

Fishery Management Report No. 06-66

**Fishery Management Report for Sport Fisheries in the
Arctic-Yukon Management Area, 2003-2005**

by

John Burr

December 2006

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)		General		Measures (fisheries)	
centimeter	cm	Alaska Administrative Code	AAC	fork length	FL
deciliter	dL			mid-eye-to-fork	MEF
gram	g	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	mid-eye-to-tail-fork	METF
hectare	ha			standard length	SL
kilogram	kg	all commonly accepted		total length	TL
kilometer	km				
liter	L	professional titles	e.g., Dr., Ph.D., R.N., etc.		
meter	m			Mathematics, statistics	
milliliter	mL	at	@	<i>all standard mathematical signs, symbols and abbreviations</i>	
millimeter	mm	compass directions:		alternate hypothesis	H _A
		east	E	base of natural logarithm	e
		north	N	catch per unit effort	CPUE
		south	S	coefficient of variation	CV
		west	W	common test statistics	(F, t, χ^2 , etc.)
		copyright	©	confidence interval	CI
		corporate suffixes:		correlation coefficient (multiple)	R
		Company	Co.	correlation coefficient (simple)	r
		Corporation	Corp.	covariance	cov
		Incorporated	Inc.	degree (angular)	°
		Limited	Ltd.	degrees of freedom	df
		District of Columbia	D.C.	expected value	E
		et alii (and others)	et al.	greater than	>
		et cetera (and so forth)	etc.	greater than or equal to	≥
		exempli gratia (for example)	e.g.	harvest per unit effort	HPUE
		Federal Information Code	FIC	less than	<
		id est (that is)	i.e.	less than or equal to	≤
		latitude or longitude	lat. or long.	logarithm (natural)	ln
		monetary symbols (U.S.)	\$. ¢	logarithm (base 10)	log
		months (tables and figures): first three letters	Jan., ..., Dec	logarithm (specify base)	log ₂ , etc.
		registered trademark	®	minute (angular)	'
		trademark	™	not significant	NS
		United States (adjective)	U.S.	null hypothesis	H ₀
		United States of America (noun)	USA	percent	%
		U.S.C.	United States Code	probability	P
		U.S. state	use two-letter abbreviations (e.g., AK, WA)	probability of a type I error (rejection of the null hypothesis when true)	α
				probability of a type II error (acceptance of the null hypothesis when false)	β
				second (angular)	"
				standard deviation	SD
				standard error	SE
				variance	
				population	Var
				sample	var

Weights and measures (English)					
cubic feet per second	ft ³ /s				
foot	ft				
gallon	gal				
inch	in				
mile	mi				
nautical mile	nmi				
ounce	oz				
pound	lb				
quart	qt				
yard	yd				

Time and temperature					
day	d				
degrees Celsius	°C				
degrees Fahrenheit	°F				
degrees kelvin	K				
hour	h				
minute	min				
second	s				

Physics and chemistry					
all atomic symbols					
alternating current	AC				
ampere	A				
calorie	cal				
direct current	DC				
hertz	Hz				
horsepower	hp				
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

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Division of Sport Fish

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
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December 2006

The Division of Sport Fish Fishery Management Reports series was established in 1989 for the publication of an overview of Division of Sport Fish management activities and goals in a specific geographic area. Since 2004, the Division of Commercial Fisheries has also used the Fishery Management Report series. Fishery Management Reports are intended for fishery and other technical professionals, as well as lay persons. Fishery Management Reports are available through the Alaska State Library and on the Internet: <http://www.sf.adfg.state.ak.us/statewide/divreports/html/intersearch.cfm>. This publication has undergone regional peer review.

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PREFACE

The goals of the Sport Fish Division of the Alaska Department of Fish and Game are to conserve wild stocks of sport fish, to provide a diversity of recreational fishing opportunities, and to optimize social and economic benefits from recreational fisheries. In order to implement those goals the Division has in place a fisheries management process.

This report provides information for the Arctic-Yukon Management Area (A-Y MA) and is one in a series of reports annually updating fisheries management information about important sport fisheries within Region III. The report is written to make that information available to the State Board of Fisheries, Fish and Game Advisory Committees, the general public, and other interested parties. It presents fisheries assessment information and the management strategies that are developed from that information. In addition, the report includes a description of the fisheries regulatory process, the geographic, administrative, and regulatory boundaries, funding sources, and other information concerning Sport Fish Division management programs within the management area. This report covers the 2004 -2006 fishing seasons. The management area was formerly the A-Y-K area and included a portion of the Kuskokwim drainage. In 2003 the entire Kuskokwim drainage and Kuskokwim Bay were consolidated into the Kuskokwim management area. Information concerning sport fisheries in the Kuskokwim area is found in the Annual Management Report for the Kuskokwim management area. Beginning in 2006, the North Slope of the Brooks Range (Arctic portion of the AYK area) was combined with the Northwest Alaska management area. Subsequent reports on sport fisheries management for the North Slope portion of Alaska will be found in the Northwest Annual Management Report.

An annual regional area review is conducted in mid-winter during which the current status of important area fisheries is considered and research needs are identified. Fisheries stock assessment research projects are developed, scheduled, and implemented to meet information needs identified by fisheries managers. Projects are planned within a formal operational planning process. Biological information gathered by these research projects is combined with effort information and input from user groups and is used to assess the need for and to develop fisheries management plans, and to propose regulatory strategies.

Sport Fish Division management and research activities are primarily funded by a combination of State of Alaska Fish and Game (F&G) and Federal Aid in Fisheries Restoration monies. The F&G funds are from the sale of fishing licenses. The Federal Aid or D-J (named after congressmen Dingell and Johnson, who wrote the act) funds are from a Federal tax on fishing tackle and equipment. D-J funds are provided to the states at a match of up to three-to-one with the F&G funds. There is also an amendment to the D-J Act (W-B, for Wallop-Breaux) that provides money to states for boating access projects at the same three-to-one match with F&G funds. Funding Source for W-B money is a tax on boat gas and equipment. Other, peripheral funding sources can include contracts with various government agencies and the private sector.

