

Twin Hills

People and Place

*Location*¹

Twin Hills is located near the mouth of the Twin Hills River, a tributary of the Togiak River, 386 miles southwest of Anchorage. Twin Hills is located in the Bristol Bay Recording District and the Dillingham Census Area and is not located within an organized Borough.

*Demographic Profile*²

In 2010, there were 74 inhabitants in Twin Hills, making it the 276th largest of 352 total Alaskan communities with recorded populations that year. The population of Twin Hills grew by 7.25% between 2000 and 2009, with an average annual growth rate of -0.87%, indicating a slow rate of decline. The change in population from 1990 to 2010 is provided in Table 1.

In a survey conducted by NOAA's Alaska Fisheries Science Center (AFSC) in 2011, community leaders estimated that seven individuals come to Twin Hills as seasonal workers or transients each year during the months of June, July, and August, with the population reaching its annual peak in July. Community leaders noted that this annual peak in population is mostly driven by employment in the fishing sectors.

A majority of Twin Hills residents identified themselves as American Indian and Alaska Native in 2010 (94.6%). Other ethnic groups present in Twin Hills that year included White (2.7%) and two or more races (2.7%). Between 2000 and 2010, the percentage of the population identifying themselves as American Indian and Alaska Native increased by 10.5%, with corresponding decreases in the percentages of the population identifying themselves as White and two or more races. Changes in racial and ethnic composition from 2000 to 2010 are shown in Figure 1.

The average household size in Twin Hills increased from 2.6 in 1990 to 2.88 in 2000, and then decreased to 2.55 persons per household in 2010. The number of households decreased from 25 in 1990 to 24 in 2000, then increased to 29 occupied housing units by 2010. Of the 36 housing units surveyed for the 2010 Decennial Census, 16 were owner occupied and 13 were renter occupied, while seven housing units were vacant or used only seasonally. Throughout this period no residents of Twin Hills 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.

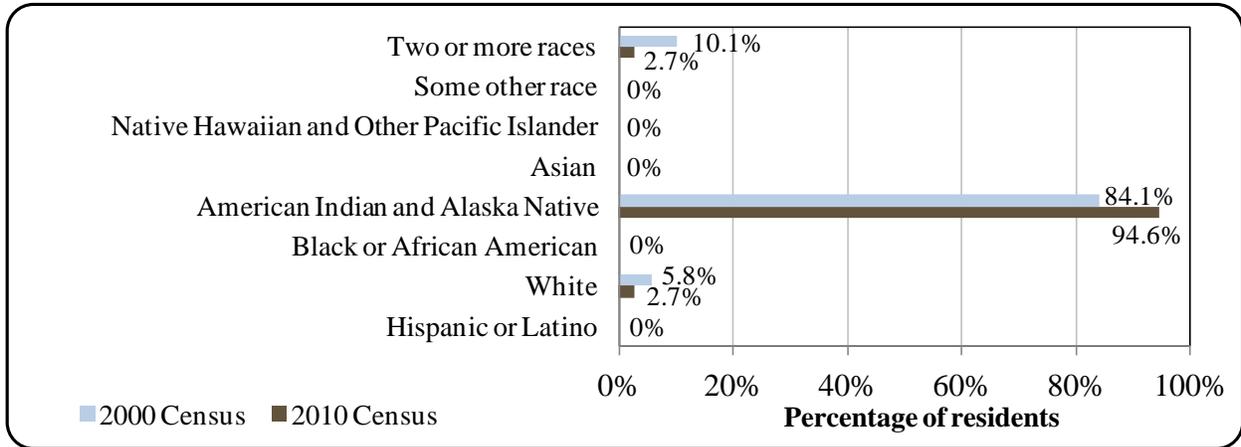
² U.S. Census Bureau (n.d.). *Profile of selected social, economic and housing characteristics of all places within Alaska*. Datasets utilized include the 2000 (SF1 100% and SF3 sample data) and 2010 (Demographic Profile SF) Decennial Census and the 2010 American Community Survey 5-year estimates. Retrieved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

Table 1. Population in Twin Hills from 1990 to 2010 by Source.

Year	U.S. Decennial Census ¹	Alaska Dept. of Labor Estimate of Permanent Residents ²
1990	66	-
2000	69	-
2001	-	64
2002	-	77
2003	-	76
2004	-	68
2005	-	71
2006	-	77
2007	-	81
2008	-	75
2009	-	74
2010	74	-

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, Twin Hills: 2000-2010 (U.S. Census).

