

Shishmaref (SHISH-muh-reff)



People and Place

*Location*¹

Shishmaref is located on Sarichef Island, in the Chukchi Sea just north of the Bering Strait. Shishmaref is 5 miles from the mainland, 126 miles north of Nome, and 100 miles southwest of Kotzebue. The village is surrounded by the 2.6 million-acre Bering Land Bridge National Preserve. It is part of the Beringian National Heritage Park, endorsed by Presidents Bush and Gorbachev in 1990. Shishmaref is located in the Cape Nome Recording District and the Nome Census Area, and is not located within an organized borough. The City encompasses 2.8 square miles of land and 4.5 square miles of water.

*Demographic Profile*²

In 2010, there were 563 residents in Shishmaref, making it the 106th largest of 352 total Alaskan communities with recorded populations that year. According to Alaska Department of Labor population estimates, between 2000 and 2009, the population of Shishmaref grew by 7.83%, with an average annual growth rate of 0.66%, indicating slow growth. However, the U.S. Census shows that the population remained relatively stable between 2000 and 2010. The change in population from 1990 to 2010 is shown in Table 1.

In 2010, almost all Shishmaref residents identified themselves as American Indian or Alaska Native (94.8%). Other ethnic groups present in Shishmaref that year included two or more races (1.2%), Asian (0.4%), White (3.6%), and Hispanic or Latino (0.2%). Between 2000 and 2010, the percentage of the population identifying themselves as American Indian or Alaska Native increased by 1.6% and the percentage of the population identifying themselves as Asian increased by 0.4%, with corresponding decreases in the percentage of the population identifying themselves as White, Hispanic or Latino, and two or more races. Changes in racial and ethnic composition from 2000 to 2010 are shown in Figure 1.

In 2010, the average household size in Shishmaref was 3.99, an increase from 3.96 persons per household in 2000 and 3.80 in 1990. The total number of households in Shishmaref increased from 119 in 1990 to 142 in 2000 then decreased by one to 141 in 2010. Of the 151 total housing units surveyed for the 2010 Decennial Census, 84 were owner-occupied, 57 were renter-occupied, and 10 were vacant. Throughout this period, no residents of Shishmaref were reported to be living in group quarters.

¹ Alaska Dept. of Comm. and Rural Affairs. (n.d.). *Community Database Online*. Retrieved October 17, 2011 from http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm.

² U.S. Census Bureau (n.d.). *Profile of selected social, economic and housing characteristics of all places within Alaska*. Datasets utilized include the 2000 (SF1 100% and SF3 sample data) and 2010 (Demographic Profile SF) Decennial Census and the 2010 American Community Survey 5-year estimates. Retrieved November 1, 2011 from <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>.

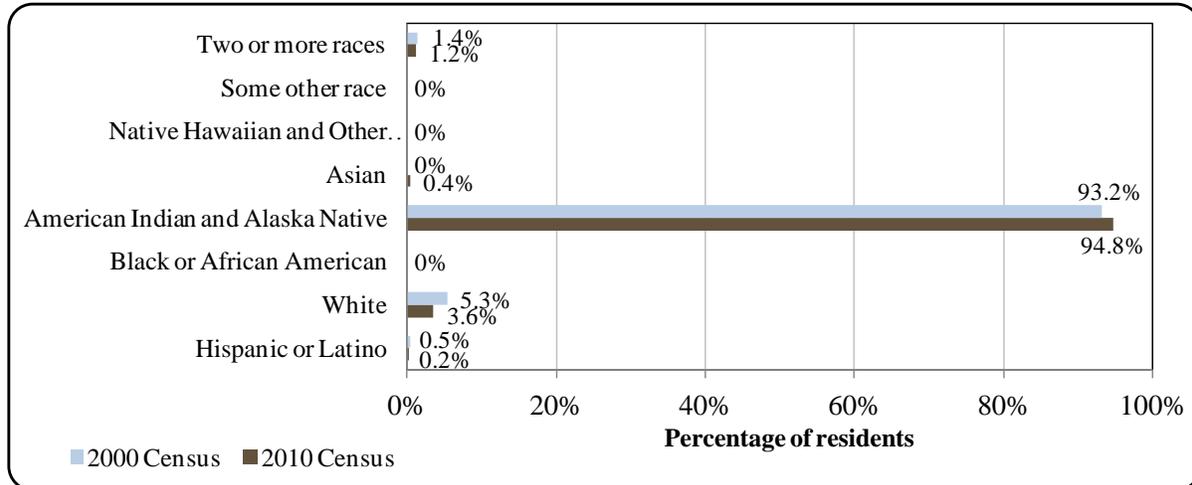
Table 1. Population in Shishmaref from 1990 to 2010 by Source.

Year	U.S. Decennial Census ¹	Alaska Dept. of Labor Estimate of Permanent Residents ²
1990	456	-
2000	562	-
2001	-	586
2002	-	589
2003	-	594
2004	-	595
2005	-	582
2006	-	617
2007	-	607
2008	-	586
2009	-	606
2010	563	-

¹ (1) U.S. Census Bureau (1990). *CP-1: General Population Characteristics of all places within Alaska*. Retrieved November 1, 2011 from <http://www.census.gov/prod/www/abs/decennial/1990.html>. (2) U.S. Census Bureau (n.d.). *Profile of selected social, economic and housing characteristics of all places within Alaska*. Datasets utilized include the 2000 (SF1 100% and SF3 sample data) and 2010 (Demographic Profile SF) Decennial Census and the 2010 American Community Survey 5-year estimates. Retrieved November 1, 2011 from <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>.

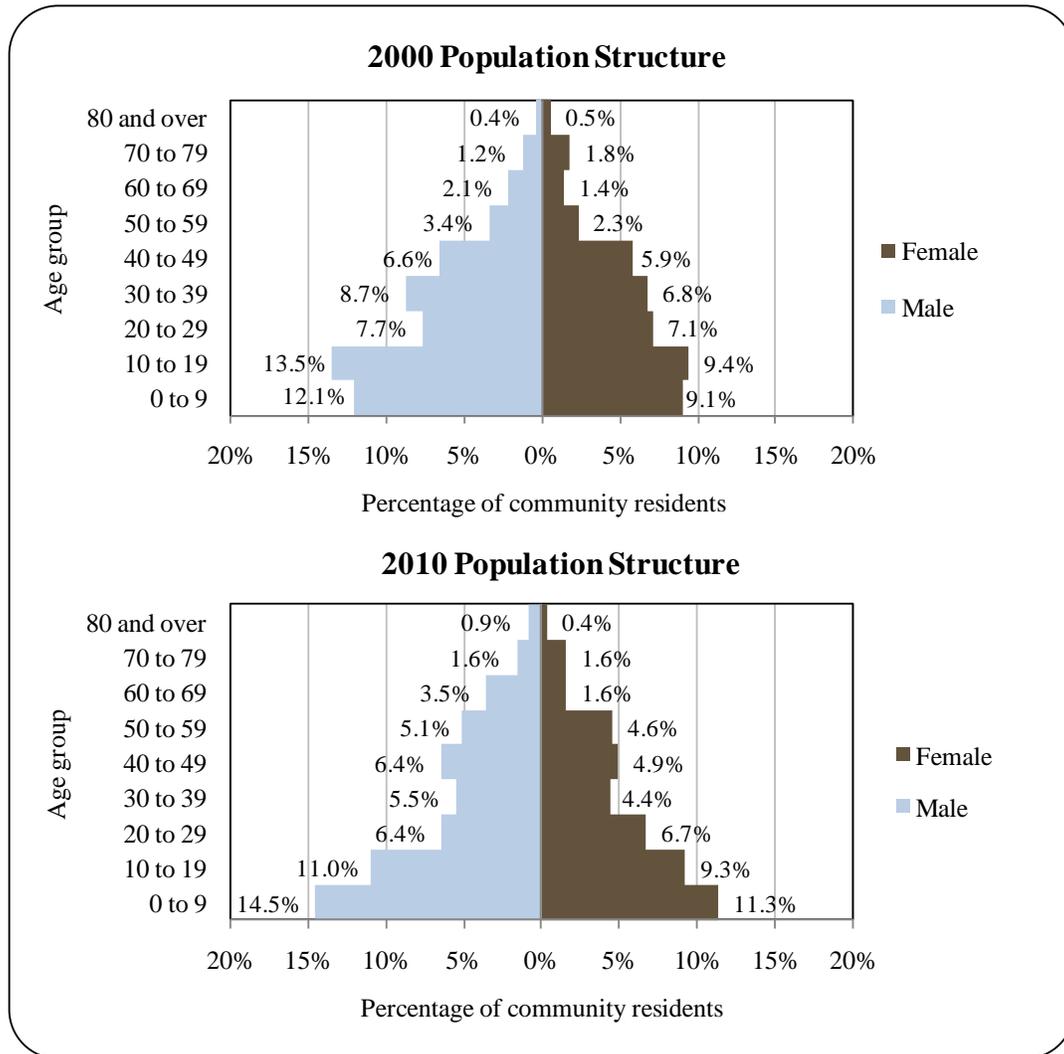
² Alaska Department of Labor. (2011). *Current population estimates for Alaskan Communities*. Retrieved April 15, 2011, from <http://labor.alaska.gov/research/pop/popest.htm>.

