

**K'ezghlegh**  
Nondalton  
Traditional  
Ecological  
Knowledge of  
Freshwater Fish

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## Forward

This report summarizes information regarding the subsistence use of sockeye salmon and other freshwater fish gathered for a project funded by the U.S. Fish and Wildlife Service, Fisheries Information Services. This project to document traditional ecological knowledge (TEK) was undertaken by the Nondalton Tribal Council in partnership with Lake Clark National Park and Preserve.



**Nondalton**

*Mary McBurney*

During the summer of 2001, Karen Stickman and Andrew Balluta interviewed eighteen Nondalton residents regarding their current and past use of sockeye salmon and other freshwater fish for subsistence. The project participants responded to a questionnaire that asked about past and present fishing practices; geographic locations and Dena'ina place names of traditional fishing areas; changes in the relative abundance of sockeye salmon and other freshwater fish used for subsistence, and observations of change in the environment. The questionnaire was administered as a series of semi-directed interviews using USGS quad maps of the Lake Clark/Newhalen River area with mylar overlays to record spatial information. Karen and Andrew were assisted by two high school interns, Terina and Cheryl Trefon, who learned techniques for documenting traditional ecological knowledge by observing the interviews and running the recording equipment. Spatial information recorded on quad map overlays was incorporated into a subsistence database by Dan Young and used to generate the maps included in this report.

The following report does not attempt to analyze or interpret the questionnaire responses, but presents the information in the words of the residents interviewed. Spatial information from individual interviews is consolidated on summary maps and quantitative data is described in bar graphs. The people interviewed included elders and other knowledgeable individuals familiar with local subsistence fisheries who at the time ranged in age from 41 to 97 years old. The interviews were conducted in both Dena'ina and English. The orthography of Dena'ina words and place names appearing in this report was cross checked for consistency using Dena'ina dictionaries and vocabularies prepared by Jim Kari, Priscilla Russell Kari and Andrew Balluta (see bibliography).

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This project would not have been possible without the generosity of the following Nondalton residents who participated in the interviews and shared their time and knowledge with the interviewers.

Pete Koktelash	Nastasia Zackar	Mary Hobson
Agnes Cusma	Dolly Hobson	Nick Carltikoff, Sr.
Andrew Balluta	Mike Delkittie	Olga Balluta
Gladys Evanoff	Bill Trefon Sr.	Martha Trefon
George Alexie	Liz Balluta	Darlene Nolan
Clara Trefon	Melvin Trefon	

The original tapes, maps, mylar map overlays and transcripts are archived at the Lake Clark National Park and Preserve headquarters in Port Alsworth. Agencies, researchers and other individuals wishing to access and use this original material should contact the Nondalton Tribal Council for permission.

Mary McBurney  
Lake Clark National Park and Preserve  
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## I. Introduction

The people indigenous to Nondalton are Northern Athabascans belonging to the Dena'ina (Tanaina) tribes of the Cook Inlet region. Osgood, in his ethnography of the Tanaina (1937), differentiated seven geographically separate Dena'ina subgroups: the Kachemak Bay, Kenai, Upper Cook Inlet, Susitna, Tyonek, Iliamna and Lake Clark. The people of Nondalton belong to the Lake Clark or Inland Dena'ina subgroup and little is known about their pre-contact history. Vanstone and Townsend (1970) speculated that the Inland Dena'ina may have migrated inland from the Cook Inlet coast in the late eighteenth or early nineteenth centuries to escape encroachment of Russians moving into the region. However many Nondalton families are descended from people who settled in the Kijik River drainage, perhaps as early as 900 years ago. Recent analyses of trade beads, historic ceramics and radiocarbon dating of charcoal samples indicate a range of occupation in the Kijik area dating from AD 1170 to about 1900 (J. Schaaf, personal communication, August 2003).

The old Nondalton village site was settled sometime in the early 1900s by families relocating from Kijik on Lake Clark and other small villages in the area (Townsend 1965). According to Vanstone and Townsend, Kijik was abandoned because it was located too far from the nearest trading posts on Iliamna Lake and the canneries in Bristol Bay. However, epidemics during the early part of the century may have also prompted the community to move to the southwest end of Sixmile Lake.

Beginning in the late 1930s, the community of Old Nondalton was relocated to a more favorable location immediately west of the Old Nondalton village site. Ellanna and Balluta (1992) reported that the relocation became necessary after a sandbar formed in front of the old village site and made it increasingly difficult to land watercraft. They also attributed the move to a depletion of the local timber resources needed for construction and fuel.

The traditional diet of the Inland Dena'ina historically included birds, land mammals and a variety of fish, each harvested in its season (Behnke 1982; Ellanna and Balluta 1992). During the winter and early spring, people chopped holes in the ice and jigged for whitefish (*q'untuq* or *telay*) and candlefish (*ghelguts'i k'una*). Burbot (*ch'unya*) and lake trout (*zhuk'udghuzha*) were also

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fished through the ice using set hooks baited with bits of meat or grayling. Once the ice went out, they fished for lake trout, Dolly Varden (*liq'a k'qen*), whitefish, pike (*ghelguts'i*), grayling (*ch'dat'an*) and burbot using nets, traps (*taz'in*), and hook and line. The term “trouts” (*shagela*) is still used generically to refer to non-salmon species including rainbow trout (*tuni*), grayling, Dolly Varden and lake trout. The availability of “trouts,” whitefish and pike was an important factor in selecting camp sites for spring fishing, hunting and trapping (Ellanna and Balluta).

The summer months from June through the middle of August were primarily devoted to harvesting and preserving sockeye salmon (*Oncorhynchus nerka*) returning to Sixmile Lake and Lake Clark. Sockeye salmon were traditionally harvested using nets, log weirs and fish traps placed in spawning streams or by spearing from the river banks. Lake trout, whitefish, pike and suckers (*duch'ehdi*) were also taken in salmon nets and used as dog food or dried for later use. According to Ellanna and Balluta, prior to the abandonment of Kijik, most of the summer fish camps utilized by the Inland Dena'ina around Lake Clark were located at the outlet of Kijik Lake. Contemporary fish camps are primarily located at the head of the Newhalen River at the outlet of Sixmile Lake and scattered along the shores of the Newhalen, Sixmile Lake and Lake Clark.

Around the beginning of October, people would establish fall fish camps near prime salmon spawning areas to harvest and dry “fall fish.” Bright red spawning salmon were caught using barbed fish spears (*tuqesi*) then eaten fresh or split and dried (*nudelvegh*). These “fall fish” were considered a delicacy and preferred by many older people because the flesh does not have the high oil content of fresh, bright salmon and is easier to digest. Pre-spawning fall females were filleted with the backbone, guts and eggs left intact and dried. Fall fish were also dried whole, allowed to freeze (*dunultani*) and used as food for people and dogs (Behnke; Ellanna and Balluta).

The current population of Nondalton is approximately 220 people, primarily Inland Dena'ina, and dependent on subsistence food sources. While the methods and means for harvesting fish has changed over the years with the introduction of new fishing equipment and technologies, fish remains an important source of protein with salmon accounting for 65 percent of the subsistence diet and other freshwater fish comprising another 15 percent (ADF&G, 1999).

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## II. Subsistence Salmon Harvest

Lake Clark, Sixmile Lake and their tributaries are sockeye salmon producing systems. While an occasional king salmon may find its way into someone's net, *k'q'uya*, or sockeye salmon, is the primary fish species used by Nondalton residents for subsistence. Bright, pre-spawning sockeye salmon are harvested in *Nughil Vetnu* (Newhalen River); *Ch'qi'un* (Alexie Creek); *Nundaltin Vena* (Sixmile Lake), and at *Nughilqutnu* (Tazimina River) from late June through late July and at



Cutting sockeye salmon  
Dan Young

various locations in *Qizhejh Vena* (Lake Clark) from late July through the middle of August. Spawning sockeye salmon, called *gh'elica* or redfish, are generally taken from August through October in the Tazimina River, *Ch'ak'daltnu* (Kijik River) and on beaches and streams tributary to Lake Clark, however several people mentioned that *gh'elica* used to be taken as late as December through the ice.

### Summer Salmon

Pete Koktelash recalled that before gill nets were widely available, salmon were caught using fish traps in *Ch'qi'un* (Alexie Creek); *Qizhejh* (Old Kijik), and *K'q'uya Vena* (Kijik Lake):

*“I know they get, Alexie Creek way down there, they use a fish trap, no net then, Old Kijik and Kijik Lake, too. They use fish trap. No net then, old days....There's no net so they gotta use fish trap. Whole village, they use one, two fish trap.”*

Map 1 (Appendix A) illustrates locations identified by respondents as areas where sockeye salmon are currently harvested for subsistence. Sockeye are generally caught with 25-fathom (150 foot long) set gill nets, however beach seines are the preferred method for taking salmon since they don't damage the fish and people can take what they need and let the rest go. Most subsistence fishing occurs between *Niqanch'qentdel* (Landing) on the Newhalen River and Sixmile Lake, with the greatest concentration of activity taking place at fish camps located immediately below Nondalton near the outlet of Sixmile Lake and at the head of the Newhalen River. Several people also reported fishing for sockeye at One-Tree Island,

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*Husuyghiqan Hni'* (Flat Island), and in Chulitna Bay at *Kijeghi Tsayeh* (Owl Bluff).

The following locations, in descending order of frequency, were mentioned most often as places where Nondalton residents harvest sockeye salmon:

**Alexie Creek**, *Ch'qi'un*

**Newhalen River**, *Nughilvetnu*

**Landing**, *Niqanch'qentdelt* (located below Alexie Creek on the Newhalen River)

**Sixmile Lake**, *Nundaltin Vena*

**Igiugig**, *Nildink'et'a* (the channel connecting Lake Clark and Sixmile Lake)

**One-Tree Island** (near Flat Island)

**Owl Bluff**, *Kijeghi Tsayeh*

***Nundaltinshla*** (the lake-like area about six miles downstream from Sixmile Lake on the Newhalen River)

***Ch'ghitalishla Vetnu*** (creek one mile south of Nondalton)

**Tazimina River**, *Nughilgutnu*

**Jimmy's Bay** (small bay below Nondalton)

Two of the fourteen people interviewed were the oldest people in Nondalton and no longer actively engaged in harvesting salmon. One elder reported no fish harvested in 1998, 1999 or 2000 and another reported that while they fished for rainbow trout, whitefish and grayling on a limited basis, they had not fished for salmon in recent years. The following harvest summary is based on the twelve residents who reported harvesting salmon in 1998, 1999 and 2000.



Salmon drying on fish rack  
Dan Young

When asked about their subsistence sockeye harvests, twelve people reported subsistence fishing for salmon and described annual harvests ranging from 160 to 800 fish with a three-year average harvest of 376 salmon per respondent (Figure A, Appendix B). Five people reported that their sockeye harvests had remained stable over the three-year period, 1998 through 2000, while six others described reduced harvests for the same time span. One individual reported a stable harvest in 1998 and 1999 and a 25 percent increase in 2000.

Of those describing reduced sockeye harvests, two people reported reductions of more than 60 percent, one reported a drop of more than 40 percent and two reported reductions of more than 20 percent. One individual related a 21 percent harvest increase between 1998 and 1999 and a 29 percent decrease between 1999 and 2000.

## Ghe'lica—Redfish

Spawned-out sockeye salmon, redfish or *ghe'lica*, are harvested and eaten fresh or filleted and dried as *nudelvegh*. Ten people reported fishing for redfish in 1998, 1999 and 2000 and described annual harvests ranging from zero to 400 fish, with a three-year average harvest of 140 redfish per respondent (Figure B, Appendix B). Two people reported that their redfish harvests had remained stable between 1998 through 2000, while seven others described reduced harvests over the same time period. One individual reported harvests that increased 29 percent between 1998 and 1999 and another 29 percent from 1999 to 2000. Of those describing reduced redfish harvests, one person reported a 100 percent reduction, two reported a decrease of 80 percent or more, one person reported a drop of 50 percent and two reported reductions of 25 percent or more. One individual described a 21 percent harvest increase between 1998 and 1999 and a 29 percent decrease between 1999 and 2000.

