Freshwater Fish Inventory of Denali National Park and Preserve, Wrangell-St. Elias National Park and Preserve, and Yukon-Charley Rivers National Preserve Central Alaska Inventory and Monitoring Network

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ABSTRACT

As part of the National Park Services Inventory and Monitoring Program a freshwater fish inventory was conducted in the Central Alaska Network between 2001 and 2003. This network is comprised of Denali National Park and Preserve, Wrangell-St. Elias National Park and Preserve, and Yukon-Charley Rivers National Preserve. The purpose of this inventory was to document 90% of the expected yet undocumented species and to collect baseline data of species abundance and distribution. Angling, dip nets, electrofishing, a fyke net, gill nets, hoop traps, minnow traps, and snorkeling were all methods used in the 135 different sites that were sampled in the Central Alaska Network. Nine out of twenty one expected yet undocumented species were documented. Three previously undocumented species were documented in Denali, inconnu (*Stenodus leucichthys*), longnose sucker (*Catostomus catostomus*), and northern pike (*Esox lucius*). Six previously undocumented species were documented in Wrangell-St. Elias, coastrange sculpin (*Cottus aleuticus*), eulachon (*Thaleichthys pacificus*), pacific lamprey (*Lampetra tridentata*), slimy sculpin (*Cottus cognatus*), lake chub (*Couesius plumbeus*) and threespine stickleback (*Gasterosteus aculeatus*). One additional species was documented in Yukon-Charley Rivers National Preserve, coho salmon (*Oncorhynchus kisutch*). There were also four species detected that were not on the expected species lists, however, after further review these four species overlap with Park units within the Network and should be included in the expected species lists. Three of these species were detected in Denali National Park/Preserve and included, Alaska blackfish (*Dallia pectoralis*), Arctic lamprey (*Lampetra camtschatica*), and humpback whitefish (*Coregonus pidschian*). One of these species was detected in Wrangell-St. Elias, starry flounder (*Platichthys stellatus*).

EXECUTIVE SUMMARY

The Inventory and Monitoring Program of the National Park Service is conducting nationwide natural resource inventories. As part of this effort, a freshwater fish inventory was conducted throughout the Central Alaska Network (CAKN). The Central Alaska Network is made up of Denali National Park and Preserve (DENA), Wrangell-St. Elias National Park and Preserve (WRST), and Yukon-Charley Rivers National Preserve (YUCH).

The primary objective of this inventory was to document through capture or observation 90% of the freshwater fish species that were *expected yet undocumented* within the CAKN. The secondary objective of the inventory was to provide initial descriptions of the distribution, abundance, and biologic characteristics of the freshwater fish species present in the CAKN. A list of expected yet undocumented species was created for each park unit and was based on the fish communities of adjacent watersheds.

Within the CAKN there were a total of 135 sites sampled. Of these sites 20 were river sites, 62 were stream / creek sites and 53 were pond sites. A variety of sampling methods and techniques were used, including; Angling, dip nets, electrofishing, a fyke net, gill nets, hoop traps, minnow traps, and snorkeling. Ten out of twenty one expected yet undocumented species were detected during this inventory. Three species were documented in Denali National Park/Preserve, inconnu / sheefish (*Stenodus leuichthys*), longnose sucker (*Catostomus catostomus*), and northern pike (*Esox lucius*). Six species were documented in Wrangell-St. Elias, coastrange sculpin (*Cottus aleuticus*), eulachon (*Thaleichthys pacificus*), pacific lamprey (*Lampetra tridentata*), slimy sculpin (*Cottus cognatus*), lake chub (*Couesius plumbeus*) and threespine stickleback (*Gasterosteus aculeatus*). One additional species was documented in Yukon-Charley Rivers National Preserve, coho salmon (*Oncorhynchus kisutch*). There were also four species detected that were not on the expected yet undocumented lists. Three of these species were detected in Denali National Park/Preserve and included, Alaska blackfish (*Dallia pectoralis*), Arctic lamprey (*Lampetra camtschatica*), and humpback whitefish (*Coregonus pidschian*). One of these species was detected in Wrangell-St. Elias, starry flounder (*Platichthys stellatus*). There were also four species detected that were not on the expected species lists, however, after further review these four species' ranges overlap with Park units within the Network and should be included in the expected species lists.

Eleven expected yet undocumented species were not detected during this inventory. Ten of these undetected species were expected to occur in WRST; Alaska whitefish, Arctic char, green sturgeon, lake whitefish, least cisco, longfin smelt, northern pike, pond smelt, pygmy whitefish, and rainbow smelt. One undetected species was expected to occur in YUCH, pygmy whitefish.

The thirteen newly documented species that were detected within the Central Alaska Network remain consistent with the known distribution patterns of these species throughout central Alaska. No range extensions or truly unexpected species were identified during this inventory. Our objective was not to document absence and we did not sample intensely enough to demonstrate the absence of any fish species, therefore more work is needed to determine whether undocumented species are truly present, as well as the abundance, distribution, and biological characteristics of documented species.

INTRODUCTION

The Inventory and Monitoring Program of the National Park Service is conducting nationwide natural resource inventories. As part of this effort a freshwater fish inventory was conducted within the Central Alaska Network. The Central Alaska Network (CAKN) is made up of three park units, Denali National Park and Preserve (DENA), Wrangell-St. Elias National Park and Preserve (WRST), and Yukon-Charley Rivers National Preserve (YUCH) (Figure 1).

The parks located within the CAKN contain vast freshwater resources with two of the states largest rivers flowing through YUCH and WRST. These watersheds provide freshwater habitat for both anadromous and nonanadromous fishes. Due to the remoteness and limited access, little or no work has been previously conducted on the physical, chemical, or biological makeup of many of the watersheds within these parks. Many of the anadromous fishes within these systems have significant economic value (mainly salmon) and have been previously documented, whereas the majority of freshwater fishes are not targeted in commercial, sport or subsistence fisheries and therefore little is known regarding their distribution. The primary objective of this inventory was to

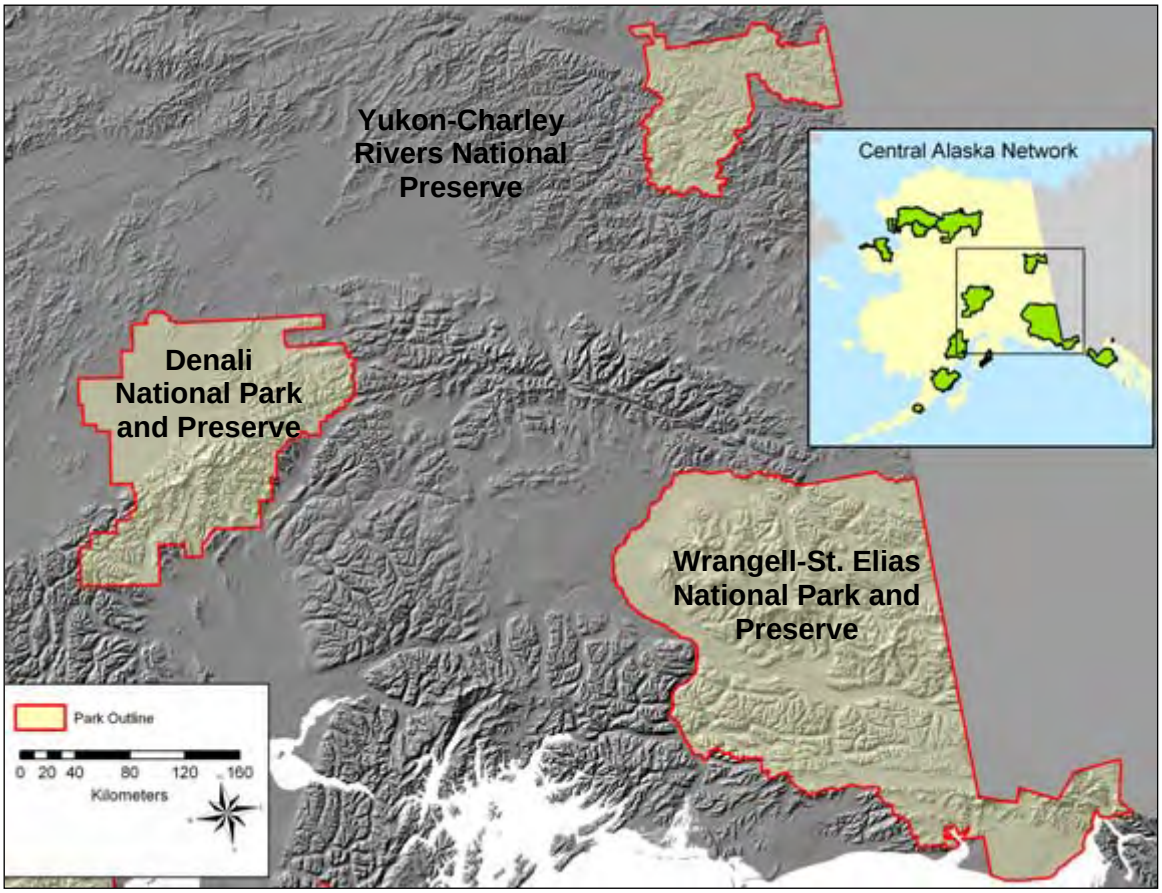

Figure 1.—Map of the parks that make up the Central Alaska Network.

document 90% of the fishes that were expected to occur within the CAKN in 2001 when the inventory was initiated (Tables 1, 2, & 3). A secondary objective was to provide initial descriptions of the distribution and relative abundance of the freshwater fish species present in the CAKN. A list of *expected yet undocumented* species was created for each park unit and was based on the fish communities of adjacent watersheds as well as the known fish distributions from existing literature (Table 1, 2, & 3).

METHODS AND MATERIALS

Site

The Central Alaska Network (CAKN), Denali National Park and Preserve, Wrangell-St. Elias National Park and Preserve, and Yukon-Charley Rivers National Preserve, encompasses 8.8 million hectares (21.7 million acres) and represents roughly 25% of the land within the National Park System. These lands span a wide range of environments and ecosystems from the snowcapped mountainous peaks of the Alaska, Chugach, St. Elias, and Wrangell ranges, to the subArctic terraces of the Yukon River, and all the way to the maritime coastal communities of southeast Alaska.

Denali National Park/Preserve

Denali National Park and Preserve is located 390 km (242 mi) north of Anchorage in the central interior part of the state and encompasses 2.4 million hectares (6 million acres). The park is divided by the massive Alaska Range which includes the tallest point in North America, Mt. McKinley at 6,194 m (20,320 ft). The Alaska Range divides the park into two basic environments, the warmer and wetter climate to the south and the cooler, drier subArctic region to the north. Denali's diverse subArctic vegetation communities span a variety of landscapes ranging from thermokarst lowland plains and rolling tundra foothills to the rugged alpine areas of the nearly one third of the park that is above 1,219 m (4,000 ft) in elevation. Denali National Park/Preserve has 849,800 ha (2,100,000 acres) of officially designated wilderness area and had been deemed an International Biosphere Reserve (Swanson et al. 2000).

We divided Denali National Park/Preserve into five major watersheds; the Chulitna, Kahiltna, Kantishna, Kuskokwim, and Nenana River drainages. The Chulitna and Kahiltna River drainages originate on the southeast side of the Alaska Range and flow south into the Susitna River which drains into the marine waters of the Knik Arm. The Kantishna and Nenana drainages originate on the north side of the Alaska Range and flow north into the Tanana River which then flows westerly into the Yukon River. The Kuskokwim drainage originates on the northeast portion of the Alaska Range and flows westerly all the way to the Bering Sea.

The inventory work conducted in 2003 concentrated on the northwest portion of DENA and focused on the Kantishna and Kuskokwim River drainages (Figure 2). The inventory of this portion of the park was a priority to the Resources Division Chief because it represented a gap in the knowledge base with little or no fisheries or aquatic work having been done prior to this inventory. The Kantishna River drainage sites were shallow isolated lakes, lakes connected by streams, and streams that flow directly into the Kantishna River. The Kuskokwim drainage sites were shallow isolated lakes, lakes

connected by streams and Highpower Creek (a creek that drains into the Swift Fork which then flows into the North Fork Kuskokwim River).

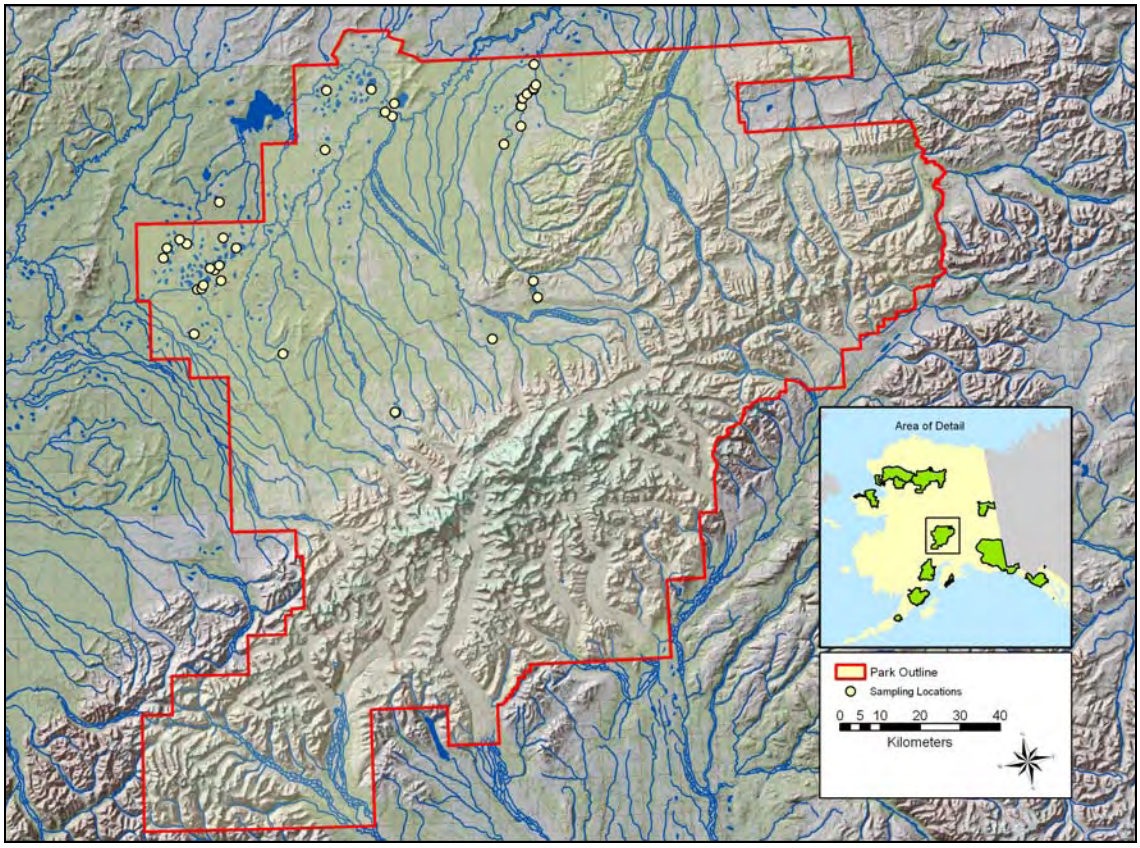

Figure 2.—Map of Denali National Park and Preserve showing the locations that were sampled during the 2003 freshwater fish inventory.

Wrangell-St. Elias

Wrangell-St. Elias National Park and Preserve is located 325 km (202 mi) east of Anchorage on the Alaska Canada border and encompasses 5.3 million hectares (13.2 million acres) (Figure 3). The environments within the park range from the glaciated mountainous peaks of the four (Alaska, Chugach, Wrangell, and St. Elias) large mountain ranges within the park, to the maritime coastal environments of southeast Alaska and the Pacific Ocean.

We divided Wrangell-St. Elias National Park/Preserve into six major watersheds; the Bremner, Chitina, Copper, Nabesna, White River drainages, and the coastal streams fan area in the southeast portion of the park. The Chitina, Copper, and Bremner River drainages all flow westerly into the Copper River which flows south into the Gulf of Alaska. The Nabesna and Chisana Rivers (which make up the Nabesna watershed) flow northerly and are the headwaters of the Tanana River which flows northwesterly into the Yukon and ultimately into the Bering Sea. The White River flows northeasterly into Canada and eventually into the

Yukon River. There are numerous coastal streams in the southeast portion of WRST that flow directly into Disenchantment and Yakutat Bays which are part of the Gulf of Alaska and the Pacific Ocean (Figure 4).

The inventory work conducted in WRST spanned a wide range of varying habitats including both glacial and non glacial rivers and streams, high and low gradient systems, and large to small lakes and ponds in a variety of elevations (Figure 3).

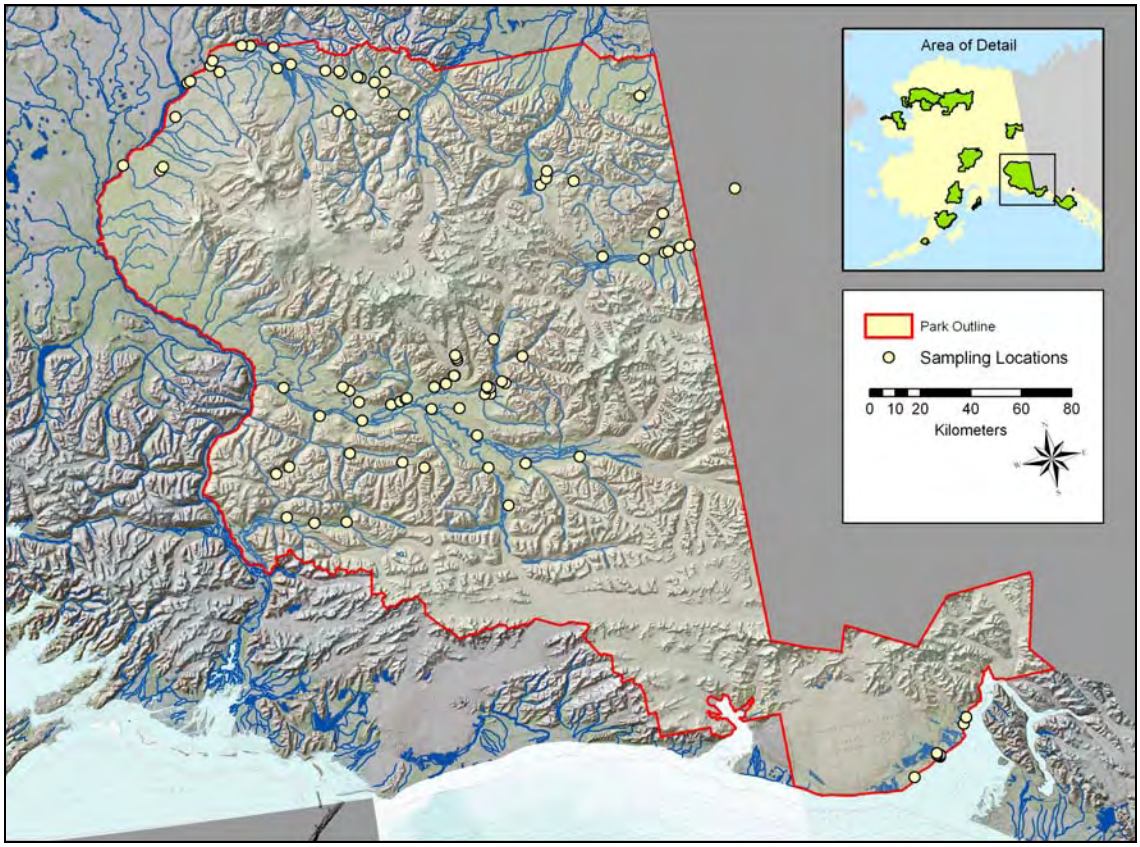

Figure 3.—Map of Wrangell-St. Elias National Park and Preserve showing the locations that were sampled during the 2001 – 2003 freshwater fish inventory.

Figure 4. Coastal stream within Wrangell-St. Elias National Park and Preserve.

Yukon-Charley Rivers National Preserve

Yukon-Charley Rivers National Preserve is located 550 km (342 mi) northeast of Anchorage in the interior of Alaska on the Alaska Canada Border and encompasses one million hectares (2.5 million acres). The climate within YUCH is typical of that of interior Alaska and more specifically the Yukon Lowlands with an average temperature of 5.6°C (42°F). January being the coldest month of the year has an average daily temperature of -25°C (-13°F), but with temperatures of -51°C (-60°F) on record. July having the warmest temperatures of the year has an average daily temperature of 15.6°C (60.1°F) but with temperatures of 38°C (100.4°F) having been recorded. Precipitation varies throughout the area but in general is less than 305 mm per year (12 in.) (Young et al. 1976).

The Yukon-Charley Rivers National Preserve is comprised of four primary watersheds (The Charley, Kandik, Nation, and Tatonduk Rivers), all of which flow into theYukon River as it passes through the Preserve (Figure 4). The

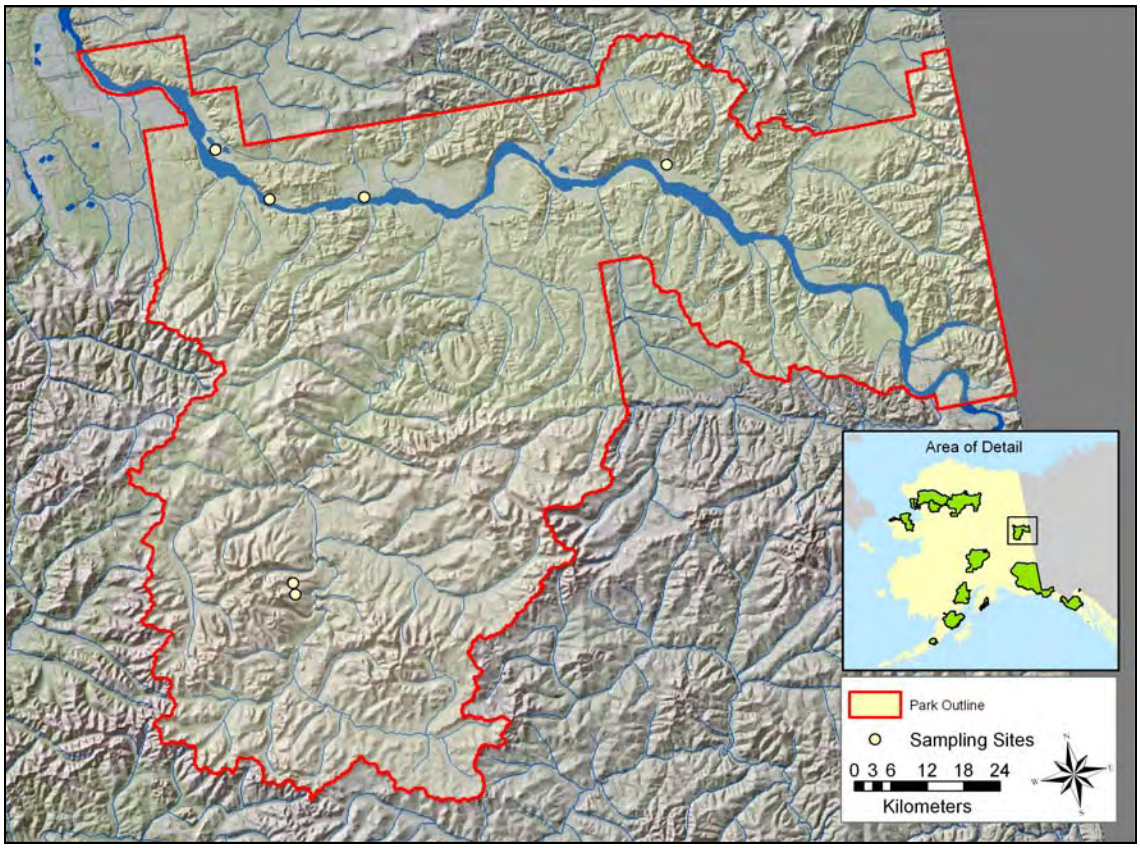

Figure 4.—Map of Yukon-Charley Rivers National Preserve showing the locations that were sampled during the 2002 freshwater fish inventory.

Kandik, Nation, and Tatonduk Rivers originate in the Ogilvie Mountains of the Northwest Territories, Canada and flow southwest into the Preserve and the Yukon River. The Charley River is contained entirely within the Preserve and flows northwest into the Yukon.

The Preserve protects 206 km (128 mi) of the 2900 km (1801 mi) Yukon River as it meanders its way over a distance of roughly 160 km (99.4 mi). During the summer months this section of the Yukon typically runs 150,000 to 200,000 cfs. This section of the Yukon River is glacially influenced and very turbid with a high velocity but little turbulence.