Figure 1. Racial and Ethnic Composition, Shishmaref: 2000-2010 (U.S. Census).



The gender makeup in Shishmaref in 2010 was 55.1% male and 44.9% female, slightly more skewed than the state as a whole (52% male, 48% female). The median age was estimated to be 22.5 years, lower than both the U.S. national average of 36.8 years and the median age for Alaska, 33.8 years. In 2010, the largest percentage of residents fell within the age group zero to 19 years old, with the next largest percentage in the 20 to 39 year old age group. The overall population structure of Shishmaref in 2000 and 2010 is shown in Figure 2.

Figure 2. Population Age Structure in Shishmaref Based on the 2000 and 2010 U.S. Decennial Census.



In terms of educational attainment, according to the 2006-2010 American Community Survey (ACS),³ 79.1% of Shishmaref residents aged 25 and over were estimated to hold a high school diploma or higher degree in 2010, compared to 90.7% of Alaskan residents overall. Also in 2010, 12.3% of residents aged 25 and older were estimated to have less than a ninth grade education, compared to 3.5% of Alaskan residents overall; 8.6% were estimated to have a ninth to 12th grade education, compared to 5.8% of Alaskan residents overall; 48.9% were estimated to have a high school diploma or equivalent, compared to 27.4% of Alaskan residents overall; 24.3% were estimated to have some college but no degree, compared to 28.3% of Alaskan residents overall; 2.2% were estimated to have an Associate’s degree, compared to 8% of

³ While American Community Survey (ACS) estimates can provide a good snapshot estimate for larger populations, smaller populations can be misrepresented by ACS estimates if demographic information is not collected from a representative sample of the population. This is especially problematic for Alaskan communities with small populations that have a low probability of being adequately sampled.

Alaskan residents overall; and 3.7% were estimated to have a Bachelor's degree, compared to 17.4% of Alaskan residents overall. There were no Shishmaref residents estimated to hold a graduate or professional degree in 2010.

*History, Traditional Knowledge, and Culture*⁴

The original Inuit name for the island was “Kigiktaq.” In 1816, Lt. Otto Von Kotzebue named the inlet “Shishmarev,” after a member of his crew. Excavations at “Keekiktuk” by archaeologists around 1821 provided evidence of Inuit habitation from several centuries ago. Shishmaref has an excellent harbor, which became a supply center for gold mining activities to the south around 1900. The village was named after the inlet, and a post office was established in 1901. The city government was incorporated in 1969. During October 1997, a severe storm eroded over 30 feet of the north shore, requiring 14 homes and the National Guard Armory to be relocated. Five additional homes were relocated in 2002. Other storms have continued to erode the shoreline an average of three to five feet per year on the north shore. In July 2002 residents voted to relocate the community. Shishmaref is a traditional Inupiat village with a fishing and subsistence lifestyle. The sale and importation of alcohol is banned.

Natural Resources and Environment

On the northern shore of the Seward Peninsula, the area experiences a transitional climate between the frozen Arctic and the continental Interior. Summers can be foggy, with average temperatures ranging from 47 to 54 °F (8.3 to 12.2 °C); winter temperatures average -12 to 2 °F (-24.4 to -16.7 °C). Average annual precipitation is about 8 inches, with 33 inches of snow. The Chukchi Sea is frozen from mid-November through mid-June.⁵

According to the Shishmaref Erosion and Relocation Coalition, the community of Shishmaref has determined that the threat to life and property from reoccurring beachfront erosion requires immediate action. The community has taken the first step by establishing an erosion and relocation coalition made up of the governing members of the City, Indian Reorganization Act (IRA) Council and Shishmaref Native Corporation Board of Directors. Faced with the decision of whether to remain at its present location or to move, the majority of the community is in favor of moving. Shishmaref is situated on a barrier island no wider than 1/4 mi, and 3 miles in length. The island is comprised of fine sand deposits and permafrost that is vulnerable to erosion. The community has experienced erosion of its north shoreline an average of 3-5 feet per year, except for the storms of: November 9th and 10th, 1973, October 4th, 1997, and October 7th, 2001 where extensive erosion in highly vulnerable areas was as much as 125 feet in horizontal distance. Shishmaref is also experiencing erosion of the southern side of the island, which is noticeably reducing the size of the island. The community is most vulnerable when tidal high water is combined with intense wave action of the Chukchi Sea during storms. Erosion has been heightened by continual degradation of permafrost. An average high tide is three feet above the normal tide, during storms; the wave action can increase the high tide by three feet, which causes the waves to crest over the bluff. The loss of land through erosive action and increasing risk to property and lives has caused a dangerous situation for the community of

⁴ Alaska Dept. of Comm. and Rural Affairs. (n.d.). *Community Database Online*. Retrieved October 17, 2011 from http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm.

⁵ Ibid.

Shishmaref. The community has determined that staying on the island to face the ever-present threat from ocean-based storms is unacceptable. The only viable solution is to relocate the community off the island to a nearby mainland location that is accessible to the sea, suitable for the subsistence lifestyle of the community, and preserves the culture and integrity of the community.⁶

Shishmaref is located adjacent to the Bering Land Bridge National Preserve, which is part of the Beringian National Heritage Park. The Bering Land Bridge National Preserve has the wildlife and permafrost features of the icy north, but has also had explosive volcanic events. It is a place where the presence of the Bering Land Bridge was confirmed. The Preserve has a rich diversity of offerings for those wishing to experience the raw, wild nature of Alaska's far northwestern ecosystems through recreation as well as for scientific research.⁷

Current Economy⁸

The Shishmaref economy is based on subsistence supplemented by part-time wage earnings. In 2010, one resident held a commercial fishing permit. Year-round jobs are limited. Villagers rely on fish, walrus, seal, polar bear, rabbit, and other subsistence foods. Two reindeer herds are managed from here. Reindeer skins are tanned locally, and meat is available at the village store. The Friendship Center, a cultural center and carving facility, was constructed for local artisans.⁹

Based on household surveys conducted for the 2006-2010 ACS,¹⁰ in 2010, the per capita income in Shishmaref was estimated to be \$10,203 and the median household income was estimated to be \$39,063, compared to \$10,487 and \$30,714 in 2000, respectively. Taking inflation into account by converting the 2000 values to 2010 dollars,¹¹ the real per capita income in 2000 is shown to have been \$13,790 and the real household income was \$40,388. This shows that both per capita and household income decreased between 2000 and 2010. In 2010, Shishmaref ranked 272nd of 305 Alaskan communities with per capita income that year, and 195th out of 299 Alaskan communities with household income data.