Map 2 (Appendix A) shows locations identified by respondents as areas where redfish are currently taken for subsistence use. The following locations, in descending order, were mentioned most frequently as places where residents harvest redfish:

**Kijik**, *Qizhjih*

**Flat Island**, *Husuyghiqan Hni'a*

**Tuk'eleh** (creek south of the Kijik River)

**Priest Rock**, *Hnitsanghi'iy*

**Kijik Lake**, *K'q'uya Vena*

**Tanalian River**, *Tanilen Vetnu*

**Chulitna Bay**, *Ch'alitnu Hdakaq'*

**Owl Bluff**, *Kijeghi Tsayeh*

**Tazimina River**, *Nughilqutnu*

**Tanalian Point**

**Alexie Creek**, *Ch'qi'un*

**Igiugig**, *Nildink'et'a* (the outlet of Lake Clark)

**Snowshoe Bay**, *Ush'K'itudghi'uyi* (next to Portage Bay)

**Chi Point**, *Chayi Ch'dedlish Kiyiq'*

**One-Tree Island**

**Tuk'eleh:**

“fish schools up  
to spawn”

**K'q'uya Vena:**

“red salmon lake”

**Ch'qi'un:**

“we found the  
place”

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**Sucker/Hudson Bay, K'denez Y'itughil'u**

**Chu'gun'dagh** (near Tuk'eleh)

**Brown's Slough**

In the early 1900s, men from Nondalton started travelling to Bristol Bay to work in the canneries during the summer fishing season and by the 1930s, many were working as commercial fishermen (Ellanna and Balluta 1992). Nastasia Zackar described how she caught and put up salmon for her family while her husband commercial fished in Bristol Bay:

*“Well, our husband go down the Bay, we stay home and we put fish up ourself. We jump in the boat and go down the river and we fish down there. We get fish and bring it up and put it in the fish box and cut it. Get fall fish from Kijik. We go up there and stay there and put it up. We dry nudelvegh.”*

**K'q'uya T'el'ht—Where We Get Salmon**

The following narrative describes one family's seasonal round of subsistence salmon fishing around Nondalton and in Lake Clark.

*“Usually we try to go down to Alexie Creek around Landing. That's where we go for the last ten years, but before that we used to go up by Jimmy's Bay [a small bay below Nondalton]. The next best place is on the [Newhalen] river below Horseshoe Bend and in the sloughs around Nughilgutnu [Tazimina River]. Then we move up to Lake Clark and set net up by One-Tree Island for salmon. Later we like to go up that creek that comes up by Kijik for fall fish. If fishing is slow there, we move from that creek up past Kijik River to Tuk'eleh. Then we fish between the old rivers about a mile below Kijik by the cabins. Then we go up around the point [Suxni Kiyiq'] to where they call Priest Rock for redfish, especially the last few years because there hasn't been much below Priest Rock. When there's really no fish, sometimes, we go up by Brown's Slough [at the head of Lake Clark] and set net for redfish. By Tanalian River for redfish. Later in the winter, we go up to Kijik Lake, too, for redfish.”*



Gladys Evanoff cutting fish  
Dan Young

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## Spawning Areas

Sockeye salmon spawn in rivers, sloughs, lakes, small creeks and beaches throughout the Lake Clark watershed. Map 3a (Appendix A) illustrates locations identified as places where salmon are known to spawn. According to Olga Balluta, the spawning places familiar to Nondalton residents are generally where they harvest redfish:

*“The spawning places is all the places that we named for the redfish [fall fish]. All those places is the spawning places.... All places we get fall fish is spawning places.”*

**Łiq’a Qilanhtnu:**  
stream where  
salmon are

**Taz’in Vena:**  
fishtrap lake

**Ts’ananiłghazitnu:**  
spawned out fish  
come out stream

In 2000, Dr. Carol Ann Woody and Dan Young (2001) conducted radio-tagging studies of adult sockeye salmon entering the Lake Clark system to determine where individual fish spawned. Until recently, information in the scientific literature regarding habitat use by spawning adults was limited to the clear portions of the glacially influenced Lake Clark watershed. Woody and Young’s radio-tagging work revealed ten previously “unknown” spawning areas that were later verified by traditional ecological knowledge collected for this report (Map 3b). *Łiq’a Qilanhtnu* (Tlikakila River) is a case in point. Many fisheries biologists were skeptical about the Tlikakila River as a salmon spawning stream, however Andrew Balluta described spawning populations familiar to many Nondalton residents in both the Tlikakila and Little Lake Clark:

*“They spawn....way up in this river, Tlikakila River. Then head of Little Lake Clark they spawn there and little way up the river. In this river (Tlikakila) they go all the way up almost up to the glacier to spawn.”*

The following locations were reported by respondents as places where sockeye salmon spawn. They are listed in descending order of frequency reported:

**Kijik River, Ch’ak’daltnu**

**Tazimina River, Nughilqutnu**

**Priest Rock, Hnitsanghi’iy**

**Alexie Creek, Ch’qi’un**

**Kijik Lake, K’q’uya Vena**

**Flat Island, Husuyghiqan Hni’a**

**Bear Creek, Ggis Nuqelahitnu**

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**Lake above Bear Creek**

**Sucker/Hudson Bay**, *K'denez Y'itughil'u*

**Sucker Lake**, *K'denez Vena*

**Currant Creek**, *Nuch'tnashtnunhtnu*

**Little Lake Clark**

**Pickereel Lake**, *Vata'esluh Vena*

*Ch'dat'antnu* (creek above Tazimina River)

**Tanalian River**, *Tanilen Vetnu*

**Chulitna Bay**, *Ch'alitnu Hdakaq'*

**Alexie Lake**, *Ch'qi'un Vena*

**Owl Bluff**, *Kijeghi Tsayeh*

*Tuk'eleh* (creek south of the Kijik River)

**Tommy Island**

**Tlikakila River**, *Liq'a Qilanhtnu*

**Steambath Creek**, *Nli Z'un Vetnu*

**Snowshoe Bay**, *Ush'K'itudghi'uyi* (near Portage Bay)

**Tommy Creek**, *Ts'ananiighazitnu*

**Brown's Slough**

**One-Tree Island**

**Head of Kijik Lake**, *K'q'uya Q'atl'a*

**Miller Creek**, *Nan Qelah Vetnu*

**Tazimina Lake**, *Taz'in Vena*

**Nundaltonshla**

**Landing**, *Niqanch'qentdelt* (located below Alexie Creek on the Newhalen River)

**Telaquana**, *Dilah Vena*

**Newhalen River**, *Nughil Vetnu*

**Northwest Bay**

**Madfay Bay**

**Kok'teek'leg**

Priest Rock and a nearby creek were frequently mentioned as places where sock-eye salmon spawn. Mary Hobson explained how Priest Rock got its name:

*“ Priest Rock in gasht'ana [white people] way of saying it. We say, Hnitsanghi'iy. That's like that but the shape of it when they saw the first [Russian Orthodox] priest, he look like that rock so they name it that. ”*



Roadhouse Mountain from Old Nondalton  
Mary McBurney

## Spawning Areas with Reduced Spawning Activity

The respondents were asked whether they knew of locations where salmon used to spawn but don't any longer. With a couple of exceptions, most people were not aware of places that no longer supported salmon runs, but could name places where salmon spawning activity had decreased over time. The following locations were reported most frequently as places with decreased numbers of spawning salmon:

**Kijik Lake, *K'q'uya Vena***

**Kijik River, *Ch'ak'daltnu***

**Priest Rock, *Hnitsanghi'iy***

***Tuk'eleh* (creek south of the Kijik River)**

**Alexie Creek, *Ch'qi'un***

**Tazimina River, *Nughilqutnu***

**Sucker/Hudson Bay, *K'denez Y'itughil'u***

**Sucker Lake, *K'denez Vena***



Spawning salmon  
NPS File Photo

Kijik Lake was frequently reported as an area where salmon spawn, but it was also mentioned most frequently as an area where spawning activity had decreased over the years. Several respondents mentioned that the reduced spawning is due to increased beaver damming on the Kijik River that prevents fish from moving upstream to spawning grounds in and around Kijik Lake. Agnes Cusma recalled that people used to maintain spawning habitat in the Kijik area by removing beaver dams every year:

*“That Kijik River is the best spawning ground in that area but now I heard the fish is spawning down in Lake Clark near the islands because all the spawning grounds is covered with beaver dams. When we were kids they move up there to put up fall fish and they go to work in that river; take all the beaver dams away so the fish could go up there and spawn. In the fall time they need to go up there and check around and see how much the spawning ground is wasted away. Find out where the fish is spawning now. Priest Rock, not much anymore. They never check the spawning areas like they used to, especially that Kijik. We should take a ride up there and check it....They*

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*check all the creeks where salmon go to spawn if there's beaver dam they take it down, that was just to help out the fish. Now they don't do that, they don't do nothing to beavers, let them do whatever they want to do. Long time ago, everybody knows that spawning areas is a valuable place so they helped the fish, not the animal. Animal can go any place to make a beaver dam....Kijik River is having a hard time to spawn because of the beaver dam. What I heard is they're spawning in the main lake."*

Melvin Trefon also mentioned increased beaver damming in the Kijik River as a factor affecting the number of spawners returning to the Kijik system:

*"Up to Kijik Lake and Kijik River, they're [the salmon] getting land-locked by beaver, but they will go into those creeks as far as they can going up toward Kijik Lake. In the middle fork up by Kijik Lake, of the rivers going into it, they don't go up there anymore. I think mainly it's the beavers that dammed up that river. So, there's not as much fish anymore. They still spawn on the south side of Kijik Lake, but not as much. We know Kijik for sure has been dammed up 'cause we put in a request in the early '90s for funding to clean up the spawning grounds and we never got a response. So, the fish is not as abundant 'cause of those dams. Ch'ghitalishla (creek one mile south of Nondalton), there used to be more salmon there."*

George Alexie described an area near Kijik Lake where salmon used to spawn that is now dried up:

*"There's a place near Kijik Lake that we walked up to, that place was drying up, right at the entry there. As a matter of fact, that was [Gust Evanoff] and Albert Wasillie took us up there. They said that was the best place to lay for bear—fish all over. We went up there, there was nothing. It was dried up."*

Bill Trefon, Sr. said he's noticed an overall decline in spawning activity throughout the Lake Clark, Sixmile Lake and Newhalen River system and commented that a number of spawning areas are not as productive as in the past:

***"Kijik, in that lake. They can't get up there anymore. So, I don't think they spawn there anymore. It's full of beaver dams in that creek."***

*Gladys Evanoff*

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*“Even K’den’ez there’s not as much. Lover’s Creek and Alexie Creek, there’s not as much spawning there. Bear Creek is above Lover’s Creek. In Bear Creek too, not as many as used to be. Tazimina is getting pretty much depleted too, not much spawning up in that area. K’den’ez, too, that whole lake used to be full of fish, not that much any more. Priest Rock, too, there used to be lots, not as much now. And Tuk’eleh by Chulitna Lodge out on the point there, there’s a creek coming out. We stop there and we didn’t see any.”*

## **Harvest Methods**

Before the introduction of commercially manufactured gill nets, people used a variety of methods to harvest salmon and other freshwater fish. *Vel niqak’idezehi* (seines) were used to catch salmon; *tuqesi* (spears) to harvest redfish and *taz’in* (fishtraps) to capture salmon, trout, whitefish, grayling and pike.