The Charley River is the largest of the four primary watersheds within the Preserve, excluding the Yukon, and it flows a distance of 171km (106.3 mi). The Charley River watershed is contained entirely within the preserve and drains roughly 440,300 ha (1,088,005 ac) (Daum 1994). The Charley River originates in the Yukon-Tanana Uplands and flows northeast into the Yukon River. Daum (1994) provides the following description of the Charley River:

> *The Charley River can be divided into three major reaches. The upper section, from the headwaters to Crescent Creek, is shallow with occasional braiding of the river channel. Large*

boulder fields exist in this reach. The middle reach, from Crescent Creek to Dewey Creek, becomes a single fairly uniform channel. Boulder fields become interspersed with deep pool areas. The lower reach, below Dewey Creek, meanders, with the main channel becoming deeper and wider. Pools are common throughout and the substrate decreases in size to mostly gravel and sand. The water in the river runs clear throughout its course to Bonanza Creek, where the mainstem water becomes heavily tannic stained from peat type soils (Daum 1994).

The Kandik River flows a distance of 132 km (82 mi) and drains approximately 310,800 ha (768,004 ac) (Stern 1978). The Kandik River originates in the Ogilvie Mountains in the Northwest Territories, Canada and flows southwest into the Yukon River. Daum (1994) provides the following description of the Kandik River:

The upper portion, above Johnson Gorge, consists mainly of cobble type substrate with occasional cliffs along the river. The river is a single channel with intermittent pools throughout. Johnson Gorge is unique, with boulders and large cobble substrate comprising the majority of substrate types. Cliffs on both sides of the river form the gorge, which runs approximately 13 km [*(8.1 mi)*]*. Below Johnson Gorge, gravel comprises the mahority of the substrate with pools common wthin the river channel and overhanging trees (sweepers) lying along its meanders. The river is divided into numerous side channels near the mouth. The Kandik River is clean and fed mainly by groundwater and runoff (Daum 1994).*

The Nation River is 80 km (49.7 mi) long and drains roughly 233,100 ha (576,001 ac) (Orth 1967). The Nation River originates in the Ogilvie Mountains in the Northwest Territories, Canada and flows southwest into the Preserve and the Yukon River. Daum (1994) provides the following description of the Nation River:

The river consists of a meandering single channel for the majority of its length. Logjams are common throughout and have altered the River's course, leaving large expanses of exposed gravel. Beaver dams and lodges are common along the mainstem and tributary streams. Pool areas are sca rce with the majority occurring below Hard Luck Creek. The mainstem substrate is mainly gravel and small cobble with areas of bedrock appearing between Waterfall and Hard Luck Creeks. The river runs clear until Waterfall Creek, where leaching from numerous bog areas causes tannic staining (Daum 1994).

The Tatonduk River flows 97 km (60.3 mi) and drains approximately 349,700 ha (864,128 ac) (Orth 1967). The Nation River originates in the Ogilvie Mountains in the Northwest Territories, Canada and flows southwest into the preserve and the Yukon River. Daum (1994) provides the following description of the Tatonduk River:

> *Above Pass Creek the mainstem consists mainly of a single channel with numerous rapids flowing between steep cliffs. Many deep pools occur within this area. Below Pass Creek the mainstem splits into numerous side channels with logjams commonplace. The predominant substrate types are gravel and small cobble. The water runs clear except for periods of localized precipitation, when the water quickly becomes turbid. Two perennial water supplies occur in the lower river (Daum 1994).*

Fish Sampling

The inventory was conducted between June of 2001 and September of 2003. Denali National Park/Preserve sampling took place in the summer of 2003, Wrangell-St. Elias, having the least documentation, was sampled during all three years, and YUCH sampling took place during the summer of 2002.

Sampling methods were modeled after those outlined in the Freshwater Fish Inventory study plan (Swanson 2000) and the sampling methods used in this inventory are described in detail below.

An initial attempt to randomly select sampling sites was made in the beginning of the inventory however after further discussion with Jim Tilmant, the National Park Services Fisheries Program Leader, random sampling was deemed not feasible for the purposes of this inventory and a targeted sampling approach was adopted.

Specific sampling sites within each region were chosen by examining the habitat requirements of expected yet undocumented species. These habitat requirements were then related to physical habitat features that were observable in the field or by using topographic maps. Targeted habitat for Alaska whitefish included small to large rivers and lakes. Arctic char were expected to be found in riverine habitats with deep runs or pools and also in lakes. Coastrange sculpins, longnose suckers, and slimy sculpins were expected to be in close association with cobble or gravel habitat in lakes and flowing waters. Eulachon were expected to be found in coastal streams and estuarine environments. Coho salmon were expected to be found primarily in flowing waters but also in lake and pond systems. Green sturgeon were expected to be found in estuarine or brackish water and in the lower reaches of large rivers. Inconnu were expected in large turbid rivers and in brackish estuarine lakes and delta waters. Lake chub and least cisco were expected to be ubiquitous, occurring in almost any

freshwater habitat within their range. Lake whitefish were expected to be found in lake and river systems. Longfin smelt and rainbow smelt were expected to be found in coastal streams and estuarine waters. Northern pike were expected to be found in vegetated clear water lakes and in the backwater pools or oxbows of streams and rivers. Adult Pacific lamprey were expected to be found in riverine habitats. Juvenile lamprey (ammocoetes) were expected to be found in silty or muddy substrates. Pond smelt were expected to be found in middle and surface water of lakes, ponds, and streams. Pygmy whitefish were expected to occur primarily in deep lake systems but also in cold swift streams. Threespine sticklebacks were expected to be found in shallow bays and in slow moving streams in close association with aquatic vegetation usually over mud or sand (e.g. Heard et al. 1969; McPhail and Lindsey 1970; Morrow 1980; Russell 1980; Mecklenburg et al. 2002).

After arrival at each sampling site, latitude, longitude, time, water depth, and a brief habitat assessment were recorded. Latitude and longitude were determined using either a PLGR®+96, Garmin® GPS III, or Trimble® Basic+ (all GPS measurements were recorded in North America 1927 Datum). A portable Cabela's® Fishin' Buddy 2201 depth sounder was used to determine water depth. Habitat appearance (e.g., description of water movement, fluvial characteristics, substrate composition, vegetation description, and general observations) was assessed in the immediate vicinity of the site or sampling gear.

A number of different gear types were used to document species presence in specific habitat types. Different gear types select for different size fish, different life histories, and can be more effectively used in specific habitat types. Efforts were made to match habitat type and gear selectivity with that of expected species. Angling was used in all habitats and targets larger fish. Baited set lines were used in benthic lake and littoral lake habitat types and select for larger fish. Dip nets were used in main-channel river and side-channel river and selected for different size fish depending on mesh size. Electrofishing was used in main-channel river and side-channel river habitats and selected for larger fish. Fyke nets were used in main channel river and side channel river habitat types and select for slower swimming fish moving downstream. Gill nets were used in littoral lake, limnetic lake, main channel river, and side channel river habitat types and select for different size fish depending on mesh size. Hoop traps were used in benthic lake, benthic river, and littoral lake habitat types and select for small to large fish. Minnow traps were used in littoral lake, main channel stream, side-channel stream, and pond habitat types and select for smaller fish. Beach seines were used in littoral lake habitat types and select for slower swimming fish. Minnow seines were used in littoral lake, side channel river, and pond habitat types and select for smaller slow swimming fish. Snorkeling observations were used in pond and stream habitat types and were not size or species selective. Nelson & Johnson (1992) and Murphy & Willis (1996) provide general descriptions, theoretical discussions, and caveats of the sampling techniques discussed above.

Hook-and-line sampling or angling was performed with both baited setlines and conventional sport fishing equipment. Fishing gear was deployed from boats or from shore and both artificial lures and bait were used. Herring, salmon eggs, Arctic cisco eggs, and tuna, were all common types of bait used.

Dip nets were typically used from a boat and are best described as medium sized landing nets. These nets were approximately 0.6 m (2.0 ft) in diameter and were constructed with either a circular or D shaped frame with nylon netting ranging in size from 5.1 cm (2.0 in) to 10.2 cm (4.0 in) (all mesh sizes represent diagonal or stretched measurements as opposed to square or bar measurements).

A Smith-Root® model 15-D backpack electrofisher was used. Standard procedures of operation were to start with a pulse width of 500 µs and to not exceed 5 milliseconds. Pulse rate was started at 30 Hz and carefully increased as needed in order to capture fish. The electrofisher was used in conjunction with two individuals wielding D shaped capture nets. Electrofishing was not conducted in YUCH because the Park unit was concerned that electrofishing would result in unacceptable impacts.

Fyke nets were fished in flowing waters less than 1.0 m (3.3 ft) deep in order to capture fish moving downstream. The main body of the net consisted of a 1.2 m (3.8 ft) by 0.8 m (2.6 ft) opening tapering down to a round cod-end 0.8 m (2.6 ft) in diameter with four interwoven steel rings. The traps overall length was 4.3 m (14.1 ft) and it was covered with 3.8 cm (1.5 in) nylon mesh netting. The trap was also fished with two 6.1 m (20.0 ft) leads or wings that were constructed of the same 3.8 cm (1.5 in) mesh netting in order to increase the area fished. Fyke nets were baited with herring, salmon eggs, Arctic cisco eggs, or tuna.

Gill nets were fished across a range of habitat types and were fished at surface, subsurface, and benthic locations (Figure 5). There were two basic types of gill nets used either uniform mesh or experimental variable mesh. There were four uniform mesh gill nets used and they are as follows; three of the nets measured 15.2 m (50.0 ft) in length and were1.2 m (4.0 ft) deep, these nets had 2.5, 3.8, and 6.4 cm (1.0, 1.5, 2.5 in) mesh sizes respectively, the fourth net was 7.6 m (25.0 ft) long and 1.2 m (4.0 ft) deep with 10.2 cm (4.0 in) mesh. The experimental variable mesh gill net was 45.7 m (150.0 ft) long and 1.8 m (4.0 ft) deep with three 15.2 m (50.0 ft) panels consisting of 2.5, 7.6, and 12.7 cm (1.0, 3.0, 5.0 in) mesh sizes. Gill nets were marked with buoys and anchored with 3.0 to 5.0 kg (6.6 to 11.0 lb) sand bags. Float tubes and a 3 m (9.8 ft) zodiac® raft powered by a 5 hp outboard motor were used to deploy gill nets, traps, and seines.

Figure 5. Sampling fish using a gill net.

Hand nets were typically used to transfer fish between holding tanks, but also for catching smaller slow moving fish. Hand nets ranged in size from small nets approximately 7.6 cm (3.0 in) by 7.6 cm (3.0 in) in size to larger 12.7 cm (5.0 in) by 12.7 cm (5.0 in) size nets. These nets had very fine mesh netting.

Hoop traps were fished in a variety of different habitats and depths but mainly in benthic locations (Figure 6). The hoop traps were 3.0 m (9.8 ft) long and 0.6 m (2.0 ft) in diameter and constructed with six fiberglass hoops with 5.1 cm (2.0 in) cotton mesh netting covering the traps (hoop traps are collapsible and resemble an accordion). Two traps were also fitted with 4.6 m (15.0 ft) leads or wings constructed of the same 5.1 cm (2.0 in) cotton mesh netting. Traps were baited with either herring, salmon eggs, salmon flesh, Arctic cisco eggs, or tuna. In waters 2.0 m (6.6 ft) and deeper, traps were marked with a buoy and anchored with a 3.0 to 5.0 kg (6.6 to 11.0 lb) sand bag otherwise they were tied to shore.

Figure 6. Burbot captured using a hoop trap.

Minnow traps were baited with herring, salmon eggs, Arctic cisco eggs, or tuna and were set by boat or from shore. In waters 2.0 m (6.6 ft) and deeper, traps were marked with a buoy and anchored with a 3.0 to 5.0 kg (6.6 to 11.0 lb) sand bag otherwise they were tied to shore.

Beach seines were deployed in nearshore waters (less than 3.0 m [9.9 ft] deep) where large snags or rocks were not apparent. The beach seine was 15.2 m (50.0 ft) long and 1.2 m (4 ft) deep and consisted of one 0.95 cm (0.38 in) uniform mesh pane.

Snorkeling observations were conducted in pond and stream habitat types and involved individuals wearing a drysuit, mask, fins, snorkel, and visually observing fish while underwater.

The total number of fish collected was calculated for each gear type and is displayed by watershed (Table 5).

Processing fish samples involved identifying, counting, measuring, weighing and then releasing or retaining individual fish or fish parts. Fish were identified to species level using dichotomous keys (McPhail and Lindsey 1970; Morrow 1980; Pollard et al. 1997; Mecklenburg et al. 2001). Captured fish were counted and a sub sample was measured for length (fork length [FL] or total length [TL] depending on species) and weight which was recorded using 0.5, 1.5, 2.5, 5, 10 and 20 kg (1.1, 3.3, 5.5, 11.0, 22.0, 44.0 lb) spring scales or a portable digital

scale. Following measurement, most fish were released; however, some fish or fish parts were retained as voucher samples. Whole-fish samples were collected. Whole-fish that were retained as voucher specimens were killed by exposure to a lethal dose of a grain alchohol and clove oil mixture and then preserved in a 10.0% formalin solution and later moved into 95% ethanol. Voucher specimens were sent to the University of Alaska Museum Fish Collection for curation and verification of species identity.

The Alaska Natural Heritage Program conducted a comprehensive literature review for the CAKN of all previously conducted fish research occurring in DENA, WRST, and YUCH. AKNHP examined all pertinent literature and entered fish species location and catch information from each study into a fisheries database designed by the Alaska Department of Fish and Game, Habitat Division. Additionally, AKNHP entered citations for each study into NPS_FishSurvey, a separate literature citation Procite database. AKNHP also created an ArcView GIS data layer describing the locations of each fisheries study.

Analysis

Data was analyzed using geographic information systems (GIS), a Microsoft® Access database, and statistical approaches. GIS was used to illustrate sites in which data was collected and to produce maps of the general study region. All of the data collected was entered into a Microsoft® Access database. Statistical approaches were used to describe morphological characteristics of the fish captured such as the mean and standard deviation of total length (TL), fork length (FL), and weight.

RESULTS

Ten out of twenty one expected yet undocumented species were documented in the CAKN freshwater fish inventory between 2001 and 2003 (Table 1, 2, & 3). Three species were documented in DENA, inconnu, longnose sucker, and northern pike (Table 1). Five species were documented in WRST, coastrange sculpin, eulachon, pacific lamprey, slimy sculpin, lake chub, and threespine stickleback (Table 2). One species was documented in YUCH, coho salmon (Table 3). There were also four species detected that were not on the AKNHP expected yet undocumented lists for the CAKN (Table 1, 2, & 4). Three of these species were detected in DENA and included, Alaska blackfish, Arctic lamprey, and humpback whitefish (Table 1 & 4). One of these species was detected in WRST, starry flounder (Table 2 & 4).

Table 1.—Species list for Denali National Park and Preserve.

Species	2000 Status	2004 Status	Doccumentation	Citation
Alaska blackfish *Dallia pectoralis*	Not Expected	Present	Inventory	9
Arctic Grayling *Thymallus arcticus*	Present	Present	Inventory	9, 13
Arctic Lamprey *Lethenteron camtschaticum*	Not Expected	Present	Vouchered	9
Burbot *Lota lota*	Present	Present	Vouchered	8, 9
Chinook/King salmon *Oncorhynchus tshawytscha*	Present	Present	Inventory	13
Chum/Dog salmon *Oncorhynchus keta*	Present	Present	Inventory	1, 4
Coho/Silver Salmon *Oncorhynchus kisutch*	Present	Present	Inventory	1, 4
Dolly Varden *Salvelinus malma*	Present	Present	Lit	13
Humpback Whitefish *Coregonus pidschian*	Not Expected	Present	Vouchered	9
Inconnu *Stenodus leucichthys*	E	Present	Lit	3, 12
Lake Trout *Salvelinus namaycush*	Present	Present	Vouchered	9, 13
Longnose Sucker *Catostomus catostomus*	E	Present	Vouchered	9, 15
Northern Pike *Esox lucius*	E	Present	Vouchered	9, 12
Round Whitefish *Prosopium cylindraceum*	Present	Present	Inventory	9, 12
Slimy Sculpin *Cottus cognatus*	Present	Present	Inventory	9, 12, 13

E = Expected. Documentation refers to how the species was documented. Inventory (this species was captured by the inventory) Lit (this species was verified in the literature) Vouchered (this species was captured by the inventory and a voucher specimen was retained. Citation (numbers reference the source of the documentation and can be found in the Literature Cited section).

Table 2.—Species list for Wrangell-St. Elias National Park and Preserve.

Species	2000 Status	2004 Status	Documentation	Citation
Alaska Whitefish *Coregonus nelsoni*	E	E	Lit	15, 16
Arctic Char *Salvelinus alpinus*	E	Unknown	Lit	14
Arctic Grayling *Thymallus Arcticus*	Present	Present	Vouchered	2, 9, 10, 17
Burbot *Lota lota*	Present	Present	Vouchered	2, 9, 10, 17
Chinook/King Salmon *Oncorhynchus tshawytscha*	Present	Present	Vouchered	2, 9, 10, 17
Chum/Dog salmon *Oncorhynchus keta*	Present	Present	Lit	2, 10, 17
Coastrange Sculpin *Cottus aleuticus*	E	Present	Vouchered	7, 10
Coho/Silver Salmon *Oncorhynchus kisutch*	Present	Present	Vouchered	2, 9, 10, 17
Cutthroat Trout *Oncorhynchus clarki*	Present	Present	Lit	2, 10, 17
Dolly Varden *Salvelinus malma*	Present	Present	Vouchered	2, 9, 10, 17
Eulachon *Thaleichthys pacificus*	E	Present	Vouchered	2, 9, 10
Green Sturgeon *Acipenser medirostris*	E	E	Lit	2, 10
Humpback Whitefish *Coregonus pidschian*	Present	Present	Lit	2, 10, 17
Lake Chub *Couesius plumbeus*	E	Present	Vouchered	14
Lake Trout *Salvelinus namaycush*	Present	Present	Vouchered	2, 10, 17
Lake Whitefish *Coregonus clupeaformis*	E	E	Lit	14
Least Cisco *Coregonus sardinella*	E	Not Expected	Lit	14
Longfin Smelt *Spirinchus thaleichthys*	E	E	Lit	7
Longnose Sucker *Catostomus catostomus*	Present	Present	Inventory	2, 9, 10, 17
Northern Pike *Esox lucius*	E	E	Lit	7
Pacific Lamprey *Lampetra tridentata*	E	Present	Vouchered	2, 9, 10
Pink Salmon *Oncorhynchus gorbuscha*	Present	Present	Lit	2, 10, 17
Pond Smelt *Hypomesus olidus*	E	E	Lit	2, 10
Pygmy Whitefish *Prosopium coulteri*	E	E	Lit	2, 5, 10
Rainbow Smelt *Osmarus mordax*	E	E	Lit	15, 15
Rainbow Trout *Oncorhynchus mykiss*	Present	Present	Inventory	2, 9, 10, 17
Round Whitefish *Prosopium cylindraceum*	Present	Present	Vouchered	2, 9, 10, 17
Slimy Sculpin *Cottus cognatus*	E	Present	Vouchered	2, 9, 10
Sockeye/Red Salmon *Oncorhynchus nerka*	Present	Present	Vouchered	2, 9, 10, 17
Starry Flounder *Platichthys stellatus*	Not expected	Present	Vouchered	9, 11
Threespine Stickleback *Gasterosteus aculeatus*	E	Present	Vouchered	2, 9, 17

E = Expected. Documentation refers to how the species was documented. Inventory (this species was captured by the inventory) Lit (this species was verified in the literature) Vouchered (this species was captured by the inventory and a voucher specimen was retained. Citation (numbers reference the source of the documentation and can be found in the Literature Cited section).

Table 3.—Species List for Yukon-Charley Rivers National Preserve.

Species	2000 Status	2004 Status	Documentation	Citation
Arctic Grayling *Thymallus arcticus*	Present	Present	Lit	6
Arctic Lamprey *Lethenteron camtschaticum*	Present	Present	Lit	6
Broad Whitefish *Coregonus nasus*	Present	Present	Lit	6
Burbot *Lota lota*	Present	Present	Lit	6
Chinook/King Salmon *Oncorhynchus tshawytscha*	Present	Present	Lit	6
Chum/Dog salmon *Oncorhynchus keta*	Present	Present	Lit	6
Coho/Silver Salmon *Oncorhynchus kisutch*	E	Present	Lit	1, 10, 15
Dolly Varden *Salvelinus malma*	Present	Present	Lit	6
Humpback Whitefish *Coregonus pidschian*	Present	Present	Lit	6
Inconnu *Stenodus leucichthys*	Present	Present	Lit	6
Lake Chub *Couesius plumbeus*	Present	Present	Vouchered	6, 9
Least Cisco *Coregonus sardinella*	Present	Present	Lit	6
Longnose Sucker *Catostomus catostomus*	Present	Present	Lit	6
Northern Pike *Esox lucius*	Present	Present	Lit, Inv	6, 9
Pygmy Whitefish *Prosopium coulteri*	E	Not Expected	Lit	10, 11
Round Whitefish *Prosopium cylindraceum*	Present	Present	Lit	6
Slimy Sculpin *Cottus cognatus*	Present	Present	Lit	6
Trout-Perch *Percopsis omiscomaycus*	Present	Present	Lit	6

E = Expected. Documentation refers to how the species was documented. Inventory (this species was captured by the inventory) Lit (this species was verified in the literature) Vouchered (this species was captured by the inventory and a voucher specimen was retained. Citation (numbers reference the source of the documentation and can be found in the Literature Cited section).

Table 4.—Number of fish captured or observed by species broken down into watersheds for the Central Alaska Network freshwater fish inventory.

	Denali		Wrangell St. Elias						Yukon-Charley		
Species	Kantishna	Kuskokwim	Bremner	Chitina	Coastal	Copper	Nabesna	White	Charley	Yukon	Totals
Alaska Blackfish *Dallia pectoralis*	161	1	0	0	0	0	0	0	0	0	162
Arctic Grayling *Thymallus arcticus*	23	5	0	17	0	63	43	70	0	0	221
Arctic Lamprey *Lampetra japonica*	4	0	0	0	0	0	0	0	0	0	4
Burbot *Lota lota*	34	0	0	0	0	41	3	21	0	0	99
Chinook/King Salmon *Oncorhynchus tshawytscha*	18	0	0	80	121	14	0	0	0	0	233
Chum/Dog salmon *Oncorhynchus keta*	3	0	0	0	0	0	0	0	0	0	3
Coastrange Sculpin *Cottus aleuticus*	0	0	0	0	2	0	0	0	0	0	2
Coho/Silver Salmon *Oncorhynchus kisutch*	62	0	0	118	84	0	0	0	0	0	264
Dolly Varden *Salvelinus malma*	0	0	207	483	97	4	0	0	0	0	791
Eulachon *Thaleichthys pacificus*	0	0	0	0	27	0	0	0	0	0	27
Humpback Whitefish *Coregonus pidschian*	6	0	0	0	0	0	0	0	0	0	6
Lake Chub *Couesius plumbeus*	0	0	0	0	0	0	0	0	0	3	3
Lake Trout *Salvelinus namaycush*	21	0	0	5	0	17	0	20	0	0	63
Longnose Sucker *Catostomus catostomus*	6	0	0	11	0	8	0	12	0	0	37
Northern Pike *Esox lucius*	28	18	0	0	0	0	0	0	0	1	47
Pacific Lamprey *Lampetra tridentata*	0	0	0	0	0	3	0	0	0	0	3
Rainbow Trout *Oncorhynchus mykiss*	0	0	0	79	0	0	0	0	0	0	79
Round Whitefish *Prosopium cylindraceum*	4	0	1	23	0	6	9	1	0	0	44
Slimy Sculpin *Cottus cognatus*	113	5	0	46	4	52	45	94	0	0	359
Sockeye/Red Salmon *Oncorhynchus nerka*	0	0	1	3	0	1	0	0	0	0	5
Starry Flounder *Platichthys stellatus*	0	0	0	0	2	0	0	0	0	0	2
Threespine Stickleback *Gasterosteus aculeatus*	0	0	0	0	134	0	0	0	0	0	134

Table 5.—Number of fish captured by gear type broken down into watersheds for the Central Alaska Network freshwater fish inventory.

