows of stones leading out to the bay. It measures 10 meters long on the west side and 7.5 meters on the east side of the channel arms. The stone wall width measures on average about 1.5 meters except where

the end walls meet the shoreline. The stone wall height is quite uniform along its entire length, measuring about 46 centimetres (18 inches) high. The second wall is much shorter, narrower, and is located closer to the shoreline on the upper intertidal zone on a higher elevation than the first trap wall. The straight wall extends 10 meters across without openings or wooden features. A narrow creek that measures about 15 centimetres across has noticeable obstructions that block or slow down water flow into the bay. According to Carl Humchitt (personal comment, August 1, 2004), the creek is classified as a contemporary non-salmon bearing stream but in the past salmon may have migrated to this creek when the conditions for their migration were better suited for them.

FbTa 59

FbTa 59 (Figure 40) is located 16 kilometers north of Bella Bella. There are no ethnographic accounts and local consultants could relate no information about it. It is not associated with a major salmon stream association. No wooden features were observed.

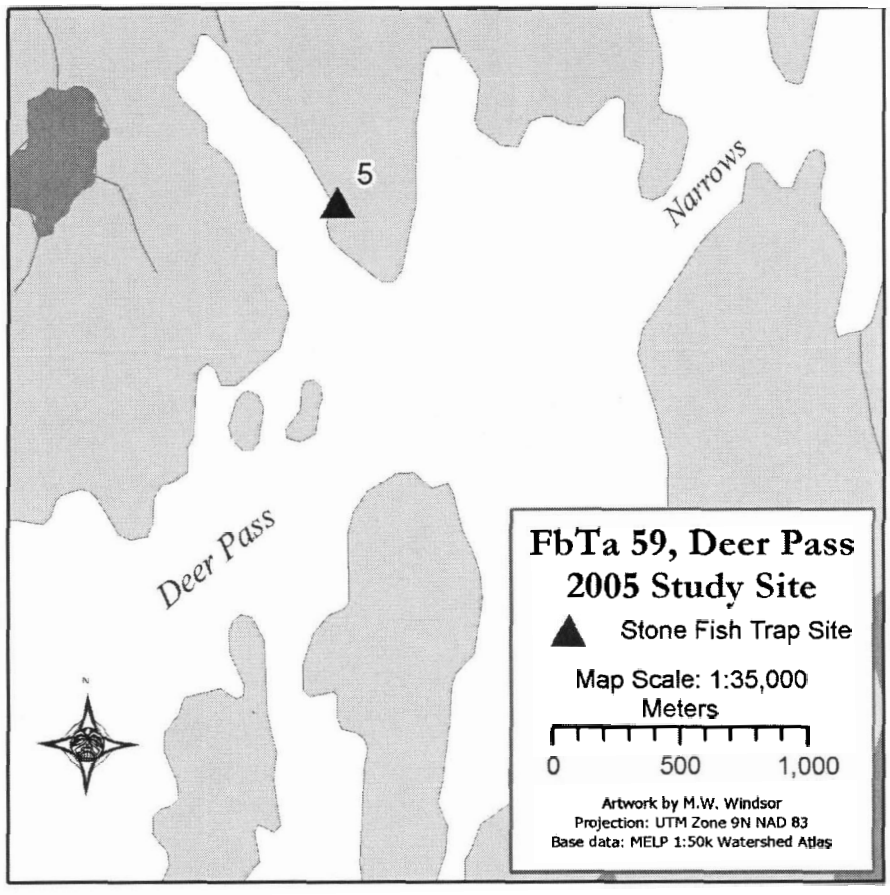

Figure 40 Location of FbTa 59 in Deer Pass area

FbTa 59 (Figure 41) is a new site that had not been previously recorded. It rests on an exposed location on the upper intertidal zone. The stone wall formation differs considerably from the other site types. This feature does not exhibit distinct wall alignments except for the side facing the water line. This wall slopes on a 45-degree angle from the top to the bottom. At the bottom, it falls below the lower intertidal zone into the eelgrass. This wide wall measures about two meters across and is about 10 meters long.