Pete Koktelash related that before gill nets were widely available, salmon were caught using fish traps in Alexie Creek, Old Kijik, and Kijik Lake. Andrew Balluta described a weir used near a fish camp at Kijik Lake for capturing fish:

*“In that creek near Kijik Lake, that used to be the fish camp. They had no net, so they used to come up here to catch fish. They put a fence across the creek, they get fish in there. Fish go up in there and everybody go down there and get whatever fish they need for that day. They take the fish for their smokehouse.”*

Mike Delkittie recalled the use of fish traps and remembered when jigger boards became a commonly used fishing method:

*“We used to have no gill net and we used fish trap, but after gill net came around we stopped using that and used gill net. During the fifties, we learned how to use a jigger board, in the winter to get fish for our dogs. We still get whitefish like that now.”*

In 1959, the State of Alaska banned the use of fish traps, which closed the door on using fish traps as a harvest method both for commercial fishing and for subsistence (Colt 1999). Agnes Cusma mentioned the fishtrap ban:

*“We used to have fish traps on the creeks and stuff for trout and we don’t make fish traps no more. We used to use spears and seines.”*

*Melvin Trefon*

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*“We can’t use fish traps. That’s what we made and put in the water and catch fish with it. My grandpa did that. Now it’s outlawed.”*

Seines are another gear type traditionally used for harvesting salmon that are no longer allowed under current State of Alaska fisheries regulations. Andrew Balluta said beach seines were originally made by hand during the fall and winter months and “required a lot of work, but everyone helped out.” The fact that the use of seines is currently illegal is frustrating to many residents because they regard it as a more efficient and less wasteful fishing method. Most all the people interviewed mentioned that beach seining would be the preferred method for harvesting salmon if allowed under State fishing regulations because it does not bruise the fish, is non-lethal and excess fish can be released. Gladys Evanoff summarized the concerns expressed by many Nondalton residents:

*“Seining, is best way I think. Better than setting net [gill net]. You don’t waste fish. Just get what you want. Some people set the net there and leave it and forget to pick it. Fish could be on there for two or three days. But if you seine, you get them fresh and you don’t waste no fish. They said we can’t use seining any more. I don’t know why. I think we are saving more fish than wasting. Years ago they said we could not seine.”*

Several elders remembered seining as a community-based fishery where the whole village participated in the harvest and everyone received the fish they needed. Nastasia Zackar recalled that seining provided a reliable source of fish and avoided the problem of catching more fish than could be processed at one time:

*“They used to seine, now it’s different, they use gill net. They fill up our guska (fish box). Seine and have enough fish for everybody. Fill up ten boats. Used to catch enough to use for that one day, fill up the smoke house and then go after more. Once we seine we make loads. It’s better. Get enough, fill up boats, everybody got fish.”*

The abolition of seining and the increased use of gill nets also shifted the emphasis from village-based harvesting to harvesting by smaller family groups. Andrew Balluta said the beach seine was more of a community net that people could share and take turns using to catch fish:

*“Whole village when they used to seine, we help each other. For net, just us ....People use their own net now. They got no seine.”*

Mary Hobson

*They use to have a community seine that was for everybody to use. But now they don't share the gill net with anybody. The community would share the seine and three to four families would take the net and fish that day. The next day, a few more families would go and fish with the net.*

No one mentioned when seines became illegal, but most of the respondents could remember a time when they were allowed to use a seine to catch fish.

One respondent expressed frustration with the incompatibility of state subsistence fishing regulations with traditional subsistence fishing practices, particularly in regard to gear restrictions and when and where they are allowed to fish. Current State of Alaska subsistence fishing regulations prohibit fishing with nets in the Newhalen River, Alexie Creek and the Tazimina River and within 1/4 mile of their terminuses between September 1 and June 14 ( 5 AAC 01.325(b)). In addition, with the exception of the western shore of the Newhalen River, all Newhalen waters within 300 feet of a stream mouth used

by salmon are closed to subsistence fishing ( 5 AAC 01.325(a)).



Guska, fish boxes  
Dan Young

*“Those regulations don't follow our traditional time schedule for harvest. We need to get it to coincide so that we are not fighting the bugs and the rain to get our fish put up....If we wait 'til later in the season, the flies come out and the rain and bugs. The fish gets moldy....Gear restrictions is something where we would rather have seine early.*

*We have to use gill net....We could seine when the salmon first start running. That would be better salmon harvest. We would not be catching trouts in the gill net and bruising our fish in that gill net. We catch more fish in that gill net than we want or need....They just need to change the regulations to match the traditional cultural way of harvesting. They should bring back the fish trap, 'cause it is tradition and if we catch what we don't need, we let it go.”*

When asked whether the numbers of fish reported on the State subsistence harvest permits are realistic, half of the respondents didn't know or had no opinion and only three thought the numbers reported were accurate. Five people

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felt strongly that the numbers reported were generally inflated to make the point that subsistence salmon is still a necessity of life to Nondalton residents.

*“Everyone puts more than they catch just to be on the safe side. If we do catch more, we write down more. People put down more to show that they are using it.”*

## Current Harvest Practices

Everyone interviewed reported that they generally stop fishing once they have caught the number of fish they need. As indicated in Figure A, the number reported per respondent varies from around 200 fish up to 800 fish and the number of fish harvested each year tends to be somewhat stable. Nine of twelve people who reported harvests in 1998, 1999 and 2000 were within 20 percent of their three-year average harvest.

Alexie Creek, Landing, various sloughs and Sixmile Lake were most frequently mentioned as places with the best fishing and water level was identified as a major factor affecting fishing success. Several people noted that the fish are easier to catch when the water level is low because they are more accessible and easier to find. When the water is high, fish generally swim deeper and are more difficult to catch and floating debris fouls the nets. However, one person said that during times of high water, there are more fish in the sloughs and bays where they can be easily caught, particularly in Jimmy’s Bay.

Several respondents said that they vary the length of time that they leave their nets in the water depending on the strength of the run and the number of fish that they want to catch. Olga Balluta described it this way:

*“Well, if there is lot of fish out there, you put it out for overnight and if there is lesser fish, then you just leave it and keep picking until you get the fish you wanna put up. But then if there is lots of fish, then you just put it out there for maybe a day or so.”*

Mike Delkittie said he also varies the amount of gill net that he fishes to insure that he does not catch more fish than he needs:

*If we are getting lots of fish, we just put half the net in—10 fathoms—and we still catch 15-20 fish per day. And this way you can handle it.*

*“August month  
we quit fish.  
We fill up our  
smokehouse we  
quit fishing.”*

*Nastasia Zackar*

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*You don't have to pull the whole net out because you can get more than you wanted. Again, it is you that is in control of what you get."*

Most people said they check their gill nets at least once a day in order to harvest the salmon while they're still fresh and to avoid catching more fish than they need. Several respondents expressed disapproval of subsistence fishers who leave their nets out and don't check them regularly. Andrew Balluta described his system for setting and checking his gill net:

***"When the first salmon comes, they don't catch nothing around here. They go all the way down the Landing. Set net. That is where they catch the first salmon."***

*Dolly Hobson*

*"Checking the net is everyday, that is my way, that is my belief. I don't leave out net and not check it for three or four days 'cause that's not very good to leave net out like that....They used to say if you don't use what you are catching in your net, don't leave your net out there. And that is what I believe in, too.... I pick my net twice a day and then I leave it overnight. If I am catching too much fish, then I pull it up and re-set it maybe in the evening, pick it up in the morning 'cause I can't use that much fish. I gotta process the fish that I caught earlier before I catch any more. That is the way I do it, the way we do it."*

Respondents were also asked if Nondalton residents were travelling farther from the village or fish camps to catch their subsistence salmon. Most people didn't think residents were necessarily travelling any further than usual, but acknowledged that some still go down the Newhalen River to Landing to catch early fish.

In 2001 the water level in the Newhalen River was unusually high and salmon were unable to get upstream past the rapids on the lower end of the river. This delayed the subsistence fishery for more than two weeks. In addition, the number of salmon returning to the Lake Clark/Newhalen system was far less than anticipated. For Melvin and Clara Trefon and other Nondalton families, this meant taking a boat to Landing and driving the Iliamna Road to Newhalen to get fish.

After several weeks, the water levels dropped to where the salmon were able to make it above the rapids and up to Sixmile Lake. But by that time, people had either found alternate salmon sources or harvested what they could once the fish showed up. In 2001, Nondalton residents harvested 7566 salmon, down from 11,953 in 2000. According to the Alaska Department of Fish and Game, the 2001 subsistence harvest throughout the Kvichak drainage, including Lake Clark, was the worst on record since record keeping began in 1963 (ADF&G, 2002).

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## Putting Up Fish

The amount of fish harvested for subsistence use has greatly declined over the decades, primarily due to the fact that dog teams are no longer the primary form of land transportation. In the 1940s, most Nondalton households kept dog teams which required up to 50 bundles (one bundle equals 40 fish), or 2000 salmon, to feed for the year (Ellanna and Balluta, 1992). Agnes Cusma remembered that all the men used to keep dog teams:

*“Years ago they put up more [fish] for their dogs, too. Some people had seven or nine dogs. Nine dogs was the highest they had long time ago. In the whole village, all the men folks had dogs, lots in the village. They put up their eating fish then they put up fish for their dogs.”*

Gladys Evanoff and Bill Trefon, Sr. remembered processing so much salmon that they filled their smokehouses twice. Martha Trefon recalled her family being so busy putting up fish that they would stay at fish camp until the end of August. Mike Delkittie said that when people had dog teams to feed, very little of the fish went to waste:

*“They used the fish bone, they saved the heads and everything in order to survive their dogs. Each family had maybe two and three teams, some of them four-dog teams which means one person has seven or eight dogs. One family could have 30 dogs to feed and that was their transportation. They had to have them during the winter months to haul wood and go trapping and hunting.... So, there is way less of salmon caught now than there used to be. We had to have at least 1500 fish or more to survive the winter.”*



Olga Balluta's smokehouse  
Mary McBurney

According to Andrew Balluta, as recently as fifteen years ago, families put up 20 to 25 bundles per household. Now, he says, people put up much less. Based on the harvests reported in Figure A, seven respondents had a three-year harvest average of between five and eight bundles of fish while the others had three-year harvest averages that ranged from 10 to 16 bundles.

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### III. Observed Changes in Salmon Over Time

#### Run Strength and Timing

Compared to data collected in the 1980s, the average number of sockeye salmon returning to Lake Clark declined from 1.1 million fish (1980–1981; Poe and Rogers 1984) to about 0.2 million (Woody 2000, 2001, 2002). This dramatic reduction in salmon abundance is of great concern to Nondalton residents who worry about the long-term health of sockeye salmon stocks in the Lake Clark/Newhalen River system.

*“We used to have lots of fish. Boy, long time ago.”*

*Nastasha Zackar*

Each person interviewed reported fewer fish than in the past and all indicated that the first noticed the change in abundance between five and ten years ago. Nastasia Zackar, the oldest woman in Nondalton, said she noticed smaller returns of salmon about ten years ago and commented that run timing also appeared to have changed:

*“It changed, really change, since she remember the fish run. We used to have lots of fish, we can’t even set net, too many fish. Seine only. Fish are late now.”*

Mary Hobson agreed that runs are smaller and appear to be arriving later:

*“We don’t get fish like before. Fish is low now. It don’t come like before. Long time ago there used to be lots. Fish are late coming, too.”*

Darlene Nolan reported that her harvesting activities have shifted up to three weeks later than usual:

*“Fish is running later. Since the past six years seems like it changed. We used to catch our salmon June 17th and now it is July 7th.”*

Bill Trefon said that while he has noted the decline in salmon abundance, his harvesting of salmon at *Niqanch’qentdelt* (Landing) near Alexie Creek seems to start earlier than in the past:

*“Yes, [the number of salmon returning] really, really went down, seem like. Maybe about the last ten years it really started going down. The runs are smaller and are early. Usually we don’t start putting up fish until after the Fourth [of July]. But now we start catching fish the end*

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*of June. But it is lesser and lesser all the time is comes up.”*

This apparent difference in harvest timing may be due to where salmon are caught. Darlene Nolan’s fish camp, for instance, is located on Lake Clark, more than twenty miles upstream from Landing where Nondalton residents go to harvest early fish.

