

## **Bethel (BETH-ul)**



### **People and Place**

#### *Location*<sup>1</sup>

Bethel is located at the mouth of the Kuskokwim River, 40 mi inland from the Bering Sea. It lies in the Yukon Delta National Wildlife Refuge, 400 mi west of Anchorage. The area encompasses 43.8 sq mi of land and 5.1 sq mi of water. Bethel was incorporated as a Second-class city in 1957, is located in the Bethel Census Area, and is not under the jurisdiction of a borough.

#### *Demographic Profile*<sup>2</sup>

In 2010, there were 6,080 residents, ranking Bethel 17<sup>th</sup> of 352 Alaskan communities in terms of population size. Between 1990 and 2010, the population grew by 30%. Between 2000 and 2009, the population grew by 6.1% with an average annual growth rate of -0.13%, somewhat lower than the statewide 0.75% and indicative of a slowing rate of growth. In a survey conducted by NOAA's Alaska Fisheries Science Center (AFSC) in 2011, community leaders reported an estimated 200 transient or seasonal workers living in Bethel in 2010. Seasonal workers typically live in the community from June through September, and the population peaks in July and August as well as December and January. These population peaks are somewhat to mostly driven by employment in the fishing sectors. Information regarding population trends can be found in Table 1.

Bethel's population was predominately Yup'ik Eskimo in 2010. In that year, 65.0% of residents identified themselves as American Indian or Alaska Native, compared to 61.8% in 2000; 23.3% identified themselves as White, compared to 26.8% in 2000; 2.5% identified themselves as Asian, compared to 2.9% in 2000; 0.9% identified themselves as Black or African American, compared to 0.9% in 2000; 0.4% identified themselves as Native Hawaiian or Other Pacific Islander, compared to 0.2% in 2000; 7.3% identified themselves as two or more races, compared to 6.9% in 2000; and 0.6% identified themselves as some other race, compared to 0.5% in 2000. In addition, 2.2% of residents identified themselves as Hispanic or Latino, compared to 1.7% in 2000.

In 2010, the average household size was 3.04, a decrease from 3.1 in 1990 and 3.65 in 2000. In that same year there were 2,364 total housing units, an increase from 1,624 in 1990 and 1,990 in 2000. Of those households surveyed in 2010, 35.8% were owner-occupied, compared to 37.6% in 2000; 44.4% were renter-occupied, compared to 49.8% in 2000; 13.7% were vacant,

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<sup>1</sup> Alaska Department of Community and Rural Affairs. (n.d.). *Community Database Online*. Retrieved October 17, 2011 from [http://www.commerce.state.ak.us/dca/commdb/CF\\_BLOCK.htm](http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm).

<sup>2</sup> 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>.

compared to 9.4% in 2000; and 6% were occupied seasonally, compared to 3.1% in 2000. In 2010, 321 residents were living in group quarters, compared to 241 in 2000.

Gender distribution in Bethel was relatively equal in 2010 at 51.9% male and 48.1%. This was similar to both the distribution statewide (52.0% male, 48.0% female) and distribution in 2000 (52.5% male, 47.5% female). The median age that year was 28.7 years, which was younger than the statewide median of 33.8 years and similar to the 2000 median of 29.1 years.

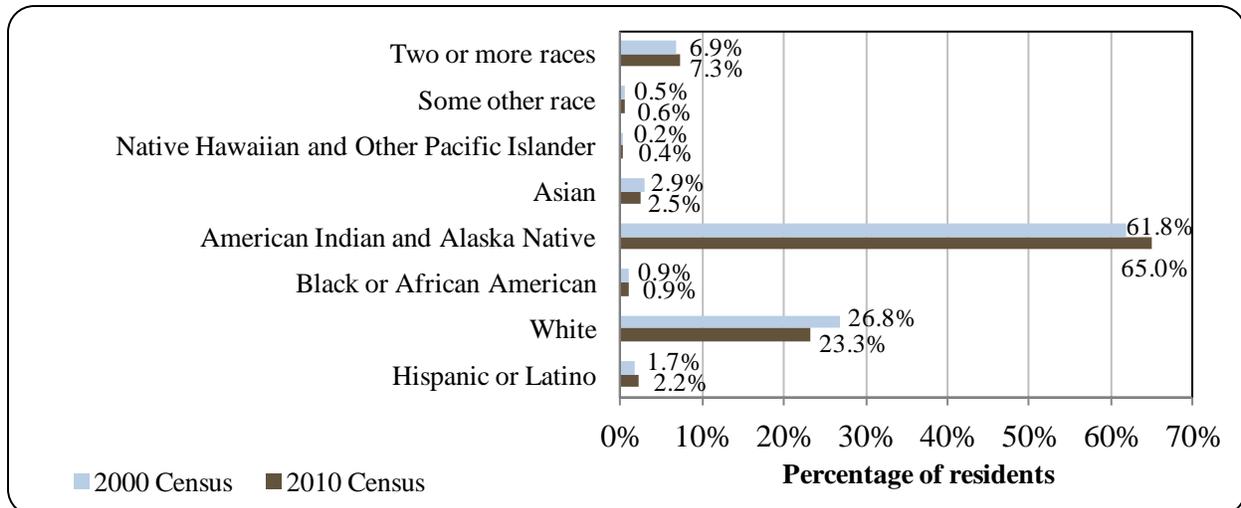
Table 1. Population in Bethel from 1990 to 2010 by Source.

Year	U.S. Decennial Census <sup>1</sup>	Alaska Department of Labor Estimate of Permanent Residents <sup>2</sup>
1990	4,674	-
2000	5,471	-
2001	-	5,463
2002	-	5,740
2003	-	5,885
2004	-	5,872
2005	-	5,963
2006	-	5,810
2007	-	5,634
2008	-	5,649
2009	-	5,803
2010	6,080	-

<sup>1</sup> (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>.

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

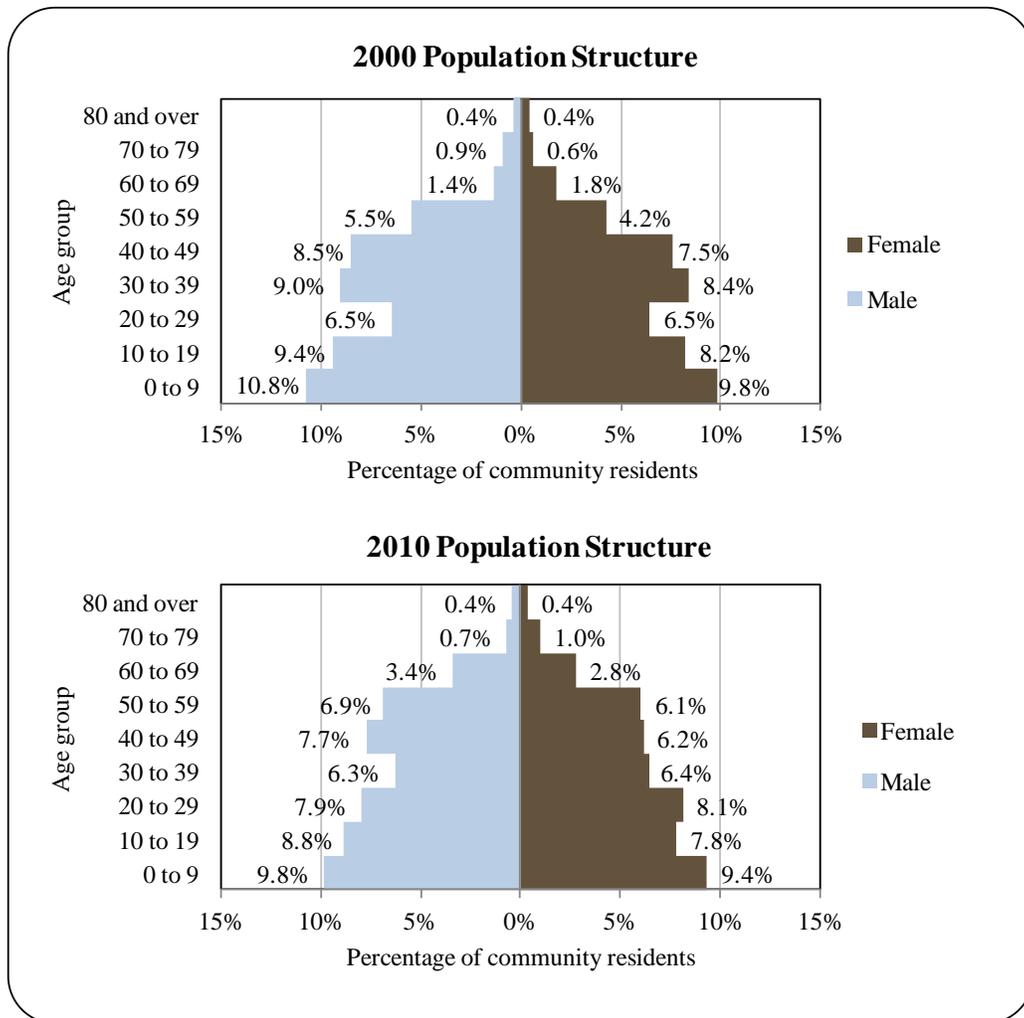
Figure 1. Racial and Ethnic Composition, Bethel: 2000-2010 (U.S. Census).



