

Fishing Communities of the North Pacific: Social Science Research at the Alaska Fisheries Science Center

by

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The Alaskan fishing community of Unalaska. Photo by Jennifer Sepez.

Successful fisheries management is dependent upon accurate fish stock data and accurate information about the people who conduct fishing and fish processing. Managers do not directly manage fish populations but rather the interaction humans have with those fish populations. Social science research is integral to successful fisheries management because it improves our understanding of the decision-making processes of fishers and their community members and how those individuals may be affected by fishery regulations.

NOAA Fisheries, formally known as the National Marine Fisheries Service (NMFS), is involved in a nationwide effort to profile fishing communities for the purpose of expanding baseline knowledge of people who may be affected by changes in fishery regulations. The profiles will facilitate the implementation of laws such as the Magnuson-Stevens Fishery Conservation and Management Act and the National Environmental Policy Act (NEPA) and will be used to help develop social models that can help predict the effects of regulatory changes. These profiles provide descriptive social information about the people of the community including demographics, history, employment, income, governance, available facilities, and types of fishing conducted by community members.

In 2003 a team of graduate students at the Alaska Fisheries Science Center (AFSC) completed draft

short-form profiles for 130 communities located in the state of Alaska. These profiles have been compiled in the upcoming publication *Fishing Communities of the North Pacific, Volume I: Alaska*. Longer profiles based on in-depth research also are being developed at the AFSC for a more select group of Alaska fishing communities. In mid-2004, the AFSC team joined with a team from the Northwest Fisheries Science Center to begin developing short-form profiles for West Coast communities, many of which are very involved in Alaska fisheries.

Importance of Communities

Consideration of human communities is required by a variety of Federal resource management regulations. National Standard 8 of the Magnuson-Stevens Act states:

Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

In addition, NEPA requires that agencies assess the impacts of major Federal actions on the environment, including the human environment. Other laws and policies mandating attention to impacts on human communities include

- Executive Order 12898 on Environmental Justice, which directs agencies to assess impacts that may disproportionately affect low income and minority populations.
- Executive Order 12866 on Regulatory Planning and Review, which requires agencies to assess the costs and benefits of proposed regulations and alternatives.
- The Regulatory Flexibility Act (RFA), which requires agencies to assess impacts of proposed policies on regulated small entities including small governmental jurisdictions (usually taken to mean communities of under 50,000).

In addition to meeting the requirements of the above laws, communities research offers an amplified look at populations that are, or could be, affected by fishery regulation changes. Often, the information provided to assess social impacts relies on geographical areas much larger than communities because a large amount of the available data is provided at aggregated levels, such as counties or, in the case of Alaska, boroughs. By focusing on the community level, researchers may be able to analyze the effects of a proposed regulation on more specific populations.

Such research might be especially effective in states such as Alaska where 1) communities are more distinct in geographical distance from one another than in many other states, 2) fishing is often the dominant or only viable industry, and 3) regulatory changes can be expected to have substantial impact. Participation in recreational and subsistence fisheries is also taken into account. Communities research can be even more complicated on the contiguous West Coast, where 1) denser population patterns mean that geographical boundaries between communities may be more difficult to distinguish and 2) communities are likely to be involved in fisheries off several states, meaning that data from numerous sources must be collected and reconciled.

AFSC Community Profiles

Each of the NOAA Fisheries Science Centers is currently undertaking an effort to profile fish-

ing communities. At the AFSC, we have elected to move forward with the approach pioneered by the North Pacific Fishery Management Council (NPFMC) in *Faces of the Fisheries*, published in 1993. This effort requires profiling a large number of communities in concise narrative descriptions by compiling data from existing sources. The advantages of this approach are several. First, it takes on the fishing communities issue at the community level. Second, this approach allows for the coverage of a large number of communities, including many small places which are highly impacted by fisheries regulations but are often not included in time-constrained, issue-specific, social impact assessments. Finally, this approach separates the process of describing communities based on available data from the very important, but methodologically distinct, process of conducting original field-based ethnographic research in communities. This separation is efficient for producing a large set of materials quickly and without the expense of fieldwork, which can be considerable in a place like Alaska. (Field-based research is also part of the AFSC Communities Research Plan, but will be conducted in a smaller subset of communities over a longer period of time.)

SELECTION OF COMMUNITIES

One hundred and thirty Alaskan communities were selected to be profiled using our quantitative assessment method, a method necessary to reduce the extremely long list of communities in Alaska which are involved in fishing in some way. In order to determine which communities would be profiled, we chose a wide array of quantitative indicators that measure a variety of types of involvement in fisheries and selected those communities which rose above the designated threshold for any one of the indicators. We utilized eight indicators which showed communities that have commercial fisheries landings: 1) landings, 2) number of processors, 3) number of vessels delivering to a community; 4) communities that are the registered homeports of vessels participating in the fisheries, and communities that are home to documented participants in the fisheries: 5) crew license holders, 6) state permit holders, 7) Federal permit holders and 8) vessel owners. Data from the year 2000 were used because they could be matched with Census 2000 population and demographics data. Table 1 shows the list of communities selected for profiling.