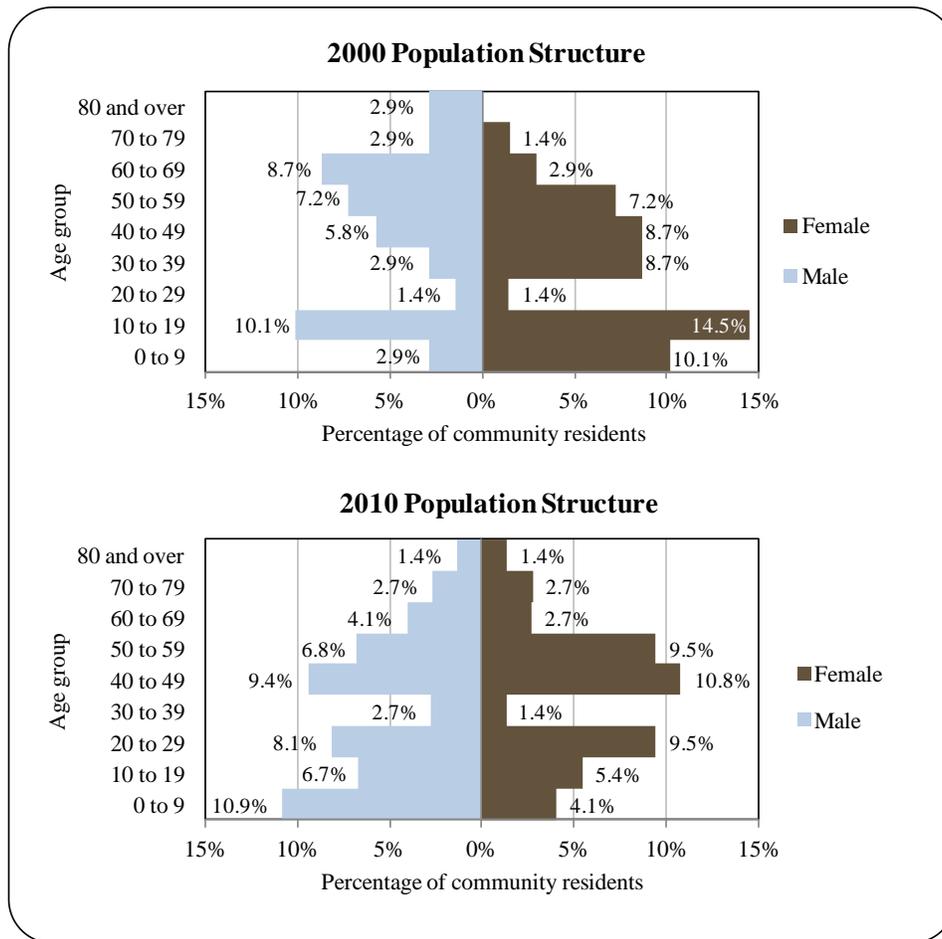


The gender makeup in Twin Hills in 2010 was 52.7% male and 47.3% female, similar to the state as a whole (52% male, 48% female). The median age was estimated to be 41.5 years, higher than both the U.S. national average of 36.8 years and the median age for Alaska, 33.8 years. In 2010, the greatest percentage of the population fell within the age group 40-49 years, with the second largest percentage falling within the 20-29 age group. Relatively few individuals fell within the 30-39 age group, and few were age 70 or older. While the age groups 20-29, 40-49, and 50-59 were more skewed towards females, the 0-9, 10-19, 30-39, and 60-69 were more skewed towards males. The 70-79 and 80 and older age groups had an even distribution of males

and females. The overall population structure of Twin Hills in 2000 and 2010 is shown in Figure 2.

According to the 2006-10 American Community Survey,³ in terms of educational attainment, 85.7% of Twin Hills residents aged 25 and older were estimated to hold a high school diploma or higher degree in 2010, compared to 90.7% of Alaskan residents overall. Also in 2010, 14.3% of residents aged 25 and older were estimated to have less than a ninth grade education, compared to 3.5% of Alaskan residents overall; 51.4% were estimated to have a high school diploma or equivalent, compared to 27.4% of Alaskan residents overall; 28.6% were estimated to have some college but no degree, compared to 28.3% of Alaskan residents overall; and 5.7% were estimated to have a Bachelor’s degree, compared to 17.4% of Alaskan residents overall. No Twin Hills residents were estimated to have a ninth to 12th grade education but no diploma, an Associate’s degree, or a graduate or professional degree in 2010.

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



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.

*History, Traditional Knowledge, and Culture*⁴

Alaska Native populations in Bristol Bay can trace their ancestry to early hunting and gathering societies. The coastal area between Togiak and the Northern Alaska Peninsula was populated early by Yupiit Eskimo; however, there was a great deal of movement and migration between other communities, bringing many different groups into the region. Contact with Europeans occurred in the mid-eighteenth century, and Russians moved into the area around 1818. Following contact, disease epidemics and cultural upheavals created a great deal of social reorganization throughout Bristol Bay communities.⁵

The village was established in 1965 by families who moved from Togiak to avoid the recurrent flooding there. Some residents migrated from Quinhagak on Kuskokwim Bay. The people have strong cultural ties to the Yukon-Kuskokwim region, because many of their ancestors migrated to Togiak following the 1918-19 influenza epidemic. School classes were first conducted in the church during 1967-68. A school building was constructed in 1972, but it burned in 1976. A new school was built in 1978. A post office was established around 1977, although there have been some interruptions of service.

Twin Hills is a traditional Yup'ik Eskimo village with a fishing and subsistence lifestyle. The sale, importation, and possession of alcohol is banned in the village.

Natural Resources and Environment⁶

The area experiences a transitional climate that is primarily maritime, although the arctic climate also affects this region. Average summer temperatures range from 37 to 66 °F (2.8 to 18.9 °C); winter temperatures average 4 to 30 °F (-15.6 to -1.1 °C). Annual precipitation ranges from 20 to 26 inches. Fog and high winds are prevalent during winter months. The Togiak River is ice-free from June through mid-November.

Twin Hills is located within the Togiak National Wildlife Refuge (Refuge), an area that is managed by the U.S. Fish and Wildlife Service (FWS). The following information is from the FWS.⁷ The Refuge totals 4.7 million acres - an area about the size of the states of Connecticut and Rhode Island combined. Almost half of these lands, the northern 2.3 million acres, are designated as the Togiak Wilderness Area. This constitutes the second largest contiguous Wilderness Area within the National Wildlife Refuge System. The Refuge was established to conserve fish and wildlife populations and habitats in their natural diversity including salmon, marine birds and mammals, migratory birds, and large mammals, to fulfill international treaty obligations; to provide for continued subsistence use; and to ensure necessary water quality and quantity. Special values of the Refuge include the Togiak Wilderness Area, the Kanektok, Goodnews, and Togiak river drainages, and sportfishing. The wild lands of the Refuge, including the Togiak Wilderness Area, provide valuable and diverse habitat for the fish and wildlife that make the area their home. The conservation of freshwater streams and rivers, wetland and alpine tundra, boreal forests, and coastal cliffs and beaches allow an amazing diversity of species to

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 Lowe, M. (2007). *Socioeconomic Review of Alaska's Bristol Bay Region*. Retrieved July 12, 2012 from: <http://www.iser.uaa.alaska.edu/Publications/bb-socio-review.pdf>.

