"We looked after all the salmon streams"
Traditional Heiltsuk Cultural Stewardship of Salmon and Salmon Streams:
A Preliminary Assessment

By

James Thomas Jones
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to the required standard

[redacted]

Dr. Nancy J. Turner, Co-supervisor (School of Environmental Studies)

[redacted]

Dr. Paul R. West, Co-supervisor (School of Environmental Studies)

[redacted]

Dr. Richard J. Hebda (Department of Biology)

[redacted]

Dr. Rosemary E. Ommer, External Examiner (Office of V.P. Research)

Co-supervisors: Dr. Nancy J. Turner and Dr. Paul R. West.

ABSTRACT

There has been an increasing interest in aboriginal salmon stewardship practices by First Nations during recent years as Pacific salmon stocks decline in spite of scientific resource management. I undertook a representative study of Heiltsuk traditional salmon and salmon stream stewardship practices. My method was to combine literature and archival research with a collaborative, participatory action, interview project in the Heiltsuk community of Wáglísla (Bella Bella). Despite some loss of traditional knowledge, due to dramatic disease induced population declines after European contact, followed by more than a century of federal and provincial policies of cultural assimilation, five specific practices central to stream stewardship were identified in addition to a requirement for exclusive systems of tenure. These were: one - stream clearing to ensure ease of entry for spawning salmon; two - selective harvesting of salmon; three - transplanting of salmon eggs; four - restricted hook and line fish harvesting through secret "hot spots"; and five - a "First Salmon" ritual ceremony that limited fishing when the annul runs were beginning. My study suggests that these practices were critical in perpetuating the reliable and abundant yields that supported relatively high populations of First Nations peoples. I also ascertained that salmon stewardship is just one manifestation of ancient care-taking ethics inextricably embedded in First Nations' cultures.

Examiners:

[redacted]

Dr. Nancy J. Turner, Co-supervisor (School of Environmental Studies)

[redacted]

Dr. Paul R. West, Co-supervisor (School of Environmental Studies)

[redacted]

Dr. Richard J. Hebda (Department of Biology)

[redacted]

Dr. Rosemary E. Ommer, External Examiner (Office of V.P. Research)

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PREFACE

Who I am and how I came to do this work and this study

When I first met Heiltsuk hereditary Chief Reg Moody Humchitt in Bella Bella in August, 1996, the meeting went badly. After introductions, he asked me two simple questions: "Who are you? And, why are you in my territory?" Reasonable questions. Not wanting to give trite answers, I really bumbled around, unable to give a sincere answer to questions I had not adequately considered before. Since then, I have spent some time with Reg and several of the Heiltsuk elders, but never appropriately addressed those questions, which I think are very important to them and others of the Heiltsuk community who might read this thesis. Many traditional people, when identifying themselves in a formal setting, introduce themselves with a short narrative, identifying their ancestral descent. In answer to the Chief's questions, the following reply respectfully outlines my ancestry, interests and personal commitments.

During my first 40 years, I grew up in Edmonton, Alberta, thinking of myself as a non-Native person. Not that I was unaware of my Indian ancestry, I just never gave any thought to having some relatives who were browner than others. To me, the reserve was simply a good place to pick berries with the family. When the federal government passed Bill C-31, repealing "those sections which offended the equality provisions of the Charter of Rights" (Woodward 1989: 20), my mother regained her Indian status that had been lost through marrying my father, a non-Native. At the urging of a great aunt who said

something like, "we need all the Indians we can get", my brothers and I also applied for Indian status. My Native heritage comes from my mother through her father, Thomas Callihoo, of Cree and Mohawk descent, whose grandfather was Michel Callihoo, signator of Treaty 6 for the Michel Band no. 132, near Edmonton, Alberta. Both my maternal grandmother's family and my father's family came to the prairies as pioneering settlers. I think that all of my ancestors wanted similar things: peace, contentment and a good life for their descendants. I now identify myself as a man of mixed ancestry, both Native and non-Native. I am dedicated to those same goals.

By 1989, I had thought long and hard about my status right to education, formerly an impossible dream for me as a single parent with children. I felt that such an education carried an obligation to apply that education for the strengthening of First Nations. This has become my guiding commitment.

From the beginning, my intentions have been to work towards positive change in public and academic perspectives as well as to contribute to inter-cultural understanding. It is my hope that by helping to record traditional ecological knowledge and promoting traditional wisdom, I will be assisting the emergence of a better human understanding of the natural world. I want to help develop traditional knowledge partnerships with science, where mutual respect between practitioners of each way of knowing, will allow them to work together in confronting our unprecedented environmental instability, building the respectful environmental ethic humans will need to survive.

In 1990, I attended Selkirk College in Castlegar BC, where I completed high school requirements for university entrance. This escape from city life to the mountains and valleys of the west Kootenays allowed me and my family to reconnect with the natural world. Fishing, observing nature and outdoor living has always been my passion, so it seemed most meaningful to begin studies in biology while at Selkirk.

I moved on to the University of Victoria where I completed a Bachelor of Science degree with double majors: biology and environmental studies. Close association with the Native Students' Union during those years brought greater awareness of Aboriginal issues through friends and acquaintances and their stories from all over the province. Written assignments in environmental studies gave me many opportunities to explore perspectives of First Nations. I developed an intense interest in learning about First Peoples in British Columbia: the history; the problems; the traditional way of life; and especially, the sustainable way that people lived on the land in pre-contact times and worked with it in order to ensure survival with some degree of certainty. I got hooked on this so-called "Native stewardship"; the study of it may be as timely as its environmental application is timeless.

During the summer of 1996, I worked as a volunteer in Heiltsuk territory with the Vickers family in their project to reestablish their family's presence in its traditional territory at the head of Ellerslie Inlet. Through conversations with elders and other knowledgeable community members during that time, I became aware of fundamental community, economic and cultural values surrounding Heiltsuk subsistence fishing. Fascinated, I heard it said that Heiltsuk "looked after the salmon in the old days".

Discussions arising from apprehension over present and extensive future logging, planned by Western Forest Products within the tribal territory, invariably introduced concerns over dwindling salmon stocks and unsustainable management of forest and fish resources: critical issues in current treaty negotiations for the Heiltsuk and other First Nations throughout the province.

Later that summer, I was accepted by the University of Victoria to study for a Master of Arts degree in Environmental Studies. By this time, I knew that I wanted to learn more about traditional Heiltsuk stewardship of fish and met with anthropologist, Jennifer Carpenter, Director of the Heiltsuk Cultural Education Centre. In a preliminary meeting, I learned from Jennifer that although the Heiltsuk were fully experienced in documenting their own oral history, they might consider a mutually beneficial, collaborative investigation of a traditional Heiltsuk marine resource management topic. Together, we determined that a study that included marine fish or foreshore stewardship was too broad for now, but that a study focusing on Heiltsuk traditional stewardship of salmon streams, treated as a pilot project could be a valuable first step.

The Challenge to Write for a Nonexclusive Audience

Very early in discussions with Jennifer Carpenter regarding the study of traditional knowledge, she challenged me to write in a way that would be more accessible to the Heiltsuk. One of the barriers to partnership is academic language. Academic writing tends to be for academic audiences and as such, is generally complex and bursting with specialized words that often make it difficult, sometimes even for scholars of other

disciplines, to understand. Although specific terminology is difficult to dispense with in discussions between specialists, science's use of complex language has served to inhibit the development of cross-cultural understanding in discussions regarding resource management issues. This effectively excludes traditional knowledge holders from access to data or from participating in debates about issues which concern them. Park (1993: 6) has suggested we recognize the validity of "interactive knowledge", which can be drawn "from sharing a life-world together - speaking with one another and exchanging actions against the background of common experience, tradition, history, and culture." Despite cultural differences, widespread use of accessible language based on daily life and common experience, can help to penetrate the fog-bank obscuring information that is specific to either system of knowledge, especially when it corresponds to shared environmental concerns. I hope that my writing is both appropriate and respectful and encourages exchange of ideas, truly linking science with traditional knowledge.

Potential Risk

After knowledge is documented, it can sometimes be taken out of its cultural context and there is a potential for harmful misuse through deliberately inappropriate reinterpretation or simply, quotes taken out of context. It has been my hope that the collaborative nature of the project would help to manage this sensitive issue since all concerned have been alert to this possibility as they read and critiqued the work. This research has sought to learn about, and begin to understand First Nations cultural stewardship of salmon and salmon streams through the Heiltsuk example and should not be considered definitive; we are just beginning to turn the pages of understanding. The work seeks to learn and

understand stewardship as it was accomplished during more traditional times before the advent of European influence and from times when such influence was much reduced (up to about the 1950s) from that felt during the present time period. There is no intention, whatsoever, to place Heiltsuk traditional knowledge or stewardship in the past, as it is understood that Heiltsuk care of the salmon, indeed, all their resources, is ongoing, but outside the scope of this research. In any case, the thesis is my own analysis and understanding of the information collected, for which I take full responsibility, including any errors or omissions.

ACKNOWLEDGEMENTS

Special thanks to the Hereditary Chiefs, Elders and other knowledgeable Heiltsuk who contributed their knowledge to the project, and all the people of Wáɣ̓ísḷa who shared their community and territory with me - A part of me will always live in your unique Place.

I am grateful to the Heiltsuk Tribal Council for supporting this project and providing my community based Heiltsuk Advisory Committee: Jennifer Carpenter, Director - Heiltsuk Cultural Education Centre; John Bolton, Director - Heiltsuk Fisheries Program; and Sarah Murdock, Researcher - Heiltsuk Treaty Office. Thank-you Jennifer, John and Sarah for your guidance.

I especially thank Hereditary Chief Clarence Martin for your guidance and all the explanations, suggestions and day to day help as we worked together to interview Heiltsuk who remember the old ways of looking after the salmon and the salmon streams.

My thanks to Gordon Miller, Librarian - Pacific Biological Station, Nanaimo, BC for your helpful suggestions and for providing access to your private collection of scholarly papers on topics concerning First Nations' fishing.

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To my many good friends and loving family who walked with me every step of the way by my side, always keeping faith - words fail me, I could not have completed this work without you.

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CHAPTER ONE
INTRODUCTION

Survival of Heiltsuk people is totally dependent on the resources of the sea. We have nothing else . . .Every family owned fishing sites in the old days, [you] know. You got areas where people dried herring eggs. Certain families owned certain areas. Not everybody went to the same place; you had to have a right to go there. We looked after all the salmon streams. We even had our own halibut grounds, our own black cod grounds and our salmon streams; we looked after them. We made sure that nothing was going to happen to the runs that came back. We never abused it in any way. So we are natural conservationists. We've been told stories[1] *by our ancestors about how people were banished from our communities for abusing the resource of the sea or playing with it. (Heiltsuk Hereditary Chief, Edwin Newman, from the documentary film: Laxwesa Wa. Cranmer and Green 1995)*

Chief Newman's words highlight the profound and vital importance to First Nations of understanding and stewarding the natural world. We are now beginning to understand that First Nations peoples are holders of knowledge and wisdom important to all of us as we strive to live in greater balance with our environment in our challenging times. The purpose of this research was to investigate the nature and existence of traditional[2] Heiltsuk stewardship of salmon, their salmon streams and any directly related activities in

[1] The word "stories", as well as "myths" and "legends," though often used by First Nations' people to describe their oral history, can have the effect of suggesting fiction, rather than fact. Oral history is only storylike in that it is passed on orally, in a story-telling format. It is recognized and accepted as evidence in our court system as fact (Delgamuukw v crown 1997)

[2] Tradition (Anderson 1999; Berkes 1999) is culturally based and repeated for generations - rooted in the past, continually evolving through its dynamic connection to the present.

adjacent landscapes. A brief description of the Heiltsuk people's history and their territory[3] is provided at the beginning of this chapter, followed by an outline of the goals and benefits of the research with a discussion and definition of the concept of "Native stewardship". This collaborative study, sharing perspectives with the Heiltsuk research community, was seen as a pilot project, intended to provide an academic anchor for the ecological validity and utility of long term Heiltsuk environmental understanding. It explores the current concept that practices associated with traditional ecological / environmental knowledge[4] may provide insight and community based alternatives to current resource management and conservation regimes.[5]

As materials and transcripts accumulated, the study matured, evoking visions of a pre-contact [6] Northwest Coast comprised of thriving human-influenced ecosystems that call into question long standing European notions of "wilderness". In place of this romantic image of pristine, untouched land and seascapes, I conclude this chapter with a picture of long established, substantially populated, human influenced/balanced, tenured territories.

The argument for long existing, organized and widespread systems of stewardship among

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[3] Territories are First Nations' recognized areas of exclusive tenure and harvest rights, recorded in oral history and in many cases physically marked on the landscape, they include land, rivers, waterways and ocean, often as much as three hundred km off-shore.

[4] Often shortened to TEK, please see definition, this chapter.

[5] Clayoquot Sound Scientific Panel 1995; Pinkerton and Weinstein 1995; Pitcher, Hart and Pauly 1998; Weinstein 1998; Pers. comm. with Fred Carpenter, Dianne Newell, Nigel Haggan, Daniel Pauly, Evelyn Pinkerton, Tony Pitcher, Nancy Turner, Martin Weinstein, and many more, from 1997 to 2001, whose work is cited throughout the thesis.

[6] Pre-contact refers to the era before European contact with Northwest Coast First Nations peoples.

First Peoples of the Northwest Coast is explored through an analysis of literature and archival material in Chapter Two. Providing context for the study, I examine: the relationship of traditional knowledge and stewardship; related academic works; Aboriginal systems of tenure; traditional fishing processes; and the implications of stewardship for human populations and salmon abundance. The collaborative approach of the field project is set out in Chapter Three. Then, in Chapter Four, data collected through the interviews and archival research are presented and where possible, visually summarized in tables and figures providing grist for the detailed discussion. In Chapter Five my cultural stewardship of natural resources metaphor is introduced and graphically portrayed, demonstrating the way that stewardship inseparably permeated Heiltsuk and other First Nations' cultures. Threads of cultural stewardship are teased from stories and legends, language, cultural ethics and spirituality. Then I consider in depth, "hands on" aspects of Heiltsuk traditional practices during a smokehouse season. Chapter Five ends with a consideration of the many areas and topics for future research.

Just as culture and stewardship are one, the study of cultural stewardship brings into play a hail-storm of resource related questions and issues that must be addressed in order to put the topic, the Heiltsuk field work, and First Nations' experience into perspective. Recalling that traditional ecological / environmental knowledge may provide insight and community based alternatives to current resource management and conservation regimes, sensitive resource issues, both current and long-standing, are viewed from a cultural stewardship perspective of First Nations' cultural loses in their struggles to maintain their traditional role in resource management in Chapter Six. In conclusion, I offer some

philosophical insights I have come to believe through my long consideration of this research.

1.1 Heiltsuk and Their Territory[7]

Prior to European contact, the Heiltsuk consisted of four main regional groups living in many seasonal and permanent settlements dispersed over approximately 15,000 square kilometers of the Central Coast of what is now the Canadian province of British Columbia (see map, Figure 1).

Heiltsuk territory includes the land and adjacent waters, as well as many inlets that probe deeply into the continent's Coast Mountains, inside a network of coastal passageways between numerous islands. Sea and lake coasts, as well as river mouths, were once extensively settled throughout the territory. Well over 100 small salmon rivers and creeks drain mainland and island old growth temperate rainforest watersheds. All five species of Pacific salmon once spawned in Heiltsuk streams, but the handful of Spring salmon *(Oncorhynchus tshawytscha)* runs have been lost since the advent of commercial fishing, and returns of other once prolific species have significantly diminished (Slaney et al. 1996).

Classified, in resource management terms, within the Coast Forest Biotic zone, the Heiltsuk lands are characterized by mild winters, cool summers and rainfall that often exceeds three meters annually in some locations (Schoonmaker et al. 1997: xiii-xiv).

[7] Condensed from HCEC 1993

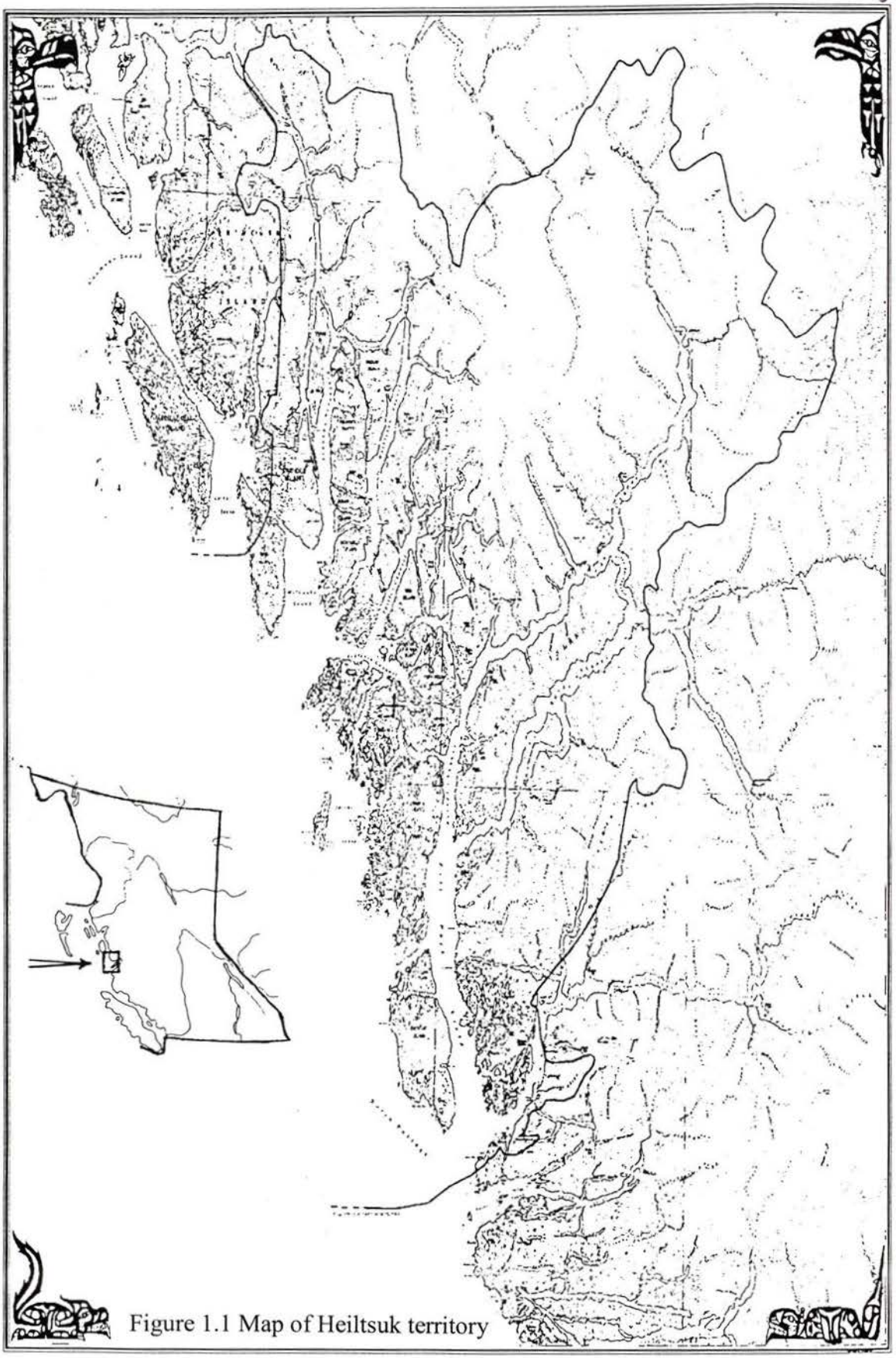

Figure 1.1 Map of Heiltsuk territory

Heiltsuk Oral history, reaching back to time immemorial, is reinforced by the archaeological record which shows that the area has been continuously inhabited for at least 9700 years (Cannon 1996; Carlson 1979). Anthropological studies confirm that the Heiltsuk have had, for uncounted generations, a sophisticated culture with well defined ceremonial and social systems for governance, and land tenure and by inference, resource management practice. The highly developed technologies of the people have included construction of immense cedar-wood houses and canoes; complex fishing and hunting equipment and strategies; production of intricate ceremonial regalia; spinning and weaving of local plant and animal fibers; and a variety of methods for processing and preserving perishable foods. Salmon was predominant among Heiltsuk staple foods and continues to be central to sustenance in Heiltsuk culture and subsistence. Heiltsuk have always been skilled mariners and shrewd traders who maintained strong cultural connections with other coastal First Nations and made distinctive contributions to the renowned West Coast Native art forms.

In quick succession, Heiltsuk populations were decimated by smallpox and other dreaded disease epidemics before and during the development of the fur trade. Next the missionaries arrived and immediately began to actively and purposefully erode culture and traditions; the canneries introduced large-scale commercial fishing and a cash economy; tiny restrictive reserves were established and a British legal system overrode Aboriginal systems of social order. Diminished Heiltsuk tribal groups had moved to Campbell Island by 1889 where they began to merge into a central cultural group that has grown into the present community of Bella Bella/Wáglísla.

1.2 Goals

> *...Native leaders now advocate research that is collaborative and meaningful to their communities...Native research takes place in an increasingly politicized and chaotic environment...Our responsibility is to make explicit a participatory methodology whereby our own and the Native voice are differentiated and strengthened...Collaboration ensures self-reflection and invites critical reassessment of our methods. (Warry 1990, quoted in Brown 1993:22)*

The initial idea of the research was to work collaboratively with the Heiltsuk on a marine related aspect of their traditional ethnoecology.[8] In the spirit of participatory action research (Hall 1979; Johnson 1989-93, 1992; Park 1993), the study topic and field work were mutually discussed and the following goals were jointly refined:[9]

a) Develop and work within collaborative multi-level partnerships:

- Heiltsuk Tribal Council ↔ University of Victoria, School of Environmental Studies
- Heiltsuk Advisory Committee ↔ graduate Academic Committee
- Heiltsuk professionals ↔ graduate researcher

b) Develop a community-based project that brings traditional ecological knowledge and wisdom, academic research methods and scientific knowledge together in an ethical and mutually beneficial manner;

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[8] Ethnoecology is the cultural use, influence and manipulation of local plants, animals and landscapes.

[9] In working out the meaning and reality of true collaboration, collaboration issues in First Nations community research became the topic for a Heiltsuk initiated joint study between Heiltsuk and the University of Victoria (Turner and Carpenter 1999).

c) Assemble evidence from Heiltsuk oral traditions and narrative as well as from archival records and literature sources that describe or infer traditional salmon stewardship practices;

d) Determine whether traditional Heiltsuk methods might enhance current salmon populations;

e) Learn whether stewardship of salmon and salmon habitat continues to be practiced; and

f) Generate interest in further study of Heiltsuk and other First Nations' stewardship systems.

1.3 Benefits of the Study

When the work was first discussed, we agreed that besides providing data for this thesis, it must, as a first priority, benefit the Heiltsuk people. Heiltsuk partnership and perspectives have consistently provided guidance to this end. In the "Project Description" accepted by the Heiltsuk Tribal Council, we anticipated:

a) Cooperative research, providing avenues for sharing ecological philosophies between Heiltsuk and scientific communities, validating Heiltsuk traditional holistic knowledge and stewardship of the environment;

b) Preservation of wisdom and knowledge held by Elders, which may not have been passed on to younger Heiltsuk generations;

c) Establishment of a record of traditional Heiltsuk river system management, in which the collected information will be more accessible for adaptations by resurging Heiltsuk culture. The results of the study could

eventually influence education, land use, treaty negotiation, fisheries resource management, stream restoration enterprise and more;

d) The resulting data gathered will be instrumental in initiating further studies; particularly involving implementation of salmon habitat restoration on unlogged, currently unmanaged stream systems, as well as on those impacted by logging. A new technology might emerge, creating employment for members of the Bella Bella Community.

Over the course of the study, we have begun to realize these benefits and, as well, others are emerging. Our ongoing collaborative exchange became an exercise in relationship building. Heiltsuk requests to define the meaning of 'collaboration' helped to clarify the three levels of partnership mentioned in the goal section above. Our experience with collaborative research may provide valuable insight to both academic and community partners in similar, resource related future research.

The combined collection of archival materials, literature sources and additions to recorded Heiltsuk oral history are illustrated and interpreted here in a way that accessibly blends and balances ecological understandings of both the Heiltsuk and academic communities, underscoring the validity, utility and value of this knowledge. Interview recordings hold a much broader base of environmental knowledge and stewardship practices that will be valuable in future research.

Although we will never know the full extent of Heiltsuk stewardship practices of the past, this study has collected evidence that Heiltsuk and other First Nations followed a successful culturally embedded system of stewardship, supporting extensive fishing

pressure that will become more defined with further study. The reality of long-standing, widespread and successful organized stewardship of salmon foreshadows experiments that adapt this gentler ecological approach to fisheries. Although Canada has been considered a world leader in fisheries and marine resource management, success remains elusive as fish populations decline in our oceans (Haggan 1998; Pitcher, Hart and Pauly 1998). Ironically, in the wake of disastrously low salmon returns in recent years, the "new" trend is to developing "selective"[10] and "terminal"[11] fishing strategies - echoing First Nations' fishing practices of the past. Not surprisingly, coastal First Nations were among the first and most active supporters of these new policies. Considering the ongoing dialogues between various stakeholders on habitat loss, watershed restoration, and ecoforestry, we may soon be ready to look at experiments in stream stewardship that includes exclusive harvest rights for the stewards. A case is made for community responsibility and jurisdiction over local salmon and other resources in Chapter Six.

1.4 Critical Concepts

Recognition of the connection indigenous peoples have to nature has led to related academic research and the emergence of the descriptive phrase "Traditional Environmental Knowledge" or "Traditional Ecological Knowledge", popularly shortened to TEK or TEKW (Traditional Environmental/Ecological Knowledge and Wisdom).

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[10] Selecting for size and species without catching or at least without harming non-targeted fish.

[11] Terminal fishing requires shifting away from fishing mixed stocks in the open ocean in favor of concentrating fishing effort at stream mouths where fully mature fish gather before ascending to spawning grounds - at the terminal, or end, of their life cycle. Terminal and selective strategies are likely to be characteristic of future fisheries.

The accumulating body of knowledge concerning TEK is generating interest and great respect among western scholars for the ecological and environmental wisdom of indigenous peoples (Kuhn and Duerden 1996). Anthropologist Martha Johnson defines "traditional environmental knowledge" as:

> *...a body of knowledge built up by a group of people through generations of living in close contact with nature. It includes a system of classification, a set of empirical observations about the local environment (often referred to as "the land"), and a system of rules or ethics that governs human behavior and use of resources. The quantity and quality of traditional environmental knowledge varies among community members, depending on gender, age, social status, intellectual capability, and profession (hunter, spiritual leader, healer, etc.). With its roots firmly in the past, traditional knowledge is both cumulative and dynamic, building on the experience of earlier generations and adapting to socioeconomic and environmental changes and adopting useful aspects of modern technological innovation (Johnson and Ruttan 1993: 8-9; also see: Anderson 1999; Berkes 1999b; Inglis 1993; Turner 1997; Turner et al. 2000; Williams and Baines 1993).*[12]

The "system of rules or ethics that governs human behavior and use of resources" that Johnson refers to has been commonly known by scholars and laymen, though seldom fully understood, as "Native stewardship". Exploring the history and perspectives of coastal First Nations and their struggle to regain control of their lands and natural

[12] It should be noted that TEK is part of a broader discussion which recognizes long term local knowledge held by non-indigenous communiy members, which can also represent generations of time depth such as outport communities in Newfoundland. Specialized knowledge held by forest workers or fishermen and other resource workers is also important in contributing to our greater understanding of natural systems.

resources has taught me that the concept of "Native stewardship" has been widely, often vaguely, acknowledged but its practice has not really been well studied, defined or fully accepted. As anthropologist Eugene Anderson wrote, "We have many evidences of careful resource management. . . Unfortunately, no thorough description is possible, since the relevant mechanisms were gone by the late nineteenth century. . ." (Anderson in Duff 1996: 38-9; Weinstein and Morrell 1994: 68; and Weinstein 1994: 1). Traditional systems of stewardship have been a dynamic cultural integration with local ecosystems which in turn were substantially influenced by practices that enhanced productivity, stability and diversity of harvested resources. The long term outcome was the perpetuation of a human balanced ecosystem. Native stewardship clearly links spirituality, culture, and survival. These elements culminate in a lifestyle ethic that obliges all members of the group to actively participate in environmental husbandry of essential resources, in a way that has been adapted to their locality over an extended period of time.

I think it is critical to make the distinction here, between *perpetuation of natural resources in stewardship* and conservation or sustainability in management of these resources. Gifford Pinchot, the first director of the United States Forest Service, believed that "the first duty of the human race is to control the earth it lives on". He defined and promoted conservation as "the use of the natural resources for the greatest good of the greatest number for the longest time," which became the foundation of modern conservation (Walsh 1990: 77, 75). Conservation's "for the longest time" suggests an assumption that resources will eventually run out - now a looming reality. The concept

of "perpetuation" requires us to reject that assumption, moving away from rationalizing harvest rates that consistently dip into environmental capital, and starting to plan in a way that includes generous estimates of our capital requirements and how best to nurture natural capital - if we expect to survive as a species. "Sustainably", should be an excellent descriptor for maintaining the integrity of natural systems, implying the goal of resource perpetuation through wise use. Unfortunately, since it was first popularized in the World Commission on Environment and Development's (WCED) report: Our Common Future (1987: 114, 15)[13] "sustainability" has always been tarnished by its links to the context of the Commission's phrase: "sustainable development". In my opinion, the comment of Maurice Strong, then our Canadian representative to the Commission, quoted in "Disagreeing on the Basics"- "sustainable development is in danger of becoming the fig leaf behind which business hides" (Taylor 1992: 32) - has proven to have been prophetic. Well-founded comments were also made by William E. Rees in "Planning for Growth Management and Sustainable Development" (1991), which criticized the Commission in great detail for its errors and omissions. For example, "sustainable economic development does not require the preservation of the current stock of natural resources or any particular mix of human, physical and natural assets"(Rees 1991: 22) . Stewardship acknowledges the need for wise use while accepting the responsibility to perpetuate resources for optimum future benefit.

Native stewardship of natural systems is not so much about a hunting, fishing or farming technology, as it is about a time built awareness and understanding that enables an

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[13] Also known as "The Brundtland Report."

advantageous rebalancing of local ecosystems. Food species are encouraged to reproduce or multiply under protective human influence with humans constantly seeking understanding while striving to gain stability and predictability of the food source over time. Awareness and understanding equate with survival. Ecological awareness and the natural urgency of survival permeate the fabric of spirituality and culture that clothe a people. In a First Nation's culture, oral tradition embodied in stories, ceremonies, orations, songs, discourse and names for places, plants and animals provides a long term background knowledge and information system that supports this dynamic ecological approach to maintaining food and other essential supplies. Oral history of a tribal region holds memories of diverse phenomena such as earthquakes, major storms, landslides, drought or failed salmon runs and is likely to hold stories built into ecological lessons of how environmental problems affecting food supplies were endured or overcome. This long term experience provides the basis for wise decisions in restoring or maintaining stability within a system that will maximize harvest returns (Berkes, 1993). A metaphor of Native stewardship as "cultural stewardship" for perpetuation of natural resources is presented and explored in Chapter Five.

1.5 Traditional Ecological Knowledge and Stewardship: Calling into Question the Notion of "Wilderness"

> *We did not think of the great open plains, the beautiful rolling hills and the winding streams with tangled growth as 'wild'. Only to the white man was nature a wilderness and...the land infested with wild animals and savage people. (Standing Bear, Oglala Sioux - quoted in Blackburn and Anderson, 1993)*

The significance of Traditional Ecological Knowledge became widely acknowledged when Our Common Future was published, recognizing that "...communities are the repositories of vast accumulations of traditional knowledge and experience..." and the larger society "could learn a great deal from their traditional skills in sustainably managing very complex ecological systems..." (WCED 1987: 114-115). This recognition of earlier works in the field of traditional knowledge study signaled a fundamental shift in the way that indigenous peoples and their knowledge are thought of in the world. Since that time, many more Canadian works on traditional ecological knowledge have been researched and published (Berkes 1999b; Kuhn and Duerden, 1996; Turner et al. 2000).

Historian John Lutz (1996), through an analysis of historic records, has revealed that James Douglas chose the Victoria site for the Hudson Bay Company post because the "prairies", produced by Coast Salish practices rooted in traditional ecological knowledge, reminded him of English country estates. Similar choices had occurred more than 200 years earlier for similar reasons on the East coast (Day 1953). Anthropologist Eugene Anderson states: "there is no serious doubt that some deliberate managing of populations (burning, planting, cultivating) was practiced" (1996a). He also mentions the Nuu-chah-nulth planting of salmon eggs in streams reported by Gilbert M. Sproat during the 19th century.[14] Aquaculture, in various forms has been practiced in the world, possibly for as long as agriculture, so it should come as no surprise that the Heiltsuk, or other First Nations, "looked after the salmon". Comparatively large concentrated aboriginal

[14] Confirmed by Earl Maquinna George, Ahousaht hereditary chief, (pers. comm. 1999). Ahousaht are a member nation of the Nuu-chah-nulth.

Northwest Coast populations (Hebda and Frederick 1990; Thornton 1990) suggest that traditional ethics and ecological practices based on survival may have provided the stability required to allow development of the complex sedentary coastal First Nations' civilizations.

The recognition that Aboriginal peoples have intentionally managed and manipulated their environments to achieve higher production of their natural resources is becoming widespread (see collected case studies in Blackburn and Anderson 1993, and Deur and Turner, in press; Minnis and Elisens 2000). Pinkerton and Weinstein (1995) collected examples of indigenous community fisheries from around the world that suggest long term systems of stewardship in Fisheries That Work. Another example of aquatic stewardship is found in the seminal recording by David Ellis with Manhousaht elder Luke Swan (1981: 85). They assess the use and extent of intertidal invertebrates as food and medicine sources of the Manhousaht tribe of Nuu-chah-nulth peoples living on the west coast of Vancouver Island. Luke Swan states that many of these animals were under "semi-cultivation" (Ellis and Swan 1981: 85).

The concept of centuries, if not millennia, of organized systems of stewardship, has far reaching environmental implications. If we accept that Aboriginal peoples had these culturally embedded ways of stabilizing and enhancing their food and medicinal sources, and assuming varying positive degrees of success among peoples, it seems reasonable to conclude that human populations would also increase in concert with stabilized and augmented food resources. If stewardship success contributed to population growth, this

may be a significant factor not previously considered in the pre-contact population estimates of so-called 'hunter gatherers' on the Northwest Coast.

Thinking about the impact of large numbers of people, each practicing their culturally developed forms of stewardship, and recalling the words of Standing Bear (Blackburn and Anderson 1993, above), let us reflect on of the definitions of wilderness:

> Wilderness:
>
> "a tract of land inhabited only by wild animals" (New Century Dictionary, Emery and Brewster 1927);
>
> "an area of land in which organisms and geological processes are undisturbed by man" (Dictionary of Ecology, Hanson 1962); and more recently,
>
> "1. a wild uncultivated and uninhabited region. 2. part of a garden left with an uncultivated appearance" (The Canadian Oxford Dictionary, 1998).

It seems that until recently, wilderness was any place where there has been no human influence, a concept that remains central to the popular interpretation. I think that "wilderness", more than just a word, is an emotionally embedded European heritage concept for peoples of Western cultures that extends back ito their own cultural histories.

"Wilderness" is a very old notion, probably translatable into many languages, going back thousands of years. Possibly it first came into being as a description of whatever lands lay beyond local knowledge: the great "unknown". Those who courageously ventured into the unknown (and returned to yarn about their adventures and the natural wonders of far off lands) were often inflated into heroic, if not historic figures. Besides the attraction of fame and fortune, somewhere along the way, that wonderful feeling of peace and

belonging that we feel in a quiet natural setting was also folded in. Thus the romance of wilderness where the rugged, and self reliant could make their fortune, start a new life, or escape a hum-drum existence by sallying forth (Go west young man!) to conquer, tame or at the very least, push back the bounds of "wilderness". And always, always, the "pristine beauty", "virgin forests", "land of milk and honey", "untouched...", those romantic enticements, pied piper's tunes to the souls of the resolute or desperate or faithful.

The romance of wilderness has always been promoted, a tool serving those who would profit, eg. business, government and religion, in the colonization of North America. For example, European settlers were enticed to western Canada during the 1800s by fantastic handbills promising short term prosperity, distributed in their home communities by the colonial Canadian government (Dalheim, K. and M. Kerr eds. n.d.). The romantic and spiritual notions of "pristine wilderness" free of human influence persist, and are now promoted entrepreneurially for the benefit of tourism in British Columbia as "supernatural". Some areas are also mysticized, as in the 'Great Bear Rainforest' by the environmental movement, which seeks to preserve the so-called wilderness in an untouched or at least not clearcut state through emotional appeal to the collective conscience of the urban masses, impelling them to stand up for their untouched wilderness heritage.

The land has been increasingly neglected since the great epidemics, but it only takes examination of virtually any site suitable for a community settlement on the Northwest Coast to find evidence of previous habitation. The land is far from untouched!

Evidence better supports the Canadian Oxford Dictionary's "garden left with an uncultivated appearance", when defining those places commonly described as "wilderness". In their paper: "Taming the Wilderness Myth", Arturo Gomez-Pampa and Andrea Kaus (1992) note evidence of resource management by past civilizations. They state, based on a cited collection of sources, "Scientific findings indicate that virtually every part of the globe, from the boreal forests to the humid tropics, has been inhabited, modified, or managed throughout our human past" (Gomez-Pampa and Kaus 1992: 273). In restoring such ecosystems after mutilation during resource exploitation, restorationists are beginning to consider that previously, the damaged spaces may have been the result of an artificial balance imposed or even created by indigenous peoples (Anderson 1996; McCann 1999a, 1999b). Extensive evidence of habitation throughout Heiltsuk territory has been mapped (Pomeroy 1968) and undoubtedly, many more sites will be located; the whole area is a maze of islands and peninsulas where suitable sheltered locations are to be found at every turn. The precontact density of Heiltsuk habitation sites alone certainly confirms a need for the extra productive services associated with a "garden".

With the concept of stewardship infusing every compartment of my mind, and looking back a few hundred years, I cannot imagine this territory as wilderness by anyone's definition.

1.6 Emerging Vision of The Pre-contact Northwest Coast Thriving Human-Influenced Ecosystems

Although a romanticized notion of "pristine wilderness" free of human influence persists, evidence to the contrary is rapidly accumulating. Organization of data from broad interdisciplinary sources assist in reconstituting a stewardship induced garden image for pre-contact times.

