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Ecological crisis social change and the life paths of young Alaskans: An analysis of the impacts of shifting patterns in human-environment interaction in the fisheries-dependent region of Bristol Bay Alaska

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ECOLOGICAL CRISIS, SOCIAL CHANGE AND THE LIFE PATHS OF YOUNG ALASKANS

AN ANALYSIS OF THE IMPACTS OF SHIFTING PATTERNS IN HUMAN-ENVIRONMENT INTERACTION IN THE FISHERIES-DEPENDENT REGION OF BRISTOL BAY, ALASKA

by

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B.A. University of Montana, Missoula, 2001

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Located in southwest Alaska, off the eastern shelf of the Bering Sea, Bristol Bay has the largest red salmon runs in the world. In the late 1990s, fisheries decline resulted in economic and social disaster for the entire region. Unfortunately, environmental change is only one component of many that threatens the livelihood of Bristol Bay communities. The current economic condition of the region is the result of a combination of destructive forces including the recent globalization of the salmon industry, shifting overseas economies, as well as climate change. At the most fundamental level, the research presented in this study examines how populations respond to ecological change.

By applying a theoretical framework that explains human behavior in relation to environmental factors, I look at social change that I believe is driven by ecological change. I argue that recognizing the relationship between people and their local environment is imperative to accurately understanding social structure. This project examines the impacts of environmental stress endured at the community and individual levels. Specifically, I analyze whether the migration patterns and education outcomes of local high school graduates have been impacted by the fisheries decline since 1997. Along with environmental change, I also analyze the importance of how gender and ethnic identity contribute to young peoples’ life choices after high school. Analyzing these variables allows me to take an in-depth look at Bristol Bay prior to and following the 1997-1998 fishing crisis. It therefore not only depicts patterns of change relevant to environmental-economic conditions, but also generates results concerning ethnic or gender-specific patterns. Additionally, I make predictions about the impacts of ecologically driven social change on the future of the fishing industry in Bristol Bay.
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Ecological Change and the Shaping of Human Behavior

Why, in some of the meanest waters imaginable, where men drowned each year for lack of engine power, were Bristol Bay fishermen required to fish only under sail until 1952—decades after the technology of small boat engines was taken for granted in any other developed fishery of the world? The influential "packers" had the 1922 law passed in the name of conservation when newly developed small marine engines threatened to free fishermen from cannery ownership of all the boats. (A man with a powerboat could have brought himself to Bristol Bay—gear, grub and all—to deliver where he chose.) Even men returning from duty in World War II, who might have rebelled, put up with the self-serving danger for another half dozen years. Maybe it was pride. The law certainly kept the amateurs at bay and weeded out incompetence.¹

Just as the fishermen in Bristol Bay began enjoying the newly acquired independence from cannery ownership of boats and the advantages of engine-powered fishing vessels, cultural ecology began building its roots in the field of anthropology. Shortly thereafter, cultural ecologist Julian Steward (1968) published his work, *The Concept and Method of Cultural Ecology*. Steward's work focused on the study of the relation between certain features of the environment and certain traits of the culture possessed by the sets of people living in that environment.² His interest in the effect of environment on culture pioneered a new way of explaining behavior in relation to environmental factors. The ecological framework is valuable when considering how greatly life and work in Bristol Bay changed for both the fishermen who braved the journey from San Francisco to the Alaskan waters each spring, as well as for the local

¹ McCloskey 1998:277
² Steward 1968
population of whites and Natives living in the region, after engine-powered fishing boats were introduced.

The aspects of culture that were of particular interest to Steward’s “method of cultural ecology” were technology, economic arrangements, social organization and demography. Steward articulated the foundation of ecological anthropology and three decades later his contribution to ecological anthropology is still evident. Ecological anthropology is defined as the study of the relations among the population dynamics, social organization, and culture of human populations and the environments in which they live.\(^3\)

Half a century has passed since the fishermen took down their sails and switched to motorized fishing, but once again Bristol Bay has found itself in the midst of an ecological phenomenon that ecologists and cultural ecologists alike can appreciate for its theoretical dimensions. The research presented in this study examines the relationship between social change and environmental stress. More specifically, the goal of this project is to investigate the relationship between the migration patterns and educational outcomes of Bristol Bay high school graduates and recent changes in the environmental-economic condition of the community. By methodically examining key variables such as time period, gender and ethnic identity one can better evaluate both the mechanisms of change and the inter-relatedness of such factors to deem which relationships impact

\[^{3}\] Orlove 1980:235
outcomes most significantly. Ultimately then, this analysis focuses on the influence of gender and ethnicity on adolescent behavior in relation to declining ecological conditions.

1.1 The Big Picture

To adequately understand Bristol Bay in its proper context requires a familiarity with the dynamics of the macro and micro-ecosystems in which it is located. My approach recognizes the relationships between adolescents and households and situates them in the local community. Incorporating the community as a unit of analysis demands acknowledging Bristol Bay’s relationship and role in the State of Alaska’s and world economic system. The environmental factors discussed in this project originate from various areas, and Bristol Bay is the crossroad where they all meet.

Britan and Denich (1976) define the concept of environment as ‘one that inter-relates all material forces impinging upon the life conditions of a population.’ Such an incorporation of external factors is necessary, because when the sources of change are far removed from their impact points, analytical models with locally drawn boundaries can not provide explanations for such change processes.4 Excluding

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4 Britan and Denich 1976:55

| Timeline |
|------------------|----------------------------------|
| 11,000-6,000 years ago - | Humans inhabit the Aleutians, southeastern, Interior and northwestern Arctic Alaska. |
| 6,000 years ago - | Most recent migration from Siberia across the Bering Land Bridge. Earliest migration believed to have taken place up to 20,000 or more years ago. |
| 5,000-3,000 years ago - | Humans inhabit the Bering Sea coast. |
| 1725 - | Vitus Bering sent by Peter the Great to explore the Northern Pacific. |
| 1741 - | On a later expedition, Bering and Alexei Chirikov, in separate ships, sight Alaska. Georg Stellar goes ashore on Kayak Island, becoming the first European known to have set foot on Alaska soil. |
| 1818 - | Russian fur trade prevalent in Bristol Bay. |
| 1829 - | Russian Orthodox missionaries visit Bristol Bay. |
‘outside’ factors from an examination of sources of change in
the environmental-economic condition of Bristol Bay would
produce a very myopic analysis. Because of the importance of
the physical environment and global fish market on life in
Bristol Bay, we can not answer questions about what life is like
there without also looking at Bristol Bay’s relationship with the
rest of the world.

At the most general level, Bristol Bay has found itself
delicately balanced between the interplay of such far removed
factors as shifting oversea economies, rapid technological
advancements, state political agendas, erratic climate changes
and significant declines in regional marine resources. A
downturn in Japan’s economy; a rising farmed fish industry out
of Norway, British Columbia and Chile;\(^5\) fewer ice sheets and
warmer waters frequenting the Bering Sea;\(^6\) these are just a few
of the many ‘outside’ factors that merge to make up Bristol
Bay’s economic-environmental climate. The magnitude of the
recent globalization of the salmon industry should be stressed
as a key component in Bristol Bay’s ecological condition.\(^7\)

Combined with recent changes in the physical environment,

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\(^5\) Gilbertson 2003

\(^6\) For Bering Sea climate change see: Farley and Quinn 1998, Stabeno 1999,
Overland & Stabeno 2004 and Brodeur et al. 1999

\(^7\) For more information on the globalization of the salmon industry and its impacts on Alaska see Gilbertson
2003.
Bristol Bay has been faced with the task of overcoming a duo of harmful adversaries.

1.2 People and the Environment

In anthropology, an ecological perspective considers humans as an integral component of their environment. In a seminal article discussing the origins of ecological crisis, Lynn White (1967) stresses that, "quite unintentionally, changes in human ways often affect non-human nature; people, then, have often been a dynamic element in their own environment." A case in point is the devastating impacts the billion dollar farmed fish industry has on coastal marine ecosystems in British Columbia. White's point of view describes a continuous relationship of fluctuation, action and reaction, which fits with my analytical framework. I believe that human action is often intricately influenced by, and an influential factor on environment. I define environment broadly here, including the ecological, historical, economic and social forces that affect humans.

Applying an ecological approach to the Bristol Bay case study implies two basic principles: 1) The incorporation of

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8 White 1967:1203
9 Canadian National Public Broadcaster (Feb. 4, 2003) and Ministry of Agriculture, Food and Fisheries: local authorities are now dealing with a seriously threatened ecosystem ranging from a damaged sea bed to the well-being of wild stocks of Pacific salmon
external forces of change in my analysis and 2) The necessity of analyzing human behavior in the contexts of people’s natural environment. Additionally, we can not look at the present day situation in Bristol Bay accurately without knowing its historical past, because of the myriad ways that history shapes human behavior. \(^{10}\) Guided by these principles, this project analyzes the ecological and socioeconomic systems of Bristol Bay, and the ways in which they are linked.

1.3 The Environment is the Economy

Any complete cultural ecology that aims to trace the connections between people and their natural environment has to include economic connections. \(^{11}\) Essentially, what we are looking at is one of the first major shifts in environmental possibilities in Bristol Bay and how this restructuring of possibilities relates to young people’s migration and education outcomes.

Alaska is the world’s largest purveyor of wild salmon. The fishing industry pumps three billion dollars a year into the State’s economy. \(^{12}\) The State of Alaska accounts for 95 percent of all Pacific salmon landings in the United States due in large part to Bristol Bay salmon harvests. \(^{13}\) Bristol Bay sockeye salmon account for over 33 percent of the total value of the State’s salmon fisheries. \(^{14}\) The annual budget for the Bristol Bay Borough is based largely on salmon forecasts projected by the Alaska

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\(^{10}\) Plattner 1989:380
\(^{11}\) Wilk 1996:19
\(^{12}\) Gates 1994
\(^{13}\) ADF&G Division of Commercial Fisheries.
\(^{14}\) ADF&G Division of Commercial Fisheries.
Department of Fish and Game. Tax revenues related to the fishing industry (harvesting, processing and related property) are the dominant source of revenue for the Borough.\textsuperscript{15}

Bristol Bay is the largest sockeye salmon run in the world. It is also the largest commercial sockeye salmon run in the world.\textsuperscript{16} History dates that there is evidence of fishing camps along the Naknek River in Bristol Bay from 3,000 to 4,000 BC.\textsuperscript{17} Archeological records suggest that the inhabitants of 19\textsuperscript{th} century native settlement of Paug-vik, located one mile west of present day Naknek, relied on salmon as a dietary staple in summer months.\textsuperscript{18} Commercial fishing began in Bristol Bay in 1883, only sixteen years after the United States purchased Alaska from Russia. The first cannery on the Naknek River was operating by 1890. Ten years later there were twelve canneries dotting the banks of the Naknek River.\textsuperscript{19}

\textsuperscript{15} Significant declines in harvest levels leave the Borough with revenue shortfalls. These losses are critical because borough governments in rural Alaska are often the largest employer and serve as the economic engine for the area. Declines in Borough revenues and operating capacity affect every component of the local economy (Northern Economics 1999 ES-4).
\textsuperscript{16} ADF&G
\textsuperscript{17} AK Dept of Commerce, Community and Economic Development
\textsuperscript{18} Dumond and VanStone 1995
\textsuperscript{19} McCloskey 1998
The twenty year average of the inshore total run of sockeye salmon in the Naknek-Kvichak District of Bristol Bay is 15.8 million fish.\textsuperscript{20} Although the 1996 sockeye salmon run was slightly below average with a total of 11 million fish, the 3.3 million salmon that returned to the Naknek-Kvichak District in Bristol Bay for the 1997 season resulted in the Governor of Alaska declaring Bristol Bay an economic disaster. The 1997 harvest in the Naknek-Kvichak District was only 5 percent of the twenty year average for the district.\textsuperscript{21} The fishing crisis of 1997 was further compounded when the 1998 season topped out at 6.3 million. Literally, it was as if the fish never really arrived. The Bay was filled with impatient fishermen waiting for a run that never came. Since 1997 commercial fishing in Bristol Bay is at the very least a risky venture. The 1999 season came in strong with an unexpected run of 17.7 million, but the excitement was short lived as the following three seasons failed to make up for the losses of the 1997 and 1998 fishing disasters.\textsuperscript{22} Figure 2 illustrates the major fluctuations in the total inshore sockeye salmon run from 1983 to

\begin{figure}
\centering
\includegraphics[width=\textwidth]{inshore_total_run_of_sockeye_salmon_naknek_kvichak_district}
\caption{Inshore Total Run of Sockeye Salmon
Naknek-Kvichak District}
\end{figure}

\textsuperscript{20} These numbers indicate the sockeye salmon run for only one district, the Naknek-Kvichak District, out of a total of five districts that comprise Bristol Bay. All districts have shown poor salmon returns since 1997.
2003. Because salmon run on a four year cycle, low runs are expected every few years. The repeated low runs since 1997 raise concern about the sustainability of Bristol Bay salmon. In the past seven years, the 1999 season was the only year that produced a run above, or even close to, the twenty year average.

Figure 3 represents the declining exvessel value of the Bristol Bay commercial sockeye salmon run. Simply put, it shows the value paid to commercial fishermen for salmon catches. The exvessel value is derived from price per pound times commercial catch.\textsuperscript{23} The twenty year average is an estimated $117,676.\textsuperscript{24} Between 1997 and 2003, 1999 is the only year to even come close to the average with $109,495.

Because the resilience of the salmon run remains uncertain and the price per pound continues to fall well below the average for the past decades, residents of Bristol Bay are opening up to the possibility of economic diversification through alternate forms of natural resource development. Such possibilities may best be considered as inevitable

\textsuperscript{23} ADF&G 2003 AMR Report
\textsuperscript{24} 20 year average for 1984-2003
changes for the entire region, and they raise fascinating questions for future research in
the area.

Just north of the Bristol Bay Borough, located on the northern side of Lake
Iliamna and near the village of New Halen, development of what sources say is to be the
largest gold mine in North America is already underway. Known as the Pebble Project, it
is estimated to have 26.5 million ounces of gold and 16.5 billion pounds of copper.\(^{25}\)
And in keeping in the spirit of growth, in the summer of 2002, Alaska’s Governor, Frank
Murkowski, signed an agreement with Native Corporations in Bristol Bay to build a 285
million dollar road spanning the Aleutian Peninsula. The 182 mile road from Chignik
Bay, on the Pacific side, will connect to the pre-existing fifteen miles of Alaskan
Peninsula Highway which presently connect the towns of King Salmon and Naknek. The
road is the first major headway towards development of Alaska’s newest onshore oil
field.\(^{26}\)

One can only hypothesize how central fishing will still be after these projects are
in full force. With the onset of an era brimming with rapid progress and intensive
development, we may well be witnessing the twilight of fishing in Bristol Bay. In a
community shaped by the commercial fishing industry, where exactly will fishing fit in
come future decades of oil exploration and mining? More importantly, where exactly
will the fishermen fit in?

The history described above compels one to recognize fishing as the literal
lifeblood of the region. Nearly half (45% or 40 out of 89) of the households interviewed
in this study are directly reliant on commercial fishing as both a way of life and economic

\(^{25}\) Northern Dynasty Minerals Ltd 2004
\(^{26}\) Lockyer 2003
viability. Another 20 percent may have fished prior to the 1997-1998 fishing crisis.

Other families are indirectly reliant on the fishery. Clearly, the economic component of the environment is vital to understanding aspects of social structure and as a source of social stress.

In addition to historical forces, we must consider the connection between the people of Bristol Bay and their local ecology. McEvoy (1986) states that:

Fishing requires special skills as well as a tolerance for hard and dangerous work at low pay. It also has the power to hold the loyalty of its workers and their children, who will to the consternation of modern economists stay in the business long after it ceases to produce incomes comparable to those in other trades.27

Social scientists need to be willing to engage this human-environment relationship on a non-empirical level, one that includes deciphering how people actually work the environment into their biography, or perhaps more appropriately, how one’s environment shapes their life story and social identity. After more than five continuous devastating fishing years several fishing households in Bristol Bay are not only continuing to fish, but teaching their children to fish as well. To understand why, researchers need to understand the cultural significance of fishing to Bristol Bay fishermen. This entails answering a question of how conceptions of the land influence conceptions of the people themselves.28 Mihaly Csikszentmihalyi and Edward Rochberg-Halton (1981) have suggested that:

To understand what people are and what they might become, one must understand what goes on between people and things. What things are cherished, and why, should become part of our knowledge of human beings. Yet it is surprising how little we know about what things mean to people. By and large social scientists have neglected a full investigation of the relationship between people and objects.29

27 McEvoy 1986
28 Basso 2000:7
29 Csikszentmihalyi and Rochberg-Halton 1981:1
What role does the activity of fishing play in the lives of Bristol Bay residents?

Keith Basso (2000) writes:

Societies must survive, but social life is more than just surviving. And cultural meanings are epiphenomenal only for those who choose to make them so. [We need a] broader and more flexible approach to the study of man-land relationships in which the symbolic properties of environmental phenomena receive the same kind of attention that has traditionally been given to their material counterparts.  

Although mineral mining and oil exploration might sustain the communities in Bristol Bay on an economic level, what determines the sustainability of social identity? I would argue that fishing is central to the social identity of local fishermen and their families.