⁶ Ibid.

⁷ U.S. Fish and Wildlife Service (2011). *Togiak National Wildlife Refuge*. Retrieved from <http://togiak.fws.gov/> on April 9, 2012.

find suitable homes here. The lands also offer amazing opportunities for recreation and education.⁸

The Refuge protects habitat that produces nearly 3 million Chinook, sockeye, chum, pink and coho salmon, and 27 other fish species. These fish species are the primary subsistence resource for residents of seven local villages. Fishery resources in this area of Alaska are economically important for commercial fisheries valued at over \$8 million, as well as a \$6 million sport fishery. Ensuring that adequate numbers of each fish species are allowed to spawn in each drainage is key to this region's aquatic and terrestrial ecosystems.

The Refuge also contains prime habitat for several other fish species, including rainbow trout, Arctic grayling, Dolly Varden, and Arctic char. Anglers come from around the world for an opportunity to pursue these prized fish species. The Refuge is working to further our understanding of these fish species. The Refuge conserves habitat for at least 201 staging, migrating, or breeding bird species. Bird species groups include landbirds, shorebirds, seabirds, raptors, and waterfowl. Birds from the North American Pacific Flyway and several Asiatic routes funnel through the area. The Refuge is home to more than 30 species of terrestrial mammals. With a wide variety of habitats, the Refuge supports brown bear, moose, caribou, wolves, and many smaller mammals. The Nushagak Peninsula, in the southeastern portion of the Refuge, was the site of a 1988 caribou reintroduction, and the caribou population continues to grow. Moose populations on the refuge have increased substantially in recent years as well, much to the delight of local people. Lynx and wolverines continue their elusive ways, seldom seen except for tracks they leave in the snow. In addition, 17 species of marine mammals are found along the coastline. The Refuge has haulout sites that provide animals a place to rest after feeding forays in the Bering Sea. Cape Peirce, on the southwestern tip of the Refuge, is one of only two regularly used land-based haulouts for Pacific walrus in North America. Up to 12,000 male walrus may haul out here at one time. Endangered Steller sea lions use haulouts within the Refuge, as do harbor and spotted seals. Marine and terrestrial mammals are important food resources for local village residents, and are important in the local tourism economy as well.⁹

Twin Hills is located near Togiak, which is the gateway to the Walrus Islands State Game Sanctuary (WISGS), an area managed by the Alaska Department of Fish and Game (ADF&G). The sanctuary protects a group of seven small craggy islands and their adjacent waters in northern Bristol Bay, approximately 65 miles southwest of Dillingham. The WISGS includes Round Island, Summit Island, Crooked Island, High Island, Black Rock and The Twins. The WISGS was established in 1960 to protect one of the largest terrestrial haulout sites in North America for Pacific walrus (*Odobenus rosmarus divergens*). The sanctuary also protects important habitats for several species of seabirds, Steller sea lions (*Eumetopias jubatus*) and other marine and terrestrial birds and mammals. The ADF&G manages the sanctuary primarily to protect these important habitats and wildlife species, and secondarily to provide for public use and enjoyment of these resources including the opportunity for scientific and educational study, viewing, and photography.¹⁰

⁸ Ibid.

⁹ Ibid.

¹⁰ Alaska Department of Fish and Game (2011). *Walrus Islands State Game Sanctuary: Area Overview*. Retrieved from <http://www.adfg.alaska.gov/index.cfm?ADFG=walrusislands.main> on April 9, 2012.

Current Economy¹¹

In a survey conducted by the AFSC in 2011, community leaders reported that the Twin Hills economy relies on fishing. In 2010, eight residents held commercial fishing permits, primarily for salmon, herring, herring roe, or sac roe. Fishermen use special flat-bottomed boats for the shallow waters of Togiak Bay. Togiak Fisheries and other fish buyers provide a market for fishermen in nearby Togiak. The community depends heavily on subsistence activities for various food sources. Seal, sea lion, walrus, whale, salmon, clams, geese, and ducks are harvested. An exchange relationship exists between Twin Hills, Togiak, and Manokotak. Seal oil is exchanged for blackfish. Handicrafts also supplement incomes.¹² Top employers in 2010¹³ included Twin Hills Village Council, Twin Hills BFU Project, Southwest Region Schools, Bristol Bay Area Health Corp., Bristol Bay Native Association, and Peninsula Airways Inc.

In 2010, the per capita income in Twin Hills was estimated to be \$23,034 and the median household income was estimated to be \$36,667, compared to \$16,856 and \$29,375 in 2000, respectively. Taking inflation into account by converting the 2000 values to 2010 dollars,¹⁴ the real per capita income in 2000 is shown to have been \$22,165 and the real 2000 median household income was \$38,628. This shows that per capita income increased in Twin Hills between 2000 and 2010, while the median household income decreased during this period. In 2010, Twin Hills ranked 125th of 305 Alaskan communities with per capita income that year, and 209th of 299 Alaskan communities with household income data. However, Twin Hill's small population size may have prevented the American Community Survey from accurately portraying economic conditions.¹⁵ 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, the per capita income in Twin Hills in 2010 was \$9,778, which indicates a substantial decrease compared to the real per capita income values reported by the U.S. Census in 2000.¹⁶ This is supported by 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 2010.¹⁷ However, it should be noted that American Community Survey and DOLWD data are based on wage earnings and does not take into account the value of subsistence within the local economy.

Based on the 20069-10 American Community Survey, 68.4% 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 zero, compared to the statewide unemployment rate of

¹¹ Unless otherwise noted, all monetary data are reported in nominal values.