Overall, the population structure in both 2010 and 2000 was expansive. In addition, cohorts maintained their overall structure as they aged, possibly indicating a stable population. In 2010, 35.8% of residents were under the age of 20, compared to 38.2% in 2000; 8.7% were over the age of 59, compared to 5.5% in 2000; 39.6% were between the ages of 39 and 59, compared to 43.1% in 2000; and 16.0% were between the ages of 20 and 29, compared to 13.0% in 2000.

Gender distribution by age cohort was slightly more even in 2010 than in 2000. In that year, the greatest absolute gender difference occurred in the 40 to 49 range (7.7% male, 6.2% female), followed by the 10 to 19 (8.8% male, 7.8% female) and 50 to 59 (6.9% male, 6.1% female) ranges. Of those three, the greatest relative gender difference occurred in the 40 to 49 range. Information regarding trends in Bethel’s population structure can be found in Figure 2.

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



According to the U.S. Census' 2006-2010 American Community Survey (ACS),<sup>3</sup> an estimated 91.7% of the population in Bethel aged 25 and over held a high school diploma or higher degree, compared to an estimated 90.7% of Alaska residents overall. Also in 2010, an estimated 3.6% of the population had less than a 9<sup>th</sup> grade education, compared to an estimated 3.5% of Alaska residents overall; an estimated 4.7% of the population had a 9<sup>th</sup> to 12<sup>th</sup> grade education but no diploma, compared to an estimated 5.8% of Alaska residents overall; an estimated 26.5% had some college but no degree, compared to an estimated 28.3% of Alaska residents overall; an estimated 5.7% had an Associate's degree, compared to an estimated 8% of Alaska residents overall; an estimated 14.8% had a Bachelor's degree, compared to an estimated 17.4% of Alaska residents overall; and an estimated 11% had a graduate or professional degree, compared to an estimated 9.6% of Alaska residents overall.

#### *History, Traditional Knowledge, and Culture*<sup>4</sup>

The area around what is now Bethel was originally occupied by Yup'ik Eskimos around 2,000 years ago. At that time, the area provided a strategic trading route along the Yukon-Kuskokwim (Y-K) Delta region, connecting many communities located on the two rivers. The original settlement "Mamterillermuit" was located across the river from modern day Bethel. In 1880, the U.S. Census recorded 29 people living in Mamterillermuit. At that time the community was primarily an Alaska Commercial Trading post. On the advice of a local shaman, the original site was moved across the river, and a Moravian mission was constructed. After the purchase of Alaska in 1867, trading posts were established in Fort Komakovsky and Vinasale. By the late nineteenth century, Bering Sea Eskimos and Nunivak Islanders traveled to Bethel to trade, and around the turn of the century a medical facility, post office, and federal school were constructed. In 1912, the U.S. Army Corps of Engineers mapped a deep water channel, and by 1915 ocean liners began visiting Bethel regularly. Around that point Bethel had been established as a regional hub for the Y-K Delta region, and by the late 1930s, the region's center for aviation and government administration. After World War II, Bethel's city government was organized, and it became the largest community in western and arctic Alaska by the 1980s. Today, Bethel's culture is strongly rooted in Yup'ik tradition and subsistence activities continue to be a central component of community cohesion. As a regional hub, many people come from surrounding villages to meet, work, and network in a setting where traditional and modern values are interwoven.

Bethel has one property on the National Register of Historic Places. The First Mission House was constructed in 1885 and was the first Moravian mission in southwest Alaska.<sup>5</sup>

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<sup>3</sup> 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.

<sup>4</sup> HDR Alaska. (1997). *Bethel Comprehensive Plan*. Retrieved January 6, 2012 from: <http://www.commerce.state.ak.us/dca/plans/Bethel-CP-1997.pdf>.

<sup>5</sup> National Park Service. (n.d.). *National Register of Historic Places*. Retrieved January 6, 2012 from: <http://pdfhost.focus.nps.gov/docs/NRHP/Text/90001551.pdf>.

## Natural Resources and Environment

Precipitation averages 16 inches per year, and snowfall averages 50 inches per year. Summer temperatures range from 42 to 62 °F (6 to 17 °C). Winter temperatures range from -2 to 19 °F (-19 to -7 °C).<sup>6</sup>

Bethel is located in the Yukon Delta National Wildlife Refuge (YDNWR) which covers 19 million acres of the upper and lower Y-K Delta region.<sup>7</sup> Bethel itself is located on lowland alluvial deposits comprised of mud, silt, sand, gravel, and various organics; similar to conditions found on coastal plains found in much of western Alaska. The landscape in these lowland areas is populated with shallow circular and oxbow lakes, streams, and sloughs. Upland areas consist of silt deposits covered by a shallow permafrost layer. Vegetation in the area is characteristic of poorly drained, moist tundra. Vegetation types include dwarf shrubs, mosses, lichens, forbs, grasses, and herbs. In areas along the Kuskokwim River, thickets of alder, willow, and birch can be found. Most of the area surrounding Bethel is classified as wetland habitat.<sup>8</sup> In terms of wildlife, the area is probably best known for the abundant species of waterfowl. Many migratory birds make use of the wetlands for nesting. Terrestrial mammals in the area include moose, wolves, red and arctic fox, snowshoe hare, beaver, muskrat, and caribou. Marine and freshwater fish include all five species of Pacific salmon, sheefish, smelt, whitefish, burbot, northern pike, Dolly Varden char, rainbow trout, arctic grayling, herring, halibut, tomcod, and flounder.<sup>9</sup>

Natural resources in the area include several mineral locations within 100 mi of Bethel. These include placer deposits of gold, and a mercury project at Arsenic Creek.<sup>10</sup> Other mineral projects in the area include Bogus Creek and Nyak gold prospects to the east.<sup>11</sup>

Natural hazards in the area primarily include bank erosion and flooding.<sup>12</sup> Bethel is located on an oxbow curve in the Kuskokwim River, making it susceptible to erosion. When the city was founded it was protected by several islands; however, by 1939 the islands had eroded and Bethel was left unprotected. In addition, steep banks of unconsolidated silty soils are left susceptible to erosive forces as permafrost retreats. Much of Bethel lies within a floodplain, which is inundated annually. Elevations below 17 ft are at high risk of flooding due to seasonal ice jams and poorly drained soils. Bulkheads and pilings have been constructed to mitigate impacts; however, undercutting continues to be an issue.<sup>13</sup>

According to the Alaska Department of Environmental Conservation (DEC), there are no significant environmental remediation sites active in Bethel.<sup>14</sup>

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<sup>6</sup> Alaska Department of Community and Rural Affairs. (n.d.). *Community Database Online*. Retrieved October 17, 2011 from [http://www.commerce.state.ak.us/dca/commdb/CF\\_BLOCK.htm](http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm).

<sup>7</sup> USFWS. (n.d.). *Yukon Delta National Wildlife Refuge*. Retrieved January 6, 2012 from: <http://www.fws.gov/refuges/profiles/index.cfm?id=74540>.

<sup>8</sup> See footnote 4.

<sup>9</sup> See footnote 7.

<sup>10</sup> See footnote 4.

<sup>11</sup> Alaska Department of Commerce. (n.d.). *Mineral Property Map*. Retrieved January 6, 2012 from: <http://commerce.alaska.gov/ded/dev/minerals/mining.htm>.

<sup>12</sup> See footnote 4.

<sup>13</sup> Ibid.

<sup>14</sup> Alaska Department of Environmental Conservation. (n.d.). *Contaminated Sites Program*. Retrieved June 20, 2012 from: <http://dec.alaska.gov/spar/csp/list.htm#Western>.

## Current Economy<sup>15</sup>

Bethel serves as the regional hub for 56 villages in the Y-K Delta. Food, fuel, transportation, medical care, and other services for the region are provided by Bethel. Subsistence activities contribute substantially to villager's diets, particularly salmon, freshwater fish, game birds, and berries. Poor fish returns since 1997 have significantly affected the community.<sup>16</sup>

In a survey conducted by the AFSC in 2011, community leaders reported that Bethel's economy relies upon mining, fishing, ecotourism, and sport hunting and fishing. While the community relies mostly on employment in the fishing sectors, 1,300 residents are employed at the regional hospital making it the largest contributor to local employment.

Top employers in Bethel for 2010<sup>17</sup> include Yukon Kuskokwim Health Corporation, Lower Kuskokwim School District, State of Alaska, Association of Village Council Presidents (AVCP), City of Bethel, Omni Enterprises Inc., AVCP Housing Authority, AK Commercial Company, University of Alaska, and Hageland Aviation Services Inc.