Fishing is an activity only possible a few weeks out of each year, yet it is an integral part of the lives of those who consider it less of a job and more of a way of life. Through out the course of my fieldwork I observed a clear sense of identity among Bristol Bay fishermen. Equally apparent was the strong value that members of fishing households place on their livelihood.

Parents who taught their children to fish are now teaching their grandchildren. Brothers join together each spring to take over the operation of their retired fathers’ fishing boat. Entire families live by the tide. It is not unusual to find toddlers helping their mothers check the net or sleeping in the beach truck as older siblings pick fish. One local native man, who had been fishing in Bristol Bay since 1958, described fishing as a “family operation.” Indeed, his sons had been fishing with him since they were infants. His eldest, now married with children of his own, continues to do so. What will result from a widespread loss of social roles in Bristol Bay communities? This thesis aims in part to anticipate some of the consequences of contemporary social change in Bristol Bay.

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30 Basso 2000:67
1.4 Processual Approaches in Ecological Anthropology

An assessment of Bristol Bay at present needs economic, social and environmental facets, all of which can be seen to systematically intersect when viewing them with an ecological mindset. When ecological anthropology transitioned into what has become known as its “third stage,” its scope expanded to include mechanisms of change, an ideal tool to utilize when looking at ecological change in Bristol Bay. Within ecological anthropology, this type of approach was known as “processual.” A processual approach is particularly valuable to maritime and environmental anthropologists because it entails analyses that examine mechanisms of change in contrast to the older view which took a static view of culture and ecology. The most prominent feature of the approach is the emphasis on analyzing the responses of populations to environmental stress. One of the advantages of engaging in a processual approach for the present study is that it allows me to examine shifts and changes in individual and group behavior. I believe that analyzing how young people adjust to and cope with environmental change and uncertainty in Bristol Bay will shed light on human adaptive responses to a changing environment. Bristol Bay is a classic example of how a population responds to environmental stress and the chapters that follow illustrate why.

1.5 The Bristol Bay Case Study

At the most fundamental level, this is an analysis of environmental change. Specifically, I look at social change that I believe is driven by ecological change. I argue that recognizing the relationship between people and their local environment is imperative to accurately understanding social structure. This relationship is the

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31 For a complete history of Ecological Anthropology see Orlove 1980
foundation from which other aspects of culture develop, including beliefs and values, worldviews or ideology, acts of production, economic strategies, household organization, division of labor and, though not as frequently in 'Western' societies, religion. Because of this interplay, it is essential that we attempt to view this relationship through the eyes of the locals, rather than on outsiders' terms.

1.5.1 Summary

In this project I analyze whether migration patterns and education outcomes of local high school graduates have been impacted by the fisheries decline since 1997. While I pay particular attention to the impacts of environmental stress endured at the community and individual levels, I also analyze the importance of how gender and ethnic identity contribute to young peoples' life choices after high school. Analyzing these variables allows me to take an in-depth look at Bristol Bay prior to and following the 1997-1998 fishing crisis. It therefore not only depicts patterns of change relevant to environmental-economic conditions, but also generates results concerning ethnic or gender-specific patterns. Additionally, I can make predictions about the impacts of ecologically driven social change on the future of the fishing industry in Bristol Bay.

The theoretical orientation of this study emphasizes a multi-dimensional framework. The agility of an ecological mindset allows one to explore various interrelationships with in multiple contexts. As Maschner (2003) suggests, "We have found that to understand humans and their worlds successfully, one must be able to traverse seamlessly every possible scale of humanity, space, time and theory." An ecological structure recognizes and aides in the task of finding correlations between aspects of social structure and environment.

32 Maschner 2003:5
Young people in Bristol Bay come from an array of backgrounds and there is no collective response to how one reacts to ecological uncertainty. This theoretical framework looks intently upon the social structure of Bristol Bay and the intracultural diversity among its youth, and then relates how environmental factors shape such constructs. Equal consideration of the dynamics between the political, economic, social, ideological and environmental spheres is perhaps the greatest contribution of this study to the literature on fishing communities in flux.

The literature on fishing communities in northern regions experiencing rapid changing ecological conditions is extensive; however, fieldwork in this particular community is lacking. This case study then contributes to the existing literature on fisheries-dependent regions and creates an ideal situation for future comparative studies. This will be addressed in more detail in the next chapter. Chapter two focuses on the severity of fisheries crisis in several northern fishing communities. Additionally, it addresses how gender and ethnicity influence young people's life decisions in rural, fisheries-dependent regions like Bristol Bay. The purpose and quality of rural education in multi-cultural societies is also discussed as an important factor that influences young peoples' life choices.
Empty Oceans

"Tiny Iceland had almost come to war with British fishermen and warships in 1976 over the protection of fish stocks. A year later, the Argentine navy injured Soviet and Bulgarian fishermen when they fired on them during the arrest of nine trawlers inside their 200-mile zone. In the same year, a Burmese gunboat sank a Thai fishing boat and captured another..."  

Wars have been waged for the fish in the sea. These battles are not mere relics from the past, but today’s evidence of crisis and calamity. As the world comes to terms with the limits of the ocean, lines are literally being drawn across her waters and the stakes are high. Shots are fired, nets cut, boats rammed, catches seized and captains fined, all the while tension mounts as coastal nations gauge the economic implications of owning near empty oceans. The “Cod Wars” of the 20th century offer a noteworthy example.  

With the taste of independence still fresh in her mouth, the young nation of Iceland boldly extended her offshore territory from four miles to twelve miles in 1958. The extension, which prohibited foreign trawlers within the newly set limits, was Iceland’s solution to seriously depleted fish stocks. Iceland had good reason to worry. Fish was the nations’ only resource and ticket to economic security. Britain, however, was quite accustomed to fishing in Icelandic waters at the time and refused to give up prime fishing grounds. Although there was not a single casualty, the “Cod Wars” were the real deal and both nations were prepared to go the distance.

33 Harris 1998:16  
34 For a complete history of the Cod Wars see Kurlasky 1997
The final fracas lasted five months in 1975. It was Britain’s reaction to Iceland’s 200-mile extension. After thirty-five ramming incidents and the cutting of forty-six British nets, Britain finally joined the rest of the foreign fishing fleets and acknowledged Iceland’s extended sovereignty. The “Cod Wars” were over. By the mid-1970s most of Britain’s cries of injustice were falling on deaf ears anyways. Every coastal nation in the world was on the verge of establishing a 200-mile limit.

America’s first official interest in the idea of owning the sea came on September 28, 1945, when United States President, Harry Truman, addressed the topic of fisheries jurisdiction beyond the territorial sea, which was then three miles. The Truman Proclamation stressed the need for conservation and protection of fisheries resources by implementing conservation zones in areas off the coast of the United States. It was a direct response to the incursion of Japanese fishermen into the Bristol Bay red salmon fishery. Consequently, such conservation measures would also protect U.S. offshore oil production by giving the U.S. mineral rights to the continental shelf.

Despite intentions, the Truman Proclamation was never implemented into law. It was not until 1976-77 that the United States, along with the rest of the world’s coastal nations, declared its own 200-mile Exclusive Economic Zone (EEZ). The Fishery Conservation and Management Act of 1976 came just in time. In 1973, the Bristol Bay salmon run had fallen so low, with a run of 2.4 million fish, that President Richard Nixon declared Bristol Bay an economic disaster. Foreign fishing fleets were taking all they could from Alaskan waters before it was too late. The protective measures proved to be effective. By 1978, the run had risen to 19.6 million.

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35 Kurlasky 1997
These days conservation and sustainability are at the forefront of most discussions regarding the world's fisheries. However, even with the 200-mile EEZ in effect, controversy still finds its way out to sea. In *Lament for the Sea*, Harris (1998) opens with an exemplar tale, "It was the other shot that was heard around the world. The 50-calibre machine-gun bursts from the *Cape Roger*, three in all, marked the first time since Confederation that Canada had fired on another country in defense of the national interest."37

In March of 1995, Canadian officials were in pursuit of the *Estai*, a Spanish trawler fishing just beyond Canada's 200-mile limit. Suspected of illegal fishing, the *Estai* went as far as cutting away its own nets, worth $80,000, in hopes of evading Canadian officials. Such expensive tactics failed and when Canadian officials boarded the trawler suspicions were confirmed. The *Estai* was holding nets too large and fish, turbot to be exact, too small. But that was not the concern of Spain's leaders. Canada had just opened fire on an unarmed fishing boat in international waters, which Spain considered an "act of war." The ordeal soon became known as the "Turbot Wars." Even some of Canada's own leaders were concerned that the actions taken were too risky. Regardless, the moral of the story is a familiar one. Nations are prepared to go to great lengths to protect their marine assets.

One might argue these examples fall much higher on the scale of 'impacts of fisheries decline' than the Bristol Bay case study. The "Cod Wars" and "Turbot Wars" are fitting titles for stories riddled with aggressive tactics so impressive that international affairs are left standing on shaky ground. Yet no matter the grandness of the story and regardless of its popularity, all accounts of declining fisheries are linked by the

37 Harris 1998:1
indisputable recognition that changes in the ocean are always felt ashore. This relationship has shaped the profile of many fishing communities throughout history.

Iceland and Canada were attempting to prevent the economic damage and social chaos that often accompany declining fisheries. Declining ecological conditions in fisheries-dependent communities triggers significant, and often times destructive, social change. Disappearing fish potentially endangers entire cultures. The ecology of a declining fishery may stem from a combination of various origins, but the outcomes are always similar. That is, we are usually dealing with a situation of too few fish, too many fishermen and never enough money. This chapter pays particular attention to social and demographic change occurring in fishing communities undergoing rapid ecological change. In addition, attention is directed towards the role of schooling in rural Alaska with specific interest on the quality and purpose of education in rural, multicultural communities. Lastly, this chapter addresses the economic and cultural changes that have occurred in Alaska over the past thirty years and how such changes have impacted life in the North.

2.1 Crisis in the World’s Fisheries: Occurrences in the North

It is worth mentioning that the social impacts of fisheries crises have not yet been thoroughly addressed or solved. While such matters continue to be assessed by social scientists, the primary emphasis of this section begins with the magnitude of fisheries decline. Fisheries decline has become a global crisis of pandemic proportions. In 1995 the Food and Agriculture Organization of the United Nations (FAO) stated that, at the
beginning of the 1990s, 69 percent of the world’s conventional species were fully exploited, overexploited, depleted, or rebuilding from a depleted state.\textsuperscript{38}

There is over-fishing in the North Sea, southern oceans near New Zealand and Australia are empty of blue fin tuna and the salmon of British Colombia’s rivers are sparse. The list goes on. The Gulf of Mexico, Latin America, East Asia, and the entire Atlantic Ocean for that matter, are all pawns in the game of vanishing marine resources. It appears that we are taking from a well running dry. It seems now that humanity is paying the price for its inability to spare a few fish when competitive markets, misguided politicians and advancing technology told us we needn’t bother. Discussing crises in the worlds’ fisheries is an endless feat. Because of this, the scope of this review is limited to fisheries-dependent regions in the north. The purpose behind this fairly specific regional review is to identify patterns evident in the Bristol Bay case study to already documented outcomes in areas of comparable character. The communities mentioned below share similar environmental and economic traits with the Bristol Bay region. They are relatively isolated communities existing in harsh environments, and dependent on a single resource.

The North Atlantic is one of the most fisheries dependent regions in the world. Likewise, I would argue that no other region in the world knows the social impacts of fisheries crises better.\textsuperscript{39} With a history older than the New World and determined as much by fish as by humans, the North Atlantic region lends itself as a prime candidate for both comparing and predicting the social impacts of ecological change in Bristol Bay.

\textsuperscript{38} Food and Agriculture Organization of the United Nations 1995
Man has been fishing the waters of the North Atlantic for thousands of years. The Vikings of the 10th century, the Basque of the Middle Ages, Newfoundlanders, Greenlanders, Nova Scotians – the people of the North Atlantic are all bound by one water-breathing factor: fish. Codfish, haddock, herring, redfish, halibut, capelin and hake; you name it North Atlantic fishermen have not only caught it, they've probably found a market for it as well. Participation in the fishing industry proved to be a fruitful endeavor for centuries. The North Atlantic fisheries created profitable communities upon barren, isolated shores. They brought hope to entire nations and purpose to the men from them. The North Atlantic was truly a water overflowing with fish, jobs and money.

In the last century, and especially the latter half, North Atlantic communities have endured the crippling effects of fisheries depletion. Years of advancing technology, overfishing and overall mismanagement have resulted in ecological and economic crises from shore to shore. Recent climatic changes have further confounded fisheries declines in the North Atlantic.\textsuperscript{40} By the early 1990s, crises had spread from Norway to New England. The effects of changing marine ecosystems had become evident and many North Atlantic communities are still dealing with the social repercussions.

Fisheries collapse has become a common occurrence. Such events make for particularly trying times when national leaders are pressured to choose between rescuing the fish, the fishermen or national interests. Although measures have been taken to protect and sustain fisheries, such remedial action is often too little, too late.\textsuperscript{41} In the meantime, the North Atlantic serves as the world's most noticeable example: the world's fisheries are in crisis and it's taking people with them.

\textsuperscript{40} For impacts of climatic change see Kochmer and Johnson 1995, Hamilton, Haedrich and Duncan 2004, Hamilton, Brown and Rasmussen 2003, Hamilton, Lyster and Otterstad 2000 and Hamilton et al. 2004

\textsuperscript{41} A noteworthy example being Newfoundland's 1991-92 cod collapse.
2.2 Packing Up and Getting Out – Qualitative Departures

What becomes of the fishing town without the fish, or more importantly without the fish market? I recall one fisherman’s advice, who was not a local, after the particularly bad 1998 salmon season in Bristol Bay. He matter of factly advised “the last person to leave Naknek to shut the lights out.” As more and more fishing communities struggle with ecological change, it has become increasingly apparent that fisheries decline often results in population loss. Demographic change in fisheries-dependent regions experiencing rapid ecological change is one of the more well studied social impacts of fisheries decline. Linking social change to changing marine ecological factors addresses valuable questions. These concerns give researchers insight into how communities cope with environmental change while establishing population trends. The following focuses on the occurrence and impact of population decline in regions experiencing fisheries depletion.

2.2.1 Population Decline and Shifting Demographics

To begin, this section highlights the widespread occurrence of population decline following fisheries decline. Additionally, it introduces the issue of who is most likely to migrate from fisheries-dependent regions in crisis. Emphasis is also placed on how demographic shifts alter the lives of those residents remaining in the community. The latter half examines why some groups of people are more inclined to leave than others.

With fish products comprising more than 90% of their total exports, the Faroe Islands are among the most fisheries-dependent Atlantic Arc societies. [Cod landings] declined from about 200,000 to less than 70,000 metric tons between 1987 and 1993. Net out-migration caused the Faroes’ population to fall by 9% from 1989 to 1995.

Greenland counts on fishing for roughly half of its total foreign exchange. [Paamiut is a west Greenland municipality that had been built up as a fishing center during the years when cod appeared abundant.] While cod fishing was expanding, Paamiut’s human population grew too. As cod declines became evident
in the mid-1980s Paamiut’s human population began declining as well – by approximately 15% from 1984 to 1996.\footnote{Hamilton and Haedrich 1999:385}

[During the first half of the 20th century, Siglufjörður, a north Iceland village, became known as the “Herring Capital of the World.” But the 1968 herring collapse was a national shock with impacts not confined to herring towns. Unemployment increased around Iceland; net out-migration jumped in 1969-70 to its highest levels since 1887. Iceland’s fisheries dependent rural communities have tended to lose population in the 1990s as well.]\footnote{Hamilton et al. 2004:332}

Although significant in numbers, the above examples fail to show how a declining population indirectly impacts the quality of life for those left behind. Population decline is more than simply the downsizing of a community. It is a disruption of the existing balance that promotes stability and allows a place to function properly. Due to high levels of out-migration among young people, “one result of population decline is that many fisheries-dependent communities have changed, over a short period of time, from ‘young’ places to ‘old’ ones.”\footnote{Hamilton and Duncan 2000:100} This rapid aging trend has been documented in Norway, Newfoundland and the Faroe Islands.\footnote{Faroe Islands (Hamilton, Colocousis and Johansen 2004; Newfoundland (Hamilton and Butler 2001, and Hamilton, Haedrich and Duncan 2004); Norway (Hamilton and Otterstad 1998a)}

For example, in the Faroe Islands, the 20 to 39-year-old population actually dropped 18 percent, while the over 65 population grew by 7 percent - making the islands population on average noticeably older by 1995 than it had been six years earlier.\footnote{Hamilton and Haedrich 1999:385} Further troublesome is the fact that often times the departure of young people includes the more educated and skilled of the group.

Declining populations in Norway and Newfoundland in the early 1990s offer further evidence of the link between ecological and demographic change. Newfoundland is not only Canada’s most fisheries-dependent province, it is also the poorest. At the time
of the 1991-92 cod moratorium, the cod fishery was one of the largest employers in the Atlantic region. After the cod collapse, populations declined all over Newfoundland, including the capital region near St. Johns. Hamilton and Butler (2001) report significant declines in Newfoundland’s most fisheries-dependent regions. From 1986 to 1998, the Northern Peninsula and South Coast regions both lost 18 percent of their populations. Additionally, the Burin Peninsula fell by 14 percent and Notre Dame Bay by 13 percent.\(^4\)\(^7\) This widespread population loss makes Newfoundland the only Canadian province with negative growth. Again, young people, especially females, were the most likely to leave.