¹² 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.

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 Inflation was calculated using the Anchorage Consumer Price Index for 2020 (retrieved October 18, 2011 from the Alaska Department of Labor, <http://labor.alaska.gov/research/cpi/inflationcalc.htm>).

¹⁵ 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.

¹⁶ See footnote 13.

¹⁷ Denali Commission. 2011. Distressed Community Criteria 2011 Update. Retrieved April 16, 2012 from: www.denali.gov.

5.9%. There were no Twin Hills residents estimated to be 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; figures reported for Twin Hills are not reflective of the value of subsistence to the local economy. In addition, these unemployment and poverty statistics are likely inaccurate given the small population of Twin Hills. A more accurate estimate is based on the ALARI database, which indicates that the unemployment rate in 2010 was 12.7%.

Based on household surveys conducted for the 2006-2010 American Community Survey, the greatest percentage of workers was employed in the public sector (61.5%), while 38.5% were employed in the private sector. Out of 26 people aged 16 and over that were estimated to be employed in the civilian labor force in 2010, the greatest percentage worked in educational services, health care, and social assistance (42.9%) and public administration (23.8%). Smaller percentages of the population were employed in transportation, warehousing, and utilities (19%) and retail trade (14.3%). No individuals characterized themselves as working in natural resource based occupations or industries that include fishing. However, given the data reported in the *Commercial Fishing* section below, the number of individuals employed in the farming, fishing, and forestry industries may be underestimated by census statistics as fishermen may hold another job and characterize their employment accordingly. Information about employment by industry is presented in Figure 3, and employment is broken down by occupation in Figure 4.

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

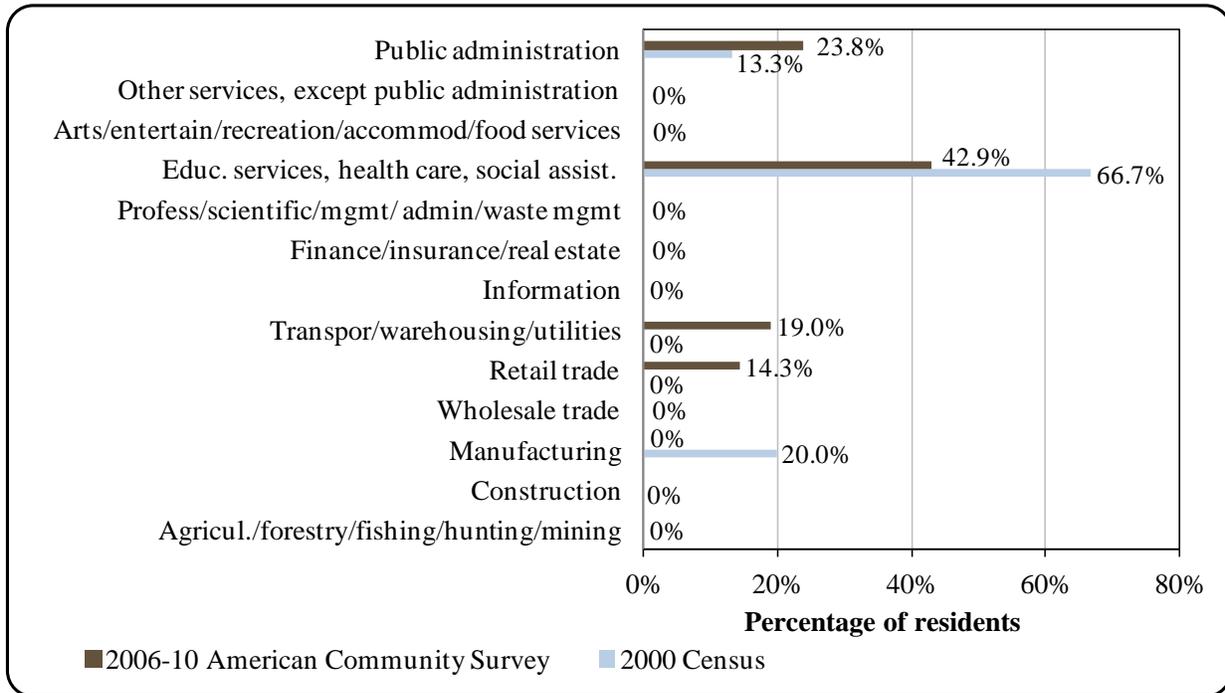
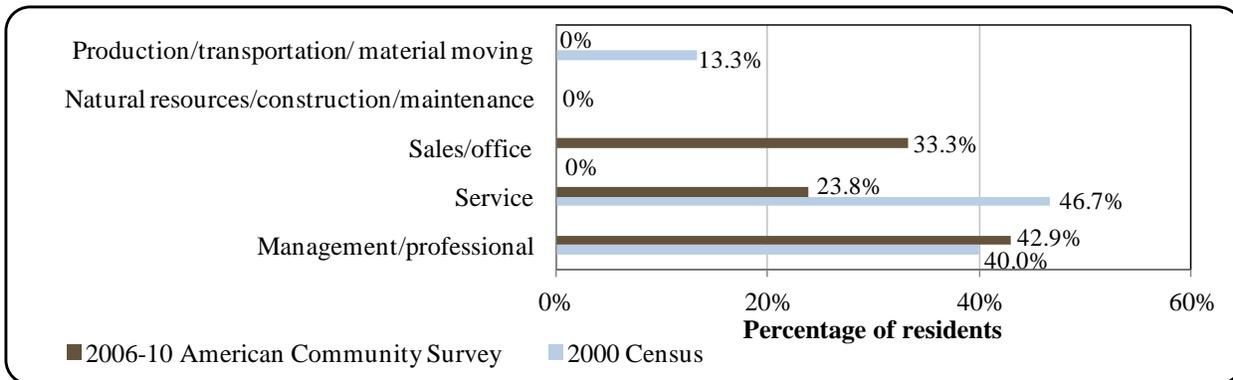


Figure 4. Local Employment by Occupation in 2000-2010, Twin Hills (U.S. Census).