This report provides fisheries information for the 2004 through 2006 seasons. Following the introduction, which includes an overview of the Region, this report is organized into three major sections. **Section I** provides an overview of the Arctic-Yukon Management Area. Included is a description of the management area and sub-areas, Board of Fishery activities, and management information and activities within the area. **Section II** provides effort and harvest results for the management area and sub-areas. **Section III** provides more detailed summaries of major fisheries and activities occurring during the reporting period. Included in these summaries are a fishery description; a description of recent performance of the fishery; a description of recent Board of Fishery actions related to the fishery; a discussion of social or biological issues that may be associated with each fishery; and a description of ongoing research and management activities related to each fishery.

ABSTRACT

Information specific to the recreational fisheries in the Yukon and Arctic management areas between 2003 through 2006 is presented. Estimates of fishing effort, total catch and effort is summarized up through the 2005 season. This information is provided to the Alaska Board of Fisheries, as well as to the general public and interested parties. Summaries of major fisheries within the area are detailed, including descriptions of the performance of these fisheries, regulatory actions by Alaska Board of Fisheries, social and biological issues, and descriptions of ongoing research and management activities. Information specific to the proposals that the Alaska Board of Fisheries will address at the January 2007 meeting is contained within numerous sections of this report. As a means to assist board members and the public in efficiently locating this information, Appendix A1 has been constructed, which guides the reader to specific information contained within text, table and graphic format that may be helpful in evaluating regulatory proposals.

Key Words: Yukon, North Slope, sport fisheries, sport fishery management, fisheries management plan, Anvik River, Nowitna River, Dall River, Innoko River, Ivishak River, Dalton Highway, northern pike, Arctic char, Dolly Varden, Chinook salmon, coho salmon, Arctic grayling

INTRODUCTION

REGION III DESCRIPTION

The Alaska Board of Fisheries (BOF) divides the state into 10 regulatory areas for the purpose of organizing the sport fishing regulatory system by drainage and fishery. These areas (different from Regional Management Areas) are described in Title 5 of the Alaska Administrative Code. Sport Fish Division of the Alaska Department of Fish and Game (ADF&G) divides the state into three administrative regions with boundaries roughly corresponding to groups of the BOF regulatory areas (Figure 1). Region I is Southeast Alaska. Region II covers portions of Southcentral Alaska, Kodiak, Southwestern Alaska, and the Aleutian Islands. Region III includes three of the BOF fishery regulatory areas. They are the Upper Copper and Upper Susitna regulatory area and the Arctic-Yukon-Kuskokwim regulatory area. Prior to 2000, a portion of the Arctic-Yukon-Kuskokwim regulatory area was excluded from Region III and included in Region II; this was the lower Kuskokwim drainage from the Aniak River downstream and Kuskokwim Bay.

Region III is the largest region, encompassing the majority of the landmass of the state of Alaska (Figure 1). The region contains over 1,251,300 km² (485,000 mi²) of land, some of the state's largest river systems (the Yukon, the Kuskokwim, the Colville, Noatak, and upper Copper River and upper Susitna River drainages), thousands of lakes, and thousands of miles of coastline and streams. Regional coastline boundaries extend from Cape Newenham in the southwest, around all of western, northwestern and northern Alaska to the Canadian border on the Arctic Ocean. Region III as a whole is very sparsely populated, with the most densely populated center located in the Tanana River valley. Fairbanks (population about 31,000) is the largest community.

For administrative purposes Sport Fish Division has divided Region III into six fisheries management areas (Figure 1). They are:

- (1) The Northwestern Management Area (Norton Sound, Seward Peninsula and Kotzebue Sound drainages). In late 2006, the North Slope drainages were added to this jurisdiction.
- (2) The Arctic-Yukon Management Area (the North Slope drainages, and the Yukon River drainage except the Tanana River drainage). Prior to 2004 the portion of the Kuskokwim River drainage upstream from the Aniak River was also included in this management area. In late 2006, the North Slope drainages were removed from this area's jurisdiction.

- (3) The Upper Copper/Upper Susitna Management Area (the Copper River drainage and the Susitna River drainage above the Oshetna River).
- (4) The Upper Tanana River Management Area (The Tanana River drainage upstream from Banner Creek and the Little Delta River).
- (5) The Lower Tanana River Management Area (The Tanana River drainage downstream from Banner Creek and the Little Delta River).
- (6) The Kuskokwim Management Area (the entire Kuskokwim drainage and Kuskokwim Bay). This management area was added to Region III during the winter of 1999/2000; prior to 2004 this management area included the portion of the Yukon drainage downstream of Piamiut but did not include the portion of the Kuskokwim River drainage upstream from the Aniak River.

Area offices for the six areas are located in Nome/Fairbanks, Fairbanks, Glennallen, Delta Junction, Fairbanks, and, Bethel/Fairbanks respectively.

THE ALASKA BOARD OF FISHERIES

The Alaska BOF is the seven-member board that sets fishery regulations and harvest levels, allocates fishery resources, and approves or mandates fishery conservation plans for the State of Alaska. Board members are appointed by the Governor and must be confirmed by the legislature. Board members are appointed for 3 years.

Statewide fisheries issues may be considered at any BOF meeting. Under the current operating schedule, the BOF considers fishery issues for regulatory areas or groups of regulatory areas on a 3-year cycle. The BOF meetings are usually in the winter, between early October and late March. Regulation proposals and management plans are received for evaluation by the BOF from ADF&G and the public. During its deliberations the BOF receives input and testimony through oral and written reports from staff of the ADF&G, members of the general public, representatives of local Fish and Game advisory committees, and special interest groups such as fishermen's associations and clubs.

ADVISORY COMMITTEES

Local Fish and Game advisory committees have been established throughout the state to assist the Boards of Fish and Game in assessing fisheries and wildlife issues and proposed regulation changes. Advisory committee members are individuals from the local public who are nominated and elected by all present during an advisory committee meeting. Most active committees in urban areas meet in the fall and winter on a monthly basis; rural committees have generally only one fall and one spring meeting due to funding constraints. Advisory meetings allow opportunity for direct public interaction with department staff that answer questions and provide clarification concerning proposed regulatory changes. The Boards Support Section within the Division of Administration provides administrative and logistical support for the BOF and Fish and Game advisory committees. During the reporting period, the department had direct support responsibilities for approximately 70 advisory committees in the state.