Melvin Trefon explained that changes in run timing can be attributed to environmental factors such as water level and water temperature:

*“It fluctuates from year to year. Sometimes it is early, sometimes it’s late. Depends on the water level and temperature. It also depends on how much water there is throughout the year. If there is a lot of snow, then the lake will be high and a late run because the water will be too cold—the salmon would kind of wait and the run is later.”*

2001 was a year with high water levels in the Newhalen River and nearly half the respondents commented that the fish were late in arriving because they could not get past the falls near Newhalen. Olga Balluta said that while the high water delayed salmon movement upriver in 2001, the 2001 salmon run seemed to be larger than the previous year’s—a year with normal water levels. She also noted that the high water in 2001 appeared to affect that summer’s salmon returns to *Nughilqutnu* (Tazimina River):

*“The only thing that I really noticed this year was that we had more fish than last year, but it got here late because of the falls down there—high water level. They couldn’t come up through the falls down there, that is the only thing I could think of. But then there are times that last year was lesser fish than I ever seen it before, but I wouldn’t know why. The water level was good last year. It could be the high water. I don’t know ‘cause this year there is not fish in Tazimina—mouth of Tazimina hardly any, and it could be from the high water...I don’t know why, it should have been there early, because that is the first place the fish will hit. First time that I ever heard that there is no fish there.”*

Interestingly, research done in 2001 in conjunction with a counting tower project at river mile 22 confirmed that water flows of 25,000 cubic feet per second (cfs) prevent or delay sockeye salmon migration into the lower Newhalen River

*“The fish are gonna be slow because of high water, having a tough time getting up the rapids. It will be kinda late. If the water were like normal, we would have fish up here by now.”*

Andrew Balluta

(Woody and Poe). In 2001 the recorded water flow on the Newhalen was over 27,000 cfs from June 27 to July 8 and peaked at 28,800 cfs on July 1 (C. Woody, personal communication, August 2003).

While water levels are clearly a factor in delaying salmon migration, the respondents indicated an overall trend of reduced run size and altered run timing. This observation corroborates recent research on the Newhalen River indicating no change in the median run time, the date by which 50 percent of the run arrives each year, compared to the 1980s (Poe and Rogers 1984). However, a comparison of run duration, the time it takes for passage of the 25 and

75 percentiles of the run each year, has been reduced by about half over same period of time (C. Woody, personal communication, August 2003). This means that while the peak of the run occurs at about the same time each year, the run of the run begins later and ends earlier than in the past.



Serfean Alexie brining salmon for the smokehouse  
Dan Young

## Appearance

In addition to concerns regarding reduced salmon abundance and changes in run timing, respondents also expressed opinions about the size and quality of the salmon they harvest. More than half the respondents said the size of individual fish returning each summer varies from year to year. Pete Koktelash said that elders have long used fish size as a predictor of salmon abundance:

*“Where you see the small salmon, the old people said, first salmon come, they’re small, there’s gonna be lots of fish. First salmon, big fish, not very much fish.”*

Mike Delkittie said that salmon size depends on the age of the returning spawner and that the proportion of larger fish to smaller fish is variable. He explained the relationship between fish age and size:

*“From what the old people say—sometimes you have fish coming back, a lot of them maybe are small and a lot of them maybe large. So that means the four-year old fish come back and also a mixture five-year old fish so you have a mixture of bigger and smaller fish...They stay in waters here for two years. After two years they are going out*

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*to the salt water. When they hit the salt water they stay for about two to three years, so the average is five-year fish and they are the bigger fish and the four-year fish coming back are the smaller fish.”*

Melvin Trefon reported that many salmon appear long and skinny and seem to have softer-textured flesh. He speculated that they might be farmed fish:

*“Last year I was thinking that they were softer and seemed like they were bland or something. Seemed like they were not as rich. Just seemed like that, maybe it was just my own taste. A lot of fish are long and skinny, like farmed fish or something. That is not normal. It is farm fish.”*

Dolly Hobson also noted that the salmon flesh seems to have gotten softer over time and attributed small fish size to farmed salmon:

*“I noticed that they are softer. Long time ago, it was kind of firm. But now when you cut it, it is soft. Maybe warm water or something....All I know is that when I fished in Bristol Bay, I know that there are small salmon mixed in with the big salmon. The small ones are the ones they farm. They just put them back in the ocean.”*

George Alexie mentioned that he has noticed a change in the quality of the flesh and that it appears softer and greasier than in the past. He said the softer fleshed salmon fell from the racks in his smokehouse:

*“I don’t know what it is, but seems like they are a little bit softer and it started falling off. Maybe it was the fire, but it has never happened before. And the fish, it very rich. Too greasy, more greasy than usual. Parts of it is really greasy, it is unusual.”*

Most respondents reported that the fish they catch are generally parasite free and unblemished, with the exception of the occasional scar from gill nets or boat propellers. Andrew Balluta described the general appearance of the salmon he catches for subsistence:

*“Lots of net marks that is almost what I see a lot, not too much of other sores. Well, maybe a fish will have a sore from being cut by*

**“Salmon meat is more soft. Even the fall fish are soft, too.”**

*Bill Trefon, Sr.*

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*a seal or beluga. The net is really the biggest thing that you find on salmon, net marks. No sores from naturally.”*

Darlene Nolan said that she has noticed salmon with abnormal growths and blemishes appearing in her subsistence catch in recent years:

*“They have like, lumps, on belly side, like cysts and then some of the fish I get have lots of prop marks. Some salmon have round yellowish spots, sometimes on head and tail parts. I don’t eat the salmon that are like that. Noticed this from about four or five years ago.”*

*“I notice the weather change over time.... Winter is not as cold as it used to be.”*

*Nastasia Zackar*

## IV. Observed Environmental Changes

### Weather

Since the 1960s, the average annual temperature in Alaska has increased about 5° F. (3° C.). Evidence of this warming trend has been observed in glacial retreat, thinning of permafrost, reduction in sea surface ice and other changes in the environment. It has also been manifested in warmer winters with shorter snow seasons and reduced periods of river and lake ice cover (Center for Global Change and Arctic System Research 1999).

When asked about environmental changes observed over time, nearly every respondent noted changes in weather patterns with a shift to warmer winters and wetter summers. Olga Balluta commented that the summer and winter of 2001 were unusually warm:

*“The weather was really hot this summer, all from spring until July. Then the weather changed to a little bit rain, and at times lots of rain, but more than usually. It was just hot from the beginning of spring to the middle of July. This winter was lots of change with no snow and warm winter—warmer than it had ever been, didn’t get any snow.”*

Dolly Hobson also noted the warmer winters and added that the summers are rainier than in the past:

*“Winters are getting warmer all the time. Weather was nicer in July long time ago. It usually would not rain until August.”*

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Bill Trefon, Sr. said he has noticed a change in weather over the past fifteen to twenty years and that during the winter of 2000-2001, people were still boating on Lake Clark at Christmas:

*“For the last fifteen to twenty years the weather has been warm in the summer—it seems like it is cold in the summer and warm in the winter. I was reading in my diary book, Butch and them went up the Lake Clark December 25<sup>th</sup> in a boat this past winter. In twenty years I think it never get cold and the summers are different, cool, more rain. Some years we don’t get rain until August, now we get all summer, and more rain in July, because we have our warmer weather in April and May. After then, it is rainy. March until June use to be good weather, but now it rains through July.”*

Mike Delkittie also noted the unusual winter and said that a high snow pack in the mountains coupled with rain contributed to the high water levels on the lakes and the Newhalen River in 2001:

*“This winter we were getting rained on here, but snow in the mountains. And we thought we were gonna have early snow, but it wasn’t. It was getting a lot of snow in the mountains and here it was turning into rain. That is why that water came up, too. Too much snow in the mountains. I noticed one thing, combination makes water come up really fast is if you have a lot of snow in the mountains and you get a lot of rain it comes together and make lots of water.”*

Gladys Evanoff observed that increased water temperatures increase mortality of juvenile salmon:

*“A little warmer in the summer, water gets too warm. A lot of the small salmon are dying—minnows dying.”*

Melvin Trefon and Mary Hobson both commented that increased rain during the summer months has impacted their subsistence activities and created hardships:



Qizhjah Vena, Lake Clark  
Mary McBurney

*Melvin: “We don’t put up as much fish bones because of the weather. The flies come out later so we can’t put up much fish bones for the dogs and it rains too much. It depends on the weather.”*

*Mary: “(During the last) couple of years, raining and raining. Barely put it up, the fish. Hard time all the time.”*

## Beaver Dams

Increased beaver damming on rivers and salmon spawning streams was men-



Beaver, chu  
NPS File Photo

tioned as the next most significant environmental change people have observed. Extensive beaver damming of the Kijik River and its tributaries is a major concern to many Nondalton residents and a factor in the declining numbers of salmon in the Kijik system. Agnes Cusma recalled her family getting fall fish from the Kijik area and removing beaver dams blocking the river and streams:

*“I remember when they used to go up there to get our fall fish. My dad and them used to go up in the (Kijik) valley, the river, and knock all the beaver dams down so the fish could go up there and spawn. Beaver dam is the worst one that effect spawning ground.”*

According to Andrew Balluta, the increase in the beaver population is due to an overall reduction in beaver trapping because of low fur prices. In 1996-97, the average price for a beaver pelt was \$35. In 2000-2001 the price had dropped to an average price of \$20.65 per pelt (ADF&G, 2002).

*“The beaver dams plug up the creeks before the fish get to their spawning area. Long time ago there use to not be so many beaver dams because the beaver was hunted and trapped more than it is now. Now days they don’t even trap here very much, not like they use to. Beaver was really depended on for cash and money. But now the price of fur went down and we don’t use it. Maybe there are more jobs and more ways to make money than to trap so that is why they don’t do it.”*

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## V. Human-Induced Change

### Sport Fishing

The enactment of the Alaska Native Claims Settlement Act (ANCSA) and the Alaska National Interest Lands Conservation Act (ANILCA) brought about major changes in the way Nondalton residents interact with the lands they traditionally use for subsistence. ANCSA and ANILCA resulted in the designation of hundreds of thousands of acres used by the people of Nondalton for hunting and fishing as “public land” and encouraged dramatic growth of the sport hunting and fishing industries in the Lake Clark region. This increase in recreational and commercial hunting and fishing activities has resulted in increased competition for the same fish and game resources used by Nondalton residents for subsistence (Ellanna and Balluta 1992).

This competition is most keenly felt in subsistence fisheries that rely on the same populations of sockeye salmon and rainbow trout as many of the commercial lodges and fly-in fishing services. Most all the residents interviewed expressed concern regarding the dramatic growth of sport fishing in the region and the potential impacts it may have on the area’s fisheries resources.

Mike Delkittie explained his concerns regarding the influx of sport fishermen in the Lake Clark area and the impacts of catch and release fishing he’s observed while subsistence fishing. He also commented that he doesn’t see the situation changing anytime soon because no one speaks up to challenge the status quo:

*“I think that there is [increased sport fishing] because we have no idea how much sport fishing activity is going on. Lots is going on in Port Alsworth. We know what we have going on here—we have four lodges in our area, it is all reflecting on our sport fishing. The thing that I have been noticing...we pick up a lot of fish guts in our gill net and three pronged hooks. We have to be careful when picking up the fish because we could get hooked, too. It is kinda hard to say this without being disgraceful, you know, because they snag the fish and it breaks their line and you know we can prove that by their getting in our nets. We know what is happening down the river. Again, that is the sports-mans that is doing that. I don’t think that tensions will let up because*

*“Sports fishermen coming in ruin the trouts. They’re fishing it catch and release.... When they’re released some of the fish end up dying. They ruin the trout, salmon, too.”*

Mary Hobson

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*no one complains about it and just let them go do what they are doing. I think they need to be outlawed these things so that the salmons aren't injured. It will probably never make it to its destination and besides it is like being cruel to the salmon. I hope I am saying the right words."*

Olga Balluta observed that the number of sport fishermen has greatly increased over time and that she has more frequent encounters with sport fishermen each year. She speculated that the proliferation of sport fishing activity may be a factor in reduced fish populations and low returns of salmon to the Newhalen River:



NPS File Photo

*"Well, ever since we got the sportfishermens coming in and fishing from all over everywhere, that is a thing that has affected to make lesser fish. I don't know, maybe that is what it is because before we never use to have less fish all these years until we start getting fishermens everywhere. All around the lake, everywhere we get sportfishermens, everywhere. There is more people coming in for fishing, you know, every year."*

Melvin Trefon also expressed concern about commercial lodges bringing in large numbers of clients—each wanting to catch their limit of fish—and exceeding the legal bag limits:

*"There is probably a hundred more lodges that was built and they all have a limit and they all fish and get their quotas and they get a certain amount of clients a week. They all catch their limit and we know that they go over, too."*

The issue of sport fishing also raised concerns regarding salmon and trout mortalities resulting from catch and release fishing. Andrew Balluta reported that he had observed sport-caught fish that had either been released dead or that had died after being let go:

*"You see dead fish floating down in Newhalen (River) from sportfishing. The fish don't die just because they want to. I notice that quite a bit. It is not just salmon, but trout, too. When they catch and release, alot of them die. You know, if you catch a fish in the gills they are dead."*

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In addition, catch and release fishing raised serious ethical questions for many Nondalton residents who viewed the practice as an irreverent torturing of fish. Mike Delkittie expressed his concern for the disrespect shown by catch and release fishermen toward the fish and their habitats:

*“The fish do not want to be disturbed and move some place else. If they [sport fishermen] hurt some, they are not going to just lay there and get tortured.... No respect at all, you know. It is really not right to do that. You know they should have respect for all the fishing grounds and all the habitat areas.”*

## **Jet Boats**

The use of jet boats, particularly on small rivers such as the Kijik and Tazimina, is another issue largely related to sport fishing and of great concern to many residents. Jet boats are generally viewed as destructive to salmon spawning areas and as a factor contributing to reduced salmon abundance in small systems, particularly the Tazimina River. Bill Trefon, Sr. explained that the strong suction generated by higher horsepower jet units creates the greatest problems:

*“Especially in spawning areas where the water is shallow and they blow up the rocks and the eggs and disturb the areas that the fish spawn—where their eggs are. Up to a certain power, jet boats like a fifty [horsepower] on down is okay. It don’t disturb, you know, the water that much. But fifty on up, that is the one the really bothers the fish spawning area.”*

Melvin Trefon agreed that the larger jet motors cause the most damage to salmon spawning habitat and Andrew Balluta expressed concern about the impact of jet boats on spawning areas in the Tazimina River:

*Melvin: “They stir up the bottom of the river during the spawning. They have higher horsepower. Jet boats have 100 horsepower plus and that seems to turn up the salmon spawn grounds.”*

*Andrew: “The jet boats ruin the bottom of the river. Streams, especially like the Tazimina River, used to be a good spawning area.”*

According to Mike Delkittie, the wakes generated by jet boats are particularly de-

*“Boats going up the river with their jet motors has changed the fish from going up there and spawning.”*

*Gladys Evanoff*

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structive to salmon spawning habitat in shallow river areas. He explained that he had no objections to jet boats being used on the lake, but felt strongly that their use be prohibited in small river systems:

*“The jet power from the water is so extreme that it forces the water to hit the bank, the spruce trees on the beach. It blew the water onto the trees and then there were salmon eggs hanging on the trees. You see again, it proves that jet power should not be used on small rivers. I don’t mind it being used in the lake, not in the small rivers. The jet powered boats should be outlawed in the smaller rivers.”*

**“There is a lot more sport fishermen in the Kvichak River more lodges and more people.”**

Andrew Balluta

In addition to damaging spawning areas, Darlene Nolan said that jet boats also scare the fish. She also worried about bank erosion caused by sport fishermen fishing from the river banks and running their boats up onto the beach:

*“The jet boats are disrupting the schools of fish along the river. The boats come and you can see the fish scatter....Erosion on banks from people walking along and their boats and their platoons are going up on the beach driving their jet units.”*

## Over-Fishing

In 1997, 1998 and 2001, the State of Alaska declared Bristol Bay an economic disaster area due to low salmon prices and below-average returns. Between 1996 and 2001, the number of salmon returning to the Kvichak River system—including Lake Iliamna and Lake Clark—was so low that minimum escapement goals were not met in four out of six years (BBNA, 2002; ADF&G, 2002). While numerous hypotheses have been posed by scientists, fishermen, and state and local officials to explain this decline in salmon abundance, over-fishing was mentioned most often by respondents as the reason for reduced salmon runs. Olga Balluta, speculated that a combination of high-seas interception, commercial fishing in Bristol Bay and sportfishing was responsible for the decline in salmon returning to the Newhalen River and Lake Clark:

*“Maybe the big seiners that’s catching all the fish in Bristol Bay and all around the seas out there, and commercial fishing too, sportfishermens that catches all the fish all through the summers. They take all kinds of*

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*fish out of here. There was lots of sportsfishermen all these years until last year when the fish slacked off and they started to stop the sportsfishermens when they thought we weren't getting enough fish up here."*

George Alexie also attributed the reduced salmon returns in the Kvichak system to high seas interception:

*"There is more high seas fishery, more of it, more drift nets in Bristol Bay. Long time ago, there used to be thousands of fish put up here, but less people putting up fish."*

Melvin Trefon raised the issue of commercial fishery management by the State of Alaska and how management decisions to leave certain fishing districts open leads to fewer fish in the river:

*"I think that commercial fishing in Bristol Bay affects the fish runs. They [the Alaska Department of Fish and Game] are not consistent in closing the [commercial fishing] districts. They said that the closings don't affect another, but it is affected all the way to Area M. The Japanese, the foreign fleets that are on the high seas need regulations."*

Nick Carltikoff agreed that interception of Kvichak-bound fish by the Bristol Bay commercial fishery had reduced the number of fish headed for the Newhalen River and Lake Clark. He suggested that closing down the commercial fishery would allow the salmon stocks to rebuild.

*"I think if they shut down the Naknek [fishing district] for a year or two the fish will build up again around here. I think that is affecting the fish. There are so many boats and all those nets out there. That's why we don't get fish up here like we used to."*

Mike Delkittie remarked on the level of fishing pressure and said that the elders also believed that the fish would come back when there is no more commercial fishing in Bristol Bay:

*"Maybe there is a lot of gear out there. But where I come to talk about the old people long ago, they said that the salmon are gonna come back when there is no fishing down the Bay."*

*"Bristol Bay fishing gets hit pretty hard, more fish is taken. People are getting more fish, sports and commercial."*

Mary Hobson

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## Pollution

Several people mentioned pollution as a human-induced change affecting their environment and quality of life. Melvin Trefon expressed concern regarding reduced water quality from runoff from the Nondalton dump and the impacts of increased tourism:

*“I can’t say for a fact, but I think pollution. I know that the present dump must effect the creek up here in Nondalton. It must effect the water quality. The creek is near the dump, the dump drains into that creek....There is more lodges along the rivers, more sportfishing and commercial fishing. With more people living around us it seems like more pollution.”*

*“I noticed more beer cans from (sport) fishermen who just leave their garbage and stuff right where they fish at.”*

*Darlene Nolan*

Gladys Evanoff reported being bothered by pollution, especially by people littering and being careless about maintaining their campsites:

*“They pollute the water a lot. They throw stuff in the water. Anything they have in the boat, paper, plastic, pop can and they throw in the water. People should take care of their campfires when they camp on the beach. They should take care of their campsite by cleaning up. There is more pollution.”*

For Agnes Cusma, the potential for oil spills was her greatest concern regarding pollution. She was particularly concerned about the impacts of oil spills on salmon and other marine life:

*“Salmon comes from the ocean and we hear things, like a boat that spills oil that will bother fish because fish have to come up. So that oil spill is worst thing they got in the ocean.”*

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## VI. Fish Camp

### Location

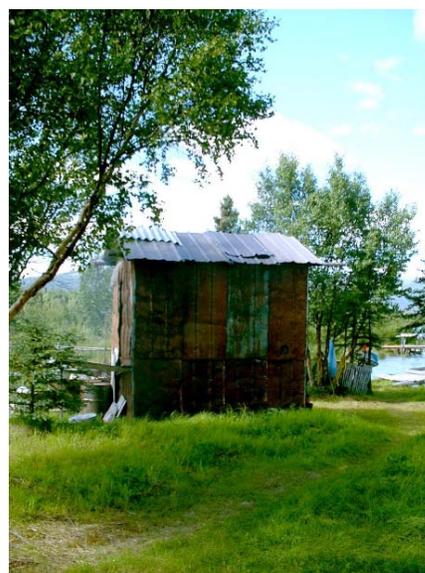
The subsistence fishing season for salmon generally starts around the middle of June and continues through August. Most of the sites currently used for fish camps are located below Nondalton on Sixmile Lake; clustered around the headwaters of the Newhalen River in an area called Fish Village, or along the banks of the Newhalen down to *Nundaltonshla*, about six miles down river from Fish Village. Several families, such as Bill and Martha Trefon's, have fish camps on Lake Clark. The Trefon's maintain a large fish camp at Chi Point, a small point located several miles down Lake Clark from the location referred to as Chi Point on USGS quad maps.

Fish camps are generally sited in areas with good fishing and enough current to wash away fish waste after the fish are processed. According to Bill and Martha Trefon, being near moving water is a major consideration:

*"They pick where the current is or eddies where all the slime could wash away. Or where they think it is easier to set the net. All the old fish camps, always where there is a current. You never see a fish camp where there is too much eddy. You choose it where the slime will wash away by moving water."*

Olga Balluta recalled the difficulties of travelling by boat before there were outboard motors and said that out of necessity, fish camps used to be located downriver from Nondalton where salmon could be harvested earlier in the season:

*"They never used to have motors, they used to use oars. It was easier for them to go way down where the fish was just coming instead of waiting up here for it. It take longer for the fish to get way up here, so everybody moved down the river. Wherever they could catch the fish faster that's where they made their fish camps. It was too hard for them to row back and forth all the way down the river and lug their fish around."*



Smokehouse at George Alexie's and Liz Balluta's fish camp on the Newhalen River  
Mary McBurney

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## Abandoned Fish Camps

Changing times, changing settlement patterns and a variety of other factors resulted in people moving or abandoning their fish camps over the years. Map 4 illustrates fish camp sites that were identified by respondents as either abandoned and currently unused or abandoned and rebuilt.

Most of the fish camps identified extend from the head of the Newhalen River down to *Ggis Nugelahitnu* (Bear Creek) but many others were identified throughout Lake Clark. The following locations, in descending order, were mentioned most frequently as locations of abandoned fish camps:

***Nli Z'un Vetnu:***  
*Steambath is  
there stream*

***Husuyghiqan  
Hni'a:***  
*Sand bar island*

***Ts'atanaltsegh:***  
*yellow water  
comes out*

**Zackar Evanoff's fish camp** (*George Alexie and Liz Balluta's fish camp at mile 23 on the Newhalen River*)

**Old Man Fedja's (Pete Delkittie's) camp**

**Antone Balluta, Simeon Kankanton and Pete Koktelash's camp** on the Newhalen River one mile up from *Ts'atanaltsegh* (*Melvin and Clara Trefon's fish camp*)

**Jack Hobson's camp**

**Rusty Point** (*Michael Rickteroff's old camp*)

**Alexie Balluta's and Kerisim Balluta's fish camps at Horseshoe Bend**

**Antone and Annie Evan's camp at Alexie Creek, Ch'qi'un**

**Charlie Dennison's camp at Tanalian Point**

**Kijik, Qizhjih**

**Ch'ghitalishla Vetnu** (*creek one mile south of Nondalton*)

**Gabriel and Charlie Trefon's camp** at *Nundaltonshla*

**Benny's camp**

**Steambath Creek, Nli Z'un Vetnu** (*Little Chuda's camp*)

**Bertha and Alex Trefon's camp**

*Ts'atanaltsegh* (*June Tracy's camp at mile 22 on the Newhalen River*)

**Tanalian River, Tanilen Vetnu**

**Flat Island, Husuyghiqan Hni'a**

**Bear Creek, Ggis Nugelahitnu**

**Portage Bay, Ch'alikel'u Yitughilu**

**Turner Bay, Hkayitadghi'u**

**Tuk'eleh**

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The abandonment of fish camps around old Kijik village were some of the earliest mentioned by respondents. Nick Carltikoff and Pete Koktelash both referred to the 1901-02 measles epidemic as the reason people left the area:

*“Kijik, you know, lots of people over there. All belong to around here old people. Lots of people over there [Kijik village]. There’s some kind of sickness. Lots of guys dying—dying for two years. During the first priest I guess they had it. He come up from Nushugak, he told them to move. That’s when they move to [Old] Nondalton.”*

Andrew Balluta recalled that Pete Delkittie’s (Old Man Fedja’s) fish camp was abandoned sometime in the 1940s and that others, including his uncle Gabriel Trefon’s fish camp at *Nundaltonshla*, were abandoned and moved to sites closer to Nondalton:

*“Fedja abandoned his fish camp back in 1940s, I guess, because at that time he passed on and then his son moved away from there and moved up to here, this fish camp up here. I figure he got too old so that is why he moved the fish camp so he don’t have to go down that far again. Too far from the village and it took a lot of effort to get there. Over here where Gabriel had his fish camp they abandoned that and moved closer to the village ‘cause it was real convenient up here where the old fish camp is. They were mostly abandoned to move closer to the village, easier to get to. Years ago, the church was way up here in the old village and we don’t go to church like we used to, but in them days every Saturday we used to go to church and only the person that had motor was able to go. They row their boats and the motor boat would pick up boats as he went up, pull the boats all the way up. Used to tow them boats up here, used to get together and go to church and have a social get together that Sunday and then everyone go back to their fish camp, put up their subsistence fish.”*

Agnes Cusma said the fish camps located on the Newhalen River near Alexie Creek were abandoned in favor of upriver camp sites after the introduction of outboard motors. According to Bill and Martha Trefon, Antone and Annie Evan were the last people to have a camp at Alexie Creek:

*“Depending on the time of the year, most people like to camp in Portage Bay and Turner Bay, at Indian Point.”*

Melvin Trefon

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*“They had a easy way of getting their fish when they were way down there by Alexie Creek. They stayed in a place where they could use net. They were closer to the fish ‘cause they were rowing. No motor, then. People moved up later when they had motors.”*

Olga Balluta also credited outboard motors as a factor leading to the abandonment of many down river fish camps, but noted that while people may no longer stay at the sites, some are still used for fishing by people commuting from camps closer to Nondalton.

*“For fall fish, they used to camp for maybe a month. Catch their fish then dry it. Then after it’s dry, then they’re ready to bring it back down for the winter and store it.”*

Olga Balluta

*“After they got their machinery, motors and stuff, then they moved up to the lake [Sixmile Lake] up here and it was easier for them to run down there and haul it up. So that’s why they were abandoned.”*

According to Nastasia Zackar, one fish camp at Horseshoe Bend was abandoned for supernatural reasons:

*“Horseshoe Bend. There was a big smokehouse there. It was spooky so they had to move to another area. That’s why Alex’s daddy when he was gonna die, he told his brother, ‘you gotta move. This place is no good,’ he said, down Horseshoe Bend.”*

Dolly Hobson recalled that in addition to Horseshoe Bend, two other fish camps were abandoned because people were afraid to camp at the sites:

*“I don’t know what they’re scared of. They used to get scared and move away from places. Nice places, too.... All I know, that Horseshoe Bend, they said they were sacred of something, and at Chuda Hobson’s [Jack Hobson] fish camp, too. They got scared of something. I don’t know. I really don’t know what they used to get scared of. And that Ch’qi’un [Alexie Creek], too. They got scared of that place.”*

Flooding was cited as another reason why some fish camp sites were abandoned. Andrew Balluta related that a fish camp at *Ts’atanaltsegh* was abandoned early on by high water and then rebuilt by his mother, Sophie Balluta Austin.

*“The fish camp [at Ts’atanaltsegh] was abandoned, too, and they*

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*started re-building again. My mom first put a smokehouse there and then Gabriel [Trefon] and Pete [Koktelash]. Why they abandoned that place was there was a flood at one time that flooded the whole point over here and flooded the fish camp on this side so they had to move out of there. That was a big flood. Must have been back in the 1920s 'cause Pete Koktelash was telling me about it."*

Mike Delkittie also talked about fish camps being abandoned because of high water and flooding:

*"Some of them moved because of severe weather. Too much rain. Lots of stuff went underwater. That never happened every year, but it depended on how the weather was. Sometime you get high water and some of them fish camp went under so they didn't go back to it anymore. The people who used to live there no longer live there. There used to be a fish camp in that slough. There used to be a lot of fish move in there, but that fish camp don't exist any more. There is one that existed near George Alexie's fish camp [originally Zackar Evanoff's camp]. There used to be a guy there, but now George put it back alive again. It used to be abandoned....High water is the number one reason people were pushed out of their fish camps. Many fish camps don't exist today because of high water."*



Newhalen River fish camp (c. 1900)  
Lake Clark Study Center

Melvin and Clara Trefon cited changes in land ownership and the ongoing shift from a subsistence-based economy to one a cash-based one as major factors resulting in the recent abandonment of local fish camps:

*"Probably the early 60s and then through the 80s, everybody abandoned because of the cash economy. When the village really turned into a cash economy in the 60s, they [Nondalton residents] had to leave to go away to work. People moving, dying, land changes."*

Clara's mother, Gladys Evanoff, said that with fewer people going to fish

camps during the summer salmon season, she worries whether the tradition of going to fish camp will survive to be passed on to future generations:

*“Less families are in fish camps. Down river, down by Benny’s fish camp and then above there. A lot less people in fish camps, used to be lots of people. They just don’t put up fish like they used to, I guess. That’s why and they moved away. I hope the younger people would start putting up fish and don’t lose that subsistence lifestyle and think that they can live on just what they buy. We used to make a lot of use out of fish.”*

Several other respondents also noted that there aren’t as many young people involved in subsistence fishing activities as in the past. One resident observed that even her own grandchildren did not participate in subsistence fishing:



Dan Young

*“Well, my own grand kids never touch a fish yet. There’s more young people in [Gladys Evanoff’s] camp. We used to help like that. Some old people is putting up fish, the young kids carry fish up for them and hang it up. That’s the way we used to work, but now it’s kind of different.”*

Andrew Balluta made a similar comment:

*“Very, very few of them now [subsistence fish]. I’m gonna tell the truth. You don’t see too many young people down there cutting fish and picking fish. It seems like it is us people in our 60s and 70s is doing that kind of work anymore. Younger parents put up fish, but teenagers and them don’t—not too many of them.”*

Melvin Trefon observed that changes in the extended family and young people’s attitudes toward subsistence fishing appear to be affecting who participates in subsistence fishing activities:

*“It used to be that we had to, now it seems like there is a choice in the matter, somehow. They are not as involved, but there are a few. Just*

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*not as many as long time ago. If we never packed the house, the smokehouse, then we weren't allowed to swim. We had to get our chores done before we could do any other activities. We had to tie fish bones and hang them."*

## **Family Use of Fish Camps**

Fish camps are no longer occupied throughout the summer months, as in the past, but have evolved into family gathering places where members work for shorter periods of time to catch and put up fish. Mary Hobson recalled how the whole village would move out to the fish camps to catch and smoke salmon:

*"People used to fill up their smokehouses. There was no people who stayed in the village, kids and all. Now it's different. People come down to fish camp, get what they want in just a couple days. Nobody hardly stay at fish camp. We used to stay at fish camp for two or three months."*

Sharing is a core value of subsistence fishing—whether sharing the harvest, the fishing site or the fishing net. Respondents were asked about the number of people with whom they currently share their fish camps and whether that number has changed over time. All the people interviewed reported sharing their fish camps with family members and several people said they also share with friends and other individuals. Agnes Cusma said she shares her camp with anyone who wishes to use it:

*"Well anybody can share it. Everybody help one another. We don't say, this is my fish campsite. Anybody want to use it they could. They ask me and I tell them, go ahead."*

The oldest residents interviewed, Pete Koktelash and Nastasia Zackar, said they used to share their camps with many more people than they do today. Both reported that they currently share their sites with only one person—Pete with a son and Nastasia with a grandson. Of the remaining respondents who specified the number of people with whom they shared their camps, one person reported sharing with four people, three reported sharing with 10 to 15 people and two reported sharing with 15 to 20 people.

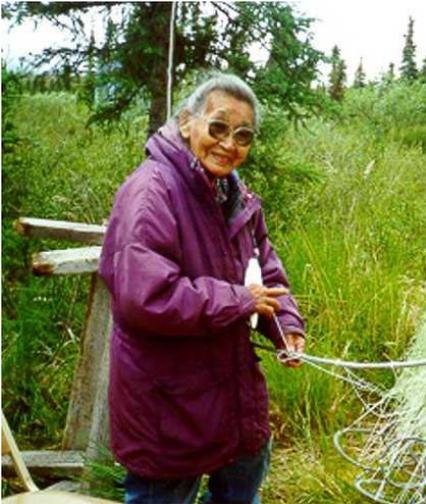
*"My whole family shares (the camp) with us and, of course, we ask them for help picking the net or sometimes even split the fish or cut heads."*

*Nick Carltikoff*

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Andrew Balluta said that he currently shares his fish camp with his immediate family but remembers a time when more families maintained fish camps. He speculated that the reduction in the number of fish camps is related to residents not needing to put up as much salmon to satisfy their subsistence needs.

*“Families, I guess, like my mother-in-law and ourselves, we share the fish camp. I would say seven in my family....maybe 13 people at our site that we share. That is now days. Years ago it was not that way. We all just had our own fish camp. There were lots of people, but each family had it’s fish camp. That was the rules. The male had his own fish camp for his family.”*



Mary Hobson mending her subsistence gill net  
Dan Young

Nearly all the people interviewed reported that they shared their gill nets with family members and two reported sharing their nets with others outside their families. According to Andrew Balluta, the regulatory ban on using beach seines and the introduction of gill nets changed the character of subsistence fishing from a community-based fishery to a more family-based one. As a result, many people will only share their gill nets with family members or a trusted friend. However, this pattern isn’t true for everyone. Olga Balluta said that she shares her fish camp and net with her family and occasionally loans her net to people who don’t have one of their own.

*“Well, when there is people out there don’t have no net, we share our net with people who needs fish for their places. We all work together to share our fish with people who have no net to put out.”*

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## VII. Salmon Ceremonies

Over millennia, Native American and Alaska Native cultures from Cape Mendocino to the Bering Sea have developed around the five species of Pacific salmon. The abundance and availability of salmon along the Pacific coast supported many cultures and provided the basis for many salmon-based economies. The significance of salmon to these cultures also gave rise to special ceremonies and practices that honored the first salmon to arrive each year (Gunther, 1928).

Most all the residents interviewed recalled the practice of sharing the first salmon caught with the entire village. Whoever caught the first salmon would host a community gathering where everyone was given a taste of the fish, even if it was only a small bite or a sip of the broth. Olga Balluta recalled that the first salmon was shared particularly with elders:

*“Long ago, the first fish they got they would have a big potluck and invite mostly all the elderly people. Invite them to eat one little bit, even if they get just a little piece out of the fish they got. And they share that one fish with everybody, that is with the soups and all, pass it to everybody to have a drink out of the cup. That is how they used to do with their first salmon that they catch.”*

Mary Hobson remembered the first salmon of the season being celebrated with a traditional potlatch where calico, dollars, and other gifts would be given away to guests. She recalled that this was also the practice at the end of the season:

*“End of fishing, too, fish is dried and we put it away. Who ever put up the most fish and made the best make the potlatch and give one fish or half a fish to everybody. They share with everybody. They show their appreciation for how much fish they got.”*

In addition to its significance as a social gathering, the first salmon celebration also served as an important sign of respect that expressed the people’s appreciation for the salmon’s return, especially after a long winter without fresh foods to eat. Honoring the first salmon was a signal to the other fish that it was time for them to come and be caught by people who would treat them with respect. Mike



Smoking salmon  
Mary McBurney

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Delkittie stressed the importance of sending a message of respect to the salmon:

*“There’s one thing I miss that they used to do a long time ago....the first fish that they caught they let everyone have a taste of that fish. Even if it was just the juice of that fish. We really have respect for that salmon. And they said, not seeing the salmon was the other eleven months without it. You must remember that, because they were talking about really harsh cold weather and then therefore you gotta have respect.... If they have a lot of respect for the salmon, more will come.”*

*“That’s the agreement we have with the salmon. As soon as they smell the q’esh (ggis), they say, ‘oh, our people is hungry, they are eating q’esh.”*

*Melvin Trefon*

While first salmon gatherings no longer take place on a community-wide basis, some residents keep the practice alive by celebrating the return of the first salmon as a family ritual to mark the change in seasons when people move from the village to fish camp. Melvin and Clara Trefon observe many traditions within their household.