Governance

Twin Hills is an unincorporated town that is not located within an organized borough. Because of the community’s unincorporated status, no municipal taxes were administered between 2000 and 2010. Twin Hills did receive State Revenue Sharing contributions from 2000 to 2003, ranging from approximately \$3,600 to approximately \$4,100 per year. Twin Hills did not receive any fisheries-related grants between 2000 and 2010. Information about selected aspects of the Twin Hills community revenue is presented in Table 2.

Twin Hills was included under the Alaska Native Claims Settlement Act (ANCSA) and is federally recognized as a Native village. The authorized traditional entity, recognized by the

Bureau of Indian Affairs (BIA), is the Twin Hills Native Corporation. The regional native corporation to which Twin Hills belongs is the Bristol Bay Native Corporation.

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

Table 2. Selected Municipal, State, or Federal Revenue Streams for the Community of Twin Hills 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	n/a	n/a	\$4,170	n/a
2001	n/a	n/a	\$3,707	n/a
2002	n/a	n/a	\$3,681	n/a
2003	n/a	n/a	\$3,631	n/a
2004	n/a	n/a	n/a	n/a
2005	n/a	n/a	n/a	n/a
2006	n/a	n/a	n/a	n/a
2007	n/a	n/a	n/a	n/a
2008	n/a	n/a	n/a	n/a
2009	n/a	n/a	n/a	n/a
2010	n/a	n/a	n/a	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/dca/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.

Infrastructure

Connectivity and Transportation

Twin Hills is primarily accessible by air and water. Regular and charter flights are dispatched from Dillingham. There is a state-owned 3,000 foot long by 60 foot wide lighted gravel runway on a ridge east of the village. Most cargo is delivered by air. In June 2012, round-trip airfare between Twin Hills and Anchorage was \$848.50.¹⁸ There is a boat landing area but no docking facilities; bulk goods must be lightered to shore. Cars, ATVs, and snowmobiles are

¹⁸ Airfare was obtained on the travel website <http://www.penair.com> for a round-trip ticket for travel from June 1 to June 8, 2012. Retrieved on December 1, 2011.

used for local transportation. Residents drive along the beach to access the Togiak Fisheries cannery. A winter trail for snowmobiles connects Twin Hills with Togiak.¹⁹

*Facilities*²⁰

Piped water and sewer systems provide services to some households; other use individual wells and septic tanks. Water is drawn using a submersible pump and is treated and stored in a 60,000-gallon steel tank. The gravity sewage system feeds to a disposal lagoon on the far west side of town. The school operates its own system. A coin-operated washeteria is available. Law enforcement services are provided by a Village Public Safety Officer. Fire and rescue services are provided by the Twin Hills First Responder Group. The community has a recreation center and a village council building. The nearest state trooper's post is located in Dillingham.

In a survey conducted by the AFSC in 2011, community leaders reported that the following infrastructure projects have been completed in the past ten years: haul out facilities, road, airport/seaplane base, water and sewer pipelines, diesel powerhouse, sewage treatment, water treatment, new landfill/solid waste site, public safety-police department, emergency response, fire department, school, telephone service, and a post office. In the same survey, community leaders noted that there is no dock space available for public moorage in Twin Hills, and that the port of Twin Hills is capable of handling rescue vessels and fuel barges.

*Medical Services*²¹

Medical care is provided at the Julius Pleasant Health Center, which is owned by the Village Council and operated by the Bristol Bay Area Health Corporation. The health center is a Community Health Aid Program site. Alternate health care is provided by the Twin Hills First Responder Group. Emergency services have limited air and river access and are provided by a health aide. The nearest hospital is located in Dillingham.

*Educational Opportunities*²²

The Twin Hills School provides instruction to students from pre-school through eighth grade. In 2011 the school had 16 students and two teachers.

¹⁹ 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.

²⁰ Ibid.

²¹ Ibid.

²² Alaska Department of Education and Early Development. (2012). *Statistics and Reports*. Retrieved April 24, 2012 from <http://eed.alaska.gov/stats/>.

Involvement in North Pacific Fisheries

History and Evolution of Fisheries

The Bristol Bay region is historically defined by traditional subsistence harvesting practiced by Yup'ik, Aleuts, and Athabascans of the region for millennia. Subsistence activities historically and continue to define livelihood, exchange, social networks, and social organization in the region. Subsistence supplements wage employment, and is considered culturally necessary for much of the population

The Bristol Bay salmon fishery is one of the most important commercial salmon fisheries in the world. Annual commercial harvests of salmon since statehood have averaged about 17 million sockeye salmon (91.2% of all salmon), about 880,000 chum salmon (4.7%), about 550,000 pink salmon (3.0%), about 120,000 coho salmon (0.6%), and about 100,000 Chinook salmon (0.5%). Commercial sockeye salmon harvests since 1959 have represented about 56% of statewide commercial harvests for that species. Chinook harvests occur mostly in the Nushagak District outside of Dillingham. Coho salmon are underused because fall runs occur after most vessels have ceased fishing efforts. Because of this, coho harvests are directly tied to market conditions rather than abundance. The Togiak River continuously exceeds minimum escapement goals and had relatively few emergency orders issued between 2000 and 2005, compared to other areas within Bristol Bay.²³

The Togiak area of Bristol Bay supports the largest herring fishery in the state. Large purses seine and gillnet fisheries harvest the spawning herring in a sac roe fishery, and a spawn-on-kelp harvest is also taken by local residents (usually in Togiak Bay). The Togiak sac roe fishery began in 1977, and has supported a fairly stable catch, averaging 40.6 million pounds between 1998 and 2002.²⁴

Bristol Bay supports a large, stable red king crab fishery which has been increasing in abundance since the late 1990s. Fishing effort has remained high with an average of 261 active permits between 1998 and 2002. However, no Togiak residents held crab permits or quota between 2000 and 2010.²⁵

Twin Hills is located near the mouth of the Twin Hills River, a tributary of the Togiak River.²⁶ The area is included in Federal Statistical and Reporting Area 514, Pacific Halibut Fishery Regulatory Area 4E, and the Bering Sea Sablefish Regulatory Area. Twin Hills participates in the Community Development Quota (CDQ) program through the Bristol Bay Economic Development Corporation (BBEDC). The community is not eligible for the Community Quota Entity (CQE) program.