ADF&G EMERGENCY ORDER AUTHORITY

ADF&G has emergency order (EO) authority (5 AAC 75.003, 2004) to modify time, area, and bag/possession limit regulations. Emergency orders are implemented to deal with conservation

issues that arise that are not adequately controlled by existing regulations. In that scenario, they deal with the situation until it is resolved or the BOF can formally take up the issue. Emergency Orders are also the mechanism by which "in-season" management of fisheries is accomplished. In-season management is usually in accordance with a fisheries management plan approved by the BOF.

REGION III SPORT FISH DIVISION RESEARCH AND MANAGEMENT STAFFING

The Region III Sport Fish Division staff biologists are organized into a research group and a management group. The management group consists of a management supervisor, an area management biologist for each of the six management areas, one or more assistant area management biologists, and two stocked waters biologists. The area biologists evaluate fisheries and propose and implement management strategies through plans and regulations in order to meet divisional goals. A critical part of these positions is interaction with the BOF, advisory committees, and the general public. The stocked waters biologists plan and implement the regional stocking program for recreational fisheries. The research group consists of a research supervisor, research biologists, and various field assistants. The research biologists plan and implement fisheries research projects in order to provide information needed by the management biologists to meet divisional goals.

THE STATEWIDE HARVEST SURVEY

Recreational angling effort, catch, and harvest of important sport fish species in Alaska has been estimated and reported annually since 1977 (Mills 1979-1981a-b, 1982-1994, Howe et al. 1995, 1996, 2001a-d, Walker et al. 2003, Jennings et al. 2004, 2006 a- b, *In prep a- b*). The Statewide Harvest Survey (SWHS), a questionnaire mailed out to a random selection of sport fish license holders, is the instrument that provides the data analyzed to make these estimates. Estimates for a particular year usually become available in September or October of the following year. Effort, catch, and harvest are estimated on a site-specific basis, but estimates of effort directed toward a single species and the resulting species-specific catch-per-unit-effort (CPUE) information can not be derived from the report. Utility of the estimates is strongly dependant on the number of responses for a site (Mills and Howe 1992). Estimates based on 12 or fewer responses are useful only to document that fishing occurred. Twelve to 29 responses produce estimates useful for indicating relative order of magnitude and for assessing long-term trends. Estimates based on 30 or more responses are generally representative of levels of fishing effort, catch and harvest.

SECTION I: MANAGEMENT AREA OVERVIEW

ARCTIC, YUKON AREA DESCRIPTION

The Arctic-Yukon Management Area (A-Y MA) consists of approximately 411,000 km² of extremely varied topography, climate, and zoogeography. The management area includes the North Slope of the Brooks Range and Arctic coastal plain and the Yukon drainage excluding the Tanana River drainage. Included within A-Y MA are two of the state's largest river systems (Yukon and Colville), thousands of lakes, and thousands of miles of streams. The area coastline boundary extends from Cape Lisburne on the west around northwestern and northern Alaska to the Canadian border on the Arctic Ocean. The area as a whole is sparsely populated. Small communities are scattered along the major river systems of Interior Alaska. On Alaska's North

Slope, virtually all communities are located along the coast. The communities within the management area are invariably located near water, because of the importance of fish and or marine mammals as a food source to native people historically and today.

Access to most of the area is limited to water or air travel. The major river systems provide transportation corridors during winter as well as during open water months. Ground transportation to the North Slope is limited to the Dalton Highway, constructed to provide ground transportation to the Prudhoe Bay area oil fields. Road access to the Yukon River is provided by the Dalton Highway, by the Steese Highway at Circle and by the Taylor Highway at Eagle. With the exception of the Dalton Highway, these gravel roads are not maintained during winter.

Land ownership and jurisdictions fragment this huge area into a complex mosaic. The federal government is the major land manager through its jurisdiction over lands in two National Parks and Preserves (Yukon – Charlie and Gates of the Arctic), six National Wildlife Refuges (Arctic, Yukon Flats, Kanuti, Koyukuk, Nowitna, and Innoko), the White Mountains National Recreation Area, the Steese National Conservation Area, the National Petroleum Reserve-Alaska (NPPRA) and numerous Wild and/or Scenic Rivers, as well as other classifications of federal lands. Lands held by the State of Alaska, native corporations, and other private landowners comprise the remaining landmass. Arvey et al. (1995) provides a detailed description of the geology and geography for each of the subareas within the A-Y Management Area. For purposes of reporting and organizing statistics in the SWHS, the A-Y Management Area is subdivided into two subareas; Yukon (Y) and Arctic (Z).

Yukon River Subarea

The Yukon is the largest river in Alaska and its drainage constitutes the fifth largest in North America. The Yukon subarea (statewide harvest Area Y; Figure 2) includes all of the Yukon River drainage in the United States except for the Tanana River drainage.

North Slope Brooks Range Subarea

The North Slope of the Brooks Range subarea (statewide harvest Area Z; Figure 4) includes all waters north of the Brooks Range flowing into the Beaufort and Chukchi seas from Point Hope on the west to the Canadian border on the east including adjacent saltwater areas.

FISHERY RESOURCES

Virtually all freshwater and migratory fish species sought by anglers in Alaska are available in the A-Y MA. All populations are wild; there is presently no enhancement of fish populations in the management area. Five species of Pacific salmon, Chinook salmon *Oncorhynchus tshawytscha*, coho salmon *O. kisutch*, chum salmon *O. keta*, sockeye salmon *O. nerka*, and pink salmon *O. gorbuscha* are available in tributaries of the Yukon subarea. Chum and pink salmon and more recently Chinook salmon are present on the North Slope in the Colville River drainage and in coastal streams, but in numbers generally too small to attract or support significant sport fisheries.

Popular fisheries in lakes and streams adjacent to the Dalton Highway are supported by stocks of resident species Arctic grayling *Thymallus arcticus*, Dolly Varden *Salvelinus malma*, northern pike *Esox lucius*, and lake trout *S. namaycush*. Unique opportunities to fish for these species as well as inconnu (sheefish) *Stenodus leucichthys*, burbot *Lota lota* and Arctic char *S. alpinus* in remote wilderness settings exist throughout this management area. Wild stocks of rainbow trout

O. mykiss do not occur naturally in drainages north of the Kuskokwim River. Additional species of whitefish that are of importance to fisheries in the A-Y Area include the broad whitefish *Coregonus nasus*, Arctic cisco *C. autumnalis*, and Bering cisco *C. laurettae*.