Table 1. The 130 Alaskan fishing communities selected for the Alaska Fisheries Science Center's short-form community profiles.

Adak	Goodnews Bay	Metlakatla	Quinhagak
Akhiok	Gustavus	Meyers Chuck	Saint George
Akiachak	Haines	Naknek	Saint Marys
Akutan	Halibut Cove	Napakiak	Saint Paul
Aleknagik	Hobart Bay	Nelson Lagoon	Sand Point
Alitak Bay	Homer	New Stuyahok	Scammon Bay
Anchor Point	Hoonah	Newhalen	Seldovia
Anchorage	Hooper Bay	Newtok	Seward
Angoon	Hydaburg	Nightmute	Shaktolik
Atka	Igiugig	Nikiski	Sitka
Bethel	Iliamna	Nikolaevsk	Skwentna
Chefornak	Ivanof Bay	Ninilchik	Soldotna
Chignik (Bay)	Juneau	Nome	South Naknek
Chignik Lagoon	Take	Old Harbor	Sterling
Chignik Lake	Karluk	Ouzinkie	Tenakee Springs
Clam Gulch	Kasilof	Palmer	Thorne Bay
Clarks Point	Kenai	Pedro Bay	Togiak
Cordova	Ketchikan	Pelican	Toksook Bay
Craig	King Cove	Perryville	Tuntutuliak
Dillingham	King Salmon	Petersburg	Tununak
Edna Bay	Kipnuk	Pilot Point	Twin Hills
Eek	Klawock	Pilot Station	Ugashik
Egegik	Kodiak	Platinum	Unalakleet
Ekuk	Kokhanok	Point Baker	Unalaska/ Dutch Harbor
Ekwok	Koliganek	Port Alexander	Valdez
Elfin Cove	Kongiganak	Port Alsworth	Wasilla
Elim	Kotlik	Port Graham	Whale Pass
Emmonak	Kwigillingok	Port Heiden	Whittier
Excursion Inlet	Larsen Bay	Port Lions	Willow
Fairbanks	Levelock	Port Moller	Wrangell
False Pass	Manokotak	Port Protection	Yakutat
Fritz Creek	Marshall	Portage Creek	
Galena	Mekoryuk	Prudhoe Bay	

For the purposes of generating a list of Alaska communities from which to select profile communities, we generated a list of 396 localities listed as communities in the various databases we used. Communities listed in the fisheries information databases which were not considered as “places” by the Census, and therefore did not have data for a place-level population, were generally not included in the selection procedure. Many of these were real locations listed by the inhabitant, such as “Bristol Bay,” or “Denali Highway” but which did not correspond to any clear community jurisdiction. This reduced the list to 249 communities, from which 130 were selected. Fisheries data was

acquired from the Alaska Fisheries Information Network (AKFIN), the Alaska Department of Fish and Game (ADF&G), the Alaska Commercial Fisheries Entry Commission, and NOAA Fisheries Alaska Regional Office.

Two of our most important data sources for nonfisheries-specific information were the U.S. Census and the Alaska Department of Community and Economic Development (DCED) communities database. The U.S. Census Bureau provides demographic data sets at various geographic types (at the national level, regional, divisional, state, county, census tract, and so on), including by “place,” which is roughly equivalent to community/city. Where an

Table 2. Descriptive statistics of fishing community indicators for 249 Alaska communities.			
Indicator	Range	Mean	Standard Deviation
1A. Tons of landings	Statutorily confidential data for most communities.		
1B. Number of Processors	0-13	0.46	1.71
1C. Number of Vessels Delivering	0-946	33	128
2. Vessels Homeported per capita	0-1.47	0.10	0.19
3. Vessel Owner Residences per capita	0-1.69	0.08	0.16
4. Crew Licenses per capita	0-0.56	0.00	0.11
5A. Registered State Permits per capita	0-1.80	0.13	0.22
5B. Fished State Permits per capita	0-0.97	0.07	0.13
6. State Setnet Permits per capita	0-0.23	0.02	0.04
7. Federal Vessel Permits per capita	0-0.13	0.00	0.01
8. Aggregated Indicators per capita	0-6.38	0.50	0.76

officially incorporated or otherwise recognized place-level jurisdiction does not exist for what is otherwise understood as a community, the Census creates one in the data, called a Census Designated Place. The DCED provides the Community Database Online, which contains information on various aspects of communities such as history, economy, facilities, location, transportation, and climate. The DCED database provided an informative source for the profiles produced by the AFSC social science profiling group. The DCED Communities Database Online can be accessed at http://www.dced.state.ak.us/dca/commdb/CF_COMDB.htm.

Fishing community indicators were analyzed for the 249 communities that had Census populations. The thresholds were set at a level which would reasonably include communities that had a significant level of involvement in commercial fisheries. Many of the indicators were calculated as a ratio to the total population of the community as stated by the 2000 U.S. Census, with 0.15 per capita set as the threshold for profiling. Means for the indicators (other than the aggregate indicator) varied between 0 and 0.13, so in every case the 0.15 threshold was selected for above average communities. A community which met or exceeded the threshold for any single indicator was selected. Table 2 summarizes the data for each of the eight indicators.