In 2010,<sup>18</sup> the estimated per capita income in Bethel was \$29,220 and the estimated median household income was \$86,935, compared to \$20,267 and \$57,321 in 2000, respectively. After accounting for inflation by converting the 2000 values to 2010 dollars,<sup>19</sup> the real per capita income (\$26,651) and real median household income (\$75,376) indicate an overall increase in individual and household earnings between 2000 and 2010. Bethel's per capita income and median household income in 2010 was significantly higher than the Bethel Census Area as a whole (\$18,584 per capita income, \$52,214 median household income), highlighting the community's relative weight within the region's cash economy. In 2010, Bethel ranked 65<sup>th</sup> of 305 communities who reported per capita earnings, and 19<sup>th</sup> of 299 communities for which median household earnings were reported.

Bethel's small population size may have prevented the ACS from accurately portraying economic conditions.<sup>20</sup> A potentially more accurate 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 (DOLWD). According to the ALARI database, residents earned \$112.53 million in total wages in 2010.<sup>21</sup> When matched with the population in 2010, the per capita income equals \$18,507; suggesting that caution should be used when comparing 2010 ACS estimates with the 2000 Census.<sup>22</sup> However, it should be noted that ACS and DOLWD data are based on wage earnings and does not take into account the value of subsistence within the local economy.

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<sup>15</sup> Unless otherwise noted, all monetary data are reported in nominal values.

<sup>16</sup> See footnote 6.

<sup>17</sup> 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/>.

<sup>18</sup> U.S. Census. American Community Survey 2006-10 estimates.

<sup>19</sup> Inflation was calculated using the Anchorage Consumer Price Index for 2000 and 2010 (retrieved January 5, 2012 from the Alaska Department of Labor, <http://labor.alaska.gov/research/cpi/inflationcalc.htm>).

<sup>20</sup> See footnote 3.

<sup>21</sup> ALARI estimates based on wages reported for unemployment insurance purposes. Estimates do not include self-employed or federally employed residents.

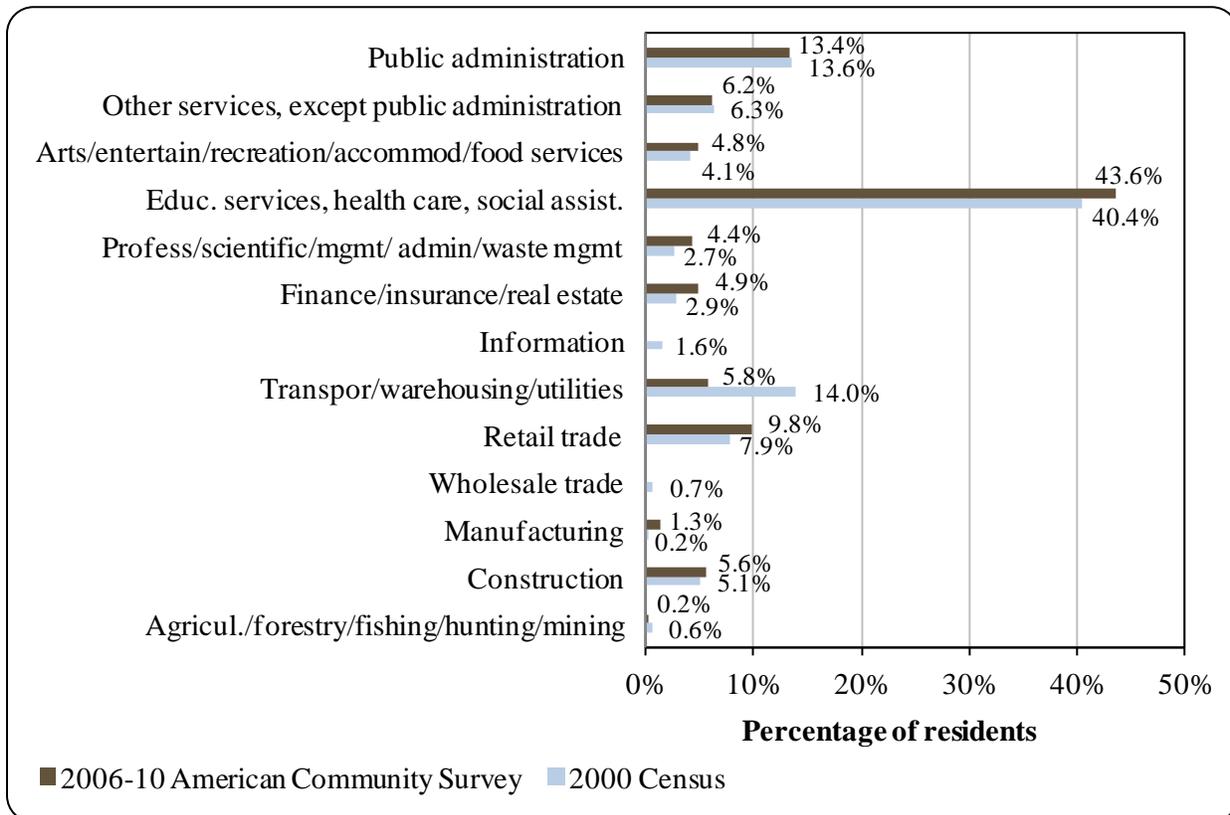
<sup>22</sup> See footnote 17.

According to 2006-10 ACS estimates,<sup>23</sup> 75.6% of residents aged 16 and older were part of the civilian labor force in 2010. The unemployment rate in Bethel was estimated at 7.6%, compared to an estimated 5.9% statewide; and 7.8% of the population was estimated to be living below the poverty level, compared to an estimated 9.5% statewide. Of those employed, 60.8% worked in the private sector, 37.8% worked in the public sector, and 1.4% was self-employed.

By industry, most (43.6%) employed residents were estimated to work in education services, health care, and social assistance sectors in 2010; followed by public administration sectors (13.4%) and retail trade sectors (9.8%). By occupation type, most (46.5%) employed residents were estimated to hold management or professional positions that year; followed by sales or office positions (22.1%); service positions (14.6%); natural resources, construction, or maintenance positions (9.4%); and production, transportation, or material moving positions (7.5%). Overall there was little variation in sector and occupational employment between 2000 and 2010. Information regarding employment trends can be found in Figures 3 and 4.

According to 2010 ALARI estimates,<sup>24</sup> most (31.2%) employed residents worked in education and health service sectors; followed by local government sectors (19.7%); trade, transportation, and utilities sectors (18.7%); and state government sectors (10.0%).

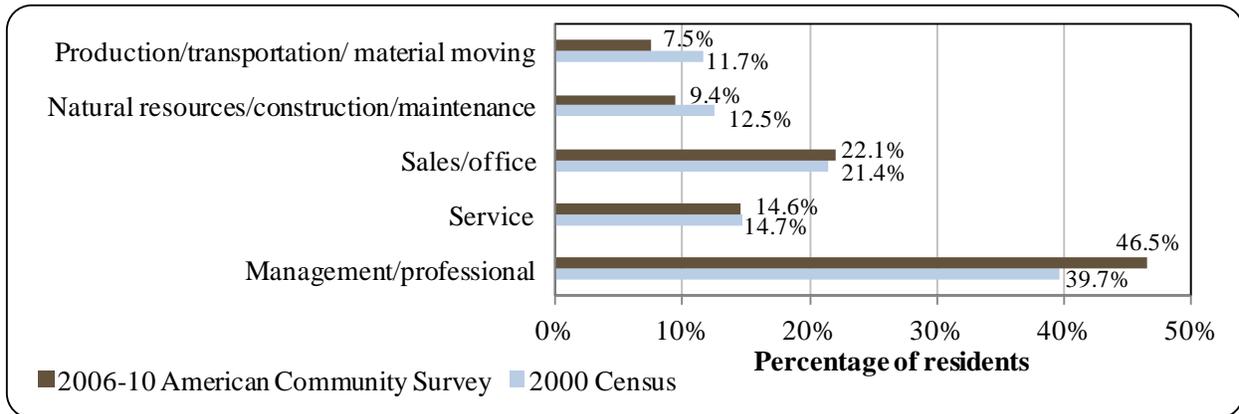
Figure 3. Local Employment by Industry in 2000-2010, Bethel (U.S. Census).



<sup>23</sup> See footnote 3.

<sup>24</sup> See footnote 17.

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



## Governance

Bethel was incorporated as a Second-class city in 1957. It has a mayoral form of government. In addition, there is a federally recognized Tribal government (Orutsararmuit Native Council) and an Alaska Native Claims Settlement Act (ANCSA) chartered Native village corporation (Bethel Native Corporation). The regional ANCSA chartered Native corporation is Calista Corporation. Additional organizations located within the community include the AVCP, a non-profit corporation which provides a range of services to the Y-K Delta region; and the Native Village of Napaimute. There are National Marine Fisheries Service (NMFS) and Alaska Department of Fish and Game (ADF&G) offices located within the community and the closest U.S. Bureau of Citizenship and Immigration Services (BCIS) offices is located in Anchorage, 400 mi east.