However, Shishmaref's small population size may have prevented the ACS from accurately portraying economic conditions.¹² An alternative understanding of per capita income is obtained through economic data compiled by the Alaska Local and Regional Information (ALARI) database maintained by the Alaska Department of Labor and Workforce Development

⁶ Shishmaref Erosion and Relocation Coalition. 2012. *Shishmaref: We Are Worth Saving!* Retrieved on May 9, 2012 from <http://www.shishmarefrelocation.com/>.

⁷ National Park Service (n.d.). *Bering Land Bridge National Preserve. Nature and Science*. Retrieved March 12, 2012 from <http://www.nps.gov/bela/naturescience/index.htm>.

⁸ Unless otherwise noted, all monetary data are reported in nominal values.

⁹ See footnote 6.

¹⁰ U.S. Census Bureau (n.d.). *Profile of selected social, economic and housing characteristics of all places within Alaska*. Datasets utilized include the 2000 (SF1 100% and SF3 sample data) and 2010 (Demographic Profile SF) Decennial Census and the 2010 American Community Survey 5-year estimates. Retrieved November 1, 2011 from <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>.

¹¹ Inflation was calculated using the Anchorage Consumer Price Index for 2010 (retrieved October 18, 2011 from the Alaska Department of Labor, <http://labor.alaska.gov/research/cpi/inflationcalc.htm>).

¹² While American Community Survey (ACS) estimates can provide a good snapshot estimate for larger populations, smaller populations can be misrepresented by ACS estimates if demographic information is not collected from a representative sample of the population. This is especially problematic for Alaskan communities with small populations that have a low probability of being adequately sampled.

(DOLWD). If total wages reported in the ALARI database for 2010 are divided by the 2010 population reported by the U.S. Census, the resulting per capita income estimate for Shishmaref in 2010 is \$7,189.^{13,14} This estimate provides support for an overall decrease in per capita income in Shishmaref between 2000 and 2010. These relatively low income figures are reflected in the fact that the community was recognized as “distressed” by the Denali Commission indicating that over 70% of residents aged 16 and older earned less than \$16,120 in 2010.¹⁵

Based on the 2006-2010 ACS, in 2010, 54.5% of the population age 16 and older was estimated to be in the civilian labor force, compared to the statewide rate of 68.8%. The local unemployment rate was 9.6%, compared to the statewide unemployment rate of 5.9%. Approximately 26.9% of local residents were living below the poverty line, compared to 9.6% of Alaskans overall. It should be noted that income and poverty statistics are based on wage income and other money sources; the relatively low income figures and high poverty rates reported for Shishmaref are not reflective of the value of subsistence to the local economy. In addition, these unemployment and poverty statistics are likely inaccurate given the population of Shishmaref. A more accurate estimate is based on the ALARI database, which indicates that the unemployment rate in 2010 was 23.6%.

Based on household surveys conducted for the 2006-2010 ACS, the greatest percentage of workers was employed in the private sector (50%), while 45.2% were employed in the public sector, and 4.8% were estimated to be self-employed. Out of 186 people aged 16 and over that were estimated to be employed in the civilian labor force in 2010, the greatest percentages worked in education services, health care, and social assistance industries (41.4%), retail trade (14%), services other than public administration (12.4%), and public administration (11.3%). Occupations in which the greatest percentages of the workforce were estimated to be employed were sales and office (29.6%) and management, business, science, and arts occupations (29%). No residents were estimated to be working in fishing-related industries or occupations in 2010. However, given the data reported in the *Commercial Fishing* section below, the number of individuals employed by fishing is likely underestimated in census statistics, as fishermen may hold another job and characterize their employment accordingly. In addition, as with income and poverty statistics, it is important to note that these employment figures reported for Shishmaref do not reflect the value of subsistence to the local economy. Information about employment by industry is presented in Figure 3, and employment is broken down by occupation in Figure 4.

¹³ Alaska Department of Labor and Workforce Development (n.d.). *Alaska Local and Regional Information Database*. Retrieved April 23, 2012 from <http://live.laborstats.alaska.gov/alari/>.

¹⁴ See footnote 10.

¹⁵ Denali Commission. (2011). *Distressed Community Criteria 2011 Update*. Retrieved April 16, 2012 from www.denali.gov.

Figure 3. Local Employment by Industry in 2000-2010, Shishmaref (U.S. Census).

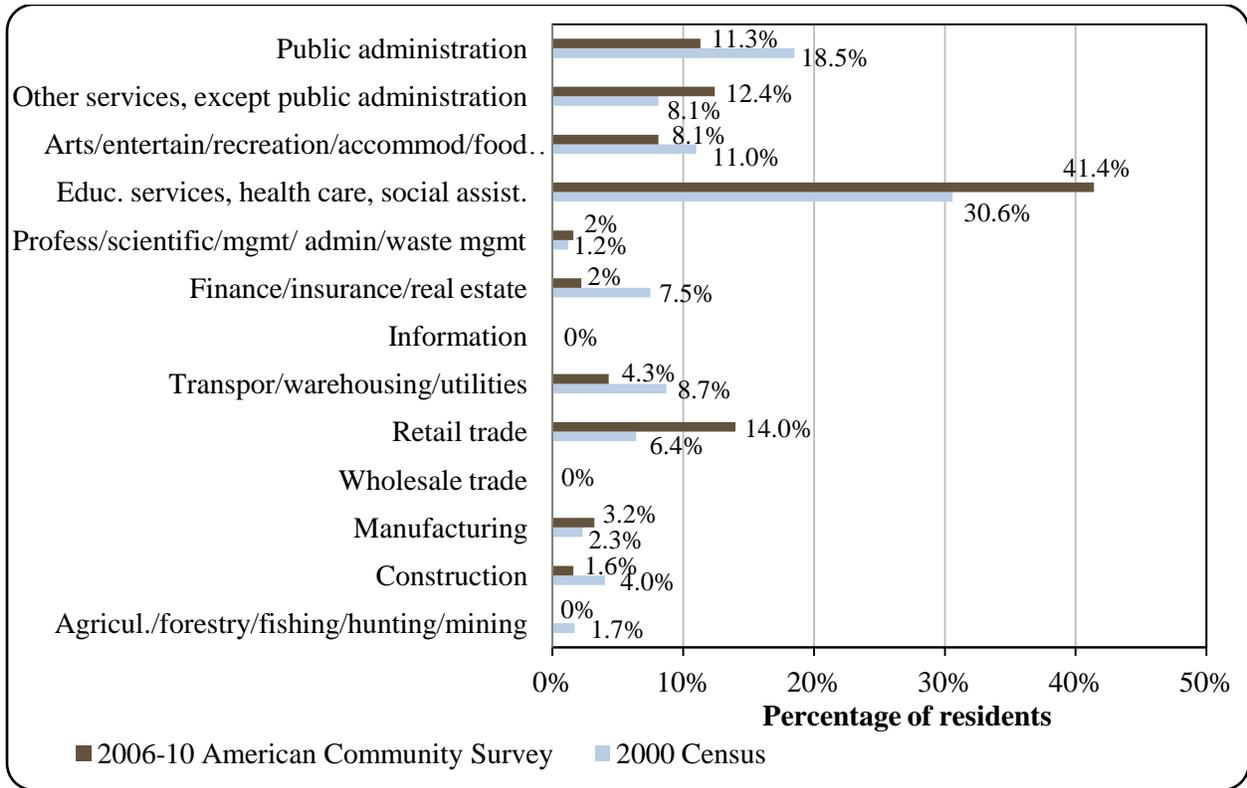
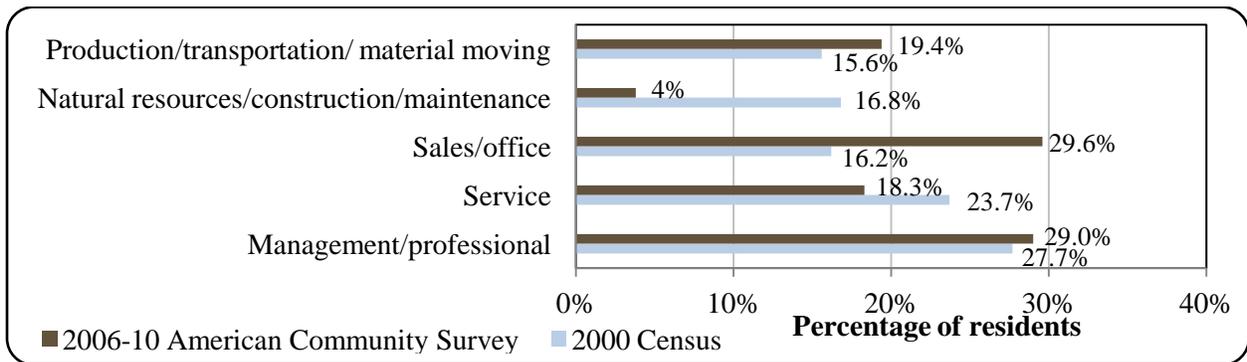