The archaeological records continue to grow as new sites are found, often through survey work for resource companies, particularly along the Northwest Coast, well known as a strip of high aboriginal population density. And, technology is advancing the methods and speed in which midden deposits can be interpreted (E.g. small diameter core samples can be taken from midden sites as a test for age and diversity of plant and animal remains and can help to quickly distinguish the most promising sites for excavation) (Cannon 1991, 1996). Even previously inaccessible submerged coastal sites are increasingly being examined, adding to our knowledge of the past (Bernick 1998; Easton 1991; 1986; Eldridge and Acheson 1992; Mauger and Wessen n.d.; Monks 1987). Historical and anthropological work reexamining archival notes and records from fresh perspectives endorse ever higher population estimates for Aboriginal peoples (Boyd 1990; 1994; Denevan 1962; Harris 1999; Suttles 1968), and also validate many of their subsistence practices (Deur and Turner in press). Scientists in botany, biology, ecology and other related disciplines, through participatory research with First Nations traditional knowledge holders, are constantly learning more and more about the surprising extent of influence First Peoples have had on their environments, supporting critical reviews of the

terms: 'agriculture' and 'hunter gatherer'. This thesis collection and analysis of Heiltsuk traditional salmon stewardship assists in pushing back the perplexing fog of misunderstanding surrounding aboriginal fishing practices.

Traditional use studies by First Nations in conjunction with their modern treaty processes have recorded large volumes of oral history, providing them with huge local data bases, now accepted as evidence in a court of law (Delgamuukw v Queen 1997). This recorded heritage information will be a valuable resource as each Nation engages in further cultural studies including mapping of its territory and harvest areas as well as settlement and use sites. In thinking of the jigsaw puzzle of these maps of linguistic and cultural diversity developed in the area over millennia, on a grand scale for the Pacific Northwest, I am reminded of old European maps that illustrate language and cultural boundaries through international borderlines. Cultural parallels between the two regions are also extensive, like the practice of arranged marriages to cement relations with another "kingdom", securing alliances, gaining access to resources or ending long standing disputes. Moreover, it must be understood that Northwest Coast civilizations would have had their own brilliant and creative minds throughout the ages too: deep thinkers, inventors, visionaries and teachers, shaping and extending technology and culture.

Common sense tells us that systems of stewardship had to have evolved, dynamically developing over time; unfortunately, we are unlikely ever to know the extent of ecological change wrought by stewardship universally practiced as a lifestyle by so many people. But, it seems reasonable to consider that much of the coastline would have been visually different than today, with communities and seasonal camps situated wherever

dependable food and other resource complexes allowed. It takes little effort to envision the often busy waterways, as numerous tribal or family groups moved from place to place following their seasonal rounds: collecting and drying seaweed or herring eggs; processing clams while tending intertidal marine invertebrate farms; digging and cultivating family root crops in marked off estuarine meadows; picking and drying berry crops; attending to controlled fires; clearing windfalls and log-jams from salmon spawning beds; harvesting and putting up the annual salmon stores. Besides food pursuits, plant patches of medicinal and technological value were being nurtured and cropped at the proper times; large projects such as canoes and totem pole carvings, plank production and house construction would be evident as specialists went about their work. No logging industry existed, so drift logs for construction and firewood would be uncommon. With iron a scarce commodity, firewood had to be gathered nearby. Undergrowth and deadfall along shorelines and stream-sides near camps and communities was likely well cleared at some distance from settlements. The landscape may have appeared somewhat manicured (Lutz 1995), like East Coast landscapes described by early European settlers before local First Peoples succumbed to disease and colonial polices (Day 1953). How extensive and how well tended would berry and root vegetable patches have been to support the constant dietary needs of so many communities? How obvious, the missing trees cut to house all these people? Each scene is a microcosm of coast-wide activity, ebbing and flowing according to local conditions and requirements. Add to this, the extensive seasonal trade traffic serving those sizable and widespread populations, and the frequent travel of community delegations to

cultural/intercultural events. All of these elements contribute to a vision of bustling human-influenced land and seascapes.

Since population size may be the best indication of First Nations' success in stewarding their resources, the next chapter is a study of Northwest Coast pre-contact population estimating and salmon harvest rates. The work supports the hypothesis that systems of tenure, stewardship, redistribution and food storage, must have existed in order to support large sedentary populations and allow them to live in balance with their Coastal ecosystems.

CHAPTER TWO

SURVIVAL, STEWARDSHIP AND CULTURE
The Importance of Living in Balance with Coastal Marine Environments

Indigenous peoples saw and, generally continue to see themselves as related to all things natural, not above or outside of something that others call "Nature". The universality of this perspective in aboriginal cultures is fascinating in itself, considering peoples' cultural and geographical diversity. For example, creation stories inevitably carry intuitive lessons that teach respect for living things. Living such a perspective and knowing no other, explains First Peoples' widely held spiritual belief that humans were set down in this world as its caretakers (Coward, Omer, and Pitcher 2000). Although past stewardship practices are presently obscure, it seems likely that stewardship systems and practices were crafted over long periods of time, creating an adjusted ecological balance, woven of survival, spirituality and culture.

Survival and reproduction are basic natural imperatives for any organism, humans included. Whether or not we thrive and prosper, depends on how effective we are, as individuals and organized groups or communities, at staying alive and nurturing our progeny. As strategies for procuring subsistence needs become more proficient and certainty of supply improves, so do our numbers increase and cultures evolve.

Careful use of limited resources ("never waste anything") increases the number of people that can be provisioned. Learning to steward and enhance resources successfully, allows

the population to grow further. On the Northwest Coast, as in most places, food resources are not evenly distributed throughout the year, nor from year to year. Consequently, in the past, a population's size was limited by its peoples' ability to provide for regular, predictable times of scarcity, such as winter and for depletions due to unexpected environmental phenomena, even as minor as extended periods of stormy weather (also a time of scarcity), which prevented access to those marine foods normally available under calm conditions. Accordingly, food storage technology, sharing and redistribution strategies[1] were major factors promoting population stability. From this perspective, and during pre-contact times when few food resources and no outside aid was available, size of populations may been the best measure of how well each First Nations culture was able to balance stewardship, storage and redistribution of resources.

This chapter will explore the range the extent to which fish and marine organisms were used and systematically maintained by various Northwest Coast indigenous groups in British Columbia. Although the concept of Native stewardship is becoming widely accepted, the existence of management systems for marine and freshwater species and habitats is not well documented for the region. The topics of human population density, together with fish harvesting levels, fish catch and storage technologies, nutrition, spirituality and systems of land tenure or ownership are examined as they relate to stewardship. Examples are taken from ethnographic and other literature as well as personal communications with First Nations individuals and ethnographers working in related fields. Analyses, presented in this chapter, reveal and support the existence of

[1] Not just from those who momentarily have to the have-nots, but also the exchange of certain resources that occur in some places but not others.

"Native stewardship" from pre-contact times to well into the twentieth century. This chapter sets the stage for my field project to investigate Heiltsuk stewardship of salmon through analysis of recorded interviews with community knowledge holders, locally recorded oral history and archival records. Chapter five extends stewardship discussions from this chapter based on further information gathered during collaborative research with the Heiltsuk of Wáɡ̓ísḷa (Bella Bella).

2.1 Settlement, Environment and the Change

The BC coastline is thought to have been inhabited by indigenous peoples since soon after the ice from the last glaciation receded. Archaeological evidence from several locations has established that the central Northwest Coast was continuously inhabited since at least the beginning of the Holocene, 10,000 radiocarbon years ago: at Namu for about 9,700 years, possibly more than 11,000 yrs (Cannon 1996; Carlson 1979; Hobler 1990); 9,000 years in the Sto:Lo territory of the Fraser River valley (McHalsie in Carlson 1997); and at least 9,000 years at Haida Gwaii (Queen Charlotte Islands)2, Port Hardy and Prince Rupert (Ketchen 1986). Humans have probably been on this continent for at least 15,000 to 20,000 years and some archaeologists suggest the likelihood that it may actually be 70,000 years or even more (Haynes 1969; MacNeish 1976).[3]

[2] Haida: Spirits of the Sea, Virtual Museum of Canada, http://www.virtualmuseum.ca/Exhibitions/Haida/ (26 February,2002).

[3] Journalist Elaine Dewar (2001), in her book-long survey of physical anthropology and archaeology, could only describe the heated debate surrounding the time-depth question on human habitation in the Americas , which seems to be without consensus.

Shell middens are found above the tidal zone on virtually every beach suitable for settlement (Onat 1989;; Moss 1993) on the Northwest Coast as well as numerous inland sites. Shell deposits apparently increase in size and frequency after 5500 BP [before present], a feature that has been interpreted to indicate a general time of rapid population expansion and a trend towards sedentism (Moss 1993). This transition coincides with the stabilizing of the earth's post-glacial crustal movements, establishing sea levels near those of today (Fladmark 1975; Hebda and Frederick 1990).

The warming trend that caused glacial retreat, from about 14,000 to 10,000 radiocarbon years ago (Hebda and Frederick 1990), ended the last ice age, and released a dynamic sequence of events. Like a log barge relieved of its load of logs, the land relieved of its burden of ice rebounded (isostatic rebound), and then slowly settled back to about its present position relative to the coastline. As the ice melted, much of the rock picked up or broken off as the glaciers advanced was rolled and/or flushed towards the ocean by powerful melt-water rivers. At some early time, the process must finally have stabilized enough to permit intertidal and river-bed ecosystems to settle, develop stable landforms and result in the establishment of long term plant, animal and marine communities (Fladmark 1975; Cannon 1996; 1991).

Similarly, western red cedar (Thuja plicata), important to aboriginal culture and technology, expanded to the BC coast at that time (Hebda and Mathewes 1984; Hebda, pers. comm. 1995), possibly due to a minor cooling climatic change following two millennia with mean annual temperatures about 2o C higher (Hebda and Frederick 1990). Archaeologist Knut Fladmark (1975) suggested that the cooling of the climate and

stabilized shoreline of the land provided conditions which also encouraged an increase in biologically productive intertidal area, which in turn had the effect of enhancing salmon productivity. A stabilizing coastline, consisting of thousands of kilometers of sheltered fiords, islands, estuaries, rich tidal flats, extensive continental shelf resources, and growing salmon returns, would have nurtured human settlements, enabling them to proliferate dramatically. In time, seven major language groups evolved or resided in British Columbia's coastal area (Carlson 1996).

Just as Europe was broken into many distinct cultural groups, each with its own family of languages, so too was the Northwest Coast. For example: the Salish, Wakashan, or Tsimshian territories, each with its own unique language divisions, might be seen as regions like Scandinavia or the Ukraine. The Wakashan group, for instance, consisting of Nuu-chah-nulth, Kwakwaka'wakw, Heiltsuk, Haisla and other sovereign nations that speak distinct languages, were each divided into tribes that could be seen as similar to European kingdoms, often with their own distinctive dialect. This divergence likely arose due to natural geographic barriers and boundaries, a certain amount of isolation, the characteristic complexity of environmental resources and rapid population growth in long term settlements following coastline stabilization. Since tribal boundaries were fiercely defended, most individuals likely spent their entire life-times within the well known confines of their own tribal territory where personal needs were entirely met by culture, community and food, medicinal and technological resources locally available.

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2.2 Pre-contact Populations on the Northwest Coast and Heiltsuk Territory

Were aboriginal populations so sparse in the time before European contact, and food resources so plentiful,, that any kind of stewardship or resource conservation systems was superfluous? Or, were human populations extensive, consuming large quantities of salmon and other resources at a rate that demanded stewardship? These two questions are at the core of the research that I undertook and are discussed below.

It is still commonly assumed that even though the Northwest Coast of North America was known to be one of the continent's most densely populated areas in precontact times, aboriginal populations were, nonetheless, still too sparse to have put appreciable harvest pressure on the anadromous fish populations on which they depended for survival.4 Under this view, the bounty of the sea, by comparison with size of communities, was infinite; lucky aboriginals simply helped themselves when hungry (Suttles 1968). Contrarily, historian Robert Boyd states: "starvation is a frequent theme in coastal folk traditions" (Boyd 1990: 136). This contention is richly supported by stories and legends in the ethnographic literature (McIllwraith 1948; Boas 1932; Maud 1982).

Humans, as part of any ecosystem, like the other animals, will affect the dynamics of the system (Kormondy 1984). In the interest of survival, we humans have been tinkering with the natural world, figuring out ways to control and enhance the local food supply, for thousands, probably hundreds of thousands, of years. The development of agriculture and domestication of animals in both hemispheres with subsequent population expansion

derived from just such efforts. There is no reason, then, to assume that the Northwest Coast First Peoples as "discovered" by European explorers were less astute than their southern agriculturalist cousins. Accordingly, elevated population densities sustained through extensive resource management systems likely occurred and exerted significant collateral ecological influence on local environments.

In this segment, historic census "guesstimates", more recent precontact population estimates, salmon abundance and. traditional salmon technology and harvesting rates are examined. I aim to show that the data on these topics illustrate that human populations were dense enough to require systems of stewardship and the ecological understanding necessary to maintain extensive salmon stocks. It is interesting to note that fishing technology all up and down the coast had advanced to the point (at contact), to be able to catch almost all returning salmon of a particular run. Stream-based fishing often made use of traps and woven wood fences that blocked the up-stream passage of spawning salmon, necessitating deliberate opening of the traps at prescribed intervals (Berringer 1982; Stewart 1977; O'Leary 1992)

2.2.1 Historic Methods of Estimating Precontact Aboriginal Populations

Academic curiosity regarding aboriginal populations in the New World began in the early sixteenth century when indigenous numbers were visibly declining in Central America and northern South America (Thornton 1987). After the 1870s the area north of the Rio

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[4] Although I have not seen specific documented references to demonstrate this assumption, I have often been frustrated in my discussions of pre-contact stewardship with learned resource managers who confidently dismiss aboriginal impact of any significance on any resource, particularly fisheries.

Grande came under study (primarily the United States with northern populations above the 49th parallel generally taken as insignificant), opening a controversial debate that has been ongoing, sometimes heatedly, to the present without consensus (Daniels 1992). In his analytical article "The Indian Population of North America in 1492", John Daniels states:

> *The lack of agreement reflects the diverse conclusions of experts and the inadequacy of historical evidence. ...Given the shortage of good evidence, historians have largely left the population question to anthropologists, ethnologists, geographers, archaeologists, demographers and mathematicians (1992: 298-9).*

Later in the discussion of subsistence and traditional resource management, the work of botanists, biologists, biochemists and ethnoecologists is added to the mix, encouraging the "trend toward acceptance of higher numbers" (Denevan 1976:1).

2.2.1.1 Methods of Population Estimation

Daniels (1992) efficiently reduces the topic to eleven methods of estimating population which he groups into three basic approaches (discussed in 2.2.1.2 below), ordering the academic diversity into easily understood perspectives. These are condensed, listed and briefly defined below as reference terms I will use later.

> ***Guesstimate*** - dead reckoning based on empirical understanding of the observer, this can mean a wide range of reliability;

Count multiple - multiply a known historical count of visible units by a ratio which has been compiled, e.g.: number of warriors, houses, house sites, village sites can be converted to population estimates;

Multiple multiple - a series of ratios as in count multiple, which has been criticized as multiplying uncertainty. Nonetheless, this method has been used by prominent population estimators;

Report discounting - initially, scholars often felt that travelers, soldiers and priests were assumed to have exaggerated their estimates in order to impress superiors. (An intriguing application of the scholarly lens?

Epidemic correction - applying population correction for events known from ethnohistory after assignment of a mortality rate for each outbreak;

Population density - known density per unit area is applied to nearby territories where geography is similar;

Comparing resource availability - when population and food resources are known for an area, nearby areas with similar topography can be estimated by analogy;

Carrying capacity - assume that by calculation of total food resources for an area, population can be estimated;

Depopulation ratio - by taking a ratio of several Southern U.S. tribes' 1492 estimated populations to their nadir populations, a general ratio is generated which is then applied to a broader area - often the whole continent;

Demographic archaeology - based on bone and shell midden debris analysis that examines per capita refuse production;

Mathematical - statistical analysis of previous estimates and census dates with respect to dated anchor populations that have been previously accepted.

2.2.1.2 Grouped Approaches

It can readily be understood that each of these methods rests on large, fragile assumptions which understandably do not lend themselves to the constructing of solid models. It is with great effort that scholars have pulled together elements of each into what Daniels has distilled into the following three approaches, each of which produces distinct ranges of estimates:

Bottom Up

Starting with James Moody, who first published estimates for the part of North America north of Mexico in 1910, scholars compiled all available historical population evidence. Then, using the above techniques, often after tribe by tribe deliberations, researchers provided numbers that were a "best guess" for their day. Often these estimates, though now considered very low, were criticized for being too high and were subsequently downsized after peer review. For example, Alfred Louis Kroeber's analysis and critique of Mooney's work in 1925 reduced the latter's estimated population of First Peoples north of Mexico to 900,000 and Wissler suggested a further reduction to 750,000 (Daniels 1992). I cannot help but wonder how much of this cautious attitude is an academic (and/or socio-cultural) holdover from old rationalizations characterized by the 17th century doctrine of Terra nullius (no-one's land).5 Mooney and Kroeber dominated the field for years with their seminal work; their 900,000 figure became a traditional standard not easily toppled. The bottom up method has a long history and is likely still in use (Daniels 1992).

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[5] Mabo and Others v. Queensland (No. 2) (1992) 175 CLR 1 F.C. 92/014

This oldest and most conservative 'school of thought' has mainly incorporated 'guesstimates', 'count multiples', and 'report discounting'. Population estimates were initially made incidentally by explorers, clergymen and fur traders. On the British Columbia coast, William Fraser Tolmie used guesstimates plus count multiples of 25 persons per house to produce a Heiltsuk population estimate in 1835 of 1294 (Tolmie 1963: 320).

Area Modeling

This approach emerged slowly out of preliminary work on modelling North American indigenous populations by Stephen Powers in 1875, which was reevaluated by Merriam in 1905. Ecological and cultural models using 'resource availability', 'population density' and the beginnings of 'epidemic-correction' led the way for work with 'carrying capacity'. This style of estimating gained prominence by about the 1950s when 'count multiple' was put to work at the same time that 'report discounting' was beginning to be phased out.

Academics have begun to suspect that the old diary and journal reports were true and possibly even represented low estimates since few if any travelers, priests or soldiers making these annotations would see all of the people, houses, warriors, canoes or other 'count multiple' units within a given locale. Area modeling figures for North America extend from 2,500,000 to 7,000,000 million souls (Daniels 1992).

Top down

This modern approach has gained impetus since 1966, when Henry Dobyns started publishing new ideas for estimating populations. After establishing himself in the modeling sphere, he went on to pioneer the 'depopulation ratio' method and suggested a post-European contact loss ratio of 20 or 25 to 1 for the entire western hemisphere. He worked this ratio backward to get new pre-contact population estimates. His 9,800,000 to 12,250,000 tally was a new high for North America. Although his work was greatly criticized, slowly, more scholars began to use 'depopulation ratio' as well as 'mathematical analysis' to reconsider area modeling methods including Dobyns' 1983 hypothesis of massive depopulation, which he has supported with a list of possible pandemics. The pandemic scenario has been supported by archaeological research. New analyses seem to corroborate Dobyns' higher estimate for North America of 18,000,000. Archaeologist Ann F. Ramenofsky (in Daniels 1992) found evidence supporting Dobyns' hypothesized pandemic during the early 16th century in excavations made in three sections of the United States. Her lower estimate of 12,000,000 for the continent is still comparably high. Nevertheless, the 'top down' approach is now firmly entrenched in the literature (Daniels 1992).

It would seem that the frequency and virulence of disease occurrences, since European contact with North America, are central issues in these population investigations.

2.2.2 Epidemic Events on the Northwest Coast: Sources and the Arguments

> *All the eight major varieties of epidemic diseases documented from the Northwest Coast in the first century of contact (smallpox, malaria, measles, influenza, dysentery, whooping cough, typhus, and typhoid fever) were introduced, ultimately from European sources (Boyd 1990: 137).*

The tradition of controversy in estimating precontact aboriginal populations is, of course, ongoing on the Northwest Coast where there are many tangled puzzles, sometimes with contradictory clues to sort out. All the diseases listed in the quotation above were devastating at various times and places from the late 18th to well into the 20th century for First Nations peoples in the region. Records dim as we direct our inquiry into the past where history and so called "prehistory" share a blurred margin; the topic seems to splinter into three specific and significant questions:

1. Where did the smallpox epidemic of the 1770s, known only to ethnohistory, arise from;
2. How devastating were its effects; and
3. Which native groups were affected by subsequent epidemic events, and to what extent?

And recently, growing interest in pandemic study, focuses on whether the smallpox epidemic originating from Mexico in the early 1500s, which apparently reached the

Columbia Plateau, also found its way to the Pacific Coast (Boyd 1990; Campbell 1990; Harris 1999).

2.2.2.1 Smallpox in the 1770s

Earliest travelers, beginning in 1774, consistently reported large population estimates at scattered landings on the Northwest Coast in their diaries and journals (Boyd 1990). As contact spread from these first encounters to other places on the Coast over the next several decades, population estimates decreased in size, and reports of pock-marked faces began to appear in the records (Boyd 1990). Exact dates, degree of virulence and source of the contagion remain controversial (Boyd 1994).

It is unlikely that the actual extent of losses suffered by First Nations during the 1770s smallpox epidemic will ever be known. Because there were no witnesses on hand to consistently record the decline, we are left with an inscrutable "X" as a rate of decline for this occurrence, a classic stumbling block for those in search of precontact population levels. On this issue, the various schools of thought mentioned earlier really clash, since mistakes made earliest in a mathematical calculation create the largest percentage of error on the final calculation. Oral history from First Nations may be a rich source of additional information that, once researched, might assist in fresh interpretations of archival data. Without it, historians interpret archival data based on academic conservatism.

> *Smallpox probably was introduced by Europeans, although again it is not known how virulent the forms were. The journals do not contain*

> *numerous accounts of wholesale depopulation resulting from smallpox. Reports tend to be of isolated cases and often of Indians with pock-marked faces who were apparently survivors of the disease. Frequently the contemporary comments about population decline were based on the observation of deserted villages. Voyagers would attribute the supposed depopulation to disease, whereas villages were clearly abandoned for a variety of reasons. Seasonal migrations, the exhaustion of resource areas, and moves to be closer to centers of the fur trade, were all reasons for an Indian band to relocate its village (Fisher 1992: 22).*

This excerpt from historian Robin Fisher's Contact and Conflict is rife with assumption and the conservative attitude of the early "bottom-up" demographers who practiced report discounting. Contrarily, it is accepted that the vector responsible for this, possibly the first epidemic, was far more virulent than subsequent epidemics; "causing the greatest total mortality" (Boyd 1994: 6). Fisher states the obvious when he says: "journals do not contain numerous accounts of wholesale depopulation." We know that few writers were there to witness the events, so how could there be "numerous accounts"? As well, his statement regarding isolated cases of "Indians with pock-marked faces" is clearly mistaken. Boyd's footnotes give a good selection of coastal accounts from early travelers which are evenly distributed from north to south including Vancouver Island and Haida Gwaii (Boyd 1994).

Fisher is also remiss in discounting deserted villages. Often these villages held a large number of skeletal remains, apparently lying where they fell (Boyd 1994: 29-34). This broad scale mortality suggests disease epidemics because the large numbers of these "abandoned" villages are not likely to be due to starvation and the "one-on-one" warfare

of the day would have been obvious (Boyd 1994). Although some settlements may truly have been abandoned, reports by the early travelers and traders, capable men of their day, would have been astute; it seems likely that their experience plus the immediate condition of the buildings and grounds would indicate to them whether the vacancy was seasonal or permanent. The construction of villages takes a lot of energy and time; abandonment of valuable house planks was unlikely unless fear of disease kept survivors or neighboring groups away. In the event of a permanent move, like seasonal moves described by Hilary Stewart (1984), all the wall and roof planks would undoubtedly have been removed and rafted to the new location which would have been within the tribal territory - not far from the "abandoned" village (likely under 50 km).

The occurrence of complete villages falling into decay strongly suggest a health disaster or other catastrophic factor. Anthropologist Wayne Suttles has learned through oral traditions that the initial appearance of smallpox in Straits Salish territory wiped out a tribe on Boundary Bay, and "two or three Lummi villages and one or two Samish villages were nearly wiped out", and all villages suffered heavy losses (Suttles 1954:42). Proponents of low population estimates would typically discount this type of report as some kind of self-serving exaggeration (Fisher 1992).

The ethnohistoric accounts may have more to say than has been recognized so far. What if we do take them at face value, and then refocus our lenses? In so doing, we might find that the losses were even more dramatic than previously thought. The following excerpt from Captain Nathaniel Portlock's diary describing the time he went ashore near what is now the southern extreme of Southeast Alaska, in Tlingit territory, is an example:

> *I expected to see a numerous tribe, and was quite surprised when I found out that it consisted only of three men, three women, the same number of girls, two boys twelve years old, and two infants. ...I observed the oldest of the men to be very much marked up with smallpox, as was a girl who appeared to be about fourteen years old...He told me that the distemper carried off great numbers of the inhabitants, and that he himself had lost ten children by it...I did not observe any of the children under ten or twelve years of age that were marked (Portlock in Boyd 1994:8).*

Taken at face value, the "numerous" tribe Captain Portlock was expecting to see (probably by some outward appearance like the number of buildings at the site) had been reduced to nine individuals at the time of the epidemic (maybe fewer if the other two girls were born after the epidemic); and an eye-witness account attesting to the "carrying off of great numbers." (Unfortunately, sign language however explicit is seldom quantitative.) It would seem likely that the losses exceeded Boyd's cautious 30 percent (Boyd 1994: 29).

Boyd's article, "Smallpox in the Pacific Northwest: the First Epidemics" (1994), from which I have drawn extensively, contains other similar accounts of total and near elimination of tribes during the first and other epidemics. He also includes several known statistics from southern areas hit by the pandemic which follow an increasingly destructive trend as they move northward and eastward to plains and interior tribes that may not have been previously affected by any strain of smallpox. Here, losses ranged from 60 percent to near total extinguishment of communities.

In the many and varied formulae, the 1770s smallpox epidemic is usually attributed to a 30 percent loss; continuing study, reconsidering this proportion, suggests that Boyd's present estimate of 100,000 for the British Columbia coastal region could possibly be doubled (Boyd 1990: 136). In his recent book, The Resettlement of British Columbia: Essays on Colonialism and Geographical Change, historian Cole Harris suggests this possibility if Dobyns' proposed 95 percent population decline is accepted (Harris 1999: 30).

2.2.2.2 Subsequent Epidemics and Mortality

It is well established that during the nineteenth century, First Nations populations of BC were relentlessly thinned by successive waves of disease. A second smallpox epidemic broke out circa 1801 or 1802 on the South and Central Coasts that was known to have originated from the Plains (Boyd 1990).6 Again, records come from ethnohistory and, accordingly, may not be very accurate. There is consensus that this second epidemic was less virulent and extensive than the widespread pandemic of the 1770s, only 20 years previously. Boyd suggests that newly affected populations would have contained many of the now immune survivors of the first wave, a factor in the apparent reduced casualty rate. Alternatively, the epidemic could have arrived at a time when the seasonal subsistence round had already dispersed village occupants, reducing intra and intergroup contact, suppressing the spread of the disease. Such a reduction in population densities would allow the epidemic to burn out more quickly.

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6 See also Harris, Resettlement of BC, 1999: 18-19, who disputes the 1801 event, suggesting instead that Boyd has misinterpreted evidence of the major epidemic, 20 years earlier.

Smallpox seemed to strike in approximately 20 year waves: 1780; 1801; 1824; 1836; 1862 and on into the beginning of the twentieth century (Boyd 1990). Other diseases, although no less lethal in many cases, were often more localized. For example, the malaria outbreak of the 1830s in southern areas was restricted by the range of the Anopheles mosquito, its dispersal agent (Boyd 1990: 139). Whooping cough, measles, typhoid fever, dysentery, typhus and flu began to show up regularly, spreading out from and along the migration routes of immigrating settlers during the 1840s. First introductions of these diseases were known to have been responsible for a great deal of mortality but, again, the records are sparse (Boyd 1990: 141).

Semi-isolation, lack of reporting, and no accurate census figures create a wildly blurred but well accepted pattern of widespread and acute population destruction and suffering for First Nations throughout the nineteenth century, making it very difficult for scholars to estimate precontact populations. The first accurate censuses of indigenous populations on the Northwest Coast, in general, were not accomplished until the 1880s. By then, the total for British Columbia had dropped from the 1835 Hudson's Bay estimate of 70,000 to 28,000 or from 46,700 on the Coast to 17,825.

2.2.2.3 Pandemics (epidemic disease over a large region)

Because of the uncertainty in recorded literature, it is interesting to consider possibilities regarding new methods in population research. The work of archaeologist Ann F. Ramenofsky, in finding "horizons" of greatly reduced refuse accumulation at several sites in three areas of the United States (Campbell 1990), seems to support Dobyns' list of

possible "pandemics" suggested in his 1983 work, "Their Numbers Become Thinned" (Daniels 1992: 315). Dobyns' prediction of an early 1500s pandemic is further supported by Sarah Campbell's dissertation which reveals archaeological evidence of depopulation on the Columbia Plateau of British Columbia in the beginning of the sixteenth century (Campbell 1990: 2).7 Although these excavation analyses are strong indicators of a sixteenth century pandemic, more study is needed before this diagnosis can be accepted as fact.

Campbell's graphs of refuse accumulation at the 34 sites excavated, indicated that people living there just before the 1500s event were accumulating garbage at a rate far exceeding that for the same place just before the epidemic of the 1770s (Campbell 1990: 170-80). Although Campbell has not suggested it, I think her data could mean that the population at those locations, just before the 1500s pandemic struck, may easily have been significantly higher than the population just previous to the known epidemic that closely followed European contact in the Pacific Northwest. This earlier event may have been costly in terms of losses in culture and technology, as was the case after the epidemic of the 1770s. If the preceding arguments are accepted, the pre-pandemic 1500s culture, population and systems of stewardship may have been at their peak. Archaeological, deposits suggest that archivally interpreted population estimates may still be conservative.

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[7] Campbell states that her thesis specifically derives from Dobyns' (1992) premises on the strength of the work done by Ramenofsky who studied early pandemics in the US.

2.2.3 Population Indications from Archaeological Deposits

In their multidisciplinary reconstruction of the Northeast Pacific history of marine faunal resources, Richard Hebda and S. Gay Frederick "...conservatively estimate populations of 200,000 to 300,000 people on the Northwest coast at first contact with Europeans" (1990; 335). Their estimate was based on the extensive widespread archaeological evidence of large communities and the vast shell midden deposits up and down the Coast It is noteworthy that if we combine the lowest census for each Coastal group, a total of 11,966 (Duff 1964: 39), as 5% of the precontact population, the total was once 240,000.

2.2.4 Implications for Heiltsuk

> *Ham-chit says the Indians are always talking among themselves about their decrease in number. Long ago he says they were like the trees, in great numbers everywhere (Dawson 1993: 526, 7).*

2.2.4.1 Census and Early Estimations

The most comprehensive population summary recorded for the Heiltsuk is in anthropologist J. Anthony Pomeroy's PhD dissertation: "Bella Bella Settlement and Subsistence" (1980). Pomeroy takes particular pains to unravel the narratives of early Hudson's Bay traders, early population estimation by scholars and conflicting census statistics of the late 1800s. Based largely on the diary of physician and trader William Fraser Tolmie, he concludes that the Heiltsuk population was about 1600 circa 1835 AD (Pomeroy 1980: 27). Pomeroy suggests the population at the time of contact was 1500 to

2000, which seems not to consider the smallpox epidemics of the 1770s and 1801, both known to have affected the Heiltsuk peoples.

Another precontact population estimate was given for the Heiltsuk Territory by Kroeber, who used 'population density' to get an estimated 8400. This number is dismissed by Pomeroy who states that much of their traditional territory's 8000 square kilometers considered by Kroeber in his calculations is under water, and that only the coastlines were settled (Pomeroy 1980: 30). I disagree with Pomeroy's dismissal of Kroeber's estimate. Approximately 90 percent of the protein in the Heiltsuk diet was from the marine environment, suggesting that coastlines, where subsistence would be most convenient, would be most densely populated (Chisholm 1993: 397). Pomeroy's own tally shows 39 sites which are likely to have been permanent winter village sites since they had historic structures (Pomeroy 1980: 83). In addition, he lists 210 midden sites, likely to have been seasonal camp sites. The high number of village and use sites would seem to bear out Kroeber's estimate, and if each of the 39 sites had an average of 300 people (Tolmie's village counts range from 300-500 people in each village), the pre-contact Heiltsuk population might easily have been 11,700 individuals. This figure may seem high but is corroborated by some thoughtful calculations.

If we start with 11,700, then reduce it by 75 percent (many ethnohistoric accounts exceed this) for the 1770s epidemic, and impose a further reduction of 30 percent for the 1801 smallpox epidemic, the result is 2,048 people, only slightly over 25 percent above Tolmie's estimate. It is also known that during the fur trade years, First Nations people obtained and used both guns and alcohol, factors which are understood to have

accelerated population decline due to intertribal warfare (Boyd 1990; Dean 1994; Duff 1964), a factor seldom considered in the estimates. Finally, it is unlikely that estimates based on house count or any other type of count multiple could have been accurate or complete since fur traders did not travel much in the territory, and relied on intelligence received from wary Heiltsuk traders.

> *They are ever ready to believe our inquiries are directed by improper motives. Owing to this they view with much distrust all questions relative to their numbers (Ross in Harkin 1988: 275).*

Based on the epidemiology and a few pertinent facts, the Heiltsuk population could easily have been 10,000 or more. I wonder how many more winter village sites, active at the time of contact, are hidden by 200 years of deterioration and overgrowth and are waiting to be found and added to the equations.

2.2.4.2 Heiltsuk Population and Subsistence Base

Both the 'area modeling' and 'top down' approaches to population estimation are concerned with the extent and availability of subsistence food sources. I contend the extent and availability would have been augmented by locally adapted systems of stewardship coupled with food storage technology. Though the Heiltsuk territory was rich in resources and favored prodigious harvests at the appropriate times and places, there were also long seasonal periods when these resources were unavailable or dangerous to access:

> *On the windward side of Pacific storm systems, the region is characterized by high winds, dense fogs, heavy rainfall, and rapid and severe weather changes. Thus, while transportation by water was the rule, heavy swells on the outer coast and strong tides and currents on inland waters made travel treacherous at times (Hilton 1990:312).*

Numerous terrestrial and marine vertebrates and invertebrates were available for subsistence purposes. However, about 90 percent of the protein portion of the food supply was taken from marine sources. Population size is, in essence, limited by the ability of people to gather and preserve food for use during the lean winter months.

Coping with Abundance (Suttles 1968)

"The Northwest Coast was an area where one could find, on a single occasion, quite literally, tons of food" (Suttles 1968: 58). Clams, salmon, eulachon *(Thaleichthys pacificus)* and other fishes. as well as large marine mammals, at times supplied food in abundance, but these were not consistent throughout the year, nor from year to year. Abundant food only materialized in certain places at certain times, according to the many individual life cycles of different species and their populations. Ultimately, a peoples' survival depended on techniques for both gathering and storage of the seasonally anticipated harvests (Suttles 1968). Since marine resources were not uniformly distributed along the coast and could vary greatly from year to year, the situation was stabilized through development of tenure and stewardship systems, along with the potlatch which provided a cultural instrument for redistribution of food and wealth,

helping to ensure survival (Suttles 1968).[8] Effective tenure, stewardship and redistribution sytems raise the carrying capacity of the territory.

Carrying Capacity

When the carrying capacity for an area is estimated, the figures are calculated under the assumption that no resource management system is in place. ("Lucky aboriginals simply helped themselves.") Imagine the difference in carrying capacity between an open meadow and the same meadow converted to a tended vegetable garden. The same could be said for Northwest Coast resource areas. For example, the burn-managed berry crops (Gottesfeld 1994; Lewis 1982; Turner 1991; Turner 2000) and camas gardens tended throughout the southern part of northwest of North America (Lutz 1995), or the "semi-cultivated" intertidals of the Manhousaht and Haida and others (Ellis and Swan 1981; Ellis and Wilson 1981). Traditionally, and especially important in the context of my research, First Nations have had various techniques in place to enhance the salmon runs. Coastal streams can fluctuate in depth by as much as ten or twelve meters between times of low rainfall and times of heavy rains, the later pushing debris into huge jams, some as much as 15 meters high. At one time, streams were cleaned of this debris by hand by aboriginal caretakers, who also tended spawning channels, moved fertilized eggs and restocked streams where runs were weak or had failed (Arvid Charlie pers. comm. to Nancy Turner 1999; Chief Earl Maquinna George pers. comm. 2000; Stanley Sam in

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[8] Resource variability and the importance of systematic redistribution are central themes in: John Charles Pritchard, "Economic development and the Disintegration of Traditional Culture among the Haisla (Ph.D. Diss., University of British Columbia, 1977). He also discusses the "demographic potential" of redistribution networks: 54-59; Also see: Hewes "Indian Fisheries Productivity in Precontact Times in the Pacific Salmon Area" in *Northwest Anthropological Notes,* vol. 7, no. 3, fall 1973: 136.

NFB 1992; Sproat 1983). Evidence of these practices is dicussed later in Chapter five, along with first salmon ceremonies, river guardians, taboos, hereditary obligations, harvest policies and systems of land tenure all contributed to traditional stewardship of salmon and salmon streams.

2.2.5 Summary

In this population analysis, the possibilities have been explored that more people than have generally been acknowledged were living on the West Coast at the time of European contact. The literature on population estimates and ethnohistoric disease accounts was questioned to this end; resource abundance and carrying capacity were examined in order to show that the much larger populations suggested in recent works were possible.

The figure widely accepted presently by historians and anthropologists for the BC Coast region at the time of European contact is Boyd's estimate of 100,000 (1990: 136) which he considers conservative. Historian Cole Harris supports Boyd's coastal estimate with one of 200,000 for the whole province but suggests the true pre-contact population might easily be double that (Harris 1999: 30) and the Coastal estimate from the archaeological perspective is thought to be 200,000 to 300,000 (Hebda and Frederick 1990).

Although it may be conservative, I use Boyd's 100,000 figure as a base line in the next segment to reveal that remarkable amounts of fish and marine resources were harvested by Heiltsuk and other First Nations in precontact times, so prodigious that such harvests awere unlikely to have been maintained without effective systems of stewardship.