In a survey conducted by the AFSC in 2011, community leaders also noted that Twin Hills does not participate in the fisheries management process in Alaska, and that a current challenge for the local economy is permit retention in the village.

²³ Clark, J. H. et al. (2006). *The Commercial Salmon Fishery in Alaska*. Retrieved July 11, 2012 from: <http://www.adfg.alaska.gov/static/home/library/PDFs/afrb/clarv12n1.pdf>.

²⁴ Woodby, D. et al. (2005). *Commercial Fisheries in Alaska*. Retrieved July 11, 2012 from: <http://www.adfg.alaska.gov/FedAidPDFs/sp05-09.pdf>.

²⁵ Ibid.

²⁶ Ibid.

Processing Plants

According to ADF&G's 2010 Intent to Operate list, Twin Hills does not have a registered processing plant. However, Togiak Fisheries operates as a fish buyer in nearby Togiak.

Fisheries-Related Revenue

Between 2000 and 2010, no data were reported about fisheries-related revenue received by Twin Hills (Table 3). However, in a survey conducted by the AFSC in 2011, community leaders reported that Twin Hills received \$150,000 in funding or grants from the BBEDC in 2010. It is also important to note that the BBEDC uses fisheries revenue from the CDQ program to provide grants for infrastructure, fuel, and electrical assistance to member communities. The BBEDC also offers educational scholarships, vocational training, and fishing permit acquisition and financing assistance to residents of its member communities.²⁷

Commercial Fishing

In 2010, there were eight Twin Hills residents holding total of 10 commercial fishing permits issued by the Commercial Fisheries Entry Commission (CFEC) for the salmon, herring, and halibut fisheries. None of the herring or halibut CFEC permits were reported as fished in 2010. Herring CFEC permits were issued for the Bristol Bay herring spawn on kelp hand-picking fishery, the Bristol Bay roe herring gill net fishery, and the statewide halibut long line fishery using vessels under 60 feet. Between 2000 and 2010, the number of halibut CFEC permits issued to Twin Hills residents remained relatively stable, with permits reported as fished between 2002 and 2009. The number of herring CFEC permits and permit holders decreased slightly during this period, but these permits were only reported as fished in 2001, 2002, 2004, and 2006. The number of salmon CFEC permits, permit holders, and permits reported as fished all decreased between 2000 and 2010. In 2010, three salmon CFEC permits were issued for the Bristol Bay drift gill net fishery and one was issued for the Kuskokwim gill net fishery. There were no residents of Twin Hills holding Federal Fisheries Permits or License Limitation Program (LLP) permits during this period. Information on commercial fishing permits and permit holders by species between 2000 and 2010 is shown in Table 4.

The number of crew license holders in Twin Hills decreased overall between 2000 and 2010, and there were no fish buyers or shore-side processing facilities located in the community during this period. The number of vessels homeported in Twin Hills and the number of vessels owned primarily by community residents both decreased between 2000 and 2010. In a survey conducted by the AFSC in 2011, community leaders reported that commercial fishing boats under 35 feet using gillnets use Twin Hills as their base of operations during the fishing season. There were no vessels landing catch in Twin Hills during this period; therefore, there are no landings or associated ex-vessel revenue to report during this period. Information on characteristics of the commercial fishing sector in Twin Hills between 2000 and 2010 is presented in Table 5.

There was one halibut quota share account holder in Twin Hills between 2000 and 2010. In each year during this period, the account holder held 270 halibut quota shares and the total

²⁷ Bristol Bay Economic Development Corporation. *Annual Report 2010*. Retrieved November 16, 2011 from <http://www.bbcdc.com>.

annual Individual Fishing Quota (IFQ) allotment averaged 34 pounds. Information on halibut IFQ between 2000 and 2010 is presented in Table 6. There were no sablefish or crab quota share account holders in Twin Hills between 2000 and 2010 (Tables 7 and 8). As previously stated there were no commercial landings or associated ex-vessel revenue in Twin Hills between 2000 and 2010 (Table 9). Landings and ex-vessel revenue recorded by Twin Hills residents between 2000 and 2010 were considered confidential due to a small number of participants (Table 10).

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

Revenue source	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Raw fish tax ¹	n/a										
Shared Fisheries Business Tax ¹	n/a										
Fisheries Resource Landing Tax ¹	n/a										
Fuel transfer tax ²	n/a										
Extraterritorial fish tax ²	n/a										
Bulk fuel transfers ¹	n/a										
Boat hauls ²	n/a										
Harbor usage ²	n/a										
Port/dock usage ²	n/a										
Fishing gear storage on public land ³	n/a										
Marine fuel sales tax ³	n/a										
<i>Total fisheries-related revenue⁴</i>	<i>n/a</i>										
<i>Total municipal revenue⁵</i>	<i>n/a</i>										

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 municipal budget. 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.