Figure 4. Local Employment by Occupation in 2000-2010, Shishmaref (U.S. Census).



Governance

Shishmaref is a 2nd Class City, and is not located in an organized borough.¹⁶ The City administers a 2% sales tax, and there appears to have been an overall increase in sales tax revenues received between 2000 and 2010. Other locally-generated revenue sources in Shishmaref between 2000 and 2010 included bingo and pull tab receipts, contracted services

¹⁶ Alaska Dept. of Comm. and Rural Affairs. (n.d.). *Community Database Online*. Retrieved October 17, 2011 from http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm.

such as operation of the electric utility and health clinic and road and airport maintenance, rentals of buildings and equipment, charges for use of services such as the washeteria/sauna, water and sewer, garbage collection, honeybucket bin removal, solid waste, and fuel sales. Outside revenue sources included state and federal grants and shared revenue. Sources of shared revenue included the State Revenue Sharing program (between \$28,000 and \$40,000 per year from 2000 to 2003), the Community Revenue Sharing program (approximately \$125,000 per year in 2009 and 2010), the SAFE Communities program (public safety, utilities, infrastructure, etc.), and state Payment In Lieu of Taxes funds. Fisheries-related grants received by the City of Shishmaref during the 2000-2010 period included funds in 2006 and 2008 for beach seawall protection and capital improvements, including hauls and port improvements. Information on selected municipal, state, or federal revenue streams for Shishmaref is presented in Table 2.

Table 2. Selected Municipal, State, or Federal Revenue Streams for the Community of Shishmaref from 2000 to 2010.

Year	Total Municipal Revenue ¹	Sales Tax Revenue ²	State/Community Revenue Sharing ^{3,4}	Fisheries-Related Grants (State and Federal) ⁵
2000	\$839,405	\$40,894	\$28,163	n/a
2001	\$908,442	\$36,669	\$28,000	n/a
2002	\$416,772	\$37,305	\$27,107	n/a
2003	\$395,170	\$38,316	\$27,150	n/a
2004	\$728,127	\$34,277	\$40,000	n/a
2005	\$802,945	\$29,556	n/a	n/a
2006	\$516,695	\$25,354	n/a	\$496,000
2007	\$1,030,816	\$31,713	n/a	n/a
2008	\$804,397	\$63,709	n/a	\$37,730
2009	\$843,315	\$64,979	\$127,385	n/a
2010	\$925,098	\$60,364	\$125,945	n/a

¹ Alaska Dept. of Comm. and Rural Affairs. (n.d.). *Financial Documents Delivery System*. Retrieved April 15, 2011 from http://www.commerce.state.ak.us/dcra/commfin/CF_FinRec.cfm.

² Alaska Dept. of Comm. and Econ. Dev. (n.d.). *Alaska Taxable (2000-2010)*. Retrieved April 15, 2011 from http://www.commerce.state.ak.us/dca/osa/osa_summary.cfm.

³ Alaska Dept. of Rev. (n.d.). *(2000-2009) Taxes and Fees Annual Report*. Retrieved April 15, 2011 from <https://www.tax.state.ak.us>.

⁴ The State Revenue Sharing program ceased in 2003 and was replaced by the Community Revenue Sharing program starting in 2009.

⁵ Alaska Dept. of Comm. and Rural Affairs. (n.d.). *Community Funding Database*. Retrieved April 15, 2011 from http://www.commerce.state.ak.us/dca/commdb/CF_Grants.htm.

A federally-recognized Native Tribe is also located in Shishmaref. The Native Village of Shishmaref was included in the Alaska Native Claims Settlement Act. The Native village corporation in Shishmaref Native Corporation. The regional Native corporation representing the Village is the Bering Strait Native Corporation (BSNC).¹⁷ The mission of the BSNC is, “To improve the quality of life of our people through economic development while protecting our land, and preserving our culture and heritage.” The BSNC, owned by Alaska Native

¹⁷ Alaska Dept. of Comm. and Rural Affairs. (n.d.). *Community Database Online*. Retrieved October 17, 2011 from http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm.

shareholders, actively pursues responsible development of resources and other business opportunities. Through its subsidiaries, BSNC serves government and commercial customers throughout the region, Alaska, the United States and the world.¹⁸

The Native Village of Shishmaref is also a member of Kawerak Inc., a Tribal non-profit organization with a mission to “assist, promote and provide programs and services to improve the social, economic, educational, cultural and governmental self-sufficiency for the betterment of the Native people within the region, and to preserve the traditional culture, languages and values.”¹⁹ Kawerak, Inc. is one of the 12 regional Alaska Native 501(c)(3) non-profit organizations that were identified under ANCSA and charged with naming incorporators to create regional for-profit corporations. Today, these regional Native associations receive federal funding to administer a broad range of services to villages in their regions.²⁰ Kawerak, Inc. offers children and family services, community services, and education, employment and training opportunities for residents of the 18 member villages located in the Bering Straits region. The non-profit also includes a Natural Resources Division, which incorporates the Eskimo Walrus Commission, Land Management Services, Reindeer Herders Association, and Subsistence Resources Division.²¹

The closest offices of the Alaska Department of Fish and Game (ADF&G) and Department of Commerce, Community, and Economic Development are located in Kotzebue and Nome. The nearest office of the Alaska Department of Natural Resources is located in Fairbanks. The nearest offices of the National Marine Fisheries Service (NMFS), Bureau of Citizenship and Immigration Services, and U.S. Immigration and Customs Enforcement are located in Anchorage.