2.3 Harvest Magnitude

The first Coast-wide synthesis of annual aboriginal salmon harvesting levels on the Northwest Coast was done in 1947 by Gordon W. Hewes. His table of estimated annual pre-contact per capita consumption of salmon for British Columbia coastal groups, based on reports from the literature and anecdotal archival materials, shows an average of 220 kg (500 pounds) (Hewes 1973: 136).9 This reinforces a similar Indian salmon harvest estimate in1879 by Canada's Department of Marine and Fisheries of 500 pounds per capita for the province.10 Although this figure seems high, Hewes' examination of the ethnographic literature commonly yields examples of greater than 500 kg per capita per year in some regions and research in the Columbia River basin suggests that his estimates for the region may have been overly conservative (Schalk 1986: 17; Argue et al. 1990: 13). During the fur trade era, men on the "boat brigade crews" consumed a phenomenal 4 kg [9 lbs] of salmon per day (Newell, 1993: 30). At that rate, 230 kg would last slightly less than 2 months. Consumption of what sounds like extreme amounts can readily be explained.

For First Peoples on the Northwest Coast, living in a climate where coldness and wetness, or at least dampness, are near constant companions, and skin clothing quickly soaked through, only cedar coverings were able to retain any body heat at all. These were apparently still wet and somewhat cumbersome to work in and were often simply not

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9 Also see: Hewes 1998, in which he estimates interior salmon cosumption at 400 to 450 pounds: Per person per year: 621.

10 Canadian Department of Marine and Fisheries, Twelfth Annual Report for the Fiscal Year Ended 30th June, 1879 (Ottawa, MacLean, Rodger & Co., 1880): 300.

used, even in winter. Working outdoors gathering food can cost as much as 5,000 to 6,000 calories per day (Anderson in Duff 1996). Most marine foods are not particularly fatty or carbohydrate-rich, so large quantities are required for daily intake. A large caloric intake is even more critical in winter, especially in Heiltsuk territory, where only the leanest salmon (and unfortunately, of the lowest caloric value), ready to ascend the rivers to spawn, could be dried hard enough to avoid mold during long term storage.[11] Heiltsuk territory receives more rainfall than most other regions of the Northwest Coast. Heavy caloric requirements in food consumption, it seems, must have been an unavoidable fact of life on the Northwest Coast in early times (Anderson 1996).

230 kg of salmon per capita, per year, works out to an annual consumption 23 million kg of salmon per 100,000 people.[12] For comparison, from the year 1901 to 2000, the average landed commecial salmon catch (all species included) was just under 64 million kg per year, barely enough to have satisfied the reqirements of 200,000-300,000 precontact First Nations people living along what is now Coastal British Columbia.

Now - if we add to this figure: the harvest of up-river Fraser tribes; the trade of salmon to interior groups; the amount of salmon fed to dogs and used for bait; and as well, annual spoilage, how much greater would the consumption have been? We must consider that even modern population estimates are thought to be conservative; the aboriginal salmon

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[11] Also confirmed by Nancy Turner, for the Kwakwaka'wakw through pers. comm. with Kim Recalma-Clutese and Chief Adam Dick (Kwaksiseala).

[12] This amounted to about one million cases of canned salmon. Dominion Fisheries and Marine, Annual Reports always present figures in terms of "yield", so it can be assumed that their estimates are for dressed weights, exclusive of heads, tails and entrails. Salmon was canned for many years in 48-pound cases of 48 one-pound cans. The 1879 report, p. 300 lists in its "Computation of Home Conservation of

harvest could easily have approached the contemporary industrial salmon catch which today, is known to be unsustainable. This leads to an inevitable conclusion: aboriginal cultures developing over several thousand years could not have survived without having systems in place for husbanding their salmon resources. In his 1878 report, Inspector of Fisheries, Alex C. Anderson recognized and defended hereditary systems of aboriginal salmon stewardship:

> *I would Willingly Quiet the alarm of those zealous agitators (few, possibly, in number) who contend that the untrammeled exercise of the aboriginal fishing rights must necessarily [sic] cause the ruin [sic] of the fisheries. These objectors are oblivious of the fact that, up at least to the advent of the white man, the fisheries throughout the Province were admittedly unimpaired. Yet up to that period, from time immemorial, and while the natives were much more numerous than they now are, the aboriginal fisheries both on the coast and in the interior, were prosecuted, after the hereditary fashion, without that deplorable consequence which, in ignorance or oversight, some well meaning individuals may now, possibly, choose to foreshadow. Any deterioration that may have appeared of late years in the fisheries either of the coast or the interior, therefore, must be ascribed to other causes than that referred to.*

And again, later in the same report, discussing spawning conditions on the Skeena River:

> *I was particular in my enquiries as to the condition of the spawning-beds on the upper waters; and I was glad to be assured by Mr. Robertson that, from his own personal observation, great care is extended by the natives towards their protection. No one is allowed to fish within certain limits;*

Fish by the Indians of British Columbia, exclusive of European supply", annual per capita consumption estimates at: 500 pounds, salmon; 150 pounds, halibut; and 10 gallons, "Oolâhan and other oils".

> *and several circumstances were mentioned by Mr. Robertson, all tending to show that the Indians both understand and appreciate the importance of preserving the nursery grounds from injury.*[13]

Clearly, given the magnitude of annual harvesting, the technology to wipe out salmon stocks was existed among First Nations at the time Europeans arrived on the Coast, yet it is common knowledge that during the first century of European contact, all the rivers teemed with salmon. Such abundance was attested to in a 1925 report on the condition of spawning beds in streams emptying into Smith Inlet, just south of Heiltsuk territory:

> *Outside in the lake, the sockeye were breaking water in all directions, while schooled up at the entrance for a distance of two hundred yards, the fish were so dense in numbers that by throwing a rock in to disperse them, the noise created resembled a roar of thunder. Proceeding up the river to the falls, one mile and a half distant, thousands of spawning sockeye were observed, utilizing every foot of gravel while carcasses lay scattered all over the bars.*[14]

Salmon was not the only resource harvested in prodigious quantities. The amount of eulachons, shellfish, herring and herring roe, seaweed, berry and root crops harvested strongly suggest that stewardship was not limited to salmon alone (Deur 1999; Deur and Turner in press).

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[13] Alex. C. Anderson, Appendix 17, Supplement No. 4, to theEleventh Annual Report of the Minister of Marine and Fisheries for 1878, Report of the Commissioner of Fisheries for the year ending 31st December,1878 (Ottawa, Maclean, Roger & Co., 1879): 293, 295. Anderson spent an earlier part of his career in the employ of the Hudson's Bay Company, some of the time in Heiltsuk Territory with Dr. Tolmie, mentioned earlier.

[14] BC Archives, GR 435, BC Provincial Fisheries Department, box 107, file 1059 (1925), Unknown author, Annual Spawning-bed report.

The commercial eulachon fishery once ranked fifth largest in British Columbia (Glavin, 1996: 17). Although there is not much in the way of statistics recorded for the traditional aboriginal eulachon fishery, apparently 1906 was an outstanding year for eulachons, source of the renowned "grease", an edible fish oil. Dennis Horwood reports that 600 tons of eulachon oil was produced in the Nass River that year (1990: 46). A modern assay of eulachon shows that the fish are 15% to 18% oil by weight, and that a traditional process extracted 380 liters of oil from 6300 kg of fish, about 6% (Kuhnlein et al. 1996: 18-19). Assuming the oil to be just slightly lighter than water, the weight of water can be used (1 liter = 1 kg) to obtain the ratio of 16.6:1, which translates Horwood's 600 tons of oil to more than 9 million kg of fresh eulachons. Eulachons were also smoked, dried and eaten fresh, in substantial quantities during the grease rendering operations. The Nass River was considered the most prolific eulachon producer (Drake and Wilson, 1991: 31), consistently outshining runs in 12 other major watersheds on the BC Coast. Even if the entire coastal harvest was only enough to match the Nass yield in 1906, it would have equaled the estimated aboriginal annual salmon harvest of 230 kg per capita.

It may be argued that the 1906 eulachon harvest reflected participation in the commercial fishery, but people of European descent do not generally favor grease. Besides, the Nass harvest was "put up" using traditional infrastructure at Fishery Bay, which evidently was capable of handling this unusual harvest size. The traditional eulachon fishery and the trade in its products to other groups was no small enterprise for the Nisga'a of the Nass River, or other peoples whose territories included the mouth of the major watersheds where eulachon spawned.

Here, again, is another example of tremendous harvest volumes, which had somehow been maintained through millennia of exploitation. Ironically, though harvesting pressure declined over the years, eulachon populations now "blue listed" as endangered, failed rapidly during the 1980s due to problems with pollution, loss of spawning habitat and years of by-catch destruction resulting from trawl fisheries.15 White-sided dolphins have also been blamed (Glavin, 1996: 18).

In terms of shellfish, shellfish middens, as previously indicated, are found everywhere on the BC Coast. More are constantly being found and reported in the archaeological and ethnographic records. Yet paradoxically, shellfish have seldom been considered to be of more than seasonal importance (Blackman, 1990: 244; Erlandson, 1988: 102; Moss, 1993: 631). Contemporary studies, however, suggest that shellfish may only be unimportant during the notorious "R-less months, May to August, when PSP (paralytic shellfish poisoning or red tide) is a danger (Erlandson 1988: 104; Moss, 1993: 637-8). Madonna L. Moss' study was done in the Alaska Panhandle at nine sites around Angoon, where it was found that by reconstructing "meat weights" from midden shell and bone deposits, shellfish supplied 82.23% of the precontact "meat" component of diet in that area. Fish accounted for 11.56% and birds added in with mammals made up the balance at 5.78% (Moss, 1993: 637-8).

Moss' data (1993) may be skewed, possibly by cultural practices of burning the bones, or returning them to the water, or it could be that fish, bird and mammal bones with any remaining flesh would have been carried away by ravens, eagles, gulls or other

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[15] The Eulachon Crisis. Eulachon Concervation Society, Richmond, BC, Accessed March 9, 2002

"cleaners" just as they are today. In any case, these figures illustrate that the importance of shellfish in coastal First Nations diets has been undervalued, until recently. Manhousaht elder Luke Swan describes "clam drying time," when huge quantities of

butter clams were gathered and dried by groups of men and women who moved from clam bed to clam bed as each location was harvested (Ellis and Swan 1981: 48-53). Clams were dried (Ellis and Swan 1981: 51-52; Moss 1993: 640), smoked or smoke-dried for winter, and gathered by torchlight during the big tides of winter (Kennedy and Bouchard, 1983: 33-36).

A traditional stewardship system for this type of intensive gathering is hinted at by Luke Swan talking about California mussels (Mytilus californianus) and goose neck barnacles (Pollicipes polymerus) : "You have to go to the same place every time, so that the next ones will be better, " hinting at what he calls partial or "semi-cultivation". "It was the same with all the seafood," he said (Ellis and Swan, 1981: 85: Ellis and Wilson, 1981: 33; Onat, 1989:7).

Food resources are not evenly distributed throughout First Nations territories. The Heiltsuk, for example, have no major watershed along their coastline to harvest eulachons from, but they have extensive intertidal segments where herring spawning is prolific and red laver seaweed (Porphyra abbottae) is abundant.16 Herring roe deposited by the spawning fish on giant kelp (Macrocystis integrifolia), boughs of western hemlock, mountain hemlock (Tsuga heterophylla, Tsuga mertensiana), or western red-cedar (Thuja

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http://www.oolichan.org/ecs/eulachoncrisis.html.

plicata) anchored in place, reaches a thickness of more than one cm. Herring roe has always been, and still is, a much sought after item of trade, forming the basis of an important commercial industry. Salmon, shellfish, herring roe and seaweed, as well as berry and root crops, all fall under the Heiltsuk traditional rights of ownership system, suggesting that all of these resources were systematically stewarded (see 2.7, below - "tenure enables stewardship," discussion which is enhanced by intervening sections).

It seems likely that some of the former practices of First Nations groups may have had far-reaching benefits not readily apparent to the lens of Western science. Taboos, ceremonies and tenure systems, at the very least, ensured that very little harm was done to fish or their habitats during the earlier times when these cultural elements were in full force.

2.4 Taboos, Tales and Rituals

> *Now you have come, grandfather, you fish, that you may not ill-treat me, that you may only bring good luck by your coming to me, Supernatural Ones, you Dancers, I pray you Supernatural Ones, that we may meet again next year and, please, protect me, friends, you fish (Boas in Drake and Wilson 1991: 7).*

First Nations peoples never took for granted that their fish resources would return every year. Sometimes, for whatever reason, a run would fail. They believed that the fish were distant human cousins that came each year of their own free will to feed their land relatives. It was widely believed that if proper protocols were not followed, the life-

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[16] A genus well known in Japan and health food stores as Nori.

supporting fish runs would disappear or fail in following years. Because of these widespread beliefs, an elaborate system of first fish ritual ceremonies, instructive tales or legends and taboos developed in various forms from Northern California to Tsimshian territory on British Columbia's North Coast but may not have included the Tlingit or Haida peoples. First Salmon ceremonies were also observed to some extent by upriver communities such as the Nlaka'pamux (Amoss 1987; Blackman and Davidson 1982; Gunther 1926; Hill-Tout 1978; Swezey and Heizer 1977). Besides eulachon and salmon "first fish" ceremonies, the Pacific lamprey (Lampetra trientatus) was also honored ceremonially by the Yurok people of the Klamath River who relished them (Yurok elder Grant Pilgrim pers. comm. 1995).

First fish ritual ceremonies had unique characteristics in each place they were practiced, including Heiltsuk territory, but there is a unifying thread, which connects them all. The ritual recognition of first fish, was followed by feasting, during which fishing was prohibited. Depending on the group, this could be a few days or up to two weeks in some cases, where the early run fish were unmolested in their movement upriver (Swezey and Heizer, 1977). This practise helped insure a supply of fish to up-river communities, as well as adequate spawning stocks to maintain future runs.

Stories and legends of First Nations' oral histories are well known for their teaching of lessons and moral messages. The stories hint at a great deal of understanding about nature, salmon life cycles, how to look after them and that salmon traps may have been in use as long as salmon have been eaten. These lessons, values and relationships with the

natural world are evident in the Heiltsuk "First Generation" story of "Ts!ŭ'mqălăqs", discussed later in Chapter Five along with other stories.

The Bella Coola, Nuxalk neighbors of the Heiltsuk, had a powerful hereditary office, described by anthropologist T.F. McIlwraith as the River Guardian, responsible for enforcing river taboos:

> *From time immemorial, certain restrictions have been enforced concerning the river: no refuse may be thrown in; otherwise, the olachen [sic] would remain in the ocean. For the same reason, women at certain periods are not allowed to bathe lest a speck of blood should blind the fish and prevent them from seeing the route. Occasionally an olachen [sic] with red eyes is caught; this is caused by some heedless woman. When the fish are running in the river, women are not allowed on the bank, nor to repair the nets. At high tide, it is forbidden to drive stakes for olachen [sic] nets.*
>
> *The number of prohibitions increases during the critical period of the salmon run. Then no freshly hewn planks can be set afloat, and even a canoe, which has just been completed, must be kept for ten days before launching. No one whose husband or wife had died within the last year can embark at the village, but must proceed to a landing-place at the head of the fiord. Most important of all, refuse salmon must be deposited in the woods; if thrown into the river, the fish would smell it and avoid the stream. Even accidents such as the upsetting of a canoe or the spilling of olachen [sic] grease, are considered to be offences.*
>
> *Disregard of any of these injunctions is displeasing to the salmon and it is the duty of the River Guardian to punish the offender, irrespective of his rank. In case of slight infringements, he beats the guilty person or throws*

> *him into the river. The guilty person usually scrambles out, but should he be swept away and drowned, no recompense can be claimed by his relatives. This punishment is customary in cases of the upsetting of a canoe. Death is the penalty for throwing refuse into the river, particularly during the summer, and until the coming of the white man, the River Guardian exacted it without hesitation (1948: 263-264).*

The River Guardian office is also reported from the Kwakwakawakw (Weinstein and Morrell 1994).17 A Haida story recorded by John Swanton describes a supernatural being who, after the stream had been polluted, moved to block the stream-mouth, where it turned to stone, destroying a coveted harvest source (Swanton 1905b: 74).

The River Guardian may have evolved through the knowledge that once disturbed, eulachons may withdraw and not spawn at that location anymore. As well, polluted water quality may affect spawning success, possibly one reason for diminishing salmon populations today. These words from Ernie Crey, a contemporary Aboriginal fisherman of the Sto:lo Nation, sum up the fabric of antiquity, culture, fishing, spirituality and stewardship, basic threads stitched into many of the traditional stories:

> *. . . My history tells me that salmon is the reason I am here. We are salmon people. The history of salmon in this part of the world is my own peoples' history. The salmon, and the Fraser River, define who we are. We take our name from the word that we give the river: Sto:lo. Our history tells us that at the beginning of the world, salmon was given to the Sto:lo by Xa:ls, the creator and great transformer. He taught us how to survive by maintaining a good relationship with salmon. He taught us*

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17 Also from Hereditary Chief Adam Dick, who inherited the guardian position with his name: Kwaksistala, pers. comm. to Nancy Turner, November, 1997.

how to fish for salmon, how to cook it, and how to look after it (quoted in Carlson, 1997: 140).

2.5 Fishing and Stewardship

The nature of British Columbia's deeply indented coastline, mostly buffered and protected by its many islands, produces a broad interconnected maritime continental boundary between land and sea, straddling an array of microclimates that range from the relatively dry "Sunshine Coast" to the rainiest places on the continent. Fiords are the terminus of innumerable streams and rivers that have always served as food producers for coastal communities as well as subsistence and transportation routes for inland communities, some which are located at great distances from the ocean. The rich diversity of edible fish, invertebrates and seaweeds found within an extensive variety of specific aquatic and marine habitats in this region has induced the inhabiting peoples to devise a matching array of fishing devices. Many of their technological designs are still in use. The trawlers, trollers, seiners, gill-netters, long-liners and trap fishing boats of the current industrial fisheries are all technological adaptations of ages-old Indigenous fishing methods.

Hilary Stewart's Indian Fishing: Early Methods on the Northwest Coast (1977), confirms that with few exceptions, the scale and design of equipment used on the Northwest Coast was intended for inshore applications, with harvesting of anadromous fish generally being concentrated at the mouth or reaches and geographic features of the rivers themselves. Although it was probably not by design, a focus on river fishing would make stock monitoring a relatively straightforward part of the activity, producing a large

number of people who would have naturally understood the history and ecology of the local salmon runs, since most families had their own stream or a fishing station on larger rivers. Understanding promotes timely adaptation to local seasonal climatic or run specific variations in stocks.

> *The Nitinaht [Ditidaht] had a weir across the Cheewat River in their territory. They selected every salmon that went up to spawn and moved them by hand up the river but when the runs were low, they took it [the weir] out and went halibut fishing, that was the alternative: they could take more halibut if the salmon runs were light (David Ellis: pers. comm. 1997).*

Hereditary leaders were known to close fisheries when they felt it was necessary.

> *Years ago, when the fisheries were giving out licenses to fish the Megin [River], we knew the runs were poor; we knew they shouldn't fish it. . . Earl George [Ahousat hereditary chief] shut it down. That was his right, his Hahuulhi. He said "Shut it down" so we went out and we wouldn't let anyone fish there (John Frank, Ahousaht fisherman: pers. comm. 1997).*

> *Yes, he [Kwaksistala] was the fish [Kwakwa'ka'wakw] warden, I guess, up at Kingcome [Inlet]. Nobody touch the oulachen [sic] until he says okay. (So there's always going to be enough oulachens [sic]? NT) Yes, the same with salmon (Daisy Sewid-Smith pers. comm. to Nancy Turner 1997).*

The extent of weir fishing, especially above tidal waters seems to have been almost universal. Being the most efficient method of fishing, it was used wherever possible and was only precluded in deep, fast waters.

The curious thing about weir fishing is that although it has been outlawed for decades, some fisheries biologists are now arguing for this type of "run specific, terminal (end of migration) and selective fisheries," rather than the "destructive mixed stock fisheries management that came to prevail on the coast" (Glavin, 1996: 29).

Another widespread method of salmon fishing used mainly at stream mouths was stone traps. A corral of cobbles and boulders was built in an area that salmon and other fish species were known to frequent during high tide. Fish could enter over the top of the stone enclosure at high tide, and then could not escape as the water receded below the rim of the trap. In this way, fish could be selected for harvest or released without harm, either by hand or, if the trap did not dry up completely, when the next tide came up.

In Heiltsuk territory archaeologist Anthony Pomeroy found 140 of these stone fishing traps, some measuring as much as 240 meters in length, but most were made up of extensive systems of several corrals at multiple levels to take advantage of varying tidal fluctuations (Pomeroy, 1980: 103-27). Several more have been found in the area since that time. There are far more stone traps in Heiltsuk territory than anywhere else on the West Coast (John Maxwell, Millennium Archaeological Consultants, pers. comm. 1997), including one that was found about ten meters below sea level at the entrance to a large inlet (Mitchel Vickers and Ross Wilson, Heiltsuk divers, pers. comm. 1996).

2.6 Storage and Redistribution

In a recent analysis of various models postulated for culture development on the Northwest Coast, anthropologists R.G. Matson and Gary Coupland concluded that First Peoples' breakthrough into storage technology was the factor that permitted the region's rapid settlement, population and cultural expansion (Matson and Coupland 1995). Without effective preservation, storage and redistribution of food resources in order to provide for months or possibly a year of scarcity, the growth of large populations could not have taken place.

Further, salmon processing capacity, rather than capability in catching these fish, is considered a major population limiting factor for early First Peoples (Suttles 1968: 58; Donald and Mitchell 1975: 340). The intensive work of preserving salmon or other foods could only take place within the limited harvest season for each resource at its specific location. Salmon processing required a concerted effort, often by all available hands, to preserve enough for winter and redistribution purposes such as: trade, to obtain a more diverse food base like eulachons; sharing; and potlatch obligations.

"Potlatch" is a widely accepted generic term used in place of the specific name each culture recognizes for this diverse formal aspect of First Peoples' social systems.18 A major cultural institution, it has been the topic of much study (for example), well beyond

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18 "Potlatch" was the word used by early colonial bureaucratic proponents of the anti - potlatch laws first passed in 1884 and enforced after final ammendments in 1927. Kwakwa'ka'wakw historian Daisy Sewid-Smith (1979), suggests the name comes from the old Chinook trading language. Richard Atleo has suggested that potlatch derives from the Nuu-Chah-Nulth verb *pachitle*: to give, and *pachuck*: article to be given. See Turner and Atleo (1998: 115).

the scope of this thesis. However, the connection between redistribution of food resources, stewardship and the potlatch has been established for some time (Suttles 1968; Vayda 1961).19 Discussions in most potlatch studies are spun from a Euro-academic

perspective and derived from reanalysis through the lens of early field work without benefit of First Nations' consultation. The following excerpt from Nancy Turner and Ahousaht hereditary chief Richard Atleo of the Nuu-Chah-Nulth First Nation, in their recent collaboration, encapsulates the essence of these connections, valid since time immemorial:

> *The potlatch incorporated social, economic, political, and spiritual aspects of life. From a resource perspective its function was to redistribute wealth to promote the well-being of the community without doing damage to the environment, without violating the principles of balanced stewardship over the land, and in such a way as to render respect and honour to chiefs, nobility, people, plants animals, spirit powers, and through all these, to the creator (Turner and Atleo 1998: 115).*

In First Peoples' cultural groups, the chiefs and nobility had an obligation to maintain resources in the best possible way, carefully working to ensure ample harvests and general contentment. These leaders were entitled to portions of every harvest, determined in culturally diverse ways, but always, this share was used in feasts and potlatches where local community and members of the larger tribal groups were present, among other

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19 Piddocke (1965) also discusses the potlatch connection with resources but Drucker and Heizer (1967) like Boas, argue that marine resources were overwhelmingly rich and had no significant connection to the potlatch. Donald and Mitchell (1975: 343) have established that the size of salmon resource accounts for variance in human population. An overview from the cultural ecology and population dynamic perspective is found in Netting (1986).

reasons, to bear witness that the resources were indeed being well looked after. A benefit of the feasting and distributions of food and other items, to potlatching chiefs or nobles, was to retain their good name and social position within the greater society. Also, since all people had the right to live with any group to which they had appropriate kin ties,20 it was critical for the tenure holder to treat them fairly and look after them with as much consideration as with other resources. For example, a tyrant would soon have few remaining kin to work his holdings and consequently, might lose stature within the tribal nobility (Anderson 1996; Turner and Atleo 1998; Weinstein 1994; Weinstein and Morrell 1994).

Food storage technology, which enabled redistribution strategies on the Northwest Coast, besides being tied to the specific harvest season, required favorable weather conditions. The main way of preserving marine foods was through dehydration. Many methods and combinations of smoking and drying were used. In the interior Fraser Valley, the summers are moderate to hot and wind is nearly constant. Heat, wind and low humidity provide optimum conditions for drying and storing moderately fat sockeye salmon (Oncorhynchus nerka), which are prepared with many parallel cuts through the flesh to the skin, allowing the wind to dry the fish faster. The fish is hung on racks in the shade and takes about one week to finish drying. Closer to the Coast where humidity is higher, drying takes longer; the fatter sockeye and spring salmon (Oncorhynchus tshawytscha), having spent little time since feeding ceased in the ocean, could not be cured/dried well enough to prevent mold without the addition of smoke during the drying process. In

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20 Generally, kinship systems were matrilineal in the North and patrilineal in the South, but Heiltsuk, being at the interface of these, had families that participated in both: Suttles, Evidence in Reid et

wetter regions like Heiltsuk territory, only the leanest chum salmon (Oncorhynchus keta) could be smoked and dried hard enough to last through the winter without molding. To speed up the drying, slabs were cut into two thin filets - inner and outer (Cranmer and Green 1995). A similar process was used in the Babine area. There, an aboriginal weir fishery was in use until the weir's destruction in 1904 by Hans Helgesson who reported:

> *A most wonderful sight met our eyes when we beheld the immense array of dried salmon. On either side there were no less than 16 houses 30 x 27 x 8 feet [9 x 8.25 x 2.5 m], filled with salmon from the top down so low that one had to stoop to get into them and also an immense quantity of racks, filled up outside. If the latter had stood close together they would have covered acres and acres of ground, and though it was impossible to form an estimate, we judged it to be nearly three quarters of a million fish at those two barricades [fishing weirs, and there were more upstream nearer to the lake].*[21]

Evocative images like this make it easy to see how an annual catch of 230 kg per capita might have been preserved for future use and trade along parts of the BC coast and interior.

At a Columbia River basin location called "The Dalles", Lewis and Clark, on their expedition 1804-1806, found an estimated one million pounds [450,000 kg] of sun dried salmon that had been pounded into powder and loaded into standardized basket packs which were destined for trade along routes that reached west to the Coast and east to the Northern Plains:

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al v Queen.

[21] Department of Fisheries, Annual Report for 1905, Sessional Paper No. 22:207-8.

> *Great numbers of pounded salmon neetly [sic] preserved in the following manner, i.e. after (being) suffi(c)iently dried it is pounded between two stones fine, and put into a speces [sic] of basket neetly made of grass and rushes better than two feet long and one foot diameter, which basket is lined with the skin of salmon stretched and dried for the purpose; in this it is pressed down hard as is possible, when full they secure the open part with the fish skins across which they fasten th(r)o the loops of the basket that part very securely, and then on a dry situation they set those baskets the corded part up; their common custom is to set 7 as close as they can stand and 5 on top of them, and secure them with mats which is raped [sic] around them and made fast with cords and covered also with mats, those 12 baskets of from 90 to 100 lbs. each form a stack; thus preserving those fish may be kept sound and sweet several years, as those people inform me. Great quantities as they inform us are sold to the whites [sic] people who visit the mouth of this river as well as to the natives below (Thwaites quoted in Schalk, 1980: 10).*

The Dalles area, a centre for production and distribution of pounded salmon, was also a trade centre where a cornucopia of aboriginal food and goods, and as well, newly available trade items from ships were also bartered. Moving westward were dried buffalo meat and hides, corn and squash. From the Coast, en route to the east, were dentalium shells, eulachon oil, slaves, shellfish and wapato tubers as well as the European iron, knives, clothing, blankets and glass beads. The Plateau bands bartered with camas roots, horn bows and hides, horses and wild [Indian] hemp (Schalk 1980).

Salmon eggs were treated in a different manner than the fish. Coast Salish "Indian cheese" was made by half filling a clean deer stomach with coho or chum eggs and then kneaded daily until the moisture was gone, leaving a cheese-like mass. The Heiltsuk

version of "Indian cheese", as I understand it, is partially smoked and dried eggs still in the ovaries. The eggs are also eaten raw, boiled or fried in eulachon oil and seaweed. A widespread gourmet product, most notorious today, was prepared by putting them in a hole lined with maple or skunk cabbage leaves, covering them up with dirt for a couple of months, then removing and boiling with a small amount of water until the contents look like pancake batter. "Stink eggs" 22 are the result (Kennedy and Bouchard, 1983).

The Sliammon and Stl'atl'imx Salish rendered salmon oil from the heads and offal, boiling them down overnight in a large scoured out bedrock pothole adjacent to the river; next morning the oil was skimmed off. The oil was stored in a specially prepared salmon skin bottle that had been sewed together then sealed with the slime from the outside of salmon eggs, making it leakproof. The oil was used as a condiment, hair oil and medicine. These people also used Salmon skin in the manufacturing of sandals and moccasins (Kennedy and Bouchard 1983).

Herring eggs, an important Heiltsuk food and trade resource highly prized and eaten fresh in season in great quantity, were sun dried for later use (salted or fresh frozen in recent times). The sticky covering of the eggs cause them to adhere and build up layers of eggs that may easily reach a thickness of 1 cm and more per side on giant kelp fronds, and

great rubbery gobs on hemlock or cedar boughs anchored under water (Hereditary Chief Edwin Newman 1995; Kennedy and Bouchard 1983: 31-2; Stewart, 1977: 124-7). These were hung, boughs and all on drying racks.

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[22] Stink eggs must be prepared in exactly the right way, and must be exactly the right kind, in order to prevent deadly botulism. Do not try to make them without expert assistance.

The Inside Passage, as it is known today, a sea route sheltered from the open Pacific, passes through Heiltsuk Territory, creating a unique bargaining position for shrewd Heiltsuk traders who acted as middle men between the northerly Haida, Tlingit, Haisla and Tsimshian and the huge southern culture area of the Kwakwaka'wakw, Nuu-Chah-Nulth, Salish and beyond. As well, Heiltsuk straddling Burke Channel protected a monopoly on trade with the Nuxalk to the east (Suttles 1990). Trade centers at Namu and other Heiltsuk locations are discussed briefly in Chapter Five (Carlson 1996: 215-226;1979: 221) .

Eulachon, as suggested earlier, must have been nearly as important as salmon in some regions of the Northwest Coast and was preserved in similar ways, although the drying of so oily a fish in wet regions such as the Nass River or Bella Coola Valley must have been challenging. It seems likely that storage was of a relatively short term. Possibly there was a special method for long term protection against mold, of which I am unaware.[23] The oil was stored directly in tightly crafted steam bent cedar boxes or specially treated pneumocysts (bulbs) and hollow stems of bull kelp (Nereocystis luetkeana) that could then be stored in larger boxes full of the long coils of these natural containers (Stewart, 1977: 154). As mentioned above, the Nass River grease works were capable of large scale production, and people sometimes paddled hundreds of miles in order to trade for eulachon and grease at Fishery Bay, the largest grease trade centre on the Coast.

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[23] Nancy Turner suggests that the cedarbark boxes and baskets may themselves have acted as preservatives.

Many emerging factors were affecting the Heiltsuk and other peoples of the Northwest Coast including trade and redistribution practices; advancing storage technology; pressures from growing human populations expanding over diverse geographic and climatic regions; cultural development; clashing in times of scarcity and clearly, from a very early time, systematic tenure and stewardship were also evolving. Inevitably, territorial boundaries became established between and within tribal groups, where designated land and resource holders could steward their own resources knowing that their community alone would reap the benefits of their labours.

2.7 Tenure Enables Stewardship

> *We, the Ehattesaht and Nuchatlaht Chiefs are reverting back to our Aboriginal Right to plan, manage, harvest and take true conservation measures in conjunction with Nature to ensure sustainable returns of all aqua-resources within our "Ha Holthe." This Aboriginal Right flows from total control and jurisdiction over a Hereditary Chief's "Ha Holthe" - Mountains, Lands, Rivers, Streams, Beaches, Intertidals, Reefs and Deep Seas (quoted in Notzke, 1994: 33).*

The dangers of open access to common resource pools have become especially well known since the publication of Garrett Hardin's much debated: "Tragedy of the Commons" essay (1968). Recent interest in traditional ecological knowledge overlaid on a background of failure and crisis in scientific fisheries resource management, is encouraging continuing examination of traditional indigenous tenure and stewardship alternatives known from many areas of the world (Freeman and Carbyn 1988; Inglis 1993; Pinkerton and Weinstein 1995; Pitcher, Hart and Pauly 1998; Turner and Jones

2000; Williams and Hunn 1982). Although there may be cases where open access to resources is viable, exclusion of outsiders is an efficient and direct means to limit harvesting and, in so doing, reserve resource capital for the individual or group in control. The diversity of geography, cultures and resources among First Peoples creates many degrees and specific characteristics of ownership that express this exclusive right to harvest and control referred to here as "tenure".

Tenure included a broad range of territorial tracts, from the complete confederation of a First Nation's land and water based realm, to tribal group areas and various kinship, clan, family or individual holdings. Besides blanket control of resources within defined boundaries, often holdings were more complex. Frequently people would only have rights to specific resources in a certain place, such as berry picking or hunting a certain species of game, herring roe or seaweed harvesting, or claims to drift carcasses of marine mammals along partitioned stretches of coastline. Even selected portions of these animals might belong to a hereditary chief, but rights were often held collectively by culturally defined kinship groups with obligations and responsibility for wise stewardship invested in hereditary chiefs (McEvoy 1986; Richardson 1976; Turner et.al. 2000; Weinstein 1994).

Whether it is called tenure, ownership or traditional use rights, First Nations' tribal and sub group territories were well established through recognized landmarks and by various cultural regulation traditions. The potlatch, as previously discussed, was a central feature of First Peoples' systems of tenure. Obligations of stewardship and redistribution were played out and reinforced, jurisdictions were recalled and renewed, and hereditary

succession over specified areas and resources, like other aspects, was formally witnessed by guests.

Boundary and plot markers were also in widespread use throughout the Northwest Coast. The Haida used sticks to mark the limits of their holdings (Dawson, 1878:117b-118b, 136b), as did the Kwakwaka'wakw and Nuu-Chah-Nulth,24 and in annual construction of wood fishing weirs, "the uprights made of hemlock [were] left in place to mark each family's territory" in the case where a stream was shared by two or more families.25 In some cases, tribal group efforts could be prodigious in erecting memorable markers, particularly the Nuu-Chah-Nulth, described by Blenkinsop:

> *The boundary 'post' of the Sheshahts and Ow-chuk-lis-ahts on Nob Point, Alberni Canal, is certainly the most remarkable in this respect. Here two immense boulders have been selected, one placed on top of the other, with a small flat stone between them, the upper one weighing upwards of ten tons.*
>
> *The greater portion of the males of four tribes, one now extinct, assisted at this imposing ceremony. The women and children were also present and were told by the elders of the tribes to impress the event on their memory in order that they might be able to hand it down to future generations (Blenkinsop quoted in Odonnell 1988: 46).*

Wilson Duff recorded that according to oral traditions the first Gitxsan chiefs claimed their territory by traveling on the land and "put their power on the river and land", and

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24 Chief Adam Dick and Daisy Sewid-Smith cited in Turner et al. (2000).

25 Newcombe (1902: Haida -Ksaan Notebook: vol 35, frame 000833).

left their "mark", eventually establishing a permanent village at Git-an-yow where they put up totem poles to signify ownership of the territory (Duff 1959: 24-25). Similarly, Legaic, of the Tsimshian, marked the Skeena estuary with pictographs of coppers, claiming a trade monopoly in the area (Dickason 1994, 210 and photograph, 211). Pictographs of coppers and other figures can be seen throughout Heiltsuk territory and the term "power" or "táxwaí" is also used by Heiltsuk elders, Maggie Windsor26 and Hoffman Harris, to describe tenure rights and "táxwaínukw" to express the authority of that right (quoted in Suttles 1990: 35).

The framework of land and aquatic resource tenure strongly implies that systems of stewardship would naturally have evolved with them. When a people have the exclusive right of ownership and subsistence within a territory, it allows them the opportunity and incentive to develop practices that encourage greater or more stable production of food and other resources. Individuals who grow up tending and depending, almost exclusively, on food supplies provided by their local resources, know explicitly that their lives, history and culture survive and flourish, based largely upon the group's success in stewarding these resources. The often-heard phrase: "You cannot separate the people from the land; we are the land", declares the deep emotional bonds, borne of nurturing, given and received since "time immemorial."

Salmon's biological success in ocean foraging habitats can be uncertain. For example, the warm water trends of recent times extended the mackerel's range northward during El

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[26] Autobiography , HCEC interview by Dorothy Walkus, 1977.

Niño years, allowing them to gorge on salmon smolts as they reached the sea, directly reducing future salmon returns to affected locales.27 Uncertainty of environmental conditions coupled with the critical ongoing preoccupation with survival, provides insight about the rich cultural weaving of stories, ceremonies, rituals, taboos and respect that creates a universal yet distinct fabric within the oral history and traditions of all First Peoples (Turner and Atleo 1998).

> *Since the beginning of time - I have been told this through our oral stories - since the beginning of time, the Haidas have been on the Queen Charlotte Islands. That was our place, given to us. We were put on the islands as caretakers of this land (Gwaganad, Diane Brown 1990: 49).*

Imperatives of survival made it prudent for individuals and families to learn specialized environmental knowledge about ecosystems under their jurisdiction that ultimately led to more efficient and balanced use through caring for land and sea resources. Collective experience, over time would inevitably evolve toward widespread stewardship/tenure systems and practices as communities and community members shared their knowledge during social, trade and ceremonial contact with others, contributing to the traditional ecological knowledge and wisdom of many peoples.

Numerous old settlement sites remain undisturbed by study; many are as yet uncharted, capping archaeological deposits reaching back millennia. Cultures of the Northwest Coast evolved through time, developing and growing with their ability to perpetuate, stabilize and extend their resources. The two hundred or so years since contact have

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[27] Fisheries and Oceans, Pacific Region. Ocean Science and Productivity-El Niño: High Latitude Biological Effects. March 10, 2002. http://www-sci.pac.dfo-mpo.gc.ca/osap/projects/elnino/biol.htm.

wrought unprecedented devastation, turmoil and uncertainty. Culture and ecological practices developed through the ages depended on the exclusivity of tenure. They would have been severely impacted by rapid population decline, colonization, acculturation policies, and effective loss of cultural and territorial sovereignty. Terrifying community death rates, linked with declining traditions of culture, knowledge and technology would have been cataclysmic.