In 2010, the city administered a 6% sales tax, 3% bed tax, 6% alcohol tax, 6% gaming tax, and a motor vehicle registration tax. When adjusted from inflation,<sup>25</sup> municipal revenues increased 34.6% between 2000 and 2010 from \$5.63 million to \$9.80 million. In 2010, most local revenue came from sales taxes, gaming fees, taxi permits, and services charges. Most outside revenues came from payments in lieu of taxes, community revenue sharing, and federal stimulus. Sales tax revenue accounted for 76.0% of total municipal revenue in 2010, compared to 64.6% in 2000. State allocated Community Revenue Sharing accounted for 4.0% of total municipal revenues, compared to 3.2% from State Revenue Sharing in 2000. Bethel received several state and federal fisheries-related grants between 2000 and 2010, including \$15,500 for a slush bag delivery and installation system, \$600,000 for the appropriation and deferred maintenance costs of a state-owned dock, and \$500,000 for a small boat harbor dredge project. Information regarding municipal budget trends can be found in Table 2.

<sup>25</sup> Inflation calculated using Anchorage CPI from Alaska DOL: <http://labor.alaska.gov/research/cpi/cpi.htm>

## Infrastructure

### *Connectivity and Transportation*<sup>26</sup>

The state-owned Bethel Airport is the regional transportation center and is served by a number of passenger airlines, cargo carriers, and numerous air taxi services. Bethel is the third busiest state-owned airport in Alaska. It offers 6,400-ft long by 150-ft wide and 4,000-ft long by 75 ft wide asphalt runways and a 1,860-ft long by 75-ft wide gravel crosswind runway. Two float plane bases (Hangar Lake and H Marker Lake) are nearby. The Port of Bethel includes a small boat harbor, drydock storage, and up to 5,000 ft of transient moorage on the seawall. River travel is the primary means of local transportation in the summer, and it becomes a 150-mi ice road to surrounding villages in the winter. A barge service based in Bethel provides goods to the Kuskokwim villages. There are 16 mi of graded dirt roads maintained by the City and 22 mi of paved roads maintained by the State Department of Transportation (DOT). Public transportation services include taxi service, bus service, and boat shuttle service.<sup>27</sup> Roundtrip airfare<sup>28</sup> between Bethel and Anchorage in June 2012 was \$360.

### *Facilities*<sup>29</sup>

Public facilities are managed through nine departments, and provide a range of services including general city operations; finance services, including permitting and licensing; planning services; water, wastewater, and waste disposal; communications infrastructure; police and fire services; youth center; several parks, trails and boardwalks; and port and harbor infrastructure including a cargo dock, petro port, small boat harbor, float plane beach, and seawall. Fuel supply is provided by Crowley and Delta Western, electricity is provided by the Bethel Utilities Corporation via six 2,500-kW diesel generators, telephone services are provided by United Utilities, Inc. and GCI, internet is provided by GCI, a museum and community center is maintained by the AVCP, and a library is operated by the City in cooperation with the University of Alaska.

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<sup>26</sup> Alaska Department of Community and Rural Affairs. (n.d.). *Community Database Online*. Retrieved October 17, 2011 from [http://www.commerce.state.ak.us/dca/commdb/CF\\_BLOCK.htm](http://www.commerce.state.ak.us/dca/commdb/CF_BLOCK.htm).

<sup>27</sup> AGNEW::Beck. (2011). *Bethel Comprehensive Plan*. Retrieved January 9, 2012 from: [http://www.cityofbethel.org/vertical/Sites/%7B86032ACB-92B0-4505-919A-3F45B84FECD9%7D/uploads/Final\\_2035\\_Comprehensive\\_Plan.pdf](http://www.cityofbethel.org/vertical/Sites/%7B86032ACB-92B0-4505-919A-3F45B84FECD9%7D/uploads/Final_2035_Comprehensive_Plan.pdf).

<sup>28</sup> Airfare was calculated using lowest fare. Source: <http://www.travelocity.com> (retrieved November 22, 2011).

<sup>29</sup> Ibid.

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

Year	Total Municipal Revenue <sup>1</sup>	Sales Tax Revenue <sup>2</sup>	State/Community Revenue Sharing <sup>3,4</sup>	Fisheries-Related Grants (State and Federal) <sup>5</sup>
2000	\$5,627,565	\$3,635,905	\$178,955	n/a
2001	\$5,930,185	\$4,194,997	\$155,918	n/a
2002	\$6,725,666	\$4,322,478	\$154,688	n/a
2003	\$6,542,212	\$4,603,797	\$169,456	n/a
2004	\$7,003,253	\$4,880,743	-	\$615,500
2005	\$8,741,801	\$5,357,912	-	n/a
2006	\$7,323,670	n/a	-	n/a
2007	\$8,059,713	\$5,782,218	-	n/a
2008	\$9,880,807	\$6,801,070	-	n/a
2009	\$11,415,358	\$8,007,750	\$384,996	n/a
2010	\$9,797,338	\$7,448,211	\$387,030	\$500,000

<sup>1</sup> Alaska Department of Community 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](http://www.commerce.state.ak.us/dcra/commfin/CF_FinRec.cfm).

<sup>2</sup> Alaska Department of Community and Economic Development (n.d.). *Alaska Taxable (2000-2010)*. Retrieved at [http://www.commerce.state.ak.us/dca/osa/osa\\_summary.cfm](http://www.commerce.state.ak.us/dca/osa/osa_summary.cfm). Data retrieved April 15, 2011.

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

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

<sup>5</sup> Alaska Department of Community and Rural Affairs. (n.d.). *Community Funding Database*. Retrieved April 15, 2011 from [http://www.commerce.state.ak.us/dca/commdb/CF\\_Grants.htm](http://www.commerce.state.ak.us/dca/commdb/CF_Grants.htm).

In a survey conducted by the AFSC in 2011, community leaders reported the community had 1,400 ft in public dock space available for permanent moorage and 240-ft of moorage space for transient vessels. Vessels up to 350-ft can use moorage in Bethel. Dock infrastructure is capable of handling regulated vessels, including rescue vessels, fuel barges, hazardous materials, tugs, and freight barges. Typically, commercial vessels under 125-ft use Bethel as a base of operations during the fishing season. Infrastructure projects completed between 2000 and 2010 include dockside electricity, roads serving dock space, haul out facilities, roads, water and sewer pipelines, water treatment, fire department improvements, school improvements, telephone service improvements, and post office improvements. Projects currently in progress or under development as of 2011 include a barge landing area, new dock spaces, dock improvements, dockside utilities, breakwater, harbor dredging, general utilities improvements, alternative energy, landfill improvements, public safety improvements, and communications improvements. Fisheries-related businesses within the community include fishing gear sales, boat repair services (electrical, welding, and mechanical), small vessel haulout services, commercial fishing moorage, recreational fishing moorage, tackle sales, drydock storage, fish lodging, boat fuel sales, fishing gear repair, ice (provided, but no sales), and air taxi. Residents of Bethel go to Kodiak, Homer, Seward, and Seattle for fisheries-related businesses and services not available in the community. A food bank, job placement services, and public subsidized housing are all available in the city.

### *Medical Services*<sup>30</sup>

The Yukon-Kuskokwim Delta Regional Hospital is a qualified Acute Care and long-term care facility which provides regional services to 56 communities around the Y-K Delta. The Bethel Family Clinic is a qualified Emergency Care Center and Primary Health Care facility. Additional specialized care includes alcohol treatment and prevention services, and other outpatient services. Regional Emergency Medical Services (EMS) are also available within the community.

### *Educational Opportunities*<sup>31</sup>

Bethel has a total of 6 schools within the city which provide a K-12 education. In 2011, there were a total of 1,375 students enrolled and 90 teachers, system-wide. In addition, the Kuskokwim campus of the University of Alaska Fairbanks (UAF) is located in Bethel, providing outreach and distance education services to the region. Finally, Yuut Elitnaurviat, a local non-profit corporation, provides regional vocational and on-the-job training.

## **Involvement in North Pacific Fisheries**

### *History and Evolution of Fisheries*

Subsistence harvesting has been important to residents of the Bethel area for thousands of years. Subsistence salmon harvesting continues to be a primary economic activity along the Kuskokwim River.<sup>32</sup> In addition to salmon, spring harvests of herring roe on kelp or hemlock boughs is an important subsistence resource for coastal Alaskan communities.<sup>33</sup>

Fisheries participation in the Lower Kuskokwim Delta dates back thousands of years to the original Central Yup'ik occupants. Commercial harvest of salmon first took place in the Kuskokwim area in 1913, although in the early years it was a quasi-commercial fishery with limited distribution. During early years, local salmon were cured and salted and by 1920, the largest commercial season to-date took place on the Kuskokwim, with five operators processing approximately 35,000 Chinook salmon that year. In 1922, there were four salteries operating near the mouth of the Kuskokwim, processing Chinook and sockeye salmon. The Kuskokwim area was closed to all fishing for export from 1926 through 1929. In 1930, regulations were modified to allow commercial fishing in part of Kuskokwim Bay. A floating cannery operated for that year, and by 1932, three companies engaged in commercial fishing. Catch was dried and sold as food for sled dogs during the 1930s when dog teams were the primary means of hauling freight to villages in Western Alaska. Information on commercial fishing during the late 1930s through the 1950s is limited. However in 1952, poor salmon runs prompted the closure of the

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<sup>30</sup> See footnote 26.