ALASKA BOARD OF FISHERIES ACTIVITIES

Appropriate fishing regulations are developed through a process that the State of Alaska has established by which the BOF adopts regulations based on input from all concerned members of the public and the ADF&G.

Alaska Board of Fisheries

Under the current operating schedule, the BOF meets on a 3-year cycle for area considerations. The BOF last met in January 2004 and considered nine proposals potentially affecting sport fisheries in A-Y MA (Appendices A2-A3). The BOF will again meet in January 2007 and consider two proposals concerning fisheries in the Yukon and/or North Slope waters. The proposals that will be considered by the BOF are listed in Appendix A4. Oral and written reports by staff of the ADF&G and written and oral testimony by members of the public and by representatives of several advisory committees will be provided during this meeting.

Advisory Committees

During the reporting period, there were at least 12 active Fish and Game advisory committees in the A-Y MA. In the Yukon subarea, active committees included: Eagle, Upper Tanana /Forty Mile, Yukon Flats, Central, Tanana /Rampart /Manley, Ruby, Koyukuk, Grayling /Anvik /Shageluk /Holy Cross (GASH), Middle Yukon, and Lower Yukon. In the North Slope subarea, two advisory committees are listed. However struggles with inadequate funding and with very low attendance by members from distant sites in this large area resulted in poor representation by local residents. The North Slope Borough (NSB) formed a North Slope Borough Fish and Game Advisory Committee approximately 15 years ago, which has filled the void created by the inactive "official" advisory committees. The NSB continues to support this advisory effort and appears to provide this needed function.

ESTABLISHED MANAGEMENT PLANS AND POLICIES

Fisheries specific management objectives for the management area have been identified in management plans for Arctic grayling, lake trout and northern pike. In addition, a series of general divisional criteria have been prepared to guide the establishment of fishery objectives, and include:

1. **Management and protection of existing fish resources.** Divisional activities should strive to manage and protect Alaska's wild fish stock resources for future generations;
2. **Public use and benefits of existing fish resources.** Alaska's fishery resources should be made available for public use and benefit on a sustained yield basis;
3. **Rehabilitation of depressed stocks and damaged habitat.** Division activities should strive to restore and maintain fish stocks and habitat damaged by man's activities; and,
4. **Enhancement of natural production or creation of new opportunities.** The Division should pursue creation of new sport fishing opportunities through rehabilitation of natural stocks or creation of new fisheries where these opportunities do not negatively impact other fisheries.

Management plans that have been written for A-Y MA fisheries are listed below. In addition, two region-wide management plans that affect fisheries in the area have been completed. A regional management plan for Arctic grayling was adopted by the AK BOF in January 2004 (5AAC 70.055, 2004). This plan supersedes the previous Yukon drainage management plan. A management plan for lake trout in the AYK region has been completed and was adopted by the BOF for the UC/US area in December 2005. The lake trout management plan was undated (Burr 2006) and will be considered for adoption for the remainder of the AYK region by the BOF in February 2006. Revision of the existing plans as well as the development of additional fisheries management plans will occur as needed in response to changes in use patterns as new quantitative information becomes available.

- North Slope Sport Fishery Management Plan
- Sport Fishery Management for Salmon in the Yukon Drainage
- Sport Fishery Management Plan for Northern Pike in the Yukon Drainage (revised 2004; Burr *In prep*)
- A Management Plan and Policies for Arctic Grayling Fisheries within the Arctic-Yukon-Kuskokwim Region (Swanton and Wuttig *In prep*)
- Wild Arctic Grayling Management Plan. (5AAC 70.055)
- Management Plan for Lake Trout In Region III (Burr 2006)

A cooperative planning effort for the Dall River northern pike fishery provided a management plan for this fishery. Cooperators include the ADF&G, the Stevens Village Natural Resources Office, the Yukon Flats National Wildlife Refuge, and members of the Fairbanks Advisory Committee.

MAJOR BIOLOGICAL AND SOCIAL ISSUES

1. Dalton Highway/ Prudhoe Bay recreational fisheries. The opening of the entire length of the Dalton Highway (North Slope Haul Road) to public travel in 1994 provided new access to lakes and streams along the route. Increases in recreational fishing effort and harvest have resulted in reductions in bag limits for northern pike and Arctic grayling and in a no-harvest regulation for lake trout within the highway corridor. The State of Alaska is in the process of paving the Dalton Highway north of the Yukon River. Sport fishing by road construction crews and by increasing numbers of visitors will likely bring greater fishing effort to fish stocks in the highway corridor. Due to the unproductive fisheries habitat in the region, the likelihood of overexploitation of these stocks is considered high.
2. North Slope resource development. Development of extensive oil and gas deposits in and around Prudhoe Bay at the mouth of the Sagavanirktok River and extending west of the Colville River Delta carries the risk of petroleum contamination of the most important streams on Alaska's North Slope for anadromous Dolly Varden and contamination of lakes inhabited by lake trout. Resident freshwater fish are also at risk because of limited overwintering habitat that is located in river delta areas where most development currently exists. In addition, new petroleum developments that are under consideration would extend exploration into the upstream, foothill areas. Critical over-wintering habitat for entire stocks of Dolly Varden are located in isolated sites within these upstream areas.
3. Development of New Sport Fisheries in Rural Alaska. Relatively rapid development of sport fisheries in remote areas has resulted in friction between local residents and the non-local

anglers. In many instances, local people have historically enjoyed nearly exclusive use of fishery resources. Sport fishing guides and other anglers seeking less crowded fishing opportunities in wilderness settings continue to “discover” less well known but potentially high quality fisheries. As currently popular fishing destinations in other parts of Alaska become increasingly crowded, anglers and guides are likely to continue to travel farther to participate in Alaska’s fisheries. In addition to the social friction caused by this change in use patterns of remote areas and to some extent because of this friction, the department will increasingly be expected to provide information on the status of stocks for which there is currently only the most rudimentary information. This is likely to be the biggest challenge in the management of sport fisheries in the A-Y Management Area. Recent experiences at the Dall, Holitna, and Innoko rivers are examples of the type of challenges that we should anticipate.