One can envision the desperate situation, with disruption of traditional practices following drastic population losses: too many young apprentices dead at a time when mentors were too old to take on a new protegé and too many veteran knowledge holders gone, leaving behind partially trained novices to learn on their own. How much of a community's knowledge base would disappear if a third, two thirds or more of its populace perished? Reasons for the obscurity of the actual traditional stewardship practices become obvious, although there is much archival and ethnological evidence as well as academic study of the various aspects of tenure where stewardship is accepted and discussed (Darling 1955: Turner et al. in press). Despite the disruptions, much can still be learned from the living memory and traditions of oral history

2.8 Heiltsuk Tenure

> *At the Head of Cascade Inlet (GĭldiL, "long inlet") There lived a man who was a real raven (sic) and who was the ancestor of the Raven sept. His name was Mĭni'gălis ("the only man there"). He owned the whole inlet (Olson 1955: 322).*

So the Eagle chief gave the couple the stream on Hunter Island called Ti'nkĭs (near Howeet) (Olson 1955: 331).

The ethnographies, archives and community cultural records for Heiltsuk contain frequent reference to ownership of territory, resources, harvest sites and cultural items such as names, songs, stories and dances (Boas 1932; 1928; Olson 1955; Storie and Gould 1968-69).28 These rights, strongly in place culturally, were rigorously guarded. Although harvesting or passage by outsiders could be arranged by asking permission (Angus Campbell in Storie and Gould 1968-69: 53), a breach of protocol could have mortal consequences. A Heiltsuk chief once gave a hunting territory to a Nuxalk man whose family had found and cared for his daughter (recently escaped from slavery). Later, after the chief's death, a member of the Nuxalk family, hunting beaver in the awarded territory, was killed by Heiltsuk as a trespasser. The account of this story is retold in McIlwraith's The Bella Coola Indians (1948: 134-135), where the discussion claims the incident was murder and centers around whether or not the return of tenure to Heiltsuk was valid. The story implies that in the case of a valid instance of trespass or poaching, the killing would have been expected, giving us a glimpse of how well were understood the rights and consequences inherent with tenure29 . In another instance, which took place at "Neekas" where both Heiltsuk and Tsimshian laid claim, a contest apparently decided ownership of the Ellerslie Channel district in favor of the Heiltsuk, a humane alternative that may have prevented war (Olson 1955: 321).

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28 And various autobiographies of community elders on file at HCEC.

29 Similar rights and consequences are discussed for Tlingit tenure sytems in Oberg (1934, 1973).

Heiltsuk population had declined to its lowest ebb, only a few hundred people, by the time anthropologists began to record ethnographic information about their culture. Even so, the detail of oral history held by Heiltsuk elders was remarkable. In 1923, Andrew Wallace was able to give Franz Boas a list of 24 individual house groups belonging to seven tribes, which he identified by naming each one with its first ancestor, village and crests (Suttles 1990). An oral record of such detail, in itself, illustrates house and tribal tenure divisions within the Nation's territory, and implies significant importance was placed on their recognition.

In his evidence, provided during an important Heiltsuk aboriginal marine resource rights case in 1990, anthropologist Wayne Suttles included a description of territorial tenure structure as:

> *Traditionally several kinds of resources were the property of the house. . . and the management of these resources was under the direction of its chief. What a house owned were rights to harvest certain species at certain places or within certain areas. Others could harvest there only with the permission of the chief of the house who owned the resource. Normally permission was asked by and granted to outsiders related by marriage, in a widespread pattern of reciprocal access to resources. . . (34).*
>
> *The resources that were owned included salmon streams, Halibut grounds, hunting territories, fruits and berries in certain areas, and herring spawning grounds (35).*

Citing sources from Heiltsuk historical records, anthropological literature and cultural records, he presented many supporting examples, including ownership of the stone fish

traps, and reports on "power" or "táxwaí" and "táxwaínukw" (seen above). He noted that, as recently as 1968, a Heiltsuk elder, Hoffman Harris, "could have identified the owners of most or all streams in Heiltsuk territory, had he been given the time" (Suttles 1990: 34-35). About the same time, Willie Gladstone, a Heiltsuk consultant working with archaeologist Anthony Pomeroy, was able to guide him to many of the early Heiltsuk village and stone fish trap sites and supply their names and stories. These examples once again demonstrate the detail of oral history that continues to be carried by Heiltsuk, as well as the enduring importance placed on ownership of resources.

Examples of tenure selected by Suttles, along with excerpts from other ethnographic and archival sources, and many more provided by Heiltsuk knowledge holders during my 1997-8 field interviews, will be prominent in the results and discussion, Chapters five and six.

2.9 Summary

In this chapter it is argued that, in order to meet harvest requirements of expanding populations, systems of stewardship were required. The stewardship ethic evolved embedded in culture and was practiced as a part of everyday living. People believed that they must be respectful of all living things, never wasting or wilfully destroying anything. To this end, stories, taboos, rituals and ceremonies, and in some cases even River Guardians were in place to provide spiritual and moral guidance and if necessary, to enforce proper behavior.

Exclusive ownership of specific resources at specific sites was necessary to facilitate the success of these practices. Tenure and stewardship very likely co-evolved as populations expanded, creating a need for more and stable resource supplies. We still do not have a good sense of exactly how many people once resided on the coast of British Columbia or how much salmon they consumed. However, even the most conservative estimate of 100,000 people consuming 22,000,000 kg of salmon annually, is a strong indication that systems of tenure and stewardship were necessary.

The examples discussed in this chapter carry convincing evidence of stewardship systems, enticing further study to learn how marine resources were once successfully stewarded. The range and extent to which First Nations understood and shaped their territories before European contact is just beginning to be realized. There may have been more people using more resources, inducing more ecological modification than we can possibly track. It does not seem possible that First Peoples could have lived in balance with nature without practising resource stewardship, applied at both regional and site specific scales.

CHAPTER THREE

LOOKING AFTER THE SALMON
Project Description and Methods

This chapter begins with the research question, followed by a brief report on related academic literature. Heiltsuk policy regarding research by non-Heiltsuk and my introduction of the project to the community are then presented before outlining my research approach and methods. A discussion regarding the evolution of collaboration within the project is included here. The chapter concludes with my critique of the project and its methods, making recommendations for future research with First Nations' communities.

Having substantiated through examination and analysis of the literature that pre-contact coastal First Nations' populations were at least 100,000 strong and resource stewardship systems were likely a typical component of extensive salmon harvests, the question central to this thesis has been:

> *How* were *salmon and salmon streams "looked after", as stated by hereditary chief Edwin Newman (quoted at the beginning of Chapter One)? More specifically, what practices were/are employed by Heiltsuk and other coastal First Nations to help maintain their salmon stocks?*

Salmon make a good focal point in the study of aboriginal stewardship practices because of their primary importance as a subsistence food and their role in the history and

development of British Columbia. Because of salmon's importance, it was also likely that a good deal of First Nations stewardship practices were described or referred to, in early reports to government agencies and offices, and diaries of historic figures connected to the fishing industry and/or to coastal First Nations.

A preliminary examination of the ethnographic, historical and other academic literature revealed that although related topics such as ethnobotany, aboriginal land tenure systems, traditional use and other traditional environmental knowledge based studies have suggested its existence repeatedly, traditional salmon stewardship practices have not been well documented from primary sources or investigated previously. For some reason, early anthropologists and ethnographers seldom considered resource stewardship in their studies. Nonetheless, more recent, often interdisciplinary work by anthropologists, archaeologists, biologists, ecologists, ethnobotanists and others has led to general agreement, if not the assumption, that widespread aboriginal resource management systems existed (Deur and Turner in press; McEvoy 1986; Pinkerton and Weinstein 1995; Richardson 1976; Turner and Atleo 1998; Turner and Jones 2000; Weinstein 1994). Acceptance of aboriginal resource management systems has developed over the last two decades with increasing interest, especially in British Columbia where the ethnobotanical work of Nancy Turner and her students, with First Nations' consultants has revealed many examples of First Peoples' plant cultivation. A few encouraging reports of salmon stewardship practices have also been located. Gilbert M. Sproat (Lillard 1983), a colonial bureaucrat, described the transplanting of salmon eggs by a Nuu-chah-nulth group. The Nuu-chah-nulth "Hahuulhi" system treats "looking after" a river as a serious obligation

(Bouchard and Kennedy 1990: 21; Turner and Atleo 1998; Chief Earl Maquinna George, pers. comm. to Nancy Turner 1996). Construction of "spawning dams" is mentioned by anthropologist Homer G. Barnett (1955). Haida and Manhousaht (a Nuu-chah-nulth group) elders, working with David Ellis to record their traditional marine foreshore invertebrate use, also discussed "semi-cultivation" of some of these food resources (Ellis and Swan 1981: 68, 85, 86; Ellis and Wilson 1981: 4 - also "planting" mussels, 24, 32). As well, farming of marine resources is mentioned by Ahousaht, Nuu-chah-nulth elder Stanley Sam (Salt-Water People, NFB video documentary, 1992). Anthropologist Helen Codere characterized the Kwakwaka'wakw as being "agriculturists", farming "the woods, the shores, and salmon streams and the sea" (1990:364).

Such indications suggested that digging deeper into archival records and oral history might reveal further substantive evidence, in traditional knowledge and understanding not previously accessed. As well, it seemed that recording living oral history that might be shared with me by Heiltsuk elders and other knowledgeable community members could reveal salmon and salmon stream stewardship and its practices from the Heiltsuk experience. Since earlier discussion with Jennifer Carpenter had outlined Heiltsuk experience and expertise in ethnographic work, the idea of working collaboratively for mutual benefit took shape under established Heiltsuk research policy.

3.1 HEILTSUK RESEARCH POLICY

Heiltsuk anthropologist Pamela Brown succinctly encapsulates the Heiltsuk position on research writing originating from their territory:

> *I feel particularly uneasy about writers who use Native experience to exemplify a particular ideological perspective. There is good reason for concern. As the treaty negotiation process begins in B.C. an unexpected weight will be attributed to conventional literature about the fisheries.*
>
> *Written evidence will play a large role in treaty negotiations. The traditional economic base of First Nations is based on fish, but First Nations history is based on oral tradition. The majority of written material about the fisheries in B.C. is written by non-Native people. Because First Nations didn't write, this creates a serious imbalance. ...there is a high probability that future efforts to do justice to First Nations economies will be subjected to the most rigorous analysis during treaty negotiations or, as has already happened in the case of the Gitksan Wet'suwet'en, be subjected to merciless cross examination in court (Brown 1993:19-20).*

The potential risk to First Nations when research is undertaken in their territories, as stated in the preface of this document and above, is considerable. Because of possible legal/political biases in interpreting results and unforeseen gaps that may later be found or perceived in the research, academic inquiry must be advanced with caution.

The Heiltsuk have a history of taking the initiative by inviting academic researchers to work in their community. From the early 1970's, Jennifer Gould (now Jennifer Carpenter, Director of the Heiltsuk Cultural Education Centre), Dr. John Rath, Dr. Barbara Lane, Dr. Wayne Suttles, Dr. Michael Harkin, and many other researchers in several disciplines have been welcomed and sometimes recruited by the Tribal Council. Since 1980, protocol has been established for visiting researchers, requiring them to first register with the Band, providing a "detailed project description", stating the purpose of the project, and listing any proposed sponsors or funding agencies. The "Guidelines for Researchers / Access to Information" policy statement, in effect since that time, explicitly states the Band's welcome as well as its concerns and requirements for research in Heiltsuk territory. These are embodied in the following excerpted points:

a) that the research be of use to the Band, as determined by the Band;

b) that it be conducted according to professional standards and ethics;

   With regards to the latter, prospective researchers and supporting institutions are referred to "Ethics Guidelines for Research With Human Subjects," revised by the SSHRC; and the "Statement of Ethics" of the American Anthropological Association, 1971. Two principles basic to all ethical guidelines are: i) no harm, and ii) informed consent.

c) that the interests of the Band and the confidentiality of the informants be protected with regard to the dissemination of original research data to any third party (that is, to persons or institutions other than the researcher).

   Note: "the interests of the Band...etc." are to be determined in consultation with the Band and are not to be a matter of unilateral assumption on the part of the researcher or his/her supporting institution.

d) The Band welcomes projects leading to the dissemination of accurate and respectful descriptions of its heritage and culture, especially when Native perspectives and interpretations are included in the presentation, but does not support projects that would lead to the expropriation of indigenous knowledge by outside individuals and institutions.

In support of the project and its collaborative aspect, the Tribal Council appointed experienced people from three different Tribal organizations to act as my Heiltsuk advisors: Jennifer Carpenter, Director, Heiltsuk Cultural Education Centre; Sarah Murdoch, Research Coordinator, Heiltsuk Treaty Office; and John Bolton, Director, Heiltsuk Fisheries. These people formed an ad-hoc committee, which I refer to as my Heiltsuk advisory committee, which became the Heiltsuk counterpart to the University of Victoria, School of Environmental Studies' academic degree committee. My original proposal had been written to attract provincial funding but the limited writing time available precluded Heiltsuk participation in developing the proposal. The intent of the project had been to work collaboratively with Heiltsuk, which made it necessary for the project description to be rewritten with guidance and suggestions from the Heiltsuk advisory committee. Once the required "detailed project description" was accepted by the Heiltsuk Tribal Council, a formal agreement (Appendix 3) was signed between the Tribal Council and myself, to undertake the community-based research.

3.2 Community Introduction to the Project

As an outsider planning to do ethnographic work in the community, I had been guided to Heiltsuk and Central Coast historic, ethnographic and archaeological materials held in the

Heiltsuk Cultural Education Centre. These resources gave me an opportunity to add to my knowledge and understanding of the history and culture of the Heiltsuk people through combing suggested books, files and other records for evidence of any traditional stewardship practices during my first few weeks in the community. This provided me the beginnings of a contextual grounding helpful in writing my "detailed project description" for the Band Council.

The project was formally introduced to the wider community through an article I wrote that was printed in the Nanakila, a community newsletter produced by the Heiltsuk Treaty Office. The article notified those interested that the project had approval of the Tribal Council; introduced me, Jim Jones; listed primary open ended questions I wanted to ask; gave reasons for people to participate as contributors; and assured confidentiality of project data. Prospective participants were given an expanded version of the introduction, which contained more information on the above topics, more questions and two pages of Heiltsuk stories and words in the Heiltsuk language to contemplate. I felt that by including questions, stories and words, the article and handout would encourage people to think about and discuss the topic which invariably required thinking back over many years, usually to childhood memories.

3.3 Research Approach and Methods

> *Research findings, cloaked in jargon, have been unintelligible to communities or have been largely irrelevant to community needs...Native leaders now advocate research that is collaborative and meaningful to*

their communities...Native research takes place in an increasingly politicized and chaotic environment...Our responsibility is to make explicit a participatory methodology whereby our own and the Native voice are differentiated and strengthened...Collaboration ensures self-reflection and invites critical reassessment of our methods (Warry, 1990, quoted in Brown, 1993: 22)

3.3.1 Collaboration

In the beginning, I took guidance from my Heiltsuk advisory committee through a question-answer-critique format that developed spontaneously as we grappled with maintaining the collaborative obligations of the project. From the outset, it was intended that this project should be collaborative, which for me meant working together on a level that is appropriate for the diverse partners. My assumption was that under the low-budget circumstances this meant that both community and academic committees would give guidance and critiques as needed while I would do the bulk of the work under their supervision. Unfortunately, assumptions have many failings. In this case, since we had failed to discuss or define collaboration, Heiltsuk were left wondering what they could expect from the University; my academic supervisors; and me, and what we expected from them within this process. Paradoxically, we were perpetuating the old academic hierarchy and control over a First Nation's research participants while saying we wanted to move away from it. The word 'collaboration' sounds good and respectful, as indeed were my field project supervisor - Nancy Turner's and my intentions. Ironically, we felt strongly that it was important to promote collaboration as a condition for fieldwork with First Nations. Fortunately, Heiltsuk brought this issue to our attention when late in the

study, they became increasingly frustrated in interpreting their role in guiding the work as it overlapped with the University's academic role in guidance of my thesis.

Extensive dialogue to define collaboration and its implications for roles and responsibilities of its partners was then begun between Heiltsuk and University of Victoria advisory committees. The discussion developed into a short research investigation by Heiltsuk to determine what constitutes appropriate research in First Nations Communities. The research by Jennifer Carpenter was instrumental in shaping discussions on collaboration with Nancy Turner. In their joint report to Forest Renewal British Columbia, funding agency for the research and discussion process, Jennifer and Nancy outline an "emerging . . . framework for considering a new relationship between the university community and First Nations in collaborative research" (Carpenter and Turner 1999).

3.3.2 Participatory Action Research

However, previous to the dialogue on collaboration, I had developed much of the following methods based on my course-work survey of ethnographic methods (Johnson, 1992; Yow, 1994; Van Maanen, 1988; Cruickshank, 1990), suggestions from Jennifer Carpenter and discussions of the day-to-day work while I was accompanied by Hereditary Chief Clarence Martin.

During the interview process, Clarence Martin worked with me almost daily, suggesting possible interview candidates, setting up interviews, introducing me to prospective Heiltsuk consultants, explaining Heiltsuk culture and discussing our interview findings overlaid on his own extensive knowledge. In short, he was my teacher and co-worker. Clarence Martin has worked with the Heiltsuk Cultural Education Centre for many years, having participated in interviewing community elders during Heiltsuk traditional use studies, and earlier mapping of place names and sites. He also spent many years as a commercial fisherman and serving on the Heiltsuk Band Council. Chief Martin is also a Heiltsuk language speaker and translator.

The research was intended to investigate the nature and extent of traditional stewardship of salmon streams and possibly their surrounding landscapes by the Heiltsuk people. From the beginning, it was clear that we would have to find a way to obtain and integrate information and methods from several academic disciplines with Heiltsuk traditional environmental/ecological knowledge. The few models of traditional environmental/ecological knowledge (TEK) study that exist draw heavily from social science methods, such as interviewing and discourse analysis, participatory action research, and archival research, ideally tying in biological inventories, ecological surveys and mapping, then finding ways of modeling and testing hypotheses (Johnson and Ruttan, 1993). In consideration of limitations in scope of a Masters thesis and constraints of budget and time, my Heiltsuk advisors and I saw this as a pilot project. As such, we ultimately adapted the methods of participatory action research as employed by the Dene

in their traditional environmental knowledge pilot project (Johnson and Ruttan, 1993) to our needs.

Participatory action research in the study of traditional environmental knowledge is described by Martha Johnson, anthropologist and former director of the Dene Cultural Institute:

> *Increased appreciation of TEK has produced a burgeoning field of research. At the forefront of this research are aboriginal peoples. They are demanding primary involvement in the direction of TEK research. "Participatory community" or "action" research has become the accepted approach in studying traditional environmental knowledge. In such an approach, the host aboriginal community participates directly in designing and implementing the project, community members are trained in research methods and administration, and the community retains control over the research results (Johnson, 1992:6).*

This contemporary shift from former models has arisen "in reaction to earlier dominant and elitist social science research methodology" and its theory, which formerly did not involve the people who were the supposed research beneficiaries (Johnson and Ruttan, 1993). The participatory style of research has repeatedly evolved in northern Canada as a tool for a variety of community-based planning, cultural and development projects, and has been used on other projects by the Dene. An analysis of two Dene projects was included in the Royal Commission on Aboriginal Peoples Report (Ryan and Robinson 1992).

3.3.3 Community Control over Research Results

Establishing community control over research results is a critical aspect of participatory action research, in that the project must serve the community and the community must be involved at every stage clarifying what it wants from the project.

From the beginning, the fact that the project was initiated as field work for a university thesis created no end of confusion as I, in the interest of collaboration, attempted to always defer to community control, while my community advisors constantly grappled with trying to guide me toward a worthwhile project for the Heiltsuk without interfering with unknown academic processes and standards. Academic advisors were also involved in this dance as they attempted not to step on the toes of Heiltsuk protocol. There are three main areas where this confusion created problems for community control: first, in the area of determining the direction of research; second, development of research methodology; and third, interpretation of results.

The first two evolved within the spirit of collaboration and participatory action research based on discussion with advisors. But, the project could have proceeded with more certainty and in a greater spirit of partnership and trust if research design, planning, methodology and the roles and duties of each partner had been explicitly defined and agreed upon at the proposal stage. An early definition of what collaboration really means, likely would also have led to consensus on these points. Agreement on this

definition underlines the importance of the seminal dialogue suggested by Heiltsuk, between Jennifer Carpenter and Nancy Turner.

The academic interpretation of results in the thesis, as we have agreed, will be reviewed by the Heiltsuk advisory committee, points of contention discussed, and where we agree, additions or changes made to reflect Heiltsuk perspectives. Heiltsuk have a right to comment, in print, on the content of the final text. The final product, however, carries my own analysis and perspective on the data. A primary benefit of the project, or any future academic project as described above, for the Heiltsuk is in the documentation of their oral history as well as the archival data compiled. From these resources, Heiltsuk may make their own analyses to draw from in their challenging treaty and resource management negotiations.

3.3.3.1 Selecting Participants

During my first few weeks in the community (July and August, 1997), when explaining my presence to the people I met, I introduced the project and kept a list of the names of people they suggested I contact. This tentative interview list grew as time passed and more names were suggested by my advisory committee and the staff in their offices. Clarence Martin, through long experience with previous ethnographic projects, added to the list and helped select those most likely to be knowledgeable on the subject. It seemed to me that the most appropriate and respectful method of approaching prospective participants was by asking Clarence Martin to drop in to see them at their homes or other

informal settings, chat with them about the project, leave a handout and ask them to consider meeting with me to discuss the questions. This led to a pre-interview meeting, which allowed me to meet them and assess whether or not they were good candidates for a project interview. It also gave the person an opportunity to meet me, ask questions and "size me up" before making a decision about being formally interviewed. Sometimes the person wanted to get right down to the interview, so we always carried a "loaded" tape recorder and spare cassettes. We always asked for suggestions of more names for our prospect list, the non-random "snowball" sampling method suggested by Yow (1994: 45).

People were selected for interview during pre-interview meetings by three criteria: their personal experience with salmon stewardship practices, their personal observations, and whether they had heard anything directly from persons who had primary experience (e.g.: grandparents or other ancestors). People, who seemed to have these connections and appeared to have more to say, were asked if they would be interested in being interviewed further with the interview recorded on audiotape.

3.3.3.2 Interviewing

Based on discussions with Jennifer Carpenter, the qualitative nature of the project, and on the recommendations written by anthropologists Martha Johnson (1992) and Valerie Yow (1994), who discuss the pitfalls of highly structured questionnaires and closed questions, we decided the best approach to interviewing would be to use a set of open-ended questions as an interview guide that suggested a line of thought, while permitting

participants to respond in a way least influenced by the interviewer. The guiding questions were the same ones listed on the handout and newsletter. By having the questions in their hands before meetings, it was hoped that participants might be primed and ready with their reminiscences as well as their own questions.

After a few pre-interviews and audiotaped interviews, more questions were added to the list and the order of questions reorganized to related groups. Topic opening questions were followed by more specific, spontaneous questions intending to gain clarification or expand on some aspect of the answers being recorded. Experience showed that the Heiltsuk word list and stories were not stimulating discussion and even created some confusion. These were eventually phased out. In retrospect, I think this was an error. By simply changing the questions in a way that would eliminate the confusion, more information might have been gathered during interviews.

I monitored the questions in the guide and as the interview progressed, mentally checking off questions that were answered incidentally or skipping more specific questions where topic-opening questions drew little knowledge or interest. This strategy was intended to create a comfortable dialogue by avoiding a rigid framework of questions and answers, enabling the participant to comment in his or her own way without restrictions. Guide questions were asked only if a topic was not previously covered by the speaker, or if conversation lapsed.

All pre-interviews and interviews were conducted in peoples' homes, where we asked them to choose a quiet spot where they could be comfortable. During pre-interviews, I checked to be sure the handout had been understood and usually went through it in detail before asking any questions. The visit went on until the person had finished with the questions. If it was established that we should come back for a taped session or if the contributor seemed tired, we would suggest a return visit. Most interviews lasted just over one hour. Participants were always asked again for permission to audiotape the interview, just before the machine was switched on. At first, participants were asked to give their name, age and other life history information, but after a few interviews, this practice was dropped as redundant since each person spoke broadly about their life throughout the interview. Here again, I realize in retrospect that answers to key biographical questions would have been invaluable to future researchers and would self-identify the recording.

I conducted the interviewing myself, except in one case when the consultant preferred to be interviewed in Heiltsuk. In that instance, Clarence Martin took over. When interviews were winding down, I usually asked Clarence Martin for any comments or questions he might have. This approach sometimes stimulated further discussion. I took notes throughout pre-interviews, which were not audiotaped, and used them as a mental checklist and source of more narrowly focused questions during the recorded interview. I took no notes during recorded interviews except to jot down further questions to ask when the participant seemed to have finished with a topic. I felt it was more important to

listen to every word and ask new questions as they occurred to me than to write further notes. Note taking, however provides a good backup if tape recordings fail.

The above methods were generally successful; the pre-interview was an effective filter for the "snowball" sampling technique. Using the set of open-ended questions as a guide during interviews worked very well, helping to establish a comfortable flow in the dialogue with the consultant and permitting spontaneous questions as they occurred to me. In future, I would want to be more cautious in framing spontaneous questions, since I noticed some instances of leading or closed questions (Yow 1994) as I transcribed the interviews. I think the most important lesson was in paying close attention during the interview and learning to be flexible and inventive with questioning. If time and opportunity had allowed, I would like to have gone back to many of the consultants with specific questions that arose in my mind during the transcribing process.

3.3.3.3 Documentation and Storage

Copies of all printed documents pertaining to the project are filed and stored in the Heiltsuk Cultural Education Centre (the Centre). This includes copies of all pre-interview notes and interview transcriptions, as well as original copies of individual consent forms, and other field notes. Transcripts are accompanied by an index made up of sentences from the transcripts that signal slight changes in topic with corresponding tape footage for easier access to specific topics by future researchers and myself. Consent forms have been signed for all recordings and pre-interview notes. All files are

also recorded on a 3.5-inch floppy disc in Macintosh - Claris Works format and are also stored on one of the Centre's computers.

All original recordings were made on equipment and tapes supplied by the Centre and were duplicated on Centre equipment. Original recordings are held at the Centre while duplicates, made on project tapes, became working copies for transcription purposes. Once transcriptions were completed, these working copies were returned to participants when I again met with them to check over the transcripts for accuracy.

Rough transcriptions were made by my partner, Lynn Solomon. Afterward, I went over them again, correcting and filling in as much as possible of what she missed. Some Heiltsuk language segments and one tape, entirely in Heiltsuk, were translated and transcribed by Clarence Martin into English. Interview tapes recorded in English were transcribed verbatim, including repetitions and an indication of pauses made by speakers, except in a few cases where those interviewed requested that repetitions be removed from the transcriptions. The spelling of Heiltsuk words and place names used on all recordings should be checked and corrected in the transcripts by a Heiltsuk speaker when funding becomes available. If funding or a community volunteer had been available, transcriptions done in Bella Bella likely would have been more accurate as community workers would be better acquainted with the speakers and place names, many of these I could only spell phonetically.

Compiling Data

As a strategy for making the interviews more accessible to myself and future researchers, all interview transcripts and pre-interview notes were reviewed and relevant passages were placed in computer documents under separate headings: Abundance (any fish, plant or animal); co-management (items useful in resource negotiations); commercial fishing (experience, comments and criticism); harvest rates (subsistence); impacts (natural and mostly human industrial disturbances); non-Heiltsuk attitudes (perceived and remembered); Population (Heiltsuk); sport fishing (impacts and issues); stewardship practices; storage (food technology); stories and ceremonies; subsistence; tenure (land and marine resource ownership); traditional knowledge; and women's roles. These documents, as Heiltsuk intellectual property, were filed with the Heiltsuk Cultural Education Centre.

3.3.3.4 Participation and Understanding

I think that spending time in the community, getting to know some of the people while exploring the territory, participating in subsistence fishing trips and attending cultural events have been very important in developing my understanding of some of the issues surrounding fishing, subsistence, culture and history. I feel that any insight I may have acquired into a Heiltsuk perspective has grown out of day-to-day contact with everyone. My discussion and conclusions are likely to have been very different without this aspect of the project. I recommend that future researchers also get involved and spend as much time as possible with the people in the community before and during their research.

Another difficulty I encountered was in catching people at home and at a time convenient for them to be interviewed. In this study, many of the people best known as knowledge holders were very busy with subsistence harvesting activities, community service, potlatch and other social obligations. These folks, mostly elders, some troubled by illness, must sometimes be simply too exhausted to participate. Future work should consider this situation and time visits by discussing, with community advisors, ways that research forays can be undertaken to be more in tune with the community's seasonal activities.

3.3.4 Archival Research and Methods

An important aspect of my research was locating archival records pertaining to Heiltsuk and other coastal First Nations' salmon stewardship with documentation of any related traditional environmental/ecological knowledge. Such records strengthen and validate statements made by Heiltsuk knowledge holders in interviews and other previous recordings. The search requires that many and diverse, sometimes very large, record groups and collections be consulted. My research fell somewhere between a scavenger hunt and fishing trip (very specific, but you have to be happy with whatever comes up). Clues point the researcher in several different directions and the researcher's job is to recognize productive ground, and to slow down and try for the big ones, "knowing" they must be there. Daily voyages can be long and tiresome, but we must be ever alert, for supporting information is often well camouflaged in the undulating sea (after days and

weeks) of paper. For example, there are many fishing industry reports that criticize First Nations' traditional trap and weir fishing throughout the Coast and interior salmon subsistence areas. These reports also often contain information about salmon escapement, condition of spawning beds and predictions about the state of the coming runs, provided by the same "Indians" the fisheries guardians and cannery men have accused of destroying the fish. Fisheries department officials once recognized that aboriginal peoples were very knowledgeable, and commonly depended on them to provide information for their reports. It took a while before I realized that this reliance on indigenous peoples' observations was an obvious assumption and acceptance of the extent of First Nations' salmon knowledge.

Working under the assumption that the large sedentary pre-contact populations of First Nations could not have developed to such an extent without a successful system of resource stewardship, Lynn Solomon and I combed through old records looking for clues in reports that described aboriginal, especially Heiltsuk, activities. Finding very little pertaining to Heiltsuk, we pushed on, looking for evidence of stewardship from other coastal First Nations. We paid particular attention to reports originating from nearby areas where salmon streams were generally comparable in size (relatively small) to Heiltsuk streams and where stewardship techniques were likely to be similar. We even stopped at times to consider reports from larger rivers, hoping to learn what practices might have been carried out in tributary streams, recognizing that their similar size to Heiltsuk might suggest more similarities. We skimmed hundreds of pages on microfilm and perused boxed federal and provincial fisheries archival records from their beginnings

in the 1880's to the early 1940's, including scanning every available volume of the annual fisheries reports of the federal government's Department of Fisheries (title varies) from 1887 to 1940 (Canada, Department of Fisheries 1868-).

During my summer 1997 visit to Waglisla, I examined archival records and books held on file at the Heiltsuk Cultural Education Centre for any information on Heiltsuk stewardship practices. I heard from Carl Humchitt in the Heiltsuk Treaty Office that the early fisheries guardians and overseers kept diaries and made reports to their government departments on a regular basis. Fred Carpenter, DFO director of aboriginal fishing programs for many years, subsequently confirmed this. It seemed reasonable to assume that these writings would hold some mention or possibly some descriptions of Heiltsuk and other First Nations' stewardship practices. Infrequently, I found these reports in the "sessional papers" published with the annual report of Dominion Marine and Fisheries (Canada, Department of Fisheries 1868-). Although I found none that related directly to Heiltsuk, it was obvious to me that Fisheries Guardian's and Overseer's reports must, at least occasionally, have included the type of information we were looking for. A good example is the one written by fisheries Overseer Hans Helgeson, sighting the fishing weirs, drying racks and smokehouses at Babine Lake in 1904 (see Chapter Two). Notwithstanding defamatory statements, Helgeson's detailed reports can be helpful. Given the primary importance of salmon as a food source (Chisholm et al. 1993), the impressive harvest of salmon had to have been an annual occurrence. The extent of tribal organization is obvious, and common sense tells us that without a stewardship ethic and wise practices, considering the efficiency and potential for destruction described by

Helgeson, neither the fish nor the Babine First Nation could have co-inhabited the area in such abundance. By including descriptions of First Nations' fishing practices, even seen through European eyes, Helgeson unwittingly provides insights into the local stewardship.

Unfortunately, the diaries and obviously extensive records and correspondence referred to and quoted in the Annual Reports are not to be found in British Columbia. Nor are they listed in the National Archives in Ottawa. Thinking that they may be closed files due to privacy issues, I requested these files through the federal access to information process and eventually spoke to an Ottawa supervisor who told me that the records I wanted were very likely contained within a warehoused stock of about 2000 boxes of old Fisheries records that will eventually be distributed to regional branches of the National Archives. My trip to the Burnaby branch yielded only one file box of interest, which I was told had not yet been examined by an archivist. The archivist working with me was subsequently told that the box had been attacked by fungus and would be sent to Ottawa for salvage or restoration of some kind. Strangely, the archivist was unfamiliar with such a procedure, as she had never heard of a fungus problem in the building. Future access to the warehouse files may provide much in the way of supportive documentation for stewardship by First Nations.

3.4 Critique

Looking back, I can see that fundamental mistakes were made. These were sorted out and resolved or noted above in the description of methods . The variable conditions of human nature come strongly into play in a research project such as this. In asking questions, even the same questions asked of the same people on a different day may elicit more, or less detail or may even provoke new or different recollections to be discussed, to say nothing of new questions from a different researcher on the same topic. Regrettably, this type of repetition would be taxing for the elders, but if they had the time, strength and patience to put up with it, we undoubtedly would learn much more. Clearly, a long-term resident researcher, a Heiltsuk, would be in the best position and possess the best insight to carry on research of this type.

Although I had good intentions to make the project truly collaborative, the need to access funding, coupled with the stress/constraints of time, distance, and my own assumptions, my original project proposal was written largely without input from the Heiltsuk community for a funding agency audience. Research is very difficult without funding. The problem with such proposal writing is that several masters must be served: the research funding priorities of the funding agency (forestry in this case); the complex resource and cultural issues of the First Nation; and academic requirements/limitations, along with any personal requirements.

When our original funding proposal failed – a proposal that had incorporated substantive funding for Heiltsuk co-researchers and which was supported in principle by the Heiltsuk Chief and Band Council as well as the Heiltsuk Cultural Education Centre, we decided to push on with the aid of a modest scholarship from the University of Victoria plus the assistance and goodwill of the Heiltsuk community. The project proposal was then rewritten with Heiltsuk guidance in Waglisla, the methods evolving during the rewriting period and as the labors of the project emerged. The process took a lot more time than I had anticipated.

In any future work, I recommend that the researcher first develop a good working relationship with the Heiltsuk or any First Nation concerned, then jointly work out the details of the project to mutual satisfaction with academic guidance, and finally, work closely with the First Nation in preparing *their* proposal for the funding. Working this way establishes the researcher's credibility and the collaborative aspect of the work, leaves administrative control of the research and the accounting with the First Nation where it belongs, and sorts out the roles and expectations of all the players before the project begins. Once the project is approved and funded, the work should then proceed with the friction of confusion minimized and within a planned timeline for work and reporting approved by the Band, as well as the funding agency. Independent research writings submitted later, such as a thesis or dissertation, can provide welcome reinforcement of project reports by the First Nation.

That said, it should also be reported that good intentions, combined with a dogged follow-through by all concerned, as collaboration was discussed and defined while the methods themselves evolved, ultimately did produce a workable and collaborative project. From an academic perspective, working my way through this project has added a new dimension to my education, connecting it to the real world. For the Heiltsuk, objectives of recording cultural knowledge of some of the elders and exploring the topic of salmon stewardship and collecting pertinent archival information have been initiated as expected of a pilot project. Future ethnoecological study will extend the knowledge recorded and gained from this beginning.

CHAPTER FOUR

EMERGING FROM THE MAZE WITH EVIDENCE

Initially, I had hoped that I would find at least one elder who had somehow dodged the residential school system[1] and experienced a more traditional First Nations' childhood - being taught by elders and other Heiltsuk community members of that time. The reality was that all the people I spoke to or interviewed had been taken away to residential schools, probably by age 6 or 7 years, with some as young as 4 years and one or two as late as 8 or even 9 years of age. For this reason, it is important to understand that much of the knowledge recorded comes from present elders' childhood memories of various activities and events and the teachings passed on to them. Most often, grandparents are cited and sometimes other elders' perspectives and activities recalled from childhood.

The search for evidence of Heiltsuk stewardship practices through ethnographic-style interviews within the community did net a mixed array of the salmon and salmon stream stewardship information. Much traditional knowledge also came out, especially as regards salmon preservation techniques, as well as a sprinkling of ethnobotanical knowledge. Unfortunately, few ethnographic and archival materials specific to Heiltsuk were available to directly reinforce stewardship practices described by Heiltsuk consultants. But, by broadening my search to include other Northwest Coastal First

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[1]The impact of residential schools on First Nations cultures and individuals continues to be investigated. For poignant examples from a First Nations' perspectives, see Fournier and Crey 1997; and Indian Residential Schools 1996.

Nations' territories, I was able to collect a great assemblage of supportive documentation, which is presented in Chapter five's discussions.

These recollections of a small number of Heiltsuk participants' childhood smokehouse days, stories set down in the ethnographic record, and widely scattered archival materials relevant to the study, begin to reveal the well-developed stewardship practices of Heiltsuk and other coastal First Nations.

4.1 Interview Data

The sample of the community that was interviewed is by no means exhaustive of Heiltsuk knowledge holders. We have collected and transcribed approximately 20 hours of audiotaped interviews from 15 participants. Written notes are also filed with the Heiltsuk Cultural Education Centre for seven additional pre-interview participants. Though I was conscious of the gender imbalance and always alert for opportunities to interview knowledgeable women, for some reason, only three of the consultants interviewed were women. Of these, my interview with Evelyn Windsor, whose considerable traditional knowledge stems from her youth in nearby Oowekeeno and reinforces Heiltsuk knowledge holders, was unfortunately interrupted early in the interview and there was no opportunity to continue later. Indications from these women and some male participants are that women played a very important role in supervision of the salmon harvest and processing the salmon for storage. They probably influenced and participated in selective harvesting, and were instrumental in passing on specific aspects of the oral history pertaining to salmon fishing and stewardship.