	Denali		Wrangell St. Elias						Yukon-Charley		
Gear Type	Kantishna	Kuskokwim	Bremner	Chitina	Coastal	Copper	Nabesna	White	Charley	Yukon	Totals
Angling	10	1	1	70	0	67	12	24	0	-	185
Baited Setline	1	-	-	-	-	-	0	-	-	-	1
Dip Net	10	13	-	1	2	-	1	-	-	-	27
Electrofishing	*39*	-	-	405	54	46	55	131	-	-	730
Fyke Net	7	-	-	-	-	-	-	-	-	-	7
Gill Net	73	5	1	13	40	8	11	3	0	1	155
Hand Net	-	-	-	-	-	1	-	1	-	-	2
Hoop Trap	55	4	-	17	-	42	9	29	0	0	156
Minnow Trap	237	1	207	356	263	45	16	27	0	3	1155
Seine	20	10	-	-	77	-	-	-	-	-	107
Snorkel Observation	-	-	-	-	52	-	-	-	-	-	52
Visual Observation	32	10	-	2	1	2	-	3	-	0	50

Denali National Park/Preserve

There were three expected yet undocumented species documented within DENA. These species included inconnu, longnose sucker, and northern pike (Table 1). There were also three species that were not on the AKNHP expected list that were captured within the park, these included Alaska blackfish, Arctic lamprey, and humpback whitefish (Table 1). Eight previously documented species were also captured within DENA, Arctic grayling, burbot, chinook salmon, chum salmon, coho salmon, lake trout, round whitefish, and slimy sculpin (Table 1 & 4). The results below summarize the data collected for the species captured or observed by this inventory within DENA.

Alaska Blackfish—One hundred and sixty two Alaska blackfish were captured in DENA (Table 4). Individuals ranged in size from 37 to 124 mm in length (mean TL= 83.3 mm, SD= 16.6 mm, n= 162) and in weight from 1 to 22 g (mean= 6.9 g, SD= 4.8 g, n= 157). Alaska blackfish were primarily captured in minnow traps but were also captured electrofishing and in gill nets. Multiple age classes were present based on the range and distribution of length frequencies (Figure 7). Length to weight relationships were also plotted for this species (Figure 8). Alaska blackfish were mainly captured in the Kantishna River drainage, but one individual was captured in the Kuskokwim River drainage.

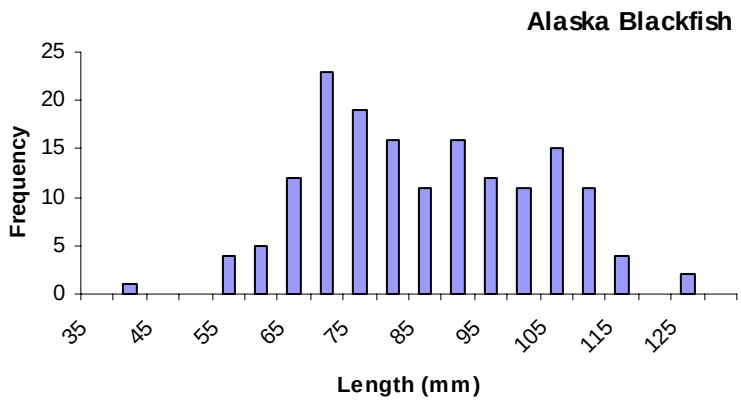

Figure 7.—Length frequencies of Alaska blackfish captured in Denali National Park and Preserve. Individuals are grouped in 5 mm bins.

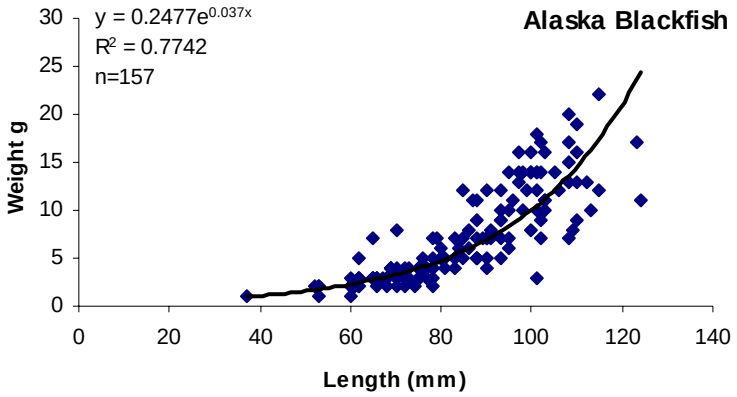

Figure 8.—Length to weight relationship for Alaska blackfish captured in Denali National Park and Preserve

Arctic Grayling—Twenty eight Arctic grayling were captured in DENA (Table 4). Individuals ranged in size from 77 to 385 mm in length (mean FL= 206.0 mm, SD= 98.9 mm, n=27) and in weight from 4 to 602 g (mean= 156.6 g, SD= 198.0 g, n= 23). Arctic grayling were primarily captured angling and in gill nets, but were also captured in fyke nets, dip nets, hoop traps, seines, and electrofishing. Multiple age classes appear to be present based on the range and distribution of length frequencies (Figure 9). Length to weight relationships were also plotted for this species (Figure 10). Arctic grayling were captured in both the Kantishna and Kuskokwim River drainages mainly in lotic habitats although two individuals were captured in lentic habitats.

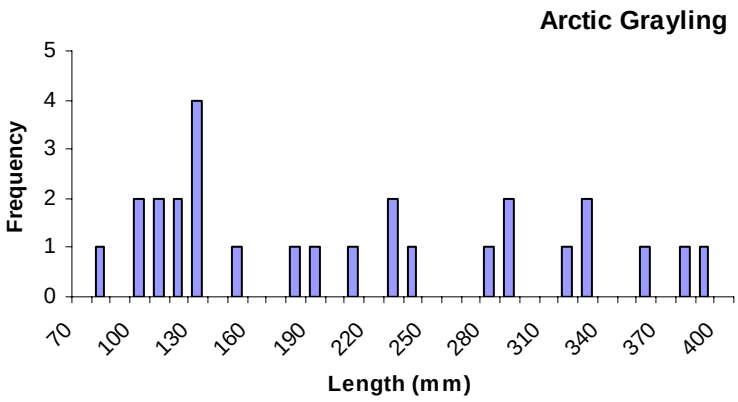

Figure 9.—Length frequencies of Arctic grayling captured in Denali National Park and Preserve. Individuals are grouped in 10 mm bins.

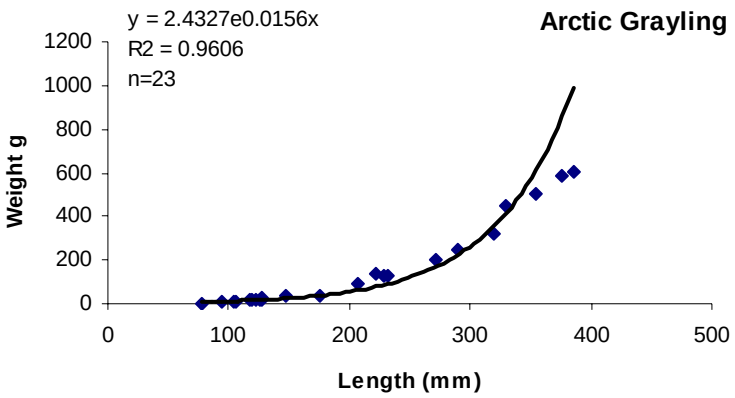

Figure 10.—Length to weight relationship for Arctic grayling captured in Denali National Park and Preserve.

Arctic Lamprey—Four Arctic lamprey were captured in DENA (Table 4). Individuals ranged in size from 140 to 367 mm in length (mean TL= 204.5 mm, SD= 109.1 mm, n= 4) and in weight from 3 to 85 g (mean= 24.8 g, SD= 40.2 g, n= 4). Arctic lamprey were primarily captured by seine, but one individual was captured in a fyke net. Multiple age classes appear to be present based on the range in length frequencies of this small sample. Arctic lamprey were only captured in the Kantishna River drainage and only in lotic habitats.

Burbot—Thirty four burbot were captured in DENA (Table 4). Individuals ranged in size from 328 to 650 mm (mean TL= 501.0 mm, SD= 80.3 mm, n= 34) and in weight from 182 to 1600 g (mean= 717.4 g, SD= 314.6 g, n=34). Burbot were primarily captured in hoop traps but one individual was also captured with a baited setline. Multiple age classes appear to be present based on the range and distribution of length frequencies (Figure 11). Length to weight relationships were also plotted for this species (Figure 12). Burbot were only captured in the Kantishna River drainage.

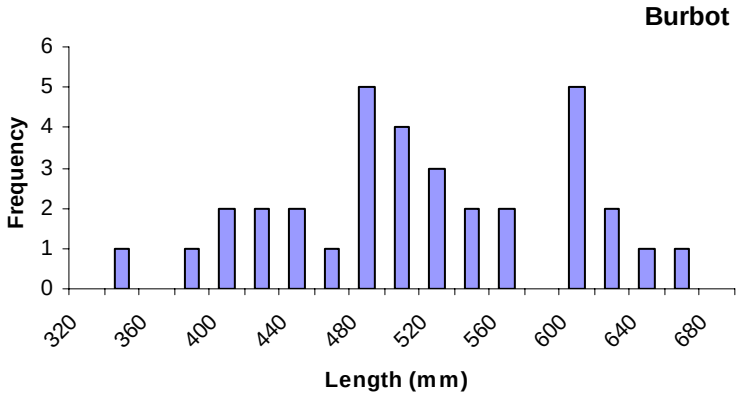

Figure 11.—Length frequencies of burbot captured in Denali National Park and Preserve. Individuals are grouped in 20 mm bins.

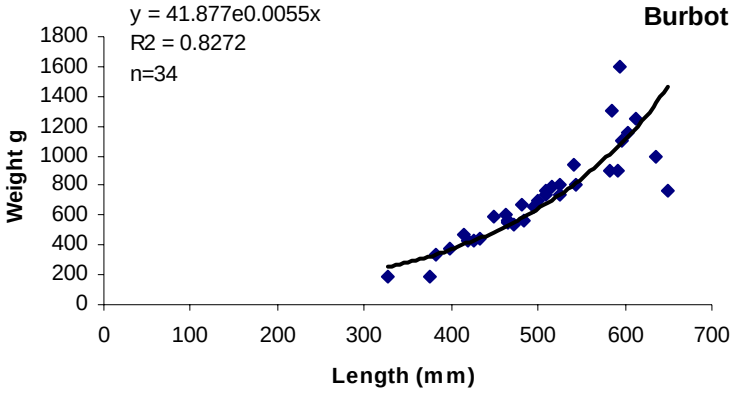

Figure 12.—Length to weight relationship for burbot captured in Denali National Park and Preserve.

Chinook Salmon—Eighteen chinook salmon were captured in DENA (Table 4). Individuals ranged in size from 36 to 104 mm in length (mean FL= 53.2 mm, SD= 15.6 mm, n= 18) and in weight from 1 to 12 g (mean= 2.3 g, SD= 2.5 g, n= 18). Chinook salmon were primarily captured electrofishing and in minnow traps, but one individual was captured in a fyke net. Two age classes were present based on the range and distribution of length frequencies but all individuals appeared to be juveniles (Figure 13). Length to weight relationships were also plotted for this species (Figure 14). Chinook salmon were only captured in the Kantishna River drainage.

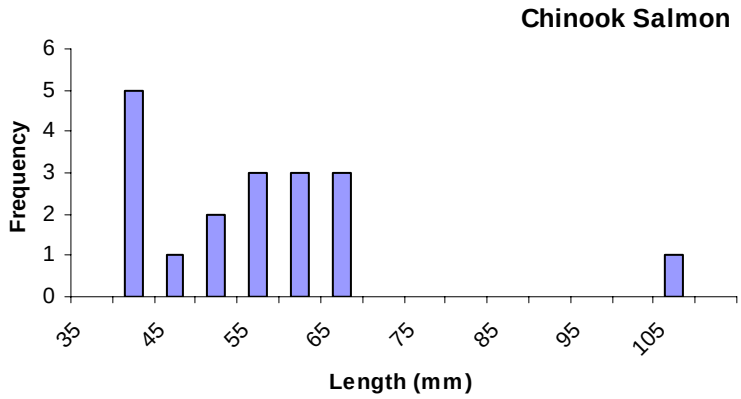

Figure 13.—Length frequencies of chinook salmon captured in Denali National Park and Preserve. Individuals are grouped in 5 mm bins.

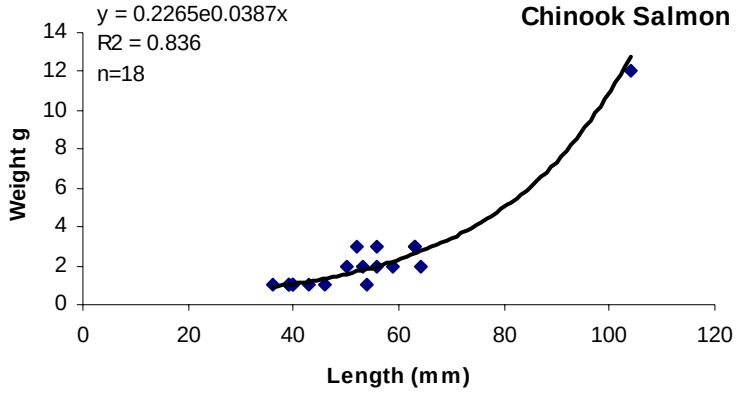

Figure 14.—Length to weight relationship for chinook salmon captured in Denali National Park and Preserve.

Chum Salmon—Three chum salmon were captured in DENA (Table 4). Individuals ranged in size from 25 to 40 mm in length (mean FL= 31.7 mm, SD= 7.6 mm, n=3) and all individuals weighed 1 g. Chum salmon were captured electrofishing and in a dip net. Chum salmon were only captured in the Kantishna River drainage and were only found in lotic habitats.

Coho Salmon—Sixty two coho salmon were captured in DENA (Table 4). Individuals ranged in size from 32 to 65 mm in length (mean FL= 49.1 mm, SD= 7.2 mm, n= 62) and in weight from 1 to 4 g (mean= 1.5 g, SD= 0.8 g, n= 62). Coho salmon were primarily captured in minnow traps and electrofishing but were also captured in a dip net. All of the individuals captured appeared to be juveniles based on the range in length frequencies and the life history of this species (Figure 15). Length to weight relationships were also plotted for this species (Figure 16). Coho salmon were only captured in the Kantishna River drainage and were only captured in lotic habitats.

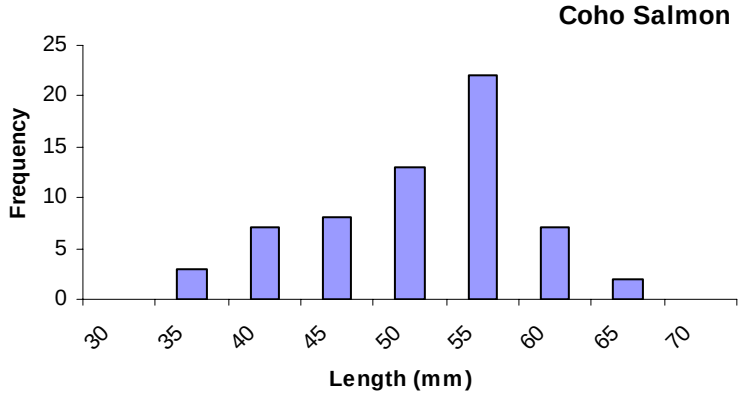

Figure 15.—Length frequencies of coho salmon captured in Denali National Park and Preserve. Individuals are grouped in 5 mm bins.

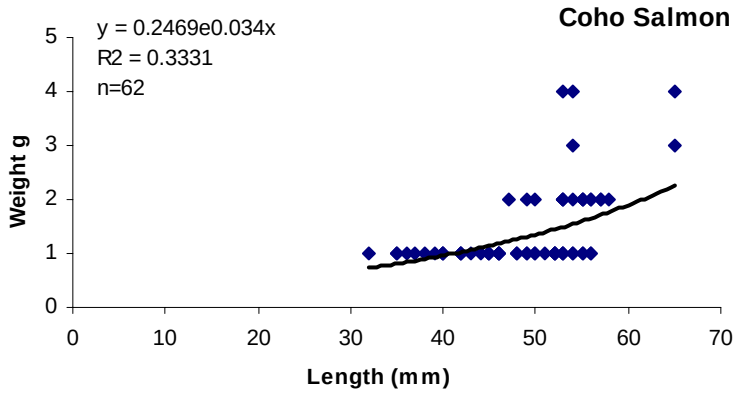

Figure 16.—Length to weight relationship for coho salmon captured in Denali National Park and Preserve.

Humpback Whitefish—Six humpback whitefish were captured in DENA (Table 4). Individuals ranged in size from 387 to 560 mm in length (mean FL= 433.7 mm, SD= 65.4 mm, n= 6) and in weight from 640 to 2200 g (mean= 1082.2 g, SD= 570.8 g, n= 6). Humpback whitefish were primarily captured in gill nets but one individual was also captured in a fyke net. There are no clear age class distinctions from the samples collected (Figure 17). Length to weight relationships were also plotted for this species (Figure 18). Humpback whitefish were only captured in the Kantishna River drainage and were only captured in lotic habitats.

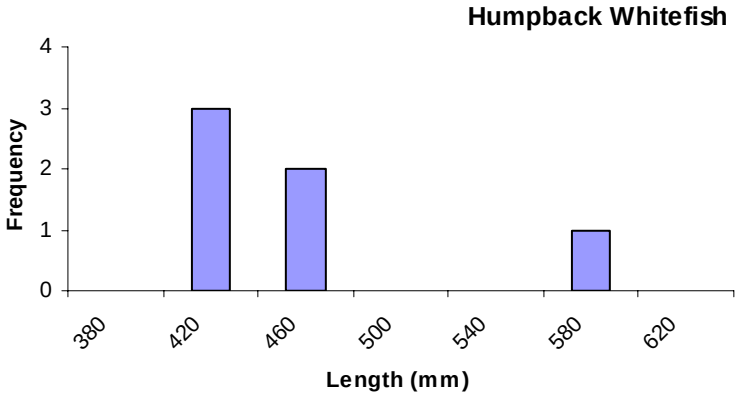

Figure 17.—Length frequencies of humpback whitefish captured in Denali National Park and Preserve. Individuals are grouped in 40 mm bins.

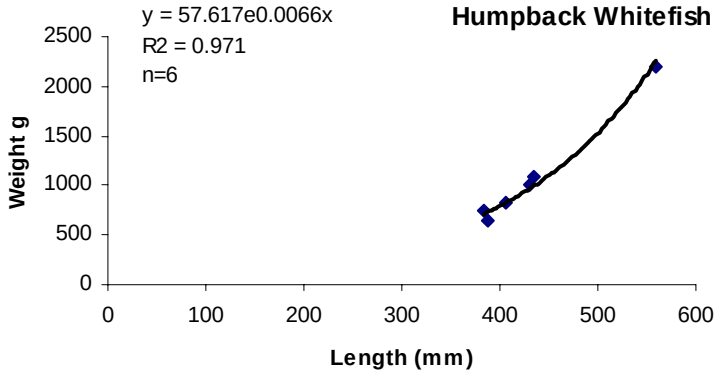

Figure 18.—Length to weight relationship for humpback whitefish captured in Denali National Park and Preserve.

Lake Trout—Twenty one lake trout were captured in DENA (Table 4). Individuals ranged in size from 258 to 461 mm in length (mean FL= 402.5 mm, SD= 64.8 mm, n= 20) and in weight from 145 to 1013 g (mean= 677.6 g, SD= 262.8 g, n= 20). Lake trout were only captured in gill nets and hoop traps. Multiple age classes appear to be present based on the range and distribution of length frequencies (Figure 19). Length to weight relationships were also plotted for this species (Figure 20). Lake trout were only captured in the Kantishna River Drainage in a large lentic habitat (Wonder Lake).

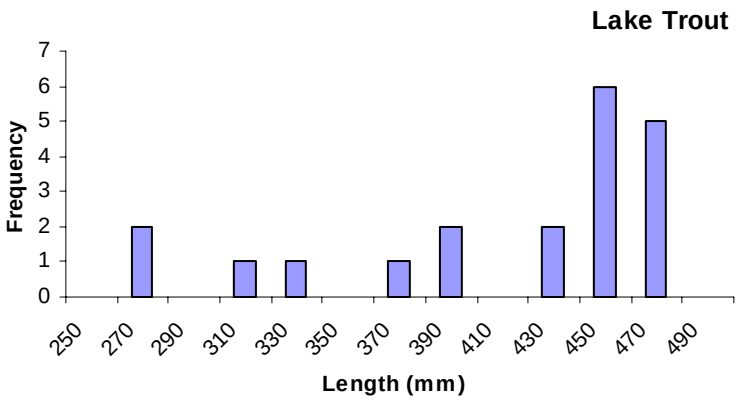

Figure 19.—Length frequencies of lake trout captured in Denali National Park and Preserve. Individuals are grouped in 20 mm bins.

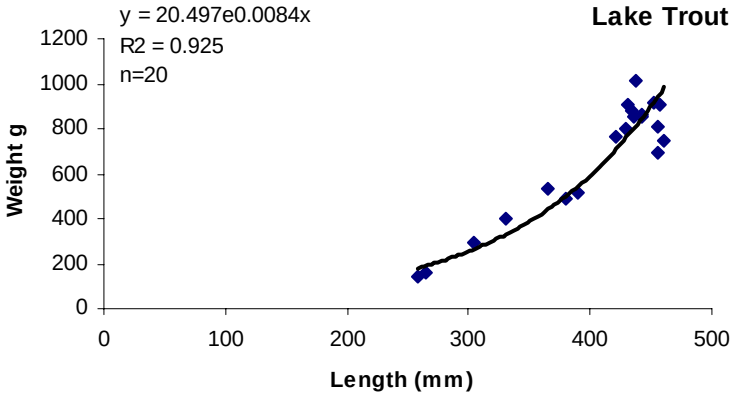

Figure 20.—Length to weight relationship for lake trout captured in Denali National Park and Preserve.

Longnose Sucker—Six longnose suckers were captured in DENA (Table 4). Individuals ranged in size from 420 to 460 mm in length (mean FL= 447.0 mm, SD= 18.5 mm, n= 4) and in weight from 800 to 1080 g (mean= 955.0 g, SD= 132.8 g, n= 4). Longnose suckers were primarily captured in gill nets but were also visually observed from the ground. There are no clear age class distinctions from the samples collected (Figure 21). Length to weight relationships were also plotted for this species (Figure 22). Longnose suckers were only captured in the Kantishna River drainage and were only captured in lotic habitats.

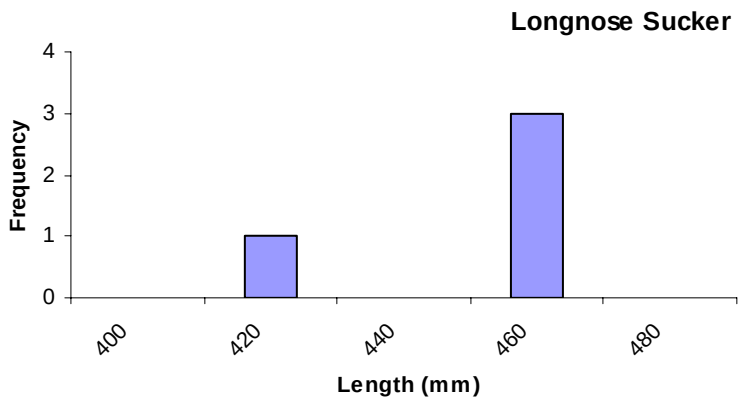

Figure 21.—Length frequencies of longnose suckers captured in Denali National Park and Preserve. Individuals are grouped in 20 mm bins.

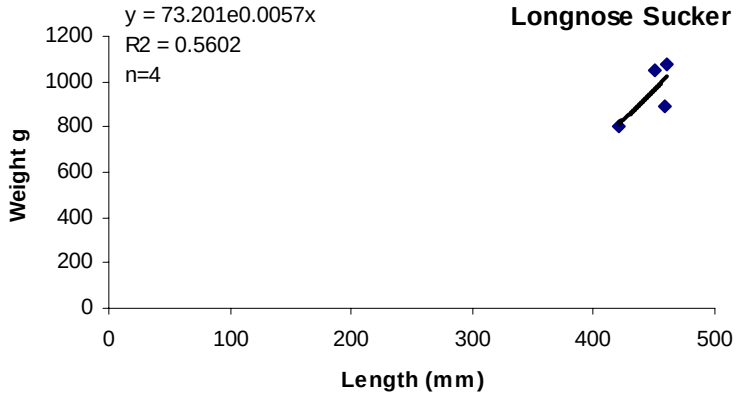

Figure 22.—Length to weight relationship for longnose suckers captured in Denali National Park and Preserve.