*“We always try to share with old people the first salmon. When the first salmon come that is when everyone moves to fish camp and starts putting up fish before the bugs come and the rain, as early as possible and you have a good harvest....After our traditions we have better harvest results.”*

Another salmon ritual still observed by some Nondalton families is throwing the leaves and peelings from wild celery or *ggis* (*q’esh*) into the water to tell the salmon that people are hungry and that it is time for the the fish to come. This is usually done during the early to middle part of July when people pick *ggis* to eat as a vegetable. According to Melvin and Clara Trefon, when the salmon smell *ggis*, they know that the people are hungry and eating greens. Darlene Nolan said that she has taught her children the *q’esh* ritual and its significance in Nondalton culture:

*“We get q’esh from up the mountain and after we eat it, we take the celery and throw it into the lake and we tell the salmon that it’s green already and we need for you to come. We don’t want to eat greens, we want to eat fish. And I tell them and I say a prayer.”*

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## VIII. Use of Other Freshwater Fish

Sockeye salmon and redfish represent more than three-quarters of the fish used by Nondalton residents for subsistence while the other quarter consists of a variety of other freshwater species (Alaska Department of Fish and Game 1983). Respondents were asked to list the species they caught and used in 1998, 1999 and 2000 and the number of each kind of fish they harvested each year. Tables summarizing this information are included in Appendix B.

The following information is organized by species and includes the number of people who reported harvesting each kind of fish, the number of fish harvested, the three-year average harvest, and whether harvests had increased, decreased or remained the same over the three year time period. Residents were also asked where they went to harvest each kind of fish. The following summaries list places mentioned by residents in descending order of frequency.

### **Rainbow Trout—*tuni***

Eleven people reported fishing *tuni* (rainbow trout) in 1998, 1999 and 2000 and described annual harvests ranging from 9 to 100 fish with a three-year average harvest of 30 rainbow trout per respondent (Figure C). Seven respondents indicated that their annual harvests of rainbow trout had remained stable between 1998 and 2000. Three others reported decreased harvests and two people described annual harvests that had increased.

With the exception of Respondent 12 whose annual harvest between 1999 and 2000 decreased 50 percent—from 100 to 50 fish—these decreases and increases in annual harvest are based on relatively small numbers of fish and may simply reflect the normal variation in catch success from year to year.

Nastasia Zackar recalled that rainbow trout was an important food fish caught in the spring and dried for winter use:

*“We never throw that trout away. All of them we cut it. Sometimes we go to Indian Point, lots of trout. We put up fish before fish [salmon] come. We bring it down dry. We eat that dried trout. Then fish [salmon] come and then we start putting up fish. We put that trout away. Winter-time, we want to it, we eat it.”*

Map 5 illustrates the locations identified by respondents as places where rainbow

***Tuni Vetnu:***  
*rainbow trout*  
*stream*

***Tuni T’el’ht:***  
*where we get*  
*rainbow trout*

***Hqak’elyaxtnu:***  
*Dolly Varden*  
*stream*

“We cook it [grayling] over the fire with cha’kish [stick]. The scales is like a tin foil. It cooks really good inside.”

Agnes Cusma

trout are harvested for subsistence:

**Steambath Creek**, *Nli Z’un Vetnu*

**Tazimina River**, *Nughilqutnu*

**Newhalen River**, *Nughil Vetnu*

**Alexie Creek**, *Ch’qi’untnu*

**Landing**, *Niqanch’qentdelt*

**Sixmile Lake**, *Nundaltun Vena*

**Alexie Lake**, *Ch’qi’un Vena*

**Chulitna**, *Ch’alitnu*

**Indian Point**: *Yusdi Ghuyiq’*

**Snowshoe Bay**, *Ush’K’itudghi’uyi*

**Chi Point**, *Chayi Ch’dedlish Kiyiq’*

**One-Tree Island**

**Fish Village**

**Frying Pan Lake**

*Ts’atanaltsegh*

### **Dolly Varden—*liq’a k’qen***

Ten people said they fished for *liq’a k’qen* (Dolly Varden) in 1998, 1999 and 2000. The annual harvests ranged from zero to 88 fish with a three-year average harvest of 25 Dolly Varden per respondent (Figure D). The harvest trends for Dolly Varden are similar to those reported for rainbow trout—six people reported stable annual harvests between 1998 and 2000 and four had reduced harvests over the same time period. With the exception of Respondent 1 who reported a 40 percent reduction in catch from 50 fish in 1998 to 30 fish in 2000, the remaining reductions in harvest were for catches representing relatively small numbers of fish. Six respondents reported annual harvests of 10 Dolly Varden or less while the other four had catches between 25 and 88 fish.

The places identified on Map 6 as locations where Dolly Varden are harvested generally mirror those named as rainbow trout fishing areas:

**Steambath Creek**, *Nli Z’un Vetnu*

**Newhalen River**, *Nughil Vetnu*

**Sixmile Lake**, *Nundaltun Vena*

**Tazimina River**, *Nughilqutnu*

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**Alexie Creek, *Ch'qi'untnu***

**Landing, *Niqanch'qentdelt***

**Alexie Lake, *Ch'qi'un Vena***

**Chulitna, *Ch'alitnu***

**Fish Village**

**Igiugig, *Nildink'et'a* (the outlet of Lake Clark)**

***Ts'atanaltsegh***

## **Whitefish—*q'untuq* (humpback whitefish) *telay* (broad whitefish)**

Nondalton residents catch both *q'untuq* (humpback whitefish) and *telay* (round whitefish) for subsistence, however respondents were not asked to make a distinction between the two species when asked about their whitefish harvests.

According to Nastasia Zackar, whitefish was an important food source in the spring to avoid starvation before the arrival of the salmon:

*“Whitefish dried, we use it until the salmon come. If you got whitefish, you cut it and hang it in the smokehouse.”*

Thirteen people indicated that they fished for whitefish in 1998, 1999 and 2000 and reported annual harvests between 8 and 200 fish, with a three-year average of 41 whitefish per respondent (Figure E). Only three respondents said they harvest more than 50 fish per year while the remaining ten said they take between 8 and 40 fish per year. The annual whitefish harvest trend for each respondent appears to be stable with little variation from year to year. Map 7 illustrates the locations identified as places to catch whitefish:

**Pickerel Creek, *Ch'dat'antnu***

**Whitefish Slough, *Hulehga Tahvilq'a* (Slough on the north Chulitna River delta)**

**Chulitna, *Ch'alitnu***

**Owl Bluff, *Kijeghi Tsayeh***

**Tanalian, *Tanilen***

**Sixmile Lake, *Nundaltun Vena***

**Pickerel Lake, *Vata'esluh Vena***

**Fish Village**

**Old Nondalton**

*“But in the wintertime when we fish, put our net in the lake under the ice, or make fish holes for whitefish and grayling.”*

*Melvin Trefon*

**One-Tree Island**

**Chi Point**, *Chayi Ch'dedlish Kiyiq'*

**Lake Clark**, *Qizhjih Vena*

**Upper Tazimina Lake**, *Unqeghnich'en Taz'in Vena*

**Lower Tazimina Lake**, *Taz'in Vena*

**Tazimina River**, *Nughilqutnu*

**Sucker/Hudson Bay**, *K'denez Y'itughil'u*

**Kok'teek'tleh**

**Indian Point**: *Yusdi Ghuyiq'*

**Flat Island**, *Husuyghiqan Hni'a*

**Igiugig**, *Nildink'et'a (the outlet of Lake Clark)*

**Hardenberg Bay**

**Ch'dat'antnu:**  
grayling stream

**Ch'dat'an**  
**T'el'ih:**  
where grayling  
are gathered

**Qak'ditl'ix**  
**Vetnu:**  
snares are set  
stream

**Grayling—ch'dat'an**

*Ch'dat'an* (grayling) is a plentiful fish harvested throughout the Lake Clark/Newhalen River drainage for subsistence. Twelve people reported fishing for grayling in 1998, 1999 and 2000 and described annual harvests from 8 to 100 fish, with a three-year average of 25 grayling per respondent (Figure F). Harvests of grayling appear to be the most consistent of all the freshwater fish used for subsistence with little to no variability from year to year. Nine respondents reported stable harvests between 1998 and 2000 and the other three showed minor harvest variations for the same period.

According to Andrew Balluta, the grayling population appears to be healthy, particularly in Pickeral Lake:

*"Don't really see a shortage of grayling. Some places decline, like Pickeral Lake never fails. May 10 they start spawning there."*

Agnes Cusma explained that grayling used to be caught through the ice with snares made from eagle feathers:

*"Snare for fish. We're not talking about rabbit snare. It's a snare they make it out of eagle feather, the wing. We kill squirrels with that, too. Same as squirrel snare. That wing is tied to the end of a long stick and we put it through the ice and the bait is there and you watch it with the snare. As soon as you see that fish go in there, you pull him out."*

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Grayling are found just about everywhere and Map 8 illustrates the locations listed by the respondents as places where they fish:

**Newhalen River**, *Nughil Vetnu*

**Sixmile Lake**, *Nundaltun Vena*

**Tazimina River**, *Nughilqutnu*

**Pickerel Lake**, *Vata'esluh Vena*

**Pickerel Creek**, *Ch'dat'anntnu*

**Landing**, *Niqanch'qentdelt*

**Fish Village**

**Old Nondalton**

**Alexie Lake**, *Ch'qi'un Vena*

**One-Tree Island**

**Chi Point**, *Chayi Ch'dedlish Kiyiq'*

**Chulitna**, *Ch'alitnu*

**Lake Clark**, *Qizhjih Vena*

**Jimmy's Bay (small bay below Nondalton)**

**Sucker/Hudson Bay**, *K'denez Y'itughil'u*

**Kok'teek'tleh**

**Negro Lake**

**Upper Tazimina Lake**, *Unqeghnich'en Taz'in Vena*

**Lower Tazimina Lake**, *Taz'in Vena*

*“My dad said the way fish [pike] got put into that lake is by the loons. Those are land-locked lakes. Fish can't swim into it so they get transplanted by the birds.”*

*Melvin Trefon*

## **Northern Pike—*ghelguts'i***

Eleven people reported fishing for *ghelguts'i* (pike) in 1998, 1999 and 2000 and described annual harvests ranging from one to 40 fish with a three-year average of about 13 pike per respondent (Figure G). Three people reported taking fewer than six pike per year; four reported taking ten and four reported catching 20 or more fish per year. With the exception of Respondent 6 whose annual harvest between 1998 and 1999 decreased 50 percent—from 40 to 20 fish—the individual harvests of the other respondents did not show much variability from year to year.

Dolly Hobson recalled going to camp with her family when she was younger and catching large pike around Chulitna:

*“I remember we used to camp up there. My dad used to set net in that little lake. Gee, lots of pike up around Chulitna. Great big pikes, too.”*

Map 9 shows locations listed by respondents as places where they catch pike:

**Chulitna**, *Ch'alitnu*

**Long Lake**, *Qinghuti Vena*

**Nikabuna Lake**, *Nikugh Vena*

**Chulitna Bay**, *Ch'alitnu Hdakaq'*

**Indian Point**: *Yusdi Ghuyiq'*

**Snowshoe Bay**, *Ush'K'itudghi'uyi*

**Portage Bay**, *Ch'alikel'u Yitughilu*

**Whitefish Slough**, *Hulehga Tahvilq'a* (slough on the north Chulitna River delta)

*Tava Vena*

**Walker Slough**

**Pickerel Lake**, *Vata'esluh Vena*

**Lower Tazimina Lake**, *Taz'in Vena*

**Alexie Lake**, *Ch'qi'un Vena*

**Mulchatna River**, *Valts'atnaq'*

**Sucker/Hudson Bay**, *K'denez Y'itughil'u*

**Frying Pan Lake**

**Upper Talarik Creek**,

**Owl Bluff**, *Kijeghi Tsayeh*

*Ch'ghitali*

**Sophie Austin's camp** (located near *Chaq'ah Tugget*)

### **Burbot—*ch'unya***

Eight people reported harvesting *ch'unya* (burbot or lingcod) in 1998, 1999 and 2000 with harvests ranging from 2 to 30 fish, and a three-year average of nine burbot per respondent (Figure H). Seven people described their harvests as being stable between 1998 and 2000 and one reported a 60 percent drop between 1998 and 1999 and a stable harvest at the lower catch level between 1999 and 2000.