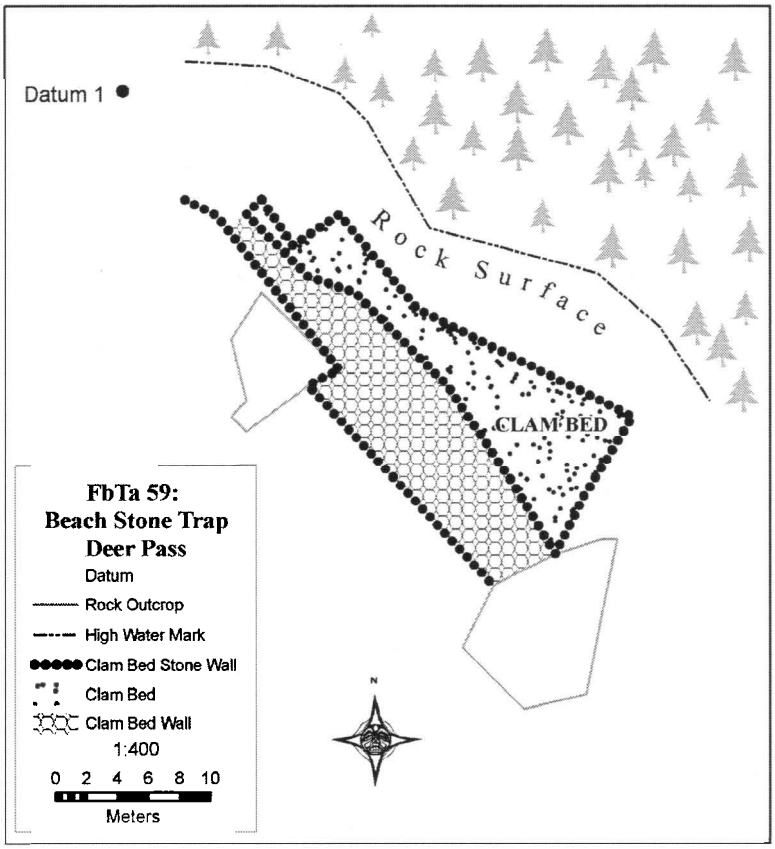

Figure 41 Site map of FbTa 59, a possible Clam garden wall formation in Deer Pass area.

Enclosed inside this unique wall formation is a silty clam bed that had butter and manila clams. This may be the first recorded 'clam garden' on the central coast. This site is not included in the fish trap atlas (2000) and there is no provincial site inventory form for it. The site was discovered during the videographic survey in June 2004 after viewing stone fish trap FbTa 8 site at the head of the bay (Figures 42 and 43).

Figure 42 **Front view of FbTa 59 of a clam garden wall formation in Deer Pass area.**

Figure 43 **Cross section view of side wall of FbTa 59.**

The smokehouse days

> ...they are pretty simple rig [beach stone fish trap] to operate giving the date [early 1930s] that they were used when there were thousands of salmon when I was there (Edward Martin Sr.)

Many elderly Heiltsuk fondly recall the smokehouse days as an important time in their young live. Semicircular beach stone fish traps were still used to capture salmon, before the advent of modern conveniences such as deep freezers, gas boats, drag seines, and jarring and canning methods. The capture process relied on the daily tidal rhythms as salmon tended to school together over the tidal flats. In September and October, when families used these traps, there was always a pool of water inside the enclosures that produced a holding pen for live salmon.

Prior to 1935 when Heiltsuk consultants used stone fish traps, they recalled that the stone walls reached heights of 91 centimetres (3 feet) to 1.22 meters (4 feet), Subsequently, due to siltation build-up or to sinking action or both, these stone walls are much lower, with heights of 46 centimetres (16 inches) to 51 centimetres (20 inches). Therefore, within 70 years, there has been at least a loss of 61 to 91 centimetres of height or 2 to 3 feet. At time of operation, these walls must have been visually impressive, with wide flat bases tapering to the narrow tops. On a recent field trip to Gullchuk Bay, I noticed the disappointment on Edward White's face when he saw how low the walls were now. He said, "the walls were higher, at least 4 feet. They have been washed down or someone moved them".

Typically, for eight months of the year, these traps lay unused as Heiltsuk families travelled in spring and early summer to their different campsites. They would gather a variety of important seafood provisions of herring, seaweeds, shellfish and cod. In

August, Heiltsuk families slowly made their way back to these smokehouse campsites in the inner waterways and into the deep meandering inlets to intercept the pink and chum migrations. Some families stayed from August until the first week of November. Carmen Humchitt recalled "one time we stayed for a whole month, one time we stayed there until after Halloween. So much fish hey".