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Table 4. Permits and Permit Holders by Species, Twin Hills: 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	1	1	2	3	3	1	1	1	1	1	1
	Fished permits	0	0	1	1	2	1	1	1	1	1	0
	% of permits fished	0%	0%	50%	33%	67%	100%	100%	100%	100%	100%	0%
	Total permit holders	1	1	2	3	3	1	1	1	1	1	1
Herring (CFEC) ²	Total permits	8	8	5	5	7	7	7	7	7	5	5
	Fished permits	0	1	3	0	1	0	1	0	0	0	0
	% of permits fished	0%	13%	60%	0%	14%	0%	14%	0%	0%	0%	0%
	Total permit holders	8	7	5	4	5	5	5	5	5	4	4

Table 4 cont'd. Permits and Permit Holders by Species, Twin Hills: 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	10	10	9	6	7	5	4	5	5	4	4
	Fished permits	10	9	5	5	7	4	3	4	4	4	3
	% of permits fished	100%	90%	56%	83%	100%	80%	75%	80%	80%	100%	75%
	Total permit holders	12	13	11	7	9	6	5	7	7	5	5
<i>Total CFEC Permits²</i>	<i>Permits</i>	<i>19</i>	<i>19</i>	<i>16</i>	<i>14</i>	<i>17</i>	<i>13</i>	<i>12</i>	<i>13</i>	<i>13</i>	<i>10</i>	<i>10</i>
	<i>Fished permits</i>	<i>10</i>	<i>10</i>	<i>9</i>	<i>6</i>	<i>10</i>	<i>5</i>	<i>5</i>	<i>5</i>	<i>5</i>	<i>5</i>	<i>3</i>
	<i>% of permits fished</i>	<i>53%</i>	<i>53%</i>	<i>56%</i>	<i>43%</i>	<i>59%</i>	<i>38%</i>	<i>42%</i>	<i>38%</i>	<i>38%</i>	<i>50%</i>	<i>30%</i>
	<i>Permit holders</i>	<i>16</i>	<i>16</i>	<i>14</i>	<i>10</i>	<i>13</i>	<i>10</i>	<i>8</i>	<i>10</i>	<i>10</i>	<i>8</i>	<i>8</i>

¹National 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.]

²Alaska 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 Twin Hills: 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 Twin Hills ²	Total Net Pounds Landed in Twin Hills ^{2,5}	Total Ex-Vessel Value of Landings in Twin Hills ^{2,5}
2000	12	0	0	6	10	0	0	\$0
2001	14	0	0	9	11	0	0	\$0
2002	7	0	0	6	9	0	0	\$0
2003	13	0	0	6	10	0	0	\$0
2004	4	0	0	7	11	0	0	\$0
2005	11	0	0	5	9	0	0	\$0
2006	6	0	0	4	6	0	0	\$0
2007	5	0	0	4	6	0	0	\$0
2008	6	0	0	5	7	0	0	\$0
2009	5	0	0	4	8	0	0	\$0
2010	5	0	0	4	8	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 Twin Hills: 2000-2010.

Year	Number of Halibut Quota Share Account Holders	Halibut Quota Shares Held	Halibut IFQ Allotment (Pounds)
2000	1	270	33
2001	1	270	37
2002	1	270	38
2003	1	270	38
2004	1	270	39
2005	1	270	37
2006	1	270	35
2007	1	270	33
2008	1	270	31
2009	1	270	28
2010	1	270	26

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 Twin Hills: 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 Twin Hills: 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 Twin Hills: 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>

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.]

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 Twin Hills 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	--	--	--	--	--	--	--	--	--	--	--
Finfish	--	--	--	--	--	--	--	--	--	--	--
Halibut	--	--	--	--	--	--	--	--	--	--	--
Herring	--	--	--	--	--	--	--	--	--	--	--
Other Groundfish	--	--	--	--	--	--	--	--	--	--	--
Other Shellfish	--	--	--	--	--	--	--	--	--	--	--
Pacific Cod	--	--	--	--	--	--	--	--	--	--	--
Pollock	--	--	--	--	--	--	--	--	--	--	--
Sablefish	--	--	--	--	--	--	--	--	--	--	--
Salmon	--	--	--	--	--	--	--	--	--	--	--
<i>Total²</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	--	--	--	--	--	--	--	--	--	--	--
Finfish	--	--	--	--	--	--	--	--	--	--	--
Halibut	--	--	--	--	--	--	--	--	--	--	--
Herring	--	--	--	--	--	--	--	--	--	--	--
Other Groundfish	--	--	--	--	--	--	--	--	--	--	--
Other Shellfish	--	--	--	--	--	--	--	--	--	--	--
Pacific Cod	--	--	--	--	--	--	--	--	--	--	--
Pollock	--	--	--	--	--	--	--	--	--	--	--
Sablefish	--	--	--	--	--	--	--	--	--	--	--
Salmon	--	--	--	--	--	--	--	--	--	--	--
<i>Total²</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.]

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 sport fish guide businesses located in Twin Hills, and no Twin Hills residents holding sport fish guide licenses. Given this, no kept/released log book data were reported for sportfishing charters out of Twin Hills between 2000 and 2010.²⁸ The number of sportfishing licenses sold to community residents (irrespective of the location of the point of sale) during this period varied considerably, between one and 14, with 12 licenses sold to Twin Hills residents in 2010. Between 2000 and 2010, there were no sportfishing licenses sold within the community of Twin Hills (Table 11).

Twin Hills is located within the Nushagak, Wood River, and Togiak Alaska Sport Fishing Survey Area. Information is available from ADF&G about both saltwater and freshwater sportfishing activity at this regional scale. For saltwater sportfishing, non-Alaska resident angler days fished varied between 0 and 767 between 2000 and 2010, while Alaska resident angler days fished varied between 31 and 921 during this period. During this period there were years in which non-Alaska residents fished a greater number of saltwater angler days as well as years in which Alaska residents fished a greater number of saltwater angler days. In contrast, non-Alaska resident anglers fished consistently more angler days in freshwater in this region (26,403 on average) than Alaska resident anglers (12,276 per year on average) (Table 11).