4. Rod and Reel Subsistence. In 2000, the Alaska BOF included rod and reel gear as a legal subsistence fishing method for harvest during the open water season in the Association of Village Council Presidents (AVCP) area of the lower Yukon and Kuskokwim rivers. In 2001, rod and reel subsistence fishing was extended upstream in the Kuskokwim by emergency regulation in response to a petition to the BOF from Nikolai Native Village and the Western Interior Regional Advisory Council. Until these actions were taken, rod and reel for subsistence fishing was permitted only through the ice under state regulations. Harvest of fish with rod and reel during open water periods in the remainder of the state is regulated under Sport Fishing regulation. The primary concern with this potential change is how to manage for sustainable fish populations with legalization of rod and reel gear for subsistence fishing. We understand that rural resident use patterns have likely incorporated rod and reel in past subsistence harvests, and legalization of this gear will not greatly affect local use patterns. Our greatest concerns relate to changes in urban resident behavior in regard to license sales, visitation to rural fisheries, and harvests of fish populations.
5. Rural resentment of sport fishing and sport anglers. Some rural Alaskans have a cultural bias against the concept of "sport fishing" and feel that people do not have the right to "play" with food resources. The bias is particularly strong towards catch-and-release practices. This conflict of values has led to resentment towards sport anglers who wish to fish on private and public lands within the AYK area.
6. Federal Fishery Management for Subsistence in Alaska’s navigable waters. In October 1999, Federal fishery managers assumed responsibility for ensuring a rural subsistence priority on navigable waters adjacent to or within the boundaries of Federal Conservation units. There is continued concern that a result of this action will be reduced opportunity for sport fishing throughout the state. Because of the large amount of Federal public land within A-YMA and because of the high proportion of subsistence users, this loss of opportunity is of acute concern for sport fishermen in the area. Recent proposals to the Federal Subsistence Board to exclude recreational anglers from popular fisheries have required substantial efforts by department staff to maintain current opportunities.

ACCESS PROGRAM

The Sport Fish Access Program was initiated nation-wide in 1984 as a result of the Wallop-Breaux Amendment to the Sport Fish Restoration (Dingell-Johnson or D-J) Act. The Sport Fish Access Program is composed of two parts. The first involves capital improvement projects, which are of a

durable nature, and involve major construction. Typical projects include construction of boat launches, parking areas, camping areas, handicap-accessible public fishing docks, access roads, improved trails, and the purchase or lease of lands or right-of-ways to ensure public access. The second portion of the program is called the Small Access Site Maintenance Project. This ongoing, annually funded program involves maintaining and upgrading existing angler access sites. Activities include placing and maintaining (replacing vandalized) signs at lake and river angling access sites, constructing and maintaining pedestrian and Off Road Vehicle (ORV) trails to fishing sites, securing permanent right-of-ways on public and private land to ensure continued public access to fishing and boat launching sites. Maintaining access roads to boating or angling sites that might not otherwise be maintained, providing portable toilets, picnic tables, and trash removal at heavily used roadside angling sites. The project also constructs and maintains outhouses and tent platforms at remote angling sites and produces and prints publications which inform anglers about fishing and boat launching opportunities.

To date relatively few access projects have been proposed for rural A-Y MA. Access funds were used for construction of a concrete boat launch to the Yukon River in cooperation with the City of Galena. Other projects that are currently under consideration include improved access and parking at the Yukon River, Dalton Highway bridge boat launch and a boat launch on Birch Creek on the Steese Highway.

SECTION II: FISHING EFFORT AND HARVEST IN THE A-Y MANAGEMENT AREA

SPORT ANGLING EFFORT

Estimates of effort in the Arctic and Yukon management area have averaged less than 17,000 angler days and suggest a modest decline during the past 15 years (Table 1; Figure 4). The proportion of angler effort in the two subareas of the A-Y MA has remained similar since the early 1980s. Effort in the North Slope subarea increased to about 5,000 angler days in the early 1980s but has grown very slowly since then, averaging about 4,700 days of effort (about 29% of A-Y MA) during the last 5-year period. The Yukon area continues to provide about 70% of the fishing effort in the management area. The estimated angler effort for the Yukon area for 2005 of 9,000 angler days is less than the most recent 5-year average of about 12,000 (Table 1).

SPORT FISH HARVEST AND CATCH-AND-RELEASE

The vast majority of the A-Y management area and its fishable waters occur away from highways and motor vehicle roads of any kind. Small communities are scattered along the major river systems of Interior Alaska and along the western and northern coasts. The communities are invariably located near water to facilitate transportation and because of the importance of fish as a food source to native people historically and today. Residents of these rural communities harvest a substantial amount of fish and game resources for personal subsistence use, but fishing is usually conducted with high catch-per-unit-of-effort gear types such as fish wheels and nylon gillnets. Recently, rod and reel fishing gear was added to the types of legal subsistence fishing gear in the lower portion of the Yukon drainage. Recreational or sport fishing with rod and reel is practiced to some extent by rural residents, but often as an extension of subsistence activities and less for recreational purposes. Consequently, harvest estimates of sport caught fish from rural Alaska are generally low because local residents usually fish under subsistence regulations and because the small amount of sport fishing done is usually conducted as a subsistence

activity. Since statewide harvest estimates are based upon surveys of licensed sport anglers, the rural harvests are probably not fully documented.

Sport harvest of all species in the A-Y Management Area between 1984 and 1995 averaged about 16,000 fish annually with peak harvests around 20,000 fish (Table 2). Since that time annual harvest have averaged about 10,000 fish, a moderate decrease in harvest. The harvest in the A-Y Management Area has been dominated by freshwater resident species, primarily Arctic grayling, northern pike, Dolly Varden/Arctic char and sheefish (Figure 6). Pacific salmon comprise only about 6% of the total sport harvest in the management area.

Nearly all of the harvest of northern pike and sheefish is from the Yukon sub-area as is about 75% of grayling. The sport fishery for lake trout has historically been on average evenly distributed between the North Slope and the Yukon sub-areas. In contrast, about 70% of the use of Dolly Varden/Arctic char is from the North Slope sub-area. While a limited number of pink and chum salmon are harvested from the North Slope nearly all the harvest of salmon comes from the Yukon sub-area. (Appendices B1 and B2).

Sport catch of all species in the AY Management Area has been estimated since 1990 (Table 2). Numbers reported as catch include fish that are caught and kept (harvested) and those that are caught and released. During the most recent 5-year period, more than 85% of all fish caught in the A-Y MA were released. The proportion of catch and release activity varies by species. For example, only 12% of burbot caught between 2000 and 2004 were released compared with 91% of northern pike, 86% of Arctic grayling, 84% of lake trout and 86% of Chinook salmon.