Infrastructure

Connectivity and Transportation

Shishmaref’s primary link to the rest of Alaska is by air. A state-owned 5,000 feet long by 70 feet wide paved runway is available for charter and freight services from Nome. Most people use boats for trips to the mainland.²² In June 2012, roundtrip airfare to Anchorage (connecting in Nome) was \$792.²³

*Facilities*²⁴

Water is derived from a surface source, treated, and stored in a new tank. A flush/haul system provides services to some homes. Unserved homes continue to haul water. Honeybuckets and flush tanks are hauled by the City. The school, clinic, Friendship Center, city hall, and fire hall are connected to a sewage lagoon. Law enforcement services are provided by a Village

¹⁸ Bering Straits Native Corporation. 2012. Retrieved May 9, 2012 from <http://www.beringstraits.com/>.

¹⁹ Kawerak, Inc.. 2006. *Homepage*. Retrieved February 17, 2012 from <http://www.kawerak.org/>.

²⁰ U.S. Government Accountability Office. 2005. *Alaska Native Villages: Report to Congressional Addressees and the Alaska Federation of Natives*. Retrieved February 7, 2012 from <http://www.gao.gov/new.items/d05719.pdf>.

²¹ See footnote 19.

²² *Ibid*.

²³ Airfare was obtained on the travel website <http://www.travelocity.com> for a round-trip ticket for travel from June 1 to June 8, 2012. Retrieved on December 1, 2011.

²⁴ See footnote 17.

Public Safety Officer (VPSO) and by state troopers based in Nome. Fire and rescue services are provided by the State VPSO and by the city volunteer fire department and emergency services. The city also operates a city jail. The Melvin Olanna Friendship Center has a youth center, community hall, and senior services. There is a school gym, a city sports center, and a public and school library.

*Medical Services*²⁵

Medical services are provided by the Katherine Miksrmaq Olanna Health Clinic, which is owned by the Village Council and operated by the Norton Sound Health Corporation. The clinic is a Community Health Aid Program site. Alternate health care is provided by the city volunteer fire department/emergency services. Emergency services have coastal and air access and are provided by a health aide. The nearest hospital is located in Nome.

*Educational Opportunities*²⁶

The Shishmaref School provides instruction to students in pre-school through 12th grade. In 2011 the school had 192 students and 17 teachers.

Involvement in North Pacific Fisheries

History and Evolution of Fisheries

Shishmaref is included in the Arctic Management Area. Commercial fishing for all species is currently prohibited in federally regulated waters of the Arctic Management Area, “until sufficient information is available to support the sustainable management of a commercial fishery.”²⁷ The community is not located within a Pacific Halibut Fishery Regulatory Area or a Sablefish Regulatory Area. Shishmaref is not eligible to participate in the Community Development Quota or Community Quota Entity programs.

Processing Plants

According to ADF&G’s 2010 Intent to Operate list, Shishmaref does not have a registered processing plant. The nearest processing plants are located in Nome and Kotzebue.

Fisheries-Related Revenue

Between 2000 and 2010, no data were reported about fisheries-related revenue received by Shishmaref (Table 3).

²⁵ Alaska Dept. of Comm. and Rural Affairs. (n.d.). *Community Database Online*. Retrieved October 17, 2011 from http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm.

²⁶ Alaska Department of Education and Early Development. (2012). *Statistics and Reports*. Retrieved April 24, 2012 from <http://eed.alaska.gov/stats/>.

²⁷ North Pacific Fishery Management Council. (2009). *Arctic Fishery Management Plan*. Retrieved February 29, 2012 from <http://www.fakr.noaa.gov/npfmc/PDFdocuments/fmp/Arctic/ArcticFMP.pdf>.

Commercial Fishing

Between 2010, Shishmaref residents held a total of two commercial salmon fishing permits issued by the Commercial Fisheries Entry Commission (CFEC) for the Kotzebue and Norton Sound gillnet fisheries. The only year during the 2000-2010 period in which one of these salmon permits was actively fished was 2010. Information on commercial fishing permits and permit holders by species between 2000 and 2010 for Shishmaref residents is presented in Table 4. Between 2000 and 2010, the number of crew license holders residing in Shishmaref varied between zero and two. No fish buyers or shore-side processing facilities were present in the community during the 2000-2010 period. As a result, no vessels landed catch in the community. Likewise, no vessels were primarily owned by Shishmaref residents and no vessels were homeported in Shishmaref (Table 5). Also between 2000 and 2010, no Shishmaref residents held quota share accounts in federal catch share fisheries for halibut, sablefish, or crab (Tables 6 through 8). Given the lack of fish buyers operating locally or vessel owners residing in Shishmaref (Table 5), no commercial landings or associated ex-vessel revenue were reported locally (Table 9) and no landings and ex-vessel revenue were generated by Shishmaref vessel owners (Table 10).

Table 3. Known Fisheries-Related Revenue (in U.S. Dollars) Received by the Community of Shishmaref: 2000-2010.

Revenue source	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Raw fish tax ¹	n/a	n/a	n/a	n/a							
Shared Fisheries Business Tax ¹	n/a	n/a	n/a	n/a							
Fisheries Resource Landing Tax ¹	n/a	n/a	n/a	n/a							
Fuel transfer tax ²	n/a	n/a	n/a	n/a							
Extraterritorial fish tax ²	n/a	n/a	n/a	n/a							
Bulk fuel transfers ¹	n/a	n/a	n/a	n/a							
Boat hauls ²	n/a	n/a	n/a	n/a							
Harbor usage ²	n/a	n/a	n/a	n/a							
Port/dock usage ²	n/a	n/a	n/a	n/a							
Fishing gear storage on public land ³	n/a	n/a	n/a	n/a							
Marine fuel sales tax ³	n/a	n/a	n/a	n/a							
Total fisheries-related revenue⁴	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>							
Total municipal revenue⁵	\$839,405	\$908,442	\$416,772	\$395,170	\$728,127	\$802,945	\$516,695	\$1,030,816	\$804,397	\$843,315	\$925,098

Note: n/a indicates that no data were reported for that year.

¹ Alaska Dept. of Comm. and Econ. Dev. (n.d.) *Alaska Taxable (2000-2010)*. Retrieved April 15, 2011 from http://www.commerce.state.ak.us/dca/osa/osa_summary.cfm.

² Alaska Dept. of Comm. and Rural Affairs. (n.d.) *Financial Documents Delivery System*. Retrieved April 15, 2011 at http://www.commerce.state.ak.us/dcra/commfin/CF_FinRec.cfm.

³ Reported by community leaders in a survey conducted by the AFSC in 2011.

⁴ Total fisheries related revenue represents a sum of all known revenue sources in the previous rows.

⁵ Total municipal revenue represents the total revenue that the City reports each year in its financial statements. Alaska Dept. of Comm. and Rural Affairs. (n.d.) *Financial Documents Delivery System*. Retrieved April 15, 2011 at http://www.commerce.state.ak.us/dcra/commfin/CF_FinRec.cfm.

Table 4. Permits and Permit Holders by Species, Shishmaref: 2000-2010.