<sup>31</sup> Alaska Department of Education and Early Development. (2012). *Statistics and Reports*. Retrieved April 24, 2012 from <http://eed.alaska.gov/stats/>.

<sup>32</sup> HDR Alaska. (1997). *Bethel Comprehensive Plan*. Retrieved January 6, 2012 from: <http://www.commerce.state.ak.us/dca/plans/Bethel-CP-1997.pdf>.

<sup>33</sup> Woodby, Doug, Dave Carlile, Shareef Siddeek, Fritz Funk, John H. Clark, and Lee Hulbert. 2005. *Commercial Fisheries of Alaska*. Alaska Department of Fish and Game, Special Publication No. 05-09. Retrieved December 29, 2011 from <http://www.adfg.alaska.gov/FedAidPDFs/sp05-09.pdf>.

Kuskokwim River and Bay. Management was finally shifted to the State of Alaska in 1960, and commercial fishing resumed.<sup>34</sup>

At the time of statehood in 1959, commercial fishing districts were defined along the Kuskokwim River. In the 1960s and 1970s commercial salmon fisheries in the Kuskokwim were still considered experimental, and management efforts focused on increasing commercial use while ensuring continued supply for subsistence use. Harvest levels continued to increase until the mid-1990s, after which time fishing effort, harvest levels and salmon prices decreased. Current management is focused on sustainability of salmon runs, ensuring subsistence needs are met, and with a precautionary approach, providing opportunity for commercial harvest of available surpluses.<sup>35</sup> Harvest levels continued to increase until the mid-1990s, after which time fishing effort, harvest levels and salmon prices decreased. Current management is focused on sustainability of salmon runs, ensuring subsistence needs are met, and with a precautionary approach, providing opportunity for commercial harvest of available surpluses.<sup>36</sup>

Commercial catch of herring for bait began in Alaska around 1900, and herring sac roe fisheries developed in the late 1970s. Along the Yukon/Kuskokwim coast there are six commercial gillnet sac roe districts: Security Cove, Goodnews Bay, Cape Avinof, Nelson Island, Nunivak Island and Cape Romanzof. Harvests in these areas have been declining in recent years, in part due to lack of processing capacity in the region.<sup>37</sup>

On the lower Kuskokwim, subsistence sockeye, chum, and Chinook harvesting typically begins by June 1<sup>st</sup>, and is concluded by mid-July. Coho and pink salmon are harvested in August and September. Fishing effort is based from either a fish camp or from a home village. Drift gill nets, fish wheels, and rods and reels are used for harvesting. Soon after river ice breaks up in May, smelt move into the lower Kuskokwim area. Residents use fine-meshed nets to catch smelt, and thread them through willow sticks before drying and smoking them. Whitefish, sheefish, Arctic grayling, and northern pike are harvested year-round. Blackfish and burbot are harvested during fall and winter months. Dolly Varden are typically harvested from June through December; while trout are typically harvested in the early spring and summer, and again in the late summer and early fall. Spotted seal, bearded seal, ringed seal, and walrus are harvested in the late spring.<sup>38,39</sup>

The fishing sectors provide one of the few sources of revenue in the region not originating from government sources. However, over the past 20 years, the contribution of commercial fishing in has fallen due to poor runs and prices. Since the early 1990s, declines in

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<sup>34</sup> Pennoyer, S.; Middleton, K. R.; & Morris, M. E. (1968). *Arctic-Yukon-Kuskokwim Area Salmon Fishing History*. Retrieved April 11, 2012 from: <http://www.sf.ADFG.state.ak.us/fedaidpdfs/afrbIL.070.pdf>.

<sup>35</sup> Clark, McGregor, Mecum, Krasnowski and Carroll. 2006. "Kuskokwim Commercial Salmon Fishery." In *The Commercial Salmon Fishery in Alaska*. Alaska Department of Fish and Game, Pgs. 105-146. Retrieved December 28, 2011 from [http://www.adfg.alaska.gov/static/home/library/PDFs/afrb/clarv12n1\\_p4.pdf](http://www.adfg.alaska.gov/static/home/library/PDFs/afrb/clarv12n1_p4.pdf).

<sup>36</sup> Clark, McGregor, Mecum, Krasnowski and Carroll. 2006. "Kuskokwim Commercial Salmon Fishery." In *The Commercial Salmon Fishery in Alaska*. Alaska Department of Fish and Game, Pgs. 105-146. Retrieved December 28, 2011 from [http://www.adfg.alaska.gov/static/home/library/PDFs/afrb/clarv12n1\\_p4.pdf](http://www.adfg.alaska.gov/static/home/library/PDFs/afrb/clarv12n1_p4.pdf).

<sup>37</sup> Woodby, Doug, Dave Carlile, Shareef Siddeek, Fritz Funk, John H. Clark, and Lee Hulbert. 2005. *Commercial Fisheries of Alaska*. Alaska Department of Fish and Game, Special Publication No. 05-09. Retrieved December 29, 2011 from <http://www.adfg.alaska.gov/FedAidPDFs/sp05-09.pdf>.

<sup>38</sup> Coffing, M. (1991). *Kwethluk Subsistence: Contemporary Land Use Patterns, Wild Resource Harvest and Use, and the Subsistence Economy of the Lower Kuskokwim River*. Retrieved July 12, 2012 from: <http://www.subsistence.ADFG.state.ak.us/TechPap/tp157.pdf>

<sup>39</sup> Andrews, E.; and Coffing, M. (1986). *Kuskokwim River Subsistence Chinook Fisheries: An Overview*. Retrieved July 12, 2012 from: <http://www.nativeknowledge.org/db/files/tp146.htm>.

prices and landings have cost the community millions of dollars in lost revenue; however, prices have rebounded somewhat in recent years.<sup>40</sup> Bethel is located in Federal Reporting Area 514, International Pacific Halibut Commission (IPHC) Regulatory Area 4E, and the Bering Sea Sablefish Regulatory District. In addition, the community is eligible to participate in the Community Development Quota (CDQ) program and is represented by the Coastal Villages Region Fund (CVRF). The CDQ program was implemented to help alleviate economic distress in rural communities in western Alaska by allocating a percentage of halibut, crab, and groundfish to six CDQ non-profit organizations representing 65 communities in the Bering Strait and Aleutian Islands region.<sup>41</sup> Managers of CDQ organizations authorize individual fishermen and fishing vessels to harvest a certain portion of the allocated CDQ.

In a survey conducted by the AFSC in 2011, community leaders reported that between 2005 and 2010, Bethel saw an increase in the number of commercial fishing vessels in the community; however, the number of vessels less than 35 ft long has declined due to fuel prices. In addition, although the community itself does not participate in the fisheries management process in Alaska, it is represented by CVRF in regional fisheries issues.

### *Processing Plants*

*Kuskokwim Seafoods* is a small processing facility in Bethel that started in 2010 in order to provide a market to local salmon fishers to help them sell their catch closer to home.<sup>42</sup> Kuskokwim Seafoods processes four salmon species: Chinook, sockeye, chum and coho.<sup>43</sup>

### *Fisheries-Related Revenue*

In 2010, Bethel received \$1.87 million in fisheries-related revenue from the Shared Fisheries Business Tax, Fisheries Resource Landing Tax, harbor usage fees, port/dock usage fees, and marine fuels taxes, compared to \$1.2 million in 2000. After accounting for inflation,<sup>44</sup> total fisheries-related revenue grew by 21% between 2000 and 2010. Harbor usage fees have consistently provided the most revenue annually, compared to Shared Fisheries Landing Tax revenue, which has declined substantially between 2000 and 2010. In a survey conducted by the AFSC in 2011, community leaders reported that there are no fishing-industry related taxes or fee programs that support local services and infrastructure. In addition, there were no reports of Bethel receiving funds from CVRF in 2010; however, CVRF typically provides support each year to its communities through educational scholarships, jobs, and other community services. Information regarding fisheries-related revenue trends can be found in Table 3.

It should be noted that a direct comparison between fisheries-related revenue and total municipal revenue cannot reliably be made as not all fisheries-related revenue sources are included in the municipal budget.