Norway’s own cod moratorium in 1990 affected 800 fishing communities, 25,000 fishermen and 10,000 plant workers.\(^4\)\(^8\) Fisheries decline in Norway caused both population loss and a reversal of the median age pattern in fishing communities. Hamilton and Otterstad (1998a) report that these communities were younger than the rest of Norway in 1980, but older by 1990.\(^4\)\(^9\) Norway’s fisheries-dependent regions had been declining some time prior to this though. Hamilton and Haedrich (1999) observed an 11 percent decline in the population of Norway’s most fishing-dependent municipalities from 1970 to 1990. This population decline amounted to over 18 percent over 1960-1991, while other municipalities grew by 21 percent.\(^5\)\(^0\) Norway’s cod collapse was described by some as “the worst epidemic since the Black Death.”\(^5\)\(^1\)

Trends in demographic shifts have emerged to indicate that of those most likely to migrate from rural, natural resource dependent communities, young people, females, and

\(^4\)\(^7\) Hamilton and Butler 2001:5
\(^4\)\(^8\) Jentoft 1993
\(^4\)\(^9\) Hamilton and Otterstad 1998a:19
\(^5\)\(^0\) Hamilton and Haedrich 1999:385
\(^5\)\(^1\) Harris 1998:185
the more energetic, educated and skilled individuals are consistently at the top of the list. Social problems have become evident in communities with apparent shortages of talent, young people and females. As those left behind react to the immediate problem of a changing environment, they are also faced with problems arising from the selective force of out-migration. Quoting a local man from rural Alaska, Kizzia (1991) captures this problem well.

He told me one of the biggest problems in the villages was that the best Native girls wanted nothing to do with traditional bush life. Too much work for the women. They found some way to move to the cities, leaving the guys behind.53

This type of demographic shift asks one question in particular. What’s taking the women away? Clearly, fisheries decline is a major force behind population decline. However, it is critical to identify that it is not the only causal factor promoting out-migration for some, while deterring others. High rates of female out-migration can not be solely explained as a reaction to changing environmental factors, nor can it be understood as simply a social consequence of unappealing village life. Out-migration is the result of a complex blend of influential factors, including individual aspirations and changing human-environment interactions. Hamilton and Haedrich (1999) list influential forces contributing to this flow of out-migration in North Atlantic communities: better opportunities in cities, higher education levels and more portable skills, new aspirations and gender roles, and the shift from labor-intensive to capital-intensive production.54

How these types of opportunities are perceived by young people and impact their future decisions is the basis of the following section.

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53 Kizzia 1991:61
54 Hamilton and Haedrich 1999:387
Prior to this, it is critical to note that out-migration does not fully explain population decline. Changing birth rates also alters the demographic profile of fisheries-dependent regions, and rural areas in general. For example, reductions in historically high birth rates combined with fisheries decline have been documented as a source of population decline in regions of Newfoundland.\textsuperscript{55} Shifting birth rates potentially changes the face of rural Alaska communities as well. Kochmer and Johnson (1995) shed light on disparities in fertility rates among women in Alaska. Native Alaskan women have significantly higher fertility rates than White Alaskan women. When comparing children born per 1000 ever married women, fertility rates of the two groups are respectively 3.14 and 1.90. Of Alaska Native women in general, rural Natives (3.43) have higher fertility rates than urban Alaska Native women (2.81).\textsuperscript{56}

Lower fertility rates among urban living women reflect a broader spectrum of roles available in cities including attractive employment opportunities and college education. If we accept that fertility rates decrease as a function of maternal education, as Kochmer and Johnson have suggested, then we should expect to see a drop in fertility rates among the Native Alaskan women population as more flee the confines of village life to inhabit urban areas, attend college and enter into full-time employment.

Although changing birth rates do not compose a major part in the Bristol Bay case study, they do pose as an influential factor for explaining migration patterns. Examining whether fisheries decline impacts non-marital fertility rates in Bristol Bay is useful, mostly because it sheds light on changes in levels of female out-migration. If there is an observable spike in non-marital fertility rates for this group of young women, we might

\textsuperscript{55} Hamilton, Haedrich and Duncan 2004  
\textsuperscript{56} Kochmer and Johnson 1995:36
expect to see a subsequent decline in out-migration as well. Young, single mothers might be deterred from leaving the community with a child in tow. Raising a child closer to home might seem more appealing, especially with the advantage of having one’s community and family support network nearby.

2.2.2 The Push-Pull Factors of Female Out-migration

Gender imbalance is a major component of population decline and reasons for it are worth exploring. Community size is an influential factor of female out-migration. Researchers have correlated sex ratio and community size in regions of Maine, Newfoundland, Norway, Iceland, Greenland and Alaska. In Alaska, studies have indicated a widening gap between bush villages and cities in terms of female population. As more females are drawn to cities in pursuit of opportunities unavailable in their home regions, villages are repeatedly found to be with significant female shortages. However, attempting to explain female out-migration by community size alone neglects other critical push and pull factors. In an article comparing gender balance in bush Alaska and Greenland, Hamilton et al. (1996) provide insight into some of the factors which help to explain gender differences in migration.

Young people in Alaskan villages mention that their communities offer good opportunities for hunting and fishing, which appeal strongly to males, but relatively few opportunities for jobs and careers of interest to females. Village girls who desire a career perceive that they will have to move away after high school. At the same time, college education appeals most strongly to females—“Education is a girl type of thing,” said several high school boys—and prepares women for jobs that do not exist in many villages. Marriage to non-Natives, much commoner for women than for men, plays a substantial role in out-migration. Finally, some negative aspects of village life—lack of amenities, limited role choices, and problems with alcohol and abuse—may be felt most keenly by females.

57 Hamilton and Otterstad 1998b
58 Hamilton et al. 1996:90
Female out-migration, also called “female flight,” has been documented for Alaska, the Canadian Arctic, Greenland, Newfoundland, Norway and Iceland. Its prevalence in these regions generally stems from the limited roles for females in rural communities versus the more diverse opportunities available in towns and cities. Among Alaska Natives in particular, causes also include how Native males and females perceive the attractiveness of village and city life and how easily one can adapt into a wage economy. High rates of female out-migration in rural Alaska have triggered researchers to look more closely at this trend. The general consensus in the literature on this subject is that Alaska Native women are much more likely than Alaska Native men to head to the city in pursuit of college and careers.

Studies dealing with high school students in the early 1990s in Alaska’s Northwest Arctic and Bristol Bay regions acknowledge that this disparity is still growing. (Students attending high school in the Bristol Bay Borough were not included in the above surveys.) Gender differences in migration expectations and university aspirations were clear: more girls than boys said they would likely move away and girls were significantly more ambitious than boys regarding higher education. In short, the emerging theme is that high school girls, more often than boys, intend to, and eventually do, attend college and live most of the rest of their lives outside their home region. Bristol Bay graduates (again, none that attended high school in the Bristol Bay Borough) serve as a good example.

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59 Alaska (Hamilton and Seyfrit 1994, Hamilton; Seyfrit and Bellinger 1997); Canadian Arctic (Kochmer and Johnson 1995, Condon 1987); Greenland (Hamilton et al. 1996; Rasmussen and Hamilton 2001, Langaard 1986); Newfoundland (Seyfrit 1993, Seyfrit and Hamilton 1994), Norway (Jentoft 1993, Hamilton and Otterstad 1998b) and Iceland (Hamilton and Otterstad 1998b)
60 See Kleinfeld 1981
61 Hamilton and Seyfrit 1993, 1994a and 1994b;
62 Hamilton and Seyfrit 1994a:16
63 Kleinfeld 1992
Bristol Bay graduate women were somewhat more likely to have attended a university after graduating from high school. They were also significantly more likely to have a full-time job, and more than twice as likely to be living outside the Bristol Bay region at the time of the survey. Despite (or perhaps because of) these tangible steps towards acculturation, the women also assigned greater importance to retaining their Native language and culture.⁶⁴

These findings allowed me to develop some clear expectations in the Bristol Bay case study. It seems likely one would expect to find both Native and non-Native females, but more so the latter, attending university and living outside the region at higher rates than their male counterparts. Whether or not the 1997-1998 fishing crisis accelerated or altered these patterns remains to be seen. To some extent the aforementioned studies also highlight cultural factors and local values that influence migration patterns of young people. Cultural factors, especially those guiding gender roles, influence how attractive youth find life in rural communities.

In acknowledging the importance of subsistence hunting and fishing to males, Hamilton and Seyfrit (1994a) note that these activities remain individually enjoyable and important as sources of food, sharing and cultural identity.⁶⁵ When working among the Inupiat of north Alaska, Kleinfeld (1981) recognized that these lifestyle choices carry enough weight to dissuade males from seeking full-time employment or leaving their home region.⁶⁶ On the other hand, the lifestyle sought after by many females, which includes the advantages of urban living, college and full-time employment, not only enables them to leave the village, it requires it.

One final point should be addressed concerning Hamilton and Seyfrit’s findings. Sixty-three percent of the students surveyed in 1994 said they expected to leave their present region. However, students’ migration intentions compared to actual migration

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⁶⁴ Hamilton and Seyfrit 1993:191  
⁶⁵ Hamilton and Seyfrit 1994a:17  
⁶⁶ Kleinfeld 1981
varies considerably. The authors note that the percentages of students who think they
will leave appear much higher than percentages of graduates who actually left.⁶⁷
Although reasons for such variation are widespread, some important factors that deserve
attention are: strong community and family ties, as well as a sense of familiarity, security
and value in one’s home region.

2.2.3 Reasons for Return Migration

A good example of the force of non-economic factors is found in Richling’s
(1985) study which focuses on motivations for return migration in two outports of
Newfoundland. Richling observed the above factors as leading causes for return
migration. Although the author never draws any real disparities between male and
female patterns on return migration, his work is valuable because it provides at least one
explanation for the occurrence of return migration among Bristol Bay high school
graduates.

Sixty-seven percent of the respondents in Richlings’ study cited patriotic-social
pull factors and nearly half cited familial personal pull factors in returning home.⁶⁸ In
short, this study recognizes the relative unimportance of economic factors on return
migration. Instead, return migration appears to be linked to family and community ties,
sense of identity, and a sense of satisfaction in life. These findings are somewhat
comparable to studies that examine the force of rapid growth resource development on
young people’s migration intentions. In each case below, economic factors associated
with new employment opportunities did not impact students’ decision to stay or leave. It
appears that a good job at home is not enough to dim the lights of the big city.

⁶⁷ Hamilton and Seyfrit 1994b
⁶⁸ Richling 1985
In a study of rural Utah youth, Seyfrit (1986) found no significant differences in migration intentions between students in rapid growth counties and students in counties without rapid growth development; approximately 70 percent of all seniors intended to live most of the rest of their lives outside their home counties. Likewise, regardless of new economic opportunities in the oil industry in the early 1990s, Scotland’s Shetland and Orkney Islands were still drained by out-migration of bright, ambitious youth. Similar findings were found in Newfoundland. Oil development in Newfoundland does not appear to keep youth at home. These examples draw attention to major non-economic push and pull factors that broaden our understanding of young people’s migration intentions.

For the sake of completeness, it is worth exploring alternate reasons for both return migration, and the conflicting pattern of intentions and actual outcomes. One counter viewpoint requires looking past the importance of both economic and non-economic factors and instead focusing on how well students from rural areas are actually prepared for life outside the community. The widespread overshooting of migration intentions observed by Hamilton and Seyfrit is also present in rural students’ educational goals. Often times, aspirations for higher education far exceed actual success rates.

2.2.4 Preparation for Life Outside

Mary Simon, former president of the Inuit Circumpolar Conference, stressed that “students should be taught the attitudes, skills and knowledge necessary to achieve success in both wage and subsistence economies.” Although Bristol Bay is by no
means a purely subsistence economy, Simons’ statement does raise questions regarding what rural education should be preparing students for: life inside the community or life outside the community. Moreover, is it plausible to achieve both goals simultaneously and sufficiently in a multi-cultural, rural community, such as Bristol Bay, Alaska?

Reasons for such large inconsistencies between intentions and actual outcomes may be partially explained by turning to the quality of rural education. Hamilton and Seyfrit (1994b) expose how Alaska youth rate their own education, “the tone of respondents’ comments indicated that many viewed rural high school as too easy, leaving them inadequately prepared to complete college or compete for desirable jobs.”73 1992 survey results show similar findings.

Only 38% of the students think their high school education is preparing them for college, 30% feel they are receiving adequate career counseling, and 30% feel they are receiving adequate financial aid information. Almost two-thirds (63%) would change the courses they are taking in high school if they could. Retrospectively, 75% of the graduates said that there were classes they wish they had taken in high school but didn’t. [Classes included math and science, specifically mentioning algebra, geometry, trigonometry and chemistry.]74

The above concerns bring the important issue of rural education to the table.

2.3 Education and Acculturation

A study of rural Alaska, regardless of its breadth, requires that emphasis be placed on certain community characteristics; one being education. There is a growing body of literature that suggests America’s rural youth has lower levels of academic and vocational aspirations than urban and suburban youths. In a comparative study, triggered by findings in rural Maine, Cobb et al. (1989) analyze this phenomenon in a nationwide study. The outcomes of their research, which included 10,000 high school seniors across

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73 Hamilton and Seyfrit 1994b:191
74 Seyfrit and Hamilton 1992a:59
the nation, serve as a general guideline for understanding graduates in the Bristol Bay case study, regardless of fisheries decline. These are their results.

- Rural youth value their jobs more and their academic less than urban and suburban youth.
- Rural youth place lower value on making lots of money than do urban youth, but value friendships more.
- Rural youngsters do not aspire to post-secondary educational opportunities as frequently as either urban or suburban residents do.
- Rural students are not as confident as urban and suburban students in their abilities to complete a college education.
- Rural parents are perceived as much less often supportive of full-time college than their urban counterparts and more supportive of full-time jobs, trade schools, and the military. Similarly, students from rural settings report more often than their urban counterparts that their guidance counselors and teachers do not think they ought to go to college.75

Compared to urban and suburban youths, rural student’s nationwide mentioned higher levels of intended out-migration: “When asked if they were willing to move for a job they wanted, more rural than urban youth not only were willing to move, they preferred to move.76 Of the five results mentioned, the last one deserves particular attention. Such a correlation relates how critical parents’ expectations are in the future endeavors of students.

The value and support parents, teachers and other adults place on education appears to be a major factor guiding students’ future plans. What adult role models expect from students seems to indirectly impact the expectations students have for

75 Cobb, McIntire and Pratt 1989:12-13
76 Cobb, McIntire and Pratt 1989
themselves. This connection was further discussed in a study that explored the relationship between ethnic identity and students’ aspirations in Alaska.

2.3.1 The Inclusion of Cultural Tool-Kit Variables

Seyfrit et al. (1998) borrow Swindler’s (1986) idea of a “cultural tool-kit” when studying differences in ethnic identity and aspirations among rural Alaska youth. Swindler’s idea combines aspects of socialization with the notion that one must have “an image of the kind of world” in which one might aspire to participate - be it higher education or urban living or a certain kind of job. Swindler also argues that individuals have a kind of tool box of cultural knowledge and experience - habits, skills, even stories and worldviews- that is acquired through everyday living in families, schools, social networks, and neighborhoods. Seyfrit et al. (1998) found that ethnicity affects expectations for the most part indirectly through “cultural tool-kit” variables including family role models and support.

Recognizing these less obvious causes for migration and education outcomes sheds light on the crux of a very complex relationship. Replacing the importance of ethnic identity with the more substantial and direct link to parents’ expectations, is in effect taking the blinders off and having a proper look around. Incorporating the underlying components that are often times lurking in the shadows of the more obvious and blatant ties, like ethnicity, provides a clearer understanding of the actual links which reveal the causes behind young people’s life choices. As discovered by Seyfrit et al. (1998), ethnic identity alone is not that valuable of an indicator for migration and education aspirations.

77 Seyfrit et al 1998
78 Seyfrit et al. 1998
79 Seyfrit et al. 1998
Our preliminary analysis found that students who identify themselves as Natives are less likely to plan to leave rural Alaska for the predominantly non-Native worlds of college or cities. But the effects of ethnicity appear largely indirect, operating through the ways that families encourage or provide role models for their children’s educational aspirations. Parents’ and grandparents’ support for college, in particular, explain much of the difference between the ethnic groups’ aspirations.80

This is an important case study to keep in mind as we analyze how ethnic identity plays into the migration patterns and education outcomes of Bristol Bay graduates.

2.3.2 Life in Rural Alaska and Agents of Change

Life in rural Alaska has undergone considerable changes since the 1970s, especially when looking at how Indigenous peoples have responded to such momentous change. Marianne Stenbaek (1987) attributes these changes to several causes, most notably, the influx of southern peoples, modern technology, bureaucracy, and assorted political, economic, social and cultural systems.81 Additionally, fisheries depletion, rapid growth resource development and climate change have also been added to the list of major forces of demographic and socio-economic change in the far north. Global economic and environmental pressures threaten Native culture and the livelihood of entire regions, especially those dependent on subsistence lifestyles and traditional fisheries. Two landmark events happened in the 1970s which greatly altered life in rural Alaska: the Alaska Native Claims Settlement Act (ANCSA) of 1971 and the Molly Hootch decision of 1976.