Species		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Groundfish (LLP) ¹	Total permits	0	0	0	0	0	0	0	0	0	0	0
	Active permits	0	0	0	0	0	0	0	0	0	0	0
	% of permits fished	-	-	-	-	-	-	-	-	-	-	-
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0
Crab (LLP) ¹	Total permits	0	0	0	0	0	0	0	0	0	0	0
	Active permits	0	0	0	0	0	0	0	0	0	0	0
	% of permits fished	-	-	-	-	-	-	-	-	-	-	-
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0
Federal Fisheries Permits ¹	Total permits	0	0	0	0	0	0	0	0	0	0	0
	Fished permits	0	0	0	0	0	0	0	0	0	0	0
	% of permits fished	-	-	-	-	-	-	-	-	-	-	-
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0
Crab (CFEC) ²	Total permits	0	0	0	0	0	0	0	0	0	0	0
	Fished permits	0	0	0	0	0	0	0	0	0	0	0
	% of permits fished	-	-	-	-	-	-	-	-	-	-	-
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0
Other shellfish (CFEC) ²	Total permits	0	0	0	0	0	0	0	0	0	0	0
	Fished permits	0	0	0	0	0	0	0	0	0	0	0
	% of permits fished	-	-	-	-	-	-	-	-	-	-	-
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0
Halibut (CFEC) ²	Total permits	0	0	0	0	0	0	0	0	0	0	0
	Fished permits	0	0	0	0	0	0	0	0	0	0	0
	% of permits fished	-	-	-	-	-	-	-	-	-	-	-
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0
Herring (CFEC) ²	Total permits	0	0	0	0	0	0	0	0	0	0	0
	Fished permits	0	0	0	0	0	0	0	0	0	0	0
	% of permits fished	-	-	-	-	-	-	-	-	-	-	-
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0

Table 4 cont'd. Permits and Permit Holders by Species, Shishmaref: 2000-2010.

Species		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sablefish (CFEC) ²	Total permits	0	0	0	0	0	0	0	0	0	0	0
	Fished permits	0	0	0	0	0	0	0	0	0	0	0
	% of permits fished	-	-	-	-	-	-	-	-	-	-	-
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0
Groundfish (CFEC) ²	Total permits	0	0	0	0	0	0	0	0	0	0	0
	Fished permits	0	0	0	0	0	0	0	0	0	0	0
	% of permits fished	-	-	-	-	-	-	-	-	-	-	-
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0
Other Finfish (CFEC) ²	Total permits	0	0	0	0	0	0	0	0	0	0	0
	Fished permits	0	0	0	0	0	0	0	0	0	0	0
	% of permits fished	-	-	-	-	-	-	-	-	-	-	-
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0
Salmon (CFEC) ²	Total permits	2	2	2	2	2	2	2	2	2	2	2
	Fished permits	0	0	0	0	0	0	0	0	0	0	1
	% of permits fished	-	-	-	-	-	-	-	-	-	-	50%
	Total permit holders	2	2	2	2	2	2	2	2	2	2	2
<i>Total CFEC Permits²</i>	<i>Permits</i>	2	2	2	2	2	2	2	2	2	2	2
	<i>Fished permits</i>	0	0	0	0	0	0	0	0	0	0	1
	<i>% of permits fished</i>	-	-	-	-	-	-	-	-	-	-	50%
	<i>Permit holders</i>	2	2	2	2	2	2	2	2	2	2	2

¹ National Marine Fisheries Service. (2011). Data on License Limitation Program, Alaska Federal Processor Permits (FPP), Federal Fisheries Permits (FFP), and Permit holders. NMFS Alaska Regional Office. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

² Alaska Commercial Fisheries Entry Commission. (2011). Alaska commercial fishing permits, permit holders, and vessel licenses, 2000 – 2010. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

Table 5. Characteristics of the Commercial Fishing Sector in Shishmaref: 2000-2010.

Year	Crew License Holders ¹	Count Of All Fish Buyers ²	Count Of Shore-Side Processing Facilities ³	Vessels Primarily Owned By Residents ⁴	Vessels Homeported ⁴	Vessels Landing Catch In Shishmaref ²	Total Net Pounds Landed In Shishmaref ^{2,5}	Total Ex-Vessel Value Of Landings In Shishmaref ^{2,5}
2000	1	0	0	0	0	0	0	\$0
2001	0	0	0	0	0	0	0	\$0
2002	0	0	0	0	0	0	0	\$0
2003	0	0	0	0	0	0	0	\$0
2004	0	0	0	0	0	0	0	\$0
2005	1	0	0	0	0	0	0	\$0
2006	0	0	0	0	0	0	0	\$0
2007	2	0	0	0	0	0	0	\$0
2008	2	0	0	0	0	0	0	\$0
2009	1	0	0	0	0	0	0	\$0
2010	0	0	0	0	0	0	0	\$0

¹ Alaska Department of Fish and Game. (2011). Alaska sport fish and crew license holders, 2000 – 2010. ADF&G Division of Administrative Services. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

² Alaska Department of Fish and Game, and Alaska Commercial Fisheries Entry Commission. (2011). Alaska fish ticket data. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

³ Alaska Department of Fish and Game. (2011). Data on Alaska fish processors. ADF&G Division of Commercial Fisheries. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

⁴ Alaska Commercial Fisheries Entry Commission. (2011). Alaska commercial fishing permits, permit holders, and vessel licenses, 2000 – 2010. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

⁵ Totals only represent non-confidential data.

Table 6. Halibut Catch Share Program Participation by Residents of Shishmaref: 2000-2010.

Year	Number of Halibut Quota Share Account Holders	Halibut Quota Shares Held	Halibut IFQ Allotment (Pounds)
2000	0	0	0
2001	0	0	0
2002	0	0	0
2003	0	0	0
2004	0	0	0
2005	0	0	0
2006	0	0	0
2007	0	0	0
2008	0	0	0
2009	0	0	0
2010	0	0	0

Source: National Marine Fisheries Service. (2011). Alaska Individual Fishing Quota (IFQ) permit data. NMFS Alaska Regional Office. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

Table 7. Sablefish Catch Share Program Participation by Residents of Shishmaref: 2000-2010.

Year	Number of Sablefish Quota Share Account Holders	Sablefish Quota Shares Held	Sablefish IFQ Allotment (Pounds)
2000	0	0	0
2001	0	0	0
2002	0	0	0
2003	0	0	0
2004	0	0	0
2005	0	0	0
2006	0	0	0
2007	0	0	0
2008	0	0	0
2009	0	0	0
2010	0	0	0

Source: National Marine Fisheries Service. (2011). Alaska Individual Fishing Quota (IFQ) permit data. NMFS Alaska Regional Office. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

Table 8. Bering Sea and Aleutian Island Crab Catch Share Program Participation by Residents of Shishmaref: 2000-2010.

Year	Number of Crab Quota Share Account Holders	Crab Quota Shares Held	Crab IFQ Allotment (Pounds)
2005	0	0	0
2006	0	0	0
2007	0	0	0
2008	0	0	0
2009	0	0	0
2010	0	0	0

Source: National Marine Fisheries Service. (2011). Alaska Individual Fishing Quota (IFQ) permit data. NMFS Alaska Regional Office. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

Table 9. Landed Pounds and Ex-vessel Revenue, by Species, in Shishmaref: 2000-2010.

	<i>Total Net Pounds¹</i>										
	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>
Crab	0	0	0	0	0	0	0	0	0	0	0
Finfish	0	0	0	0	0	0	0	0	0	0	0
Halibut	0	0	0	0	0	0	0	0	0	0	0
Herring	0	0	0	0	0	0	0	0	0	0	0
Other Groundfish	0	0	0	0	0	0	0	0	0	0	0
Other Shellfish	0	0	0	0	0	0	0	0	0	0	0
Pacific Cod	0	0	0	0	0	0	0	0	0	0	0
Pollock	0	0	0	0	0	0	0	0	0	0	0
Sablefish	0	0	0	0	0	0	0	0	0	0	0
Salmon	0	0	0	0	0	0	0	0	0	0	0
<i>Total²</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
	<i>Ex-vessel Value (nominal U.S. dollars)</i>										
	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>
Crab	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Finfish	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Halibut	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Herring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other Groundfish	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other Shellfish	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pacific Cod	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pollock	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sablefish	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Salmon	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>Total²</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>

Source: Alaska Department of Fish and Game, and Alaska Commercial Fisheries Entry Commission. (2011). Alaska fish ticket data. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

¹ Net pounds refers to the landed weight recorded in fish tickets.