I was unable to interview some of the people on our list of potential participants for a variety of reasons. Due to the nature of the study, the best candidates for interviews were elders, the cultural, spiritual and knowledgeable guides of the community. In some cases, elders were too busy with seasonal subsistence harvesting or community obligations or others were temporarily away during the times I was in the community. I particularly wish that I could have spent some time with Fred Reid and Walter Jackson Sr.: both are well known in the Heiltsuk community for their extensive subsistence fishing knowledge. Don Vickers mentioned that " old man Walter [Jackson Sr.] said 'when there's too much dead fish, they just threw it off on the side', just to make the stream clearer I guess."

The 300 or so pages of interview transcripts were first organized into a series of quotes, categorized into 13 subject groupings listed in Chapter Three. The transcripts were further distilled in a table of place names and the activities connected, whenever a consultant referred to each location. The number of participants who cited each place was also tabulated. Table 4.1, Heiltsuk Subsistence Sites and Related Activities, represents information pertaining to the 16 sites most often mentioned.[2] Since this thesis concerns salmon stewardship, the illustrated significance of sustenance or "food fishing" was expected. Chart Figure 4.1, Frequency of Heiltsuk Place Names and Activities, facilitates visually, comparison based on the data from Table 4.1. Gullchuck and Howeet predominate in almost every category and the importance of Rivers Inlet, Oowekeeno territory, is clear. The legend of place names is arranged in descending order of the number of times mentioned, held to ascribe "significance" to this, as are the associated activities. Of particular note is that the decline of salmon stocks, high on the significance

[2] A data table for all sights is held at the Heiltsuk Cultural Education Centre

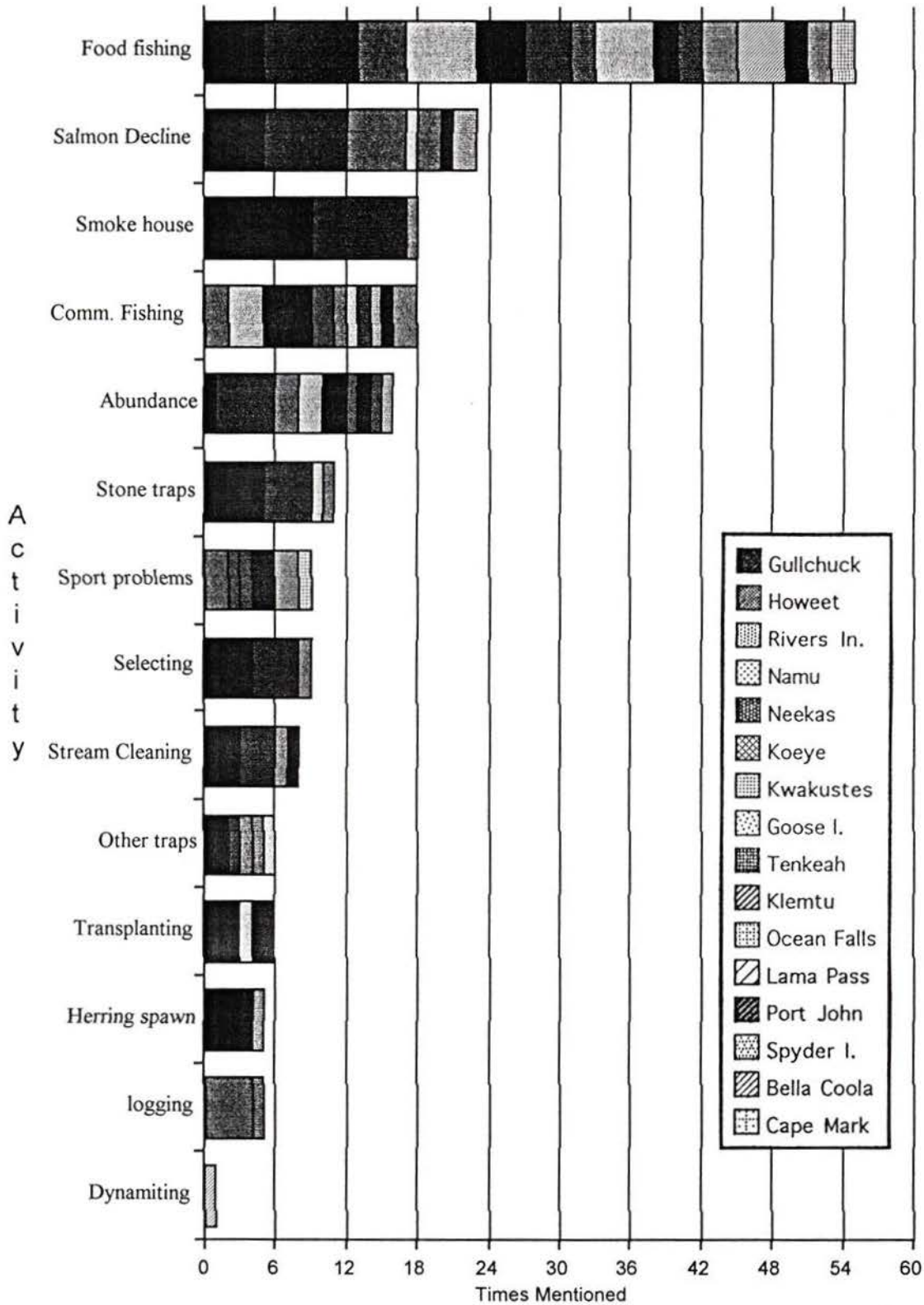

Fig 4.1, Frequency of Heiltsuk Place Names and Activities

Table 4.1, Heiltsuk Subsistence Sites and Related Activities.
Numbers show how many consultants mentioned each activity at each place.

	Mention	Dyna miting	Logg ing	Herring spawn	Trans- planting	Other traps	Stream cleaning	Select ing	Sport problems	Stone traps	Abund ance	Comm. fishing	Smoke house	Salmon decline	Food fishing	Total
Gullchuck	12			3	3	2	3	4		5	1		9	5	5	52
Howeet	11					1	3	4		4	5		8	7	8	51
Rivers In.	11		4			1	1	1	2		2	2	1	5	4	34
Namu	8				1					1	2	3		1	6	22
Neekas	7						1				2	4			4	18
Koeye	7								1		1	2			4	15
Tenkeah	7				2						1			1	2	13
Klemtu	7								1		1	1			2	12
Kwakustes	6		1			1				1		1		2	2	14
Goose I.	6					1						1			5	13
Bella Coola	6											2				8
Cape Mark	5								1						2	8
Lama Pass	5	1													4	10
Ocean Falls	4										1	1		2	3	11
Port John	3			1					2			1			2	9
Spyder I.	4			1					2						2	9
Totals		1	5	5	6	6	8	9	9	11	16	18	18	23	55	299

chart, is perhaps the most important Heiltsuk resource issue of our time.

It had been hoped that a single river, possibly Kuakustes, would emerge as a case study focus for the project and thesis. Although either Gullchuck or Howeet may provide this focus for a future study, it proved to be beyond the scope of this project due to time and funding constraints to pursue such a study at this time. However, the combined data from both sites, as well as from the others, provide significant records of Heiltsuk traditional ecological knowledge and wisdom together with fundamental ecological/cultural directives and specific stewardship practices.

A large proportion of the contributors identified four key Heiltsuk rules of harvest (see "cultural directives" in Table 4.2, Heiltsuk Cultural/Ecological Practices). Such rules would probably resonate with the traditional practices of indigenous peoples everywhere. These rules were generally advanced by a subgroup of interviewees that seem to be the most knowledgeable of the consultants, often volunteered at the beginning of the interview in response to my opening question, "Did the Heiltsuk do anything to make sure that the salmon would always return in large numbers?" The answers were given in the positive, with strong conviction, and direct questioning of the other consultants undoubtedly would further substantiate the strength and persistence of these traditional cultural directives.

Though the interview group was small, several specific stewardship practices were recalled:

- stream clearing to ensure ease of entry for spawning salmon;

- selective harvesting of salmon;
- transplanting of salmon eggs;
- restricted hook and line fish harvesting through secret "hot spots"; and a
- "First Salmon" ritual acknowledgement, possibly a remnant from a more complex ceremony of the past.

Most of those interviewed spoke of a past great local abundance of salmon and other fish. The meaningful knowledge and wisdom documented by these few participants from childhood memories suggests an extensive understanding of the salmon resource by earlier and especially pre-contact Heiltsuk.

Table 4.2, Heiltsuk Cultural Stewardship.

Key Cultural Directives	**Contributor**	**% of Contributors**
no fishing/harvesting allowed without specific hereditary rights (tenure)	CC, CH, CH, CM, DC, MH, PH, RH	36.4%
always took care of/looked after the salmon - never mistreated it	CC, CH, CM, DV, EN, JB, MH, MW, RMH	40.9%
never took more than needed - distributed any accidental surplus	CC, CH, CM, DV, EN, HH, JB, MW, RH, RMH	50.0%
never wasted anything	DV, CC, RH, CH, MH, ER, EN, PH, MW	40.9%
Specific Stewardship Practices		
transplanting fertilized salmon eggs	WJ, EN, HH, JB (herring: CC)	18.2%
stream clearing/care-taking (ecological monitoring is implicit in this activity)	HH, EW, ER, EN, TH, WJ, CH, JB, MH, PH, CC, MW	54%
selective and restricted fishing at stream mouths for salmon with specific attributes	CM, CH, MH, ER, CC	22.7%
secret "hot spot" fishing sites	CM, MW	9.1%
"First Salmon" ceremony/ritual	CM, CH, CC, talk to first fish and release it live, back into the ocean: DV, MW	22.7%
Other		
participated in or witnessed fishing with semicircular style intertidal stone fish trap.	CH, ER, RMH	13.6%
gaffed salmon funneled into range by using two rows of stacked rocks	CM, MW	9.1%

Of particular note is that three consultants remember using an intertidal semicircular stone walled trap to catch salmon and two others discuss using two lines of stacked rocks, in an intertidal stretch of the river at Howeet, to funnel the salmon up to where they selectively and efficiently gaffed them. Until now, it has only been speculated how long ago Heiltsuk traps[3] were in use. Anthony Pomeroy, an archaeologist who's research in Heiltsuk territory spanned several years beginning in 1968 (Pomeroy 1976; 1980), described both semi-circular and funnel styles of traps in Stone Fish Traps of the Bella Bella Region. Pomeroy suggested:

> *The ethnographic information that we've been able to obtain indicates that stone fish traps were used up until quite recently: as a matter of fact, some of them look as though they've been repaired and are still being used (Pomeroy 1976:173).*

4.2 Interviews Recorded Previously

At the Heiltsuk Cultural Education Centre in Bella Bella, I examined recommended transcripts of earlier interviews of now ancestral Heiltsuk as well as those found in Bella Bella Stories (Storie and Gould 1969) and Klemtu Stories (Storie and Gould 1969). I understand that many more interview recordings of past and present elders are kept at HCEC but have yet to be transcribed. Unfortunately, since information on stewardship practices is not usually requested during interviews, the interview subjects make sparse comment directly related to stewardship. However, there is much information about the traditional seasonal round to harvest food, medicine and materials. Of particular note is

[3] A Tsimshian intertidal stone trap was in use at Hartley Bay until about 25-30 years ago when a breakwater was built (Nancy Turner, 2001: pers. comm.).

that site-specific use and harvest rights or ownership are usually cited whenever these historical interview subjects discuss any type of harvesting, confirming the importance of the Heiltsuk tenure system.[4]

4.3 Oral History as Stories and Legends

Jennifer Carpenter suggested that the "First Generation" or creation stories recorded during interviews and ethnographic studies done in earlier times contain important Heiltsuk cultural beliefs regarding salmon. Embedded in the teachings of these primary stories are elements of cultural identity and history, spirituality, social and environmental ethics and also, stewardship. These components are inextricably woven together and may only be truly understood by traditional Heiltsuk of earlier times. I suspect the stories do not translate well into the European experience of the English language. To me, the stories hint at a great deal of understanding about nature, salmon life cycles, how to look after the salmon, and that salmon traps may have been in use for as long as salmon were eaten. Stories about salmon are so interwoven with the Heiltsuk and other First Nations' cultures that they might be considered cultural staples as well as staple food (Chapter five). Rather than attempting to unravel the fabric to extract stewardship as a separate activity, which it is not, I propose a representative and inclusive metaphore of "cultural stewardship" in Chapter five.

[4] Tenure rights, "táxwaínukw", were discussed by Hoffman Harris in Chapter Two.

4.4 Heiltsuk Language[5]

During the time I spent reading the Heiltsuk - English dictionary (Rath 1981) and Boas' earlier Bella Bella, Rivers Inlet and Kwak'wala vocabulary (Boas 1928), what really struck me was that a very large proportion of the words recorded had an environmental context. I am amazed by the number of single words used to describe specific activities, e.g.: "díqvemptaísa" which means - "to drive pegs or poles into the surface of the beach" or "ṅiátusla": "dragging salmon downstream on a rope through their gills" (Rath 1981). Local ecology was and is embedded in the language; "wáglísḷa" means: "part of the beach that is flooded by a river, a river delta, the running of river water over a part of the beach" (Rath 1981). (Wáglísla is also the name of the Heiltsuk community and the site was once known for these attributes). Another example, "wás", signifies a coho salmon that is metamorphosing, just before spawning (i.e., turning red - Rath 1981). It seems to me that such words indicate specialized but commonplace knowledge, activities and understanding of ecological processes that are strongly rooted in the past.

Initially, I selected the first group of eight words listed in Table 4.3, Heiltsuk Word List, from the "Short Classified Heiltsuk Word List" (Rath 1985) and "Hílzaqvḷas Húsḷá: Keeping Track of the Year in Heiltsuk", hoping to facilitate discussion of ecological processes and stewardship during the interviews. Though I met with little success in learning more about these terms, I believe that a linguist could study the Heiltsuk vocabulary, including the words listed, and come to understand much about the traditional ecological knowledge and the Heiltsuk cultural bond with the natural world.

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[5] All spellings are in the Revised Practical Alphabet (Revised Heiltsuk Practical Orthography) developed by linguist Dr. John Rath except in the case of works quoted from Boas (1921, 1928, 1932), Olson (1955)

The words following the first eight selected, represent aspects of Heiltsuk ecological knowledge and activities please see Chapter five, section 5.4.2, for discussion.

4.5 Widespread Northwest Coast Cultural Practices Relating to Salmon

Anthropologists have discussed the importance of the "First Salmon" ceremony in assuring that early portions of salmon runs were allowed to ascend streams unmolested (Anderson, 1997; Barnett 1955; Drucker and Heizer, 1984; Gunther, 1926; Hill-Tout 1978; Stewart 1977; Swezey and Heizer 1977). Records in the Cultural Centre, and comments from some interviewees, confirm this practice for Heiltsuk. Taboos such as having menstruating women stay away from spawning beds and for children not to play with fish or waste food are found in Heiltsuk records as well as in many of the recent transcripts. These themes also recur in the literature describing other First Nations (McIlwraith 1942; Weinstein 1994). Furthermore, recent oral history works investigating aboriginal systems of land tenure support a strong cultural and organizational connection between tenure and stewardship (Pinkerton and Weinstein 1995; Weinstein 1994; Nuu Chah Nulth Tribal Council 1997). These studies echo the evidence given by Wayne Suttles in a Heiltsuk federal court case (Reid et al. vs. Crown, 1990). Although Clarence Martin and I did not ask about culture-based obligations in our interviews, I believe there was a hereditary obligation for the Heiltsuk, as there was for other Northwest Coast peoples, for chiefs or heads of families to oversee cultural maxims, including those of salmon stewardship. Suttles (1990: 24) writes:

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or Suttles (1990) where orthography follows their printed example.

> *The chiefs had considerable but not unlimited authority. The chief of a "house" had "táxwaí" ('power'or authority) over the use of its resources and over its members, but his authority was ultimately subject to their approval. It was based on tradition, and exercising it depended on his own character, which was the product of careful upbringing preparing him for the position.*

Works describing chiefly parameters for other Coastal First Nations (Clayoquot Scientific Panel 1995; Daisy Sewid-Smith[6] and Chief Adam Dick[7] pers. comm to Nancy Turner; Earl George[8] Pers. Comm.; George 1998; Turner and Atleo 1998; Weinstein 1994; Weinstein and Morrell 1994) contain many parallels to "táxwaí" and include strong stewardship obligations. Although I did not ask directly in the interviews about a hereditary chief's obligations to steward his resources, Edwin Newman mentioned that: "People were responsible for their own streams".

4.6 Archival Documents

The various repositories of coastal fisheries documents were searched from earliest records to about 1950. First Nations peoples have consistently expressed concern about the impacts on their way of life as a consequence of over-development of extractive resource industries. Key Heiltsuk examples are the words of Chief Moody-Humchitt and Bob Anderson, arguing for exclusive Heiltsuk fishing rights, given in evidence during the August 25th, 1913 Bella Bella community hearing of the Royal Commission on Indian Affairs (1913: 57):

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[6] Daisy Sewid-Smith is historian of the Mamaliliqela Tribe of Village Island.

[7] Adam Dick is Hereditary Chief of the Kwakwa'ka'wakw Nation.

Chief Moody-Humchitt: *I think we ought to enjoy exclusively the hunting and particularly the fishing privileges, on these reserves and in the vicinity of these reserves, which we do not enjoy at the present time.*

Chairman: *Do I understand you to say that these reserves were set aside for the Indians, the Indians should have exclusive fishing privileges in all the Inlets on the sea around here?*

Chief Moody-Humchitt: *Yes, everywhere. We are more anxious than ever, at the present time to have these things put right. It has been a very poor year with us. The Ocean Falls Company, for whom many of us had been hand logging, closed down early, and we have also had a very poor run of fish. We feel ourselves getting poorer and poorer all the time. We would like to have everything arranged now. ... We would like the exclusive fishing rights in all these rivers in this vicinity, particularly in two, the Kisameet and Tinkey.*

Later in the same meeting, after stating the Heiltsuk position on Aboriginal Title, Bob Anderson reiterates (pp. 60-61) the topic of Heiltsuk fisheries ownership:

Bob Anderson: *...we think that the money which has been received for all these [commercial] fishing licenses in the past should have been (and should be) paid over to us, as all the fishing privileges rightly belong to us Indians. The place is ours. All the money which is received from the licenses issued to the cannery people should be paid over to us. This place was ours long before the cannery people came into the country at all.*

Dr. McKenna: *And the proceeds of these licenses would go to the whole Band, is that what you mean?*

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[8] Earl Maquinna George is Hereditary Chief of the Ahousaht Nation.

> *Bob Anderson: The proceeds of all licenses which have ever been issued to anybody for fishing on these rivers should be paid back to us, and in future we should be allowed to pay for and take out our own licenses ourselves. We want to have these licenses in our own name, so that we can sell the fish, when we get them, to whatever cannery or people we like.*

Stating Heiltsuk right to fishing license money for fishing in the Heiltsuk territory asserts that Heiltsuk considered the fish in Heiltsuk territory to belong to the Heiltsuk. Before the intrusion of European law, anyone caught hunting or fishing in Heiltsuk territory without permission may very likely have been killed for the transgression (McIllwraith 1948: 134). This exclusionary right, as an essential tenet of stewardship, surely would control spot over fishing by other groups with fishing gear known to be efficient enough to eliminate a salmon run in small central coast streams.

The above documents[9] were accessed from the Heiltsuk Cultural Education Centre collection. In looking for data in other collections, beyond the materials available in Bella Bella, I have found very little archival information that directly pertains to Heiltsuk territory. Early records are mostly concerned with activities in and around the larger rivers on the BC Coast. Stewardship in these areas can be expected to have some similarities with Heiltsuk, since much of the big river fishing was done on tributaries, similar in size to the smaller streams of the Central Coast. The prevalence of intertidal stone fish traps in Heiltsuk territory rather than staked wooden weirs[10] and other wooden

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[9] Also available in BC Archives, microfilm tape No. 458, Evidence: Royal Commission on Indian Affairs for the Province of B.C., Bella Coola Agency – transcript from meeting at Bella Bella: August 25, 1913.

[10] Traces of wooden weirs that I am aware of, are found at Kuakustes River, Tinkey and Pine Creek. Wood was also used on top of some fish traps, but within the territory, the intertidal stone fish traps

traps may indicate fundamental differences in stewardship strategies. There are a lot of records for the northern coastal region that pertain to these bigger river systems: Babine River area of the Skeena and lower Skeena River; Nass River; and to some extent, Rivers Inlet, Smith Inlet and Kingcome Inlet, and the Bella Coola River. However, the diaries and reports of the fisheries guardians, overseers, cruiser captains, early fishways engineers and biologists who visited or worked in these areas, are unavailable at this time. Nor have I been able to find much in the way of day-to-day correspondence that might yield valuable descriptions of local stewardship practices from any of the big river areas. Only a few of the weekly or monthly reports, which promised to hold the type of information that we sought, have surfaced. Nonetheless, there are enough traces of documentation from nearby areas to support statements made by Heiltsuk participants about their culture's ecological practices. Heiltsuk testimony in turn confirms and strengthens reports from other areas.

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are found at the mouth of nearly every stream with year round flows. Heiltsuk territory holds, by far, more stone fish traps than any other tribal territory (Pomeroy 1976).

CHAPTER FIVE

THE STORY OF SALMON STEWARDSHIP

In this chapter, I summarize the preconditions necessary for the evolution of stewardship which I believe was driven by episodes of starvation. I offer and illustrate a metaphor of stewardship embedded within culture, as an alternative to pre-existing disjointed models of stewardship. I draw and discuss examples from Heiltsuk interview and archival data, explicitly assembling the described cultural stewardship metaphor model, to clarify coastal First Nations' culture-borne stewardship of salmon and their spawning streams. The final section reviews present-day issues concerning dramatic declines in salmon as linked to commercial, sport and subsistence fishing as well as resource management and treaties. First Nations' cultural stewardship holds pivotal significance to these long-standing issues and is presented from my own (mixed ancestral?) perspective.

5.1 Stewardship Preconditions

As discussed in earlier chapters, when I first began to investigate the pre-contact practice of salmon stewardship by First Nations, it seemed to me that several preconditions must have been in place in order for such an activity to take place; if stewardship wasn't necessary, why bother with it? We know that millions and millions of the five species of salmon, six if you count steelhead, returned to the rivers annually, yet the findings of many recent scholarly inquiries, involving a range of disciplines (McEvoy 1986;

Pinkerton and Weinstein 1995; Richardson 1976; Turner and Atleo 1998; Turner and Jones 2000; Weinstein 1994), very strongly support the concept of at least some form of "resource management" among First Nations. Clearly, there had been a need: occasionally a run failed or supplied too few fish for requirements (Suttles 1968; Weinstein and Morrell 1994). Such failure, probably due to environmental factors, may also have been exacerbated by over-harvesting[1], especially in smaller coastal rivers and streams where fishing technology became efficient enough to remove too many fish (Stewart 1977). Catch rates would have increased, with growing populations, to a point where natural or human caused shortfalls led to starvation from time to time.

As I see it, in every region, no matter where it is in the world or when, eventually, the demand from expanding populations for food resources begins to exceed the available supply. When this happens, starvation incidents are unavoidable. With limited opportunity to diversify food sources, territorial boundaries would have been established and exclusive harvest rights aggressively defended. As previously described, stewardship would slowly co-evolve with such tenure systems, while the times of starvation were

[1] There is much controversy over the coincidence of large mammal extinctions in the Americas soon after the arrival of humans to those environs (Martin 1975; Mosimann and Martin 1975; Diamond 1999). Maybe when humans first started living in this environment, game was so plentiful that it was inconceivable that it could ever be diminished (similar to our previous assumptions regarding air, sea and land). Human populations would have expanded until their requirements over-ran their meat resources, which may have been hunted to extinction in many cases. I suspect that there was more to it than overhunting though – some species were not hunted and they too declined – probably a combination of circumstances. As eventually, those extinctions did stop – human populations must have adapted to other food resources or declined until equilibrium of supply and demand was reached. I like to think that people learn from their mistakes and adapt as necessary. This may well have been a time of cultural renaissance, as tribal groups struggled and learned to survive in a post abundance environment. For a broader consideration of the historical issue of "Malthusian precipices" in population dynamics, see Brown, Gardner and Halweil (1999). I suspect that a time came on the Northwest Coast when a similar destructive process may have been played out with races of salmon lost in many streams coast-wide until people adapted, learning new ethics and practices: environmental factors of evolving cultures and spirituality.

incorporated into oral history, strongly influencing taboos, beliefs, prayers, ceremonies, harvest strategies and more, in short: redefining cultures. Stories of starvation in the distant past persist widely in coastal First Nations' oral histories (Suttles 1968), despite the strain on collective memories that losing up to 95% of precontact populations to recuring waves of disease must have produced. In light of such widespread and persistent reference to starvation, it is inevitable that early First Nations peoples and early peoples everywhere were once caught in the same "boom and bust" cycles, that we observe in prey-predator cycles (rabbit/lynx, moose/wolf) when fluctuating environmental conditions disturb periods of equilibrium (Boughey 1971; Kormondy 1984; Primack 1993).

With the preconditions of large human populations efficiently harvesting large amounts of salmon annually, tribal territorial boundaries established a diverse array of tenure systems developing (Chapters 1 & 2), stewardship had to evolve - as a hedge against starvation in times of scarcity . The question is: how?

5.2 Scarcity, Starvation and Stewardship

In characterizing the practice of salmon stewardship by First Nations, I soon realized that many social factors were involved. Unlike present day resource management, where a few specially trained individuals work full time at assessing habitat issues, harvest and recruitment rates of valued target species, traditional stewardship was a more subtle

cultural response, having emerged through long-term experience in the school of survival.

Survival was the primary goal and economic stability (a relaxed sense of certainty and abundance) the objective. War and disease had considerable impact on survival of tribal groups, but until the arrival of European guns and diseases, starvation may have been the foremost threat (Diamond 1999). In ethnographic recordings of First Nations' oral histories and cultures - beliefs, taboos, ceremonies, celebrations, songs, and key cultural principles/obligations, bear moralistic sub-themes that suggest roots in food scarcity or starvation and hinting at stewardship. I recognize hunger and food shortage as a powerful agent of cultural unity and the pivotal factor in the evolution of stewardship as an integral and inextricable multi-stranded component of each First Nation's culture.

Accordingly, without a clear-cut division between a culture and the stewardship it embodies, a model/framework for traditional stewardship independent of culture cannot provide a picture of this interrelationship. First Nations of the North American Northwest Coast are each distinct in many ways and for many reasons: history, geography, and a north to south climate and environmental gradient, all playing important roles. Nonetheless, many similarities of lifestyle and some universality in ethics exist suggesting philosophical parallels at a fundamental level. As an alternative to the model concept and in recognition of these parallels in basic philosophy, I offer a holistic metaphor of culture and people: stewardship integrally entwined within.

I perceive the people of each Nation riding within a durable cultural canoe of its own distinctive heritage, the hull built from the strong persistent fibres of ancestry flowing astern through a millennial wake to time immemorial, reinforced by mature structural elements that have grown substantial out of long-term regional understanding. This experience was enriched through ancestral interaction with other groups: language; tribal law; social complex; potlatch redistribution system; spirituality; narrative, musical and artistic traditions, ethics; tenure system; traditional environmental -ecological knowledge and wisdom; seasonal harvest cycle with locale-specific harvest strategies, and much more that presently can only be guessed at (see Figure 5.1, Metaphor Model of Northwest Coast First Nations' Cultural Stewardship).

These canoes have survived oceans of time and numerous dangers, guided by their oral history rudder, constantly striving toward economic stability. They have successfully navigated the storms of lifetimes and misfortune that inevitably push them off course. They have learned to depend on the many paddles that have served them well, transforming through the ages: the creation stories, instructional stories, customs, rituals, ceremonies, prayers, beliefs, taboos, songs - these and many more, including local food storage, material and fishing technologies have provided the motive power of cultural endurance. Ecological paddles include: resource monitoring; exclusive harvest rights; long-term local experience; the understanding that all things are connected and require respect; and more. In the case of salmon, a few distinct paddles that have become known are selective fishing, stream clearing, and transplanting. The canoe's stern is shaped by age-old and dynamic traditions that reach forward as the deep running keel, providing

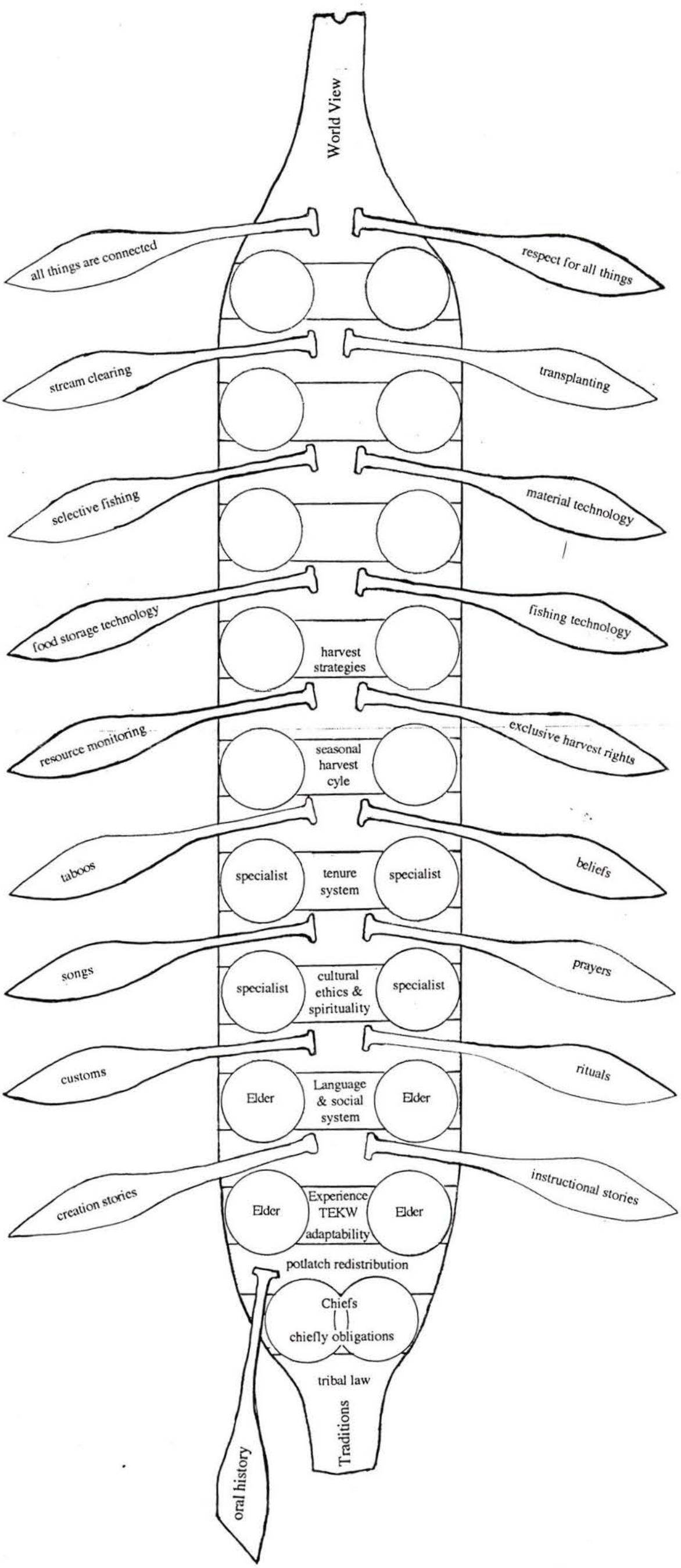

Figure 5.1, Metaphor Model of Northwest Coast First Nations' Cultural Stewardship.

balance for the canoe and its occupants, surfacing at the prow, forming the strong world view needed by its people, to cleave through the unknown turbulent seas of time. This metaphor model is in no way intended to romanticize the cultures or people described though I cannot help admiring the evident balance indigenous cultures once attained between our species and its environment.

5.3 Evolution of Stewardship

The outcome of successful stewardship is greater productivity, stability and dependability in the supply of a resource supporting stable or expanding human populations. As has been seen, given the large numbers of people, their long term intensive harvest requirements and the continuing abundance of salmon in earlier times, the existence of stewardship and its success can be inferred. By centering the lens on the apparent philosophical parallels among coastal First Nations, the threads of stewardship and their origins may be recognized, though not always completely teased out of the cultural environment.

I try to imagine the repercussions of a starvation incident where people die. The survivors would afterwards naturally attempt to understand the reasons for such an incident and take steps to prevent similar starvation re-occurrences in the future. In earliest times, as it is even now, the human tendency is to assume that we have done something wrong, make another assumption about what that was, and either shoulder the responsibility ourselves or point the finger of blame elsewhere - with conviction. Could

this be the source of beliefs, taboos, prayers, and respect for all things, which in turn give rise to related stories, practices and activities? I believe it is. When something goes wrong, many of us would pray that it did not happen again and conversely, when events end well, pray for good to continue. A conviction of "rightness" comes together when it happens that just before an annual expected event like the first salmon run in springtime, all the prayers are said, ceremonies performed, taboos observed and respect properly demonstrated - then a wonderful harvest follows. Evident to all, is that they are living right, with everyone following culturally prescribed guidelines.[2] An examination of good and bad subsequent years will always recognize profitable new activities performed in concert with current customs and beliefs or – if something went wrong, an interpretation of the past year's activities may turn up an event that the wrong could be the result of - e.g.: if a human corpse is transported over spawning fish, the fish will stop spawning and may never return. In this way, new practices develop, blame is shouldered or assigned and over time, it is easy to see the lengthening, shaping and weaving of cultural stewardship fibres into taboos, oral histories, creation and instructional stories and eventually including physical stewardship practices among cultural ethics key to husbanding resources. Ultimately, within the overall social complex, a strong atmosphere of ecological goodwill would have been fostered and flourished together with local salmon and other "natural" resources, producing human balanced ecosystems where productivity was encouraged.

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[2] Although this may sound a bit facetious, I think this statement could well apply to a huge proportion of us humans, even today in our age of "scientific enlightenment".

Who could say beyond a doubt which beliefs or activities are extraneous when culture and stewardship are so interwoven, mutually dependent and influential on one another? Some beliefs may evade the understanding of cultural outsiders but often the thread of stewardship is easily recognized. Women were forbidden to go near streams during their menstrual cycle, when salmon or eulachons were spawning. Without delving into the reasons that led to the practice, it can be inferred that this monthly reminder to half the adult population that they must respect the all-important fish resources would support and influence a long tradition of ethics favorable to stewardship.

Within these cultural domains, I also see the thinkers of these societies studiously observing the salmon runs, always alert for ways to assist the life-sustaining brother salmon. They might conclude that the biggest, strongest individuals should be released unmolested from traps to go on and spawn. They might think of ways to help the spawning salmon to overcome the river's natural barriers during an unusually dry year. They might notice that silted spawning beds have an adverse effect on fry survival, leading to the clearing of log jams and as much of the annual deadfall out of the river as possible, or finding ways to redirect currents to wash silt away from the gravel beds. Ways may have been found to return salmon to a stream that had lost its run through natural causes or inadvertent over-fishing. Anecdotal accounts of all these practices exist, albeit sparsely[3], from various sites coast-wide. When I think about the Heiltsuk living and thriving at Namu for more than 10,000 years, depending on salmon as a

[3] Few who may have noticed these practices in early times were moved to write about activities that must have seemed a straightforward and obvious application of common sense.

primary food source, it seems incomprehensible that they would not have developed these and many more practices that we can only surmise. The following excerpt from a 1968 interview of hereditary chief Angus Campbell provides insight into a history of periodic starvation, intercultural relations, ancestral time depth connections to the "First Generation," and the great significance of tenure built into "Mauwash":

> *There used to be fish in Mauwash, Namu as it is called today, all year round in the olden days. When the people from other villages ran out4 of smoked and dried salmon, they would come to Mauwash and ask my great, great, great, grandfather to fish there. ...even those people with big rivers like Bella Coola, Rivers Inlet, Kitamaat, and the Nass river would come and ask to smoke salmon there (Storie and Gould 1968: 53).*

Additional information appears in a footnote:

> *Also the Skeena. All those inland places, if they ran out of dried salmon, they could go to Namu and ask permission from the first generation to smoke and dry salmon and that's what Mauwash means: 'you just have to ask me' (Storie and Gould 1968: 53).*

The tenure systems of Heiltsuk and other First Nations[5] (Bouchard and Kennedy 1990; Driver and Massey 1957; Darling 1955; Drucker 1943:25; Johnsen 1986; Suttles 1990; Turner and Jones 2000; Turner et al. 2000; Usher 1993) contained nested sub-levels of

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[4] Running out suggests late winter starvation when preserved stocks were insufficient or possibly spoiled, sometimes forcing people to go far abroad in search of scarce winter food sources.

[5] BC Archives: GR123 (DIA's RG 10 files), microfilm B5637, file 504D: George Brown and Robert Hopkins to Mr. McKennan [sic] Indian Land Commissioner. 1912: Klemtu, Princess Royal Island aboriginal stream names listed with their hereditary owners; BC Archives: GR 123, microfilm B5647, frame 000613: Port Simpson, August 17, 1922: "The Tsimshean Tribal ownership. From the outlet to head of all tributaries; and from streams to the peaks of mountains." Lists aboriginal stream names for 64 streams held as common property divided among three tribes.

increasing exclusivity where tribes and then the families within them held hereditary fishing/harvesting rights to watersheds and specific sites. Carmen Humchitt and Cyril Carpenter confirm their Heiltsuk traditions (HCEC records: Eva Star autobiography 1977; Maggie Windsor, autobiography nd; Willie Gladstone in Storie and Gould 1968-9: 67; David Gladstone 1982; Hoffman Harris 1968 interview; Clarence Martin 1989 interview):

> *(C.H.). . . Different tribes had their own river like Neekas and Gullchuck here and uh...Clatse, Howeet, all the places and rivers belonged to different tribes.*
>
> *(C.C.). . . My family could not go [just] anywhere. In the old days, you had to ask permission. You had to trade with a family that had sockeye in their, within their jurisdiction. They had absolute jurisdiction over those rivers. You could not go there like we do now.*

These systems had the effect of distributing harvest pressure throughout the territory while reducing harvest requirements at individual sites. Harvesting is further limited by cultural obligations and imperatives for wise use. In the case of exceptional abundance or need by others, permission for harvesting could be granted by the family or tribe within the bounds of prudent stewardship.