As salmon mill about the tidal flats, their silvery bodies begin to physically change. The males of each species form large humps on their backs and their jaws take on a hook billed appearance reminiscent of dog jaws. Females do not undergo as drastic a physical change as their male counterparts. Streamlined bodies slowly become thinner as their oil content decreases. Color changes are notable as the shiny bright texture fades to dull dark colors of black, red, green and purple hues. These desirable traits reveal the clues for salmon in perfect condition for smoke-drying and hence selection from the schools in the traps.

Huyat Bay and Gullchuk Bay were particularly important locales during the smokehouse days. At Huyat (FaTa 10), a thick patch of thimbleberry bushes grows on the old village where families once grew their vegetable products (Figure 44). Apparently, this practice of seasonally occupying the bays was an old one as archaeologists recorded one ancient village adjacent to the beach stone fish trap (FaTa 11).

Figure 44 Huyat village (FaTa 10), ancestral village of Chief Gviustijas and ancestress Cumqlaqs.

At least 5 to 6 small smokehouses that measured on average 7.3 meters (24 feet) by 9.1 meters (30 feet) once stood along these shorelines on the west side of the river. Family members were interested in catching, processing and smoke-drying thousands of lean pink and chum. Each summer Albert Humchitt, Johnny White Sr, Charley and Lucy Windsor, Paul Brown, William Dixon, and Albert Cuyler called Huyat their home.

Numerous canneries at Rivers Inlet, Namu, Walker Lake in Johnson Channel, and north of the village of Klemtu provided seasonal employment for Heiltsuk people when they were not logging or fur trapping. Grandparents assumed responsibility for their numerous grandchildren as the parents entered this work force. The nearest cannery was Namu that began operation in 1898, the same year that Bella Bella became a village on Campbell Island. When the cannery season ended, the parents rejoined their family network.

These extended families lived together for at least five to six months in small-sectioned houses that served both as living quarters and as smoking facilities. George Housty recalled that "they smoked fish in a big smokehouse with rooms in each corner for different families. The rooms were not sectioned off. They were large enough to sleep in". Triangular roofs with ventilation openings allowed the smoke to filter out. Some smokehouses had three fires whereas others only had one. Although they really didn't produce open flames, their main objective was to create continuous smoke, which is an important factor for smoke-drying. Edward Martin emphasized that the fires never went out because "the fires never went out and I seen fourteen hundred salmon smoking at one time".

Edward Martin and Edward White did not observe their family members use stone fish traps. They used drag seines to catch their salmon but they both mentioned that there was so much salmon that it was easy to capture them. Edward Martin Sr. noted that "most of the time there were little drag seines or simple little gillnets. You didn't need [...] a massive net because there were so much fish [salmon]". All consultants shared similar observations. Edward White Sr recalled that they "never had to worry about working hard to trap them [salmon] because they were so much of them". Carmen Humchitt's observations attest to the efficiency of the trap walls when salmon were plentiful: "it used to be just plugged with fish [salmon]! Fish [salmon] were so easy to trap!"

At Gullchuk Bay (Figure 45), numerous smokehouses once lined the entire inlet from the entrance where the Kadjusdis River empties. Families built their smokehouses on the ancient village that takes the name of the river (Figure 42). Carmen Humchitt,

Adam Dixon, Louie Hall, Willie West, Nathan Wilson, Charlie Moody, and Susan Campbell lived here for months at a time. Five beach stone fish traps are located here, and Carmen Humchitt, Reginald Moody Humchitt, Peggy Housty, and Bobby Jackson shared their recollections about the operation of these traps.

Figure 45 Gullchuk Bay summer campsite where family activities associated with smoke-drying lean salmon took place

Operating a beach stone fish trap

Typically a wall should have at least one or two openings along its length at specific intervals that were intentionally placed there at the end of the previous summer. The openings consist of one-meter length gaps from which all stones were pushed away to the outside. They lay where they landed. This intentional act was part of a time honoured Heiltsuk conservation process to provide an escape route for any salmon when the traps were not in use. When the season ended in the first week of November, this was one of the last tasks for the men to perform to open the wall (Figure 46).