² Totals only represent non-confidential data.

Table 10. Landed Pounds and Ex-vessel Revenue, by Species, by Shishmaref Residents: 2000-2010.

	<i>Total Net Pounds¹</i>										
	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>
Crab	0	0	0	0	0	0	0	0	0	0	0
Finfish	0	0	0	0	0	0	0	0	0	0	0
Halibut	0	0	0	0	0	0	0	0	0	0	0
Herring	0	0	0	0	0	0	0	0	0	0	0
Other Groundfish	0	0	0	0	0	0	0	0	0	0	0
Other Shellfish	0	0	0	0	0	0	0	0	0	0	0
Pacific Cod	0	0	0	0	0	0	0	0	0	0	0
Pollock	0	0	0	0	0	0	0	0	0	0	0
Sablefish	0	0	0	0	0	0	0	0	0	0	0
Salmon	0	0	0	0	0	0	0	0	0	0	0
<i>Total²</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
	<i>Ex-vessel Value (nominal U.S. dollars)</i>										
	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>
Crab	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Finfish	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Halibut	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Herring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other Groundfish	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other Shellfish	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pacific Cod	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pollock	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sablefish	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Salmon	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>Total²</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>

Source: Alaska Department of Fish and Game, and Alaska Commercial Fisheries Entry Commission. (2011). Alaska fish ticket data. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

¹ Net pounds refers to the landed weight recorded in fish tickets.

² Totals only represent non-confidential data.

Recreational Fishing

Between 2000 and 2010, there were no active sport fish guide businesses or licensed sport fish guides registered in Shishmaref. However, some sport fishing activity was reported by ADF&G. Between 2000 and 2010, the number of sport fishing licenses sold in Shishmaref varied between 0 and 52 per year. The number of licenses purchased by Shishmaref was generally higher, varying between 8 and 71 purchased per year (irrespective of point of sale). That fact that Shishmaref residents purchase more licenses than were sold in the City suggests that residents travel to other communities to prepare for and engage in sport fishing activities.

Shishmaref is located within Alaska Sport Fishing Survey Area W – Seward Peninsula – Norton Sound. Information is available about both saltwater and freshwater sport fishing activity at this regional scale. Between 2000 and 2010, there was significant sport fishing activity in both saltwater and freshwater, although freshwater sport fishing was more important in the region. Alaska resident anglers consistently fished more angler days in both freshwater and saltwater (34 – 2,663 saltwater and 6,199 to 17,579 freshwater angler days) than non-Alaska residents (0 – 204 saltwater and 2,087 – 8,307 freshwater angler days) during the period. This information about the sport fishing sector in and near Shishmaref is displayed in Table 11.

The Alaska Statewide Harvest Survey, conducted by the ADF&G between 2000 and 2010, noted that coho salmon, Dolly Varden, and Arctic grayling are generally targeted by private anglers in Shishmaref.²⁸ Given the lack of sport fish guide businesses in Shishmaref, no kept/release log book data were reported for fishing charters out of the community between 2000 and 2010.²⁹

Table 11. Sport Fishing Trends, Shishmaref: 2000-2010.

Year	Active Sport Fish Guide Businesses ¹	Sport Fish Guide Licenses ¹	Sport Fishing Licenses Sold to Residents ²	Sport Fishing Licenses Sold in Shishmaref ²
2000	0	0	71	37
2001	0	0	66	48
2002	0	0	45	20
2003	0	0	46	40
2004	0	0	40	21
2005	0	0	49	35
2006	0	0	60	51
2007	0	0	56	52
2008	0	0	49	37
2009	0	0	48	39
2010	0	0	8	0

²⁸ Alaska Department of Fish and Game. (2011). *Alaska Sport Fishing Survey results, 2000-2010*. ADF&G Division of Sport Fish, Alaska Statewide Harvest Survey project. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. <http://www.adfg.alaska.gov/sf/sportfishingsurvey/> (Accessed September 2011).

²⁹ Alaska Department of Fish and Game. 2011. *Alaska sport fish charter logbook database, 2000 – 2010*. ADF&G Division of Administrative Services. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

Table 11 cont'd. Sport Fishing Trends, Shishmaref: 2000-2010.

Year	Saltwater		Freshwater	
	Angler Days Fished – Non-Residents ³	Angler Days Fished – Alaska Residents ³	Angler Days Fished – Non-Residents ³	Angler Days Fished – Alaska Residents ³
2000	196	2,663	3,789	11,795
2001	64	988	2,087	7,816
2002	94	1,650	4,321	12,260
2003	30	1,530	3,632	7,211
2004	204	497	4,183	8,439
2005	56	1,940	8,307	6,764
2006	90	1,400	3,547	12,535
2007	49	530	3,688	12,400
2008	0	655	3,761	17,579
2009	133	897	4,198	11,995
2010	43	34	4,334	6,199

¹ Alaska Department of Fish and Game. (2011). Alaska sport fish guide licenses and businesses, 2000 – 2010. ADF&G Division of Administrative Services. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

² Alaska Department of Fish and Game. (2011). Alaska sport fish and crew license holders, 2000 – 2010. ADF&G Division of Administrative Services. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

³ Alaska Department of Fish and Game. (2011). Alaska Sport Fishing Survey results, 2000 – 2010. ADF&G Division of Sport Fish, Alaska Statewide Harvest Survey project. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. http://www.adfg.alaska.gov/sf/sport_fishingsurvey/ (Accessed September 2011).

Subsistence Fishing

The Shishmaref economy is based on subsistence harvesting supplemented by part-time wage earnings. Year-round jobs are limited. Villagers in Shishmaref rely on fish, walrus, seal, polar bear, rabbit, and other subsistence foods.³⁰ According to information compiled by the Shishmaref Erosion and Relocation Coalition, it is a common sight to observe drying racks outside Shishmaref homes full of drying bearded seal, ugzruk, fish, reindeer, and caribou meat. They also note that seal oil is an important resource utilized by residents, with each family putting up an average of 50 gallons per year. Local people say that the subsistence hunting lifestyle is an important reason why families remain in Shishmaref rather than moving to urban centers such as Nome that offer a greater opportunity for cash employment.³¹

No information is available from ADF&G between 2000 and 2010 regarding the percentage of Shishmaref households participating in the harvest of various subsistence resources, or per capita subsistence harvest (Table 12). However, data are available regarding

³⁰ Alaska Dept. of Comm. and Rural Affairs. (n.d.). *Community Database Online*. Retrieved October 17, 2011 from http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm.

³¹ Shishmaref Erosion and Relocation Coalition. 2012. *Our Culture*. Retrieved on May 9, 2012 from http://www.shishmarefrelocation.com/our_culture.html.

total subsistence harvest of some resources, including salmon, halibut, and some marine mammal species.

Data about annual subsistence salmon permits are available between 2001 and 2005. During this period, between one and two subsistence salmon permits were issued to households in Shishmaref each year, and between one and two of these permits were reported as actively fished. Species harvested included chum, coho, pink, and sockeye salmon, though numbers of each species harvested were relatively low and varied from year to year. Data were not available regarding harvest of marine invertebrates or non-salmon fish (not including halibut) during this period. Information on subsistence harvest of salmon, marine invertebrates, and non-salmon fish is presented in Table 13.