OTHER USER GROUPS - COMMERCIAL AND SUBSISTENCE FISH HARVESTS

Important subsistence and commercial fisheries exist in the A-Y area and form an economic base for income and employment in many local communities. Commercial and subsistence harvests for all species of salmon are much larger than are sport harvests (Appendices C1 – C3). In contrast to fisheries for salmon, the majority of the harvest of freshwater fish is by subsistence and sport users. Currently there are very limited commercial fisheries for sheefish, burbot, northern pike, whitefish, and lamprey.

Salmon harvests for subsistence and commercial use are relatively less important in the North Slope sub-area than in the Yukon due to the sparse distribution of salmon north of Point Hope on the Chukchi Sea coast. In the Yukon drainage, salmon harvests have historically been dominated by chum salmon (Table 3; Appendices C1 – C3). Chinook salmon, while less abundant, is most important for commercial sale and is preferred for subsistence use in many parts of the area. Since 1997 the number of Chinook salmon harvested in the commercial fishery has exceeded the number of chum salmon (summer and fall combined). The commercial harvest of coho salmon is primarily incidental to the fall chum salmon fishery. Pink salmon occur throughout the A-Y MA in streams near the coast, but, while numerically dominant in some years, the species is not exploited to a great extent in commercial or subsistence fisheries.

Commercial harvests of all salmon species in the Yukon averaged more than one million salmon annually from 1977 to 1996. Poorer returns of Chinook, and chum salmon since 1997, particularly through 2001, resulted in much lower than average commercial harvests. In 2001 there was no directed commercial fishery for Chinook or chum salmon in the Yukon River drainage. Recently commercial harvests have increased but have not again reached historical levels.

SECTION III: MAJOR FISHERIES OVERVIEW

Waters within the A-Y Management Area offer some of the most remote and diverse opportunities for anglers available in Alaska. Opportunities to harvest trophy northern pike, sheefish, Dolly Varden, lake trout, and Arctic grayling within wilderness settings are well known. Sport fishing opportunities for salmon are currently not as well known. However, angling for Chinook and coho salmon has increased during recent years in the Yukon area as pressure on other popular sites outside the A-Y management area continued to increase. Marine sport fisheries are not an important component in the area.

This section provides a summary of sport fisheries that were considered significant in the A-Y management area during 2004-2006. The section includes a discussion of the sport fisheries in the area by species. Discussion of each fishery will address 1) historical perspective, 2) recent fishery performance (stock status), 3) fishery objectives and management, 4) fishery outlook, 5) recent actions by Alaska BOF, 6) current issues and 7) ongoing and recommended management and research activities. Recent fishery performance will focus on data from 2005. Information regarding the 2006 season will be included as available, but estimates of sport effort and harvest are not yet available for the 2006 season. Tables summarizing historic sport fish harvests by species and sub-area are provided for reference (Table 2; Appendices B1–B2).

YUKON RIVER DRAINAGE SALMON

The Chinook, chum, and coho salmon are important subsistence and commercial species in the Yukon River drainage; however, utilization by sport anglers has, to date, been minimal.

Fishery Description and Historical Perspective

Chinook salmon spawn throughout the Yukon River drainage. Chum salmon, including a summer run and a fall run, are numerically the most abundant species, and are distributed throughout the drainage. Coho salmon are less abundant and spawn in large numbers in only a few identified streams. Pink salmon are locally abundant in some years but are not thought to migrate upstream of the Anvik River. Sockeye salmon occur occasionally, but only a few individuals are taken annually in commercial or subsistence harvests. There may be a small spawning stock of this species in the Innoko River, but the locations of spawning sites have not been identified.

Annual sport harvests of Yukon River drainage salmon have historically been, and continue to be, primarily from streams of the Tanana River drainage. Sport fisheries in the Tanana drainage are discussed within the Annual Management Reports for the Tanana Management area (Brase *In prep*; Parker *In prep*). Sport harvests are reported from other streams and drainages in the Yukon watershed, primarily from the Andreafsky, Anvik, Porcupine and Koyukuk rivers and their drainages (Tables 4–6). Approximately 12,000 people live along the Yukon River and its tributaries (excluding the Tanana River). Most of these people depend on salmon for livelihood, subsistence, or both. Rural residents customarily use high yield fishing methods such as gill-net and fish wheel, where a larger volume harvest can be taken in the turbid mainstem of Yukon River. Rod and reel fishing for salmon is practiced by some rural residents on occasion and by non-area residents who visit for the purpose of sport fishing. Consequently, the size of reported sport harvest does not reflect the abundance of salmon in the drainage.

Recent Fisheries Performance

A trend of declining runs of Yukon River Chinook and chum salmon began in 1997 with the 2000 runs the worst on record for both species. In September 2000 the Alaska BOF classified the Yukon Chinook salmon stock as a yield concern, the Yukon summer chum salmon stock as a management concern and most of the Yukon drainage fall chum salmon stock as a yield concern. Fall chum salmon stocks in the Toklat and Fishing Branch rivers were classified as management concerns. The Sustainable Salmon Fisheries Policy defines a yield concern as an inability to maintain expected yields or harvestable surpluses above the stock's escapement needs despite the use of specific management measures. A management concern is defined as the chronic inability to meet existing escapement goals for the stock. Between 2001 and 2003 increases in escapements were due primarily to more conservative management. Since that time Chinook and chum salmon runs have continued to improve over the very poor runs of 1999-2000.

Summary of Yukon Salmon Runs 2004-2006

Based on harvest and escapement information, the 2004 Chinook salmon run was stronger than the below-average runs of 2001 and 2002 and similar to the 2003 run in abundance. Chinook salmon escapements to monitored Alaskan tributaries were better than average, with several near record high levels. Total spawning escapement for the Canadian portion of the Yukon River drainage was estimated to be about 40,000 Chinook; the escapement objective is 28,000. Subsistence needs appear to have been met for most areas, although some residents from several Yukon River communities were employed to fight forest fires in the drainage and were not able to directly obtain fish. Eight commercial openings in District 1 and four periods in District 2 yielded 25,565 Chinook. Forest fire smoke and other problems with getting fish to market resulted in no commercial openings in District 4. Limited openings in upriver districts produced approximately 3,600 fish. The total commercial harvest was estimated to be 56,168 Chinook salmon. The 2004 commercial harvest was the largest since 1999 and more than twice the 2002 harvest but well below historic levels (Appendix C1).