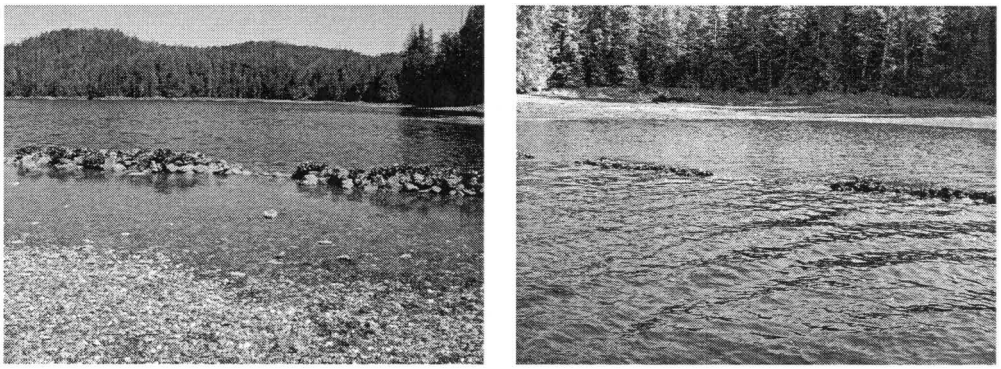

Figure 46 Openings on FaTa 2 beach stone fish trap. Photos taken during a rising tide.

Bobby Jackson and Billy Wilson used the term 'gate' for these gaps. Initially, this confused me since gate implied a wooden fence being placed in these openings. According to Bobby Jackson, a gate is a pile of rocks that were removed quickly and temporarily. This responsibility fell onto his uncles and older men who simply kicked about 10 to 15 stones outwards from the wall. Bobby Jackson described it thus:

> Tide brings fish in, and when tide rises, fish [salmon] swim out. Open a gate and let rest of fish [salmon] out again otherwise they get rotten. A gate is a pile of rocks removed quickly and temporarily. Uncles opened the gates

At Huyat, I was surprised the to learn that this impressive trap wall (FaTa 11) was not used at all during the smokehouse days. Edward Martin told me that they were always aware of its presence. Emma Reid and Bill Wilson recalled the adults making smaller stone fish trap versions near the grass flats and on the beachfront that parallels the smokehouse campsite (Figure 35). The families used these short semicircular stone walls more as containment areas to deposit their daily catch of salmon into them. They became pools of salmon inside an enclosed area near the smokehouse buildings. The selection process continued in a modified fashion.

Bill Wilson called it a 'trap inside the trap' as he noted:

> I remember the big one. It was part of the main one but they just blocked it off, make small portion. There were many formations there, smaller ones were within the big one, not always left up, took rocks from the main one. Traps were little offshoots. Walls not very high.

The video footage supported my inquiries as Emma Reid informed me about the different stone wall formations she was familiar with and how the men created openings in the wall. She stated:

> The one we had close to the house here, was right up close, they were right by the, see where the grass is, have to be right close to the grass line.
>
> They just rolled them, rolled them away from this one. And there is some they didn't touch. And the littler rocks just moved or tossed out into the river and guess they picked them up again (Emma Reid pers. comm. 2004)

Don Vickers recalled his anger as a fishery officer deliberately dismantled one of the trap walls at Huyat. I believe he was talking about the smaller ones since they were in use during his time.

> No, he he, kicked them down two or three places to make much more room for fish [salmon] to escape. That's what he did. I seen him! I still remember. I was that was ah, food for us. Well, ah, at that time, I know my dad and Magaga, had to listen to what the white people said! (Don Vickers pers. comm. 2004)

As a Heiltsuk living in a different social and political context than my elders, I could not help but feel sad for Don's generation who had to endure different laws that denigrated them. My response to this observation is taken directly from the verbatim transcription:

> 30.7 EW (Elroy) Your dad just listen to the guy?
>
> 30.8 DV (Don) Yah, well that was, that was the law hey. Don't put it up again, yah.