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<sup>40</sup> AGNEW::Beck. (2011). *Bethel Comprehensive Plan*. Retrieved January 9, 2012 from: [http://www.cityofbethel.org/vertical/Sites/%7B86032ACB-92B0-4505-919A-3F45B84FECD9%7D/uploads/Final\\_2035\\_Comprehensive\\_Plan.pdf](http://www.cityofbethel.org/vertical/Sites/%7B86032ACB-92B0-4505-919A-3F45B84FECD9%7D/uploads/Final_2035_Comprehensive_Plan.pdf).

<sup>41</sup> Fina, M. (2011). Evolution of Catch Share Management: Lessons from Catch Share Management in the North Pacific. *Fisheries*, Vol. 36(4). Retrieved September 12, 2012 from [http://www.fakr.noaa.gov/npfmc/PDFdocuments/catch\\_shares/Fina\\_CatchShare\\_411.pdf](http://www.fakr.noaa.gov/npfmc/PDFdocuments/catch_shares/Fina_CatchShare_411.pdf).

<sup>42</sup> Kuskokwim Seafoods (n.d.). Retrieved from: <http://kuskokwimseafoods.com/>

<sup>43</sup> Alaska Seafood Marketing Institute. (n.d.) Retrieved from: <http://alaskaseafood.org/industry/suppliers/>

<sup>44</sup> Inflation calculated using Anchorage CPI from Alaska DOL: <http://labor.alaska.gov/research/cpi/cpi.htm>

### *Commercial Fishing*

Commercial fishing, particularly in salmon fisheries in Kuskokwim and Bristol Bay, is an important part of the local economy in Bethel. In 2010, 233 residents, or 3.8% of the population, held 238 commercial fishing permits issued by the Commercial Fisheries Entry Commission (CFEC). In 200, 218 residents held 225 CFEC permits. Of the CFEC permits held in 2010, 87% were for salmon, compared to 88% in 2000; 12% were for herring, compared to 9% in 2000; and 1% were for “other” finfish, compared 1% in 2000. In addition, one resident held one License Limitation Program (LLP) permit for groundfish that year, although it was not actively fished. No residents held Federal Fisheries Permits (FFP) since between 2006 and 2010. Two residents held 958 shares of halibut quota in 2010; however, no quota share accounts were held and no quota allotment was given. The number of halibut quota shares peaked in 2002 and 2003 when 51,151 quota shares were held on one account. No residents held sablefish or crab quota between 2010 and when the programs began.

In 2010, 140 residents held commercial crew licenses, compared to 199 in 2000. In addition, residents held majority ownership of 33 vessels, compared to 55 in 2000. Of the CFEC permits held in 2010, 45% were actively fished, compared to 61% in 2000. This varies by fishery from 52% of salmon permits to 0% of herring and “other” finfish permits. No herring permits were actively fished between 2006 and 2010. No “other” finfish permits were actively fished between 2000 and 2010. No LLP groundfish permits were fished between 2005 and 2010. Fisheries prosecuted in 2010 by Bethel residents included: Bristol Bay drift gillnet and Lower Yukon gillnet salmon.<sup>45</sup>

In 2010, 1.25 million lbs of salmon valued at \$781,809 ex-vessel was landed in Bethel, compared to 3.70 million lbs valued at \$1.27 million in 2000; an increase of \$0.16 per pound landed after adjusting for inflation<sup>46</sup> and without considering the species composition of landings. Landings in Bethel peaked in 2009 at 3.93 million lbs valued at \$1.97 million ex-vessel. In 2010, Bethel ranked 38<sup>th</sup> of 67 Alaskan communities in terms of reported lbs landed and 41<sup>st</sup> in terms of ex-vessel value of landings. Residents reported landings 237,593 lbs of salmon valued at \$218,883 ex-vessel in 2010, compared to 444,516 lbs valued at \$274,549 ex-vessel in 2000; an increase of \$0.07 per pound landed after adjusting for inflation<sup>47</sup> and without considering the species composition of landings. Information regarding commercial fishing trends can be found in Tables 4 through 10.

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<sup>45</sup> 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.]

<sup>46</sup> Inflation calculated using Producer Price Index for unprocessed and packaged fish, Bureau of Labor Statistics, <http://www.bls.gov/ppi/#data>

<sup>47</sup> Ibid.

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

Revenue source	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Raw fish tax <sup>1</sup>	\$90,492	\$480,450	\$15,895	\$16,000	\$6,500	\$600	\$600	n/a	\$2,300	\$1,300	n/a
Shared Fisheries Business Tax <sup>1</sup>	\$92,830	\$76,733	\$15,895	\$5,484	\$601	\$1,509	\$1,716	\$910	\$644	\$535	\$568
Fisheries Resource Landing Tax <sup>1</sup>	n/a	\$638									
Fuel transfer tax <sup>2</sup>	n/a	n/a									
Extraterritorial fish tax <sup>2</sup>	n/a	n/a									
Bulk fuel transfers <sup>1</sup>	n/a	n/a									
Boat hauls <sup>2</sup>	n/a	n/a									
Harbor usage <sup>2</sup>	\$1.02 M	\$1.05 M	\$980,700	\$979,760	\$1.00 M	\$1.07 M	\$1.04 M	\$1.19 M	\$1.24 M	\$1.22 M	\$1.06 M
Port/dock usage <sup>2</sup>	n/a	\$210,000*									
Fishing gear storage on public land <sup>3</sup>	n/a	n/a									
Marine fuel sales tax <sup>3</sup>	n/a	\$600,000*									
<i>Total fisheries-related revenue<sup>4</sup></i>	<i>\$1.20 M</i>	<i>\$1.61 M</i>	<i>\$1.01 M</i>	<i>\$1.00 M</i>	<i>\$1.01 M</i>	<i>\$1.07 M</i>	<i>\$1.04 M</i>	<i>\$1.19 M</i>	<i>\$1.24 M</i>	<i>\$1.22 M</i>	<i>\$1.87 M</i>
<i>Total municipal revenue<sup>5</sup></i>	<i>\$5.63 M</i>	<i>\$5.93 M</i>	<i>\$6.73 M</i>	<i>\$6.54 M</i>	<i>\$7.00 M</i>	<i>\$8.74 M</i>	<i>\$7.32 M</i>	<i>\$8.06 M</i>	<i>\$9.88 M</i>	<i>\$11.42 M</i>	<i>\$9.80 M</i>

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

\*AFSC 2011 Community Survey

<sup>1</sup> Alaska Department of Community and Economic Development (n.d.) *Alaska Taxable (2000-2010)*. Retrieved April 15, 2011 from [http://www.commerce.state.ak.us/dca/osa/osa\\_summary.cfm](http://www.commerce.state.ak.us/dca/osa/osa_summary.cfm).

<sup>2</sup> Alaska Department of Community 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](http://www.commerce.state.ak.us/dcra/commfin/CF_FinRec.cfm).

<sup>3</sup> Reported by community leaders in a survey conducted by the AFSC in 2011.

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

<sup>5</sup> Total Total municipal revenue represents the total revenue that the city reports each year in its municipal budget. Alaska Department of Community 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](http://www.commerce.state.ak.us/dcra/commfin/CF_FinRec.cfm).

NOAA-TM-AFSC-259 – Volume 10  
Community Profiles for North Pacific Fisheries – Alaska: Bethel

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

Species		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Groundfish (LLP) <sup>1</sup>	Total permits	1	1	1	1	1	1	1	1	1	1	1
	Active permits	0	0	0	1	1	0	0	0	0	0	0
	% of permits fished	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%	0%
	Total permit holders	1	1	1	1	1	1	1	1	1	1	1
Crab (LLP) <sup>1</sup>	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	n/a										
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0
Federal Fisheries Permits <sup>1</sup>	Total permits	1	1	1	1	1	1	0	0	0	0	0
	Fished permits	0	0	0	0	0	0	0	0	0	0	0
	% of permits fished	0%	0%	0%	0%	0%	0%	n/a	n/a	n/a	n/a	n/a
	Total permit holders	1	1	1	1	1	1	0	0	0	0	0
Crab (CFEC) <sup>2</sup>	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	n/a										
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0
Other shellfish (CFEC) <sup>2</sup>	Total permits	1	1	1	1	1	1	1	1	1	1	1
	Fished permits	0	0	0	0	0	0	0	0	0	0	0
	% of permits fished	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Total permit holders	1	1	1	1	1	1	1	1	1	1	1
Halibut (CFEC) <sup>2</sup>	Total permits	3	6	6	3	0	0	0	1	1	0	0
	Fished permits	1	2	2	1	0	0	0	0	0	0	0
	% of permits fished	33%	33%	33%	33%	n/a	n/a	n/a	0%	0%	n/a	n/a
	Total permit holders	3	6	6	3	0	0	0	1	1	0	0
Herring (CFEC) <sup>2</sup>	Total permits	20	28	28	34	32	33	31	29	29	31	28
	Fished permits	5	2	0	2	2	1	0	0	0	0	0
	% of permits fished	25%	7%	0%	6%	6%	3%	0%	0%	0%	0%	0%
	Total permit holders	20	26	26	32	31	32	31	28	29	30	27