ANCSA was the result of negotiations between the Federal Government, oil companies and Alaska Natives. The settlement triggered the establishment of twelve regional corporations and included 44 million acres of land and $962 million dollars. On one hand, ANCSA and oil development gave Alaska Natives economic and political clout, as well as better education, communication and heath care systems in bush villages.

80 Seyfrit et al.1998:360
81 Stenbaek 1987
On the other, ANCSA served as a major tool of acculturation. Along with economic wealth and political power, Alaska Natives were also subject to a major invasion of “outside” cultures. As the rest of the world, complete with “southern” ways of life and foreign language, encroached upon rural Alaska the profile of many communities underwent extensive transformations. Ironically, one major force of change was invited directly into many homes by the flip of a switch. Krauss (1980) described it as, “a cultural nerve gas – insidious, painless and fatal.” Graburn (1982) later called it “a late and powerful stage of ethnocide.” Next to schooling, Graburn considers television the “most powerful instrument of assimilation working on some contemporary Canadian Inuit.”

In Alaska, all of this came for a mere 25-30 million dollars, which is what the state paid for Aurora, its very own satellite. The satellite brought telephone and television services to every village with a population over twenty-five. The investment spurred easier access and communication with the rest of the world however it was also a driving force behind the widespread disappearance of Indigenous language and life-way. By the 1990s, only 20 out of the 200 Native villages in Alaska still had parents speaking to their children in their traditional language. Television is now considered as a serious and potent threat to Alaska Native cultures; it widened the generation gap in communities as many young people became bilingual, while the elders did not. It is also responsible for displacing traditional language and social life with unrealistic images of an unfamiliar lifestyle.

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82 Krauss 1980:82
83 Graburn 1982:16
84 Graburn 1982:14
85 Stenbaek 1987
86 Hower and Kelly 1996
The Molly Hootch decision of 1976, which became the biggest education legislature in Alaska, was also a vital force impacting life and education in rural Alaska. Named after a girl who didn’t finish high school, the settlement triggered the end of boarding school days. The boarding school system has been described by some as a pressure on rural Alaska villages that “systematically dismantled communities.”\(^{87}\) The Molly Hootch settlement meant that a high school would be built in every village that wanted one and had at least one high school aged student. It allowed families to stay together and communities to contribute more to students’ high school education.\(^{88}\) One result of students attending high school in their own community has been a substantial increase in Native graduation rates.\(^{89}\) As beneficial as the system seems, rural communities have been faced with several obstacles as well. Rural education is an expensive endeavor. With an average statewide price tag of $8,700 per student, a rural education prices out well above this with a figure of $13,500. The Bristol Bay Borough School District spends about $10,000 per student.

The problems with rural education include more than the burdens of a high price tag though. Hamilton and Seyfrit (1992 and 1994b) mention several shortcomings including too easy texts and course work, limited course offerings and teachers covering subjects outside their training.\(^{90}\) College drop out rates among rural Alaska students was estimated at about 60 percent by a UAF researcher in 1986.\(^{91}\) Moreover, even with an increase in high school graduation rates, many of the bush schools rank well below national averages on standardized tests. Kleinfeld (1992) notes that of rural school

\(^{87}\) Hower and Kelly 1996  
\(^{88}\) See Kleinfeld 1992  
\(^{89}\) Alaska Federation of Natives 1989  
\(^{90}\) Hamilton and Seyfrit 1994b, Seyfrit and Hamilton 1992  
\(^{91}\) Hower and Kelly 1986
districts where 85 percent or more of the eighth grade students are Alaska Native, none have scored at the 50th percentile, the national average.92

Darnell and Höem (1996) stress that “the school in a multicultural society has to be part of the world at large if it is to fulfill its intended goals. This implies as well that the school must acquire the qualities of a well functioning society. A basic premise that must be accepted along with this concept is that every unit and every culture in the society should be recognized as having equal importance to the people with whom they are connected. It is only then that members of each group will have the wisdom to know what is best for themselves in their local communities.”93

Rural communities in Alaska and the education systems that have been brought into them may be lacking this type of holistic education. One concern in many villages is that 90 percent of the teachers in bush Alaska are non-Native. These are people, perhaps unintentionally, bringing Western values into small communities while down playing the importance of cultural survival. Turning to Graburn’s (1982) observations among the Canadian Inuit again, “schooling, for the past two decades, has probably been the most massive and significant form of exposure (and ethnocide, if one defines the term as concerted effort to change a peoples’ way of life from their own to somebody else’s).94

There is a growing concern for more Native teachers in rural Alaska classrooms. Kleinfeld (1992) stresses that Native teachers serve as important role models for Native students and increase student confidence in the institution. In 1990, only 8.7 percent of Bristol Bay School District classroom teachers were Alaska Native.95

92 Kleinfeld 1992:6
93 Darnell and Höem 1996:283
94 Graburn 1982:13
95 AK Dept of Education
When looking at how education is, and should be, incorporated into the cultural process and identity formation of rural Alaska youths, it is evident that the system is lacking in certain respects. Large scale losses of language and culture, as well as poor preparation for life “outside” are factors of rural education that need to be addressed immediately. If bush schools are ill equipped to prepare students for their future endeavors, whatever they may be, than significant measures need to be taken. The future success of rural Alaska is largely dependent on the youth of today. Regardless of where young people choose to spend their future, preparing successful, aware and content individuals is a priority.

2.3.3 Summary

This review of the literature has set the stage nicely for the introduction of the Bristol Bay case study. It has presented general themes and specific examples, as well as various ways to interpret such findings. The literature on this topic reflects the relative importance of incorporating and examining both community wide variables and individual outcomes, so that future studies can be presented in the most appropriate and insightful manner. Such widespread documentation of ecological and social change, as well as life in rural communities, makes one eager to explore how the Bristol Bay piece fits into such a fascinating puzzle. Chapter three offers a more complete picture of life in Bristol Bay.
Banks of the Naknek River

The Alaska Peninsula juts southwestward from the Alaska mainland and, with its partly submerged extension in the long chain of Aleutian Islands, forms the boundary between the Bering Sea on the north and the Pacific Ocean on the south. Throughout its length its backbone is the Aleutian Range of volcanic mountains. Toward the coast the ground slopes as a soggy plain built by outwash of the Pleistocene glaciers that carved the basins of the lakes that now stretch in series along the northwestern foot of the mountains, which is the source of meandering streams and the spectacular runs of red salmon for which Bristol Bay is famous for.96

The view from above does well to make one more aware of the immediate surroundings. Considering that there are no roads into Bristol Bay, the short flight from Anchorage offers everyone a birds’ eye view of what the middle of nowhere actually looks like, and it is breathtaking. In no other place have I seen the land awaken from the deep sleep of winter so elegantly, be it ever so slow. By late July and the start of the berry season, the colors of the tundra make it look as though an artist has mistakenly left his palette in some corner of the region and the abandoned paints have taken upon a life of their own, a bound in each direction. Such an animated landscape fades rather quickly after the first frost. The fast approaching winter serves as a seasonal blanket, hiding away such a work of art until a full turn of the calendar permits it to be briefly unveiled once again.

96 Dumond and VanStone 1995:1
Although one might benefit from such an enlightening view, reality sets in soon enough. Swarms of humming bird sized mosquitoes welcome you as soon as you step off the plane in King Salmon. The scent of fish and mud drift through Naknek and South Naknek for six straight weeks. Just when you think you’ve finally grown accustomed to the trials of life in rural Alaska you find yourself spending six dollars on a gallon of expired milk and watching the tide come in for fun. Over the years the Bristol Bay Borough has developed into a major center of southwest Alaska, complete with city sewer, VH1, pay phones and a gas station with a recently installed 24 hour pay at the pump option. Mothers can do Christmas shopping, and grocery shopping for that matter, via the internet. Fathers know to bring back McDonald’s cheeseburgers for children when returning from trips to town (locals refer to trips to Anchorage as trips to town). Even soft-serve ice cream and shuffle board have made their way to Bristol Bay, though these are only seasonal luxuries.

This chapter is a synopsis of the history of Bristol Bay. It places the people of the region with in their social and economic surroundings from before Russian arrival to present day. Its purpose is to give the reader a general overview of the major influential forces that have historically shaped life in Bristol Bay. This chapter also recognizes the
resilience of Alaska Native culture. Large scale changes have occurred in Bristol Bay since the arrival of the first Russian fur traders. The influence of Russian Orthodox missionaries, a growing commercial fishing industry, the construction of a U.S. Air Force Base during World War II, and now fisheries decline and the onset of alternate forms of natural resource development all contribute to significant changes in Native culture and life-way. Traditional aspects of Native culture may be less apparent in communities located in the Bristol Bay Borough (BBB) when compared to more remote villages in the region. However, hidden beneath the heavy layers of modern day living exists traces of a way of life that has shaped the identity of a people since time immemorial.

4.1 Early Settlers and Russian Exploration

The Bristol Bay region was first settled over 6,000 years ago by Central Yupik speaking Eskimos, Sugpiaq (Aleut-Russian) Eskimos, and Athabascan Indians. The hospitable country proved to be rich in faunal food resources and presented the earliest inhabitants with choice living conditions. The regional setting is primarily maritime with cool, humid and windy weather. There is an abundant supply of game and marine resources in the region including, caribou, waterfowl, harbor seals, beluga, and most importantly, salmon. People lived in semi-subterranean dwellings, constructed of local cottonwood and spruce logs, called barabararas. Even today, archaeologists venture to the river banks, lake shores and bays of the region to uncover these sunken living structures.

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97 Clemens and Norris 1999
98 Clemens and Norris 1999
4.1.1 The People of Paug-vik and Savonoski

Early settlers had to do more than adapt to their natural environment though, they had to become accustomed to each other as well. Networks of pre-contact trade routes, later used by Russian explorers, span the entire northern part of the Alaskan peninsula. These trails serve as a prehistoric footprint that depicts inter-group relations prior to Russian arrival. The following section introduces the Bristol Bay settlements of Paug-vik and Savonoski. Although settlements at Nushagak and Katmai are not the central focus of this historical review, they are in the immediate locality of this corner of the region, and their inclusion is of great relevance to the story. Nushagak, located northeast of the Naknek River, and Katmai, located on the Pacific side of the Alaskan Peninsula, were both sites for fur trading posts in the 1800s. The location and establishment of these posts had a significant impact on life in the Paug-vik and Savonoski settlements.

A mile below the present day village of Naknek, one can climb the bluffs of the Naknek River and stand directly atop the 19th century Native settlement of Paug-vik. When Russian explorers/fur traders entered Bristol Bay in the early 1800s, Paug-vik was occupied by a group of Eskimos, referred to as the Aglurmiut in modern literature. The Aglurmiut were the southernmost speakers of the language designated Central Yupik.99 They also had a reputation for being a rather malicious group of warriors in the region. In 1822, they were described by Russian explorer, V.S. Khromchenko, as “the most war-like people along the coast between Bristol Bay and Norton Sound.”100 Early Russians reported that the Aglurmiut had been driven from the lower Kuskokwim River region

99 Krauss 1982
100 Dumond and VanStone 1995:4
after a series of bloody battles in the late 18th century, known more recently in Kuskokwim native tradition as the "bow and arrow wars."\footnote{Dumond and VanStone 1995:2}

While Paug-vik was situated at the mouth of the Naknek River, the Savonoski settlements were located further inland. Sixty-two miles up river, with in the vicinity of Naknek Lake and what is now Katmai National Park and Preserve, a multi-village community existed of a group of the northernmost Aleuts, the Sugpiaq. The Russians referred to these settlements as the Severnovsk settlements, and the inhabitants as Severnovsk Aleuts. During the American period these settlements were called Savonoski. Today, they are known as Old Savonoski. Dumond and VanStone (1995) suggest that Paug-vik had initially been home to a group of these Sugpiaq Aleuts up until
the late 1700s when the arrival of the Aglurmiut into Bristol Bay forced the group to relocate up river to the Savonoski settlements.  

Relations between the Aleuts of the Savonoski settlements and the Aglurmiut of Paug-vik were not friendly. Hostility between the groups resulted in the establishment of difficult trade routes for both parties. In order to evade running into their unfriendly neighbors in Bristol Bay, the people of Savonoski journeyed to Katmai for trading purposes. Prior to the establishment of Aleksandrovskiy Redoubt, a trading post at Nushagak, Paug-vik people also traded at Katmai. The Aglurmiut chose a longer, more southerly route to Katmai. They crossed the peninsula near Becharof Lake, bypassing chance encounters with the people of Savonoski.

In 1953 a Severnovsk native alleged that in the very old days the two peoples had fought each other with bow and arrow. In those same olden days, he said, the [Paug-vik] people of the lower Naknek River never went upstream, and the Severnovsk people never went downriver but repaired to the Pacific coast rather than to Bristol Bay to hunt sea mammals.

The people of the two [Severnovsk] villages.... in the vicinity of [Naknek Lake] came down to Katmai to do their shopping and dispose of their furs, undertaking a very fatiguing tramp over mountains and glaciers and across deep and dangerous streams in preference to the [easier] canoe journey to the Bristol Bay stations.

4.2 The Fur Trade in Bristol Bay

On the Pacific side of the Alaska Peninsula, the body of water known as the Shelikof Strait, separates Kodiak Island from the mainland. Katmai is conveniently situated on the Alaska Peninsula, directly across from Kodiak Island. By the early 1760s, Russian fur traders had moved into both Kodiak Island and the upper Alaska Peninsula. Although early traders knew very little about the region, they knew that the Natives there

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102 Dumond and VanStone 1995
103 Davis 1954
104 Petroff 1884:25
were very good at hunting sea otters. This was reason enough, sea otter pelts had become a lucrative trade item in China.\textsuperscript{105} Native participation in the fur trade spread rather quickly after this. By the mid-1780s, fur traders had incorporated the coastal Katmai people and Savonoski settlements in the fur trade. It was shortly after this that the Russian-American Company was formed.

Aleksandr Baranov, then chief director for the Shelikhov-Golikov Company’s American interest, succeeded in overcoming rival Russian traders, notably the Lebedev-Lastochkin Company, for control of the fur trade. In 1789, Shelikhov-Golikov established its headquarters at Kodiak, which became the major fur depot for the region. With its permanent base at Kodiak, the company spread onto the mainland and beyond. In 1799, the Russian Czar, Paul I, authorized a charter that granted monopoly of the American fur trade to the newly formed Russian-American Company (RAC). Baranov later became head of the company and the RAC monopolized the Alaskan fur trade through the end of the Russian period.\textsuperscript{106}

Neither the Russian-American Company (RAC), nor Baranov himself, were known for their kindness towards natives in the region. Some Russian Orthodox missionaries criticized the RAC for its ill treatment and callous methods for recruiting hunters. For example, it was not uncommon for Native hunters to be taken away from their families and forced into hunting. Coercive means such as conscripting labor and taking hostages were frequently used tactics employed by the RAC.\textsuperscript{107} Additionally, Natives were encouraged to become indebted, and therefore dependent, on the RAC. Although forcing Natives into hunting relaxed after 1818 with the departure of Baranov, the dependency of Natives on the RAC had far reaching and long lasting impacts on traditional life-ways and subsistence activities.

By the early 1800s, the fur trade had taken its toll on traditionally exploited regions and the RAC had turned its attention towards southwest Alaska north of the Alaska Peninsula. In 1818, the RAC dispatched an expedition from Kodiak Island under

\textsuperscript{105} Clemens and Norris 1999
\textsuperscript{106} Clemens and Norris 1999:13
\textsuperscript{107} Clemens and Norris 1999
the command of Petr Korsakovskiy.\textsuperscript{108} The primary goal of the expedition was to establish a profitable trade relationship with natives in the region for beaver pelts and other furs. These were not the first Russians to visit Bristol Bay. Prior to the RAC monopolizing the fur trade, Bristol Bay had been controlled by rival traders, the Lebedev-Lastochkin Company. The 1818 expedition led to the establishment of Alexandroski Redoubt, a fur trading post at the mouth of the Nushagak River, just northeast of the Paug-vik settlement in Bristol Bay.

Although the people of Savonoski and Paug-vik had been involved in the fur trade some time prior to this, the establishment of a trading post at Nushagak eventually led to a sizeable shift in Paug-vik’s involvement in the fur trade. Dumond and VanStone (1995) suggest that the people of Paug-vik may have continued making the demanding trek to the Katmai trading post until as late as 1832. However, Russian records indicate that by 1832 “the Aglurmiut were already becoming accustomed to the Russians, were learning the Russian language, and were believed to be as useful to the company as the Kodiak Aleuts.”\textsuperscript{109}

4.2.1 Small Pox and Religion

A variety of goods were introduced to Bristol Bay Natives through out the fur trade. The most popular trade items were tobacco, various dry goods and beads.\textsuperscript{110} Others trade items included knives, mirrors, earrings, cooking pots and steel for striking a fire.\textsuperscript{111} The fur trade brought more than a new standard for material wealth though. New diseases and religions were also on the long list of arrivals. The 1835-1840 small pox

\textsuperscript{108} VanStone 1971
\textsuperscript{109} RAC/CS 1832:345-351 (as cited in Dumond and VanStone 1995)
\textsuperscript{110} Dumond and VanStone 1995:7
\textsuperscript{111} Zagoskin 1967:161-162
epidemic reached Bristol Bay in 1838-1839 and decimated the native population of southwest Alaska. Some reports indicate that, “in spite of vaccinations administered in February 1838, [the small pox epidemic] killed a reported 522 people in Aglurmiut settlements near the redoubt, leaving only 351 survivors.”