All consultants attributed their subsistence education about the smokehouse days to their grandparents. For example, Bill Wilson recalled the following about his

grandmother, Lucy Windsor, who related several stories and oral history to Boas (1973) and Olson (1955):

> Great granny (Magaga) observed salmon, could estimate if going to catch lots or hardly any fish [salmon]. When tide went out, used just go inside the walls and pick the fish [salmon] out. Put fish [salmon] into wooden baskets and brought to the campsite.

Unfortunately, exact details about their shape and size were not provided. The stone formations are no longer visible because they were dismantled completely after the season was over.

The stone fish traps represent expansive holding areas or pens for live salmon, which became trapped inside the walls at lowering tides. Since the traps never dried up, the enclosed area became a virtual pool of live salmon in all stages of spawning maturation. Peggy Housty stated that "the inside never dried up at all, fish released at high tide. Salmon never dried up. Little bit of water inside the walls". The traps caught live salmon although the occasional dead one would turn up. Reginald Moody Humchitt shared this information to me about salmon:

> At small tide, get them alive; pick them when they were dead, hardly any dead fish [salmon], unless drifted down from the river. All families used the trap. Only took what they needed. Gaffed fish [salmon] and put fish [salmon] into a skiff that was anchored on the outside of the stone wall. Lots of fish [salmon] those days. Trap never dried. Never used the whole area inside the walls. The further down you go, the fish [salmon] school tighter, didn't have to run around too much, fish [salmon] were tight in a ball (Reginald Moody Humchitt, pers. Comm. 2004)

Some were healthy, others were near spawning time, others were near death. Since the traps did not discriminate against any salmon, the families chose or selected only the lean chum salmon for smoke drying. Carmen Humchitt observed his family

members "go into the water, it was deep enough to walk around in it to take out the fish [salmon]".

Desirable characteristics consist of the following: thin (lean) and dark colored. The objective was to search for the salmon with these characteristics to remove from the trap or pen site. The salmon were either hand picked or caught with a gaff hook. Open double-ended rowboats transported the catch to the smokehouse campsites. The lean salmon smoked easily in five to seven days providing the smouldering fires continued to burn. All oil and moisture was completely removed, leaving the salmon dry and easily storable in any condition where it could be stored in any location without worrying about waste or spoilage.

The smoke-drying process was laborious and time intensive, requiring cooperation from all family members. The main objective of their trips into these locations was to trap salmon and to smoke-dry thousands of salmon. All consultants emphasized important factors for successful smoking procedures. Evelyn Windsor said:

> Everything had to be dried when the fish were lean, no more fat and because if they still had fat, or got it too early, then, it would probably mould and go rancid. And it was put away after it was dried, smoked dried, and it was put away um, ah, cedar boxes for storages for the winter.

Chapter summary

My ancestors created stone fish traps of variable shapes for specific marine species. Some information on this practice occurs in the ethnographic literature and archaeological research on stone fish traps although the approaches are incomplete. This variation specialty observed in this research debunks the inference that one trap was multifunctional to catch all salmon species, herring, shiners/perch, cod, seals, and as clam

garden sites at later dates. This variation "depended on the species of fish, type of environment, building materials available, and the cultural background of the people" (Stewart 1977: 99).

My research demonstrated that the traps with more variation in the outer islands targeted sockeye and coho species (ElTb 24 and ElTb 18), whereas the long semicircular wall formations targeted pink and chum (FaTa 2, FaTa 11, FaTa 46). In the Gullchuk Bay area, straight wall formations with slight bow patterns at the middle were placed at coho creeks at FaTa 69 and FaTa 71 and at a sockeye creek at FaTa 71.

FaTb 59 (Figure 40) proved to be an anomaly, both in archaeological and oral history knowledge bases. The wall formation was possibly the result of natural geomorphic processes, which created these unique wall morphologies with natural siltation processes depositing beach sedimentation suitable for clam production by daily tidal movements. However, my discoveries and information from several local people of similar wall arrangements suggest a cultural process was responsible for their formations. However, only Fred Reid reported a stone wall formation that may resemble what he thinks is a clam garden based upon my description of the wall morphologies. This information leads me to believe that these wall formations were intentionally built. However, the wall formations may have targeted passing salmon stocks and may represent older trap walls that were no longer in use prior to European contact and were not used by Heiltsuk in the early 20th century before the advent of modern conveniences.