NARRATIVE PROFILES

The 130 short-form community profiles consisted of information gathered from written sources including the Alaska DCED, U.S. Bureau of

Census, Bering Sea Communities and Fisheries Organization, chambers of commerce, Commercial Fisheries Entry Commission (CFEC), ADF&G, NOAA Fisheries, U.S. Bureau of Citizenship and Immigration Services, Southwest Alaska Municipal Conference (SWAMC), Travelocity and Expedia (for the cost of travel to the community), as well as many additional scholarly and popular works. These community profiles were about three to five pages on average in length.

The profiles are organized into five regions: 1) South East, 2) South Central (subregions Anchorage/Matsu, Kodiak, Kenai, and Prince William Sound), 3) South West (subregions Alaska Peninsula/Aleutian Islands and Western), 4) Northern, and 5) Interior Alaska. An introduction is provided for each region as well as subregion if appropriate. The introductions contain information and analysis at a larger geographical area than the community, such as relevant trends and challenges by region and subregion.

Each community profile contains three sections: People and Place, Infrastructure and Involvement in North Pacific Fisheries. People and Place describes the location, history, and basic demographic structure of the community. Infrastructure offers a picture of the current economic situation, the structure of governance, and the facilities of the community. Finally, Involvement in North Pacific Fisheries details the nature and level of community involvement in commercial, sport and subsistence fishing. Figure 1 shows the People and Place section for the community of Adak's profile.

Figure 1. An example of People and Place section of the short-form community profile.



POPULATION STRUCTURE

In addition to the narrative descriptions, a series of graphs are included with the profile for each community. The graphs use 2000 U.S. Census data to show the community population structure, racial structure, ethnicity, changes in group quarters from 1990 to 2000, and employment structure.

Figure 2 contains population structure graphs for Alaska and the United States for comparative purposes, while Figure 3 contains examples of pop-

ulation structure graphs for three different Alaska communities: Adak, Petersburg, and Unalaska (the U.S. Census community of Dutch Harbor/Unalaska). Also known as population pyramids for their typical shape over large populations (world population for example), the examples in Figures 2 and 3 show distinct patterns for each population. Note, for example, as observed from field observations, the lower rates of senior citizens of both sexes in the Alaska population compared to the national

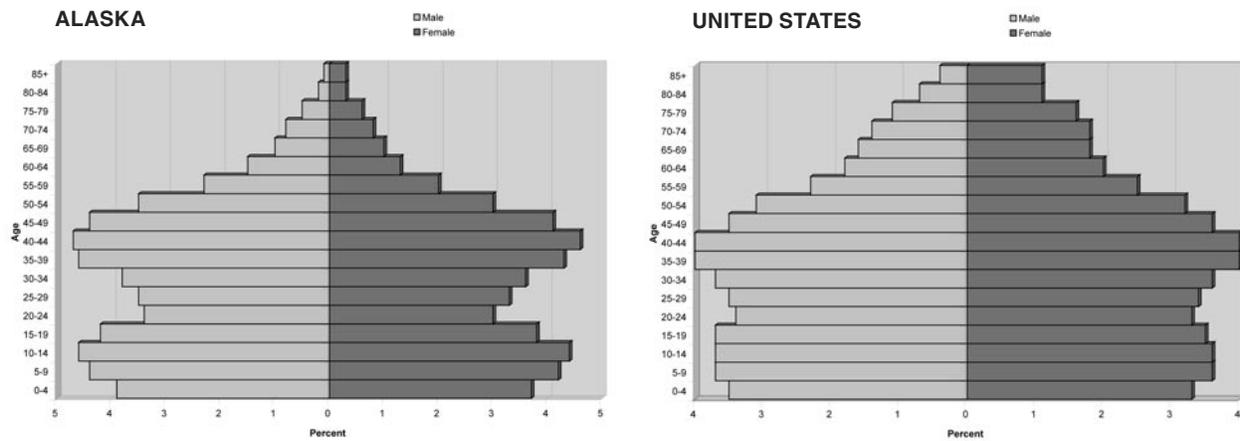


Figure 2. Year 2000 population structure in Alaska and the United States. Data source: U.S. Census.