Six people said they take fewer than nine burbot each year and three indicated that they take more than 15.

The following locations were mentioned most frequently as places where people go to fish burbot and are found on Map 10:

**Lake Clark**, *Qizhjih Vena*

**Chulitna Bay**, *Ch'alitnu Hdakaq'*

*“By Butch’s place  
(Owl Bluff) too,  
we get lake trouts,  
pike, whitefish,  
lingcod.”*

*Bill Trefon, Sr.*

**Owl Bluff**, *Kijeghi Tsayeh*

**Sixmile Lake**, *Nundaltun Vena*

**Tanalian Point**, *Tanilen*

### **Candlefish—*ghelguts'i k'una***

*Ghelguts'i k'una* (candlefish), also known as freshwater herring, are found throughout Lake Clark. Eight people said they harvested candlefish in 1998, 1999 and 2000 and reported catches ranging from one to 40 fish, with a three-year average of 12 candlefish per respondent (Figure I). Only three people said they harvest more than 20 fish per year while the remaining five said they take between 1 and 15 fish annually. With the exception of Respondent 6 who reported a 50 percent decrease between 1998 and 1999, the annual candlefish harvest for each respondent appears to be stable with little variation from year to year.

According to Mike Delkittie, candlefish move through the outlet of Lake Clark in the spring and spawn:

*“When ice start coming through Igiugig, up there, you’ll see whitefish, candlefish moving in there and lots of lake trout. Candlefish, lots in this one area. They spawn there, too.”*

The following locations are shown on Map 11 and were mentioned as places where candlefish are harvested for subsistence:

**Lake Clark**, *Qizhjah Vena*

**Chulitna Bay**, *Ch'alitnu Hdacaq'*

**Chi Point**, *Chayi Ch'dedlish Kiyiq'*

**Igiugig**, *Nildink'et'a (the outlet of Lake Clark)*

### **Sucker—*duch'ehdi***

Five people reported fishing for *duch'ehdi* (suckers) in 1998, 1999 and 2000 and reported harvests ranging from 3 to 30 fish, with a three-year average of 12 suckers per respondent (Figure J). The harvest levels for suckers was stable between 1998 and 2000 and showed no variability from year to year. Two people said they take fewer than six suckers each year and three indicated that they take more than 15.

Nastasia Zackar said that Sucker Lake (*K'den'ez Vena*) near Pickerel Lake is a particularly good place to fish:

*“Candlefish,  
you can get  
any place.  
Wherever  
there’s white-  
fish, there’s  
candlefish.”*

*Agnes Cusma*

“You know Sucker Lake by Pickerel Lake? That’s the place there’s lots of suckers. Boy, I like to eat that. Whitefish and suckers dried is good.”

Map 12 indicates other locations identified as good places to catch suckers:

**Pickerel Lake**, *Vata’esluh Vena*

**Pickerel Creek**, *Ch’dat’antnu*

**Chulitna**, *Ch’alitnu*

**Chulitna Bay**, *Ch’alitnu Hdakaq’*

**Kok’tEEK’tlegh**

**Sucker/Hudson Bay**, *K’denez Y’itughil’u*

**Sucker Lake**, *K’dEN’ez Vena*

“Suckers don’t look like a fish a person could eat, but that’s a life-saver. You don’t eat the tail part, it’s too bony. Eat the head part and body, too.”

*Agnes Cusma*

### **Lake Trout—zhuk’udghuzha**

Two residents said that they fished for *zhuk’udghuzha* (lake trout) in 1998, 1999 and 2000 (Figure K). Both reported stable annual harvests over the three-year period, one person taking 22 fish each year and the other 20 fish. While the number of people who reported fishing for lake trout is small, nearly half the respondents named specific locations (Map 13) where they had fished for lake trout in the past:

**Igiugig**, *Nildink’et’a* (the outlet of Lake Clark)

**Sophie Austin’s camp**, located near *Chaq’ah Tugget*

**Mouth of Chulitna River/Chulitna Bay**, *Ch’alitnu Hdakaq’*

**Indian Point**: *Yusdi Ghuyiq’*

**Ch’ghitalishla Vetnu** (creek one mile south of Nondalton)

**Portage Bay**, *Ch’alikel’u Yitughilu*

**Owl Bluff**, *Kijeghi Tsayeh*

**Snowshoe Bay**, *Ush’K’itudghi’uyi*

**Steambath Creek**, *Nli Z’un Vetnu*

**Alexie Creek**, *Ch’qi’untnu*

**Lake Clark**, *Qizhjih Vena*

**Chi Point**, *Chayi Ch’dedlish Kiyiq’*

**Tanivan Qilan**, (beach south of Portage Bay)

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## IX. Fish Abundance

Respondents were asked to rate the relative abundance of sockeye salmon, redfish and other freshwater fish for each decade beginning in the 1930s and ending in 2000. For each decade they could recall, people recorded their recollections of fish abundance and rated each species of fish as either abundant, average or scarce.

Figures L and M illustrate the average abundances for each decade recorded by respondents. The line corresponding to zero represents the rating for average fish abundance and serves as the baseline. The value referring to abundant fish is +1, while -1 refers to scarce fish. Each bar in the bar graph represents the average of the abundance ratings given by respondents for each decade. While this information is highly subjective and unquantified, it does reflect the recollections of the people interviewed and their perceptions of relative fish abundance from decade to decade. For example, Nick Carltikoff shared his impressions of fish abundance and related his experiences fishing for different types of fish:

*“Trouts been good all the time to me, [but Dolly Varden] never was good to me, seem like. Pike—the only place is Chulitna. It’s been about the same all the time, average. As far as I can remember lingcod [burbot] has been scarce.”*

Agnes Cusma remembered times when fish were scarce and shared her observations of fish abundance and how fish have changed in size over time:

*“1920s, that’s the year they didn’t have no fish here. They used to get fish from way down the rapids [on the Newhalen River]. Hans Severson, Jack Hobson, Alexie Balluta and Fedja. We went up to Telaquana, too. There was lots of fish up there where we went. When I used to fish for rainbow, there was lots then and big ones, too. Now you throw a out a hook you don’t get anything big like that. They’re smaller in size. Dolly Varden is same thing, average. Whitefish is about the same, too. Lingcod [burbot] is the most scarce, don’t get as much. There’s lesser now.”*

*“1920s, that’s the year they didn’t have no fish here.”*

Agnes Cusma

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Gladys Evanoff recalled her father telling stories about the large numbers of rainbow trout that he used to catch using a seine:

*“Dad told me they used to seine for rainbow long time ago. But not anymore, there’s not as much. He said they used to get them by the sleigh loads. There’s not as much as there used to be.”*

Mary Hobson also mentioned that the number of trout has declined in her lifetime and noted that rainbow trout have gotten smaller in size:



Setting a gill net  
NPS File Photo

*“Rainbows are alot smaller than they used to be. All the trout really decline same as rainbow. Never go up to Chulitna to fish for pike anymore. Years ago, they used to fish through the ice up where they call Dis’tul’a [?] and they catch fish almost every time they throw their hook in the water. Now, there’s hardly any trouts. It’s really declining, all the trouts.”*

Bill Trefon, Sr. observed that the size of trout and pike has decreased and that rainbow trout are appearing in places where they weren’t previously found:

*“Just this last four or five years we start getting rainbows in Chi’ Point. We used to never get rainbows in Lake Clark. Even Igiugig [the outlet of Lake Clark], maybe the last ten years, we start getting rainbows up there....The rainbow are showing in places where they never used to, like Igiugig. They used to be huge. The pike, too. They’re smaller, too. But they are really small, now. The pike are declining and nobody fishes for burbot like they used to.”*

Agnes Cusma also commented that the size of the pike are much smaller than in the past. She shared a story about a particularly large pike that she encountered while living at her spring subsistence camp:

*“One spring we were up there [Chulitna] and Paul [Agnes’ husband] got a pike. Jimmy Balluta was with us. They could hardly pull that pike in the beach it was so big. There was us and two dogs. We ate that pike all spring. I split it and dry it. Cook backbone for the two*

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*dogs. It had fish eggs, too. We fried that in the mornings. It's all fished out now. You don't see big pike like that anymore."*

Mike Delkittie recalled when the State of Alaska and the U.S. Bureau of Fisheries had bounties on Dolly Varden tails in an effort to decrease predation on salmon eggs and young.

*"During the 1930s and 1940s, they [the State of Alaska and the U.S. Bureau of Fisheries] put a bounty on fish tails of rainbows and Dollys. They paid five to ten cents. They did not want them eating the salmon eggs. We were just killing trouts by the thousands around here, and when they cut the tail to dry it, you know, then they put them in a bag. They put a bounty on the trout tail so the people would fish it out. They started eliminating the fish. I always wanted to ask that question, what did they do that for? Only thing I could figure out is so that they wouldn't eat the salmon eggs... We used to catch 20 sacks full of fish tail and take it down to Iliamna and sell it."*

***"The pike are declining and nobody fishes for burbot like they used to."***

*Bill Trefon, Sr.*

Figure 11 shows the average abundances per decade of sockeye salmon, redfish and rainbow trout. Figure 12 represents the average abundances for Dolly Varden, northern pike, whitefish, arctic grayling, and burbot. The absence of bars for northern pike and burbot in the 1930s and Dolly Varden in the 1980s reflects fish abundances at or near the zero baseline.

When asked whether fish abundance follows any particular cycle, people mentioned the variability of salmon abundance from year to year, but said other fish species did not seem to follow any discernible cyclic patterns. However, Melvin Trefon noted a relationship between salmon and rainbow trout:

*"When there are a lot of salmon, there are a lot of [rainbow] trout....If there's lots of redfish, then the other trout will be bigger."*

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## X. The Girl Who Said What She Shouldn't

Mike Delkittie shared a story about a careless young girl who made it snow in July. The moral of the story is children should be careful about what they say and not talk about the natural world, the weather or the environment or they may bring a curse on the land.

*“There’s this story, here. You know those mountains down there around Branch [Alagnak] River, east side? Not very high, but the snow never melt away from it. It’s white all the time.*

*There was a girl that said something that she was not supposed to say and during July month it started snowing. The north wind start blowing, it snowed and snowed until it was like that. They used to have a medicine man, they used to have a number of them, so they ask him, is there something wrong? Are we supposed to have snow in July month?*

*When they ask if there’s something wrong, the medicine men start coming together and talking about it. They said there was a young girl who said something she was not supposed to say. That’s why the weather turn bad in the summer month. They were in the snow up to their waist, it continued to snow. So one of the medicine men said they found out why this happened. One girl said something she shouldn’t. They didn’t think it would stop, either, unless they do something about that girl. They would have to get rid of her. Now, that must be a terrifying thing. They said they had to kill her and open her up towards the north on a stake like and the weather will stop. So they done that. The weather did stop. Ever since that time that mountain had so much snow on it year ‘round.*

*So I asked Agnes (Cusma) the other day, I wonder why that happened. They used to tell her about that, too. And that girl they got rid of, she was sitting on the riverbank there. She started tearing grass off the ground and throwing it in the water. “We don’t need this anymore.” That’s what she said. That was the word that went wrong. In a short time afterwards, snow came and covered all that grass. The medicine man found out what the girl was doing. They asked the other girls and they remembered what that girl did. Again, that mountain is the memory of that.”*



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# Appendix A: Maps

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## **Appendix B: Figures**

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