Between 2003 and 2007, one individual held a Subsistence Halibut Registration Certificate (SHARC) card in Shishmaref. However, data regarding whether the SHARC card was fished and any associated harvest were not available (Table 14).

Data reported regarding subsistence harvest of marine mammals in Shishmaref between 2000 and 2010 suggest that sea otters, walrus, and polar bears were the primary species harvested by residents. Annually, walrus made up the most significant component of annual marine mammal harvests, varying between 1 and 109 animals harvested per year, with an average of 33 walrus harvested for subsistence each year between 2000 and 2010. No data were reported by management agencies regarding subsistence harvest of beluga whale, Steller sea lion, harbor seal, or spotted seal between 2000 and 2010. Information about marine mammal subsistence harvests is presented in Table 15.

Although limited data were available regarding subsistence harvests of non-salmon fish, marine invertebrates, and marine mammal between 2000 and 2010, a subsistence survey conducted by the ADF&G Division of Subsistence in the mid-1990s provides some information about species utilized locally. According to the survey, in 1995, Shishmaref households reported harvesting the following species of marine invertebrates: blue mussels, sea cucumber, shrimp, unknown clams, unknown king crab, unknown marine invertebrates, and whelk. Marine mammals reported as harvested for subsistence use included adult bearded seals, bowhead, gray whale, ribbon seal, ringed seal, spotted seal, and young bearded seal. Non-salmon fish reported as harvested for subsistence use included: Arctic cod, Bering cisco, broad whitefish, burbot, Dolly Varden, grayling, herring, humpback whitefish, least cisco, round whitefish, saffron cod, sheefish, sucker, unknown flounder, unknown non-salmon fish, unknown sculpin, and unknown smelt.³²

³² Alaska Department of Fish and Game. (2011). *Community Subsistence Information System (CSIS)*. ADF&G Division of Subsistence. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. <http://www.adfg.alaska.gov/sb/CSIS/> (Accessed February 2011).

Table 12. Subsistence Participation by Household and Species, Shishmaref: 2000-2010.

Year	% Households Participating in Salmon Subsistence	% Households Participating in Halibut Subsistence	% Households Participating in Marine Mammal Subsistence	% Households Participating in Marine Invertebrate Subsistence	% Households Participating in Non-Salmon Fish Subsistence	Per Capita Subsistence Harvest (pounds)
2000	n/a	n/a	n/a	n/a	n/a	n/a
2001	n/a	n/a	n/a	n/a	n/a	n/a
2002	n/a	n/a	n/a	n/a	n/a	n/a
2003	n/a	n/a	n/a	n/a	n/a	n/a
2004	n/a	n/a	n/a	n/a	n/a	n/a
2005	n/a	n/a	n/a	n/a	n/a	n/a
2006	n/a	n/a	n/a	n/a	n/a	n/a
2007	n/a	n/a	n/a	n/a	n/a	n/a
2008	n/a	n/a	n/a	n/a	n/a	n/a
2009	n/a	n/a	n/a	n/a	n/a	n/a
2010	n/a	n/a	n/a	n/a	n/a	n/a

Note: n/a indicates that no data were reported for that year.

Source: Alaska Department of Fish and Game. 2011. Community Subsistence Information System (CSIS). ADF&G Division of Subsistence. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. <http://www.adfg.alaska.gov/sb/CSIS/> (Accessed February 2011).

Table 13. Subsistence Fishing Participation for Salmon, Marine Invertebrates, and Non-Salmon Fish, Shishmaref: 2000-2010.

Year	Subsistence Salmon Permits Issued ¹	Salmon Permits Returned ¹	Chinook Salmon Harvested ¹	Chum Salmon Harvested ¹	Coho Salmon Harvested ¹	Pink Salmon Harvested ¹	Sockeye Salmon Harvested ¹	Lbs of Marine Inverts ²	Lbs of Non-Salmon Fish ²
2000	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2001	1	1	n/a	n/a	n/a	n/a	18	n/a	n/a
2002	2	1	n/a	n/a	n/a	n/a	20	n/a	n/a
2003	2	2	n/a	n/a	n/a	n/a	55	n/a	n/a
2004	2	2	n/a	3	19	34	n/a	n/a	n/a
2005	2	2	n/a	n/a	n/a	14	n/a	n/a	n/a
2006	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2007	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2009	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Note: n/a indicates that no data were reported for that year.

¹ Fall, J.A., C. Brown, N. Braem, J.J. Simon, W.E. Simeone, D.L. Holen, L. Naves, L. Hutchinson-Scarborough, T. Lemons, and T.M. Krieg. 2011, revised. Alaska subsistence salmon fisheries 2008 annual report. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 359, Anchorage. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle.

² Alaska Department of Fish and Game. (2011). Community Subsistence Information System (CSIS). ADF&G Division of Subsistence. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle. <http://www.adfg.alaska.gov/sb/CSIS/> (Accessed February 2011).

Table 14. Subsistence Halibut Fishing Participation, Shishmaref: 2003-2010.

Year	SHARC Issued	SHARC Cards Fished	SHARC Halibut Lbs Harvested
2003	1	n/a	n/a
2004	1	n/a	n/a
2005	1	n/a	n/a
2006	1	n/a	n/a
2007	1	n/a	n/a
2008	n/a	n/a	n/a
2009	n/a	n/a	n/a
2010	n/a	n/a	n/a

Note: n/a indicates that no data were reported for that year.

Source: Fall, J.A. and D. Koster. (2011). Subsistence harvests of Pacific halibut in Alaska, 2009. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 357, Anchorage. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle.

Table 15. Subsistence Harvests of Marine Mammal Resources, Shishmaref: 2000-2010.

Year	# of Beluga Whales ¹	# of Sea Otters ²	# of Walrus ²	# of Polar Bears ²	# of Steller Sea Lions ³	# of Harbor Seals ³	# of Spotted Seals ³
2000	n/a	42	2	2	n/a	n/a	n/a
2001	n/a	n/a	24	6	n/a	n/a	n/a
2002	n/a	n/a	109	2	n/a	n/a	n/a
2003	n/a	n/a	38	2	n/a	n/a	n/a
2004	n/a	n/a	70	n/a	n/a	n/a	n/a
2005	n/a	n/a	51	n/a	n/a	n/a	n/a
2006	n/a	n/a	28	3	n/a	n/a	n/a
2007	n/a	n/a	13	3	n/a	n/a	n/a
2008	n/a	n/a	1	n/a	n/a	n/a	n/a
2009	n/a	n/a	7	n/a	n/a	n/a	n/a
2010	n/a	1	21	n/a	n/a	n/a	n/a

Note: n/a indicates that no data were reported for that year.

¹ Frost, K.J., and R.S. Suydam. 2010. Subsistence harvest of beluga or white whales (*Delphinapterus leucas*) in northern and western Alaska, 1987–2006. *J. Cetacean Res. Manage.* 11(3): 293–299. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle.

² U.S. Fish and Wildlife Service. 2011. Marking, Tagging and Reporting Program data bases for northern sea otter, Pacific walrus and polar bear. Office of Marine Mammals Management. Anchorage, Alaska. Data compiled by Alaska Fisheries Information Network for Alaska Fisheries Science Center, Seattle.

³ Wolfe, R.J., Fall, J.A. and M. Riedel. 2009. The subsistence harvest of harbor seals and sea lions by Alaska Natives in 2008. Alaska Native Harbor Seal Commission and Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 347, Anchorage.