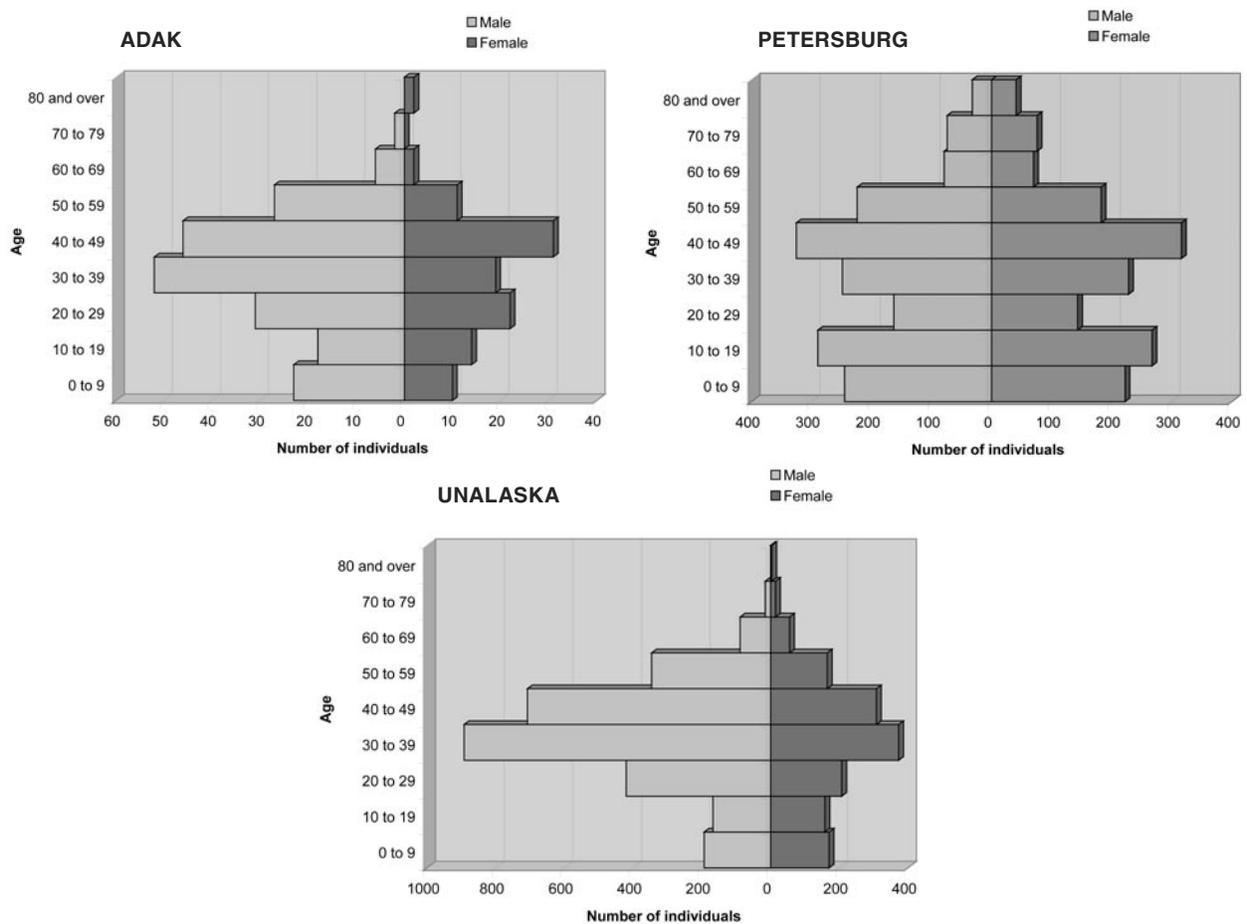


Figure 3. Year 2000 population structure in Adak, Petersburg, and Unalaska, Alaska. Data source: U.S. Census.

population, caused not by a shorter life expectancy for Alaska residents, but by emigration of a significant portion of the retirement age population to warmer, cheaper locations with more accessible medical care.

Visible in the population pyramids for both communities of Adak and Unalaska are age-based and gender-based economic opportunities available

in the community. Both communities have a proportionately larger number of working age males, which is manifested as a lopsided bulge in the middle of the graph. Information about these communities indicates that these males are most likely taking part in either commercial fish harvesting or in the processing sector. This trend is very typical of Alaskan fishing communities which attract many

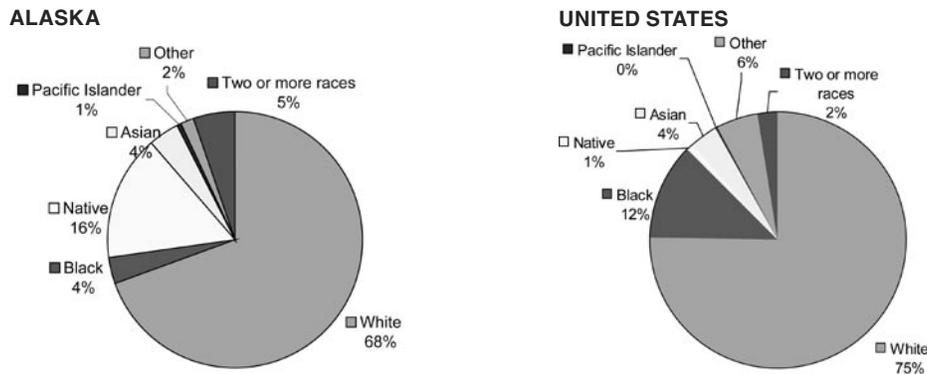


Figure 4. Year 2000 racial structure of Alaska and the United States. Data source: U.S. Census.