5.4 Heiltsuk Stewardship of Salmon and Salmon Streams

First Nations' stewardship of salmon and their spawning streams may well be best described as "cultural stewardship", given the many elements that permeate a culture,

fostering nurturing attitudes/ethics in a people that naturally permeates life-ways, day-to-day as well as in seasonal practice. In this section, I discuss elements of the Heiltsuk "cultural canoe" through the words of Heiltsuk consultants, supported by Heiltsuk cultural records and archival materials from Heiltsuk territory and elsewhere in coastal British Columbia.

5.4.1 Stories and Legends - Stewardship in Ethnographic Records

Discussions with Jennifer Carpenter, Director of the Heiltsuk Cultural Education Centre, helped me begin to understand the significance of "First Generation" or creation stories recorded during previous interviews and ethnographic studies that contain important cultural beliefs regarding salmon. Woven into the fabric of these ages-old stories, along with primordial elements of cultural identity, history, spirituality, social and environmental ethics, are also the threads of stewardship.

These inextricably intertwined fibres of culture may only be truly understood by traditional Heiltsuk of earlier times. I suspect the stories do not translate well into the English language or present day experience. In addition to the social aspects, the stories hint at a great deal of understanding about nature, salmon life cycles, and how to look after the salmon, and also that salmon traps may have been in use for as long as salmon were eaten. The following passage comes from Ō'dzeɛstalis' version of the "Ts!ŭ'mqălăqs" first generation story, as told to George Hunt:

> . . . *On the following day, Qalā'goɛyewīs disappeared again. Nobody knew which way he had gone. He went to the bay Tenk'ēɛ. He walked into the woods until he came to level ground. There he dug out a large round hole and continued until water spouted out of the bottom. In a short time, the hole was filled with water. Then he transformed it into a large lake. He dug a ditch from the beach until he reached the lake and water began to run out of the lake into the sea. He made the ditch into a large river and gave it the name Tenk'ēɛ. Then he peeled the bark of some alder trees and carried it down to the beach. He carved the bark in the shape of a salmon of very small size. He made eight of these and went down to the low water mark at the mouth of the river. He said "Now I will throw you into the sea and you shall become Sockeye salmon. Every season you shall come to be caught by my mother's people." He threw them into the sea and as soon as they touched the water, they became alive and jumped about in the sea. He went up the river a short distance and made a salmon trap (tsEkwa'). As soon as he had done so, he cut a trail leading from the trap to the village of his mother. Late in the evening, he came home (Boas 1932: 35).*

In my understanding, this segment of the story explains that salmon as well as their spawning and rearing habitat and the intertidal trap to catch them, were created specifically for the benefit of Heiltsuk people. Such creation implies ownership and, based on the cultural ethics of respect, there exists an obligation to maintain these gifts. And, following the lead of the supernatural First Generation, this maintenance could be accomplished through physical intervention and might include stream clearing among other activities, leaving the way clear over many generations for refinements like selective fishing and ecological cultural ethics to evolve.

Coastal First Nations and lineages within them each have their own equivalent "first generation" stories. These stories reach back to a time when supernatural beings came down from the sky in animal or human form (Boas 1928; 1932). They often began their exploits by transforming the land in some way and often mated with or married the human ancestor of the person who owns the story.[6] The preceeding excerpt from the Heiltsuk "Ts!ŭ'mqălăqs" story contains all these elements and much more.

Another story, carrying an instructional overtone is "Raven Creates the Salmon" (Boas 1928). This story again includes a salmon trap and salmon carved (created) from red alder bark, and what seems to be an ecological lesson about gain and loss where salmon are produced as the fingers of a supernatural wife are dipped in the river. They later disappear with the woman because they were not respected or appreciated. Several layers of lessons about respect and caring for the salmon and lessons in daily living with people and nature are likelyembedded in such stories. Robert Hall retells part of the story in discussing traditional values and spirituality:

> *...this man got married to that salmon woman; and that man wanted salmon, so that woman went into the river. The first thing she did was put one finger into the water so on and so forth until her whole body was in the river and that's the symbol of purification, when that woman was in the water, that's where that Tṛ̓kialís means*[7]*. That salmon was so full in that river that, that chief, he had big, long hair, and it was all tangled.*

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[6] In most, if not all, Northwest Coastal First Nations, hereditary right of ownership is explicit for many things, including First Generation stories, songs, dances, lands, animals and even proprietary portions of beached whales and the shells and pebbles on a beach.

[7] Tṛ̓kialís describes the roaring sound, characteristic of the Tṛ̓kia River's renowned abundance, made by salmon when spooked in the bay or going up the river.

That was before he met that woman. That woman took care of his hair and the salmon was so abundant that they were hanging. The salmon was hanging in the smokehouse. And, that man got one of his hairs hung up on the salmon that was drying and he swore: got mad, got mad at the salmon. That woman whistled and all the salmon came down from the rack and went back into the ocean and they disappeared. And that was a symbol of respect. Respecting the salmon, not to abuse them or say anything wrong to them because they are really sensitive. And all through that spirit with this female, the whole earth is in that, spiritual realm, eh. So, that man lost by cursing, and that's just a purification story about how our people, before they went after anything, they always purified themselves

In the Heiltsuk autobiographies, these stories were often mentioned or retold to some extent, but the older Boas' record is the most detailed surviving version I have seen. I would very much like to learn what lessons and insights were originally intended to be gained through listening to "Ts!ŭ'mqălăqs" and the many other stories.

There seems to be a similarity of purpose between these stories and those of the colonizing Europeans. They have their fairy stories, fables, nursery rhymes and other folk tales that all serve as entertainment for young people but also carry lessons intended to help young people learn how to grow up and live within their own culture. The lessons are more easily remembered and repeated within the mind as familiar stories and may have the greatest effect on older children as they retell them to their younger relations. Because of the subliminal nature of the implied lessons, people get similar, but over time, not always the same meaning from the stories. The best known of these stories seem to carry themes that are timeless in that they contain lessons that are useful to each new generation. There are similar examples from the European tradition: "The Boy Who

Cried Wolf", "The Three Little Pigs"; "The Fox and the Sour Grapes"; "Hansel and Gretel"; all the little nursery rhymes; and many others that need no introduction. Traditional Heiltsuk and other First Nations' stories, notably tales involving the curious and rascally "Raven" and "Coyote", I believe, work in the same way.

Other interesting stories, that hold ecological lessons about salmon while communicating an obligation to respect and care for salmon are: "Masmasa'lano Steals the Salmon", where a supernatural dog enlarges a river so that more salmon can live there, and "The Salmon Country", where two boys travel with the salmon, in their canoe, to the home of the salmon (Boas 1932)[8]. We can easily see connections to stewardship in these stories as formative of culture-based ecological and environmental ethics, but without being born into the Heiltsuk canoe and language, we can only guess at their full meaning or impact on the behavior of individuals or the overall characteristics of the Nation's territory where the culture spans millennia.

Considering that settlement at Namu began about 11,000 years ago (Cannon 1991), I am reminded that the last ice age was just ending, average atmospheric temperatures had warmed significantly, and that climatic and geological conditions must have spanned extremes unheard of today. Those times of upheaval live on in Heiltsuk oral history:

> *I do not know the exact reason of the flood. But, . . . I think it must have happened simultaneously with our present . . . the one we know of now [from the bible], when the world became flooded. And they say the*

mountain over there had a conversation with this one called 'Qág&ḿí. That one over there asked 'Qág&ḿí if he was almost under water, submerged. The latter said he was. According to the story that 'Mńsg&ḿíx&λi over there gave to this mountain what is now its summit. He threw it to that far one and . . . and as the water receded when . . . now you-know-what says that it [flood level] kept dropping, after which everything was just high and dry, say the story of the Heiltsuks (Hoffman Harris 1970 interview, Bella Bella Stories Project, HCEC).

Early coastal peoples, including Heiltsuk, would have started out living on top of a coastline heaving with tectonic rebound[9] (Fladmark 1975; Hebda and Frederick 1990; Cannon 1991; Hebda and Whitlock 1997) as mountains buried in ice emerged through melt-water that ran off in volumes and torrents we cannot imagine. But, give it a try anyway - sweltering summers; massive flood conditions on every river, with the constant pounding of rocks banging on one another on their way to the ocean; incredible storm events; and earthquakes of varying intencity may have been terrifyingly commonplace, often triggering serious landslides. Also, keep in mind that there would have been very little certainty of food supply due to the unsettled state of land and foreshore. With salmon returns sparse or non-dependable (Fladmark 1975) while cedar, technological benefactor of future generations, would not yet have been available, it is amazing that ancient settlements like Mauwash (Namu) survived their early millennia.

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[8] Similar versions of this story are recorded in other coastal traditions, e.g. Ɬuutigm Hoon, Honouring the Salmon (The Tsimshian Chiefs 1999).

[9] When the weight of the continent's glacial mantle melted off, like an unloaded boat, the continent, floating on the plastic molten rock of the planetary interior first slowly "bobbed" up and then, just as slowly, settled back down to a relatively stable level.

By about 10,000 years ago, the melting and torrents would have settled down, but shorelines continued to fluctuate one way or another, depending on the locale (frequent earthquake activity must also have continued as continental landmasses slowly moved toward a new relative equilibrium), until about 5,000 years ago when water level stabilized near where it is now. Salmon were not plentiful until that time of stability (Fladmark 1975). Cedar also began to colonize the coast at that time (Hebda and Mathewes 1984).

As salmon and cedar flourished, so too did coastal First Nations, including the Heiltsuk; present (likely only in small settlements since early midden deposits are not extensive - Cannon 1991) from those earliest times when life was far less certain, it must have seemed as if the world was being created around them. Much later, they witnessed exploding salmon populations and widespread establishment of cedar on the coast. Is it any wonder that stories of supernatural beings transforming land, and creating salmon and cedar, foundations of life for Northwest Coast tribes are so widespread in coastal cultures? Contemplating previously intact oral histories, undoubtedly more vivid in pre-contact times before the plagues, when each Nation's "cultural canoe" was most robust, I fully understand that they knew they were the owners of their territories and were obliged to look after their resources.

Clarence Martin sums up the connections between oral history, traditional stories and their threads of stewardship:

Mostly the story, why the stories are told is that, [you] know, whoever told them is ah... they should know how to educate their people about how they should treat anything that was alive and what they needed for survival in this world.

5.4.2 Language: Stewardship in the Words

Story translation from Heiltsuk, or from any language, to English or any other language can cause serious difficulties. Words do not always directly translate on a one-to-one basis, sentence structure can be much different or, in the case of the Heiltsuk experience, a concept may be completely alien to European culture. Nonetheless, interpretations of word meanings and origins hold promise of access to greater understanding of Heiltsuk traditional knowledge and ecological practices if linguistic-ecological studies are undertaken in the future.

As stated in Section 4.4 Heiltsuk Language, with examples cited in Table 5.1 (below) Heiltsuk Word List, the Heiltsuk language is richly saturated with words that have environmental origins or connotations. Some of the most intriguing words are those with more recent post-contact meanings that may have been adapted from older words with related context that hint at ecological links to the past. It seems reasonable to infer that at least some words have evolved this way in Heiltsuk or another First Nations' language and then been adopted by Heiltsuk, especially in the case where the root word was already common to both languages.

Language, I have long understood, is a dynamic tool in the art of communication. Words are added, disappear, expand or restrict in reference or shift in meaning as requirements change. The English language makes a great example. I can open my grandfather's two volume New Century Dictionary (Emery and Brewster 1944), first published in 1927, to almost any page and find words that I have never heard of. When studying Shakespeare, we learn that the language has changed so much since the writing that not only is the prose difficult to follow, but there are ribald jokes sprinkled liberally through the convoluted text that only elite Shakespearian scholars can understand well enough to grasp and knowingly titter over. Fast forward (oops, who would have said that in 1950?) to later times: the last half of the twentieth century saw the beginning of creative word-smithing by youth and media. Not to be left out, government, industry and every different discipline in academia have created their own specialized, often exclusive, jargon.

The interesting thing is that we do not often make up an entirely new word. Usually, words have origins deeply rooted in the past, so that with a little thought about the origins of the root word with a feel for figures of speech, we can often decipher textual jargon without resorting to a dictionary. Often a noun may have been transformed to a verb to suit a new requirement. For example, in an environmental hydrology text: "leaching" of toxic soil contaminants might have sounded strange to the average person at one time. But, knowing what a leach is and how it makes a living by assimilating nutrients from the blood of its prey makes an easy jump to understand that the term describes the action of toxic particles slowly seeping away with the movement of water.

We also recognize that many of our words are directly assimilated or spring from a root word of another language. Again, a quick look in the dictionary reveals Latin, Greek, Spanish, German, French and many other origins for words we use routinely in English. Similar processes are certain to have affected Heiltsuk and other First Nations' languages throughout time, given the close proximity of so many different languages on the Northwest Coast. Cataclysmic post-contact times must have facilitated significant evolution in First Nations' languages, just as our present-day technological explosion has affected the languages of developed and developing countries the world over.

As mentioned, the first eight words listed in Table 5.1 were filtered out of a small Heiltsuk Word List booklet (Rath 1985) and Heiltsuk calendars. These eight spoke to me of tenure systems, stewardship practices, ecological knowledge and possibly designated resource managers similar to those described for other First Nations (e.g.: Nuxalk, Kwakwa̲'ka̲'wakw, Nuu-chah-nulth). Although I stopped my line of questioning around these words from my interviews, thinking that they caused too much confusion, I think the linguistic history of these words may be very interesting.

Table 5.1 Heiltsuk Word List: related to salmon, ecological processes and environment.

HEILTSUK	ENGLISH TRANSLATION
čísḷá	attendant, caretaker, keeper
miaísila	guard, fish patrol
ẇáwís	area, region, place, territory
ẇáxv:ẇuís	world, home area, environment, also gvuxvdm̓a and ẇúís
čk̓vá	salmon weir (shallow?)
ẇáẇaczuálasu	trap line
g&válís	finished (the planting of fish seeds and eggs)
čúx&vlísa	to wash the creeks
cíxéls	overflow or flooding of a creek or river; inundation
cíxélsla	brook
cíxlá	flowing of water; brook, stream

ckvá (ckvaú(x&v), ckvaí, ckváki)	salmon weir made out of stones on the beach
čaṅákvlá	running of a river or the tide
čémklá pl. číčemklá	to ration, to be sparing, to use or distribute sparingly
čísˀit (..ˀidnůgva)	to start to store away, preserve, put in safe keeping, take care of something, to start to wind up string
čísḷá	to take care of, to safeguard, to look after; attendant (as of a shop)
díqvemptaísa	to drive pegs or poles into the surface of the beach
gvúláči (..čiu(x&v), ..čii)	smoke house, lunch box (also: ẃáx&studaˀaílas or ẃáx&studaílas)
gvúláyu (..yuu(x&v), yui)	salmon trap in the creek
gvúláyugvilla	to make a salmon trap in the creek
gvúlha (..lhánúgva)	to gather and preserve staple foods such as meat and berries; especially to gather and smoke salmon
gvuxvdemṁá (..ṁaú(x&v), ..ṁaí, ..ṃáki)	village, settlement, inhabited world, environment
g&viálathlagilakv	schedule of operations; maxim, guide law, or regulation for doing something, rule of conduct * Hi li gaqv g&viálathlagilakvus "This then is your guide law", "This then is the way you should go about"
háwásila	to split off shakes, to split boards from trees
kvlhá (..lhaú(x&v), ..lhaí, ..lháki)	to scatter, become separated (said of salmon eggs when ready to be laid)
kvlhˀít (..ˀídú(x&v), ..ˀídí)	to start scattering, to start to separate (as salmon eggs)
kvlhlá	snow slide; separating of salmon eggs
kúsˀit (.. idu(x&v), ..ˀidi)	to become extinct, to vanish, to disappear * kúsˀidila máglísdia láx&v "the fish have disappeared there"
kúsˀila	"not existing any more" * kúsˀila maúx&v-maux&vvels la qux&v thkáyax&v "there are no more bobcats on this island"
miá pl. mímiá	1. fish 2. salmon
miaísila	fish patrol guard (in Klemtu: ṅáṅakílákiṅua)
miáx-miakthi	a kind of spring salmon (occurs all year around)
ṅáṅakílá	to keep a close watch on something
ṅiátusa	to drag salmon downstream on a rope through their gills
ṅiátusla	dragging salmon downstream on a rope through their gills
q̓iṅákvlá	to increase in number gradually ANT: x&náṅakvla * ˀQiṅákvláˀaila miayax&i "The salmon are gradually increasing in number now"
q̓p̓ilh (-núgva, -ú(x&v), -í, -áx&í)	one's knowledge, things one knows

q̓vlá pl. q̓víq̓vlá	to live, to be alive, survive * &Awáxsienc haílhlílh álúlhax&s n̓ála du qenc q̓víq̓vlaíga "Let us be glad with the new year and our (incl.) surviving" (i.e., a New Year's wish)
sistálá	to stick into the water (as the top of a fallen tree)
tápuya	to squeeze out (e.g. salmon eggs when ripe)
wá (waú(x&v), waei, -yax&i; -thu(x&v), -thi) pl. wíẇá (wíẇaú(x&v), wíẇaí, -yax&i; -thu(x&v)	river
wa̓ ais (-núgva)	to wait for herring to spawn (at a herring spawn harvesting camp)
wač̓í (wač̓iú(x&v), ẇač̓ií, -xdú(x&v)	riverbed
wádenč̓sa (..sánúgva)	to pull down towards the beach
wádenč̓sla	pulling down towards the beach
wágéls	land or field flooded, overflown, or overrun by a river
wágélsla	river water running over the field, the land; running of river water over the land, the field
wáglís	beach flooded, overflown, or overrun by a river
wáglísla	part of the beach that is flooded by a river, a river delta, the running of river water over a part of the beach. (Wáglísla is the name of the Heiltsuk community)
Wánaí (wán̓aẏ́ú(x&v), wán̓aẏ́í, wán̓aẏ́ax&í	herring
wás (-u(x&v), -i, -ax&i)	coho that is turning red
wásílá	to put branches in the water to get herring spawn
wátálísla	pulling or dragging something upstream
wátatuslá	pulling or dragging something downstream
wáwásila	to look after the sunken branches with the herring spawn on them
wáwásilau (..ẏ́uu(x&v), ..ẏ́ui)	branches that have been set for herring to spawn on
ẇa̓ aém and: ẇa̓ aémp (irregular word. ẇa̓ aémk, ẇa̓ aémp(x&v), ẇa̓ aémpí, ẇa̓ aémkí, ẇa̓ aémpax&í. Examples of category B suffixes: ẇa̓ aémgvúlh, ẇa̓ aémlísem, ẇa̓ aémm̓aém (..m̓ámu(x&v), ..m̓ámi)	fresh water

wa'aémx&'it (..'idú(x&v), ..idí)	to become (fresh) water, to turn into (fresh) water
wáwís pl. wáxvwís	place, region, area, territory * Uyalitx&vcs wáwís "territory belonging typically to the Uyalittx&v"
wlá	1. to break off branches 2. to collect the branches with the herring spawn on them
wlála	1. breaking off branches; 2. collecting the branches with the herring spawn on them

" 'Wáwís", "wáxv:wuís" and ***"gvuxvdemmá"*** all show traces of tenure; it is difficult to decipher a precise meaning from the Heiltsuk dictionary, but the first two mention "territory" and "home area", suggesting ownership on some level and ***gvuxvdemmá*** seems to have a broader application. ***" 'Wáwaczuálasu"*** or trap-line is an interesting case. My understanding is that when the provincial trap-line system was inaugurated, Heiltsuk families applied for trap-line areas covering their traditional harvesting locale and that these trap-lines have been passed down within families. Some people even felt that their hereditary territorial rights were thus recognized. It seems possible that ***wáwaczuálasu*** has its roots in the past and might tell us more about or be a key to traditional Heiltsuk tenure systems.

" 'Cisla" and ***"miaísila"*** strongly imply some kind of environmental vocation. Several other words in the Heiltsuk dictionary that start with ***"čís"***; all carry elements of safekeeping, preserving and "taking care of sth. [something]". Is the example of a shop attendant given in the dictionary a new word adapted from existing root words or could it be that ***"čísla"***: "attendant, caretaker, keeper (Rath 1985: v-1)" is an old word signifying some earlier caretaking profession? ***"Miaísila"*** is even more intriguing. The word is defined as "fish patrol guard", but indications are that it is a very old word predating

European contact. In the stories "The Salmon Country" and "The Salmon Boy", ***Miaísila*** is the name of the chief of the salmon people (Boas, 1932).[10]

I chose ***"čk̆vá"*** and ***"cíxélsla"*** to stimulate discussion on salmon weirs and streams respectively, but I had hoped that ***"g&válís*** - finished (the planting of fish eggs and seeds)" and ***"čúx&vlísa*** - to wash the creeks", names of Heiltsuk months or moons for September and October (HCEC 1989a), might lead directly to recollections or stories of consummate stewardship in action. Although the longer definitions for the moon's names meant salmon had finished spawning and that the rains had washed away the fish carcasses, no interview discussion was elicited, so I still wonder if there was once more meaning to consider in these words. Having no linguistic training, I am reluctant to pursue the language aspects of stewardship further personally, but have presented Table 4.3, Heiltsuk Word list as an enticement to future study.

5.4.3 Significance of Cultural Ethics, Belief Systems and Spirituality to Stewardship

Cultural ethics, belief systems and spirituality, as components of culture, are a dynamic legacy, adapted and transformed over time. As successive generations rise and fade while drawing their livelihood from the cultural territory, each contributes its own wisdom, interpreting and renewing these elements of guidance - based on experience and need. Potent social guidelines define the actions and lifestyles of individual members of

[10] In very early times, all of the animals on land and in the sea were humans that had special coats that they put on to transform into their animal state. Many First Nations stories carry this feature, especially for bear, wolf, otter and salmon.

a cultural group. Social guidelines are in turn upheld because their roots in the well remembered past recommend them for leadership into the future. Survival of individuals, hence the culture, is the objective of such guidelines. However complex, such ethics promote salmon stewardship directly and in subtle ways.

> *I think one of the main lessons you can pick up from what people tell you about salmon is that we should never mistreat it because...and this one salmon story where this young man transformed himself into a salmon and went to the salmon country to find out why they weren't returning that certain year. And, going from place to place where all the salmon countries are, he was told the reason why they didn't return to his home country was because they were mistreated and....through that story, that's [the] basis of what our grandparents and parents taught us, that we should never mistreat, not [only] the salmon, but everyone else that we meet in our life. One of the things they keep harping on was that we should just use what we need. Never playfully, destroy anything that we need to eat. Always make sure you just take enough. If you have more than enough, then you have friends to give it away to. Don't throw it away. Nearly all our stories harp on the fact that we should never mistreat anything (Clarence Martin).*

I think that for most human individuals, the cultural objective is to "live a good life" within well defined guidelines learned and refined during a lifetime in their community, working alongside family mentors, listening to stories, learning traditions and the many dimensions of respect for all things. Robert Hall remembers lessons from stories told to him:

> *Well, the way my father taught me, and ... my mother, always told, told us that the salmon were a spirit just like the way we are, that we [they] are no different than we are. They want to live. They told me stories about the salmon world. In the salmon world, they just looked like us. They looked like humans. In the spiritual realm, one thing that they always stressed was that we have to look after them because if we disrespect them, then they go away and won't return and there's lots of stories about the salmon, that indicate this: that they're really sensitive. . . . Everything that the people did, they talked to, even the trees and the medicine, they spoke, even to the bones, they'd talk to. They'd talk [with] respect to it.*

Hereditary Chief Edwin Newman explains Heiltsuk cultural beliefs:

> *Animals and fish were beings, spiritual beings . . . The land was a sacred resource, everything was tied together, you can't separate anything . . . Our people talked to everything before they killed it, even a tree, you have to tell it why you are doing it.*

The harvesting of food and medicinal "beings" was never casual. When I discussed my previous harvesting of medicinal hàúx&vsúlí (Indian hellebore – *Veratrum viride*) roots for some of the elders with Shirl Hall, I was gently admonished for overlooking one of the prayers. Two are necessary in order to properly respect and tap the medicinal properties of hàúx&vsúlí: one before digging up the plant; and another said while washing the roots in the adjacent stream. Fishing and hunting were no less casual, requiring extensive spiritual preparation by the individual:

> *. . . in my grandfather's time, I don't know about my father's time, was that they went through cleansing and ritual in order to be successful in what they get. Some take baths in the morning, early morning, out in the*

> *river, just to make sure that they don't have too much human smell. Some use ah... hemlock ah...leaves, that needle thing, and use it like a washcloth all over your body. Some even went as far as not sleeping with their wives, I think it was at least four days. So, anything that they did in order to be successful, they had to go through these cleansing ceremonies, be it fishing, any kind of hunting (Clarence Martin).*

On the Northwest Coast, anthropologists have noted widespread examples of what they have called "first fruit" and "first fish" ceremonies (Boas 1921; Gunther 1926, 1926; Hill-Tout 1978; Sweezey and Heizer 1977) where the resource about to be harvested was honored with a formal ritual ceremony and, in many cases a feast. First salmon ceremonies usually required that the first salmon of the year to return to a territory were caught by a shaman, noble, or in some other culturally specific way. Often it was also important for the salmon to be carried individually with the head always facing upstream as it was transported to the site of the ritual and/or feast. Following ritual prayer, the salmon was shared among community members making sure that everyone eligible (other life circumstances could preclude certain people from participation) received a taste of the ritual salmon. A feast of several days' duration often followed. Most importantly, from a stewardship perspective, during the ceremonies and feasting which could last up to 10 days or more in communities situated on rivers where other communities dwelt upstream, the community imposed a closed season on salmon fishing. Considering how widespread the practice was I feel certain that these Peoples were well aware that it allowed the first group of spawners to ascend the streams unmolested, significant in the array of strategies used to insure adequate annual reseeding of the spawning beds.

Little has been recorded about the Heiltsuk first salmon ceremony and although some of the Heiltsuk consulted were aware that there was once such a ceremony, none felt that they had a clear recollection of the ceremony or even stories about it. However, anthropologist Erna Gunther (1928: 606), in discussing Franz Boas' ethnological collections and writings on the first salmon ceremonies of the "Kwakiutl-speaking peoples",[11] notes that:

> *The Kwakiutl are justly famous for their complete ritualization of life. In regard to the salmon ceremony they have lived up to their tradition, for where most tribes have one ritual, they have at least three. . . . Every wise salmon fisher has prayers, which belong to him personally. These prayers are offered when the first catch of salmon is made with the hook. When some are caught, the fisherman goes to the river house and prays to the fish to be good while he is drying them. He prays:*
>
> > *Swimmer, I thank you because I am still alive at this season when you come back to our good place, for the reason you come is that we may play together with my fishing tackle, Swimmer. Now, go home and tell your friends that you had good luck on account of your coming here, and that they shall come, with their wealth bringer, that I may get some of your wealth, Swimmer; also take away my sickness, friend, supernatural one, Swimmer (quoted from Boas 1921:1318-1319).*

Heiltsuk geographically straddled the Central Coast's inside passage and "occupied the interface between Northern and Southern areas" (Suttles 1990: 8). Accordingly, the

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[11] Although Heiltsuk is a divergent culture with a language distinct from the Kwakwa'ka'wakw (re-asserted traditional name of the people formerly known as Kwakiutl for their Nation), it belongs to the same language family and they were lumped together by anthropologists until recent times.

culture necessarily embraced both Northern matrilineal as well as Southern and Interior bilateral systems of succession, a highly complex system. With intermarriage alliances maintained on all sides, they were well known for their export of names, ceremonies and art (Suttles 1990). In considering this complexity, it seems likely that Heiltsuk observed ceremonies similar to that described above, possibly even originating the practice.

The concept of having three or more distinct First Salmon ceremonies each year particularly rings true since there are no large rivers in the territory and runs to the smaller rivers usually occur in distinct pulses, unlike those in larger rivers where several species may be ascending together over an extended period. Mention of a first catch "made with the hook" strongly suggests Heiltsuk territory. Sockeye arrive in the locale of their birth streams in June, a full month before other species[12], but do not ascend until September (Manzon and Marshall 1981). This puts them in a predictable spot at a predictable time, so that the skillful fisherman could reasonably expect to catch them with a hook and line. Coho arrive a month or so later and, depending on location, pink and chum a month after that. Sockeye and coho would have been welcomed in succession as they arrived back at the "good place" and caught on hook and line. Later, the chum (also discussed in Gunther 1928) and possibly pinks were ceremonially welcomed back at the smoke-houses, just before harvesting began from the many family-held intertidal traps at or near the mouth of the salmon streams. Marshal Windsor remembers the practice of his

[12] Chinook (spring salmon), migrate through the territory but do not spawn in any Heiltsuk streams, so it is likely they would only have been caught incidentally since catch per unit effort would have been too high in most cases to target them specifically during earlier times.

grandfather at the beginning of the fall fishing at their smokehouse when his family gaffed their fish in the intertidal reach of one of the streams at Howeet:

> *I heard men talk ... to the fish. My grandfather said that. . . . used to do it quite a bit. The first fish that come... come down the river, that he caught, he takes it all back down. He keeps it alive in the water. They're all alive by the time we get down, you know, 'cause they... on a string, on a line and... he'd take the first... not the first, ...the first two are tied together, so we don't know whether they are alive or not, but the first one... third one would be still alive, and he'd talk to it and threw it back in the river...*

Upon being questioned about a first salmon ceremony, Don Vickers, a Heiltsuk elder and former commercial fisherman, had this comment:

> *I think everybody did that. It think it was a tradition, 'cause I used to hear them talk amongst each other, ask them, if they talk to their first fish to come back with a lot more. They used to just talk to them say, you know, they used to hang on to it for quite awhile by the side of the boat, talk to it, tell it to come back with a lot more, you know. I think there was a tradition . . . I knew my dad done that, he'd leave the first set not too long, soon as the first one's alive, he'd hang on to it and talk to it in the water, quite a while you know, to come back.*

There is a rough parallel of action and a familiarity of intent here that suggests a dynamic continuity based on changes that have occurred since the times when survival depended on following the old traditions: individual fishers in their own way, in their own place/boat, thankful for the catch and asking for help in securing their living and maybe some prosperity from the ocean.

Traditional teachings, stories, prayer and living a good life spiritually, were all experiences of the seasonal round of movement and harvesting, where the daily living was made while specific food supplies were processed and stored for use during the winter season.

5.4.4 Harvesting and Storage: Stewardship in the Smokehouse Season.

Heiltsuk families traveled to their own individual sites, moving several times during the harvest seasons: Herring spawn in early spring, then seaweed gathering and halibut fishing, followed by fishing for sockeye in summer and eventually, to the smokehouses in the fall to store up the chum supply for winter. Medicinal plants, plant technology materials, greens, roots and berries were collected and processed at or near these sites as well, as the seasons progressed. As discussed in Chapter 2, the seasonal nature of food resource availability made it difficult for early human populations to survive and expand until food storage technology developed enough to provide food that would keep through the winter. Salmon, as the primary protein source, was one of their most difficult foods to store because the fat content, particularly in the wet climate of Heiltsuk territory, inevitably creates the right conditions for mould to grow and spoil the fish as noted previously. While some areas like the Fraser River Valley have dry enough conditions to wind-dry and use the fatter tastier sockeye, the leaner chum that ascend Heiltsuk rivers in late autumn are the more prudent choice there.

In general, the chum arrive in September at the stream mouths and ascend through October and into November (Manzon and Marshall 1981). Soon after their arrival, they begin to metamorphose (change in body chemistry, shape and colour) in the brackish (partly fresh) water of the bays, preparing for their short fresh-water spawning season. During this time, the salmon stop feeding and subsist on the fat content stored in their tissues. Once the fat content has declined enough, these fish make a good choice for winter storage. So, it was important to recognize sufficiently lean fish in order to choose them for processing. Paradoxically, the reduced fat content meant that more fish had to be consumed per person to obtain daily caloric needs.

Considering the annual per-capita salmon consumption requirement of roughly 230 kg (Hewes 1973), and that winter is the time when the body consumes calories at the highest rate (Anderson in Duff 1996), prodigious amounts of fish had to be caught and processed during the short, fall harvest season. During the first segment of the season, preparations could sometimes be extensive depending on the mischief played in the watershed and on structures by wind and rain since the harvest of the preceding year.

High water and winds can leave behind a legacy of wind-fallen trees and deposits of everything from silt to log-jams blocking access to and covering over the salmon spawning beds, beds that are critical habitat for perpetuation of all salmon runs to that stream and the welfare of the humans who depend on them. Water and wind are powerful forces that sometimes rearrange landscapes over night. If this happens in urban, agricultural or other land use areas where humans have invested energy and capital - we

get right in there, cleaning up, salvaging, redesigning, redeveloping, and before long, everything is back to normal, possibly with a few additions or modifications. Likewise in tenured, stewarded salmon streams, each year, before harvesting and processing the winter supply of chum could begin, the stream was restored to optimum spawning conditions. Routinely, this meant removal of recent windfall and other debris from the streambed, but those who held harvest rights were ready to do whatever was necessary to promote or protect their salmon resources.

5.4.4.1 Stream Maintenance

Although such traditional stream maintenance by Heiltsuk or other First Nations has rarely been documented, *not* looking after their salmon streams makes little sense. I think it is self-evident that people who hold hereditary tenure and harvest rights to a river, who invest energy in building traps and smoke houses, and who depend on the salmon that return to spawn in it year after year for their very survival, will know that river and its salmon runs, and over time, will know nearly everything that can go right or wrong with it. The incentive to continuously restore the familiar ideal would be overriding. Recently, Ahousaht elder Stanley Sam, in the moving documentary video "Saltwater People" (1992), discussed Ahousaht environmental knowledge and traditions of stream maintenance. In his narrative, he expressed deep concern over the fate of his rivers since the "Europeans" (Department of Fisheries and Oceans) took stewardship duties and jurisdiction away from him. The Ahousaht tradition of stream maintenance is also mentioned in Hereditary chief, Earl Maquinna George's M.A. thesis: "Living on the

Edge: Nuu-Chah-Nulth History From an Ahousaht Chief's Perspective" (1998).[13] In another video documentary: "Grease: Ooligan Oil Production on the Bella Coola River", the narrator, Al Elsey, reminds us that until recent times, Nuxalk kept the Bella Coola River free of obstructions from tidewater to "50 miles [80 km] upstream".[14]

Keeping an eye on things, maintaining the most advantageous conditions and finding ways of resolving the problems that arise is simply the obvious response from those who must rely on a resource. As is often the case with common-sense activities, salmon stewardship through stream maintenance was seldom described in writing previously unless it was something out of the ordinary.[15] Preserving the sockeye run by the Nlaka'apamx at Hell's Gate is a classic example. After railway construction rubble slid into the Fraser River in February 1913, further restricting the river's flow through Hell's Gate, salmon could no longer ascend through the accelerated current passing the obstruction.

> *Desperate Indian bands built a rickety wooden flume the length of a football field. Dipnetting [sic] salmon below the white water, they carried them in buckets to the flume so that the spawners could get through . . .. There'd be no Adams River sockeye run to enthrall tourists and school*

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[13] Earl has also discussed his hereditary obligations as a chief, as well as his knowledge and understanding of stream maintenance practice learned from his mentor: Paul Sam, "who was an expert" with both Nancy Turner and myself on separate occasions, describing how log jams were removed and eggs were transplanted when necessary, if, for example the stream channel changed.

[14] "Grease" is self produced by Al Elsy from film he shot in 1964 while experimenting with that media. He is a long time resident, now retired, of the Bella Coola district where he formerly operated a hunting and fishing lodge.

[15] Although I do believe that if the journals of the early Fisheries guardians and overseers are located, they will have described what they witnessed in the course of their work.

> *kids every fall if those long-dead aboriginal men hadn't set up their frantic bucket brigade to save the Fraser River's salmon 86 years ago.16*

History repeated itself during the mudslides of 1996 when Upriver Halkomelem Salish communities turned out to carry salmon by hand past an obstruction that had occurred in a Fraser River tributary (W. Wickwire pers. comm. 2001). Aside from spectacular examples, salmon stewardship would have been a far more routine process where the accumulated effect of many small activities paid off in local stability of the resource. A glimpse of Sliammon (near Powell River) practices was reported by anthropologist Homer G. Barnett (1955: 88,89):

> *Chief Tom (Slaiäman) said that the Indians did not eat female salmon for their eggs during the first half of the season. The prohibition was to conserve the fish, "to make more," he said. A few other suggestions indicate that aboriginally some attention was paid to fish and game preservation. It was recognized, for example, that some fish had to get upstream, and therefore dams were deliberately made so that they could be cleared by a leap during high water.*

A similar salmon-assisting structure was reported by the Fisheries escapement inspector in Heiltsuk territory, head of Ellerslie Inlet at Pine River in 1965:

> *"Temporary ladder of rocks and logs was built at the first falls on Sept 21 &22. Pink and coho moved up without difficulty to the second falls where water was diverted by means of rocks enabling coho to proceed to the lake" (Manzon and Marshall 1981:162).*

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[16] Stephen Hume, "At Hells Gate the River Defeats the Mountains," The Vancouver Sun, 1 November 2000, section C, p. 10.

As I am familiar with this river and both falls in its lower reaches I am convinced it would take a team of several workers to accomplish such a task in two days. Also, considering the stream escapement had been insignificant and erratic, ranging from 75 to 750 annually since 1947, I cannot imagine the Department of Fisheries and Oceans having the interest to pay for the work. No follow-up report was listed and the records stop after 1974. I suspect Heiltsuk had been at work there.

Another report from nearby Oowekeeno territory in 1947, from the "annual spawning report" made by Fisheries Inspector Charles Lord,[17] describes the silt-laden Markwell River threatening to break through its banks to the Genesee River, at a spot where it came very close to the headwaters of this very important salmon stream. The imminent breakthrough, reported Lord, would occur within a year and would be sure to blanket the spawning beds below with silt. Although strongly recommending that Fisheries engineers correct the situation, he was unable to secure support for the repair project. But, on returning the following year for the annual spawning bed inspection, he found that the local "Indians" had strategically felled a number of trees into the river, just above the previously eroding riverbank. The trees had diverted the stream away from the weak spot and created a back eddy where the stream's bed-load of rock and silt could settle out, restoring the damaged streamside. By the tone of Lord's report, this was a most impressive repair.

[17] BC Archives, GR435, box 110, file 1102, 1947 A.D.