Chapter Seven: Conclusion

> 'Science is coming of age, and while there is a convergence and a reconciling of science with our histories, scientists may have to take our word on certain facts' (Guujaw, Haida historian in Foreword to Fedje and Mathewes 2005 xiii).

I conducted this archaeology investigation on stone fish traps on behalf of the Heiltsuk. My intent was to work with community elders and explore their knowledge of stone fish traps and about the variations, operation, function, family use and wall morphology evident in their construction. I was interested in hearing them reminisce about the wide-ranging activities associated with smoke drying thousands of lean chum salmon. My objective was to appropriate the methods of archaeology and ethnology to investigate the products of my ancestors' labour. I decided to augment my internalist research using novel methods, such as videography. My intent was to assist my community to better understand their recent and ancient history through oral accounts on their own terms using archaeological methods.

In the 1994 Memorandum of Understanding between Heiltsuk administration and Simon Fraser University Department of Archaeology, of section 2.c introduced oral history as a perspective to balance science. Keeping in mind the spirit and intent of the MOU, I do not rely on science alone to provide the answers to my inquiries about stone fish traps. I employed interviews, oral narratives, mythology, personal observations and videography to compile my modern ethnography. Combining these various methods gave me a new appreciation for the human side of my investigation. My interview techniques

developed from my academic and practical experience, but my personal and family connections brought me the trust and respect of the twelve Heiltsuk consultants who their shared knowledge. Seeing a Heiltsuk academic who could represent an internalist perspective elevated their comfort in sharing their thoughts.

The video footage provided a visual stimulus that encouraged further memories of the smokehouse days at Gullchuk Bay and Huyat Bay. After viewing the video, my elders recalled the oral history their elders transmitted about stone fish traps and other important Heiltsuk village sites such as Port John (FaSx 1) in Yisdaitxv, at Clatse Bay (FcSx 3) in Wuithitxv, and at Neekas (FbTb 4) in Qvuqva'aitxv. One unanticipated benefit of the video images was their utility for Heiltsuk decision makers on questions of resource management, especially with their quest to settle land claims and to expand aboriginal rights discourse to the intertidal zones (Hogan et al 2005). In addition to becoming an important resource management tool for the Heiltsuk, the British Columbia Provincial Archaeology Branch requested a copy of this footage to accompany site descriptions, thus making the catalogue information accessible for archaeologists and Heiltsuk alike.

Inviting collaboration from Heiltsuk community institutions allowed me to visit more sites, purchase field and audio/visual equipment, and to pay for boat charters. My village presentation, or defence, was an exciting opportunity to share the results of my archaeological analysis and the interpretation of my research with my collaborators and Heiltsuk decision makers. First Nations administrators who wish to monitor the work of visiting researchers can benefit from my experience. This academic research can serve as a model for other First Nations who wish to take control of research conducted about their heritage.

The stone fish traps were an obvious choice for several reasons. First, the topic had not received attention since Pomeroys' research in 1980. It provided an opportunity to contribute fresh research about a neglected archaeological topic. Second, I noticed a difference between archaeological and Heiltsuk views of the trap sites. The traps represent an important link to the Heiltsuk past, whereas earlier work tended to isolate such cultural manifestations from the Heiltsuk community. Third, many Heiltsuk have been aware of these ancient fishing technologies, which their ancestors built to implement a sustainable fishery for subsistence purposes, but lacked the forum to express their knowledge. Fourth, Heiltsuk embraced archaeology for the bundle of useful scientific methods it supplied to their quest to learn about their ancestors' labour. This influenced them to adopt a more sympathetic view of archaeology. Thus, they could put aside past attitudes.

However, my main goal was to work with Heiltsuk political and cultural institutions to investigate stone fish traps as part of a selective fishery management system that began in antiquity. The benefits differed for each institution but they are interrelated. Thus, through community collaboration, I was able to conduct serious research on Heiltsuk heritage. For the Heiltsuk Tribal Council, this document can aid them with their negotiations with federal and provincial institutions and organizations in fishery management. It could assist them as they negotiate future co-management agreements with British Columbia Parks, such as in the Hakai Luxvbalis Conservancy Area, or the Department of Fisheries and Oceans.