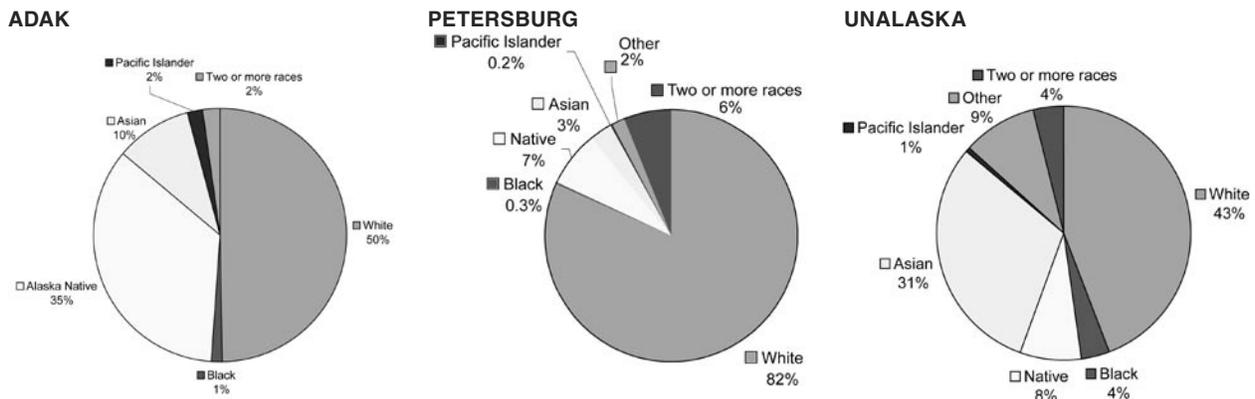


Figure 5. Year 2000 racial structure in Adak, Petersburg, and Unalaska, Alaska. Data source: U.S. Census.

transient seasonal workers, a majority of whom are male. In Petersburg the situation is markedly different; the population is made up of slightly more males than females, however the genders are much more balanced than in the other two communities and tend to mirror each other to a greater extent. In Petersburg the 20 to 29 age group has a marked loss of residents of those ages, perhaps from community members leaving to attend colleges or universities or seeking employment in a more opportunity-laden environment. The population structure of Petersburg looks more like the state pattern than that of either Unalaska or Adak. None of the community structures resemble the national structure, which shows proportionately more children and elders.

RACIAL STRUCTURE

The current prevailing view in social science is that although the racial categories we generally use are not supported by biological evidence, they have important social significance. The U.S. Census Bureau has dozens of racial classifications, but requires Federal agencies to collect or display data using a minimum of five categories: 1) American

Indian or Alaska Native, 2) Asian, 3) Black or African American, 4) Native Hawaiian or Other Pacific Islander, and 5) White. Our racial structure data is taken from the 2000 Census using these five categories plus the “two or more races” category used for the first time in 2000. For space reasons in the graphs, we shorten three of the terms as follows: Native or Alaska Native (for American Indian or Alaska Native), Black (for Black or African American), and Pacific Islander (for Hawaiian or Other Pacific Islander). Figure 4 shows the racial structure of Alaska and the United States in the year 2000, while Figure 5 shows the racial structure of Adak, Unalaska, and Petersburg.

The racial structure of the communities makes visible community history as well as the current economic opportunities available locally. In Petersburg the settling of the community by people of Scandinavian origin can still be seen in the current racial structure of the city, whereas in Adak, the recent resettlement of the community by Aleut Corporation shareholders following the closure of the military base is newly visible in the year 2000 population. In Unalaska the plentiful economic base



Figure 6. Year 2000 ethnic structure of Alaska and the United States. Data source: U.S. Census.

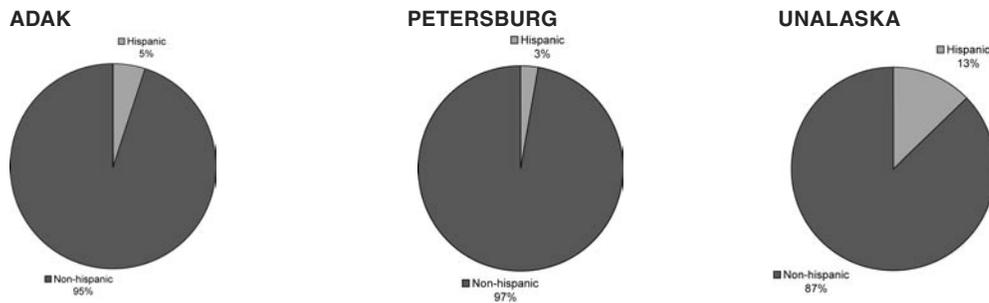


Figure 7. Year 2000 ethnic structure in Adak, Petersburg, and Unalaska, Alaska. Data source: U.S. Census.

made up primarily of commercial fishing is visible in the diversified peoples present in the community.