Northern Pike—Forty six northern pike were captured in DENA (Table 4). Individuals ranged in size from 215 to 640 mm in length (mean FL= 453.7 mm, SD= 112.9 mm, n= 34) and in weight from 90 to 2000 g (mean= 753.8 g, SD= 470.9 g, n= 33). Northern pike were primarily captured in hoop traps and gill nets but they were also captured angling and visually observed from the ground. Multiple age classes were present based on the range, distribution, and modality of length frequencies (Figure 23). Length to weight relationships were also plotted for this species (Figure 24). Northern pike were captured in both the Kantishna and Kuskokwim River drainages and were primarily captured in lentic habitats although four individuals were either observed or captured in lotic habitats.

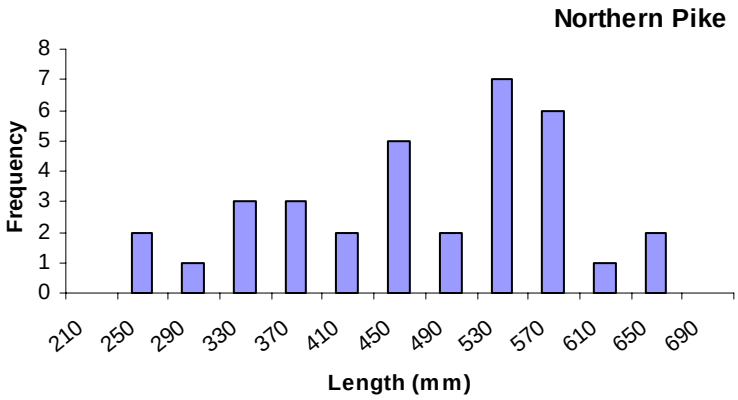

Figure 23.—Length frequencies of northern pike captured in Denali National Park and Preserve. Individuals are grouped in 40 mm bins.

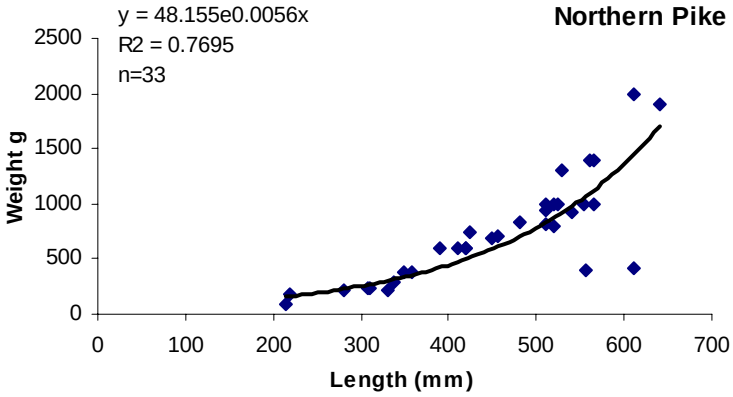

Figure 24.—Length to weight relationship for northern pike captured in Denali National Park and Preserve.

Round Whitefish—Four round whitefish were captured in DENA (Table 4). Individuals ranged in size from 237 to 322 mm in length (mean FL= 268.0 mm, SD= 39.5 mm, n= 4) and in weight from 107 to 317 g (mean= 183.5 g, SD= 94.1 g, n= 4). Round whitefish were only captured in hoop traps and gill nets. There are no clear age class distinctions from the samples collected (Figure 25). Length to weight relationships were also plotted for this species (Figure 26).Round whitefish were captured exclusively in the Kantishna River drainage in both lentic and lotic habitats.

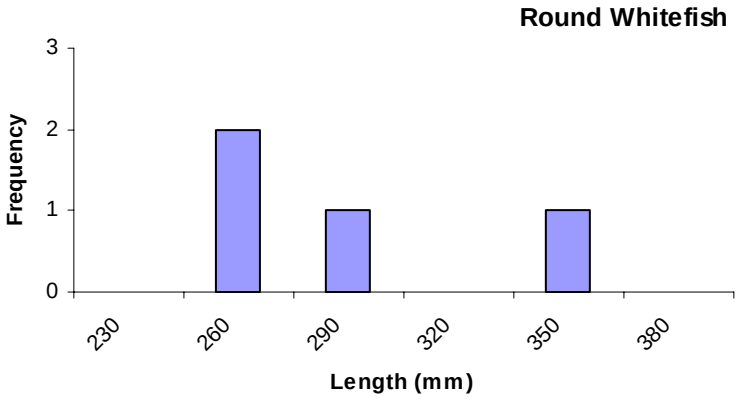

Figure 25.—Length frequencies of round whitefish captured in Denali National Park and Preserve. Individuals are grouped in 30 mm bins.

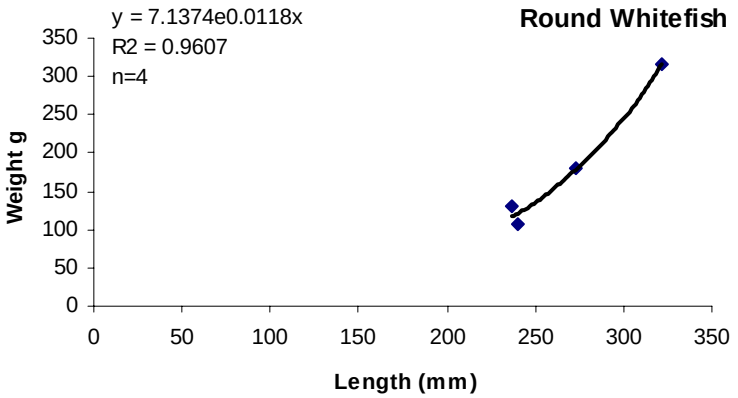

Figure 26.—Length to weight relationship for round whitefish captured in Denali National Park and Preserve.

Slimy Sculpin—One hundred and eighteen slimy sculpin were captured in DENA (Table 4). Individuals ranged in size from 20 to 75 mm in length (mean TL= 49.0 mm, SD= 14.8 mm, n= 91) and in weight from 1 to 6 g (mean= 1.9 g, SD= 1.3 g, n= 83). Slimy sculpins were primarily captured in minnow traps, seines, and electrofishing but were also captured in dip nets and visually observed from the ground. Multiple age classes are likely present given the range and distribution of length frequencies (Figure 27). Length to weight relationships were also plotted for this species (Figure 28) Slimy sculpins were captured in both the Kantishna and Kuskokwim River drainages in lentic and lotic habitats.

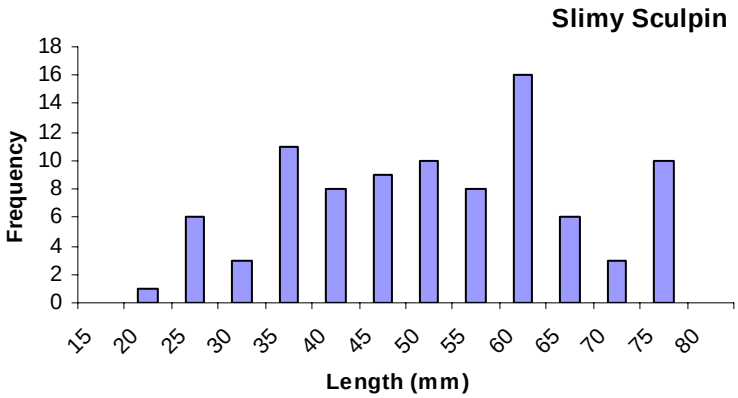

Figure 27.—Length frequencies of slimy sculpin captured in Denali National Park and Preserve. Individuals are grouped in 5 mm bins.

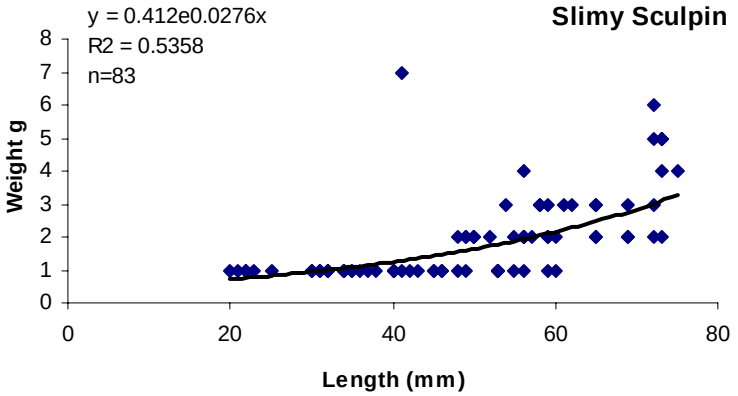

Figure 28.—Length to weight relationship for slimy sculpin captured in Denali National Park and Preserve.

Wrangell-St. Elias National Park/Preserve

There were six expected yet undocumented species documented within WRST, these species included coastrange sculpin, eulachon, pacific lamprey, slimy sculpin, lake chub and threespine stickleback (Table 2). There was also one species that was not on the expected list that that was captured within the park, starry flounder (Table 2 & 4). One species, least cisco, was removed from the expected list (Table 2), simply because its range is described as being north of the Yukon River. One species, Arctic char, was designated unknown (Table 2),

because the only way to distinguish this species from Dolly Varden is through genetic analysis, which was not performed. Ten previously documented species were also captured within WRST, Arctic grayling, burbot, chinook salmon, coho salmon, Dolly Varden, lake trout, longnose sucker, rainbow trout, round whitefish, and sockeye salmon (Table 2 & 4). The results below summarize the data collected for each species captured or observed by this inventory within WRST.

Arctic Grayling—One hundred and ninety three Arctic grayling were captured in WRST (Table 4). Individuals ranged in size from 30 to 381 mm in length (mean FL= 205.4 mm, SD= 101.2 mm, n=167) and in weight from 1 to 420 g (mean= 73.2 g, SD= 107.2 g, n= 82). Arctic grayling were primarily captured angling and electrofishing, but were also captured in gill nets, dip nets, hoop traps, hand nets, and minnow traps (Figure 31). Multiple age classes are present based on the range and distribution of length frequencies (Figure 29). Length to weight relationships were also plotted for this species (Figure 30). Arctic grayling were captured in the Chitina, Copper, Nabesna, and White River drainages in a wide range of varying habitats.

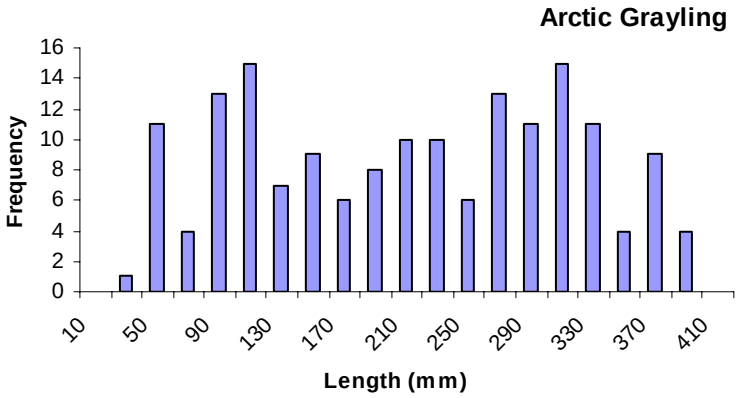

Figure 29.—Length frequencies of Arctic grayling captured in Wrangell-St. Elias National Park and Preserve. Individuals are grouped in 20 mm bins.

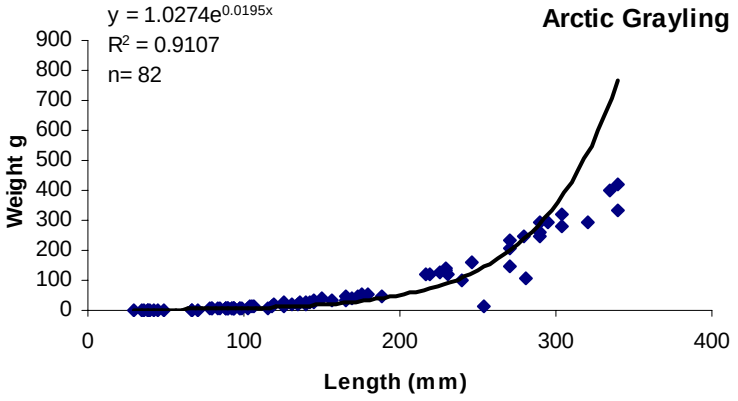

Figure 30.—Length to weight relationship for Arctic grayling captured in Wrangell-St. Elias National Park and Preserve.

Figure 31. Arctic grayling in WRST.

Burbot—Sixty five burbot were captured in WRST (Table 4). Individuals ranged in size from 75 to 762 mm in length (mean TL= 369.6 mm, SD= 153.9 mm, n= 58) and in weight from 4 to 1240 g (mean= 423.0 g, SD= 432.7 g, n= 18). Burbot were primarily captured in hoop traps, but also captured electrofishing and in minnow traps. Multiple age classes were present based on the range and modality of length frequencies (Figure 32). Length to weight relationships were also plotted for this species (Figure 33). Burbot were captured in the Copper, Nabesna, and White River drainages mostly in larger lentic systems but also in slow moving streams and rivers.

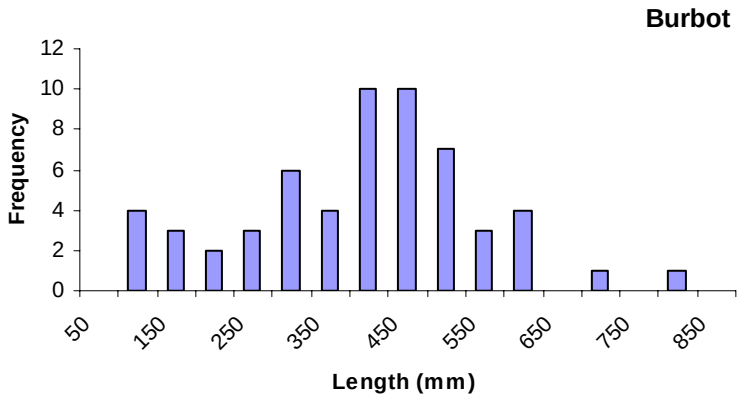

Figure 32.—Length frequencies of burbot captured in Wrangell-St. Elias National Park and Preserve. Individuals are grouped in 50 mm bins.

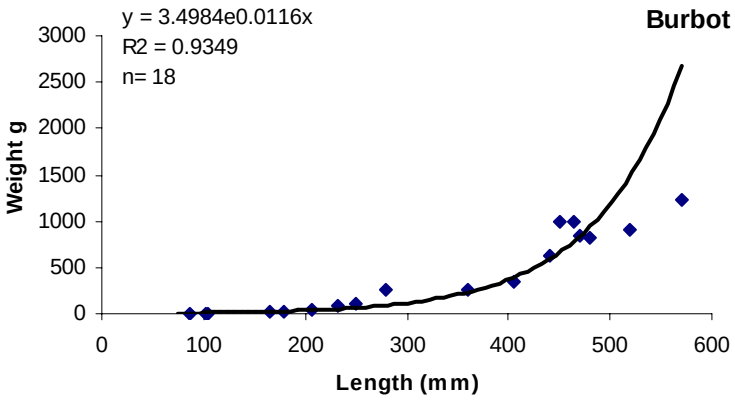

Figure 33.—Length to weight relationship for burbot captured in Wrangell-St. Elias National Park and Preserve.

Chinook Salmon—Two hundred and fifteen chinook salmon were captured in WRST (Table 4). Individuals ranged in size from 28 to 152 mm in length (mean FL= 79.3 mm, SD= 36.8 mm, n= 168) and in weight from 1 to 38 g (mean= 11.5 g, SD= 9.4 g, n= 117). Chinook salmon were primarily captured elecrtrofishing and in minnow traps, but were also captured in seines, gill nets, dip nets, and visually observed snorkeling. One adult chinook salmon was also captured angling in the mouth of the Tebay River. Two age classes were present based on the range and bimodal distribution of length frequencies, but all individuals captured were juveniles, likely age 0 and 1 fish (Figure 34). Length to weight relationships were also plotted for this species (Figure 35). Chinook salmon were captured in the Chitina, Coastal, and Copper River drainages.

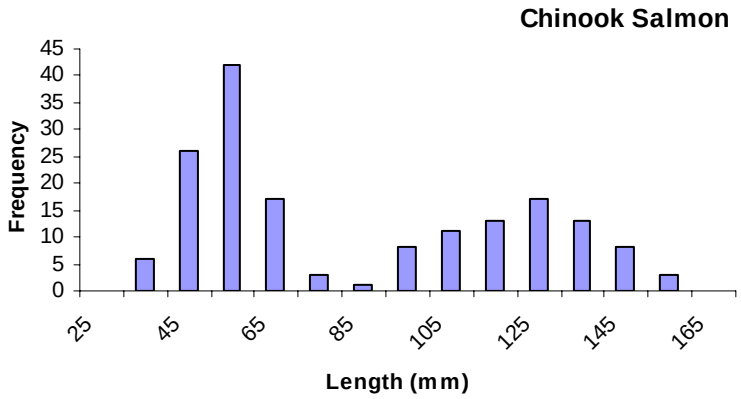

Figure 34.—Length frequencies of chinook salmon captured in Wrangell-St. Elias National Park and Preserve. Individuals are grouped in 10 mm bins.

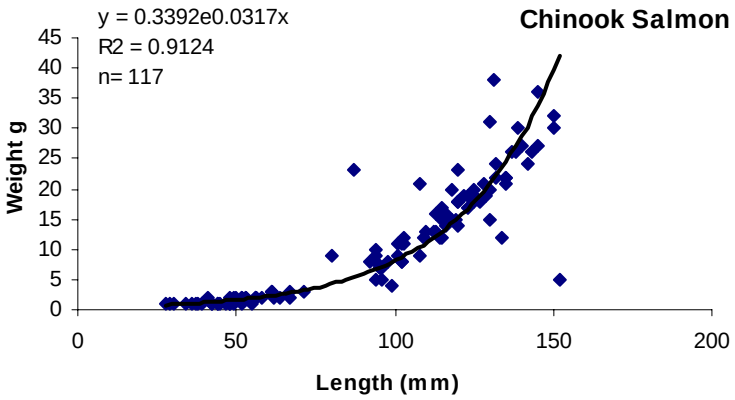

Figure 35.—Length to weight relationship for chinook salmon captured in Wrangell-St. Elias National Park and Preserve.

Coastrange Sculpin—Two coastrange sculpins were captured in WRST (Table 4). The individuals ranged in size from 69 and 70 mm in length (mean TL= 69.5 mm, SD= 0.7 mm, n=2) and no weight measurements were recorded. These two individuals were captured electrofishing and appear to be adults based on their length. The only place where coastrange sculpins were encountered was a lotic habitat within the Coastal drainage.

Coho Salmon—Two hundred and two coho salmon were captured in WRST (Table 4). Individuals ranged in size from 30 to 134 mm in length (mean FL= 60.9 mm, SD= 20.0 mm, n= 194) and in weight from 1 to 25 g (mean= 3.6 g, SD= 4.0 g, n= 159). Coho salmon were primarily captured in minnow traps and electrofishing, but were also captured in seines, dip nets, and were visually observed snorkeling. Two age classes were present based on the range and distribution of length frequencies (Figure 36). Length to weight relationships were also plotted for this species (Figure 37). Coho salmon were captured in the Chitina River and Coastal drainages mainly in lotic habitats although eight individuals were captured in a lentic habitat.

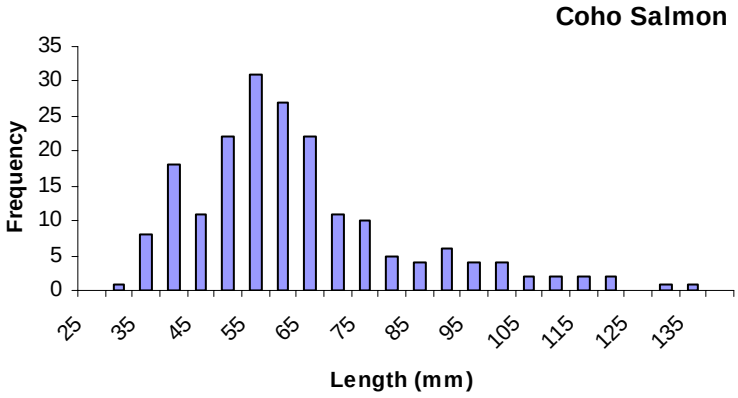

Figure 36.—Length frequencies of coho salmon captured in Wrangell-St. Elias National Park and Preserve. Individuals are grouped in 5 mm bins.

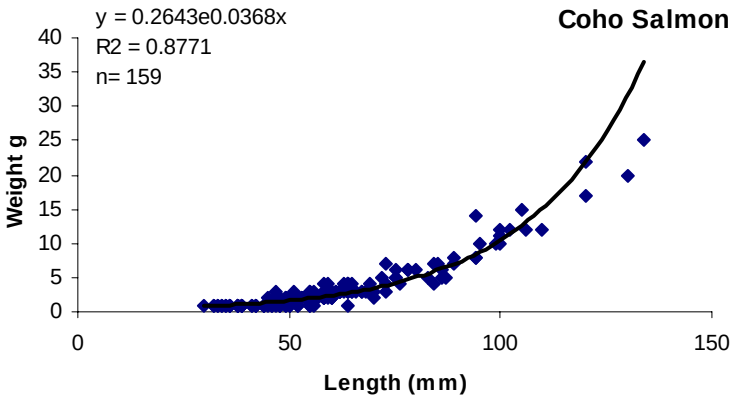

Figure 37.—Length to weight relationship for coho salmon captured in Wrangell-St. Elias National Park and Preserve.

Dolly Varden—Seven hundred ninety one Dolly Varden were captured in WRST (Table 4). Individuals ranged in size from 26 to 500 mm in length (mean FL= 109.2 mm, SD= 30.8 mm, n= 579) and in weight from 1 to 156 g (mean= 13.9 g, SD= 12.6 g, n= 466). Dolly Varden were primarily captured in minnow traps and electrofishing, but were also captured gill nets, hoop traps, seines, and visually observed snorkeling. Multiple age classes were present based on the range and distribution of length frequencies (Figure 38). Length to weight relationships were also plotted for this species (Figure 39). Dolly Varden were captured in the Bremner, Chitina, Coastal, and Copper River drainages mainly in lotic habitats although thirty five individuals were captured in lentic habitats.

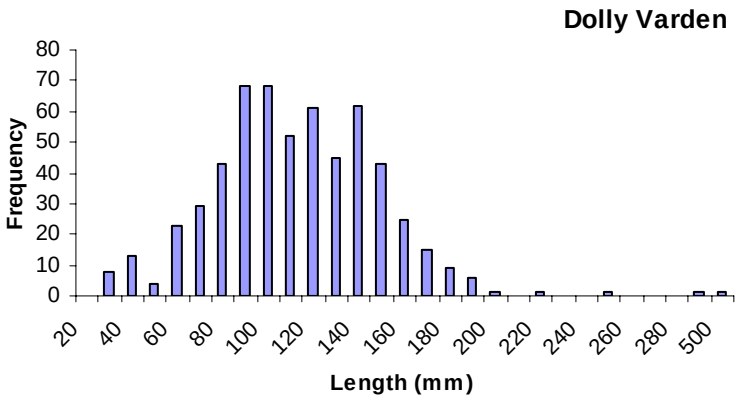

Figure 38.—Length frequencies of Dolly Varden captured in Wrangell-St. Elias National Park and Preserve. Individuals are grouped in 10 mm bins.

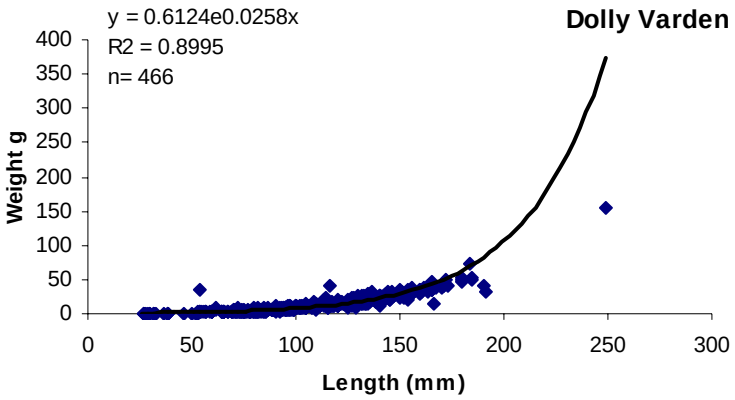

Figure 39.—Length to weight relationship for Dolly Varden captured in Wrangell-St. Elias National Park and Preserve.