The Russian Orthodox religion spread through southwest Alaska just as swiftly. As early as 1794, Russian Orthodox missionaries had baptized people in Katmai. In 1841, a chapel was built at the redoubt in Nushagak. Seven years later there were 1,080 parishioners in the region, and “the Aglurmiut were considered to be the most faithful, sometimes traveling great distances to attend services.” The native people of Bristol Bay continued to be influenced by the Russian Orthodox Church (ROC) even after the American purchase of Alaska in 1867. Priests continued to visit settlements and several chapels were built, and often times rebuilt, through out the late 1800s and early 1900s.

The 1880s included both the height and decline of the fur trade. The impacts of the excessive hunting and trapping of fur bearing creatures, especially the sea otter and beaver, were difficult to ignore. The wane of the fur trade made the rise of the commercial fishing industry all the more timely. Although Russian control over Alaska and the fur trade continue to be recognized as a major influence on native peoples in Bristol Bay, the commercial fishing industry proved to have a much more lasting impact on life in the region.

\[113\] RAC/CS 1853 (as cited in Dumond and VanStone 1995)
4.3 Commercial Fishing and Early U.S. Involvement

At the time of Alaska’s purchase in 1867, the fur trade was still the primary economic activity. The Alaska Commercial Company (ACC) became the dominant company in the region and controlled the Katmai area fur trade throughout the late 19th century. By 1885, however, the people of Katmai were already becoming involved in the fishing industry. The commercial fishing industry in Bristol Bay spurred rapid growth in the area.

Canneries, as well as other institutions like the Russian Orthodox Church, were able to acquire land for their plants through the Homestead Act. The Russian Orthodox Church owned the first land recorded in Naknek and the center of Naknek is actually the result of squatters building shelters on the church property and eventually being sold nearby lots. The first cannery was built in Naknek in 1890. In 1907, a U.S. post office was built there.

Although the uprising industry altered the settlement patterns of Natives in the area, in the early days, it failed to provide new employment opportunities. Most of the actual fishing was by Euro-Americans who came to Alaska for the fishing season and returned home when the runs were over and the canneries had completed their packs. The canning was done by imported Chinese laborers, with supervisory positions held by Euro-Americans. As late as 1891 only an occasional native was employed by the canneries, the Chinese being considered more reliable and methodical.

4.3.1 Volcanic Eruptions, Influenza and the settling of South Naknek

In 1912 a volcanic eruption destroyed the Katmai and Savonoski settlements. The Novarupta volcano erupted with such force that it is considered one of the largest

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114 Clemens and Norris 1999
115 AK Dept. of Commerce, Community and Economic Development
volcanic explosions ever recorded. Clemens and Norris (1999) note that survivors of the eruption recall the sky staying dark for three days and entire villages being buried under three feet of ash. Although the explosion came in June while most of the Savonoski residents were living at seasonal camps in the Naknek area for summer fishing, it forced families to permanently abandon their homes. Some families had already permanently left the settlement to relocate closer to the salmon canneries in Naknek. New villages were established throughout the region along both sides of the peninsula. One account of life at a new settlement on the Pacific side reveals the influence of the Russian Orthodox Church. "The local chief reported that the people were dissatisfied because they had no church and no bell." 

Many of the people from the Savonoski settlements relocated to the south bank of the Naknek River, six miles above present day South Naknek. Life at New Savonoski, as it came to be called, was short lived. The settlement was abandoned in 1919 after an influenza epidemic.

Four days after the Alaska Packers Association (APA) steamer, the Kvichak, arrived off Naknek, the first flu case was reported. By late May the entire village was sick with the flu. In response to the epidemic, a ship called Libby Maine brought fifty tons of medicines, fresh produce and supplies to the APA canneries in July, but eventually about eighty people died. Many of the victims were adults. In late July,

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117 Clemens and Norris 1999:30
118 Clemens and Norris 1999:31
119 Hussey 1971:367
120 Branson 1999
orphans from throughout the region were transferred to a government hospital at Dillingham.\textsuperscript{121}

The remaining survivors of New and Old Savonoksi moved down river and settled at what is now the village of South Naknek. However, like the abandonment of Paug-vik, the permanent settlement of South Naknek had more to do with salmon cannery development than with this ill-fated chain of events. Commercial fishing and salmon processing continue to serve as the mainstays of South Naknek’s small economy. Today the population floats around 100 people and roughly 84 percent of the population is Alaska Native or part Native.\textsuperscript{122} Residents continue to depend heavily on fishing and a subsistence lifestyle.\textsuperscript{123}

Several residents of this traditional Sugpiaq Aleut village own commercial fishing permits. South Naknek residents are not connected to the Boroughs sewage facility. Households rely on individual septic systems or honey buckets. There is no road connecting South Naknek to the communities of Naknek and King Salmon, but in the right conditions, winter travelers can cross the Naknek River on an ice road.

4.4 Paug-vik and the Pat B.

In 1983, a road was put through just north of the Paug-vik site to connect the village of Naknek with a new municipal sewage facility. Although archaeologists had visited the site prior to this, the new development spurred the need for a more thorough excavation. Two years later, a team of archaeologists uncovered several human skeletons

\textsuperscript{121} Branson 1999
\textsuperscript{122} U.S. Census 2000
\textsuperscript{123} AK Dept of Commerce, Community and Economic Development
near the site, as well as a wide variety of artifacts proving that the people of Paug-vik were heavily involved in the fur trade.\textsuperscript{124}

It was not long after the archaeologists completed their fieldwork that a local Naknek fisherman beached his tender, the Pat B., directly below the old Paug-vik settlement.\textsuperscript{125} Initially left “high and dry” to repair the keel, the Pat B. remained on the beach for a variety of reasons. Prior to its final days in Bristol Bay, the Pat B. had once frequented the waters of southeast Alaska, near Ketchikan. The seventy-six foot vessel actually sank there, but was successfully pulled out, repaired and deemed suitable for life at sea once again.

The Pat B. became a natural meeting spot for locals and summer people alike (summer people is a catch all phrase used among locals to refer anyone who isn’t a local, including tourists, fishermen and cannery workers). During good fishing seasons, so many people would gather at the Pat B. that some nights you could see a string of pallet fires and the silhouettes of hundreds of people trailing off down the beach. One night someone decided to start one of these fires in the oven (or where the oven would have been) of the Pat B. itself. Not surprisingly, local officials decided to let this one burn. It smoldered for days and by the end of the week all that was left was a big pile of ash and nails. But old habits die hard, even today the remains of the Pat B. serve as a destination point for beach parties. It is amusing to think how many of these devoted patrons do not know that people have been celebrating along this particular shoreline for thousands of years.

\textsuperscript{124} Dumond and VanStone 1995
\textsuperscript{125} A tender is a large boat that fishermen deliver their catches to while at sea. Tenders then transport the fish to a cannery where they are processed.
4.5 Semi-subterranean to Full Plumbing

Over a century has passed since the first cannery was built in Naknek, but residents of Bristol Bay continue to rely on the return of the salmon. In 1962, the Bristol Bay Borough was incorporated as Alaska’s first borough. The Borough was created in part to capture fish taxes generated by local salmon processors.\textsuperscript{126} It is located approximately 300 miles southwest of Anchorage and serves as the governing body for the communities of South Naknek, Naknek and King Salmon. Today the economy of the Bristol Bay Borough (BBB) is highly seasonal and based primarily on the harvesting and processing of wild sockeye salmon from Bristol Bay.\textsuperscript{127} Outside of the commercial fishing industry, educational, health and social services compose the largest segment of industry in the Borough at 25 percent. Public administration is the second largest industry employing 15 percent of the labor force.\textsuperscript{128} There are some defining characteristics worth mentioning with respect to the three communities in the Borough. While Naknek and South Naknek are towns filled with canneries and boat yards and higher percentages of Alaska Natives, King Salmon is much less traditional and not as closely involved in the commercial fishing scene.

4.5.1 King Salmon

King Salmon is located fifteen miles up river from Naknek on the north bank of the Naknek River. The community of King Salmon evolved from an air navigation silo built in 1930, followed by a U.S. Air Force base at the beginning of World War II.\textsuperscript{129} In 1949, a post office was established, and the U.S. Army Corps of Engineers constructed

\textsuperscript{126} AK Dept of Commerce, Community and Economic Development
\textsuperscript{127} Northern Economics 1999
\textsuperscript{128} U.S. Census 2000
\textsuperscript{129} Northern Economics (date unknown) p.28
the 15.5 mile long road to Naknek. King Salmon is predominantly non-Native and few residents hold fishing permits. In 2000, thirty percent of King Salmon’s population was Alaska Native.\textsuperscript{130} Air services employ a large portion of the community. King Salmon has grown as a government, transportation and service center for the commercial red salmon and recreational visitor industries.\textsuperscript{131} The major airport, National Park Service, Fish and Game and weather bureau are all located in King Salmon. Students from King Salmon are bussed to Naknek to attend school.

4.5.2 The Bristol Bay School

The first school was built in Naknek in 1929, fifteen students attended. Today roughly two hundred students attend school in Naknek. The Bristol Bay School District consists of two schools, both are supported by the Borough. There is a Preschool to High School program in Naknek and a Kindergarten to Fifth Grade School in South Naknek. Approximately ten students are enrolled in the South Naknek elementary school. Students from South Naknek, grades 6 to 12, are flown across the Naknek River each day. The school district employs approximately 40 people: 20 are certified and 20 are classified.

Like most schools in rural Alaska, the Bristol Bay school in Naknek fulfills several purposes in the community. The school building serves as the meeting place for community gatherings, potlucks and dances. The school gym hosts community basketball tournaments and the auditorium sometimes doubles as the community movie theater. Through out the school year, high school sporting events become the weekends’ entertainment. The school serves as a vital component of daily life in Bristol Bay, but in

\textsuperscript{130} U.S. Census 2000
\textsuperscript{131} AK Dept. of Commerce, Community and Economic Development
recent years it has become a sore subject for many community members. This will be discussed in the following chapters.

Naknek serves as the center of local government and with a population of roughly 600 people is the largest community in the Borough. Forty-seven percent of Naknek is Alaska Native. The Port of Bristol Bay is located in Naknek and serves as a hub for southwestern Alaska. City Dock, as it is called, is open from April to November and transports a variety of goods from Seattle and Anchorage to the region. The major export is salmon, but fishing vessels, building materials, automobiles, fuel and dry goods are also commonly shipped items.

4.5.3 Ashtrays Filled with Fish Skins

Power lines cross the Naknek River bringing electricity to the residents of South Naknek. Residents have the option of having Redline Taxi cabs deliver the infamous D&D pizza to their doorstep. Fishing boats are equipped with GPS units (Global Positioning Satellite) and lap tops. Elders have ATM cards. But traditional aspects of the way things were seem to radiate in the most obvious ways.

One local native man often brings a supply of strips of dried salmon with him when he visits Fisherman’s’ Bar. Patrons and employees peel the dried skin from the meat of the fish and ashtrays are soon filled with this subtle, yet constant, reminder of why we are all here. Families throw out subsistence nets to catch the much needed staple of salmon. Women and children pick blueberries, cranberries and salmonberries for preserving. Men put up caribou and moose for winters’ supply of meat. But the salmon run remains the single most decisive marker of why life in this region has continued for thousands of years. Even those who don’t rely directly on the fishery recognize its role in

\footnote{U.S. Census 2000}
sustaining life in Bristol Bay. This type of dependence no doubt brings serious consequences when the ties that bind are severed.

4.6 Impacts of the 1997-1998 Fishing Disasters

The final section of this chapter is a brief review of some of the impacts of the 1997-1998 fisheries disasters. The following illustrates major economic changes occurring in the Borough as a result of the low salmon prices and smaller harvests in recent years. It also briefly mentions related social impacts of the fisheries decline, but social change will be more thoroughly addressed in the following chapter.

Many fishers have dropped out of the fishery due to recent declines. The number of drift net vessels dropped from more than 1,890 participants in the 1990s to 1,183 in 2002. In 2003, a total of 194 Borough residents held commercial fishing permits. Recently published economic reports have indicated that the impacts of the fisheries decline in Bristol Bay go far beyond the commercial fishing industry.

The BBB government depends on tax revenues generated by the local fishery for general operations. Raw fish tax, business tax, and property tax revenues paid by fishers and processors during any given year fund government activities that same year. Borough officials understand the dynamic nature of the fishery and plan for fluctuations in the budget process. Still, extreme changes in tax revenues can pose problems for the Borough.

The extreme aforementioned changes came in 1997 when, at the end of the fishing season, the BBB estimated that it would receive $1 million less in fish tax revenues than had been budgeted on the basis of ADF&G forecasts of salmon harvests. Declines in fish tax revenues, business tax revenues and general economic activity had

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133 AK Dept of Labor and Workforce Development
134 AK Dept Commerce, Community and Economic Development
135 Northern Economics 1999:2-13
136 Northern Economics 1999
noticeable impacts on local infrastructure, delivery of public services and program
support in the Borough. When looking at local government, the most significant impacts
related to or caused by the declines in local revenues were declines in programs and in
basic services such as public safety, emergency medical, roads and docks supported by
the Borough.\textsuperscript{137}

Since the 1997 disaster, the Borough has reduced the number of employees from 50 to 38 and is
proposing more cuts in the police department. In addition, the Borough may not be able to hire a
new fire chief. Other possible cuts include reducing the Borough’s contribution to the school
district budget to the minimum level of 4 mills.\textsuperscript{138}

The 1999 report also noted social problems at the household level as a result of
the fisheries decline. Although the authors note that such occurrences are difficult to
quantify in any sort of formal analysis, their findings do represent local concerns. In
short, several respondents from the 1999 survey mentioned social problems, most
common were those associated with alcohol abuse, as a result of the fisheries crisis.

Some respondents also recorded emotional distress and depression.

Respondents commented frequently about the emotional stresses associated with bad fishing
seasons. These stresses include a loss of pride and certain elements of embarrassment. In
particular, respondents say it is very difficult in the small villages to not be able to pay bills. The
people in debt typically owe money to a neighbor or friend. Social patterns have been disrupted
and residents are unsure how to treat each other in certain respects.\textsuperscript{139}

On a more quantitative level, there was a substantial increase in the amount of
households receiving outside assistance, such as food stamps. The most common
changes mentioned by households in surveys included steps to use less electricity and
fuel oil, less travel, and an increased dependence on subsistence activities. In closing,
only one reference was made referring to how young people were adapting to the
fisheries decline. “One village official reported that high school seniors had less

\textsuperscript{137} Northern Economics 1999
\textsuperscript{138} Northern Economics 1999:2-15
\textsuperscript{139} Northern Economics 1999:2-13
optimism about the future as a result of the dismal fishery returns of the disaster years.\textsuperscript{140}

4.6.1 Summary

These findings suggest that the most clear and direct impacts of the fishing disasters have been on area infrastructure. The low salmon returns have placed the local government and residents in a very difficult financial situation. Little effort has been made to establish how young people from the area are responding to the declining ecological conditions. The following chapter describes the methods I used to study this topic in the Bristol Bay Borough.

\textsuperscript{140} Northern Economics 1999:2-21
Methods

In late May of 2004, I traveled to southwest Alaska to visit households in the Bristol Bay Borough. The primary goal of my fieldwork was to interview as many households as possible that had had a child graduate from the Bristol Bay High School between 1994 and 2003. The ten year time period was chosen because it contains students who graduated in the five years both prior to and following the 1997-1998 fishing crisis. By early August, I had conducted interviews in nearly every household that I had intended on visiting. The methodology presented in this chapter is relatively simple however certain components of this study require clarification. The following explains the reasoning behind the organization and structure of this study.

3.1 Resources and Informants

The major sources of demographic and economic data for community-wide variables in this study are the U.S. Census Bureau and the Alaska Department of Commerce, Community and Economic Development. Fisheries data are based on various reports from the Alaska Department of Fish and Game (ADF&G). Other data sources are identified in this study as needed. In addition to these sources, this study is based on data collected during household interviews.

The main purpose of household interviews was to gather information concerning the whereabouts and life decisions of recent high school graduates. In addition to this, interviews presented informants with a chance to discuss their views on changes in the environment, the economy and overall future of life in Bristol Bay. The substance of
interviews far exceeded expectations. Informants were keen to discuss both the study subjects as well as the qualitative details about their life history.