ETHNIC STRUCTURE

The U.S. Census Bureau has designated that Hispanic or Latino identity is an ethnic rather than a racial category. Thus, the two possible ethnicities, shortened for space reasons in the charts to Hispanic and non-Hispanic, are reported in a pie-chart format separate from race. Hispanics and Latinos may be of any race. Figure 6 shows the ethnic structure of the State of Alaska and the United States, while Figure 7 shows the same for our three communities.

The presence of members of the population who are Hispanic can also be indicative of the history of the community and opportunities available in the community. Although reliable specific estimates are not available, it is well known from fieldwork that a significant portion of processing workers in Alaskan fishing communities are of Hispanic origin.

GROUP QUARTERS

Group quarters or group housing information is taken from the 1990 Census and the 2000 Census. Because the Census method and definition in this category has remained relatively stable, it is viable to examine change over time in group housing. In order to isolate bunkhouse-style quarters, for the purpose of these charts “nongroup housing” includes single and multifamily households, and institutional (schools, hospitals) housing. Thus defined, the

vast majority of group housing indicated in Alaska fishing communities will be military barracks or corporate-sponsored housing for seafood industry workers. Change between 1990 and 2000 may indicate changes in the seafood processing industry. Figure 8 shows group housing in Alaska State and the United States, while Figure 9 shows the same for our three communities.

In the case of Unalaska in 1990 and also in 2000, a high percentage of the population involved in the fish processing sector resided in group housing provided by the processors, and anticipated structural changes to this arrangement due to the American Fisheries Act (AFA) had not yet manifested. The elongated pollock season under the AFA may cause some pressure to increase nongroup housing, as transient seasonal workers stay for longer periods of time and may be more likely to bring their families with them. However, a lack of affordable nongroup housing opportunities in Unalaska caused by a variety of economic and governmental factors may mitigate or even suppress this expected effect.

In Petersburg, only a very small segment of the population lives in group quarters, in keeping with the population pyramid (Fig. 3) which indicated a less transient structure. In Adak, the community members who lived in group quarters in 1990 were part of the naval station, which was still in operation at that time. The station closed in 1997; therefore there are no residents in group quarters in Adak at the time of the year 2000 Census.

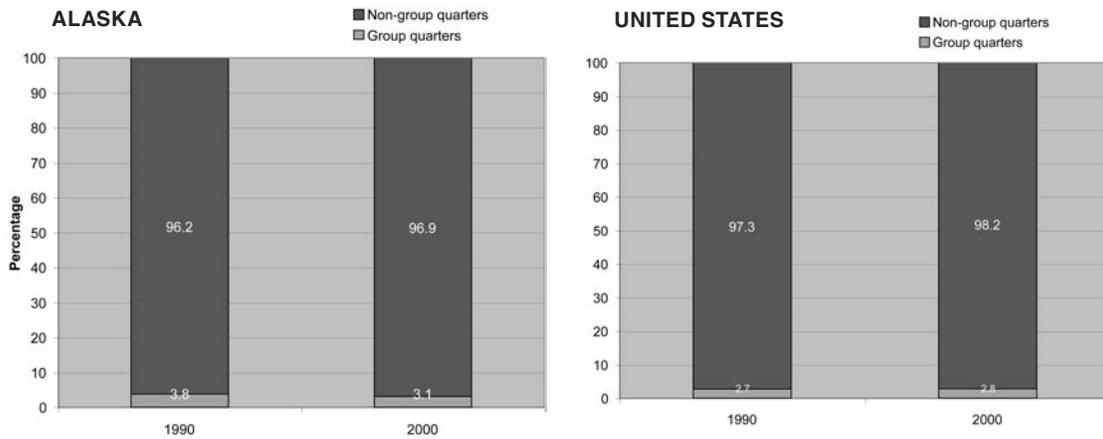


Figure 8. Percentage of population that lived in group and nongroup housing in Alaska and the United States for the years 1990 and 2000. Data source: U.S. Census.