Figure 40. Dolly Varden in WRST**.**

Eulachon—Twenty seven eulachon were captured in WRST (Table 4). Individuals ranged in size from 180 to 220 mm in length (mean FL= 205.8 mm, SD= 8.4 mm, n= 27) and in weight from 25 to 70 g (mean= 56.4 g, SD= 9.9 g, n= 27). Eulachon were only captured in gill nets. All of the individuals were adults based on their life history, length frequencies, and the fact that they were observed spawning (Figure 41). Length to weight relationships were also plotted for this species (Figure 42). Eulachon were only found in the Coastal drainage and findings were limited to lotic estuarine habitats.

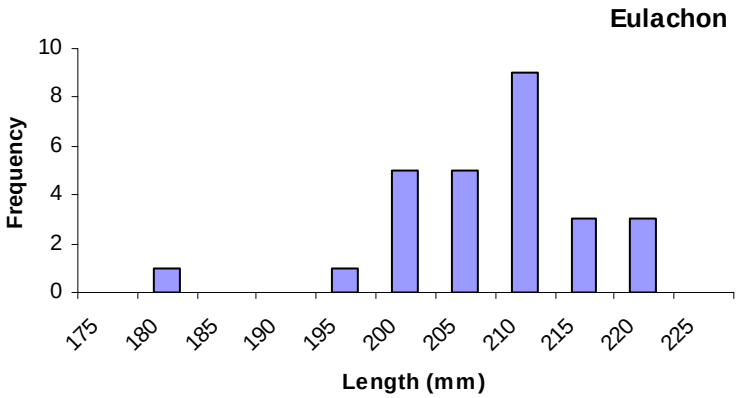

Figure 41.—Length frequencies of eulachon captured in Wrangell-St. Elias National Park and Preserve. Individuals are grouped in 5 mm bins.

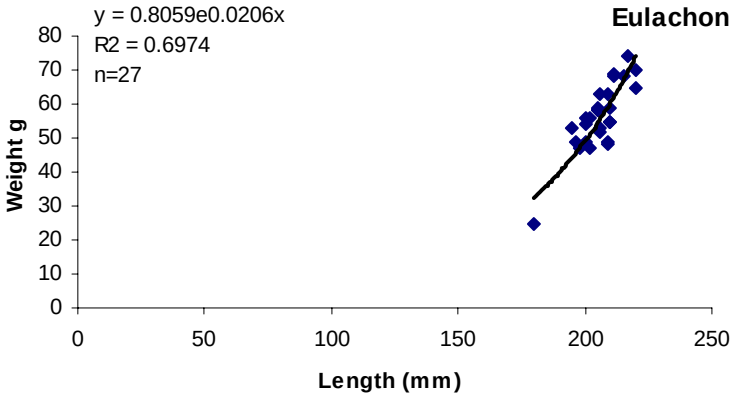

Figure 42.—Length to weight relationship for eulachon captured in Wrangell-St. Elias National Park and Preserve.

Lake Chub—Four lake chub were captured in WRST. All individuals were captured in Carden lake using a minnow trap and ranged from 48 to 69 mm in length.

Lake Trout—Forty two lake trout were captured in WRST (Table 4). Individuals ranged in size from 45 to 508 mm in length (mean FL= 323.0 mm, SD= 162.7 mm, n= 40) and in weight from 1 to 870 g (mean= 174.5 g, SD= 358.0 g, n= 10). Lake trout were primarily captured angling and in minnow traps, but were also captured in gill nets and hoop traps. Multiple age classes appear to be present based on the range and modality of length frequencies (Figure 43). Length to weight relationships were also plotted for this species (Figure 44). Lake trout were captured in the Chitina, Copper, and White River drainages only in lentic habitats.

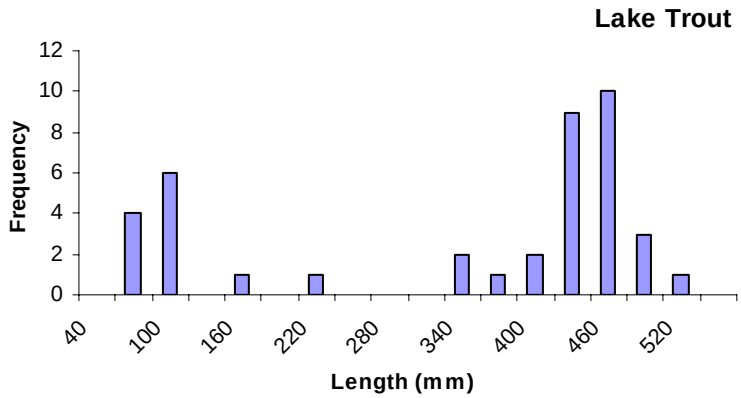

Figure 43.—Length frequencies of lake trout captured in Wrangell-St. Elias National Park and Preserve. Individuals are grouped in 30 mm bins.

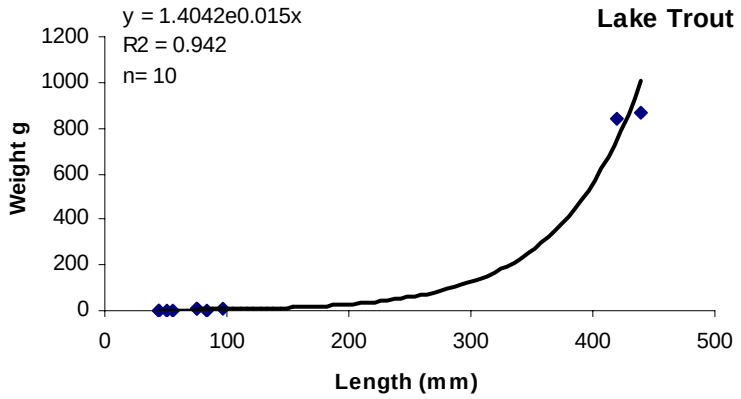

Figure 44.—Length to weight relationship for lake trout captured in Wrangell-St. Elias National Park and Preserve.

Longnose Sucker—Thirty one longnose suckers were captured in WRST (Table 4). Individuals ranged in size from 48 to 406 mm in length (mean FL= 183.7 mm, SD= 110.9 mm, n= 30) and in weight from 2 to 483 g (mean= 127.0 g, SD= 164.6 g, n= 26). Longnose suckers were primarily captured in hoop traps and minnow traps, but one individual was captured in a gill net. Multiple age classes were present based on the range, distribution, and modality of length frequencies (Figure 45). Length to weight relationships were also plotted for this species (Figure 46). Longnose suckers were captured in the Chitina, Copper, and White River drainages all in lentic habitats.

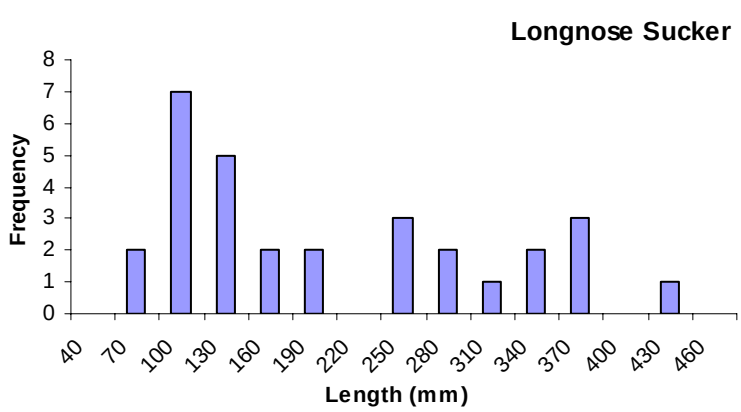

Figure 45.—Length frequencies of longnose suckers captured in Wrangell-St. Elias National Park and Preserve. Individuals are grouped in 30 mm bins.

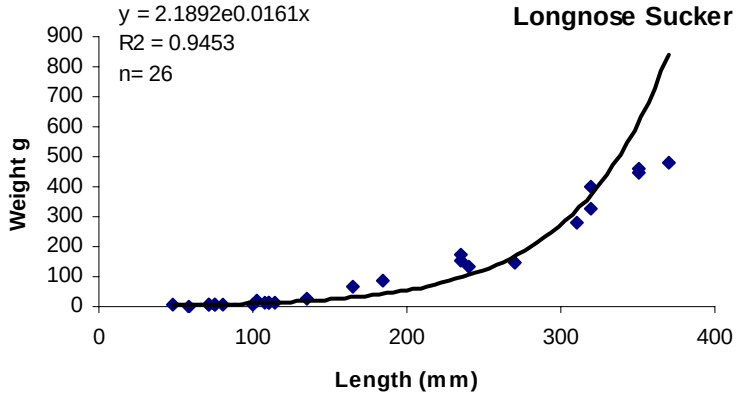

Figure 46.—Length to weight relationship for longnose suckers captured in Wrangell-St. Elias National Park and Preserve.

Pacific Lamprey—Three pacific lamprey were captured in WRST (Table 4). Individuals ranged in size from 50 to 120 mm in length (mean TL= 74.3 mm, SD= 39.6 mm, n= 3) and only one individual was weighed (5 g). The individuals captured could either be ammocoetes or adults based on their lengths. Pacific lampreys were only captured electrofishing in lotic habitats of the Copper drainage.

Rainbow Trout—Seventy nine rainbow trout were captured in WRST (Table 4). Individuals ranged in size from 29 to 457 mm in length (mean FL= 321.1 mm, SD= 98.9 mm, n= 48) and in weight from 2 to 375 g (mean= 131.0 g, SD= 140.7 g, n= 10). Rainbow trout were primarily captured angling, but were also captured in hoop traps, minnow traps, and electrofishing. Multiple age classes were present based on the range, distribution, and modality of length frequencies (Figure 47). Length to weight relationships were also plotted for this species (Figure 48). Rainbow trout were only captured in the Chitina drainage and were captured in both lentic and lotic habitat types.

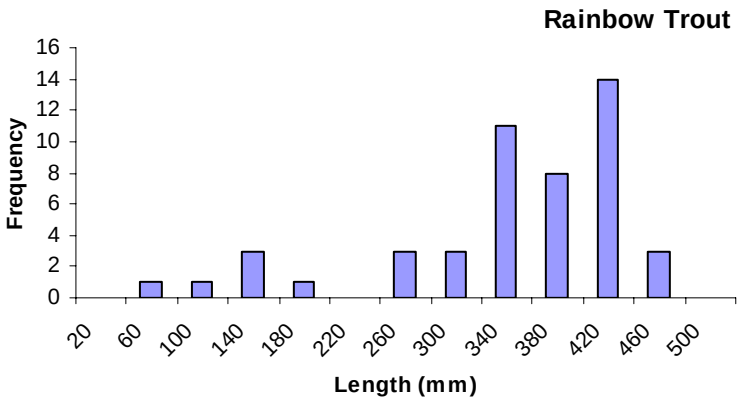

Figure 51.—Length frequencies of rainbow trout captured in Wrangell-St. Elias National Park and Preserve. Individuals are grouped in 40 mm bins.

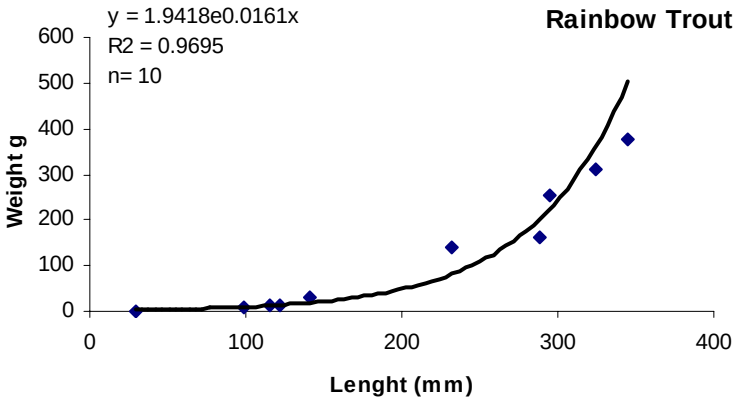

Figure 48.—Length to weight relationship for rainbow trout captured in Wrangell-St. Elias National Park and Preserve.

Round Whitefish—Forty round whitefish were captured in WRST (Table 4). Individuals ranged in size from 30 to 285 mm in length (mean FL= 141.2 mm, SD= 69.3 mm, n= 40) and in weight from 5 to 158 g (mean= 51.6 g, SD= 61.3 g, n=10). Round whitefish were primarily captured electrofishing but were also captured in gill nets and hoop traps. Multiple age classes were present based on the range and distribution of length frequencies (Figure 45). Length to weight relationships were also plotted for this species (Figure 50). Round whitefish were captured in the Bremner, Chitina, Copper, Nabesna, and White drainages and were found in lotic habitats with one individual being found in a lentic habitat.

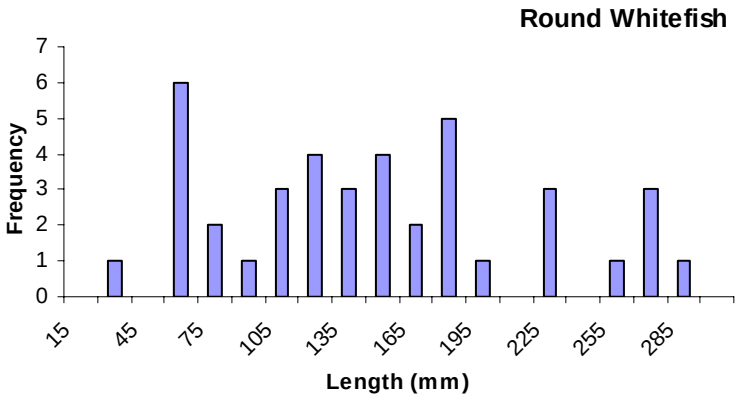

Figure 45.—Length frequencies of round whitefish captured in Wrangell-St. Elias National Park and Preserve. Individuals are grouped in 15 mm bins.

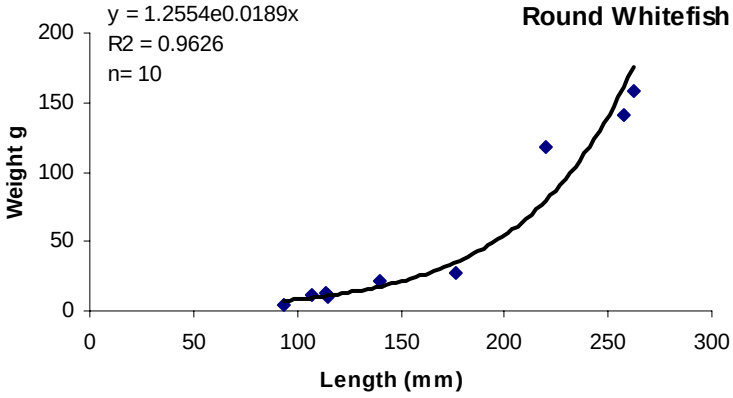

Figure 50.—Length to weight relationship for round whitefish captured in Wrangell-St. Elias National Park and Preserve.

Slimy Sculpin—Two hundred and forty one slimy sculpins were found in WRST (Table 4). Individuals ranged in size from 20 to 140 mm (mean TL= 65.9 mm, SD= 20.7 mm, n= 239) and in weight from 1 to 21 g (mean= 3.5 g, SD= 3.5 g, n= 189). Slimy sculpin were primarily captured electrofishing and in minnow traps, but were also captured in hoop traps and hand nets. Multiple age classes were present based on the range and distribution of length frequencies (Figure 51).

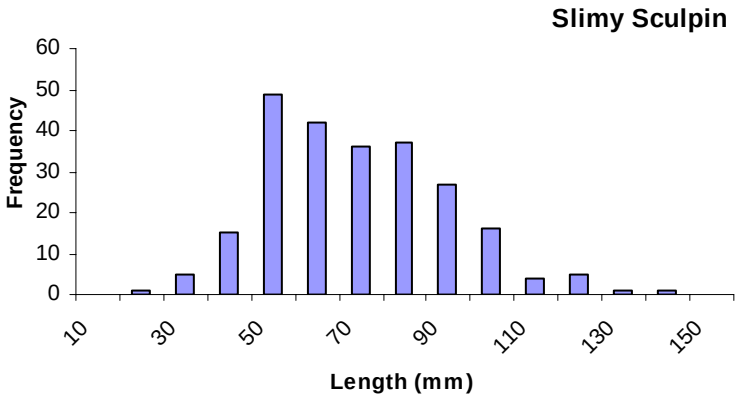

Figure 51.—Length frequencies of slimy sculpin captured in Wrangell-St. Elias National Park and Preserve. Individuals are grouped in 10 mm bins.

Length to weight relationships were also plotted for this species (Figure 52). Slimy sculpin were captured in the Chitina, Coastal, Copper, Nabesna, and White River drainages in both lentic and lotic habitats usually in close association with cobble or gravel.

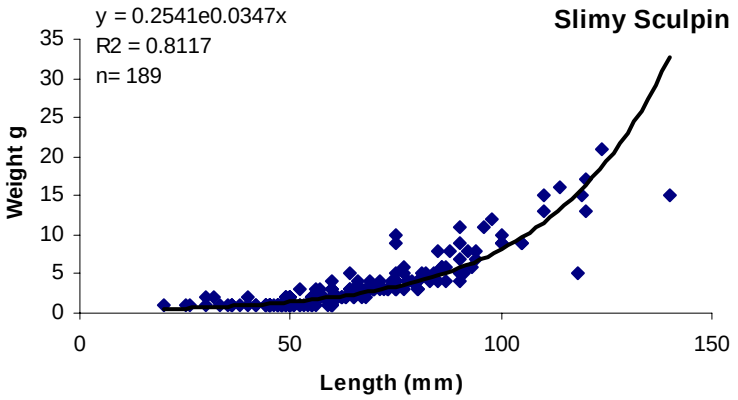

Figure 52.—Length to weight relationship for slimy sculpin captured in Wrangell-St. Elias National Park and Preserve.

Sockeye Salmon—Five sockeye salmon were captured in WRST (Table 4). Sockeye salmon are known to be very abundant in the Copper River watersheds and efforts to avoid capturing them were taken in many cases. The Individuals captured ranged in size from 82 to 620 mm in length (mean FL= 428.0 mm, SD= 238.7 mm, n= 4) and no weight measurements were taken. Sockeye salmon were captured in gill nets, angling, and electrofishing. Both juveniles and adults were represented by the samples collected. Sockeye salmon were captured in the Bremner, Chitina, and Copper drainages only in lotic habitats.

Starry Flounder—Two starry flounder were captured in WRST (Table 4). Individuals ranged in size from 46 to 49 m in length (mean TL= 47.5 mm, SD= 2.1 n= 2) and in weight from 1 to 4 (mean= 2.5 g, SD= 2.1 g, n=2). Starry flounder were captured in seines and were only found in lotic habitats of the Coastal stream watershed. Both individuals captured were juveniles.

Threespine Stickleback—One hundred and thirty four threespine sticklebacks were captured in WRST (Table 4). Individuals ranged in size from 36 to 82 mm in length (mean FL= 45.5 mm, SD= 8.5 mm, n= 125) and in weight from 1 to 7 g (mean= 1.2 g, SD= 0.9 g, n= 125). Threespine sticklebacks were primarily captured in minnow traps, but were also captured in seines and observed visually snorkeling. Both adults and juveniles were represented by the samples collected (Figure 53). Length to weight relationships were also plotted for this species (Figure 54). In some locations males in spawning coloration and gravid females were observed. Threespine sticklebacks were only captured in the Coastal drainage, primarily in lotic habitats with five individuals being captured in a lentic environment.

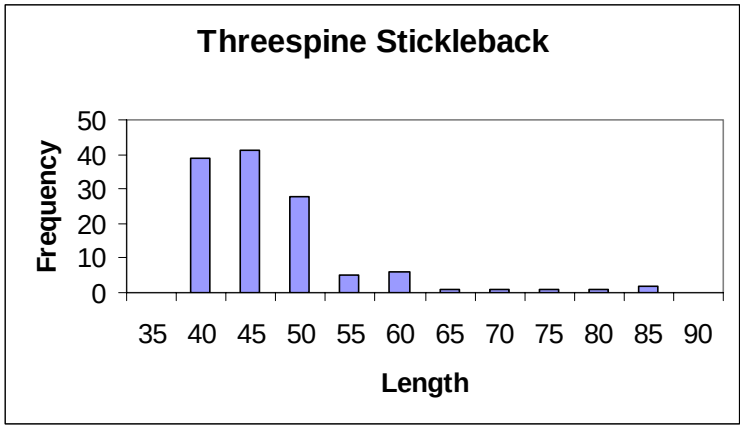

Figure 53.—Length frequencies of threespine sticklebacks captured in Wrangell-St. Elias National Park and Preserve. Individuals are grouped in 5 mm bins.

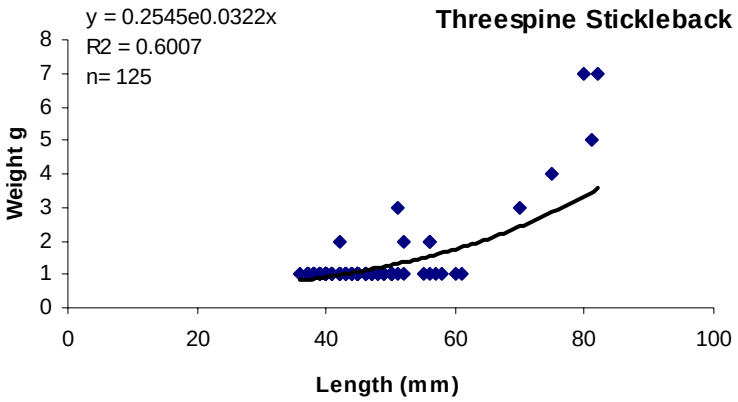

Figure 54.—Length to weight relationship for threespine sticklebacks captured in Wrangell-St. Elias National Park and Preserve.

Yukon-Charley Rivers National Preserve

There was one expected yet undocumented species documented within YUCH, coho salmon (Table 3). One species, pygmy whitefish, was removed from the expected list (Table 3), due to lack of adequate habitat. Two previously documented species were captured within YUCH, lake chub and northern pike (Table 3 & 4). The results below summarize the data collected for each species captured or observed by this inventory within YUCH.

Lake Chub—Three lake chub were captured in YUCH (Table 4). Individuals ranged in size from 85 to 95 mm in length (mean FL= 88.3 mm, SD= 5.8 mm, n= 3) and in weight from 7 to 10 g (mean= 8.7 g, SD= 1.5 g, n= 3). The three lake chub were captured in minnow traps in a lentic environment within the Yukon drainage.

Northern Pike—One northern pike was captured in YUCH (Table 4). This individual was 150 mm in length and no weight measurements were taken. The northern pike was captured in a gill net in a lentic habitat in close association with aquatic vegetation. This individual was most likely a juvenile.

DISCUSSION

The ten new species that were documented in the CAKN inventory remain consistent with known fish distributions in adjacent watersheds and throughout central Alaska (McPhail & Lindsey 1970; Wickstrom 1977; Morrow 1980; Williams 1984; Glesne 1986; U.S. Fish & Wildlife Service 1987; ADF&G 1997; Mecklenburg et al. 2002). There were no range extensions of the species captured.

Ten expected yet undocumented species were documented or captured in the CAKN however eleven expected species were not. Ten of these species were expected to occur in WRST; Alaska whitefish, Arctic char, green sturgeon, lake whitefish, least cisco, longfin smelt, northern pike, pond smelt, pygmy whitefish, and rainbow smelt. One undetected species was expected to occur in YUCH, pygmy whitefish. This species is no longer expected to occur in YUCH.

There were four species captured that were not on the AKNHP expected species list. Three of these species were encountered in DENA; Alaska blackfish, Arctic lamprey, and humpback whitefish. One species was encountered in WRST, starry flounder. None of these findings resulted in range extensions.

Denali National Park/Preserve

Denali National Park/Preserve had a total of fifteen species either captured or documented out of the twelve species expected to occur within the park. This gives DENA a total documentation of 125%. All of the fish species expected to occur in DENA were either captured or documented during the course of this inventory.