The 2005 Chinook salmon run was stronger than anticipated. In-season management was conservative because high water conditions reduced the efficacy of run assessment projects in the lower river and because of the recent history of below-average runs. Escapement goals for Chinook salmon were generally met or exceeded throughout the drainage. The Salcha River Tower project estimated 6,021 fish escaped (BEG 3,300-6,500). The Chena River Tower project was operated only a few days due to high, turbid water conditions. During this brief period, 564 Chinook were counted (BEG 2,800-5,700). An aerial survey estimated a minimum escapement of 1,600 Chinook to the Chena River. Other aerial survey escapement indices were also within or exceeded SEGs. The conservative management of the fishery held the commercial harvest of Chinook salmon in the Alaskan portion of the drainage in 2005 to approximately 32,000 fish. This harvest was the third lowest since statehood and about one half of the 1995-2004 average commercial harvest of 75,000 fish.

Preliminary assessment of the 2006 Chinook salmon run suggests that the run was below average, similar in abundance to the 2005 run but with a higher proportion of small (age-4) fish. Escapement goals for Chinook salmon were generally met or exceeded in most tributaries. Spawning escapement for the Canadian portion of the Yukon River drainage was estimated in 2006 by mark-recapture experiment on the Canadian side of the border and by the new sonar project near the border on the U.S. side. The Canadian estimate was 33,000 Chinook salmon; the

estimate based on the new sonar project in Alaska was 73,600 Chinook. The rebuilding escapement objective is 28,000. Sustainable Escapement Goals (SEG) based on aerial survey escapement indices in Alaska were met or exceeded except for the East and West Fork Andreafsky River. The Salcha River Tower project estimated that 10,400 fish escaped (BEG 3,300-6,500). The estimated escapement for the Chena River was substantially lower; an estimated 2,936 Chinook salmon passed the Chena River Tower project (BEG 2,800-5,700). The lower escapement to the Chena River compared to the neighboring Salcha River was very unusual. The total commercial harvest was 45,830 Chinook salmon for the Alaska portion of the Yukon River drainage. This harvest was the sixth lowest since statehood and about 14% below the 1996-2005 average commercial harvest of 53,183 fish (Appendix C1).

The 2004 summer chum salmon run was below average but was improved compared to the 2003 run. High water and debris early in the run confounded test netting and the sonar run assessment program, so, estimates of passage are considered to be conservative. Biological escapement ranges (BEG) based on spawner recruit analysis have been established for two Yukon tributaries, the Anvik and Andreafsky rivers. Estimated escapement to the East Fork Andreafsky (62,000) was just below the low end of the BEG range (65,000-135,000). Escapement into the Anvik River (366,000) was just above the low end of the BEG range (350,000-700,000) and 40% below the recent 10-year average (1994-2003; 606,369). The cumulative passage estimated by the Pilot Station sonar was 1,330,000 summer chum salmon, greater than the 2003 estimate of 1,163,000. A commercial fishery for summer chum salmon conducted only in the Tanana River portion of the drainage (district 6) where 6,610 were harvested. The commercial fishery targeting Chinook salmon harvested 19,775 summer chum salmon. The 2004 commercial harvest of 26,410 summer chum salmon was 91% below the 1994-1999, 2002-2003 average harvest of 259,000 fish (Appendix C2).

The 2005 summer chum salmon run was larger than anticipated particularly in light of the below average parent year escapements in 2000 and 2001. The Pilot Station passage estimate of 2.4 million was well above recent averages. The estimated escapement to the Anvik River was 525,400 fish (sonar counts) and was well within the BEG of 350,000 to 700,000. In contrast the estimated escapement into the East Fork Andreafsky of 19,935 was below the targeted BEG range of 65,000 to 135,000. In the Koyukuk and Tanana River drainages spawning escapements were well above average. The Salcha River escapement of approximately 200,000 summer chum salmon was the largest on record. The commercial harvest of summer chum salmon was very limited primarily due to a lack of market for summer chum salmon flesh. Except for five fishing periods in the Tanana portion of the drainage, all harvest of chum salmon was incidental to the Chinook salmon fishery. The total estimated commercial harvest in 2005 was 41,206 fish, the ninth lowest since 1967 and well below the 1994-2004 average of 232,200 summer chum salmon (Appendix C2).

In 2006 continued improvement was observed in the summer chum salmon run. The Pilot Station sonar recorded a record passage of 3.7 million summer chum salmon. As in 2005 poor commercial markets for summer chum salmon flesh precluded the commercial harvest of the substantial surplus that was identified. The total commercial harvest was 92,116 for the Alaskan portion of the Yukon River drainage. The 2006 harvest was 22% below the 1996-2005 average of 118,585 fish (Appendix C2).

The total run of fall chum salmon in 2004 including estimates of harvest and escapements was 650,000 fish which is average for even-year returns, below average for all years, and similar to

pre-season expectations. Prior to the 2004 season a new drainage-wide escapement goal of 300,000 – 600,000 fall chum salmon was established. In 2004 a significant pulse of chum salmon arrived late in the season permitting a fall chum salmon commercial fishery. Approximately 4,100 fish were harvested in the commercial fishery. Because the fall chum salmon abundance was low, the fishery was structured to target the more abundant coho salmon in the commercial harvest.

The 2005 fall chum salmon run, like summer chum salmon, was stronger than anticipated. The total run size in 2005 including estimates of harvest and escapements was estimated to be in excess of 2.2 million. This very strong run provided for escapement and subsistence needs as well as a limited commercial fishery. The commercial harvest of fall chum salmon in Alaskan waters was 178,987 and represents the largest commercial harvest since 1995. Poor runs and weak market conditions in recent years have contributed to low commercial harvests and fishery values.

The total run size of the 2006 fall chum run based on preliminary analysis was estimated to be 980,000 fish. This is the second largest run since 1995. The drainage-wide escapement goal (300,000–600,000 fall chum salmon, established in 2004) was exceeded. The preliminary estimated commercial harvest of fall chum salmon in Alaska was 174,542 fish.