3.2 Independent and Dependent Variables

This study analyzes the influence of three independent variables on the dependent variables under study (discussed below). The independent variables are gender, ethnicity and time period (year of high school graduation). Students are grouped into categories according to these variables. Dependent variables include out-migration, return migration, college attendance, college completion (some college, no degree) and non-marital fertility. Non-marital fertility is based on the achieved fertility of unmarried females. In other words, non-marital fertility rates reflect the number of females in this study who had a child outside of marriage. Other variables that require further explanation, such as time period, ethnicity, migration and education are discussed at length below. Table 1 offers a brief description of the independent and dependent variables included in this study.
Table 1. Variables under study

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
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<tr>
<td><strong>Independent Variables:</strong></td>
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<tr>
<td>Time Period</td>
<td>pre-fishing crisis vs. post-fishing crisis</td>
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<tr>
<td>Ethnic Identity</td>
<td>Alaska Native vs. non-Native</td>
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<td>Gender</td>
<td>male vs. female</td>
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<td><strong>Dependent Variables:</strong></td>
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<td>Return Migration</td>
<td>Left and returned to region during period under study</td>
</tr>
<tr>
<td>Attended College</td>
<td>Attended two or four year college</td>
</tr>
<tr>
<td>Some College, No Degree</td>
<td>Left college (as of May 2005) with out earning a degree</td>
</tr>
<tr>
<td>Non-Marital Fertility</td>
<td>Achieved fertility outside of marriage</td>
</tr>
</tbody>
</table>
3.3 Population Under Analysis and Classification of Variables

The focal point of this research project centers on the impacts of environmental change. When analyzing individual outcomes, this implies that the independent variable “time period” is of utmost importance. Students who graduated prior to and including 1998 are grouped in the “pre-fishing crisis” time period. Although 1998 graduates finished high school the school year following the 1997 fishing disaster, I propose that the impacts of one bad fishing season are not enough to severely disrupt any plans for the future. Students who graduated after and including 1999 are grouped in the “post-fishing crisis” period.

Survey results include sixty-six pre-crisis graduates and seventy-five post-crisis graduates. Roughly thirty graduates between 1994 and 2003 are exempt from the project because their families had already moved away from Bristol Bay and could therefore not be contacted for interviews. At final count, there are less than ten households in the Borough that could have been included in this study, but for various circumstances were not.\footnote{For example, two households had recently suffered the loss of immediate family members. Members of another household had been out of town all summer due illness that required medical attention. Other households were unavailable due to extended vacations or work that had taken them out of the region.} Tables 2 and 3 show the number of individuals in each category when accounting for time period, gender and ethnic identity.
Table 2. Total number of *pre-fishing* disaster graduates (1994-1998) included in survey.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>non-Native</td>
<td>15</td>
<td>26</td>
<td>41</td>
</tr>
<tr>
<td>Native</td>
<td>15</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td>36</td>
<td>66</td>
</tr>
</tbody>
</table>

Table 3. Total number of *post-fishing* disaster graduates (1999-2003) included in survey.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>non-Native</td>
<td>14</td>
<td>15</td>
<td>29</td>
</tr>
<tr>
<td>Native</td>
<td>25</td>
<td>21</td>
<td>46</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>39</td>
<td>36</td>
<td>75</td>
</tr>
</tbody>
</table>

3.3.1 Chosen Ethnic Identity

Due to the extremely complex nature of any topic involving mention of race or ethnicity, I simplified matters as much as possible. The independent variable “ethnic identity” indicates one’s chosen ethnic identity. Allowing parents the option of choosing their children’s ethnic identity resulted in some instances where a student may be less than one-forth native and still identified as Alaska Native. In a few cases, this resulted in parents classifying blond haired, blue eyed children as Alaska Native. Having been raised in Bristol Bay and being very familiar with the community, I felt comfortable with
this process of identification. Most times the chosen ethnic identity of young people accurately depicted not only how students see themselves, but also how the rest of the community identifies them as well. For the purpose of this study, ethnic identity is better understood as a reflection of social or cultural identity than purely ancestral or historical ties to a particular group of people.

One mother summed up her reasoning behind the chosen ethnic identity of her children quite nicely. When asked the ethnic identity of her children, who are of Athabascan/Euro-American descent, she stated, “I believe that you are what you eat, and my children eat pickled fish and caribou tongue.” During another interview, one native mother made a worthwhile point in saying that, although her children “have a cultural connection to their native side,” often times their ethnic identity is dependent on the social atmosphere of the situation. She considered their mixed Alaska Native/Euro-American descent as having the best of both worlds. As she put it, “My children have one foot in Western civilization and one foot in Native culture and they can walk in both worlds.” Because her children “look white” they are given the advantage of blending into mainstream society when they leave the community, but at the same time are still very accepted in the Native community at home.

3.4 Dependent Variables

3.4.1 Educational Outcomes

The variables pertaining to “educational outcomes” describe the college experience. This variable is further specified into “attended college,” which indicates whether a student went on to attend college after high school. “Attended college”
includes students who attended both two and four year colleges. Other forms of training and licensing such as those acquired at vocational schools or flight schools are not included in college attendance rates (following Kleinfeld 1992 and Seyfrit and Hamilton 1992 and 1997, Seyfrit et al. 1998, Hamilton and Seyfrit 1994b). The second educational outcome variable is “some college, no degree” and describes those students who left college with out earning a degree and did not return during the study period. “Some college, no degree” is capped at May 2005. This variable only includes students who graduated from high school between 1994 and 2003 and dropped out of college prior to May 2005.

3.4.2 Out-Migration and Return Migration

Out-migration rates are based on whether or not the student migrated from the region after graduating from high school during the period under study. Return migration rates are figured by the year of return during the period under study. I recognize that returned graduates might leave the community again at a later time. Likewise, graduates who have already left the region may return in following years. To make this analysis as straightforward as possible, I am only interested in the activities taking place in the study period. To give graduates from both time periods an equal time frame in which they can return, I capped return migration rates to the year following the end of the time period. For example, the return migration rates for pre-fishing crisis graduates are based only on those students who returned to Bristol Bay by 2000. Return migration rates for post-crisis graduates include students who have moved back to Bristol Bay by 2005.
3.5 Accurate Illustration of Small Populations

A total of eighty-nine households are included in this study, bringing the number of high school graduates under analysis to 141 individuals. This research project resulted in a very thorough analysis of the migration patterns and educational outcomes of Bristol Bay High School graduates spanning the 1997-1998 fishing crisis. Given the high percentage of households and students included in this study, outcomes illustrate a very accurate picture of what young people from this era are actually doing. It is important to recognize that we are dealing with a very small population. Due to the small size of the population under analysis, I rely primarily on percentages to illustrate patterns. The following chapter presents both large and small changes occurring at the individual level. Some of these changes are significant. Others are better understood as random variation. To differentiate between changes that actually mean something and changes that do not I also present outcomes in actual numbers whenever possible. Although I do not employ any statistical analyses (due to the small size of the population under study), this relatively simple method of presentation and analysis does demonstrate the reality of the situation we are most interested in. Guided by this uncomplicated manner of obtaining and analyzing data, chapter five presents the results of my Bristol Bay case study.
5

Underwater Changes, Out of Water Impacts

The continental shelf off the eastern Bering Sea is the second largest in the world. 1998 marked the unprecedented third year of a massive algae bloom spreading over the sea. Large clouds of milky, aquamarine water, observable from space and ships, covered the eastern Bering Shelf. The anomalous occurrence of a microscopic marine plant, known as coccolithophore, spreading though out these northern waters was not the only unordinary event adrift in the Bering Sea.

In an apparent shift from historical concentrations along the slope, whales were seen over the middle of the Bering Sea shelf. Decadal changes, as well as more recent ones, in atmospheric and oceanic conditions caused other observable shifts in the ecosystem including altered currents, warmer sea surface temperatures and a decrease in the annual extent of sea ice. In addition, scientists noted extreme die-offs of seabirds, smaller than average fish, changes in traditional migratory patterns, and a substantial increase in the biomass of jelly fish. Most disruptive to Bristol Bay residents, however, was the monumental declines in salmon returns.

High levels of inner annual variability occurring in the physical environment over the Bering Sea shelf triggered colossal changes both above and below water in the late 1990s. Despite questions aimed at identifying causal factors associated with the recent climatic shifts, talk of environmental change always returned to the imperative issue of whether recent shifts were fleeting irregularities or persistent, long term changes in the

142 Brodeur et al. 1999
143 Stabeno 1999
144 Stabeno 1999
145 Kirby 1999 and Brodeur et al. 1999
ecosystem. If the abovementioned changes proved to be long term, preparative measures needed to be engaged promptly. The livelihood of the entire region depends on ocean resources.

Long term changes in the ecosystem raise serious concerns for several reasons. The Bering Sea is home to the largest international aggregation of seabirds in the world, representing 43 percent of all breeding seabirds in the U.S.\textsuperscript{146} Approximately half of the fish and shellfish caught in the United States come from the Bering Sea. The commercial value of the total catch is more than a billion dollars.\textsuperscript{147} When people began taking note of the changing environment one detail remained strikingly clear, change was not bound by water. Things were awry on land as well.

\textbf{5.1 Community-wide Changes}

By the end of the 1997 fishing season, no one could argue that something was terribly amiss. The balancing act performed so naturally by man and the sea for more than a century had faltered and as always, recovery was easier said than done. Few fish and low prices transpired into troubled minds and empty pockets for many residents. When the calendar turned to 1998, the situation for many worsened. The Borough was forced to cope with major revenue shortfalls. Ensuing economic reports and regional surveys revealed the many financial hardships endured by local businesses and suggested that residents were having difficulty paying fuel and grocery bills.\textsuperscript{148} Fishermen from the region mentioned loss of pride and feelings of depression as factors stemming from the

\textsuperscript{146} Kirby 1999
\textsuperscript{147} Kirby 1999
\textsuperscript{148} See Northern Economics 1999
inability to provide for their families. The typically hectic seasons at the Port of Bristol Bay had slowed due to a noticeable decline in cargo shipments and fish exports.

The seasons following the alarmingly low runs of 1997 and 1998 did not calm any nerves. All but one of the following five seasons closed with a final fish count that offered little in the way of hope for the future. As of the 2003 commercial fishing season, the red salmon run had failed to return to the average sized runs of previous decades. Coupled with a price that could in no way restore any sort of stability to the region, the continuing fisheries decline transformed into large scale demographic and economic change.

The consequential social change that is always present for the unfolding of economic crises afflicted Bristol Bay communities rather quickly. By 2000, there are noticeable community-wide changes occurring in the Borough. Table 4 illustrates the shifting demographic trends and declining economic condition of the Borough including population decline, an increasing poverty level, rising unemployment rates and the rapid aging of the community.
Table 4. Changes in community-wide variables from 1990 to 2000-2003

Community-wide Characteristics
Before and After the 1997-1998 Fisheries Crisis

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>1410</td>
<td>1258 (-10.8%)</td>
<td>1099 (-12.6%)</td>
</tr>
<tr>
<td>male</td>
<td>843</td>
<td>685</td>
<td></td>
</tr>
<tr>
<td>female</td>
<td>567 (40%)</td>
<td>573 (45%)</td>
<td></td>
</tr>
<tr>
<td>Alaska Native Population</td>
<td>32.2%</td>
<td>43.7%</td>
<td></td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>4.2%</td>
<td>11.5%</td>
<td>11.2%</td>
</tr>
<tr>
<td>Adults not in Labor Force</td>
<td>26.3%</td>
<td>36%</td>
<td></td>
</tr>
<tr>
<td>Persons Below Poverty Line</td>
<td>5.1%</td>
<td>9.5%</td>
<td>12.4% (2004)</td>
</tr>
<tr>
<td>Median age (years)</td>
<td>30.3</td>
<td>36%</td>
<td></td>
</tr>
<tr>
<td>Median age (male)</td>
<td>30.8</td>
<td>37.3</td>
<td></td>
</tr>
<tr>
<td>Median age (female)</td>
<td>29.1</td>
<td>34.6</td>
<td></td>
</tr>
<tr>
<td>Population 20 to 34 years</td>
<td>36.81% (519)</td>
<td>14.87% (187)</td>
<td></td>
</tr>
<tr>
<td>20 to 34 years (male)</td>
<td>24.69% (348)</td>
<td>8.27% (104)</td>
<td></td>
</tr>
<tr>
<td>20 to 34 years (female)</td>
<td>12.12% (171)</td>
<td>6.6% (83)</td>
<td></td>
</tr>
<tr>
<td>Population 35 to 59 years</td>
<td>29.95% (422)</td>
<td>44.43% (559)</td>
<td></td>
</tr>
<tr>
<td>35 to 59 years (male)</td>
<td>18.31% (258)</td>
<td>25.03% (315)</td>
<td></td>
</tr>
<tr>
<td>35 to 59 years (female)</td>
<td>11.64% (164)</td>
<td>19.4% (244)</td>
<td></td>
</tr>
</tbody>
</table>

Bristol Bay Economic Overview - Alaska Department of Commerce, Community and Economic Development; U.S. Census Bureau, Census 1990; U.S. Census Bureau, Census 2000
5.1.1 Out of Work and Older

Since 1998, the Bristol Bay Borough has experienced negative growth every year.\(^{149}\) As a result of poor fishing years and ensuing changes in the Borough and school, the population of the Borough fell by 12.6 percent between 2000 and 2003. The population declined by 10.8 percent between 1990 and 2000. This decline is partially explained by the 1994 closure of the Air Force Base in King Salmon. The closure of the Air Force Base triggered a massive out-migration of military employees, the majority of which were males. High levels of male out-migration resulted in a 5 percent increase in the Borough’s female population between 1990 and 2000. Even with this increase, there is still a shortage of females in the community. In 2000, females represented 45 percent of the total population.

Currently the estimated population of the Borough (1,099) is at its lowest since the late 1970s.\(^ {150}\) With so many people leaving Bristol Bay, what can be said of those who are staying? One impact of population decline has been an increase in the population of the Borough’s population that is Alaska Native population. In 1990, Alaska Natives represented 32.2 percent of the Borough’s population. By 2000, 43.7 percent of the Borough’s population was Alaska Native, indicating that migration from the region is predominantly a non-Native endeavor.

It is common for urban or westernized people to be guided by their career aspirations and job opportunities. Most Americans are used to moving to locations where they can find the best jobs. Many Native Alaskans do not share the same perspective. [Survey] responses tended to emphasize a very strong sense of home and a preference to stay in the village for cultural and other reasons. For many Native Alaskans, such economic migration out of villages is not part of the desired way of life and makes it more difficult to maintain cultural and social values.\(^ {151}\)

\(^{149}\) U.S. Census Bureau  
\(^{150}\) U.S. Census Bureau  
\(^{151}\) Northern Economics 1999:ES-5
Population decline also triggered a community-wide aging trend. Comparable to the fisheries-dependent regions of Norway, Newfoundland and the Faroe Islands, the remaining population of the Borough is growing older.\textsuperscript{152} Between 1990 and 2000, the median age of Borough residents increased from 30.3 years to 36 years. For males, the median age increased from 30 years to 37 years. For females, the median age increased from 29 to 34 years. Community-wide aging is more apparent when examining changes in two particular age groups, 20 to 34 year olds and 35 to 59 year olds.

In 1990, 20 to 34 year olds made up roughly 36 percent of the Borough's total population. Similarly, 35 to 59 year olds represented about 30 percent of the population. Between 1990 and 2000, the population of the 20 to 34 year old group decreased by 20 percent. By 2000, this younger age group made up only 15 percent of the total population. In contrast, the 35 to 59 year age group grew by 15 percent. In 2000, 35 to 59 year olds represented nearly 45 percent of the Borough's total population. In looking at this aging trend more closely, the bottom portion of Table 4 notes gender-specific disparities emerging as well. For example, between 1990 and 2000, the population of 20 to 34 year old females dropped by nearly 50 percent. In 2000, 20 to 34 year old females composed only 6.6 percent (compared to 12.12 percent in 1990) of the Borough's total population.

In the early 1990s, unemployment rates in the Borough were lower than the state average of 7 percent.\textsuperscript{153} Due to poor salmon fishing and lower salmon prices beginning in 1997, unemployment rates nearly tripled from 4.2 percent in 1990 to 11.2 percent in 2003. Unemployment rates are measured by people unemployed and actively seeking

\textsuperscript{152} Faroe Islands (Hamilton, Colocousis and Johansen 2004; Newfoundland (Hamilton and Butler 2001, and Hamilton, Haedrich and Duncan 2004); Norway (Hamilton and Otterstad 1998a)

\textsuperscript{153} AK Dept of Commerce, Community and Economic Development
work and therefore do not always accurately depict the realities of life and work in rural Alaska. Many people in rural communities rely on both a small cash economy and a subsistence economy. Because of this dual dependency, an estimate of working age adults who are not participating in the work force is a better indicator of actual unemployment. The percentage of adults not in the labor force in the Borough has increased from around the national average of 20 percent in 1990 to 36 percent in 2000. Poverty levels are also increasing. The 5.1 percent of the Borough’s population living below the poverty line in 1990 gradually increased over the latter half of the decade to 9.5 percent in 2000. As of 2004, there is an estimated 12.4 percent of the Borough’s population living below the poverty line.

5.1.2 Vantage Points

When comparing the above changes in the Bristol Bay Borough to existing literature on fisheries-dependent regions in crisis, the community-wide changes documented here are of no great surprise. Ecological change triggers large scale demographic, economic and social change. Change of this caliber does not go unnoticed, nor does it simply disappear at the end of a bad fishing season. Major ecological shifts leave natural resource dependent communities in a state of foreseeable peril. Before moving on to an examination of individual responses, there are two fundamental principles essential to a discussion on community-wide changes.

Firstly, as a social scientist observing the hardships endured by the community at large, it is critical to remember that community characteristics are actually a collection of individual experiences and stories. Although community-wide changes are easier to formally analyze when quantified and viewed from this collective vantage point, we can
not gloss over the very personal and very detailed life histories from which this data originates.

Secondly, as valuable as these observed results are, it is imperative that we look beyond them. We cannot separate the economic and social spheres of life in Bristol Bay from the philosophical. Doing so produces too narrow a view of the relationship between people and their environment. To understand what has happened and what is going to happen in Bristol Bay, we need to examine the dynamic human-environment relationship on a non-empirical level as well. Residents of Bristol Bay have worked aspects of the environment into their biographies. This implies that local identity, which includes people’s environmental beliefs and values, is constructed from a mixture of environmental and cultural factors.