There were three species detected within the park that were not on the expected species list, Alaska Blackfish, Arctic lamprey, and humpback whitefish. Although this was the first time that any of these species had been detected within the park boundary, the locations where these species were detected do not appear to be outside their natural range (McPhail & Lindsey 1970; Morrow 1980; Mecklenburg et al. 2002). The inventory concentrated on the northwest portion of the park, a region that is difficult to access and where little work has been done regarding fisheries or aquatic resources. This is most likely the primary reasons that these three species have not previously been detected, their range within the park is simply outside of the regions where research has been conducted.

Alaska blackfish were detected in seven different locations in the park and all but one of these regions were lentic. Blackfish, preferring lakes, ponds, and generally slower-moving waters, may not persist in the other more rugged regions of the Park where steeper slopes create faster moving streams and rivers. Blackfish may also not be able to maintain viable populations in isolated lakes in the presence of a piscivorous predator such as the northern pike. Alaska blackfish

were only found to inhabit the same waterbody as northern pike in one instance, the Bearpaw River, where only one blackfish was captured. One of the lakes where blackfish were detected was named Blackfish Lake.

Arctic lampreys were only captured in two locations within the park. Both of these locations were in the Kantishna drainage. Arctic lampreys can be anadromous or nonanadromous and although not much is known about them they are most susceptible to capture during migration either downstream to the sea or upstream to spawning grounds. Lampreys were captured in a fyke net and a minnow seine.

Humpback whitefish were captured in four locations in the park. All of these locations were in the Kantishna drainage and it is possible that researchers have sampled there before although there is no record of any encounters with humpback whitefish. Humpback whitefish are difficult to distinguish from both the Alaska whitefish and lake whitefish. The only way to distinguish between these three species is through modal gill raker counts of large samples. Assistance was given to the researchers by Randy Brown of the USFWS who can be considered a regional whitefish specialist. Randy assisted researchers in the identification and aging of specimens.

Wrangell-St. Elias National Park/Preserve

Wrangell-St. Elias National Park/Preserve had a total of twenty one species either captured or documented out of the thirty expected to occur within the park. This gives WRST a total documentation of 70%. With 70% of the expected species accounted for, WRST has the lowest documentation of the three parks in the CAKN. Some of the lower level of documentation can be attributed to the sheer size and limited accessibility of the aquatic resources within the Park and Preserve however the main reason that there is so little known about this area is because there has been virtually no work to speak of done prior to this inventory.

There were ten species expected to occur in the park that were not detected by this inventory. Each of these eleven species presents a unique set of life history characteristics and morphological variables that may have made them difficult to detect.

Three of the whitefishes expected to occur in the park fall into the *humpback whitefish category*. This category is comprised of the Alaska, humpback, and lake whitefish, all of which are very difficult to differentiate from one another. The only way that proper species identification can be determined in this group of whitefish is by looking at modal gill raker counts of a large sample of fish. These three species do however seem to have each carved out a unique ecological niche. The Alaska whitefish is a freshwater species primarily inhabiting streams and rivers and is said to rarely be found in lakes. The humpback whitefish is an

anadromous coastal species, wintering in the sea. The lake whitefish is a freshwater species inhabiting large lakes and sometimes large rivers. With this information one could then look at the habitat where the fish was captured and make inferences about species identification, however, without modal gill raker counts species identity could not be certain. Due to the difficulty in identifying these different species many fish have been identified improperly making distribution patterns unreliable. The humpback whitefish has been documented in the park however there is no reference to any gill raker counts. Therefore it is possible that this identification was accurate, or it may be that one of the other two forms of humpback whitefish were encountered. The documentation of humpback whitefish in the park comes in the form of unpublished ADFG creel survey data from the Slana River. Based on the source, habitat, and proximity to the ocean it is the opinion of the authors that the species encountered were most likely humpback whitefish.

Arctic char were designated as expected in the park prior to this inventory but after further review have been changed to an unknown status (Table 2). The reason that Arctic char have been changed to an unknown status is because it is impossible to distinguish them from Dolly Varden without genetic analysis which was not performed in this inventory. Many fish identified as Dolly Varden were captured throughout the course of the inventory, but without genetic analysis it is impossible to say whether or not some of these individuals were Arctic char.

The green sturgeon remains on the expected species list. Documentation exists of two specimens captured in the Copper River in 1897 and a specimen captured off the coast of Unalaska Island. More concrete documentations have been recorded in Southeast Alaska (Mecklenburg et al. 2002). These large prehistoric fish are anadromous and inhabit coastal estuarine waters and the mouths of large rivers, but generally do not ascend far up these rivers. It may be difficult to detect green sturgeons if they are present in the Copper River simply because their habitat would likely be difficult to access and their relative abundance is probably fairly low. This means it could require a considerable amount of time and effort to detect them. Park staff have heard accounts of commercial fisherman catching sturgeon in their commercial gear as well as sport anglers catching sturgeon in Miles Lake, but these accounts have not been verified.

Least cisco were designated as expected in the Park prior to this inventory but after further review have been changed to an unexpected status (Table 2). The reason that least cisco have been changed to an unexpected status is simply because their distribution does not reach as far south as WRST in this part of the state (Mecklenburg et al. 2002).

The longfin smelt and the rainbow smelt are both anadromous species of smelts that spend the majority of their life history in coastal waters. They ascend coastal freshwater streams to spawn but rarely is the upstream migration much more than a few km and sometimes only a couple hundred meters (Morrow 1980).

Rainbow smelt are spring spawners often congregating at river mouths before the ice goes out whereas longfin smelt typically spawn between October and December. If early spring and late fall are the only times that these species are present within the Park then it is unlikely that researchers sampling in the summer months would detect them. These two species remain on the expected species list.

Northern pike typically inhabit clear vegetated lakes, quiet pools, and backwater areas. These habitat types are not common in most parts of WRST, however the northeast portion of the park does have similar habitat types. These areas were not sampled during the inventory. Access to this northeast portion of the park is difficult and could potentially require a helicopter but based on the distribution described by McPhail and Lindsey (1970), Morrow (1980), and Mecklenburg et al. (2002), these areas would likely be the place to find northern pike if they are present within the park and furthermore their distribution may be limited to these areas.

Pond smelt are said to inhabit ponds, lakes, and streams and are often extremely abundant in suitable habitat. Adult pond smelt are pelagic and would prove difficult to detect in an inventory of this scale. Suitable gear for detecting this pelagic species would be a tow net, trawl, or possibly a very fine mesh gill net. Tow netting would require two medium to large vessels in order to make tows and trawl gear would require a large boat in order to tow the trawl. The logistics of getting this equipment into some of the remote locations of the Park limited our ability to detect this species. An extremely fine mesh gill net could also increase the probability of detecting pond smelt, however these nets can be difficult to obtain and are quite expensive and fragile, not to mention the adverse effects they can have on the sometimes large quantities of bycatch. It is entirely possible that pond smelt are present within the park and in fact McPhail and Lindsey (1970) make an account of individuals of this species being ripe on June 8th in the Copper River, although the origin of this account is unclear. Based on the distributions described by Morrow (1980) and Mecklenburg et al. (2002), if pond smelt are present within the park their range may be limited to the southern half of the park.

Pygmy whitefish are known to inhabit deep glacial lakes and clear, swift, streams and rivers. Members of this species are generally most abundant at depths of greater than 6.1 m (McPhail and Lindsey 1970). Pygmy whitefish, inhabiting these deeper waters, can be difficult to detect unless they are specifically targeted, they were only found to inhabit Lake Superior in 1952 when bottom trawls were used in depths of greater than 18 m. Fish were most abundant in Lake Superior from depths of 46 to 71 m (McPhail and Lindsey 1970; Morrow 1980). Bird and Roberson (1979) reported members of this species in the Klutina, Tazlina, and Tonsina lakes which make it highly possible that they are present within the park and thus they remain on the expected species list.

The starry flounder was not on the AKNHP expected species list for WRST. Flounders are typically marine fishes and generally would not be of concern to a freshwater inventory however the starry flounder is said to ascend streams all the way to freshwater thus making special consideration for this flounder necessary (Morrow 1980). Starry flounder were captured in two instances within the park and are now designated present in WRST. Starry flounder have also been documented on many occasions in the nearshore waters off the coast of WRST (Arimitsu et al. 2003).

Yukon Charley-Rivers National Preserve

Yukon Charley-Rivers had a total of seventeen species either captured or documented out of the eighteen originally expected to occur within the park. It is important to note that the one species that was not detected is no longer expected to occur within YUCH, this gives YUCH a total documentation of 100%. Much of this documentation came in the form of a preliminary fisheries investigation that was conducted by the U. S. Fish and Wildlife service on an interagency agreement between 1987 and 1988 (Daum 1994).

The pygmy whitefish was designated as expected in YUCH prior to the inventory because the species range overlaps with the Preserve (Table 3). The reason pygmy whitefish is now unexpected in this region is because YUCH simply lacks adequate habitat to support a population of these fish. There are no large deep lakes in the region and the distribution of this species as described by McPhail and Lindsey (1970), Mecklenburg et al. (2002), and Morrow (1980), is south of YUCH with the closest populations being from three lakes in the Copper River drainage (Bird and Roberson 1979).

Conclusion

The Central Alaska Network Freshwater Fish Inventory achieved the objective of documenting 90 percent of the freshwater fish species present within both Denali National Park and Preserve and Yukon-Charley Rivers National Preserve. This objective was exceed for both of these units with 100 percent of the expected species documented within YUCH and 125 percent of the expected species documented within DENA. In Wrangell-St. Elias National Park and Preserve, the percentage of documented species increased from 47 percent to 70 percent. We believe that the expected species list for WRST is valid and that the complexity of the aquatic ecosystem, difficult access, and the vast size of the Park simply require more effort then we were able to put forth with this project to achieve the 90% objective within WRST while still performing sampling throughout the remainder of the network.

The Central Alaska Network Freshwater Fish Inventory gained additional information regarding the abundance and distribution of freshwater fish species

within the watersheds of the Central Alaska Network. The summarization of previously published freshwater fish studies that was performed as part of this inventory provides an outstanding bibliography of work addressing the abundance and distribution of freshwater fish species within the CAKN.

The fish species observed in the Central Alaska Network Freshwater Fish Inventory represent typical freshwater fish communities that would be expected in Central Alaska. The thirteen newly documented species that were detected by this inventory remain consistent with the known distribution patterns of these species throughout central Alaska. No range extensions or truly unexpected species were identified during this inventory. More work is needed to determine whether expected yet undocumented species are truly present within Wrangell-St. Elias, as well as the distribution and relative abundance of these species if they are present.

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APPENDIX A

This appendix contains the data collected during the Central Alaska Network Inventory and Monitoring Freshwater Fish Inventory.

Defintions:
Park: A four letter park code designating which park the site was in. DENA=Denali National Park and Preserve, WRST=Wrangell-St. Elias National Park and Preserve, YUCH=Yukon-Charley National Preserve

Site: A five digit alphanumeric code that uniquely identifies a sampling site (e.g., WONDE=Wonder Lake, or BREM3=Bremner River site three—there was no consistent pattern to code selection). Each site corresponds with a unique Latitude and Longitude

Obs: (short for observation): A number was assigned to each sampling attempt using a specific Gear Type at each sampling site. At each new site (i.e., each Site ID) sampling would begin with the number one and progress sequentially as new sampling attempts were made with new Gear Types. For example if at first minnow traps were set, then a beach seine deployed, and finally hook and line sampling was conducted at WONDE the Obs. column would have a 1, 2, and 3 where 1 represents minnow trap sampling, 2 represents beach seine sampling and 3 represents hook and line sampling. In combination with the Site ID, obs. Provides a unique location and sample attempt identifier (e.g., WONDE-1, WONDE-2, WONDE-3).

Latitude: Point location of Site ID NAD 1927 datum

Longitude: Point location of Site ID NAD 1927 datum

Elevation m: The elevation of the site recorded in meters

Quad: The topographical quad where the site is found (e.g. XMC B-6=McCarthy B-6).

Waterbody: Refers to the common name of the pond, lake, stream, or river where the sampling took place.

Gear Type: Refers to the specific gear used to make an observation (to capture fish).

Species: Refers to the common name of the fish captured for an individual observation record.

Count: Refers to the number of fish captured or observed for an individual observation record.

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
DENA	BEAR1	1	63.92649	150.83326	165	MMK D-2	Bearpaw River-1	Arctic grayling	Angling	1
DENA	BEAR2	1	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	salmon, trout, undifferentiated	Dip Net	2
DENA	BEAR2	1	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	coho salmon, silver	Dip Net	5
DENA	BEAR2	1	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	slimy sculpin	Dip Net	2
DENA	BEAR2	1	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	chum salmon, dog	Dip Net	1
DENA	BEAR2	2	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	slimy sculpin	Minnow Trap	6
DENA	BEAR2	2	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	coho salmon, silver	Minnow Trap	1
DENA	BEAR2	3	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	chinook, king, spring salmon	Fyke Net	1
DENA	BEAR2	3	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	Arctic lamprey	Fyke Net	1
DENA	BEAR2	4	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	chum salmon, dog	Electrofisher Port.	2
DENA	BEAR2	4	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	slimy sculpin	Electrofisher Port.	3
DENA	BEAR2	4	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	Alaska blackfish	Electrofisher Port.	1
DENA	BEAR2	4	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	coho salmon, silver	Electrofisher Port.	11
DENA	BEAR2	4	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	chinook, king, spring salmon	Electrofisher Port.	6
DENA	BEAR2	5	63.88794	150.90144	167	MMK D-2	Bearpaw River-2	slimy sculpin	Visual	25
DENA	BEAR3	1	63.90523	150.89180	165	MMK D-2	Bearpaw River-3	slimy sculpin	Minnow Trap	2
DENA	BEAR3	1	63.90523	150.89180	165	MMK D-2	Bearpaw River-3	coho salmon, silver	Minnow Trap	2
DENA	BEAR4	1	63.91409	150.86839	165	MMK D-2	Bearpaw River-4	slimy sculpin	Minnow Trap	3
DENA	BEAR4	1	63.91409	150.86839	165	MMK D-2	Bearpaw River-4	coho salmon, silver	Minnow Trap	3
DENA	BEAR5	1	63.93418	150.82244	165	MMK D-2	Bearpaw River-5	Arctic grayling	Angling	5
DENA	BEAR5	2	63.93418	150.82244	165	MMK D-2	Bearpaw River-5	slimy sculpin	Minnow Trap	2
DENA	BEAR5	3	63.93418	150.82244	165	MMK D-2	Bearpaw River-5	longnose sucker	Gill Net	3
DENA	BEAR5	3	63.93418	150.82244	165	MMK D-2	Bearpaw River-5	humpback whitefish	Gill Net	1
DENA	BEAR6	1	63.84311	150.90674	173	MMK D-2	Bearpaw River-6	chinook, king, spring salmon	Electrofisher Port.	1
DENA	BEAR6	1	63.84311	150.90674	173	MMK D-2	Bearpaw River-6	slimy sculpin	Electrofisher Port.	8
DENA	BEAR6	1	63.84311	150.90674	173	MMK D-2	Bearpaw River-6	coho salmon, silver	Electrofisher Port.	6
DENA	BEAR6	2	63.84311	150.90674	173	MMK D-2	Bearpaw River-6	chinook, king, spring salmon	Minnow Trap	10
DENA	BEAR6	2	63.84311	150.90674	173	MMK D-2	Bearpaw River-6	coho salmon, silver	Minnow Trap	34
DENA	BEAR6	3	63.84311	150.90674	173	MMK D-2	Bearpaw River-6	Arctic grayling	Gill Net	1

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
DENA	BEARC	1	63.98023	150.82678	150	MMK D-2	Bear Creek	northern pike	Gill Net	2
DENA	BEARC	1	63.98023	150.82678	150	MMK D-2	Bear Creek	longnose sucker	Gill Net	1
DENA	BEARC	1	63.98023	150.82678	150	MMK D-2	Bear Creek	humpback whitefish	Gill Net	3
DENA	BEARC	2	63.98023	150.82678	150	MMK D-2	Bear Creek	slimy sculpin	Minnow Trap	7
DENA	BEARC	3	63.98023	150.82678	150	MMK D-2	Bear Creek	Arctic grayling	Visual	1
DENA	BEARC	4	63.98023	150.82678	150	MMK D-2	Bear Creek	No Fish Collected	Angling	0
DENA	BIGLA	1	63.51212	152.53868	259	MMK C-6	Big Lake	northern pike	Gill Net	5
DENA	BIGLA	2	63.51212	152.53868	259	MMK C-6	Big Lake	northern pike	Hoop Trap	2
DENA	BIGLA	3	63.51212	152.53868	259	MMK C-6	Big Lake	No Fish Collected	Minnow Trap	0
DENA	BIGLC	1	63.50402	152.54770	259	MMK C-6	Big Lake Creek	slimy sculpin	Dip Net	1
DENA	BIGLC	1	63.50402	152.54770	259	MMK C-6	Big Lake Creek	salmon, trout, undifferentiated	Dip Net	6
DENA	BIGLC	1	63.50402	152.54770	259	MMK C-6	Big Lake Creek	Arctic grayling	Dip Net	3
DENA	BIGLC	1	63.50402	152.54770	259	MMK C-6	Big Lake Creek	slimy sculpin	Dip Net	3
DENA	BIGLO	1	63.52153	152.44884	297	MMK C-5	Big Long Lake	northern pike	Visual	8
DENA	BIGLO	2	63.52153	152.44884	297	MMK C-5	Big Long Lake	No Fish Collected	Minnow Trap	0
DENA	BIGLO	3	63.52153	152.44884	297	MMK C-5	Big Long Lake	No Fish Collected	Dip Net	0
DENA	BIGLO	4	63.52153	152.44884	297	MMK C-5	Big Long Lake	No Fish Collected	Angling	0
DENA	BIRCH	1	63.87741	151.56020	194	MMK D-4	Birch Creek	No Fish Collected	Minnow Trap	0
DENA	BIRCH	2	63.87741	151.56020	194	MMK D-4	Birch Creek	No Fish Collected	Gill Net	0
DENA	BLACK	1	63.61460	152.65375	265	MMK C-6	Blackfish Lake	Alaska blackfish	Minnow Trap	1
DENA	CAREY	1	63.40342	152.59097	292	MMK B-6	Carey Lake	northern pike	Visual	1
DENA	CAREY	2	63.40342	152.59097	292	MMK B-6	Carey Lake	No Fish Collected	Gill Net	0
DENA	CAREY	3	63.40342	152.59097	292	MMK B-6	Carey Lake	No Fish Collected	Minnow Trap	0
DENA	CAREY	4	63.40342	152.59097	292	MMK B-6	Carey Lake	No Fish Collected	Hoop Trap	0
DENA	CAREY	5	63.40342	152.59097	292	MMK B-6	Carey Lake	No Fish Collected	Angling	0
DENA	CARIL	1	63.55523	152.45639	258	MMK C-5	Caribou Lake	No Fish Collected	Minnow Trap	0
DENA	CARIL	2	63.55523	152.45639	258	MMK C-5	Caribou Lake	northern pike	Visual	1
DENA	CARLS	1	63.80695	151.90659	205	MMK D-4	Carlson Lake	northern pike	Angling	2
DENA	CARLS	2	63.80695	151.90659	205	MMK D-4	Carlson Lake	northern pike	Gill Net	1

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
DENA	CARLS	3	63.80695	151.90659	205	MMK D-4	Carlson Lake	No Fish Collected	Minnow Trap	0
DENA	CARLS	4	63.80695	151.90659	205	MMK D-4	Carlson Lake	No Fish Collected	Hoop Trap	0
DENA	CASTL	1	63.35401	152.14966	400	MMK B-5	Castle Rocks Lake	Arctic grayling	Hoop Trap	2
DENA	CASTL	2	63.35401	152.14966	400	MMK B-5	Castle Rocks Lake	Alaska blackfish	Minnow Trap	4
DENA	CASTL	3	63.35401	152.14966	400	MMK B-5	Castle Rocks Lake	No Fish Collected	Gill Net	0
DENA	CHILC	1	63.90567	151.54692	194	MMK D3	Chilchukabena Lake	northern pike	Angling	1
DENA	CHILC	2	63.90567	151.54692	194	MMK D3	Chilchukabena Lake	northern pike	Gill Net	6
DENA	CHILC	3	63.90567	151.54692	194	MMK D3	Chilchukabena Lake	No Fish Collected	Hoop Trap	0
DENA	CHILC	4	63.90567	151.54692	194	MMK D3	Chilchukabena Lake	No Fish Collected	Minnow Trap	0
DENA	DOGHO	1	63.69700	152.44900	240	MMK C-5	Doghouse Lake	Alaska blackfish	Gill Net	29
DENA	DOGHO	2	63.69700	152.44900	240	MMK C-5	Doghouse Lake	slimy sculpin	Visual	1
DENA	EBLAC	1	63.60516	152.61842	262	MMK C-6	Lake east of Blackfish Lake	No Fish Collected	Minnow Trap	0
DENA	FISHE	1	63.54494	152.48031	277	MMK C-5	Lake east of Fish Lake	Alaska blackfish	Minnow Trap	1
DENA	FISHL	1	63.54956	152.50305	277	MMK C-5	Fish Lake	northern pike	Hoop Trap	9
DENA	FISHL	2	63.54956	152.50305	277	MMK C-5	Fish Lake	northern pike	Gill Net	3
DENA	FISHL	3	63.54956	152.50305	277	MMK C-5	Fish Lake	No Fish Collected	Minnow Trap	0
DENA	FORAC	1	63.21553	151.59997	759	MMK A-4	Foraker Creek	Arctic grayling	Gill Net	7
DENA	FORAC	2	63.21553	151.59997	759	MMK A-4	Foraker Creek	slimy sculpin	Minnow Trap	2
DENA	FORAL	1	63.21469	151.59596	759	MMK A-4	Foraker Lake	round whitefish	Hoop Trap	3
DENA	FORAL	2	63.21469	151.59596	759	MMK A-4	Foraker Lake	slimy sculpin	Minnow Trap	6
DENA	FORAL	3	63.21469	151.59596	759	MMK A-4	Foraker Lake	No Fish Collected	Gill Net	0
DENA	HIGHP	1	63.50271	152.56948	250	MMK C-6	Highpower Creek	sculpin, undifferentiated	Seine	9
DENA	HIGHP	1	63.50271	152.56948	250	MMK C-6	Highpower Creek	Arctic grayling	Seine	1
DENA	HIGHP	2	63.50271	152.56948	250	MMK C-6	Highpower Creek	Arctic grayling	Angling	1
DENA	HIGHP	3	63.50271	152.56948	250	MMK C-6	Highpower Creek	slimy sculpin	Visual	1
DENA	HIGHP	4	63.50271	152.56948	250	MMK C-6	Highpower Creek	No Fish Collected	Minnow Trap	0
DENA	LONES	1	63.57427	152.73662	251	MMK C-6	Lonestar Creek	No Fish Collected	Minnow Trap	0
DENA	MCLEO	1	63.37096	151.10031	598	MMK B-3	McCleod Lake	slimy sculpin	Minnow Trap	1
DENA	MCLEO	2	63.37096	151.10031	598	MMK B-3	McCleod Lake	burbot	Hoop Trap	1