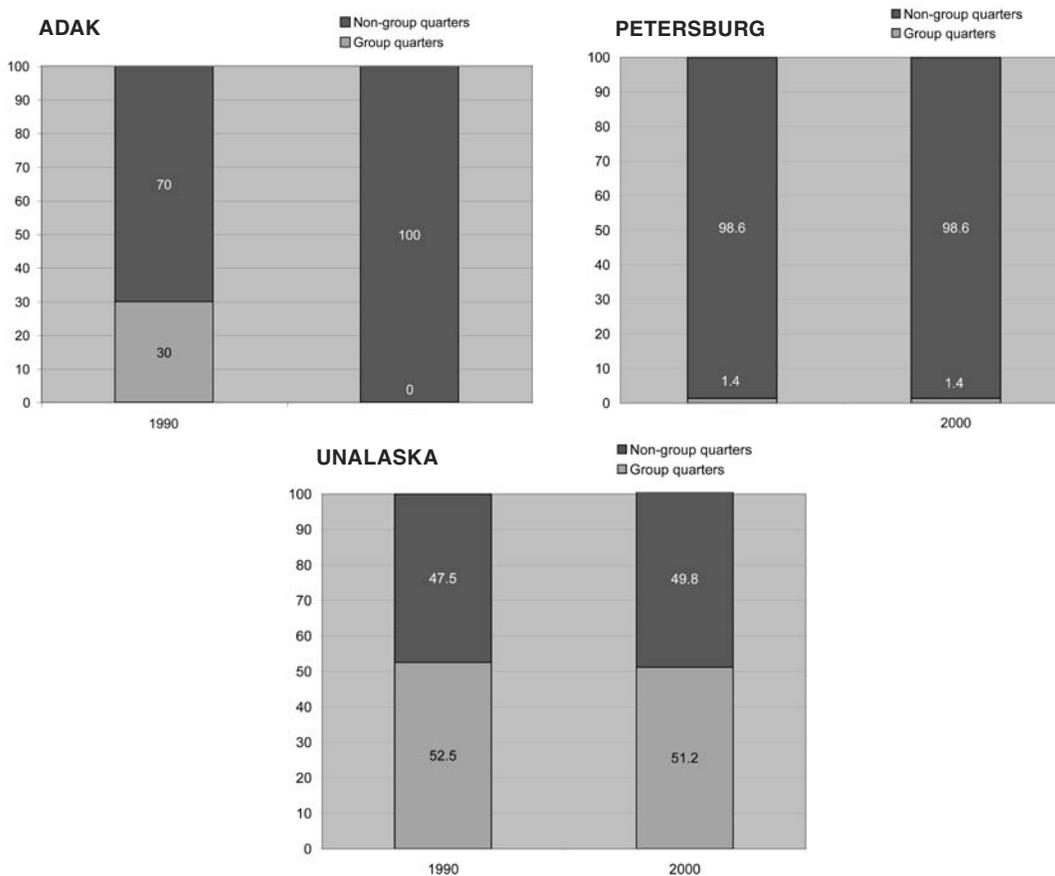


Figure 9. Percentage of population that lived in group and nongroup housing in Adak, Petersburg, and Unalaska, Alaska, for the years 1990 and 2000. Data source: U.S. Census.

EMPLOYMENT

Employment statistics are divided into four categories: employed, unemployed, not seeking work (includes children, retirees, and long-term unemployed), and members of the armed services who are stationed in the community. Employment structure is based on persons over the age of 16. Figure 10 shows the 2000 employment structure of Alaska and the United States while Figure 11 shows the

employment structure of Adak, Unalaska, and Petersburg.

Many kinds of information about communities could be graphically displayed as part of a community description, but these five basic demographic statistics were selected for their fundamental role in community identity and economy. The population pyramids are particularly rich in information as they display age, gender, and the interactions be-

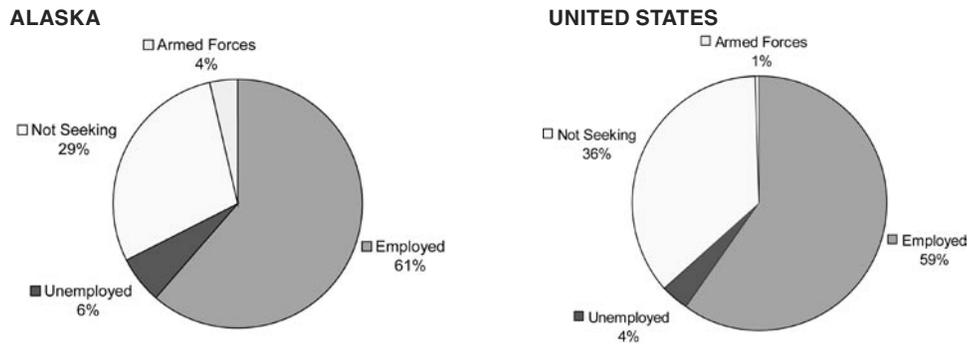


Figure 10. Year 2000 employment structure of Alaska and the United States. Data source: U.S. Census.

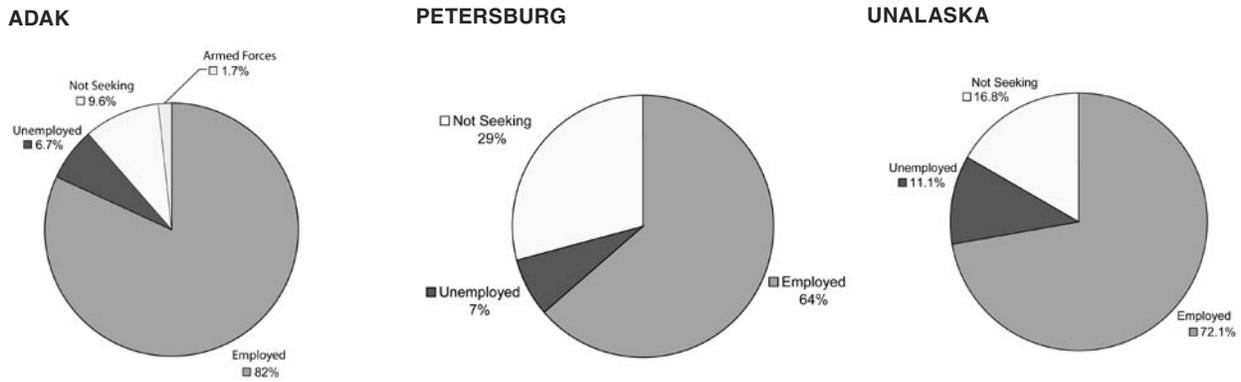


Figure 11. Year 2000 employment structure in Adak, Petersburg, and Unalaska, Alaska. Data source: U.S. Census.