Humans, culture and the environment in which they live compose the basic elements of a social system that, when functioning correctly, fulfills two equally important purposes. On an economic level, it is a relationship which allows people to survive comfortably in both their immediate surroundings and in the world economic system. On a conceptual level, examining how people relate to their environment leads to an understanding of both how people make sense out of the world and how they fit into it. This concept stresses two important points 1) the vital role that one’s environment plays in shaping identity and 2) social and environmental continuity. To further elaborate, environmental change potentially leads to a changing local identity.

When the system is not functioning smoothly, like in Bristol Bay, crisis ensues. In order to improve their situation (which implies changing how the system works), residents of the Borough have to adapt. How people adapt to a changing environment is
contingent on several factors. Some people from Bristol Bay have responded by simply leaving. They find a good job in a nice place with perhaps a lower cost of living and a better school for their kids and they move there. For others, leaving Bristol Bay is neither desirable nor an option. Bristol Bay is home and that is final. Aware of a diminishing quality of life, the adaptive task at hand becomes altering how the system works, or how people, culture and the environment interrelate. The ultimate goal for Bristol Bay communities is grounded in improving the economy, however the steps to do so require redefining what is culturally acceptable in terms of how to actually accomplish that goal. Communities can not afford to sit around and wait for the fish to come back or the markets to improve. This is why, for the first time in the history of Bristol Bay, there is local support for oil and gas exploration in the region. Although new economic activity in the region may take the pressure off the commercial fishing industry and stabilize the Borough economically, it also threatens the culturally constructed local identity that makes Bristol Bay what it is. This will be discussed more fully in chapter six.

5.2 Individual Responses and Environment as an Agent of Change

Establishing a direct link between ecological change and the individual life choices of young people from Bristol Bay is much more complicated than relating changes on a community-wide level. There are several underlying and external factors at play when observing (and trying to make sense out of) changes at the intimate and complex level of the individual. Because of the numerous factors that guide and shape the life decisions of young people, the purpose for including an analysis of individual outcomes is multi-faceted.
In an attempt to place individuals in their ecological surroundings and then relate how such influences outcomes, this study focuses on findings in relation to environmental and economic change. However, in recognizing the disadvantage of both working with a small population and the importance of various influential forces not addressed here, it is with a fair amount of caution that I proceed to draw any concrete connections between the broad based human-environment interactions occurring at the individual level. To counter problems stemming from ambiguous associations and too vague generalizations, this study also contributes to another rising and very important function of social scientific research in rural Alaska.

The findings presented below identify how the life choices of Bristol Bay graduates relate to the gender and ethnic identity of individuals. By including how gender and ethnicity play into individual outcomes, I explain findings from a combination of angles. One angle notes the collective impacts of fisheries decline, another looks more closely at the influence of gender and ethnicity, and a third combines the above factors and documents how they interact and impact young people's response to fisheries decline.

5.3 Expectations Based on Existing Literature

Guided by existing literature which focuses on the life decisions of adolescents from places comparable to Bristol Bay, I developed some fairly strong assumptions concerning individual outcomes. The majority of these studies aim in part to answer some of the questions I have posed here today. Because of how closely my own research

goals resemble that of prior reports, I formed a set of clear expectations as to how this project would eventually unfold. It is worth briefly recapping some of the expected outcomes based on existing literature before discussing results from this case study. The following expectations are more fully discussed in sections of chapter two.

- In general, studies of fisheries-dependent regions have shown that young people, females and the more educated and better skilled are the most likely to migrate away from rural, natural resource dependent communities.\textsuperscript{155}

- When comparing the migration intentions of urban, suburban and rural youths, rural students have much higher rates of intended out-migration. A nationwide survey of 10,000 high school students documents that rural students are not only willing to move away from home, they prefer it.\textsuperscript{156}

- Studies focusing on rural Alaska adolescents suggest that high school girls, more so than boys, aspire to attend college and live most of the rest of their lives outside their home region.\textsuperscript{157} Specifically, Alaska Native women are much more likely than Alaska Native men to move to urban areas, pursue a college education, earn a college degree and enter into full-time employment.\textsuperscript{158}

In some cases, my findings support the observations and predictions described above. However, the Bristol Bay case study presents some rather unique findings in terms of how gender, ethnic identity and environmental change interrelate and effect individual outcomes. In short:

\textsuperscript{156} See Cobb, McIntyre and Pratt 1989
\textsuperscript{157} See Hamilton and Seyfrit 1994a
\textsuperscript{158} See Kleinfeld 1981, 1992; Hamilton and Seyfrit 1993, 1994a, 1994b
Most (91 percent) Bristol Bay graduates under study migrate from the region after high school. The majority (70 percent) of migrants leave the region to attend college.

Pre-crisis findings support existing literature on gender disparities among rural Alaska adolescents. Alaska Native females are more likely than Alaska Native males to leave the region and much more likely to attend college. Prior to the 1997-1998 fishing crisis, Alaska Native males are the least likely of all graduates to leave the region or attend college after high school.

Post-crisis results indicate major shifts in the life paths of some graduates. Alaska Native males become the most likely to leave the region. College attendance rates of Alaska Native males also begin to rise but they are still the least likely to attend college. Female out-migration declines considerably post crisis. Alaska Native females become the least likely to migrate from the region after high school.

a) Declining levels of female out-migration (both Native and non-Native) are indirectly linked to fisheries decline in Bristol Bay. Lower levels of female out-migration are the result of a sizeable increase in non-marital fertility rates.

The following sections describe these findings in detail.

5.4 Migration Patterns

5.4.1 Reverse Trends in Out-Migration of Bristol Bay Graduates

Bristol Bay students who graduated prior to the 1997-1998 fisheries crisis exhibit high levels of out-migration indicating that even in good fishing years, most young people do not find future life in the region attractive. High levels of out-migration among Bristol Bay graduates reveal a strong preference to live outside of the community. Collectively, 94 percent (62 out of 66) of pre-fishing disaster graduates left the region after high school. Figure 6 shows variation in out-migration rates in terms of the gender
and ethnic identity of pre-crisis graduates. As expected, Alaska Native males are the least likely to leave the region after high school. Although 80 percent (12 out of 15) of the Alaska Native males surveyed migrated from the region after high school, this is a relatively low percentage when compared to other graduates. Out-migration rates for all other graduates prior to the fishing disasters are roughly 96 percent or above. 100 percent of Alaska Native females and non-Native males left the region. 96.1 percent (25 out of 26) of pre-crisis non-Native females left the region. Looking at actual numbers, of the four pre-crisis graduates that did not migrate after high school, three were Alaska Native males.

As ecological change in Bristol Bay becomes more visibly destructive from an economic and social standpoint, one would expect to see an increase in levels of out-
migration of young people. Rising out-migration rates, or at least in this case consistently high ones, would seem a natural occurrence when combined with the overall declining population of the Borough and the shrinking population of 20 to 34 year olds. Moreover, existing literature leads one to hypothesize that as the regions' livelihood, and entire economy for that matter, become less stable, the relative attractiveness of life in the area would also diminish. A significant economic downturn, paired with the previously noted community-wide changes, might persuade younger generations to cautiously reconsider future plans. An overall less bright future in the community might make graduates more willing to pursue directions and take advantage of opportunities, such as a college education, that take them out of the community.

The post-crisis out-migration rate of Alaska Native males supports this hypothesis. Figure 7 illustrates a reversal in the out-migration rates of students graduating after the fisheries decline. In the five years immediately following the 1997-1998 fishing disaster, Alaska Native male graduates become the most likely of any of their counterparts (at 96 percent or 24 out of 25) to leave the region after high school. I suggest that the same push factors (related to the economic condition of the Borough) that are motivating more Native males to leave the region may be inadvertently pulling others in.

There is actually a slight decrease in the post-crisis level of out-migration (from 94 percent or 62 out of 66 before to 88 percent or 66 out of 75 after). Though slight, the increasing number of graduates who are not leaving the region post-crisis leads one to question whether or not the decision to stay was by choice or circumstance. Given the recent losses suffered by the community at large, it seems unlikely that post-crisis
graduates would prefer, more so than pre-crisis graduates, to remain in the community after high school. If fisheries crisis and related population decline consistently take the better educated and more ambitious individuals from a community, what can we conclude about the declining level of out-migration among post-crisis graduates? Have difficult economic times and related shortcomings of the school district failed to prepare and provide some students with the opportunity to leave the region? Are post-crisis graduates receiving the same quality of education as pre-crisis graduates? Are they just as confident and optimistic about their future endeavors?

The level of out-migration of females, most notably Alaska Native females, took a unique downturn post-crisis. The most significant and obscure finding in changes in out-migration rates of graduates is a 23.9 percent drop (from 10 out of 10 pre-crisis to 16 out of 21 post-crisis) in the out-migration of Alaska Native females. Declining levels of female out-migration (both Native and non-Native) stand in dark contrast to all other studies noted thus far. The fact that young females would be more willing to stay in the community as the economic and social prospects rapidly disintegrate does not fit well with existing literature based in rural Alaska and other fishing communities elsewhere. This phenomenon suggests that there are other influential forces at work here. Declining levels of female out-migration are at best indirectly linked to fisheries decline. A closer examination of this unexpected shift in female migration patterns leads to a surprisingly obvious occurrence that needs to be introduced in order to accurately understand reasons for the decline.
5.3.2 Stay Home at Home Moms

Changes in the migration patterns of females from Bristol Bay are better understood as a response to a sizeable increase in non-marital fertility rates for females. Since the 1997-1998 fishing disaster, the number of young females who have had a child outside of marriage has nearly tripled (3 out of 36 pre-crisis to 14 out of 36 post-crisis). Figure 8 illustrates a very noticeable increase in the amount of females becoming single mothers while still in high school or only a few short years out. Collectively, birth rates jumped from 5.75 percent pre-crisis to 38.1 percent post-crisis.

Statewide statistics suggest that overall Alaska Native teen birth rates are much higher than non-Native rates. In this case study, post-crisis Alaska Native females do have higher birth rates than non-Native females (9 out of 21 compared to 5 out of 15), however, major increases are not confined to the native population. The pre-crisis, non-Native fertility rate is 11.5 percent (3 out of 26). There are no pre-crisis Alaska Native females in this category (0 out of 10).

Both groups of females in the post-crisis time period show considerable increases indicating that the environmental-economic condition of the community is an important

Figure 8. Non-marital fertility rates for Bristol Bay females

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variable to consider. A spike in non-marital fertility rates serves as a crucial factor when explaining declining levels of out-migration. Of the seven post-crisis females that did not leave the region, five were single mothers.

As more and more females enter into motherhood at a relatively young age, the security of home and importance of being near ones support network of family and friends deters girls from leaving the community. Having a child in tow obviously alters life plans as well as perceptions of what is both a feasible and desirable future. Additionally, caring for a child only makes the transition to an unfamiliar, urban area (where most colleges are located) more difficult and ostensibly less attractive.

Several factors need to be considered when examining reasons for such a dramatic shift in birth rates. Generally speaking, birth rates among Alaska teens have been on the decline in the past decade, however, the actual decline is disproportionately centralized around urban and predominantly white areas. Poor access to contraception is one explanation for higher rates of teen births in rural areas, but like ethnicity, it fails to fully explain the disparities between pre-crisis and post-crisis fertility rates.

Along with geographic location and demographic composition, the environmental-economic condition of a region is an important factor to consider when understanding birth rates. Incorporating environmental factors into the equation draws attention to the impacts of critical ecological factors that compose the basic premise of this study. I propose that the Borough’s environmental-economic condition has played a part in rising non-marital fertility rates. Several studies have suggested that the economic climate of a community is a critical variable to include when explaining teen birth rates.

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due to the positively correlated relationship it has with an increase in risk behaviors.\textsuperscript{161} Although I am not looking specifically at teen birth rates (although all of the females composing non-marital fertility rates were under the age of twenty-two at the time of birth), the declining economic condition of the Borough does appear to be linked to the recent rise in non-marital fertility.

Major economic, environmental, and to some extent cultural, transitions have occurred in Bristol Bay in recent years. For many residents, an uncertain environment leads to an uncertain future. I argue that changing migration patterns and increasing non-marital fertility rates are corollary links in a cataclysmic and long lasting chain of events spurred by ecological change. The loss of certain qualitative aspects of community life (triggered by fisheries decline) is making life at home seemingly less attractive to Native males, which pushes more of them to leave the region. Perhaps at the same time, these losses are distorting some females' perceptions and expectations of how attainable future plans are, which has consequently led to outcomes which result in fewer being able to migrate from the community.

In other words, some young girls may be more prone to partake in high risk behaviors because doing so will not significantly alter any realistic future plans. This is not to say that these females lack visions and aspirations as to what their lives might someday be like (including where they would like to live, what they would like to do for a living, etc.), but rather that they are lacking the guidance, instruction and means that are necessary to readily accomplish such undertakings.

At this stage of analysis it is difficult to identify the direct cause of increasing birth rates. A more thorough study investigating individual and household traits would

\textsuperscript{161} See for example Clarke 2002, Cunningham 2003
be helpful in drawing conclusions on this topic. I do suggest, however, that the stress endured by the community overall, which has led to increasing social problems, and the recent falling apart of the school (which is how many residents describe it) have disrupted the life paths of some young people from the region.162

These types of problems may have actually narrowed the horizons for some, offering less direction in developing future goals and less hope and support in achieving them. Issues related to how the shortcomings of the school might play into this are discussed in the next section. Correlations between changes in human behavior and changes in the environment are often intricately connected but it is imperative to ascertain how these occurrences relate to one another. If communities are aware (of the sometimes vague) human-environment cause and effect relationship, locally initiated steps can be taken to respond to the present impacts and prepare for future ones.

5.4 Educational Outcomes

5.4.1 College Attendance Rates

Examining the migration patterns of recent high school graduates naturally leads into a discussion on educational outcomes. The majority of young people who leave Bristol Bay initially do so in pursuit of a college education. Seventy percent (90 out of 128) of the high school graduates who migrated from Bristol Bay attended college.

There is no overall noteworthy shift in the college attendance rates of graduates prior to and following the fisheries crisis. Roughly 64 percent of graduates from both eras (43 out of 66 pre-crisis and 47 out of 75 post-crisis) attended college after high

162 Social problems include those noted in previous reports including an increase in alcohol abuse and related problems, households having difficulty paying bills and depression. Northern Economics 1999
school. Figure 9 shows major differences in pre-crisis college attendance rates when accounting for gender and ethnic identity. Only 33 percent (5 out of 15) of pre-crisis Alaska Native males surveyed attended college. Comparing the college attendance rates of Native males (33 percent) to Native females (70 percent or 7 out of 10), it is obvious that the gender disparities in higher education enrollment reported elsewhere in rural Alaska clearly exist in the Borough as well. Native females are much more likely than Native males to attend college.

College attendance rates of pre-crisis Native females are similar to non-Native attendance rates. Roughly 75 percent (11 out of 15 males and 20 out of 26 females) of pre-crisis non-Native students attended college after high school.
Figure 10 shows changes in the college attendance rates of post-crisis graduates. There is a 19 percent increase in Alaska Native male college attendance rates. Although this increase brings Native male attendance rates up to 52 percent (from 5 out of 15 to 13 out of 25), they are still the least likely of all Bristol Bay graduates to attend college. Regardless, a rise in attendance rates of Native males supports the previously discussed idea that ecological change in Bristol Bay is persuading more Native men to explore life paths that take them out of the community. On the same note, higher rates of college attendance do not necessarily transfer into higher rates of college completion. This will be discussed below.

Alaska Native female college attendance rates illustrate roughly a 4 percent decline (from 70 percent to 66.6 percent) but these percentages are somewhat misleading. Looking at the actual numbers, 7 out of 10 pre-crisis Native females attended college whereas only 14 out of 21 post-crisis females attended. Non-Native female rates suffered a minor drop from 76.9 percent (20 out of 26) to 73 percent (11 out of 15). The fact that fewer females are attending college is not surprising given the increasing number of girls who are not leaving the region. Attendance rates of non-Native males declined from 73.3 percent (11 out of 15) to 64.2 percent (9 out of 14), but again, bear in mind we are dealing with a fairly small population and this drop is not as significant as it appears to be.

For the most part, fisheries decline has not had any sizeable negative impacts on college attendance rates. Given the relative ease with which rural Alaska students can gain admittance to in-state schools (also noted by Hamilton and Seyfrit 1993 and discussed below) and the financial aid made possible by local scholarships, it appears that
beginning a college education is a goal that can be met with little difficulty (in terms of admission and funding). Aiming to complete a college education poses an entirely new set of obstacles for students. How well the local high school is preparing students for this venture is discussed below. Prior to discussing college drop out rates and return migration, it is worthwhile to clarify a misconception involving the absence of Alaska Native males in higher education.

5.4.2 Different Types of Knowledge and the “Disservice” of School

Although Alaska Native males may be under represented when looking solely at college attendance rates, that is not to say they are not pursuing other educational, and what some may consider to be more practical, avenues for individual growth. Several teachers and parents of Bristol Bay graduates stressed that a college education wasn’t for everyone. Vocational (vo-tech) schools are a very effective and advantageous route for many students from rural Alaska. Vo-tech schools equip students with knowledge and skills that are well suited, and often times essential, for the life-ways and employment opportunities customary in rural, fisheries-dependent communities. Indeed, commercial fisher/author, William McCloskey (1998) describes a fisherman as one who “has always had to be proficiently skilled, but a modern day fisherman must be a walking vocational school.”