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
DENA	MCLEO	3	63.37096	151.10031	598	MMK B-3	McCleod Lake	No Fish Collected	Gill Net	0
DENA	MOSE1	1	63.80471	150.99771		MMK D-2	Moose Creek	Arctic grayling	Electrofisher Port.	1
DENA	MOSE1	2	63.80471	150.99771		MMK D-2	Moose Creek	round whitefish	Gill Net	1
DENA	MOSE1	3	63.80471	150.99771		MMK D-2	Moose Creek	No Fish Collected	Minnow Trap	0
DENA	MOSE2	1	63.88775	150.90226	167	MMK D-2	Moose Creek	Arctic grayling	Angling	1
DENA	MOSE2	2	63.88775	150.90226	167	MMK D-2	Moose Creek	slimy sculpin	Minnow Trap	2
DENA	MUDDY	1	63.88707	151.59525	191	MMK D-4	Muddy River	humpback whitefish	Gill Net	1
DENA	MUDDY	2	63.88707	151.59525	191	MMK D-4	Muddy River	No Fish Collected	Minnow Trap	0
DENA	NWMOO	1	63.59659	152.71788	253	MMK C-6	Lake NW of Moose Lake	No Fish Collected	Minnow Trap	0
DENA	OTTER	1	63.92382	150.83309	165	MMK D-2	Otter Creek	Arctic lamprey	Seine	3
DENA	OTTER	1	63.92382	150.83309	165	MMK D-2	Otter Creek	slimy sculpin	Seine	17
DENA	OTTER	2	63.92382	150.83309	165	MMK D-2	Otter Creek	humpback whitefish	Fyke Net	1
DENA	OTTER	2	63.92382	150.83309	165	MMK D-2	Otter Creek	Arctic grayling	Fyke Net	4
DENA	OTTER	3	63.92382	150.83309	165	MMK D-2	Otter Creek	No Fish Collected	Minnow Trap	0
DENA	OTTER	4	63.92382	150.83309	165	MMK D-2	Otter Creek	northern pike	Visual	2
DENA	OTTER	4	63.92382	150.83309	165	MMK D-2	Otter Creek	longnose sucker	Visual	2
DENA	SPECT	1	63.59320	152.36902	269	MMK C-5	Spectacle Lake	northern pike	Hoop Trap	1
DENA	SPECT	2	63.59320	152.36902	269	MMK C-5	Spectacle Lake	No Fish Collected	Minnow Trap	0
DENA	SPECT	3	63.59320	152.36902	269	MMK C-5	Spectacle Lake	No Fish Collected	Gill Net	0
DENA	SPRUC	1	63.57427	152.73662	251	MMK C-6	Sprucefish Lake	northern pike	Hoop Trap	2
DENA	SPRUC	2	63.57427	152.73662	251	MMK C-6	Sprucefish Lake	No Fish Collected	Minnow Trap	0
DENA	SPRUC	3	63.57427	152.73662	251	MMK C-6	Sprucefish Lake	No Fish Collected	Gill Net	0
DENA	STARR	1	63.93902	151.66103	205	MMK D-4	Starr Lake	Alaska blackfish	Minnow Trap	63
DENA	STARR	2	63.93902	151.66103	205	MMK D-4	Starr Lake	Alaska blackfish	Other	1
DENA	UNNAC	1	63.90419	150.89381	165	MMK D-2	Unnamed Creek	slimy sculpin	Minnow Trap	1
DENA	UNNAL	1	63.93974	151.89053	206	MMK D-4	Unnamed Lake	Alaska blackfish	Minnow Trap	62
DENA	UNNAL	2	63.93974	151.89053	206	MMK D-4	Unnamed Lake	No Fish Collected	Hoop Trap	0
DENA	UNNAL	3	63.93974	151.89053	206	MMK D-4	Unnamed Lake	No Fish Collected	Angling	0
DENA	UNNAL	4	63.93974	151.89053	206	MMK D-4	Unnamed Lake	No Fish Collected	Gill Net	0

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
DENA	UNNAM	1	63.61636	152.43376	259	MMK C-5	Unnamed Lake	No Fish Collected	Minnow Trap	0
DENA	WONDE	1	63.45884	150.86412	630	MMK B-2	Wonder Lake	burbot	Hoop Trap	14
DENA	WONDE	1	63.45884	150.86412	630	MMK B-2	Wonder Lake	lake trout	Gill Net	10
DENA	WONDE	1	63.45884	150.86412	630	MMK B-2	Wonder Lake	burbot	Hoop Trap	5
DENA	WONDE	1	63.45884	150.86412	630	MMK B-2	Wonder Lake	lake trout	Hoop Trap	3
DENA	WONDE	1	63.45884	150.86412	630	MMK B-2	Wonder Lake	lake trout	Hoop Trap	3
DENA	WONDE	1	63.45884	150.86412	630	MMK B-2	Wonder Lake	slimy sculpin	Minnow Trap	14
DENA	WONDE	2	63.45884	150.86412	630	MMK B-2	Wonder Lake	lake trout	Hoop Trap	1
DENA	WONDE	2	63.45884	150.86412	630	MMK B-2	Wonder Lake	slimy sculpin	Minnow Trap	1
DENA	WONDE	2	63.45884	150.86412	630	MMK B-2	Wonder Lake	lake trout	Gill Net	1
DENA	WONDE	2	63.45884	150.86412	630	MMK B-2	Wonder Lake	burbot	Hoop Trap	13
DENA	WONDE	2	63.45884	150.86412	630	MMK B-2	Wonder Lake	burbot	Setline	1
DENA	WONDE	3	63.45884	150.86412	630	MMK B-2	Wonder Lake	slimy sculpin	Minnow Trap	10
DENA	WONDE	3	63.45884	150.86412	630	MMK B-2	Wonder Lake	lake trout	Gill Net	3
WRST	ALDER	1	62.09010	141.97495	1213	NAB A-2	Alder Lake Creek	No Fish Collected	Electrofisher Port.	0
WRST	ANTIC	1	61.36716	143.96368	217	XMC B-8	Anticipation Creek	chinook, king, spring salmon	Electrofisher Port.	6
WRST	ANTIC	1	61.36716	143.96368	217	XMC B-8	Anticipation Creek	Arctic grayling	Electrofisher Port.	1
WRST	ANTIC	1	61.36716	143.96368	217	XMC B-8	Anticipation Creek	Dolly Varden unknown	Electrofisher Port.	11
WRST	ANTIC	2	61.36716	143.96368	217	XMC B-8	Anticipation Creek	coho salmon, silver	Minnow Trap	1
WRST	ANTIC	2	61.36716	143.96368	217	XMC B-8	Anticipation Creek	Dolly Varden unknown	Minnow Trap	1
WRST	ANTIC	2	61.36716	143.96368	217	XMC B-8	Anticipation Creek	chinook, king, spring salmon	Minnow Trap	1
WRST	BEAVC	1	62.03743	141.78848	1355	NAB A-2	Beaver Creek	Arctic grayling	Angling	2
WRST	BEAVC	2	62.03743	141.78848	1355	NAB A-2	Beaver Creek	slimy sculpin	Minnow Trap	4
WRST	BEAVC	3	62.03743	141.78848	1355	NAB A-2	Beaver Creek	Arctic grayling	Hand Net	1
WRST	BEAVL	1	62.03746	141.78847	1361	NAB A-2	Beaver Lake	Arctic grayling	Angling	7
WRST	BEAVL	2	62.03746	141.78847	1361	NAB A-2	Beaver Lake	burbot	Hoop Trap	5
WRST	BEAVL	3	62.03746	141.78847	1361	NAB A-2	Beaver Lake	slimy sculpin	Minnow Trap	2
WRST	BIGGR	1	62.53419	143.06896	1100	NAB C-5	Big Grayling Lake	No Fish Collected	Minnow Trap	0
WRST	BIGGR	2	62.53419	143.06896	1100	NAB C-5	Big Grayling Lake	No Fish Collected	Angling	0

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
WRST	BILLY	1	62.48886	144.71721	609	GUL B-2	Billy Lake	No Fish Collected	Minnow Trap	0
WRST	BONAN	1	61.49256	142.89053	634	XMC B-6	Bonanza Creek	No Fish Collected	Electrofisher Port.	0
WRST	BOULD	1	62.60216	144.58636	582	GUL C-2	Boulder Creek	slimy sculpin	Hand Net	1
WRST	BOULD	2	62.60216	144.58636	582	GUL C-2	Boulder Creek	round whitefish	Electrofisher Port.	2
WRST	BOULD	2	62.60216	144.58636	582	GUL C-2	Boulder Creek	slimy sculpin	Electrofisher Port.	1
WRST	BOULD	2	62.60216	144.58636	582	GUL C-2	Boulder Creek	Arctic grayling	Electrofisher Port.	3
WRST	BOULD	2	62.60216	144.58636	582	GUL C-2	Boulder Creek	chinook, king, spring salmon	Electrofisher Port.	13
WRST	BREM1	1	60.98105	143.88645	238		Bremner River	Dolly Varden unknown	Minnow Trap	200
WRST	BREM2	1	60.99469	144.12016	201		Bremner River	round whitefish	Gill Net	1
WRST	BREM3	1	61.02840	144.31436	121		Bremner River	sockeye salmon, red	Angling	1
WRST	BREM3	2	61.02840	144.31436	121		Bremner River	Dolly Varden unknown	Minnow Trap	7
WRST	CABIL	1	62.37585	142.97244	821	NAB B-4	lower Cabin Creek	No Fish Collected	Electrofisher Port.	0
WRST	CARDE	1	62.29021	141.17102	817	NAB B-1	Carden Lake	Arctic grayling	Gill Net	9
WRST	CARDE	2	62.29021	141.17102	817	NAB B-1	Carden Lake	Arctic grayling	Angling	2
WRST	CARDE	3	62.29021	141.17102	817	NAB B-1	Carden Lake	slimy sculpin	Minnow Trap	10
WRST	CARDE	3	62.29021	141.17102	817	NAB B-1	Carden Lake	lake chub	Minnow Trap	4
WRST	CARDE	4	62.29021	141.17102	817	NAB B-1	Carden Lake	Arctic grayling	Hoop Trap	9
WRST	CARDE	5	62.29021	141.17102	817	NAB B-1	Carden Lake	Arctic grayling	Dip Net	1
WRST	CARIC	1	62.57339	143.51824	902	NAB C-6	Caribou Creek	No Fish Collected	Electrofisher Port.	0
WRST	CARIC	2	62.57339	143.51824	902	NAB C-6	Caribou Creek	No Fish Collected	Minnow Trap	0
WRST	CHAKI	1	61.32883	143.13648	284	XMC B-6	Chakina River	Arctic grayling	Electrofisher Port.	2
WRST	CHAKI	1	61.32883	143.13648	284	XMC B-6	Chakina River	round whitefish	Electrofisher Port.	15
WRST	CHAKI	1	61.32883	143.13648	284	XMC B-6	Chakina River	Dolly Varden unknown	Electrofisher Port.	3
WRST	CHAKI	1	61.32883	143.13648	284	XMC B-6	Chakina River	chinook, king, spring salmon	Electrofisher Port.	19
WRST	CHAKI	1	61.32883	143.13648	284	XMC B-6	Chakina River	coho salmon, silver	Electrofisher Port.	2
WRST	CHATH	1	62.06411	141.99003	1070	NAB A-2	Chathenda Creek	Arctic grayling	Electrofisher Port.	3
WRST	CHATH	1	62.06411	141.99003	1070	NAB A-2	Chathenda Creek	round whitefish	Electrofisher Port.	2
WRST	CHITC	1	61.36967	142.68215	462	XMC B-5	Chititu Creek	coho salmon, silver	Minnow Trap	2
WRST	CHITC	1	61.36967	142.68215	462	XMC B-5	Chititu Creek	slimy sculpin	Minnow Trap	2
WRST	CHITC	1	61.36967	142.68215	462	XMC B-5	Chititu Creek	Dolly Varden unknown	Minnow Trap	19

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
WRST	CHITC	2	61.36967	142.68215	462	XMC B-5	Chititu Creek	slimy sculpin	Electrofisher Port.	3
WRST	CHLK1	1	62.50426	143.15991	927	NAB C-5	Chalk Creek	No Fish Collected	Minnow Trap	0
WRST	CHLK2	1	62.50426	143.15991	927	NAB C-5	Chalk Creek	Arctic grayling	Electrofisher Port.	3
WRST	CHLK2	1	62.50426	143.15991	927	NAB C-5	Chalk Creek	round whitefish	Electrofisher Port.	2
WRST	CHLK2	2	62.50426	143.15991	927	NAB C-5	Chalk Creek	Arctic grayling	Angling	1
WRST	CHOKA	1	61.45563	143.76174	461	XMC B-8	Chokasna River	Dolly Varden unknown	Electrofisher Port.	9
WRST	CHOKA	1	61.45563	143.76174	461	XMC B-8	Chokasna River	coho salmon, silver	Electrofisher Port.	1
WRST	CHOKA	1	61.45563	143.76174	461	XMC B-8	Chokasna River	chinook, king, spring salmon	Electrofisher Port.	13
WRST	CHOKA	1	61.45563	143.76174	461	XMC B-8	Chokasna River	slimy sculpin	Electrofisher Port.	1
WRST	CHTIR	1	61.45855	142.40236	682	NAB B-4	Chitistone River	Dolly Varden unknown	Electrofisher Port.	2
WRST	CLEAR	1	61.43243	142.93038	418	XMC B-6	Clear Creek	Dolly Varden unknown	Electrofisher Port.	6
WRST	CLEAR	1	61.43243	142.93038	418	XMC B-6	Clear Creek	coho salmon, silver	Electrofisher Port.	2
WRST	COBB1	1	62.70564	144.13075	717	GUL C-1	Smaller Cobb Lake	No Fish Collected	Minnow Trap	0
WRST	COBB1	2	62.70564	144.13075	717	GUL C-1	Smaller Cobb Lake	No Fish Collected	Hoop Trap	0
WRST	COBB2	1	62.70004	144.06417	713	GUL C-1	Cobb Lake 2, larger	No Fish Collected	Angling	0
WRST	COBB2	2	62.70004	144.06417	713	GUL C-1	Cobb Lake 2, larger	No Fish Collected	Gill Net	0
WRST	COBB2	3	62.70004	144.06417	713	GUL C-1	Cobb Lake 2, larger	No Fish Collected	Minnow Trap	0
WRST	COBB2	4	62.70004	144.06417	713	GUL C-1	Cobb Lake 2, larger	No Fish Collected	Hoop Trap	0
WRST	COPLA	1	62.42420	143.47335	894	NAB B-5	Copper Lake	lake trout	Angling	14
WRST	COPLA	1	62.42420	143.47335	894	NAB B-5	Copper Lake	Arctic grayling	Angling	40
WRST	COPLA	1	62.42420	143.47335	894	NAB B-5	Copper Lake	salmon, undffentiated	Angling	2
WRST	COPLA	2	62.42420	143.47335	894	NAB B-5	Copper Lake	burbot	Hoop Trap	3
WRST	COPLA	2	62.42420	143.47335	894	NAB B-5	Copper Lake	lake trout	Hoop Trap	2
WRST	COPLA	3	62.42420	143.47335	894	NAB B-5	Copper Lake	lake trout	Gill Net	1
WRST	COPLA	3	62.42420	143.47335	894	NAB B-5	Copper Lake	Arctic grayling	Gill Net	7
WRST	COPLA	4	62.42420	143.47335	894	NAB B-5	Copper Lake	slimy sculpin	Minnow Trap	2
WRST	COPR1	1	62.66810	144.37169	608	GUL C-1	Copper River slough - stop 1	sockeye salmon, red	Electrofisher Port.	1
WRST	COPR1	1	62.66810	144.37169	608	GUL C-1	Copper River slough - stop 1	round whitefish	Electrofisher Port.	2
WRST	COPR1	1	62.66810	144.37169	608	GUL C-1	Copper River slough - stop 1	burbot	Electrofisher Port.	2

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
WRST	COPR1	1	62.66810	144.37169	608	GUL C-1	Copper River slough - stop 1	slimy sculpin	Electrofisher Port.	2
WRST	COPR3	1	62.60757	144.56375	586	GUL C-2	Copper River Stop 3	slimy sculpin	Electrofisher Port.	2
WRST	COPR3	1	62.60757	144.56375	586	GUL C-2	Copper River Stop 3	Pacific lamprey	Electrofisher Port.	3
WRST	COPR3	2	62.60757	144.56375	586	GUL C-2	Copper River Stop 3	Arctic grayling	Angling	1
WRST	COPTR	1	62.65126	144.39282	600	GUL C-1	Copper River tributary 1	slimy sculpin	Electrofisher Port.	1
WRST	CRYST	1	61.36728	143.42711	402	XMC B-7	Crystal Creek	Rainbow Trout	Electrofisher Port.	5
WRST	CUBCR	1	61.73075	141.18387	943	XMC C-2	Cub Creek	No Fish Collected	Electrofisher Port.	0
WRST	DANCR	1	61.37630	142.56284	522	XMC B-5	Dan Creek	Dolly Varden unknown	Minnow Trap	7
WRST	ESKER	1	59.89966	139.74287	5	YAK D-5	Esker Stream	slimy sculpin	Electrofisher Port.	2
WRST	ESKER	1	59.89966	139.74287	5	YAK D-5	Esker Stream	salmon, trout, undifferentiated	Electrofisher Port.	2
WRST	ESKER	1	59.89966	139.74287	5	YAK D-5	Esker Stream	Dolly Varden unknown	Electrofisher Port.	4
WRST	ESKER	2	59.89966	139.74287	5	YAK D-5	Esker Stream	Dolly Varden unknown	Minnow Trap	2
WRST	ESKET	1	59.89866	139.74287	5	YAK D-5	Little Esker Tributary	slimy sculpin	Electrofisher Port.	2
WRST	ESKET	1	59.89866	139.74287	5	YAK D-5	Little Esker Tributary	coastrange sculpin	Electrofisher Port.	2
WRST	ESKET	1	59.89866	139.74287	5	YAK D-5	Little Esker Tributary	coho salmon, silver	Electrofisher Port.	7
WRST	ESKET	1	59.89866	139.74287	5	YAK D-5	Little Esker Tributary	salmon, trout, undifferentiated	Electrofisher Port.	1
WRST	FOXL1	1	62.30966	144.88922	736	GUL B-2	Lake west of longest Fox Lake	No Fish Collected	Gill Net	0
WRST	FOXL1	2	62.30966	144.88922	736	GUL B-2	Lake west of longest Fox Lake	No Fish Collected	Minnow Trap	0
WRST	FOXL1	3	62.30966	144.88922	736	GUL B-2	Lake west of longest Fox Lake	No Fish Collected	Angling	0
WRST	FOXLA	1	62.32039	144.86303	739	GUL B-2	Biggest Fox Lake	No Fish Collected	Minnow Trap	0
WRST	GEOHE	1	62.04609	142.04214	1038	NAB A-3	Geohenda Creek	round whitefish	Electrofisher Port.	5
WRST	GEOHE	1	62.04609	142.04214	1038	NAB A-3	Geohenda Creek	slimy sculpin	Electrofisher Port.	3
WRST	GEOHE	1	62.04609	142.04214	1038	NAB A-3	Geohenda Creek	Arctic grayling	Electrofisher Port.	1
WRST	GILAH	1	61.43850	143.71631	429	XMC B-8	Gilahina River	chinook, king, spring salmon	Minnow Trap	3
WRST	GILAH	1	61.43850	143.71631	429	XMC B-8	Gilahina River	coho salmon, silver	Minnow Trap	3
WRST	GILAH	1	61.43850	143.71631	429	XMC B-8	Gilahina River	Dolly Varden unknown	Minnow Trap	9
WRST	GILAH	2	61.43850	143.71631	429	XMC B-8	Gilahina River	Dolly Varden unknown	Electrofisher Port.	4
WRST	GILAH	2	61.43850	143.71631	429	XMC B-8	Gilahina River	chinook, king, spring salmon	Electrofisher Port.	5
WRST	GILAH	2	61.43850	143.71631	429	XMC B-8	Gilahina River	slimy sculpin	Electrofisher Port.	1

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
WRST	GILAH	2	61.43850	143.71631	429	XMC B-8	Gilahina River	coho salmon, silver	Electrofisher Port.	19
WRST	GLACI	1	61.45850	142.40234	681	XMC B-4	Glacier Creek	No Fish Collected	Electrofisher Port.	0
WRST	GLACI	2	61.45850	142.40234	681	XMC B-4	Glacier Creek	No Fish Collected	Minnow Trap	0
WRST	GOATC	1	61.07308	142.11769	685	XMC A-3	Goat Creek	Dolly Varden resident	Electrofisher Port.	11
WRST	GRANI	1	61.09104	142.79346	442	XMC A-5	Lower Granitic Creek	Dolly Varden resident	Electrofisher Port.	13
WRST	HANAG	1	61.21908	143.78508	786	XMC A-8	Hanagita Lake	Arctic grayling	Angling	8
WRST	HANAG	1	61.21908	143.78508	786	XMC A-8	Hanagita Lake	lake trout	Angling	3
WRST	HANAG	2	61.21908	143.78508	786	XMC A-8	Hanagita Lake	lake trout	Minnow Trap	2
WRST	HELI1	1	62.62390	144.32813	647	GUL C-1	Heli Trip Site 1	No Fish Collected	Gill Net	0
WRST	HELI1	2	62.62390	144.32813	647	GUL C-1	Heli Trip Site 1	No Fish Collected	Minnow Trap	0
WRST	HELI1	3	62.62390	144.32813	647	GUL C-1	Heli Trip Site 1	No Fish Collected	Hoop Trap	0
WRST	HELI2	1	62.60798	143.88320	729	NAB C-6	Heli Trip Site 2	No Fish Collected	Minnow Trap	0
WRST	HOLME	1	61.72009	141.37530	986	XMC C-2	Holmes Creek (Random Creek 1)	No Fish Collected	Electrofisher Port.	0
WRST	JACK1	1	62.46285	143.10280	868	NAB B-5	Jack Creek	Arctic grayling	Angling	1
WRST	JACK2	1	62.46323	143.10105	875	NAB B-5	Jack Creek	slimy sculpin	Minnow Trap	2
WRST	JACK2	2	62.46323	143.10105	875	NAB B-5	Jack Creek	slimy sculpin	Electrofisher Port.	10
WRST	JACK2	2	62.46323	143.10105	875	NAB B-5	Jack Creek	burbot	Electrofisher Port.	3
WRST	JACK2	3	62.46323	143.10105	875	NAB B-5	Jack Creek	No Fish Collected	Angling	0
WRST	JACKP	1	62.46276	143.10136	872	NAB B-5	Jack Creek Beaver Pond	Arctic grayling	Angling	2
WRST	JUMBO	1	61.50337	142.89535	660	XMC C-6	Jumbo Creek	No Fish Collected	Electrofisher Port.	0
WRST	KAMEC	1	59.78589	139.99115	7	YAK D-6	Kame Sream	coho salmon, silver	Minnow Trap	3
WRST	KAMEC	1	59.78589	139.99115	7	YAK D-6	Kame Sream	threespine stickleback	Minnow Trap	39
WRST	KAMEC	2	59.78589	139.99115	7	YAK D-6	Kame Sream	chinook, king, spring salmon	Gill Net	1
WRST	KAMEC	3	59.78589	139.99115	7	YAK D-6	Kame Sream	starry flounder	Seine	1
WRST	KAMEC	3	59.78589	139.99115	7	YAK D-6	Kame Sream	chinook, king, spring salmon	Seine	3
WRST	KAMEC	3	59.78589	139.99115	7	YAK D-6	Kame Sream	coho salmon, silver	Seine	1
WRST	KAMEC	3	59.78589	139.99115	7	YAK D-6	Kame Sream	threespine stickleback	Seine	1
WRST	KAMEL	1	59.79761	139.99948	10	YAK D-6	Kame Creek Lake	threespine stickleback	Minnow Trap	5
WRST	KAMEL	2	59.79761	139.99948	10	YAK D-6	Kame Creek Lake	No Fish Collected	Angling	0