Another local institution that will benefit from my research is the Heiltsuk Cultural Education Centre. My thesis will become a permanent volume for traditional knowledge

that will be available to the community with the intention of encouraging more collaborative community research. A further benefit is that it will be made available to visiting scholars in their quest to research any aspect of Heiltsuk heritage. As an archival document, it preserves for posterity the voices of an elder generation that diminishes each year. Already one of my elderly collaborators has gone to live with our ancestors but his voice remains through his contribution.

For Heiltsuk educational institutions at all levels, I envision the document as an aid that promotes more archaeology. Grade school students will find a practical guide for their lessons about how the ancient Heiltsuk lived. For the native language program, the data will help in their instruction about Aboriginal fishing techniques. My systematic discussion about the function and operation of these diverse fishing technologies links the related topic of traditional knowledge assisting science to interpret the archaeological record. For students at high school and college levels, I hope this document inspires them to pursue higher learning and helps guide them to undertake their own research programs dedicated to their community. The best possible outcome would be to produce more home-grown archaeologists.

Finally, this thesis could spur on pursuits of economic development in cultural and ecotourism for local guides who bring visitors to view their heritage that forms the archaeological record, especially about a vibrant selective fishery system that was firmly in place prior to contact with Europeans. Inviting tourists to experience the local environment and heritage sites my even help invigorate the local economy. The benefit of tourist traffic would be felt by the local arts and crafts industry as well as the service industries, such as restaurants and bed and breakfast operators.

Stone fish traps possess more than antiquarian interest for the Heiltsuk community. They are the products of our ancestors' labour and represent a legacy we have inherited. While the Heiltsuk people are not stranded in our primordial culture, we are confronted with the challenge of developing new ways of making our cultural legacy vigorous for the modern community. We must be inventive in our attempts to enhance it and archaeological research offers one possible avenue that I have explored in this thesis.

Figure 47 The author sharing ancestral songs at a selective fishery site in Clatse Bay in Roscoe Inlet (Wuithitxv), June 16, 2004

Appendices

Appendix A

HEILTSUK TRIBAL COUNCIL

Elroy White
#202-1710 East Pender
Vancouver, BC
V5L 1W4

21/05/04

Re: Research Request

Dear Elroy

First and foremost, congratulations on completing your undergrad degree and we wish you the very best in achieving your masters degree.

The Heiltsuk Tribal Council has reviewed your request and would like to thank you for a very concise and informative presentation on your thesis. It is a great pleasure to acknowledge your growth in academia, but your achievements make us very proud that a person of your stature represents us the Heiltsuk peoples.

The Heiltsuk Tribal Council has approved your research project on **Stone Fish Traps: An expression of Heiltsuk Traditional Knowledge**.

We will look forward to your report, and wish you good research and field days.

Respectfully Yours,

Ross Wilson
Chief Councillor

P.O. BOX 880, WAGLISLA, BC V0T 1Z0

Note: Digitizing the signatures of others is not permitted under the Canada Privacy Act.
Mr. Wilson's signature has therefore been protected here.

Appendix B

RESEARCH AGREEMENT

BETWEEN: Elroy White, MA Candidate, Dept. of Archaeology, Simon Fraser University,
#202-1710 East Pender, Vancouver, B.C. V5L 1W4
604-215-2182

AND: Heiltsuk Tribal Council
P.O. Box 880, Waglisla, B. C. V0T 1Z0
250-957-2381

RE: Research on Bella Bella I.R.s and within Heiltsuk Territory

I, Elroy White, propose to undertake the following research project in Waglisla / Heiltsuk Territory, in accordance with Guidelines for Researchers / Access to Information, Heiltsuk Tribal Council, 1997.

"Stone Fish Traps: an Expression of Heiltsuk Traditional Knowledge" April 16, 2004

In return for permission to conduct this research project on the Bella Bella Indian Reserve / Heiltsuk Territory, to use the resource files of the Heiltsuk Cultural Education Centre, and for assistance from band members in conducting this research, I agree to the following terms:

a) tape recordings, documented notes and other primary data gathered through the research must belong to the Heiltsuk Band and the Band shall have the right to copyright;

b) original tape recordings and copies of field notes will remain with the Band;

c) all information gathered in the research work will be available for examination at any time by the Band;

d) all findings of the research will be given to the Band and to project participants, in draft form prior to publication;

e) in the case of academic thesis research, the researcher must present his/her thesis in Waglisla/Bella Bella prior to final presentation to the academic thesis committee;

f) approval, in writing, of the Heiltsuk Tribal Council, must be obtained regarding any aspects of publication of research findings;

g) any commentary that the Band may wish to make on the publication will be included in the published version;

h) An expected completion date be specified;

i) The researcher will provide the Band with copies of all reports and publications resulting from the research project.