Of the nine graduates who preferred vocational schooling to a college education, six were Alaska Native males. When combining Alaska Native male college attendance rates with vo-tech attendance rates, the gap separating Native males from all other graduates in terms of higher education begins to close. Aforementioned studies note that Alaska Native males tend to value the lifestyle and employment opportunities available in

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163 McCloskey 1998
their home regions more so than females. Given this preference, vocational schools prove to be a viable alternative to a college education. Although they equip individuals with a different type of knowledge compared to a college education, it may be a much more applicable learning experience for those who intend on settling down closer to home. That said, as beneficial as vocational schools may be they are not equivalent to a college degree. We can not disregard the limited employment opportunities both in and out of the community available to individuals without a college education. Furthermore, Kleinfeld (1992) notes the tremendous impact that graduating from college has on personal development.

Graduation from college, many studies indicate, not only affects knowledge and intellectual skills. College graduates also tend to develop a different worldview. They are more likely to look at issues in complex ways. They tend to develop more liberal social and political attitudes, including views about the appropriate roles of men and women.164

Several residents in the Borough stressed concern regarding recent budget and program cuts at the school which have raised questions about how well the school is preparing students for life outside the community. Prior to the fishing crisis, it was not uncommon to hear that families were waiting to move away from the region until after their children had graduated from the local high school. In recent years, the school is having a more adverse affect. Several parents who have children currently attending school mentioned that they are now considering leaving the region because of the school. Others mentioned that if their child hadn’t already graduated they would consider moving.

Enrollment numbers at the Bristol Bay School (K-12th) have dropped from 340 students in 1997 to 199 in 2004. Loss of students equals loss of funding. Recent years

164 Kleinfeld 1992:12
have also been burdened by new administration, a very high teacher turn over rate and loss of staff network. Budget cuts include the loss of several programs and extracurricular activities, as well as staff and teaching positions. The most commonly mentioned program that needed to be reinstated was shop class. Many parents and teachers find these skills to be essential to graduates, most notably males, as they enter the workforce. Because community members know that not everyone is going to college, many feel the school is doing students a disservice by not providing electives that are going to help them get ready for jobs after high school. If the schools ability to prepare students for the workforce is being called into question, what can be said of its ability to prepare students for college?

5.5 Intentions vs. Success Rates

5.5.1 The Ethnic Identity of College Graduates

The remainder of this chapter discusses college drop out rates and return migration rates. It does not address these topics in relation to the 1997-1998 fishing crisis because doing so compromises results. There are simply too few students in each category to make any sound predictions regarding comparison of the two time periods. The main objective behind including information that does not pertain to ecological change is to provide a general reference point by which to measure disparities between intentions vs. actual outcomes of Bristol Bay graduates. The following results also allow other scholars of the region to compare the outcomes of young people from Bristol Bay with other young Alaskans. Additionally, these findings serve as an important piece when looking at the bigger picture of the life paths of Bristol Bay graduates.
Roughly two-thirds of the graduates included in this study started a college education. Nearly 40 percent did not finish. Figure 11 illustrates the percentage of students who left college with out earning a degree as of May 2005. The only group to have a drop out rate below 45 percent is non-Native males, at a very low 10 percent. Table 5 shows college drop out rates in terms of the actual number of students who attended college but left prior to earning a degree.

<table>
<thead>
<tr>
<th>Table 5. Actual number of college drop outs (1994-2003 high school graduates)</th>
<th>AK Native</th>
<th>non-Native</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>9 out of 18</td>
<td>2 out of 20</td>
</tr>
<tr>
<td>Female</td>
<td>11 out of 21</td>
<td>14 out of 31</td>
</tr>
</tbody>
</table>

Reasons why non-Native males have significantly lower college drop out rates than all other graduates are presently unclear. High drop out rates among rural Alaska students were expected. As previously discussed, it is relatively easy for Bristol Bay graduates (or rural Alaska students in general) to gain admittance and acquire funding for
a college education, particularly from in-state schools. A well funded college education serves as an opportunistic tool for students to easily head out into the world. The flip side of this opportunity is noted by Hamilton and Seyfrit (1994b). "For a young man or woman raised in rural Alaska, establishing a successful urban life presents big challenges in an unfamiliar world." Once in college, students are faced with the difficulties of both college life and adjusting to a completely different environment.

For many students from rural Alaska, the transition to college can be a very challenging one. The quality and purpose of a rural education, in terms of how well rural schools are able to prepare students for college courses, is only one concern. Students from rural Alaska are often times attending classes in lecture halls that could seat their entire community. On top of having to adjust and compete at a higher level of academic achievement (in comparison to the reported standards of many bush schools), it is also an overwhelming and lonely transition. Are the non-Native males under analysis able to make the transition more smoothly because they identify more closely with role models and teachers in the community? Do they have set goals that depend more heavily on a college education? The issue is intriguing because lower drop out rates among non-Native males (when compared to non-Native females) don't necessarily transpire into higher rates of college completion. Table 6 shows success rates are much less frequent occurrence than attending college for all graduates.

College graduates from Bristol Bay are predominantly non-Native. Table 6 illustrates which Bristol Bay graduates are earning college degrees. 1994 to 2000

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165 Hamilton and Seyfrit (1993)
166 Hamilton and Seyfrit 1994b
167 Hamilton and Seyfrit 1993
graduates have been included in Table 6 in order to give all individuals at least four years to finish college.

### Table 6.

**Ethnic identity and gender of graduates (1994-2000) who earned a college degree.**

<table>
<thead>
<tr>
<th></th>
<th>Alaska Native</th>
<th>non-Native</th>
<th>Total (by gender)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td>2</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>2</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong> (by ethnicity)</td>
<td>4</td>
<td>13</td>
<td>17</td>
</tr>
</tbody>
</table>

Within this seven year period, seventeen Bristol Bay graduates had earned a college degree by 2005. Of these seventeen college graduates, two have returned home. The fact that few college graduates return home after earning their degree is not unexpected, but it does raise concern due to the qualitative losses a community suffers when it is short of both educated individuals and its younger generation of adults. The final section of this chapter addresses return migration. Return migration is an important component of migration to consider because it potentially serves as a sketch of the future profile of a community. The following discusses who returns to Bristol Bay and why.
5.4.4 Return Migration: Who Comes Home?

Approximately 17 percent (22 out of 128) of graduates who left the region returned to Bristol Bay with in a few years of departure. There is a high degree of variation in reasons for return migration and cases are better understood as individual circumstances. Individuals often cited multiple incentives for returning. For example, a strong sense of home and running out money! Ties to family, community and region, as well as other quality of life motives were cited pull factors. Along with these, economically driven motives like saving money and getting back on one’s feet were also cited. Figure 12 illustrates the return migration rates of graduates. Alaska Native males are the most likely to return to Bristol Bay. Thirty-three percent of Native males who left the region returned. Native males make up nearly half (10 out of 22) of all returnees. Native females are the least likely to return to Bristol Bay. Between 1994 and 2003, only two Native females returned. Similarly, few non-Natives (five males and five females) returned.

Native males are the most likely to return, in part because returning to the region had been the initial plan for some. Three out of the ten Native males who returned, left the region to pursue vocational schooling and returned immediately after completion of the program. These are the infrequent cases where graduates planned to permanently
settle down in the community and did so. Most returnees consider their return home to be temporary. Approximately one-third (6 out of 22) of the returned students came home to work, save money, or “figure things out,” but do not consider their stay at home to be permanent. Although reasons for returning are dependent on individual circumstances, nearly all returnees share a common attribute.

Most (90.8 percent or 20 out of 22) students who return to Bristol Bay return with out a college degree. Figure 13 illustrates the level of education attained by returnees. Thirty-one percent (7 out of 22) of all returnees returned home after dropping out of college. These occurrences further illustrate the inconsistencies between students’ intentions and actual success rates. Fifty-four percent (12 out of 22) of returnees have no college education. Only one female of the seven that returned had been to college. Given the relatively few cases of return migration, it is difficult to make any generalizations outside of the widespread occurrence of low level of achieved higher education. Few individuals purposefully choose to return to the community to settle down permanently. Motivation for return migration (whether temporary or permanent) includes familial and community ties, good paying jobs and in some cases, free rent. Some returnees have returned because they have exhausted all or some of their financial
resources, educational possibilities or overall opportunities for living independently outside the community.

5.4.5 Influential Forces and Human-Environment Interactions

Environmental-economic change in Bristol Bay impacts the life paths of young people from the region in a variety of ways however, it is important to recognize that there are influential factors that are not addressed here. Although beyond the scope of this study, level of socialization (pertaining to years spent living in the community and ties to region), household economic strategy (comparing fishing vs. non-fishing households) and parent’s expectations are all worthwhile factors to include in future studies of Bristol Bay graduates.

Changes in migration patterns and educational outcomes are much more apparent among Alaska Native students in Bristol Bay than non-Native students. Given this correlation, it would be worthwhile to investigate this relationship more thoroughly to determine whether this is truly a direct link or not. Consideration of the aforementioned variables in relation to the importance of the ethnic identity of individuals would produce extremely valuable findings. The individual outcomes presented here offer insight into how ecological change, gender and ethnicity affect the life decisions of young people from rural Alaska. This case study is ultimately the groundwork for future research projects to build upon.

5.5.5 Summary

Residents of Bristol Bay are not blind to the current dilemma. Poverty is increasing, job opportunities are not. Families are selling homes they built with their own hands and moving away. Girls who should be dating are caring for children themselves.
Borough residents recognize the arising problems, and consider the majority of them to be a result of, or related to, fisheries decline. People are aware of the outside forces that affect local life. As a result of this, many acknowledge that if Bristol Bay is going to survive in the rapidly changing world around it, it is going to have to change as well. The final chapter captures how the residents of Bristol Bay view their current situation by addressing local concerns regarding the future livelihood of Bristol Bay.
The Future of Bristol Bay

"Even if the fish do come back, it's never going to be like it was…"
Local Naknek fisherman, 2004

So the fish come back… The 2004 season closed with a reported 43 million sockeye salmon returning to Bristol Bay. It is the 10th largest run ever recorded.\textsuperscript{168} The forecast for 2005 looks just as promising with an expected return of 32.9 million sockeye. End of story? Not exactly. Although fish stocks appear to be in good health, not every component of the fishery will recover with such vigor. Low salmon prices serve as an incessant reminder to many that the glory days of commercial fishing in Bristol Bay have passed. The globalization of the salmon industry persistently tilts the scales, making it extremely difficult for commercial fishermen to actually make a living at what they do. Advancing technology and global markets will most likely continue to control and afflict the wealth wrought by commercial fishing.

Every worthy fisherman in the nation knows of the salmon runs in Bristol Bay. It is impossible to speak of the remote region and not make mention of the world class runs that have undeniably shaped life and work there. The occupation of commercial fishing in Bristol Bay has no doubt persisted through hard economic times. Commercial fishermen do not easily find satisfactory job replacements for their line of work, no matter the monetary gain. This is because, to a long time fisherman, fishing is not just a source of revenue. It is a source of social purpose. It has been my observation that if a

\textsuperscript{168} ADF&G 2004 Season Summary
fisherman can afford to fish (or in recent years, can afford to lose money at fishing) he/she most certainly will.

Many fishers take time off of work to fish. They use up saved vacation time from their steady jobs as State and Borough employees, hairdressers, mechanics and teachers (just to name a few) to spend the summer building up their sea legs, or if a set-netter, knee deep in mud. They do this knowing that the market isn’t in their favor and knowing that the fish may be few. Fishing may not always pay the bills, but if you enjoy hard work, no sleep and the possibility of not getting paid, it is extremely gratifying.

Ecological change has convinced many residents to at least half-heartedly broaden their economic perspective. This is not to say that fishermen are hanging up their nets just yet. To quote one local fisher when asked of her family’s future plans, “He’ll [her husband] fish till he dies. Now I don’t know if I’ll fish that long, but maybe.”

Broadening one’s economic perspective stems from the uncertainty behind the question of whether Bristol Bay’s livelihood is still capable of sustaining the region economically. Serious doubts revolve around whether the region can survive another crisis like the present one, especially when the mineral rich environment doesn’t have to.

6.1 Does Rebuilding the Economy Imply Redefining the Culture?

Talk of oil exploration in Bristol Bay was met with strong resistance in the 1970s and 1980s. Locally, there was neither a desire nor a need for alternate forms of natural resource development. Ecological change has altered the scenario. Local opposition to
the once taboo subject of drilling for oil in Bristol Bay has transformed into unanimous support.\textsuperscript{169}

Communities in Bristol Bay will gain, both economically and politically, from rapid growth resource development in the region. But as the region struggles to economically re-establish itself, it is culturally threatened by the overpowering consequences of economic diversification. Replacing the economic base of a natural resource dependent community with a more profitable alternative may serve as a much needed shot in the economic arm, but such a potent remedy has side effects. As these communities re-emerge as the newest players in the game of rapid growth resource development, they are at risk of losing the culturally constructed local identity that is ultimately grounded in the existing way of life.

\textbf{6.2 Local Views of Inevitable Progress}

Of the eighty-nine households interviewed for this study, only one completely rejected the idea of oil exploration and gold mining in the region. Although most households are adamantly opposed to the possibility of offshore drilling, when asked how they felt about the onshore site near Chignik or the gold mine by Lake Iliamna, more than half (48 out of 89) expressed positive views, such as “Go for it!” One-third (30 out of 89) of the surveyed households view development in the region as a win-lose type of situation. Environmentally set against it and weary of the impacts new development will have on local life, many residents hesitantly support the growth under certain guidelines.

\textsuperscript{169} Unanimous support refers to the support of Native Corporations in the region (Loy 2003)
Used to be anti-development, but we can’t make a living off of fishing anymore. Environmentally set against it, but I’m open to it. (Mother, Alaska Native, fishing household)

With the way fishing is, as long as it doesn’t harm the environment and helps the local economy. (Mother, Alaska Native, fishing household)

Hate to see the country torn up but people have to live and the economy is very depressed. (Mother, non-Native, fishing household)

Hate to see it but understand why it has to happen. It will destroy the fishing economy. I don’t think the community is going to profit from it. It’s potentially dangerous. What we need is a creative tax. (Mother, non-Native, non-fishing household)

It’s inevitable and we need to plan for it. It needs to be done in a proper manner so we don’t destroy other resources. I’m totally opposed to offshore drilling. (Mother, non-Native, non-fishing household)

It might help the economy. We’ve lost so much in these past few years, all the people are leaving. (Mother, non-Native, non-fishing household)

It’s going to change one way or another so I’m not against it. Hopefully it won’t get too big. (Mother, non-Native, non-fishing household)

It’s a good thing as long as it’s managed right. (Father, non-Native, non-fishing household)

Don’t mind it. Technology is further. I’m comfortable with environmental development. We have the highest resources with few people. I’m concerned about it. Lots of pressure to do it right the first time. (Father, Alaska Native, fishing household)

There’s no stopping progress. (Father, Alaska Native, fishing household)

### 6.3 Irreversible Transitions

It is difficult to predict what life will be like in Bristol Bay in twenty, or even ten years. Some residents believe that the developing industries are too far away to benefit the Borough. Others feel that the region is on the verge of paramount and profitable transitions. One thing is for certain though, everyone agrees that there is no going back. There is no uninviting rapid growth resource development. Bristol Bay is traveling a path that goes in but one direction.

Recapturing what life is like in the fishing communities of Bristol Bay once they are overrun with mega-projects will be a worthwhile venture. The landscape will be torn up as roads and gravel pits fill the region. The economy will no longer be burdened by
the unpredictability of Mother Nature. New people will come in for new jobs and
gradually life in Bristol Bay will take on a new form, just as it did when the Russians first
arrived, and again when the first cannery stood on the banks of the Naknek River.

How remarkable that nearly three decades after Julian Steward (1968) published
his work on cultural ecology, it still serves as a solid theoretical landmark on which to
build this case study. Steward’s interest in the relationship between environmental
factors and certain aspects of culture, namely technology, economic arrangements, social
organization and demography no doubt lends itself as the ideal lens in which to capture
the transforming image of life in Bristol Bay. Advancing technology and changing world
markets have led to both a more capital intensive commercial fishing industry and a rise
in the competing farmed fish industry. Changes such as these have triggered large scale
shifts in the economic condition of Bristol Bay which have in turn led to noticeable social
and demographic change. Followed by the onset of rapid growth resource development
and what may or may not be the rise and fall of the commercial fishing industry in Bristol
Bay, we have on our hands a modern day ecological fairytale currently in progress.

It is worthwhile to pay attention to how oil exploration and gold mining in the
region will impact the life paths of young people. Will this fishing community become
more or less attractive to local youths as it withdraws from its livelihood? Is economic
growth enough to entice the bright, ambitious youths of the region back home? Will
young people retire the old boats of their fathers to take part in the uprising industries?
Will parents view this gesture as wise in the spirit of progress or discouraging in the way
of a dissolving life-way? Big stories come from little places. As anthropologists, we are
fortunate enough to have the responsibility of both the narrator and the listener.
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