tween age and gender at the same time. Both history and economy influence the racial and ethnic makeup of a community, while employment is a measure of current economic status. Group quarters may be interpreted, in part, as a measure of transience in a community, and for some communities, changes in group quarters over time reflects changes specific to the fish processing industry.

Overall Research Plan

Our overall plan for expanding the baseline knowledge of people affected by changes in regulations includes 1) the production of the Alaska short-form profiles as described above, 2) the production of short-form profiles of non-Alaska communities involved in North Pacific fisheries, 3) the incorporation of social data into the AFSC's annual stock assessment and fishery evaluation (SAFE) reports, 4) the production of long-form profiles for representative large and small communities in various regions, and 5) additional projects on harvesting crew, the processing sector, and community development quota (CDQ) sector. Social science staff at the Center also are working on projects involving

traditional ecological knowledge, Pacific halibut quota share trading, and applications of GIS to social aspects of fisheries.

SHORT-FORM PROFILES AND ANTICIPATED APPLICATIONS

Fishing Communities of the North Pacific, Volume I: Alaska is under internal review, and the individual profiles will soon be sent to contacts in each community in order to generate feedback and verify accuracy and currency of the information with community members. Many of the profiles of smaller communities suffer from a dearth of written information available about local history, and the feedback from those communities will add much valuable information.

In June 2004, the AFSC began a joint project with social scientists from both the Northwest and Southwest Fisheries Science Centers to compose short-form profiles of communities outside Alaska which are significantly involved in fisheries of Alaska, Washington, Oregon and/or California. For the Alaska Center's team, this will include profiling communities in states other than Alaska which are involved in the fisheries of the North Pacific (i.e.,

communities with a significant number of permit holders or crew members or vessel owners who fish in Alaska). Profiled communities will also include those which are essentially multiregional in orientation (i.e., those communities which have low to medium participation in the fisheries of any one state, but with aggregated state data show a high level of participation in fisheries). This project will use written sources and baseline quantitative data similar to what was described above for the Alaskan community profiles, but which are unique to each state.

The short-form profiles will be of immediate use in meeting the Alaska Region's NEPA obligations. The AFSC community profiles can be incorporated directly into required environmental assessments (EAs) or social impact assessments (SIAs) to help describe the human environment and predict the effects of changes in regulations on specific communities. For example, the draft Adak profile was recently adapted to form the core of the community section in the Environmental Assessment/Regulatory Impact Review for Amendment 82 to the Bering Sea-Aleutian Islands Fishery Management Plan and regulatory amendments to allow the allocation of future Aleutian Islands pollock specifications to the Aleut Corporation as required by statute, produced by the Alaska Region and the NPFMC in 2004. As part of the larger national effort to profile fishing communities, data from the AFSC short-form profiles will be incorporated into a national fishing communities database being constructed by NMFS.

LONG-FORM PROFILES

In addition to the short-form profiles detailed in this article, we will also produce a series of long-form profiles of Alaskan fishing communities. Thus far ethnographic fieldwork has been conducted in

two communities in Alaska: Unalaska and Chignik. This research, conducted in 2002 using ethnographic and rapid assessment methods, includes

many interviews with community members such as fishermen, processing workers, processing plant managers, leaders of village government (both tribal and nontribal), school officials, and various other residents. A long-form profile of Unalaska is under way, including information gleaned from these inter-

views, as well as historical and demographic materials. For the community of Chignik, the material gathered is being compiled for a paper on the specific issues of common property and collective action in Chignik fisheries. These long-form profiles and accompanying research are necessary to discover issues or phenomena which affect the social aspects of fisheries, but which are not documented in the available literature.

COMMUNITIES, CREW, AND PROCESSING

An additional project conducted at the Center involves gathering baseline information on the demographics of commercial fishing crews. Based largely on the Alaska crew licenses database, Alaska CFEC permit data, U.S. Coast Guard records, and media reports, the analysis will include information about the permanent home communities of crew, ethnicity and race, national origin, gender, and age, and will supply information where little to none had previously been available. Future projects will include research on the processing sector and additional important elements of Alaska fisheries such as the CDQ system in the Bering Sea and Aleutian Islands communities, the new Community Purchase Program for halibut individual fishing quota in Gulf of Alaska communities, and application of traditional ecological knowledge in fisheries management.



Members of the AFSC communities research team.