The Alaska Statewide Harvest Survey,²⁹ conducted by ADF&G between 2000 and 2010, noted that Dolly Varden are targeted by private anglers in Twin Hills. In addition, in a survey conducted by the AFSC in 2011, community leaders reported that the following species are targeted by recreational fishermen that use boats based in Twin Hills: pink salmon, chum salmon, Chinook salmon, coho salmon, sockeye salmon, halibut, and clams. Community leaders also noted that recreational fishing in Twin Hills takes place from private boats owned by local residents.

Table 11. Sport Fishing Trends, Twin Hills: 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 Twin Hills ²
2000	0	0	5	0
2001	0	0	2	0
2002	0	0	1	0
2003	0	0	3	0
2004	0	0	1	0
2005	0	0	10	0
2006	0	0	14	0
2007	0	0	6	0
2008	0	0	3	0
2009	0	0	8	0
2010	0	0	12	0

²⁸ 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.]

²⁹ 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 11 cont'd. Sport Fishing Trends, Twin Hills: 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	246	183	31,290	11,793
2001	652	599	31,489	10,779
2002	665	31	20,011	11,911
2003	321	464	26,783	13,419
2004	767	61	25,203	19,980
2005	81	246	33,089	15,662
2006	365	196	28,840	14,858
2007	326	921	28,541	13,762
2008	113	103	27,066	7,356
2009	107	38	22,444	7,805
2010	0	44	15,676	7,709

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/sportfishingsurvey/> (Accessed September 2011).

Subsistence Fishing

The community of Twin Hills depends heavily on subsistence activities for various food sources. Seal, sea lion, walrus, whale, salmon, clams, geese, and ducks are harvested. An exchange relationship exists between Twin Hills, Togiak, and Manokotak. Seal oil is exchanged for blackfish. Handicrafts also supplement incomes.³⁰ Data are not available for subsistence participation by household and species or per capita subsistence harvest between 2000 and 2010 (Table 12). However, data are available for total harvests at the species level.

In years for which data were reported on salmon harvests between 2000 and 2010, an average of two subsistence salmon permits were issued to Twin Hills households, with an average of one permit returned each year. Chinook salmon were the primary species harvested under subsistence permits during this period (an average of 47 Chinook per year), along with some harvest of sockeye, chum, pink, and coho salmon (Table 13). Data regarding subsistence harvest of marine invertebrates and non-salmon fish were not reported during this period.

Between 2005 and 2010, an average of two Subsistence Halibut Registration Certificate (SHARC) cards were issued to Twin Hills residents. Data regarding how many SHARC cards

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.

were returned and the amount of halibut harvested were not reported between 2003 and 2010. Information about subsistence halibut harvest is presented in Table 14.

Information about subsistence harvest of marine mammals was reported between 2000 and 2008, with the exception of 2005. Two to five walrus were reportedly harvested by Twin Hills residents in most years. In years for which data were reported between 2000 and 2010, an average of one sea lion, three harbor seals, and five spotted seals were harvested each year. Information about subsistence harvest of seals and sea lions is presented in Table 15.

The ADF&G Division of Subsistence reported that the following species of marine invertebrates were used for subsistence in Twin Hills during this period: blue mussels, cockles, Dungeness crab, razor clams, red king crab, shrimp, softshell clams, Tanner crab, and unknown clams. The ADF&G also reported that the following species of marine mammals were harvested for subsistence in Twin Hills: bearded seal, harbor porpoise, harbor seal, ringed seal, Steller sea lion, and unknown seal. Non-salmon fish reported as harvested for subsistence use included: blackfish, burbot, capelin (grunion), Dolly Varden, grayling, herring, herring sac roe, herring spawn on kelp, humpback whitefish, lake trout, least cisco, Pacific cod (gray), Pacific tom cod, pike, rainbow smelt, rainbow trout, round whitefish, salmon shark, sculpin, starry flounder, unknown trout, and yellowfin sole.³¹

In a survey conducted by the AFSC in 2011, community leaders reported that the three most important subsistence marine or aquatic resources are putting up/freezing fish, seal, and herring/roe.

Table 12. Subsistence Participation by Household and Species, Twin Hills: 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).

³¹ 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, Twin Hills: 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	1	1	102	36	n/a	7	68	n/a	n/a
2001	n/a	n/a	n/a	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	n/a	n/a	n/a
2003	n/a	n/a	n/a	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	n/a	n/a	n/a
2005	1	1	33	n/a	n/a	n/a	n/a	n/a	n/a
2006	3	3	61	12	n/a	16	29	n/a	n/a
2007	1	1	6	n/a	n/a	n/a	1	n/a	n/a
2008	2	1	34	10	6	n/a	26	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, Twin Hills: 2003-2010.

Year	SHARC Issued	SHARC Cards Fished	SHARC Halibut Lbs Harvested
2003	n/a	n/a	n/a
2004	n/a	n/a	n/a
2005	1	n/a	n/a
2006	2	n/a	n/a
2007	2	n/a	n/a
2008	2	n/a	n/a
2009	2	n/a	n/a
2010	2	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, Twin Hills: 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	n/a	5	n/a	n/a	2	7
2001	n/a	n/a	n/a	n/a	n/a	n/a	3
2002	n/a	n/a	n/a	n/a	n/a	2	10
2003	n/a	n/a	n/a	n/a	n/a	6	4
2004	n/a	n/a	2	n/a	1	7	1
2005	n/a	n/a	n/a	n/a	n/a	2	5
2006	n/a	n/a	5	n/a	n/a	1	4
2007	n/a	n/a	n/a	n/a	n/a	1	2
2008	n/a	n/a	n/a	n/a	n/a	n/a	7
2009	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2010	n/a	n/a	3	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.