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
WRST	KAMEL	3	59.79761	139.99948	10	YAK D-6	Kame Creek Lake	No Fish Collected	Gill Net	0
WRST	KAMET	1	59.79106	140.00131	11	YAK D-6	Kame Stream Tributary	chinook, king, spring salmon	Minnow Trap	1
WRST	KAMET	1	59.79106	140.00131	11	YAK D-6	Kame Stream Tributary	threespine stickleback	Minnow Trap	25
WRST	KAMET	1	59.79106	140.00131	11	YAK D-6	Kame Stream Tributary	coho salmon, silver	Minnow Trap	32
WRST	KAMET	2	59.79106	140.00131	11	YAK D-6	Kame Stream Tributary	No Fish Collected	Other	0
WRST	KAMET	3	59.79106	140.00131	11	YAK D-6	Kame Stream Tributary	No Fish Collected	Gill Net	0
WRST	KIAGN	1	61.08326	142.51700	406	XMC A-5	Kiagna River	Dolly Varden resident	Gill Net	1
WRST	KIAGN	2	61.08326	142.51700	406	XMC A-5	Kiagna River	slimy sculpin	Electrofisher Port.	1
WRST	KIAGN	2	61.08326	142.51700	406	XMC A-5	Kiagna River	Dolly Varden resident	Electrofisher Port.	36
WRST	KIAGN	3	61.08326	142.51700	406	XMC A-5	Kiagna River	Dolly Varden resident	Minnow Trap	5
WRST	KLETS	1	61.73762	141.02219	889	XMC C-1	Kletson Creek	Arctic grayling	Electrofisher Port.	9
WRST	KLETS	1	61.73762	141.02219	889	XMC C-1	Kletson Creek	slimy sculpin	Electrofisher Port.	22
WRST	KLURI	1	61.15892	143.41036	887	XMC A-7	Klu River	slimy sculpin	Electrofisher Port.	6
WRST	KLURI	1	61.15892	143.41036	887	XMC A-7	Klu River	Dolly Varden unknown	Electrofisher Port.	18
WRST	KLURI	2	61.15892	143.41036	887	XMC A-7	Klu River	Dolly Varden unknown	Minnow Trap	3
WRST	LAKIN	1	61.37334	143.35396	414	XMC B-7	Lakina River	coho salmon, silver	Minnow Trap	1
WRST	LAKIN	1	61.37334	143.35396	414	XMC B-7	Lakina River	slimy sculpin	Minnow Trap	1
WRST	LAKIN	1	61.37334	143.35396	414	XMC B-7	Lakina River	Dolly Varden unknown	Minnow Trap	19
WRST	LESKE	1	59.87926	139.77171	4	YAK D-5	Little Esker Stream	starry flounder	Seine	1
WRST	LESKE	1	59.87926	139.77171	4	YAK D-5	Little Esker Stream	coho salmon, silver	Seine	17
WRST	LESKE	1	59.87926	139.77171	4	YAK D-5	Little Esker Stream	chinook, king, spring salmon	Seine	9
WRST	LESKE	1	59.87926	139.77171	4	YAK D-5	Little Esker Stream	threespine stickleback	Seine	1
WRST	LESKE	1	59.87926	139.77171	4	YAK D-5	Little Esker Stream	Dolly Varden unknown	Seine	1
WRST	LESKE	1	59.87926	139.77171	4	YAK D-5	Little Esker Stream	sculpin, undifferentiated	Seine	1
WRST	LESKE	2	59.87926	139.77171	4	YAK D-5	Little Esker Stream	Dolly Varden unknown	Electrofisher Port.	10
WRST	LESKE	2	59.87926	139.77171	4	YAK D-5	Little Esker Stream	chinook, king, spring salmon	Electrofisher Port.	1
WRST	LESKE	2	59.87926	139.77171	4	YAK D-5	Little Esker Stream	coho salmon, silver	Electrofisher Port.	9
WRST	LESKE	2	59.87926	139.77171	4	YAK D-5	Little Esker Stream	sculpin, undifferentiated	Electrofisher Port.	14
WRST	LESKE	3	59.87926	139.77171	4	YAK D-5	Little Esker Stream	chinook, king, spring salmon	Minnow Trap	1

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
WRST	LESKE	3	59.87926	139.77171	4	YAK D-5	Little Esker Stream	coho salmon, silver	Minnow Trap	3
WRST	LESKE	3	59.87926	139.77171	4	YAK D-5	Little Esker Stream	Dolly Varden unknown	Minnow Trap	61
WRST	LESKE	3	59.87926	139.77171	4	YAK D-5	Little Esker Stream	threespine stickleback	Minnow Trap	2
WRST	LESKE	4	59.87926	139.77171	4	YAK D-5	Little Esker Stream	eulachon	Gill Net	23
WRST	LESKE	5	59.87926	139.77171	4	YAK D-5	Little Esker Stream	eulachon	Visual	1
WRST	LLCRE	1	61.37811	143.31241	436	XMC B-7	Long Lake Creek	Arctic grayling	Minnow Trap	1
WRST	LLCRE	1	61.37811	143.31241	436	XMC B-7	Long Lake Creek	slimy sculpin	Minnow Trap	1
WRST	LLCRE	1	61.37811	143.31241	436	XMC B-7	Long Lake Creek	Rainbow Trout	Minnow Trap	1
WRST	LLCRE	1	61.37811	143.31241	436	XMC B-7	Long Lake Creek	Dolly Varden unknown	Minnow Trap	6
WRST	LLCRE	1	61.37811	143.31241	436	XMC B-7	Long Lake Creek	coho salmon, silver	Minnow Trap	13
WRST	LOLAO	1	62.55387	143.39971	970	NAB C-5	Long Lake outlet - (Nabesna Road)	Arctic grayling	Angling	5
WRST	LOLAO	2	62.55387	143.39971	970	NAB C-5	Long Lake outlet - (Nabesna Road)	slimy sculpin	Minnow Trap	5
WRST	LOLAO	3	62.55387	143.39971	970	NAB C-5	Long Lake outlet - (Nabesna Road)	No Fish Collected	Gill Net	0
WRST	LONGM	1	61.38003	143.30469	441	XMC B-7	Long Lake (McCarthyRoad)	Arctic grayling	Minnow Trap	1
WRST	LONGM	1	61.38003	143.30469	441	XMC B-7	Long Lake (McCarthyRoad)	coho salmon, silver	Minnow Trap	8
WRST	LONGM	1	61.38003	143.30469	441	XMC B-7	Long Lake (McCarthyRoad)	slimy sculpin	Minnow Trap	1
WRST	LONGM	1	61.38003	143.30469	441	XMC B-7	Long Lake (McCarthyRoad)	Dolly Varden unknown	Minnow Trap	32
WRST	LONGM	1	61.38003	143.30469	441	XMC B-7	Long Lake (McCarthyRoad)	longnose sucker	Minnow Trap	11
WRST	LONGN	1	62.55387	143.39971	970	NAB C-5	Long Lake (Nabesna Road)	Arctic grayling	Visual	1
WRST	LONGN	2	62.55387	143.39971	970	NAB C-5	Long Lake (Nabesna Road)	burbot	Minnow Trap	1
WRST	MAYC2	1	61.36885	142.69371	446	XMC B-5	Unnamed Creek	Dolly Varden unknown	Minnow Trap	34
WRST	MAYC2	1	61.36885	142.69371	446	XMC B-5	Unnamed Creek	coho salmon, silver	Minnow Trap	6
WRST	MAYC2	1	61.36885	142.69371	446	XMC B-5	Unnamed Creek	slimy sculpin	Minnow Trap	1
WRST	MAYC2	2	61.36885	142.69371	446	XMC B-5	Unnamed Creek	slimy sculpin	Electrofisher Port.	2
WRST	MAYC2	2	61.36885	142.69371	446	XMC B-5	Unnamed Creek	Dolly Varden unknown	Electrofisher Port.	3
WRST	MAYCR	1	61.34774	142.68341	731	XMC B-5	May Creek	coho salmon, silver	Minnow Trap	2
WRST	MAYCR	1	61.34774	142.68341	731	XMC B-5	May Creek	Dolly Varden unknown	Minnow Trap	41
WRST	MCCAR	1	61.43143	142.92506	422	XMC B-6	McCarthy Creek	Dolly Varden anadromous	Electrofisher Port.	8
WRST	MONEH	1	61.12812	143.25674	834	XMC A-7	Monahan Creek	slimy sculpin	Electrofisher Port.	1

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
WRST	MONEH	1	61.12812	143.25674	834	XMC A-7	Monahan Creek	chinook, king, spring salmon	Electrofisher Port.	14
WRST	MOSE3	1	61.90293	140.59924	749		Moose Creek	No Fish Collected	Electrofisher Port.	0
WRST	MOSE3	2	61.90293	140.59924	749		Moose Creek	Arctic grayling	Visual	1
WRST	NABRD	1	62.53293	143.28156	957	NAB C-5	Unnamed cr. btwn Long L.&L.Jack Cr	Arctic grayling	Electrofisher Port.	3
WRST	NABRD	1	62.53293	143.28156	957	NAB C-5	Unnamed cr. btwn Long L.&L.Jack Cr	slimy sculpin	Electrofisher Port.	20
WRST	NATIO	1	61.48434	142.88731	601	XMC B-6	National Creek	No Fish Collected	Electrofisher Port.	0
WRST	NIZI2	1	61.36794	142.69699	444	XMC B-5	Nizina River - side channel	coho salmon, silver	Minnow Trap	45
WRST	NIZI2	1	61.36794	142.69699	444	XMC B-5	Nizina River - side channel	Dolly Varden unknown	Minnow Trap	23
WRST	NIZI2	1	61.36794	142.69699	444	XMC B-5	Nizina River - side channel	slimy sculpin	Minnow Trap	2
WRST	NIZIN	1	61.37459	142.70170	453	XMC B-5	Nizina River - main channel	slimy sculpin	Electrofisher Port.	2
WRST	NIZIN	1	61.37459	142.70170	453	XMC B-5	Nizina River - main channel	Dolly Varden unknown	Electrofisher Port.	5
WRST	NIZIN	2	61.37459	142.70170	453	XMC B-5	Nizina River - main channel	slimy sculpin	Minnow Trap	1
WRST	NIZIN	2	61.37459	142.70170	453	XMC B-5	Nizina River - main channel	Dolly Varden unknown	Minnow Trap	3
WRST	OSARS	1	59.72986	140.19180	6	YAK C-6	Osar Stream	chinook, king, spring salmon	Gill Net	7
WRST	OSARS	1	59.72986	140.19180	6	YAK C-6	Osar Stream	Dolly Varden unknown	Gill Net	2
WRST	OSARS	2	59.72986	140.19180	6	YAK C-6	Osar Stream	chinook, king, spring salmon	Snorkel	40
WRST	OSARS	2	59.72986	140.19180	6	YAK C-6	Osar Stream	threespine stickleback	Snorkel	9
WRST	OSARS	2	59.72986	140.19180	6	YAK C-6	Osar Stream	coho salmon, silver	Snorkel	2
WRST	OSARS	2	59.72986	140.19180	6	YAK C-6	Osar Stream	Dolly Varden unknown	Snorkel	1
WRST	OSARS	3	59.72986	140.19180	6	YAK C-6	Osar Stream	coho salmon, silver	Dip Net	2
WRST	OSARS	4	59.72986	140.19180	6	YAK C-6	Osar Stream	threespine stickleback	Seine	2
WRST	OSARS	4	59.72986	140.19180	6	YAK C-6	Osar Stream	coho salmon, silver	Seine	3
WRST	OSARS	4	59.72986	140.19180	6	YAK C-6	Osar Stream	chinook, king, spring salmon	Seine	36
WRST	OSARS	5	59.72986	140.19180	6	YAK C-6	Osar Stream	Dolly Varden anadromous	Minnow Trap	3
WRST	OSARS	5	59.72986	140.19180	6	YAK C-6	Osar Stream	chinook, king, spring salmon	Minnow Trap	11
WRST	OSARS	5	59.72986	140.19180	6	YAK C-6	Osar Stream	coho salmon, silver	Minnow Trap	5
WRST	OSARS	5	59.72986	140.19180	6	YAK C-6	Osar Stream	threespine stickleback	Minnow Trap	38
WRST	PTARM	1	61.86611	141.17282	1079	XMC D-1	Ptarmigan Lake	lake trout	Angling	7
WRST	PTARM	1	61.86611	141.17282	1079	XMC D-1	Ptarmigan Lake	Arctic grayling	Angling	4

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
WRST	PTARM	2	61.86611	141.17282	1079	XMC D-1	Ptarmigan Lake	Arctic grayling	Gill Net	2
WRST	PTARM	2	61.86611	141.17282	1079	XMC D-1	Ptarmigan Lake	longnose sucker	Gill Net	1
WRST	PTARM	3	61.86611	141.17282	1079	XMC D-1	Ptarmigan Lake	burbot	Hoop Trap	8
WRST	PTARM	3	61.86611	141.17282	1079	XMC D-1	Ptarmigan Lake	longnose sucker	Hoop Trap	9
WRST	PTARM	3	61.86611	141.17282	1079	XMC D-1	Ptarmigan Lake	slimy sculpin	Hoop Trap	1
WRST	PTARM	3	61.86611	141.17282	1079	XMC D-1	Ptarmigan Lake	round whitefish	Hoop Trap	1
WRST	PTARM	4	61.86611	141.17282	1079	XMC D-1	Ptarmigan Lake	burbot	Minnow Trap	1
WRST	PTARM	4	61.86611	141.17282	1079	XMC D-1	Ptarmigan Lake	slimy sculpin	Minnow Trap	4
WRST	PTARM	4	61.86611	141.17282	1079	XMC D-1	Ptarmigan Lake	lake trout	Minnow Trap	6
WRST	PTARM	4	61.86611	141.17282	1079	XMC D-1	Ptarmigan Lake	longnose sucker	Minnow Trap	1
WRST	ROCK1	1	61.80340	141.26006	1087	XMC D-1	Rock Lake	lake trout	Minnow Trap	2
WRST	ROCK1	1	61.80340	141.26006	1087	XMC D-1	Rock Lake	longnose sucker	Minnow Trap	1
WRST	ROCK1	1	61.80340	141.26006	1087	XMC D-1	Rock Lake	slimy sculpin	Minnow Trap	4
WRST	ROCK1	1	61.80340	141.26006	1087	XMC D-1	Rock Lake	burbot	Minnow Trap	2
WRST	ROCK1	2	61.80340	141.26006	1087	XMC D-1	Rock Lake	lake trout	Angling	4
WRST	ROCK1	3	61.80340	141.26006	1087	XMC D-1	Rock Lake	burbot	Hoop Trap	5
WRST	ROCK1	4	61.80340	141.26006	1087	XMC D-1	Rock Lake	Arctic grayling	Visual	1
WRST	ROCK1	4	61.80340	141.26006	1087	XMC D-1	Rock Lake	lake trout	Visual	1
WRST	ROCK2	1	62.56389	143.41388	978	NAB C-5	Rock Lake	longnose sucker	Hoop Trap	6
WRST	ROCK2	2	62.56389	143.41388	978	NAB C-5	Rock Lake	slimy sculpin	Minnow Trap	22
WRST	ROCK2	2	62.56389	143.41388	978	NAB C-5	Rock Lake	longnose sucker	Minnow Trap	2
WRST	RUFUS	1	62.68291	143.88941	681	NAB C-6	Rufus Creek	Dolly Varden resident	Minnow Trap	4
WRST	RUFUS	1	62.68291	143.88941	681	NAB C-6	Rufus Creek	slimy sculpin	Minnow Trap	2
WRST	SANFO	1	62.34495	145.16627	475	GUL B-3	Sanford River	round whitefish	Electrofisher Port.	2
WRST	SANFO	1	62.34495	145.16627	475	GUL B-3	Sanford River	chinook, king, spring salmon	Electrofisher Port.	1
WRST	SANFO	1	62.34495	145.16627	475	GUL B-3	Sanford River	burbot	Electrofisher Port.	1
WRST	SKULL	1	61.32736	143.65884	225	XMC B-8	Skull Creek	Dolly Varden unknown	Electrofisher Port.	6
WRST	SKULL	1	61.32736	143.65884	225	XMC B-8	Skull Creek	chinook, king, spring salmon	Electrofisher Port.	14
WRST	SKULL	2	61.32736	143.65884	225	XMC B-8	Skull Creek	chinook, king, spring salmon	Visual	2

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
WRST	SKULL	3	61.32736	143.65884	225	XMC B-8	Skull Creek	chinook, king, spring salmon	Dip Net	1
WRST	SKULL	4	61.32736	143.65884	225	XMC B-8	Skull Creek	slimy sculpin	Other	1
WRST	SOLOC	1	61.75634	141.67911	1097	XMC D-2	Solo Creek	slimy sculpin	Electrofisher Port.	26
WRST	SOLOC	1	61.75634	141.67911	1097	XMC D-2	Solo Creek	Arctic grayling	Electrofisher Port.	2
WRST	STREL	1	61.48532	144.19928	180	XMC B-8	Strelna Creek	round whitefish	Gill Net	6
WRST	SUDDE	1	59.78241	139.98466	6	YAK D-6	Sudden Stream Slough	Dolly Varden unknown	Gill Net	2
WRST	SUDDE	1	59.78241	139.98466	6	YAK D-6	Sudden Stream Slough	eulachon	Gill Net	3
WRST	SUDDS	1	59.78812	139.98108	1	YAK D-6	Sudden Stream	Dolly Varden unknown	Minnow Trap	9
WRST	SUDDS	1	59.78812	139.98108	1	YAK D-6	Sudden Stream	chinook, king, spring salmon	Minnow Trap	11
WRST	SUDDS	1	59.78812	139.98108	1	YAK D-6	Sudden Stream	threespine stickleback	Minnow Trap	12
WRST	SUDDS	2	59.78812	139.98108	1	YAK D-6	Sudden Stream	Dolly Varden unknown	Gill Net	2
WRST	SWIF1	1	61.38393	142.58572	483	XMC B-5	Swift Creek	Dolly Varden unknown	Minnow Trap	17
WRST	SWIF1	2	61.38393	142.58572	483	XMC B-5	Swift Creek	Dolly Varden unknown	Electrofisher Port.	7
WRST	SWIF1	2	61.38393	142.58572	483	XMC B-5	Swift Creek	coho salmon, silver	Electrofisher Port.	5
WRST	SWIF2	1	61.40829	143.00144	397	XMC B-6	Swift Creek	Dolly Varden unknown	Minnow Trap	1
WRST	SWIF3	1	61.40829	142.99831	379	XMC B-6	Swift Creek	Dolly Varden unknown	Electrofisher Port.	70
WRST	SWIF3	1	61.40829	142.99831	379	XMC B-6	Swift Creek	slimy sculpin	Electrofisher Port.	2
WRST	TANAB	1	60.94705	142.69329	436	XBG D-5	Tana River beaver ponds	slimy sculpin	Electrofisher Port.	2
WRST	TANAB	2	60.94705	142.69329	436	XBG D-5	Tana River beaver ponds	Dolly Varden resident	Minnow Trap	1
WRST	TANAC	1	62.61391	143.77499	732	NAB C-6	Tanada Creek	Arctic grayling	Visual	1
WRST	TANAC	2	62.61391	143.77499	732	NAB C-6	Tanada Creek	slimy sculpin	Electrofisher Port.	10
WRST	TANAC	3	62.61391	143.77499	732	NAB C-6	Tanada Creek	Arctic grayling	Angling	2
WRST	TANAR	1	61.21047	142.83519	320	XMC A-5	Tana River	chinook, king, spring salmon	Electrofisher Port.	1
WRST	TANAR	1	61.21047	142.83519	320	XMC A-5	Tana River	round whitefish	Electrofisher Port.	2
WRST	TANAR	1	61.21047	142.83519	320	XMC A-5	Tana River	coho salmon, silver	Electrofisher Port.	1
WRST	TANAR	2	61.21047	142.83519	320	XMC A-5	Tana River	sockeye salmon, red	Gill Net	3
WRST	TANLA	1	62.40556	143.38222	879	NAB B-5	Tanada Lake	Arctic grayling	Angling	3
WRST	TANLA	2	62.40556	143.38222	879	NAB B-5	Tanada Lake	burbot	Hoop Trap	31
WRST	TANLA	3	62.40556	143.38222	879	NAB B-5	Tanada Lake	slimy sculpin	Minnow Trap	4

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
WRST	TANLA	3	62.40556	143.38222	879	NAB B-5	Tanada Lake	burbot	Minnow Trap	3
WRST	TEBAR	1	61.39327	143.65884	200	XMC B-8	Tebay River	coho salmon, silver	Minnow Trap	7
WRST	TEBAR	2	61.39327	143.65884	200	XMC B-8	Tebay River	Arctic grayling	Gill Net	3
WRST	TEBAY	1	61.20414	144.24421	565	VAL A-1	Tebay Lake	Rainbow Trout	Angling	46
WRST	TEBAY	1	61.20414	144.24421	565	VAL A-1	Tebay Lake	Arctic grayling	Angling	1
WRST	TEBAY	2	61.20414	144.24421	565	VAL A-1	Tebay Lake	Rainbow Trout	Hoop Trap	14
WRST	TEBAY	2	61.20414	144.24421	565	VAL A-1	Tebay Lake	Dolly Varden unknown	Hoop Trap	3
WRST	TEBAY	3	61.20414	144.24421	565	VAL A-1	Tebay Lake	No Fish Collected	Gill Net	0
WRST	TEBAY	4	61.20414	144.24421	565	VAL A-1	Tebay Lake	Rainbow Trout	Minnow Trap	1
WRST	TRACT	1	61.40453	143.08914	488	XMC B-6	Tractor Creek	No Fish Collected	Other	0
WRST	TRAVE	1	61.73611	141.09293	919	XMC C-1	Traver Creek	slimy sculpin	Electrofisher Port.	23
WRST	TRAVE	1	61.73611	141.09293	919	XMC C-1	Traver Creek	Arctic grayling	Electrofisher Port.	32
WRST	TRAVS	1	61.73611	141.09293	919	XMC C-1	Traver Creek Side Channel	No Fish Collected	Electrofisher Port.	0
WRST	TWINL	1	62.52875	143.26123	951	NAB C-5	Twin Lake	Arctic grayling	Angling	6
WRST	TWINL	2	62.52875	143.26123	951	NAB C-5	Twin Lake	Arctic grayling	Gill Net	2
WRST	TWINL	3	62.52875	143.26123	951	NAB C-5	Twin Lake	No Fish Collected	Minnow Trap	0
WRST	UPTEB	1	61.18596	144.34747	552	VAL A-1	Upper Tebay Lake	Rainbow Trout	Angling	12
WRST	WFORK	1	61.53521	142.59240	623	XMC C-5	West Fork Creek	Dolly Varden unknown	Electrofisher Port.	11
WRST	WHITE	1	61.73611	141.09293	919	XMC C-1	White River (adjacent to Traver Creek)	No Fish Collected	Electrofisher Port.	0
WRST	WRAN2	1	61.72918	141.21375	956	XMC C-1	Random Creek 2	slimy sculpin	Electrofisher Port.	8
WRST	WRAN2	1	61.72918	141.21375	956	XMC C-1	Random Creek 2	Arctic grayling	Electrofisher Port.	9
WRST	YOUNG	1	61.34977	142.72551	459	XMC B-5	Young Creek	Dolly Varden unknown	Electrofisher Port.	19
WRST	YOUNG	1	61.34977	142.72551	459	XMC B-5	Young Creek	chinook, king, spring salmon	Electrofisher Port.	1
WRST	YOUNG	1	61.34977	142.72551	459	XMC B-5	Young Creek	slimy sculpin	Electrofisher Port.	14
WRST	YOUNG	2	61.34977	142.72551	459	XMC B-5	Young Creek	slimy sculpin	Minnow Trap	1
WRST	YOUNG	2	61.34977	142.72551	459	XMC B-5	Young Creek	Dolly Varden unknown	Minnow Trap	16
YUCH	CIRQB	1	64.80133	143.58475	1280	EAG D-6	Big Cirque Lake	No Fish Collected	Gill Net	0
YUCH	CIRQB	2	64.80133	143.58475	1280	EAG D-6	Big Cirque Lake	No Fish Collected	Hoop Trap	0
YUCH	CIRQB	3	64.80133	143.58475	1280	EAG D-6	Big Cirque Lake	No Fish Collected	Minnow Trap	0

Park	Site	Obs	latitude	longitude	Elevation m	Quad	Waterbody	Species	Gear Type	Count
YUCH	CIRQS	1	64.81797	143.58512	1097	EAG D-6	Small Cirque Lake	No Fish Collected	Gill Net	0
YUCH	CIRQS	2	64.81797	143.58512	1097	EAG D-6	Small Cirque Lake	No Fish Collected	Angling	0
YUCH	CIRQS	3	64.81797	143.58512	1097	EAG D-6	Small Cirque Lake	No Fish Collected	Minnow Trap	0
YUCH	CIRQS	4	64.81797	143.58512	1097	EAG D-6	Small Cirque Lake	No Fish Collected	Hoop Trap	0
YUCH	LAKE2	1	65.46840	143.61838	220	CHR B-6	Lake #2 (across from Takoma Bluff)	No Fish Collected	Hoop Trap	0
YUCH	LAKE2	2	65.46840	143.61838	220	CHR B-6	Lake #2 (across from Takoma Bluff)	No Fish Collected	Gill Net	0
YUCH	LAKE2	3	65.46840	143.61838	220	CHR B-6	Lake #2 (across from Takoma Bluff)	No Fish Collected	Minnow Trap	0
YUCH	SEYMO	1	65.33547	142.05130	246	CHR B-3	Seymore Lake	northern pike	Gill Net	1
YUCH	SEYMO	2	65.33547	142.05130	246	CHR B-3	Seymore Lake	No Fish Collected	Hoop Trap	0
YUCH	SEYMO	3	65.33547	142.05130	246	CHR B-3	Seymore Lake	No Fish Collected	Minnow Trap	0
YUCH	UNNA1	1	65.36456	143.12358	219	CHR B-5	Unnamed Creek (or lake; Site #1)	No Fish Collected	Minnow Trap	0
YUCH	UNNA1	2	65.36456	143.12358	219	CHR B-5	Unnamed Creek (or lake; Site #1)	General fish	Visual	21
YUCH	UNNA2	1	65.38392	143.45633	226	CHR B-5	Unnamed Lake (Site #2)	lake chub	Minnow Trap	3