AGREED THIS 4th DAY OF June, 2004

Researcher	Heiltsuk Tribal Council
Heiltsuk Hereditary Chiefs	Heiltsuk Cultural Education Centre
Thesis / Academic Advisor	Dr. Eldon Yellowhorn [print name & contact information of thesis advisor] Department of Archaeology Simon Fraser University, Burnaby, BC, V5A 1S6 Tel: 604-268-6669

Note: Digitizing the signatures of others is not permitted under the Canada Privacy Act.
Dr. Yellowhorn's signature has also been protected.

Appendix C

Heiltsuk Tribal Council
P.O. Box 880
Waglisla, BC.
V0T-1Z0

Simon Fraser University
Department of Archaeology
Graduate Studies
8888 University Drive
Burnaby, BC
V5A-1S6

Informed Consent: "STONE FISH TRAPS: AN EXPRESSION OF HEILTSUK TRADITIONAL KNOWLEDGE". MA Archaeological Research.

Research Investigator: Elroy White (604) 215-2182
Simon Fraser University Supervisor Eldon Yellowhorn (604) 268-6669
Heiltsuk Advisory Committee Heiltsuk Cultural Education Center

Purpose of project: This project will document local knowledge through audio interviews at Bella Bella and within the lower mainland with the aid of video footage about the technological and functional aspects of stone fish traps in Heiltsuk Traditional Territory, specifically those stone fish traps used historically to catch salmon. If possible, interviews may be conducted at the sites depending upon funding, health of participants and weather factors. The information collected will be added to the HCEC and to the Heiltsuk College (Video data) resource collection and will provide audio and visual data for Elroy White, SFU Master of Arts (MA) student in archaeology.

Confidentiality: Information from individual interviews will be kept confidential according to the wishes and direction of those interviewed. Individuals who are interviewed will have the opportunity to review and correct interviews once they are transcribed and typed. They will also have an opportunity to review and correct the project's final report before it is completed. Unless interviewees request not to be identified in the final report, they will be acknowledged.

Time Required: Time involved will be entirely up to the interviewee who may set limits on all discussions.

Compensation: Interviewees will receive for their participation, an acknowledgment of $30.00 per hour of tape-recorded interview.

Contact: If I have further concerns about my treatment or rights as a research subject, I may contact SFU's Dean of Archaeology, Dave Burley at (604) 291-3135 or Elroy's supervisor, Eldon Yellowhorn or the HCEC at 957-2626. If I have any questions or want further information about the study, I may contact Elroy White at the Heiltsuk College at 957-2141 in Bella Bella or in Vancouver at 604-215-2182 or via email at xanuis@hotmail.com

Consent: I agree to participate in this study, on the understanding that my participation is entirely voluntary, that I may ask questions about the study at any time, and that I may withdraw from the study at any time without jeopardy. Copies of this form will be in triplicate. One for the HCEC files, one for Elroy's records and I have received a copy of this form for my records.

_____ _____
Consultant Signature Date

_____ _____
Witness Signature Date

Appendix D

Interview Guideline

Knowledge Transmission
How did you learn how to use the stone fish trap?
When did you learn of it?
Who were the knowledgeable people?

Location/Use/ Function
Have you used a stone fish trap?
What type? Salmon, herring, cod, porpoise, ooligans, clams?
Why and when did you use it?
Who would participate?

Form
How high were the stone walls when you used them?
Why were they that high?

Language
Is there a Heiltsuk word/s for a Stone Fish Trap? Or Heiltsuk sentences for gathering salmon? Herring? cod, porpoise, ooligans, clams?

Construction
Who built the walls?
How long was the trap wall?
How was shape selected?

Age
Do you know how old the trap is? Or how old any of the traps in HTT are?

Ownership
Were traps owned? If yes, by whom?
Did individuals own them?
Did families own them?
Did villages own them?
Did tribal groups own them?

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