There is something about a simple, elegant response that resolves a problem with little effort or cost that speaks volumes about the wisdom, experience and expertise of the problem solver. After the fact, it would be easy enough to see what had been done, but how many people would have visualized the river putting the land back into place? Further, who of those would have the skill and confidence to properly place the tree barrier/diversion in the fast moving current with such precision? It may have been a new occurrence handled by someone who happened to have a good understanding of the river's dynamics in removing or depositing earth. But, I suspect that this particular erosion problem had presented itself previously, maybe even cyclically, so that the solution was carried in the local oral history. Either way, the "Indians" who looked after the problem clearly had the vision, knowledge, skills and confidence, were monitoring the rivers, and were accustomed to intercede in such instances that threatened their salmon spawning stream.

Oowekeeno territory is essentially Rivers Inlet and the extensive watershed of Oowekeeno Lake, with more than a dozen salmon streams that empty into the lake which drains via the Whannock River to the Inlet a short distance below. This system was once well known for its abundant sockeye runs. Evelyn Windsor, born in Oowekeeno, recalls stream cleaning there:

> *And when they do stream cares and cleaning and that kind of thing, it was done whenever they went to a river. Or if they had to travel a river and they saw it was badly dammed up or jammed up, then they'd clear it but they'd leave it alone when the fish are spawning or when the fish are coming in. They'd do it before anything was spawning because otherwise*

you're liable to break the eggs or spoil the riverbed or disturb it, so whatever was done to keep the streams clear, was done when the fish weren't spawning. They used a lot of the rivers for traveling, so whenever they saw anything that needed to be cleared, that's when they do it, but not when the fish are going up the rivers and spawning . . .. I notice that... they... in the fall time, like now [October], they would go [upstream from the smoke-house] and just check and see how much fish was in the rivers. Find out how much of a return came back. Otherwise, they didn't disturb the river at this time of year. [JJ: the other day you mentioned that, sometimes, if there was something in the water, logs or something like that, and if it wasn't really an obstacle...] Yeah its good for it because... for the fish to stop and rest behind the back-eddy, as long as they can get by. If, by chance, the river got too, too shallow that they couldn't get up, they'd make a little, tiny little...deepen a little area to get by. It didn't have to go all the way up the river . . . like a little trench, not too big . . .

John Bolton, former director of the Heiltsuk Fisheries Program, spoke of similar efforts made by Heiltsuk:

there were times when we had droughts here. I'm thinking of Martin's Creek [at Wáglísḷa] now. A couple of times it was so dry here that the river just quit. And I remember my grandfather saying that when that happened in the early 1900's that they made sure that the coho got up into the lake so that they can spawn up there, in the tributaries up there.

In Heiltsuk territory, rivers were mostly too small for use as avenues of travel, so it was necessary to have a time set aside to go upstream and maintain spawning access. In order to have access to the upper reaches of their streams, Heiltsuk were obliged to maintain

trails, likely on both sides of the rivers[18]:

> *Well when I was very small, they really looked after the streams, big rivers, like Gullchuck that's where my grandfather used to smoke fish. Andrew Wallace, I remember old Charley uh.., I can't remember the other old fellows that used to be there, old people had six houses, there on Gullchuck. Right on the head of Gullchuck. [JJ: you mentioned previously that there were trails along the rivers] Yeah, I think they were on both sides of the rivers. The rivers are pretty wide, big rivers and we couldn't go up there on canoes, or anything, we had to walk, clean the rivers, make sure that the fish go up to the spawning grounds (Hereditary chief Carmen Humchitt).*

The practice of maintaining access trails up non-navigable salmon streams for stewardship access may once have been widespread in the Pacific Northwest. John Bolton, former director of Heiltsuk fisheries, confirmed existence of stream access trails throughout the territory: "The ones that have sockeye, there is evidence of trails . . . there is trails on most of the river systems around here". Elsewhere, Fisheries Inspector Hans Helgeson, on his 1905 tour of the Babine territory to seek out and destroy so called "illegal salmon barricades" (traditional woven wood fishing fence complexes found on rivers throughout), offhandedly mentions in his report that it is his usual practice to take their trails to check upstream on the tributaries to Babine Lake.

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[18] After Heiltsuk populations dramatically declined and outlying tribes came together at the Bella Bella "Old Town" site in McLoughlin Bay at the beginning of the 20th Century, community members were allowed to set up smoke-houses and get their winter salmon supply from nearby rivers at Howeet and Gullchuck. The Heiltsuk hereditary tenure system continues to be recognized ceremonially, but in general, people now fish wherever they wish. As reported in Chapter Four, the recollections of Heiltsuk consulted are primarily concerned with these two rivers.

On the 21st we reached Fifteen Mile River and found it deserted, nearly all the fish had been removed, though I counted over 2,000 left on a couple of racks. We destroyed the barricades and as usual took their trail in order to see what there was above. We soon came to a permanent dam, a big cottonwood tree had been felled, across the river, well pinned up behind with rocks, in front were stakes and brush, with a multitude of dead fish in front of it. The dam was nearly tight as a bottle, and forbid even a single fish to get up, though there were quite a quantity of fish above it which had no doubt gotten over at a higher state of water . . .19

Clearly, the dam built by the Babines also had its purpose based in salmon stewardship. No doubt, the Babines fled with as much of their salmon as they could take after hearing about Helgeson's tour of destruction, the dead fish accumulating after they left.

Mary Hunt and Tom Humchitt Senior also have childhood memories of watching family members maintaining streambeds at Gullchuck:

MH. . . They don't go back after they clean everything out. They clean the streams, the river, before the fish; before they start drying the fish, get the fish. They clean if there's any tree fall during that. . . like now (October) or maybe two months ago. Maybe two weeks before they moved in they'd clean the river. If there's any fallen trees, they clean it. If you go up there on the river and you see there's some fallen trees and then there's some trees that they cut that's ready to fall, I think, so they clean that away.

TH... I only observed what my uncle was doing. If a tree would fall across the stream, if it was small, he would just pull it out or chop it in smaller chunks so he could drag them off the stream and if there was ah, looked

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[19] Department of Marine and Fisheries, Annual Report 1906, Sessional Papers No. 22: 208.

like rocks that were, looked like they would be blocking the fish, he would just throw them aside. He didn't throw them up on the shore; he just moved them a bit. So, the salmon would go up the main stream. The mains stream is usually about right in the middle of the river's stream. So, that's what. I never went in there, but I always went there to see what he was doing. . . . So, that would be towards the end of September when the fish were starting to move up the river. . .[JJ: So would that be the time to go and clear the river out?] Yeah, before they start heading up the river or the stream. . . . We usually just get over there a little early, get things all set up.

Marshal Windsor helped look after the rivers at Howeet (Húẏat):

I've taken part in it, that part with my granny when we smoked fish in the fall. First thing we usually do when we get there is clean the stream ... to where the last fish goes to, if it goes up [to the] lake, we clean it all the way up to the lake. And if it's ah... just a dog salmon, coho [I think Marshal meant to say "pink" here] creek, they only go so far. Where sockeye and ah... cohoes, they go right up [to] the lake . . .. and any debris that's there, that wasn't there the year before, we take away. Never touch rocks. 'Cause the rocks are there for the fish to rest on their way up. They take trees out, any trees that fall during the winter, we clear them . . . we'd cut 'em up.

Like Mary Hunt and Tom Humchitt Senior at Gullchuck, Emma Reid watched relatives clean up their rivers at Howeet while Cyril Carpenter and John Bolton heard about the practice from a grandparent:

ER Oh, they clean the streams, ah...what I can remember is, they used to just take all the debris out from.... At Howeets there's two rivers

coming down, eh. I don't know how far up they went, but they drag all these old, old um... wood and just started fires in different points to get all this cleaned out. It was done; it must have just been done yearly, every year that.... before we really moved in to the camps it was cleaned and even around our building, if there was any fallen trees, it was cut for firewood.

CC . . . the streams always have to be looked after. The Department of Fisheries and Oceans have the responsibility to do that, what the natives did for centuries. From what we were taught, what we were told by Magaga, Lucy Windsor, the old lady I grew up with, for seven years of my life, from the time I was four until I was 11, I stayed with her every summer, for one month at least, every summer, while my parents worked in Namu. She told me how the salmon streams were cleaned before spawning. It happened during the heaviest rainfalls before the salmon spawned. Before the salmon went up to spawn. They went, help clean up the debris that collected and caused log jams. That was a major effort, but, throughout the years, she said they always looked after the streams.

JB . . . My grandfather was telling me that one year, when they did have a lot of blow-downs on one of their systems, I'm not too sure if it was Howeet or Fancy Cove, but I know it was down here somewhere, he was telling me that they didn't have power saws those days so they used rope to. . . and manpower, to pull out the blow-downs that were in and along the river system, so they did do their own stream cleaning.

Few people would think that windfall could clog a stream, affecting the spawning channels or access to them. Cyril Carpenter reports on his extensive stream-clearing experiences including a comparison of stream access conditions at Howeet between the time of his childhood, when Heiltsuk were still doing annual

stream maintenance, and the later cleaning project after traditional practices had been discontinued. He also describes how a logjam completely prevented salmon from ascending to the spawning beds on another stream.

> *. . . I think the most useful thing I could provide for this project is my experience of stream clearing for the Band Council which had a joint venture with the Department of Fisheries and Oceans in 1986, 1988 and 1990. . . . it was a rehabilitation program where we cleared the streams of any major obstacles . . . we cleared a considerable amount of logjams. From 67 rivers that we worked in within the three consecutive years. In every river that we worked on, they had a fish trap. Some had more than the others, depending on the size of the river.*
>
> *. . . Starting from King Island, we worked on Nutum, across from King Island, Kisameet, Sager Lake and three streams inside Evans Arm, Port John, Four Lakes and three small streams in Jenny Bay. Martin River, Walker Lake, Clatse, four streams in Bullock Channel area. Ellerslie Lake - just up to the lagoon, Kisameet, Neekas, Tankeah, East and West Tuno, Dreadful Creek, Tom Bay, Nameless Creek, Salmon Bay, James Bay and Hunter Island [Howeet is located there], also Denny Island [Gullchuck is there] and Campbell Island. We did all the streams in those areas, right around it. There.... the streams always have to be looked after. The Department of Fisheries and Oceans have the responsibility to do that, what the Natives did for centuries.*
>
> *. . . in Howeet, invariably, as kids, you wander, you wander as far as you can go up the river and about half a mile up, more than half a mile up the main river, that's the river that flows from straight south, the stream was always clear: there was no obstacles. None whatsoever and that is what I could recall as a boy, 9, 10 years old, we used to go as far as we can because half ways up that river, we'd go there for devil's club, which we*

use for medicine. Half ways up between the salt chuck and the small little lake, it was just loaded with devil's club. I remember that, and when we were clearing stream there in 1988, we didn't go as far as where that devil's club was growing; we took off five logjams. It took two weeks of work with a crew of 12; that's how quickly the logjams built up in the rivers if you don't look after them. In 20 years, nature could do a lot of damage to rivers, if the rivers are not looked after, if no one continues to look after them.

I'll give you an example of what logjams can do to a run of salmon. We went [to] clear a small stream, it's on the mainland: called Dreadful Creek. Very steep ravine and all the trees were falling over, over a period of time, and they just clogged it up. The salmon were dying at the basin and we were asked to go and clear it. It was so bad with all the trees and all the debris clogging it up. It took us five and a half days with a crew of twelve to clear 300 yards. That was the distance between where the river leveled off, where the ponds are and the salt chuck. And the salmon was dying at the basin, they couldn't get up. We spent three days just cutting the middle with power saws and throwing all the branches on the bank. When we came back after the weekend; we worked on it Wednesday, Thursday, Friday; we came back Monday; there was no more salmon in the basin. We went up to where all the pools are, where it leveled off: and the dog salmon were all around there. That's how badly the rivers can be blocked by windfall and debris. The salmon could not go up there. Our ancestors knew this, they saw this and they were part of the manpower that kept all these rivers clear so they could guarantee that the salmon would come back. They had a farming system in place. . . . I was always told by the old people that we have to look after the river.

It seems likely that reports were done on the salmon spawning grounds in Heiltsuk territory from earlier times. The first time it is reported in the Annual Reports of the Department is in the 1931/32 volume and each year following. The only detailed report

for Bella Bella Area, made by a Fisheries Inspector to the Supervisor of Fisheries that could be found was made by G.S. Reade in 1941:[20]

> *Summary – The salmon escapement was satisfactory. The intensity for the different varieties was as follows, with the spawning for the brood year given in brackets:*
>
> *Sockeye - medium (1936 heavy, 1937 medium)*
> *Coho - heavy (1938 heavy)*
> *Pinks - medium (1939 medium)*
> *Chums - heavy (1937 medium, 1938 heavy)*
>
> *Water levels were favourable. Other than natural waterfalls, only one stream was found to have an obstruction (Evans Arm Cr.), and one obstruction forming (Tom Bay). For particulars please see stream reports.*

Reade's report includes species and intensity of spawning data for current and brood years at 43 local streams. Given Cyril Carpenter's report on clean up in many of these same streams in later days, it seems likely that Heiltsuk stream maintenance was still active and widespread until at least 1941. I also find it very interesting that, at the time, sockeye "intensity" was described as medium and during the 1936 brood year surpassed the always plentiful pinks and chums, unlike their near extinction today.

Although the federal Department of Marine and Fisheries studied the possibility of removing obstructions to spawning channels in Heiltsuk territory as early as January, 1914 and subsequently let contracts in 1915, 1923, 1925 and more in subsequent years,

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[20] BC Archives, GR435, box 107, file 1064: G.S.Reade to Supervisor of Fisheries, Prince Rupert, Bella Bella, B.C., December 8th, 1941.

the department was primarily "easing the ascent of salmon over falls." The idea was to extend and exploit salmon access to upper reaches of spawning habitat in certain streams. Clean up of logging debris caused logjams was done on Kiltik Creek and on a stream in "Deer Passage".[21] These clean-ups may have been welcome supplements to Heiltsuk routine stream maintenance.

Once the annual stream maintenance was complete, the fishing and smoke processing could begin.

5.4.4.2 Selective Fishing is Key to Stock Perpetuation

Unlike modern fishing gear, nearly every type of First Nations' traditional fishing technology enables live selection of fish. This could be active, as spearing and gaffing selected fish, or passive where, in any of the dozens of trapping methods (see description and illustrations in Stewart 1977) fish were captured alive, making it a simple matter to choose every fish to be consumed while others could easily be released unharmed. It is likely that many of the different traps were once utilized in Heiltsuk territory. Archaeological evidence shows that the woven wooden fish fence usually called a "weir" (Stewart 1977) or in the case of the earlier Helgeson example, " barricades", were once used by some Heiltsuk, but the stone-walled intertidal fish traps seem to have been constructed on nearly every salmon stream in the territory (Pomeroy 1968). It was exciting to hear from some of the Heiltsuk consulted that they had participated in fishing

[21] Annual Reports of Dominion of Canada Marine and Fisheries.

with these traps, selecting salmon to fill their needs, as recently 50 or 60 years ago in both Gullchuck and Howeet.[22]

> *Carmen Humchitt: . . .we used to watch them at the Gullchuck there, just below where the houses are. I think there was only one at Gullchuck, called " 'Qiłsutkv " in our language. 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. . . When I watched them, they picked them out. The fish that's really ready to go up the river, they let that go. Semi-brights or a little darker that's not ready yet, I guess they know, when they're ready to go up the river to spawn, that's what they let go. . . Most people pick out the males for some reason, I don't know... I mean the females, not the males. Everybody's down there pickin' out what they need. Before the tide's too low, just so you can use your gumboots, eh. They used to let some out that they don't need.*
>
> *Mary Hunt . . . In those days, I don't really see net, you know, the net. Just the trap over there. . . . over there the people really, really look after everything when they have enough fish to slice, they open up that, that ah... trap there. They open it up. There's traps all over, I know.. . . How must the people look after those traps, how must they take care of the fish and when they're finished, when they have enough, they open that trap . . . . They just open it up when the tide's low. They open it up and then when*

[22] When Nancy Turner was in the Gitga'at Tsimshian community of Hartley Bay, north of Bella Bella, she was told that a stone fish trap there had been fished until about 25 years ago when a marina was built on the site (pers. comm. 2001)

they have enough from the trap, they don't close it and then high tide comes and they all run out. And then when they want to get some fish

to . . . when they're finished with the first bunch of fish they get from the trap, they, when they're finished slicing and hanging it up, they really have really, make all, you know, in those days they don't pick the female, they pick the male. Cause the female strip narrow when they smoke it. It's really hard, really hard [taps on table].

. . . And they take some females [chum salmon], when the eggs is loose [in the ovaries, just before spawning]; they know when it's eggs or maybe they test it, I don't really know how they know when it's loose, before that, they take it when it's still whole [eggs still clustered in a firmer mass] and then they make this Indian cheese, we call it.

Reg Moody Humchitt . . . let's see, two, three years maybe when we were still using the fish traps, those fish traps never really dried in the water . . . and we'd just take what we'd think we needed, for us to live on, for the year, eh. 'Til next year . . . We used to do our camping across by Gullchuck, eh. [Our] family had a smoke house there, where we lived for about [a] month, month and a half. . . The salmon escape when the tide comes...rises. Those traps they're submersed in high water, so the fish go [out] . . . automatically go out.

Emma Reid . . . [JJ...you were saying that you ... were there when they were fishing with those stone fish traps] ...well I remember the fish all inside the water, in the traps and to me it looked like an awful lot of fish but I don't know how much they did daily . . . We just hauled them in . . . the dark ones were for drying, eh. Cause they're less fat than the brighter ones...

Darker salmon, more advanced in their metamorphosis, are said to be less oily and therefore more resistant to mould once dried. Proper selection of salmon for storage was critical in order to ensure sufficient food throughout the winter. This same process of selecting was also utilized in intertidal reaches of the stream where selected fish were taken in a different style of stone trap. This trap utilized two funneling rows of stones positioned so that salmon drifting between the stones naturally traveled upstream to a waiting Heiltsuk fisher who gaffed or hooked selected fish. Also, females that died without spawning were collected while still fresh, their eggs saved for making "stink eggs", an epicurean delicacy still popular with some Heiltsuk. The flesh of these females was first barbecued then toasted by the fire until dry as a treat for a later day.

In addition to the selecting process, it is important to understand that only a portion of the run would be caught in these non-barricading style traps, ensuring that adequate numbers of spawning salmon would always ascend the river without being harmed or handled. Also, only a limited number of salmon could be processed each day; once that amount was reached, traps were left open, giving the fish free passage.

> *Clarence Martin . . . I heard about when they used the salmon weirs [stone walled traps] ... because the tide comes down, ... slowly when you got all the fish in the salmon weir and then you just pick... pick the ones you wanted and then you release the rest. You never left anything dying within the salmon weir if you didn't need it. So that's how it was protected and then this other weir [Clarence sketches: two lines of stones make a vee with apex open and facing upstream], where it just swam... if you're not using that kind of trap, it just drops in and then continues up*

the river. But if you needed anything from it, you're at the top [upstream] end and then you're picking what you want. So, that is another form of protecting the salmon. You just take only what you need.

... 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.

Marshal Windsor... I gaffed all the fish that were caught . . .. We don't want to take the ones out...out in the salt water, [we] take the ones in the river . . . They got less fat on them ...and they're easier to dry . . . We looked for the darkest ones we can find... before they start turning white, cause they start turning whitish color after, pale, like. [JJ - Would you choose particularly a male or a female at certain times?] It depends on how many females my granny would want for the day to make ah... make some ah...need some eggs for stink eggs or Indian cheese. When we first get them, we'd get at least oh, 20 males, females a day, for about 4 days. 'cause they're still firm [egg sac/ovaries]. Firm enough to make Indian cheese, . . .we'd wait 'til the...[end of the run], then we go after females again. That's when they were loose then [in the ovaries – ready to spawn], pretty loose; they're coming right out. The eggs are loose in the last fish that are there. That way, we saved them for our stink eggs for the winter. [JJ - So what happens to the body of the female at that time?] We smoke it . . . . some are white, but we pick the ones that's...they're good. I... I prefer it once it's gone white. Gee I'd love one... got a neat taste to them.

. . . And there was a certain way to gaff ...to gaff fish so you didn't spoil the fish at all. You'd leave ah... look for the one you're going to gaff, then

you'd hold your gaff hook so far ahead of it, wait for it to come, then you'd gaff all of 'em in the head. The only place to gaff 'em is in the head. . . . we haven't spoiled any fish that way.

Cyril Carpenter and John Bolton suggest that larger salmon were often allowed to go up and spawn while smaller fish were more often selected for the smokehouse. From my own experience smoking salmon in Bella Bella, learning the traditional method of smoke drying (most Heiltsuk still have a room-sized smokehouse in their yard or have access to one belonging to friends or a relative), I think smaller fish would be more desirable since thinner flesh would dry more quickly and more thoroughly. This practice could explain why salmon were larger on average during the early days of commercial fishing (Daniel Pauly, pers comm. 1998, and confirmed in casual conversations with elder commercial fishermen). If selecting smaller fish for winter storage was a widespread practice, a natural trend to larger fish would follow.

Cyril Carpenter . . .They [people] just don't go to the river after they [salmon] spawn, but what we did, before they go to the spawning channels, that's when we picked them. I would say the first 300 yards from the basin of the river we would pick them. That's what I did, anyway. Once we had our share, we don't go to the river. After they go up there, you don't walk on the river, when they're spawning. We were told to take the females and the males . . . the smaller ones of that species [chum].

JB-they would have certain people gathering the fish every year and they're the ones that chose, they were very selective on what fish that they took. They didn't just take everything. They always...from what my grandfather was telling me, he said that they would try and let a lot of the good strong fish go up and spawn.

Another example of long term selecting due to human causes was explained to me by Arvid Charlie (pers. comm. 1999), a Cowichan elder, who says that salmon that return to the Cowichan River can be recognized anywhere in the ocean on sight because they are thinner and deeper than their relatives from other streams. The reason is simple, he says: their woven wood, barricade-style fishing weirs were built in such a way that gaps between vertical components were wide enough to let trout pass through. After all those centuries of having smaller and thinner salmon also squeeze through to continue up the river and spawn, there came to be a thinner, Cowichan variety that developed.

Eventually the Heiltsuk stone-walled traps were phased out in favor of the beach seine but Carmen Humchitt confirms that selecting continued during that period as well.

> *CH . . . What I seen though, later on, is they used the traps that we were talking about, those rocks, yeah; I guess that's when they started these little ah...drag seines. Short ones, maybe thirty, thirty fathoms I guess. Ah... there's so much fish, ...(unclear)...and use a row boat and a long line, sort of circle and cut out how much they need and that little drag seine them...(unclear)...mean the people, they'd do the same thing, just pick out what they need and let the rest go.*

Looking after the stream and selectively harvesting the salmon just before they spawn has substantial stewardship benefits. The annually maintained stream channels and spawning beds will have predictable payoffs of increased abundance. Long-term experience with a single stream provides the knowledge, central to the wisdom needed for decision-making regarding the welfare of the salmon. Observing the number of salmon spawning each year teaches stewards, not only what low limit of spawners is necessary, but also the upper limit for good success in subsequent returns. Being there means that you have a

good idea how many fish are ascending daily and can easily decide on the advisability of continuing a harvest in a lean year or when to harvest more of the surplus for trade, when the returns are over-abundant. The ability to live-release prime individual spawners or any other species of fish not targeted can help strengthen the stock while preserving the other species (e.g., coho were generally kept during the smoking season as well as chum, but if the coho returns were inadequate, they could be released unharmed allowing them to spawn). Non-food species such as sculpin (bullheads) could also be released unharmed, to carry out ecological services.

> *The bullhead is the guardian of the waterfront and rivers. It keeps the water clean by eating things that make the water unclean. That is why he has a lowly Indian name. It also guards the small coho fry until maturity. The more plentiful the bullheads are in the river, the more plentiful the fish (Huu-ay-aht elder Mable Sport, quoted in Anderson 1996: 61-62)*

This style of fishing is notably energy efficient because the fish come to you, sometimes so abundantly as to make a roaring sound as they rush away from a disturbance; no time and effort are spent in looking for them. Catching the fish was actually a rather small part of the fall salmon harvesting activities. As mentioned in Chapter two, Northwest Coastal First Nations' population support and expansion was limited by the amount of salmon that could be processed and stored for winter consumption.

5.4.4.3 Care in the Smokehouse Reduces Harvest Requirements

> *Carmen Humchitt . . . they would take the fish up on sort of a place where they could keep it, grassy spot like, and sort of a dug out place there and that's filled up with fish and put sort of grass, I don't know what you call*

> *this grass you put right over it, so the flies wouldn't get at it. What you call skunk cabbage leaves, great big leaves and cover it over so the flies wouldn't get at it. This way too, they'd leave it over night so all of the slime would come out of the fish, and the blood.*

The storage process was labor intensive and time consuming. Mistakes could be costly. The number of fish that could be processed in a day was limited by the number of hands, their available skills and endurance. It took experience to know what this number was: some fish would spoil if too many were killed and precious time wasted if the processors ran out of fish before running out of daylight. Improperly dried fish could prove disastrous, spoiling during the winter.

> *Mary Hunt . . . and they make it really dry, just like ah . . . (taps on table) really hard, just like rock or just like wood, make sure, cause I know if it's not dry enough it's going to turn moldy. . . . They're not careless when they work on the food.*

When respect for all beings and the knowledge that all things are connected are components of daily life, the natural tendency is to take great care with food resources and get every possible calorie out of each fish harvested.

Today we generally take the fillets and toss out the remainder, one way or another. During traditional times, only the bones and some of the entrails were returned to the sea (camp dogs are likely to have put on their winter fat eating the entrails, consuming a large proportion of that too!). I remember visiting with Marshal Windsor as he finished sucking the juice out of the many little bones of a salmon head, remarking over the final

tasty bits of flavour from his salmon head soup. I often heard fish soups referred to as "mulligan", which could be made with all manner of fish parts.

> *Don Vickers . . . it used to [be] kind of a delicacy for us to have one of those old dog salmon, just kind of turned white, we'd make pot mulligan with it . . . everybody used to eat it. ... the whole community.*

> *Mary Hunt . . . And like what I said about that ah.. tips, they cut it off when it's all dry. Why they leave it on because they don't want the fish to curl up, make sure it's dry and then they take the tips home and then, like every week they boil it, they boil it and have it with potatoes [mulligan] or just have it. What we do, we don't have very much like ah...the potatoes. But we have it with tea and grease and bread: a tea biscuit. That's what we have it with, yeah, those tips, yeah. And even the tail part of the fish, where the tail is, they leave about this much, big, not too big, and then we slice it this way, then turn over and slice, and then we smoke it. We smoke the. . I still do that if I have fish. It's really good, you know, when you suck the bones from that tail part. It taste real good.*

> *Emma Reid . . . They worked a lot with the fish and everything that was edible, like we ate everything on the fish. We boiled the fish and the head and the tail and we ate that and we barbecued the back bone and we ate that, so there's [not] very, very much gone to waste . . . Even barbecuing, we did the same thing. That was not...there's not too much... gone out the door in those days, everything was et.*

Such care and choices reduced the number of fish that were required to be killed to provide winter requirements. Since Heiltsuk territory is one of the rainiest on the planet, smokehouses were the only reliable way to dry the salmon to the hardness of wood needed to keep the mould away.

People are very, very careful working on the fish. They don't over-smoke it. It takes about four days . . . five days for hard smoked fish. And they use certain kind of wood like Alders and other [low resin woods], something like a Yew tree (Carmen Humchitt).

Large quantities of salmon were caught and processed through the smokehouses where people also took shelter. The following passages convey a picture of the season's life, the harvest magnitude, and the singularity of purpose still employed just 50 years ago:

. . . at Howeets [Húỷat], there was seven smoke houses there . . . my parents and grandparents lived right [in the] smoke house, only thing that was separating them from the smoke was ah... I don't know if it's blankets or cedar. Cedar bark matting, because that ceiling was just loaded with

fish. And one... say this was the main entrance, the first area of that ceiling was ...filled with ah.. freshly ah..dressed dog salmon, ... as it's getting dry... it's moved back, to back here... because the front.. front fire is just smoldering, it's not really burning. But after a certain state, it moved back, and then this fire, really burning, to dry that fish up on the ceiling. . . for a family of 12 my grandfather used to do a thousand, to 1200 fish (Clarence Martin).

. . . the one we had there must have been 35-40 feet or maybe better, long, and there was two rows of fish up on them. And there was a lot of times we had two fires going in that to smoke them, smoke dry them . . . Oh, it was wide, maybe 24, 26 maybe . . . I swear sometimes there's you know, maybe three thousand fish (Don Vickers).

. . . there were probably about half a dozen adults and a dozen kids that worked together. And we probably processed, at a maximum, 100 pieces in a day and every day . . . we would be there for three weeks. If we had a

large crew, we would do everything in ten days, for all the salmon that we wanted to smoke. Through rain or shine, we were working on salmon, until it was done, then we would return here . . . (Cyril Carpenter).

In this Heiltsuk smokehouse tradition, women played a central role as workers, teachers and specialist knowledge holders. Marshal Windsor was taught how to select and gaff salmon as well as care and management of the smoking salmon.

. . . hold your gaff hook so far ahead of it, wait for it to come, then you'd gaff all of 'em in the head. The only place to gaff 'em is in the head. We haven't spoiled any fish that way. When I first started, I gaffed many over. I was learning how; Granny had to come up there two days to show me how.

... I used to have to go up... up on top where the fish are smoking, they had platforms there; they had two layers of fish. One is smoking and one is drying out. The first fish we had goes up on top. 'Cause it dried quicker there, and it smoked quicker... on one side. . . that place was hot up there, we had a fire going . . . I was the only one allowed up on top. I knew where everything was, you see. If granny went up there and she moves [it] around, I wouldn't know where it went. So, I know which is which. I know which ones that come down or when it come down... supposed to come down. ...When I first started, my granny taught me how, she was the boss, she taught me how to catch the fish, then when I caught on. She went back to her...to her old job [preparing the salmon to be smoked].

John Bolton remembers his great-grandmother working with the salmon, teaching, and insisting that her grandchildren learn to speak Heiltsuk:

> *. . . they were the ones that were always working on the salmon. So, like I said, the part that they played was to help teach the young ones that were growing up. The dos and don'ts in and around the salmon streams.. . . that's the part I see them playing in those days. . . I know my grandmother, great grandmother, was a very good teacher. . . She took me from my parents and she took my cousin Louisa from, her parents and she taught us our language and brought us up until we went to school . . . I can remember trying to talk to her in English. She wouldn't just ignore me but she wouldn't answer me unless I spoke to her in our own language.*

Mary Hunt naturally slips into her familiar role as teacher, explaining the important intricacies of salmon smoking and the preparation of tálúse, the thin strips of flesh sliced off the thick flesh near the backbone leaving the thickness of the hanging fish uniform with that of the belly:

> *. . . They make sure they make it face each other, the middle, this fish over here is facing this way and that side is facing this way, too. If it's windy, it's going to be still smoked. If it's windy, if it all face this way, it's not going to be smoked or when the northwest wind comes, that's how come they make it face this way, into the middle, yeah. And then that strip narrow fish, we work on it all the time. Take the bones out, two days after it's been up there, and then they put it together, two or three or maybe even more. They would call it: ská. They kind of do this to it until it's all gets turned over then do the same thing and then you don't have to pound it. Because we work on it, my grandmother used to always tell me to sit down beside her and put like toothpicks, they cut those little sticks up and then they put it on that where they're gonna put the sticks through so it's just hanging up like this. We don't leave it up there until it's dry, no way, they keep working on it 'til it's dry; we call it tálúse in our language, yeah. And that's what they do and they never leave it alone. . . . the people are*

really clean and what they do with everything: they don't waste it - they don't waste it.

Phillip Hall . . . When I was a boy, my grandfather gone, I used to go with my mother and my grandmother, used to go for Gullchuck, yeah. I did the fishing ever since I was a boy, yeah. Never waste any fish. Everything you get, clear, anything, if you have too much you give it away, yeah.

Cyril Carpenter . . . I'm not too sure if there's stories that's been written by our grandparents, but I know, from my own experience, you don't kill salmon just for the sake of killing it. You're very disrespectful if you don't use it. And they've always said if you continue to do that, they're not going to return. . . . So, that was part of our social law. You're taught those when you were very young because you taught those kinds of principles by hands-on experience. Being out there with the old people. They're teaching you how to treat, how to respect the salmon.

5.4.4.4 Goodbye to Annual Smokehouse Traditions

I suspect that as the use of jars and cans to store the salmon became more commonplace, the old criteria for selecting lean fish became obsolete since the richer, therefore tastier, species and "brights" could be kept almost indefinitely. This new storage technology, was quickly supplemented by the advent of the home deep freeze and in recent times, home vacuum packaging.

Mary Hunt . . . maybe 400 fish up there [during her childhood] when they all slice the fish and they make sure it's dry because there's no fridge, no deepfreeze, people don't know anything about jar, that they could jar the fish.

Access to commercial fishing vessels and other power boats made it easier to bring the fish home and work on it there in greater convenience and comfort. The series of these events unfortunately removed the necessity for going to the smokehouses, also ending the annual stream maintenance, since food-fish supplies no longer had to be taken from the stream outside the smoke house door. Looking back from my research perspective, I think that this was, unknown at the time, a change that contributed to assimilation of Heiltsuk and other Northwest Coast salmon cultures. The annual time spent in the smokehouses, like the seaweed camps, was a major link to the old traditions and seasonal rhythm. Family groups worked together and worked hard, at a system of food storage so old it had helped shape the culture, and all shared the pride and satisfaction of accomplishment at season's end. (The stories and teachings, though not lost, may have lost some of their meaning – unable to adapt and leap into the culture of false dreams that began with television.)

5.4.5 Transplanting Salmon

There is a general confidence among the participants that Heiltsuk once transplanted salmon eggs and were responsible for bringing sockeye into the territory in an earlier time from Rivers Inlet, even listing the recipient rivers. My problem in trying to understand egg-transplanting traditions is that Federal Fisheries and Marine built a salmon hatchery in Rivers Inlet on Oowekeeno Lake in 1904. Several possibilities exist: one, the transplanting was done in the employ of the government hatchery; two, transplanting was a strategy borrowed from the hatchery; or three, considering how little

was known to science about the salmon's life cycle at the time that hatcheries first went into production, was transplanting a practice that was borrowed from Aboriginals? In hindsight, upon reflecting on all the old hatchery records that I have skimmed looking for mention of stewardship practices, I realize that in the early hatchery days, they all had "Indian" workers. Although I did not see it acknowledged, in view of the way "Indians" were relied on in those days for their fish-related environmental knowledge, and would it be far fetched to suggest that they were contributing in the same way to hatchery technology? John Bolton discusses how Heiltsuk accomplished salmon transplanting:

> *My grandfather was one of the people who were able to harvest and they enhanced the salmon as well from. . . .like all the systems that we have in our area. . . they didn't always have sockeye. They took sockeye from Rivers Inlet and how they did that is they put baskets in the spawning beds in rivers and after the sockeye spawned they'd pull the baskets out and they'd transport them up this way and they put them out in our rivers and let the eggs spawn out there. I know he told me that Gullchuck had a lot of eggs from Rivers Inlet and Ship Point and McGee's, those . . . McGee's, I don't think had a natural run there and Gullchuck, I don't think had a natural run there, sockeye run there to begin with. That was started by our local people.*

G.M. Sproat described Nuu-chah-nulth a practice similar to this in 1868 (Lillard 1987:148) long before the first European hatcheries were built:

> *It is a common practice among the few tribes whose hunters go far inland, at certain seasons, to transport the ova of the salmon in boxes filled with damp moss, from the rivers to the lakes or to other streams.*

The Sproat account establishes the transplanting of salmon eggs as an aboriginal practice. The story from John Bolton's grandfather is so similar that it may explain what Sproat saw and so offhandedly described. Practices of two distant First Nations are not likely to have been identical, but a practice as sensible as transplanting salmon eggs is bound to have developed over time and through group interactions of trade and potlatch, techniques are bound to have migrated both ways along the coast over the millennia. Combining the two descriptions makes the most sense. Leaving the basket embedded in the spawning channel for the salmon to spawn into it is a terrific idea. The fertilized eggs could then be lifted with the basket, minimizing any possible disturbance. Placing saturated moss (particularly sphagnum which can hold many times its weight in water) on top of the basket to help maintain moisture and optimal temperature is both simple and brilliant. If the basket could then be carried along with a good supply of fresh water to maintain moisture in the moss, the eggs could probably travel quite a distance before being deposited in a new stream.

This is what Heiltsuk say:

> *Edwin Newman . . . old people talk about transplanting eggs. It wasn't anything new. Tenki - sockeye planted there. Transplanting was originally suggested to DFO by Heiltsuk and they tried it in a small way.*
>
> *Harold Hall . . . White man teach you how to transplant eggs, we've already done that, years and years ago . . . Well I didn't hear that we do it but the Hartley Bays did it. The Hartley Bay people [Gitga'at]. They transplanted eggs from that creek to the other creek.*

Philip Hall . . . They tried to plant some of the eggs. Then they come back to where they put them when they transplant them. Namu is planted...eggs Namu is planted years ago always...(unclear)... the river. . .I think it was two, they were a good size, they put eggs in there . . . They, they come back in the same place as was they'd transplant them. It was before, when I was a boy. There's another place up there, they did the same thing. Transplant eggs. There's a place there called Gullchuck, they (unclear) the Coho and, Sockeye there long ago but they put the sockeye eggs there. No Sockeye now, yeah, they transplant eggs. I don't know why they don't do it any more.

Cyril Carpenter . . . I'll tell you what, though, about transplanting, if the Heiltsuk used this common knowledge of transplanting herring eggs from where it normally returns to spawn, when they took enough, when they had a surplus, they would tow the trees to different locations to enlarge the spawning area. Beatrice Brown told me that story many times. They would enhance the herring when it first came to the BC coast, by that method. If that was in practice, I would say the Heiltsuk did the same for the salmon, in some way, I don't know how it was done.

I think Cyril's reasoning is sound. The idea of transplanting is simple and needs only a successful technique. Sockeye, richest in oil content, is the first salmon species to arrive in the area of its Heiltsuk brood streams in June (Manzon and Marshall 1981), a month or more before the others. These attributes make the species highly desirable for transplanting into the territory. As I understand from my readings of the Department of Fisheries and Marine Sessional Papers in the Annual Reports, the hatchery in Oowekeeno Lake was used only to enhance the salmon runs in that watershed. Further research on Salmon transplanting by First Nations would undoubtedly add to our understanding.