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

Species		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Sablefish (CFEC) <sup>2</sup>	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	n/a										
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0
Groundfish (CFEC) <sup>2</sup>	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	n/a										
	Total permit holders	0	0	0	0	0	0	0	0	0	0	0
Other Finfish (CFEC) <sup>2</sup>	Total permits	3	3	3	3	2	2	2	1	2	2	2
	Fished permits	0	0	0	0	0	0	0	0	0	0	0
	% of permits fished	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Total permit holders	3	3	3	3	2	2	2	1	2	2	2
Salmon (CFEC) <sup>2</sup>	Total permits	198	202	207	215	215	218	212	207	201	204	207
	Fished permits	131	102	87	92	105	106	91	92	85	76	108
	% of permits fished	66%	50%	42%	43%	49%	49%	43%	44%	42%	37%	52%
	Total permit holders	205	205	209	218	219	221	214	212	203	208	214
<i>Total CFEC Permits<sup>2</sup></i>	<i>Permits</i>	<i>225</i>	<i>240</i>	<i>245</i>	<i>256</i>	<i>250</i>	<i>254</i>	<i>246</i>	<i>239</i>	<i>234</i>	<i>238</i>	<i>238</i>
	<i>Fished permits</i>	<i>137</i>	<i>106</i>	<i>89</i>	<i>95</i>	<i>107</i>	<i>107</i>	<i>91</i>	<i>92</i>	<i>85</i>	<i>76</i>	<i>108</i>
	<i>% of permits fished</i>	<i>61%</i>	<i>44%</i>	<i>36%</i>	<i>37%</i>	<i>43%</i>	<i>42%</i>	<i>37%</i>	<i>38%</i>	<i>36%</i>	<i>32%</i>	<i>45%</i>
	<i>Permit holders</i>	<i>218</i>	<i>220</i>	<i>223</i>	<i>235</i>	<i>235</i>	<i>239</i>	<i>233</i>	<i>229</i>	<i>222</i>	<i>228</i>	<i>233</i>

<sup>1</sup>National Marine Fisheries Service. 2011. Data on Limited Liability Permits, 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.]

<sup>2</sup>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 Bethel: 2000-2010.

Year	Crew License Holders <sup>1</sup>	Count Of All Fish Buyers <sup>2</sup>	Count Of Shore-Side Processing Facilities <sup>3</sup>	Vessels Primarily Owned By Residents <sup>4</sup>	Vessels Homeported <sup>4</sup>	Vessels Landing Catch In Bethel <sup>2,5</sup>	Total Net Lbs Landed In Bethel <sup>2</sup>	Total Ex-Vessel Value Of Landings In Bethel <sup>2,5</sup>
2000	199	5	1	55	44	101	3,703,446	\$1,271,147
2001	137	10	1	55	36	245	6,594,702	\$1,078,261
2002	90	10	0	45	31	134	4,160,650	\$492,185
2003	93	4	0	48	29	106	6,205,245	\$1,046,926
2004	108	5	0	40	27	146	6,720,599	\$1,766,245
2005	120	11	0	41	26	132	9,208,413	\$1,628,007
2006	105	6	0	31	20	80	4,148,701	\$1,278,886
2007	118	5	0	30	17	52	3,296,951	\$1,389,231
2008	99	9	0	26	16	44	3,608,822	\$1,713,439
2009	116	7	0	25	14	46	3,930,847	\$1,973,926
2010	140	5	1	33	21	23	1,250,256	\$781,809

<sup>1</sup> 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.]

<sup>2</sup> 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.]

<sup>3</sup> 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.]

<sup>4</sup> 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.]

<sup>5</sup> Totals only represent non-confidential data.

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

<b>Year</b>	<b>Number of Halibut Quota Share Account Holders</b>	<b>Halibut Quota Shares Held</b>	<b>Halibut IFQ Allotment (pounds)</b>
2000	0	219	0
2001	0	958	0
2002	1	51,151	6,144
2003	1	51,151	6,142
2004	0	958	0
2005	0	958	0
2006	0	958	0
2007	0	958	0
2008	0	958	0
2009	0	958	0
2010	0	958	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 Bethel: 2000-2010.

<b>Year</b>	<b>Number of Sablefish Quota Share Account Holders</b>	<b>Sablefish Quota Shares Held</b>	<b>Sablefish IFQ Allotment (pounds)</b>
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 Bethel: 2000-2010.

<b>Year</b>	<b>Number of Crab Quota Share Account Holders</b>	<b>Crab Quota Shares Held</b>	<b>Crab IFQ Allotment (pounds)</b>
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.]

NOAA-TM-AFSC-259 – Volume 10  
Community Profiles for North Pacific Fisheries – Alaska: Bethel

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

	<i>Total Net Pounds<sup>1</sup></i>										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Crab	0	0	0	0	0	0	0	0	0	0	0
Finfish	--	--	--	--	--	--	--	--	--	--	--
Halibut	--	--	--	--	--	--	--	--	--	--	--
Herring	--	3,974,252	2,654,445	--	--	5,790,126	--	--	--	--	--
Other Groundfish	--	--	--	--	--	--	--	--	--	--	--
Other Shellfish	--	--	--	--	--	--	--	--	--	--	--
Pacific Cod	--	--	--	--	--	--	--	--	--	--	--
Pollock	--	--	--	--	--	--	--	--	--	--	--
Sablefish	--	--	--	--	--	--	--	--	--	--	--
Salmon	3,698,783	2,620,450	1,506,205	--	4,876,647	3,418,287	3,368,556	3,296,951	3,608,822	3,930,796	1,250,214
<i>Total<sup>2</sup></i>	3,698,783	6,594,702	4,160,650	--	4,876,647	9,208,413	3,368,556	3,296,951	3,608,822	3,930,796	1,250,214
	<i>Ex-vessel Value (nominal U.S. dollars)</i>										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Crab	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Finfish	--	--	--	--	--	--	--	--	--	--	--
Halibut	--	--	--	--	--	--	--	--	--	--	--
Herring	--	\$271,143	\$147,556	--	--	\$420,944	--	--	--	--	--
Other Groundfish	--	--	--	--	--	--	--	--	--	--	--
Other Shellfish	--	--	--	--	--	--	--	--	--	--	--
Pacific Cod	--	--	--	--	--	--	--	--	--	--	--
Pollock	--	--	--	--	--	--	--	--	--	--	--
Sablefish	--	--	--	--	--	--	--	--	--	--	--
Salmon	\$1,270,671	\$807,118	\$344,629	--	\$1,568,550	\$1,207,063	\$1,236,866	\$1,389,231	\$1,713,439	\$1,973,875	\$781,793
<i>Total<sup>2</sup></i>	\$1,270,671	\$1,078,261	\$492,185	--	\$1,568,550	\$1,628,007	\$1,236,866	\$1,389,231	\$1,713,439	\$1,973,875	\$781,793

*Note: Cells showing “--” indicate that the data are considered confidential.*

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.]

<sup>1</sup> Net lbs refers to the landed weight recorded in fish tickets.

<sup>2</sup> Totals only represent non-confidential data.

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

	<i>Total Net Pounds<sup>1</sup></i>										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Crab	--	--	--	--	--	--	--	--	--	--	--
Finfish	--	--	--	--	--	--	--	--	--	--	--
Halibut	--	--	--	--	--	--	--	--	--	--	--
Herring	143,406	--	--	--	--	--	--	--	--	--	--
Other Groundfish	--	--	--	--	--	--	--	--	--	--	--
Other Shellfish	--	--	--	--	--	--	--	--	--	--	--
Pacific Cod	--	--	--	--	--	--	--	--	--	--	--
Pollock	--	--	--	--	--	--	--	--	--	--	--
Sablefish	--	--	--	--	--	--	--	--	--	--	--
Salmon	444,516	280,771	210,697	297,788	572,460	505,937	415,526	437,070	356,568	239,408	237,593
<i>Total<sup>2</sup></i>	<i>587,922</i>	<i>280,771</i>	<i>210,697</i>	<i>297,788</i>	<i>572,460</i>	<i>505,937</i>	<i>415,526</i>	<i>437,070</i>	<i>356,568</i>	<i>239,408</i>	<i>237,593</i>
	<i>Ex-vessel Value (nominal U.S. dollars)</i>										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Crab	--	--	--	--	--	--	--	--	--	--	--
Finfish	--	--	--	--	--	--	--	--	--	--	--
Halibut	--	--	--	--	--	--	--	--	--	--	--
Herring	\$13,459	--	--	--	--	--	--	--	--	--	--
Other Groundfish	--	--	--	--	--	--	--	--	--	--	--
Other Shellfish	--	--	--	--	--	--	--	--	--	--	--
Pacific Cod	--	--	--	--	--	--	--	--	--	--	--
Pollock	--	--	--	--	--	--	--	--	--	--	--
Sablefish	--	--	--	--	--	--	--	--	--	--	--
Salmon	\$274,549	\$107,662	\$89,628	\$151,285	\$265,605	\$293,416	\$255,775	\$280,244	\$254,288	\$181,013	\$218,883
<i>Total<sup>2</sup></i>	<i>\$288,008</i>	<i>\$107,662</i>	<i>\$89,628</i>	<i>\$151,285</i>	<i>\$265,605</i>	<i>\$293,416</i>	<i>\$255,775</i>	<i>\$280,244</i>	<i>\$254,288</i>	<i>\$181,013</i>	<i>\$218,883</i>

*Note: Cells showing “--” indicate that the data are considered confidential.*

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.]