5.5 Buried in the Archives

Although the previous traditional stewardship practices of annual stream maintenance, selective fishing in the streams at smokehouse locations and the traditional style of salmon transplanting[23] have been discontinued, cultural stewardship ethics extending back to time immemorial continue to exert immense influence on the consciousness of First Peoples. Just as the stories, language, ceremonies and other traditions of First Nations' cultures are being reasserted, issues of tenure, right of harvest and jurisdiction in resource management are foremost in ongoing treaty and resource management negotiations[24], court cases. Activism rises more and more frequently in extreme cases of frustration during deadlocked negotiations in the struggle for recognition of aboriginal rights. An example of exasperating government policy that currently ignores these issues is posted on the Heiltsuk Internet Website:[25]

> *The Heiltsuk Tribal council is participating in the Central Coast Land and Coastal Resource Management Plan, known as the LCRMP. This process was initiated by the provincial government to plan land use on "Crown Land" and to resolve questions of protected areas. The process is not what the Heiltsuk Tribal council wants. When we objected to this process we were told it would happen with or without our participation. The Council decided to participate in this process to safeguard Heiltsuk interests in Heiltsuk lands. We feel that we are in this process under*

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[23] Heiltsuk now have an extensive Fisheries Program which includes their own hatchery and territorial restocking/enhancement activities.

[24] On April 12, 2001 the Heiltsuk Tribal Council officially withdrew from Land Claims Negotiations with the Federal and Provincial Governments.

duress (we have been forced to participate [endeavoring] to look after our land).

The LCRMP process is proceeding as if there were no Land Question in British Columbia. We are told that matters related to aboriginal title and rights will be dealt with in the Treaty Process. The trouble with this is that while the Treaty process is going on, the LCRMP process will begin and end. While the province says that the LCRMP process is without any prejudice to treaty making, they will be using the LCRMP Plan as their position at the treaty negotiations.

When European explorers and traders arrived on the Northwest Coast to exploit its resource bounty, they established desire – ultimately need - for European trade goods. Deadly diseases were decimating aboriginal populations during that period. Since that time, traditional values have been buffeted by foreign and domestic business and the contempt of its promoters. [From their perspective, "Indians" were at once seen as: inferior savages; ignorant children; cheap labor; greedy consumers of valuable salmon and other desired resources; and considered lazy and ignorant (Brown and Vibert 1996: Parts I and II), illustrating historic origins of widespread racism/disrespect of First Nations and their people]. Regardless of the knowledge and opinions of those who were at least objective, history reveals a tradition of intentional misinterpretation and misrepresentation of aboriginal needs and activities (Newell 1990; 1993a; 1993b). This prejudice and racism provided righteous permission to interfere with First Nations on many levels, basic to cultural independence and the individual's dignity of self-identity.

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[25] http://www.heiltsuk.com/lrmp.htm accessed March 11, 2002.

The past intrusions of church and government in the lives of First Nations, are becoming better known through recent academic and historical publications (Brown and Vibert 1996; Canada 1996; Dickason 1992; Sewid-Smith 1979), as well as public media reporting on legal issues. In commercial fisheries, cannery operators, jealous of large-scale inland aboriginal subsistence harvests, publicly misinterpreted the traditional salmon harvesting with woven wood weirs as wantonly destructive, intentionally disregarding the wisdom of experienced observers who understood that traditional harvesting practices had underlying benefits to the salmon and attempted to defend Indian fisheries. There were those who recognized the value of traditional practices. As quoted in chapter two, in the late 1870s, A.C. Anderson, federal Inspector of Fisheries for British Columbia, a strong advocate of "Indian fishing rights", recommended they be exempted formally and publicly from the fishing laws by an Order in Council, recognizing First Nations' hereditary rights [He reported that the "natives" understood and protected the spawning salmon with their own regulations and further reasoned that aboriginal fishing practices had been performed since time immemorial without impairing the fisheries.] (Canada 1878: 295).

It is interesting to note that more than 40 years earlier, the same A.C. Anderson was working as a Hudson's Bay company trader at Fort McLoughlin at the site of Old Bella Bella in Heiltsuk territory. He lived year-round at the fort where in 1833, his co-worker William Fraser Tolmie described how their men from the fort gaffed salmon (as described earlier by Clarence Martin and Marshal Windsor) in nearby McLoughlin Creek:

> *We visited the two lakes which give origin to the burn [Creek] entering the sea a short distance from the Fort and in autumn abounds in salmon - the gentlemen used to amuse themselves this fall in catching the fish by means of a large iron hook fixed to the extremity of a pole 5 or 6 feet long, which they hooked the salmon by the belly - they have in this manner caught 100 in the space of two hours (Tolmie 1963: 259, 260).*

It is very likely that they were copying the intertidal trap style used at Howeet (though with the poor technique of belly hooking), constructed with two converging rows of stacked rocks, in order to attain that rate of success. It could also be assumed that Heiltsuk stream maintenance and selective fishing were also observed by Tolmie, Anderson and others. I was unable to access any records generated by Anderson during that time, but his later advocacy does suggest experience with First Nations' fishing practices that goes beyond that of most of his contemporaries. Ironically, it seems that First Nations' ability to successfully nurture their resources was once well known, as stated jointly by C.F. Cornwall, Commissioner for Dominion Government, and J.P. Planta, Commissioner for British Columbia in their report to the Commission Appointed to Enquire into the Condition of the Indians of the Northwest Coast, where they supported the establishment of an Indian Agent system as required by the Indian Act of 1882 (British Columbia 1888: 11):

> *So in a way that would not call for particular attention were it not seriously intended, they hold themselves as above and beyond the existing laws which affect them as Indians.*

> *Such ideas ought to be firmly but kindly dealt with and changed. It can only be done by the presence among the Indians of capable and experienced government officials, agents and magistrates. To leave them longer to pursue their course unaided, uninstructed, as to the objects and purport of the law, and uncontrolled by the civil power, would be fatal to any probability of future peace.*
>
> *With intelligent Indians as are these Northern tribes, capable in self supporting in every way . . . Intelligent as they are, industrious as they are, inhabiting districts, sea coasts and rivers rich in natural resources, the use and development of which to their own advantage they thoroughly understand . . .*

I think that the advent of ever tightening restrictions on First Nations'cultural leadership and activities through the Indian Act and the Canadian government's agenda of acculturation essentially supported attitudes of disrespect. Unfortunately, the voice of the profit-driven cannery men, championed by the press (Newell 1993a) and bigoted attitudes of the day, prevailed in putting forth an image of "Indians" as ignorant, wasteful and incapable of resource management. Sadly, First Nations fisheries have had to live with the wrongful image as wasteful destroyers ever since (Carlson 1997; Pearse 1982; Newell 1993).

There is more irony sprinkled throughout the early colonial and government records so liberally as to be at first unnoticeable. The "Indians" were, for the federal and provincial fisheries authorities, depended upon as a primary source of fish and landscape intelligence, being noted for their knowledge and observation skills. Countless entries from officials in the field to their distant supervisors start with: "The Indians

say/said/tell/told/inform . . ." or somehow communicated, passing on the authority for their information, demonstrating the breadth of traditional knowledge and site specific benefit of local observations:

> *The Indians tell me there was quite a few humpbacks in the Fraser this season and a few in the mouth of Cayuse Creek. These are the first humpbacks seen here since the slide in 1913.26*

> *The Indians informed me that Cohoe [sic] salmon frequent these waters in considerable numbers at a later date than the time of our inspection.27*

Access to the wisdom of oral history and local monitoring within Kwakwa̲'ka̲'wakw territory reassured federal and provincial fisheries officials following what they had initially considered a potentially dangerous level of rainfall:[28]

> *Dear Mr. Babcock: The recent heavy rains which were general all over the coast resulted in extremely high water in almost all the streams and it is feared that serious damage has been done to the sockeye spawning beds.*

> *. . . The spawning areas adjacent to Smiths Inlet are subject to very heavy freshets and the local inspector, when in that area, discussed the situation with Indians who had been in the vicinity of the spawning areas adjacent to Long Lake during the time the freshets were on. The information he*

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[26] BC Archives, GR435, Box 111, File 1132, October 22, 1923. J. B. Arthur, to J. Babcock, provincial Assistant to the Commissioner of Fisheries, Victoria, BC.

[27] BC Archives, GR 435, Box 130, File 6, October 17, 1923. E.P. Hickman, Inspector of Fisheries, Nass River, to Hon. Wm. Sloan, Commissioner of Fisheries, Victoria, BC.

[28] BC Archives, GR 435, Box 110, File 1092, J. Motherwell, federal Chief Superintendent of Fisheries to J. Babcock, provincial Assistant to the Commissioner of Fisheries, Dec. 16, 1932.

obtained from the Indians is to the effect that they anticipate no danger to the beds as they have seen the river many times in a like state to what it was this year. In reply to interrogation, they also stated that no large trees were washed down the river, that is, sufficiently large to scour the bed of the river.

Even as recently as 1943, Fisheries' field personnel on the Central Coast were still very dependent upon the good will reporting by First Nations and beneficiary of their observations:[29]

Genesee River: This is the first time [in 12 years experience] I have seen this happen [no sockeye seen in the mouth of Genesee River] and I now have made arrangements with local Indians who intend to visit this river in the near future to give me their report later.

Whannock River: This has been one of the main spawning areas of the lake. The actual spawning can never be seen, but their presence is indicated by flipping continuously and the activity of the Indians in procuring their winter food is a good source of information. There is to be said in connection with what is seen and information received for the 1943 escapement. THERE IS A VERY DEFINITE SHORTAGE OF SOCKEYE SALMON IN THIS SPAWNING AREA DURING 1943 [emphasis by C. Lord]. Information from local Indians are as follows: Few can be taken by net for food purposes. Another piece of information which may mean much or little was given to me from local Indians. The statement was: In hauling a piece of net, 26 sockeye were taken. Percentage of males to females was not observed. However, three of the females taken in this haul, were found to be in a condition which made it

> *impossible for them to spawn. In other words, they were ready to spawn, were much distended, were still alive, but apparently unable to express the eggs. I pass along this information as I receive it. Meanwhile, I have to state that my report on this river, the Whannock River, is to the effect that it appears to be very much of a failure. Here again, I have made arrangements for a further report which shall be rendered to you as a supplementary statement, when received. . . May I repeat that I shall render a supplementary report if the Indians send me further word as to what they find in the lake. They go in almost immediately.*

The benefits of watching over a resource, making proactive decisions regarding that resource, based on long-term full time experience, seem visibly superior to long distance "management". Since my research has been to examine traditional stewardship practices, it is beyond the scope of this thesis to further report relationships among First Nations, various government fisheries agencies, salmon fisheries and the non-Native public; these complex issues are examined elsewhere (Newell 1993). Yet, stewardship is just as inextricably woven into the fabric of present day resource management discourse as it is in Fist Nations' cultures. Marine resource management, particularly of Pacific salmon, is widely acknowledged as seriously flawed (Glavin 1996; Haggan 1998): "fisheries globally are really in deep trouble, far more so than is admitted to the public, to whom technical fixes are still being sold" (Pitcher, Hart and Pauly 1998). Without a doubt, we are consuming and destroying our salmon as well as other marine and terrestrial resources at a rate that threatens our own demise. Many have turned their backs on this truth. Those of us who have not, are intuitively interested in learning more about and

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[29] BC Archives, GR 435, Box 110, File 1100, Charles Lord, Fisheries Inspector to James Boyd, Supervisor of Fisheries, Prince Rupert, October 29, 1943, report on spawning conditions for Owekano Lake, Rivers Inlet, Long Lake and Smiths Inlet.

promoting stewardship, hence its present high public profile and diversity of application in resource "management" environments. We know we must nurture the environment that feeds us; we just don't know how to do it. Cultural stewardship's goal of survival through respectful assistance toward abundance and perpetuation of the valued resources of nature, has the potential to reverse our destructive path.

5.6 Suggestions for further study

Much more information is required in order to properly support and promote cultural stewardship on a large scale. This work needs to be supported by similar studies throughout British Columbia and beyond:

- Expanded archival study will reveal more and more of the beauty and "rightness" of cultural stewardship.
- Examination of First Nations' languages from a stewardship perspective may uncover related concepts and practices previously not considered.
- We need to document more examples of Fist Nations' stewardship, expanding studies to include their nurturing of fish other than salmon and, as well, foreshore resources like goose-necked barnacles, shellfish, sea urchins, chitons, abalone and seaweeds (cf. Turner and Clifton 2002). Heiltsuk were known to have enticed herring to spawn in new locations and held tenure harvest rights where all of these resources were harvested. What influence did this have on abundance, size, flavor, texture and other attributes of the selected resource? Were foreshore ecosystems encouraged toward monoculture or were a variety of species nurtured on the same site simultaneously?

- Scale samples collected for many years by Fisheries Inspectors could confirm where salmon stocks came from through DNA testing - such work could confirm aboriginal salmon transplanting.

- Cultural stewardship may be difficult to recreate experimentally. We need to find living examples in the world to study and test.

- Feasibility of reestablishing exclusive systems of tenure and cultural stewardship needs to be examined by scholars of community development and common property.

Maybe we have to dream a little.

CHAPTER SIX

CONCLUSION

> *Survival of Heiltsuk people is totally dependent on the resources of the sea. We have nothing else . . .Every family owned fishing sites in the old days, [you] know. You got areas where people dried herring eggs. Certain families owned certain areas. Not everybody went to the same place; you had to have a right to go there. We looked after all the salmon streams. We even had our own halibut grounds, our own black cod grounds and our salmon streams; we looked after them. We made sure that nothing was going to happen to the runs that came back. We never abused it in any way. So we are natural conservationists. We've been told stories by our ancestors about how people were banished from our communities for abusing the resource of the sea or playing with it. Heiltsuk Hereditary Chief, Edwin Newman (Cranmer and Green 1995)*

I think it is appropriate here to repeat these words of Heiltsuk Hereditary Chief, Edwin Newman (Cranmer and Green 1995) as I sum up my research. From the beginning, Chief Newman's words were never far from my thoughts. They stimulated and focused my curiosity and desire to examine the "nature and existence of traditional Heiltsuk stewardship of salmon, their salmon streams and any directly related activities in adjacent landscapes". In this work I have essentially followed a path of sequentially questioning and validating nuances of Chief Newman's statements, striving to understand and visualize the ecological impact of widespread culture-based stewardship on the Northwest Coast. I learned that:

- Without a storage technology to preserve salmon through the winter, survival was uncertain.
- The Coast's legendary pulses of abundance could sometimes fail.
- Population densities and harvest requirements were so high that First Nations could not have flourished without systems of exclusive harvest rights to protect their efforts to promote and maintain abundance.

As more sites of ancient coastal communities are archaeologically examined and the human population estimates grow with the aid of advancing technology, we clearly need to reconsider the scale of ecological influence First Nations undoubtedly wrought on the environment. This I attempted to visualize in Chapter One. Even revised, conservative population estimates reveal that, based on established annual consumption, the aboriginal salmon harvest, in the centuries prior to European arrival, was probably comparable to commercial harvests of the last century. Systems of tenure intimated by Edwin Newman would have been necessary in order to ensure harvest rights, minimize harvest raiding, and provide a level of certainty required to make it worthwhile to expend energy looking after the salmon. This would have held true as well for other food, medicinal and technological resources. High population densities also confirm that ultimately, stewardship of these resources was widely successful.

Examination of Heiltsuk oral history, including recorded stories and legends, archival records, and language for traces of stewardship, as well as project interview transcripts, revealed that there is a synergy between culture and stewardship that does not allow stewardship to be modeled as isolated specific activities. My metaphor description and illustration of cultural stewardship allows stewardship in general and salmon stewardship

in particular to be visualized as important interwoven fibres affected by, and having influence on the dynamics of culture.

Cultural stewardship recognizes that looking after the salmon was a significant element of ethical cultural consciousness. The opening question in all my interviews was: "Did the Heiltsuk do anything to make sure that the salmon would always return in large numbers?". I find it significant that the most knowledgeable Heiltsuk consultants echoed one another in their answers to this barely focused open-ended question with what I have called "key cultural directives" that reflect the harvesting aspect of the traditional Heiltsuk ethical way of life.

- no fishing/harvesting allowed without specific hereditary rights (tenure)
- always looked after the salmon - never mistreated it
- never took more than needed - distributed any accidental surplus
- never waste anything

When we intuitively grasp the Heiltsuk attitude of respect and husbandry linked to their dependence on the natural world for survival, we understand that actual "hands on" stewardship activities would naturally arise over time as well thought out solutions to local environmental conditions affecting salmon within their territory. The annual stream maintenance, for example, is both a logical and a respectful preparation for the yearly return of the Salmon People in areas where rivers and creeks are small enough for deadfall to substantially disturb their spawning channels or access to them.

Widespread traditional stream maintenance activities appear to have been in effect in Heiltsuk territory at least until the early 1940s and continued to some extent into the 1950s as reported in project interviews. Interview and archival records confirm that First Nations had long term localized knowledge, experience and skills that they were accustomed to utilize both routinely and when special circumstances arose. This could mean transplanting salmon eggs from one watershed to another if a run failed in one area; transporting eggs or fish upstream when flows were too low or too high; and even the repair of dangerously eroding stream-banks through use of trees to divert current flow. Broader archival searches will undoubtedly uncover many more interesting and ingenious solutions. I believe that First Nations were ready and felt obliged to do whatever it took to protect and perpetuate their salmon stocks. As Edwin Newman said: "we made sure that nothing was going to happen to the runs that came back".

Once the annual stream maintenance was completed and fishing for the smokehouse started, every fish was carefully selected for certain attributes: always the darkest individuals, sometimes males, sometimes females, smaller fish may have been preferred, and often newly dead females. By taking the fish in the most advanced state of metamorphosis, fish least likely to survive the run upstream to spawn - the largest strongest fish are free to ascend. Selecting dark, dying and dead fish produced a net harvest that had far less impact on the run than if all strong bright fish had been killed. This is particularly important in the case of females that were wanted for their rich eggs that were made into "Indian cheese" and "stink eggs". Once daily processing quotas were filled, traps were left open and fish freely ascended the rivers unmolested. The

suggested preference for harvesting smaller fish seems likely; culling small fish selects for a salmon stock of increased size, which may well have been the case in the past.

The key to the reasoning behind the selecting is in choosing fish that have the least possible oil content: chum salmon (*Oncorhynchus keta*) were the leanest and most plentiful during the critical smokehouse season. It was necessary to dry salmon flesh to the hardness of wood in order to prevent growth of fungus. This degree of dehydration was impossible to achieve and maintain in the extremely wet Heiltsuk winter environment if oil content was too high. The role of women in processing salmon, and teaching techniques and cultural values that prevented waste, cannot be over estimated. Careful processing and use of the whole fish (except possibly the offal) limits the number of fish lost to decay and also limits required harvest size. Once cans, jars, and deep freezes became available, there was no further need to dry leaner, less tasty fish in the fall when richer species in "bright" condition could be processed effectively anytime. It was no longer necessary to go and live in distant smokehouses, and thus a link to traditional cycles of stream maintenance was broken at a time when cultural pride was possibly near its lowest ebb.

6.1 Perspective

There is a bitter irony in finding that more than one hundred years ago government officials recognized overtly that First Nations were "intelligent", "industrious" and "self supporting"; "inhabiting districts, sea coasts and rivers rich in natural resources, the use

and development of which to their own advantage they thoroughly understand" (British Columbia 1888). At the same time, however, greedy cannery operators jealous of the food harvest Indians took to feed their families, were already accusing them of slaughter, waste and destroying all the returning salmon just before they could spawn and complete their life cycle. Public opinion, fomented by industrial greed, was being turned against the very people who had nurtured the resource for thousands of years. Keep in mind that the canneries were in their infancy and salmon abundance at the time was legendary. The top British Columbia federal fisheries official of the time advocated for Indian fishing rights, refuted these allegations and reported in the Annual Report of the Department of Marine and Fisheries (Canada 1878) that "...great care is extended by the natives towards their [salmon] protection. No one is allowed to fish within certain limits" and "tending to show that the Indians both understand and appreciate the importance of preserving the nursery grounds from injury." Unfortunately, the stigma of First Peoples being labeled "wasters and destroyers" by cannery officials stuck, and to some extent continues to this day.

Near the beginning of the 20th century, only a few years later after these initial reports, salmon exploitation was accelerating rapidly enough to cause government fisheries agencies to start looking at ways to expand salmon productivity through hatcheries, research and engineering. By this time, government had bought into the bogus hue and cry of the cannery-men. Incredibly, about the time Hans Helgeson and other Fishery Officers were destroying traditional woven wood fishing weirs inland and on the Coast as

being wasteful and destructive of "their" salmon, the cannery employees were blatantly and remorselessly fishing out the small streams of the Central Coast:

> *"I could mention several canneries who were great sinners in this respect of fishing these small streams out. I know this from personal knowledge, and these canneries kept their packs up to the usual annual catch by taking in fresh streams as the others were depleted of fish. Of course, this sort thing could not go on forever and this was the reason I was so anxious to have a cruiser watch them. One cannery manager told me when I asked him what he would do when their streams were fished out, which they would be if things went on as they were, said they would sell the cannery to the first fellow that came along. Comment on this is needless. It shows the spirit in which these streams were fished."*[1]

In the years since then, the details change, but attitudes continue to suppress stewardship and the cultural ethics that drive it. Consider the checkered history of salmon exploitation during the last hundred years from First Nations' cultural stewardship perspective. How exasperating to endure the stigma of being called "wasters" while working in a fishing industry that regularly allowed dumping of scow loads of dead salmon into the bays; that condoned the pumping of tons of waste daily into those same bays, or following the trail of dead by-catch fish not harvested because licensing regulations prohibit it. And, ultimately being pushed out of commercial fishing, essentially due to stock declines, leaving your community largely on welfare, stealing your pride and burning your soul, because "management" doesn't work. Imagine sitting in your living room and watching military aircraft drop explosives into the channel, your

[1] BC Archives, reel B11126, file 3042, no. 4. Oct 1, 1904, From the Department of Marine and Fisheries, Captain Walbran, Fisheries Protection Service to Lieutenant Col. Gourdeau, Deputy Minister of Marine and Fisheries, Ottawa.

community's own channel, land and load up *your* food fish. Imagine 28 floating fishing lodges that bring zero dollars into the community and take over the bays and reefs near the community where your family had exclusive harvest rights and have "sporties" curse, wave fists and threaten you – yelling; this is OUR spot! Get out of here! How do you pay for the hundred or so dollars it takes in fuel to go beyond all that to the sea where you may or may not be successful in catching the time-honored fish that define you? How do you then feel about living on cheap baloney, powerless while rich guys with fancy equipment are out there *playing* with your traditional food?[2]

6.2 The Future

My emotionally charged narrative illustrates the need for justice of many kinds: to individuals, communities, First Nations and even the environment. Tenure systems of earlier times insured community access to food supplies, promoted well being within the community and provided certainty of harvesting that made stewardship a good investment of energy. Stewardship maintains balance in an environment that supplies resources to humans. What environment on the planet does not? If we exploit all environments for our benefit, we must balance them all in our favor or lose our ability to survive in them. Combined pressures from expanding population, irresponsible development of technology and isolated, compartmentalized science have disturbed global balance. Maintaining balance does not mean maintaining static systems; it means

[2] This and much, much more can be found in the interview transcripts for this project on file at the Heiltsuk Cultural Education Centre. I was on board a seine boat, with respected Hereditary Chiefs and elders that I had interviewed, on a food fishing trip for the Bella Bella community on two occasions when such altercations occurred. It bites right into your soul.

perpetuating our ability to live in them. Balance, once achieved provides the best possible conditions for biodiversity - our biological storehouse, our capital for survival (Suzuki 1997; Wilson 1992). Contemporary stewardship schemes have a fatal flaw: the stewards have no ownership of their territory or its fruit. Volunteer stewards, local people whose good will and interest is relied upon for stream restoration and monitoring today, will not continue indefinitely when decisions are made by distant others without regard for their wishes and dedication. Outsider exploitation under present management schemes can take place at any time with no compensation to the volunteer community. We need new systems of tenure that support stewardship, it has to be global and it has to happen, in geologic terms, immediately! The Heiltsuk example of First Nations' traditional nested tenure systems coupled with cultural stewardship that perpetuates resources and maintains environmental balance, is an example of such a system. I believe that learning and applying its lessons on a global scale can restore balance. The most apparent lessons are:

- Nested hereditary systems of tenure are essential in order to insure exclusive harvest rights, reduce food raiding and provide the environment of certainty and flexibility necessary to promote stewardship.
- Stewards have jurisdiction jointly through their own cultural systems to make all decisions regarding their own territories and work with neighboring groups when deciding joint issues.
- Cultural ethics must be spiritually embraced by everyone
    - we are the caretakers of our planet
    - respect all things
    - all things are connected
    - humans, as part of the natural world are no more important than any other living "being"

- take only what you need
- never waste anything

- Cultural stewardship perpetuates resources.

6.3 Creating a New Vision

Considering the current global environmental imbalance, few would disagree that we humans may potentially be nearing the end of our time line as a species. This is a time of transition for us as Nature makes it clear that environmental debts incurred by our thoughtless "golden age of industry, technology and science" are now due. Pollution of the air, land and seas, polar depletion of the Ozone layer, unprecidented global depletion of fish and forests, accelerating global climate change due to extreme excesses of greenhouse gasses being released into our atmosphere: all of these and many more have placed our species in a massive deficit position that we may not survive. Outlining the transition to true cultural stewardship on a planet-wide scale is certainly beyond my aspirations, and magnitudes beyond the scope of this thesis, but I cannot stress how strongly I believe that tenured cultural stewardship is the key.

In the salmon fisheries of the Northwest Coast, population and harvest crashes in recent years are unprecedented in historic times and it is clear that a transition in salmon fisheries is occurring. At present, high rates of unemployment are driving us to tolerate rapid expansion of environmentally and politically controversial "net-pen" salmon aquaculture, touted by its multinational proponents as environmentally sound. Yet, non-governmental organizations (NGOs) like the Suzuki Foundation, a well-respected

authority on environmental issues, have vociferously opposed this type of aquaculture for years.

It seems self-evident that employing small numbers of people to rear introduced Atlantic salmon in unnaturally crowded conditions requiring constant monitoring, where chemical programs of disease control are essential and four or five pounds of wild fish biomass must be harvested and processed into pellets elsewhere in the world before delivery to the net pens is, at the very least, folly. In the debate over problems of passing disease from farmed salmon to wild stocks of salmon, denial of the possibility is impossible, so the new "backspin" by multinationals is - they have major concerns about contagion from the *wild* fish! Why spend all that time and money and suffer the flak from environmental concerns when the salmon will raise themselves and swim back to you? Why even bother to chase them all over the ocean in boats? What about the precautionary principle? Why take a chance when it may not be necessary to do so?

The Heiltsuk example of First Nations' salmon stewardship clearly points the way to maximized environmentally sound efficient harvests. The major barrier to this proposal is the lack of tenure. With the Pacific fishing fleet out in the ocean having the capacity to scoop up a significant portion of the stock from a stream in a single set, investing in stewardship schemes would be next to useless. Until commercial fisheries began in 1873, nearly all the salmon that survived the rigors of their environment to maturity returned to their natal streams.

Returning to an ocean without fishing boats is predicted and advocated by UBC professor Daniel Pauly[3], one of the world's leading fisheries scientists, who also opposes net-pen aquaculture. Pauly predicted that soon the economic returns from Pacific fisheries would not be substantial enough to be worthwhile. Suggesting that rebuilding of natural ecosystems is the most effective goal for fisheries management (Pitcher and Pauly 1998), his opinion was that fishing in Canadian waters should be closed, effectively creating a huge marine protected area (MPA) where fish stocks and ecosystems can be rebuilt (pers. Comm. 1999). In addition, Scott Wallace, a former Ph.D. student of Pauly's who's research dissertation was "Fisheries Impacts on Marine Ecosystems and Biological Diversity: The Role of MPAs in British Columbia" (1999), suggested that large MPAs created in international waters could provide refugia where fish propagate and grow before emigrating to surrounding waters (Wallace, pers. comm. 2000). If such a large refugia, closed to fishing, were to be established adjacent to Canadian waters off the Coast of BC, conditions would be in place that would allow salmon stocks to complete their life cycles. Tenure systems could then be reestablished, promoting and rebuilding to former abundance through cultural stewardship of both Native and non-Native Communities. I strongly believe that, under these conditions, all-important cultural ethics and practices would quickly reassert themselves in First Nations' communities and also inspire and inform non-Native communities. This is a system of certainty and belonging that is insured by the people who work hard to perpetuate all of their resources.

Throughout the urbanization process of the last several decades, driven by industry, technology and science, we have become increasingly transient in our lives. Many

[3] Coastal Communities Lecture Series 1999

families are now scattered to the winds in the quest for survival (employment) and individuals must be ever ready to load up and move on. We are all weary of being the disposable wrapping of ephemeral corporations and policies. We ache for certainty, stability and balance. We ache to belong. With cultural stewardship, enrichment and nurturing resonate between our Place and ourselves: amplified through time and accumulating traditions.

In a new era of cultural stewardship, large numbers of community members would be employed working in an appropriate seasonal round, stewarding and harvesting both marine and terrestrial community resources in bustling communities where, in parallel with the harvest seasons, a progression of diversified processing would add value to the harvest before local consumption or, in the case of surplus, before export to larger centers. By getting the most out of the harvest, wealth is generated within the community, which can then support more of the amenities and services of those larger centers as appropriate and beneficial.

Industry, technology and science also have their place. Once the paramount ethics of cultural stewardship are spiritually embraced, the world is more to likely be seen through lenses less clouded by values that seek to cover up environmental problems and ignore the cost to future generations. Reconstituted, these three structural components of our cultural canoe can work together in service of the community rather than of themselves as it was in the past. We support them and in return, they must work for us. Global warming foretells climate changes that will be hard to predict. In order to perpetuate the

critical biological resources we get from the earth as it metamorphoses under new conditions, we will have to pay close attention to what our Places tell us. In order to maximize stewardship efficiency, communities will need the assistance of science to provide training and make analyses that are beyond simple observations, such as air and water analyses. Monitoring, reports, experience and ideas (essentially traditional environmental/ecological knowledge and wisdom – TEKW- in the 21st century) will have to pour in to data centers similar to weather centers for study and analysis. In this way, science can be constantly updated on shifting global trends. Scientists will then be enabled to make best guess predictions and advise stewards wherever they are, as they fulfill their commitment to promote balance while walking on the treadmill of changes.

In British Columbia, we have the most beautiful and dramatic scenery and one of the richest environments in the world. Tenured cultural stewardship communities could develop immense tourism potential on the Northwest Coast from within the community. Visitors who wish to hunt or fish in the territory would be required to purchase a license from the community, and to be subject to community regulations such as size, catch limits and closed areas reserved for community food harvesting. Rented territorial harvest rights must accrue to tenure holders as demanded by Bob Anderson in Heiltsuk territory nearly 100 years ago.

The picture is not utopian; it is not even radical. It is a concept of widespread First Nations' traditional community systems updated to our times. What worked before can work again. In the effort to find out how to make it work for us again, perhaps the next

step is to study the way in which First Nations' peoples once selected and trained their leaders to shoulder responsibility for maintaining abundant natural resources in their territories and, in so doing, serve their people. Cultural stewardship, like the wheel, has been around for a long time. Its efficiency and effectiveness cannot be denied and, no matter how you refine it, it still rolls.

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APPENDIX I

University of Victoria, Human Ethics Committee, certificate of approval.

Project No. 142-97

Copy on following page.

University of Victoria
Human Research Ethics Committee

Certificate of Approval

Principal Investigators	Department/School	Supervisor
Jim Jones **Graduate Student**	**Environmental Studies**	**Dr. N. Turner**

Title: *Looking After the Salmon: Traditional Heiltsuk Stewardship of Aquatic Systems*

Project No.	Start Date	End Date	Approval Date
142-97	29 May 97	28 May 98	29 May 97

Certification

This is to certify that the University of Victoria Ethics Review Committee on Research and Other Activities Involving Human Subjects has examined the research proposal and concludes that, in all respects, the proposed research meets appropriate standards of ethics as outlined by the University of Victoria Research Regulations Involving Human Subjects.

[redacted]
Michael Corcoran,
Associate Dean, Research

[redacted]
Alex McAuley,
Associate Vice-President, Research

This Certificate of Approval is valid for the above term provided there is no change in the procedures. Extensions/minor amendments may be granted upon receipt of "Request for Continuing Review or Amendment of an Approved Project" form.

Office of Research Administration
Room B115, Sedgewick Building,
P.O. Box 1700,
Victoria, BC V8W 2Y2

Tel: (250)721-7968
Fax: (250)721-8960
E-mail: jem@uvvm.uvic.ca

APPENDIX II

Correspondence:

Arlene Wilson, Chair, Heiltsuk Tribal Council to Susan Hancock, Science Council for BC, February 12, 1997. Heiltsuk letter of support in principle for original FRBC research project proposal. #PA 97597ARE: Looking After the Salmon: Traditional Heiltsuk Management of Aquatic Systems.

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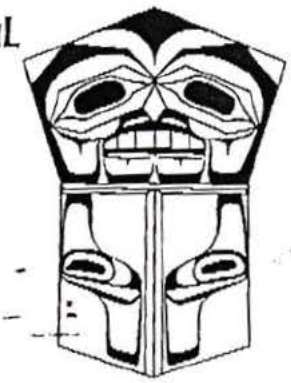
heiltsuk tribal council



February 12, 1997

Science Council for BC
Suite 800
4710 Kingsway
Burnaby BC V5H 4M2

Attention: Susan Hancock

Dear Susan Hancock,

SUBJECT: FRBC RESEARCH PROJECT PROPOSAL #PA 97597ARE

I am writing to express the support of the Heiltsuk Tribal Council for the research project, *Looking After the Salmon: Traditional Heiltsuk Management of Aquatic System*, which is being proposed by Jim Jones and Nancy Turner of the University of Victoria Environmental Studies Program. We feel this project will result in the documentation of valuable information for both local resource management and long term resource planning. It will also provide an avenue for the continued preservation of Heiltsuk wisdom and knowledge related to traditional resource management practices.

Through the partnership of the Heiltsuk Tribal Council and the project proponents, we have full confidence that this project will be carried out in a professional and successful manner. The Heiltsuk Tribal Council will be acting in an advisory capacity throughout this project through the involvement of both the Heiltsuk Treaty Office and Heiltsuk Cultural Education Centre. A Heiltsuk individual will also be working directly as part of the project team.

On behalf of the Heiltsuk Tribal Council, I hope you will give serious consideration to this project proposal. We look forward to the result of the peer review process and the decision of Forest Renewal BC regarding funding for this project.

Yours truly,

[redacted]

Arlene Wilson
Chair
Heiltsuk Tribal Council

cc: Heiltsuk Treaty Office fax 957-2134
Jim Jones University of Victoria, Environmental Studies Program fax 250-721-8985

sh02-12-97

880, WAGLISLA, BRITISH COLUMBIA V0T 1Z0 TEL. (604) 957-2381 FAX (604) 957-2544

Appendix III

Research agreement between Jim Jones and Heiltsuk Tribal Council

Copy on following page.

AGREEMENT

BETWEEN: Jim Jones
3022 Craigowan Road
Victoria, B.C. V9B 1M8 (250) 360-000

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

RE: Research on the Bella Bella Indian Reserve / Heiltsuk Territory

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

"Looking after the Salmon, traditional Heiltsuk management of river systems"

[see attached detailed project description per sec. 2 (c) RULES and PROCEDURES, Guidelines ,1997]

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) that any tape recordings, documented notes and research findings 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 must remain with the Band;

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

d) that all findings of the research will be given to the Band and to all the consultants involved in draft form prior to publication;

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

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

g) that an expected completion date be specified;

h) that the researcher will furnish the Band with copies of all reports and publications resulting from the research project .

AGREED THIS_____DAY OF_____, 19___

_____ _____ ____
Researcher Heiltsuk Tribal Council

_____ _____
Heiltsuk Hereditary Chiefs Heiltsuk Cultural Education Centre

PLACE: _____ _____
(thesis / academic advisor)

Appendix IV

Informed consent form: "Looking after the salmon".

Copy on following page.

Heiltsuk Tribal Council
P.O. Box 880
Waglisla, B.C.
V0T 1Z0

School of Environmental Studies
University of Victoria
P.O. Box 1700
Victoria, B.C.
V8W 2Y2

INFORMED CONSENT FORM: "Looking After the Salmon" Project

Principal Researcher:	Jim Jones	(250) 360-0006
Heiltsuk Interpreter & Research Associate:	Clarence Martin	957-2678
U. of Victoria Faculty Supervisors:	Dr. Nancy Turner	(250) 721-6124
	Dr. Paul West	(250) 721-7353

Heiltsuk Advisory Committee: Heiltsuk Treaty Office, Heiltsuk Cultural Education Centre, Heiltsuk Fisheries Co-management Program

Purpose of Project This project will investigate the ways in which Heiltsuk may have influenced salmon abundance in their traditional territory through deliberate management practices and cultural values, from early times to the present. The information collected will be added to the resource collections of the Heiltsuk Tribal Council in the Heiltsuk Cultural Education Centre, and provide the field data for Jim Jones', University of Victoria Master of Arts (MA) thesis.

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, as thanks for participating, an acknowledgement of $20.00 per hour of tape recorded interview .

Contact If I have further concerns about my treatment or rights as a research subject I may contact the Heiltsuk Cultural Education Center at 957-2626, or Jim's supervisors at the numbers listed above. If I have any questions or want further information about the study, I may contact Jim Jones at the Cultural Center or Treaty Office (957-2354) in Bella Bella, or in Victoria at (250) 360-0006.

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. I have received a copy of this form for my records.

_____ _____

Consultant Signature Date

_____ _____

Witness Signature Date

VITA

Surname: Jones Given Names: James Thomas

Place of Birth: Edmonton, Alberta, Canada.

Educational Institutions Attended:

University of Victoria	1993 to 2002
Selkirk College	1990 to 1993

Degrees Awarded:

B.Sc. (Double Majors)	1996

Honours and Awards

Vancouver Port Authority Scholarship	2000
Dean's Scholarship	1998 to 1999
British Columbia Environmental Research Scholarship	1998
Freehorse Wellness Society Research Grant	1997
University of Victoria President's Grant	1997
University of Victoria Teaching Fellowship	1997

Publications:

Turner, Nancy J., Robin Smith, Jim Jones and Andrew Reed. 2000 "A fine Line Between Two Nations": Ownership Patterns for Plant Resources among Northwest Coast Indigenous Peoples - Implications for Plant Conservation and Management. In: "Keeping it Living": Indigenous Plant Management on the Northwest Coast, edited by Douglas Deur and Nancy J. Turner, University of Washington Press, Seattle.

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Title of Thesis:

"We looked after all the salmon streams": Traditional Heiltsuk Cultural Stewardship of Salmon and Salmon Streams

Author 

James Thomas Jones

April 30, 2002