<sup>1</sup> Net lbs refers to the landed weight recorded in fish tickets.

<sup>2</sup> Totals only represent non-confidential data.

### *Recreational Fishing*

Sportfishing, while less significant than commercial and subsistence fishing, is nevertheless an important part of Bethel's fisheries involvement. In 2010, there were no active sport fish guide businesses, compared to 2 in 2000. In addition, residents held 7 sport fish guide licenses that year, compared to 6 in 2000. The number of sport fish guide licenses held in Bethel peaked in 2003 and 2004 at 9 each year. The number of sportfishing licenses sold in the city increased steadily between 2000 and 2010, with 1,799 sold in 2010 compared to 943 in 2000. In addition, 1,058 sportfishing licenses were sold to residents in 2010, compared to 814 in 2000.

Bethel is located in the Kuskokwim River and Bay Drainage ADF&G Harvest Survey Area which includes the Kuskokwim River drainage and all waters flowing into Kuskokwim Bay. While saltwater survey data is somewhat limited, 2008 saw a peak of 108 resident angler days fished. In 2010, there were a total of 19,455 freshwater angler days fished, compared to 19,990 in 2000. In that year, non-Alaska residents accounted for 72.1% of freshwater angler days fished, compared to 67.0% in 2000.

According to ADF&G Harvest Survey data, private anglers in Bethel target all five species of Pacific salmon, rainbow trout, Dolly Varden char, whitefish, burbot, arctic grayling, northern pike, halibut, and razor clams. There is no kept/released charter information available for Bethel.

In a survey conducted by the AFSC in 2011, community leaders reported that most recreational fishing in the community is either shore based or private-vessel based. Marine species targeted by private vessels include chum, king, coho, and sockeye salmon. Information regarding recreational fishing trends can be found in Table 11.

### *Subsistence Fishing*

Kuskokwim Area subsistence salmon fisheries rank as one of the largest in the State of Alaska, accounting for over 50% of the state's Chinook salmon harvests. More than 2,000 households in the Kuskokwim Area annually harvest salmon for subsistence use from June through August. ADF&G Division of Subsistence studies indicate that wild fish account for 85% of the total subsistence-harvested fish and wildlife resource in Kuskokwim River communities; with salmon accounting for up to 53% of the total annual subsistence harvest.<sup>48</sup>

Interviews of subsistence users conducted in 2008 indicated that fishing effort was concentrated during the week ending June 15, and extends through the week ending July 6. This period typically coincides with Chinook abundance. The majority of subsistence harvesters use gillnets and to a lesser degree, rod and reel gear types.<sup>49</sup> Subsistence fishing and hunting are practiced in Bethel although detailed data is limited and information gathered by the ADF&G regarding household subsistence participation is unavailable.

Of the species listed by ADF&G in Table 13, Chinook salmon were harvested most, followed by coho, chum, sockeye, and pink salmon. In 2008, 88,757 salmon were harvested, accounting for 8.5% of statewide subsistence salmon harvests that year. In 2000, a total of 59,461 salmon were harvested. Salmon harvests peaked in 2008. In 2010, 8 residents held

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<sup>48</sup> Carroll, M. C.; and Patton, E. (2010). *Lower Kuskokwim River Inseason Subsistence Salmon Catch Monitoring, 2008*. Fishery Management Report No. 10-09. Retrieved August 16, 2012 from: <http://alaska.fws.gov/asm/pdf/fisheries/reports/06-3062008.pdf>.

<sup>49</sup> Ibid.

Subsistence Halibut Registration Certificates (SHARC), compared to 10 in 2003. In that year, an estimated 560 lbs was harvested on 1 SHARC, compared to an estimated 44 lbs in 2000. Subsistence halibut harvests peaked in 2006 at an estimated 1,432 lbs. Between 2000 and 2010, an estimated 5 sea otters were harvested and 9 walrus. No information is available regarding subsistence sea lion, harbor seal, or spotted seal harvests. Information regarding subsistence trends can be found in Table 12 through 15.

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

Year	Active Sport Fish Guide Businesses <sup>1</sup>	Sport Fish Guide Licenses <sup>1</sup>	Sport Fishing Licenses Sold to Residents <sup>2</sup>	Sport Fishing Licenses Sold in Bethel <sup>2</sup>
2000	0	6	814	943
2001	0	8	1,003	1,136
2002	0	7	1,011	1,442
2003	0	9	1,000	1,456
2004	0	9	974	1,400
2005	0	3	1,001	1,402
2006	0	4	865	1,294
2007	0	6	871	1,366
2008	0	5	911	1,489
2009	0	6	894	1,303
2010	0	7	1,058	1,799

Year	Saltwater		Freshwater	
	Angler Days Fished – Non-residents <sup>3</sup>	Angler Days Fished – Alaska Residents <sup>3</sup>	Angler Days Fished – Non-residents <sup>3</sup>	Angler Days Fished – Alaska Residents <sup>3</sup>
2000	27	13	13,388	6,602
2001	n/a	n/a	16,437	4,236
2002	n/a	n/a	14,583	6,062
2003	28	63	16,923	7,355
2004	n/a	15	16,239	9,152
2005	19	18	13,725	5,685
2006	n/a	n/a	14,773	7,616
2007	n/a	n/a	13,390	7,816
2008	n/a	108	17,582	8,172
2009	n/a	n/a	12,625	5,166
2010	n/a	n/a	14,033	5,422

<sup>1</sup> 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.]

<sup>2</sup> 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.]

<sup>3</sup> 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).

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

Year	Subsistence Salmon Permits Issued <sup>1</sup>	Salmon Permits Returned <sup>1</sup>	Chinook Salmon Harvested <sup>1</sup>	Chum Salmon Harvested <sup>1</sup>	Coho Salmon Harvested <sup>1</sup>	Pink Salmon Harvested <sup>1</sup>	Sockeye Salmon Harvested <sup>1</sup>	Lbs of Marine Inverts <sup>2</sup>	Lbs of Non-Salmon Fish <sup>2</sup>
2000	1,739	1,213	22,515	10,616	13,794	n/a	12,536	n/a	n/a
2001	1,722	837	27,209	11,319	14,949	n/a	15,724	n/a	n/a
2002	1,500	1,312	19,305	15,082	12,966	n/a	7,350	n/a	n/a
2003	1,651	1,077	21,475	9,829	13,237	n/a	10,542	n/a	n/a
2004	1,876	982	27,504	12,162	15,068	n/a	10,606	n/a	n/a
2005	1,740	451	24,473	12,535	12,268	449	13,135	n/a	n/a
2006	1,771	403	23,094	18,794	17,004	906	11,798	n/a	n/a
2007	1,769	444	29,548	15,836	12,787	383	13,556	n/a	n/a
2008	1,987	452	35,144	18,639	16,969	n/a	18,005	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.

<sup>1</sup> 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.

<sup>2</sup> 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, Bethel: 2003-2010.

Year	SHARC Issued	SHARC Cards Fished	SHARC Halibut Lbs Harvested
2003	10	4	44
2004	11	11	555
2005	8	5	592
2006	11	14	1,432
2007	15	4	289
2008	11	5	692
2009	13	1	n/a
2010	8	1	560

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, Bethel: 2000-2010.

Year	# of Beluga Whales <sup>1</sup>	# of Sea Otters <sup>2</sup>	# of Walrus <sup>2</sup>	# of Polar Bears <sup>2</sup>	# of Steller Sea Lions <sup>3</sup>	# of Harbor Seals <sup>3</sup>	# of Spotted Seals <sup>3</sup>
2000	n/a	n/a	2	n/a	n/a	n/a	n/a
2001	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2002	n/a	n/a	1	n/a	n/a	n/a	n/a
2003	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2004	n/a	n/a	1	n/a	n/a	n/a	n/a
2005	n/a	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	n/a
2007	n/a	5	3	n/a	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	1	n/a	n/a	n/a	n/a
2010	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.

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> 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.

## **Additional Information**

In a survey conducted by the AFSC in 2011, community leaders reported that some of the current challenges for the portion of Bethel's economy that is based on fishing include limited moorage and shoreside space for commercial fishing. Community leaders reported that management actions by state and federal agencies have been fair; however, a lack of fish has affected Bethel significantly.