Coho salmon have an overlapping, but somewhat later, run timing with fall chum salmon. The escapement assessment for coho salmon is quite limited and relies heavily on information from commercial and personal use harvests. The Pilot Station sonar is terminated during the coho run as are many of the other assessment projects due to expense and/or icing conditions. The only escapement goal that is presently in place for the Yukon drainage is the Delta Clearwater in the Tanana River drainage. The current escapement goal (5,200 – 17,000), was established in 2004, and replaced the previous minimum goal of 9,000 fish. The goal continues to be based on a boat survey during peak spawning. In 2004 all available information suggests a very strong coho run for the second consecutive year. The Delta Clearwater survey estimated a total escapement of 37,950 coho in the survey area; twice the upper end of the SEG range. Catches and/or estimates of passage of coho from other projects (Pilot Station Sonar, Andreafsky River weir, test wheels in the Tanana River at Nenana and Kantishna River mouths) also reported numbers of coho that exceeded recent averages. The commercial fishery harvested and estimated 20,000 coho salmon in a fishery structured to minimize harvest of the weaker but overlapping fall chum salmon run.

The limited information on coho salmon in the Yukon River indicates that in 2005 the run continued the trend of above average size. The Pilot Station Sonar index of about 185,000 coho salmon in 2005 was similar to the 2004 estimate (188,000 coho). In 2005 the total escapement of coho in the Delta Clearwater River Delta Clearwater was estimated to be 34,293 fish. Because the fall chum and coho salmon runs overlap, the commercial fishery typically lands both species during each period. The reported Alaskan Yukon River coho commercial harvest was 58,349, the largest harvest since 1991, due in part to the higher fall chum salmon commercial harvest.

The available information suggests that in 2006 the Yukon River coho salmon run was approximately average in strength. The Pilot Station Sonar index of 132,000 was about 11% less than the recent 10-year average (1995-2005, no estimate for 1996) of 148,348. The estimated total escapement of coho to the Delta Clearwater was 16,750 fish. While lower than very recent estimates of escapement, this figure is still near the upper bounds of the escapement goal. The

preliminary estimate of the commercial harvest of coho salmon in the Alaska portion of the Yukon drainage is approximately 65,000 fish.

Summary of Catch and Harvests in Yukon Salmon Sport Fisheries in 2004-2005

Estimated sport harvest of Chinook salmon from the entire Yukon subarea (Tanana River excluded) was 194 during 2004 and 0 in 2005 (Table 4). The 2004 harvest is greater than recent averages but similar to annual estimates prior to the poor runs experienced in 1999-2001. Total sport catch (including harvested and released fish) of Chinook salmon in the Yukon subarea was estimated to be 1,088 fish in 2004 and 455 in 2005 (Appendix B1). As in previous years, most of the estimated catch and harvest of Chinook salmon during the 2004 season came from lower Yukon drainages; the Anvik River has been the most important site in recent years.

Sport fisheries harvested an estimated 105 chum salmon in 2004 and 291 in 2005 (Table 5). All reported harvest of chum salmon was from lower Yukon drainages including the Anvik and Andreafsky rivers. Total catch of chum salmon (harvested and released) from the recreational fisheries in 2004 and 2005 was estimated to be 3,356 and 2,230 fish (Appendix B1).

Sport harvest of coho salmon during 2004 and 2005 was estimated to be 907 and 360 fish (Table 6). The recent 5-year average harvest was 307 coho salmon. Total catch from the sport fishery during the reporting period was estimated to be 4,329 and 504; the 5-year average is 2,057. As with other salmon sport fisheries in the Yukon drainage outside of the Tanana area, most of the coho fishery occurs downstream of the Koyukuk River and primarily in the Anvik and Andreafsky rivers.

The sport fisheries for these three principal species of salmon have all generally demonstrated modest increases in catch and harvest in recent years (Appendix B1). This modest growth is a result of improved run sizes beginning in 2002 and a relaxation of restrictive management. Relative to the size and the productivity of the Yukon system, the estimated sport harvest is extremely light and is unlikely to impact the runs to a measurable degree.

Fishery Objectives and Management

Yukon drainage commercial, subsistence, and personal use fisheries are managed by the Commercial Fisheries Management and Development Division. As with other fish and wildlife populations, subsistence use has been designated as the highest priority among beneficial uses. Management of these fisheries is complex due a wide range of stock specific abundances, overlap of inter and intra-specific run timing, the immense size of Yukon River drainage, allocation between numerous user groups and international management treaties. The department is generally unable to manage individual stocks in this mixed stock fishery because of inadequate stock specific information.

Guideline harvest ranges have been established for commercial fisheries targeting Chinook, summer chum, and fall chum salmon throughout the Alaskan portion of the Yukon drainage (Appendix C4). The department attempts to manage the commercial fisheries such that the harvest in each district is proportionally similar to respective guideline harvest ranges. Management plans have been developed and adopted by the BOF for summer and fall chum salmon (Appendices C5 and C6).

Under the current management strategy the commercial fishery for coho salmon is incidental to the commercial fishery directed at fall chum salmon. In November 1998 the BOF adopted the

Yukon River Coho Salmon Management Plan (Appendix C7). This plan provides for a directed commercial fishery for coho salmon under unique circumstances. It is very unlikely that the conditions outlined in the coho salmon plan would occur in a given year. In most years fall chum salmon will continue to be the primary species of management concern during the fall season with only incidental catches of coho salmon. In 2005 and 2006 sufficient numbers of fall chum salmon and coho salmon were present to meet conditions outlined in the Coho Salmon Management Plan for a commercial fishery targeting coho salmon. The commercial harvest of approximately 58,000 and 65,000 coho salmon were the largest since 1991.

In response to the guidelines established in the Sustainable Salmon Fisheries Policy, the BOF classified the Yukon River Chinook stock as a yield concern in September 2000. This determination was based on an inability, despite the use of specific management measures, to maintain expected yields or harvestable surpluses above the stock's escapement needs since 1998 and the anticipated low return and harvest in 2001. The BOF classified the Yukon River summer chum salmon stock as a management concern. This classification was based on a chronic inability to meet existing escapement goals for the summer salmon stock since 1998.

During the winter of 2000/2001 the BOF developed a rebuilding plan for Yukon Chinook and chum salmon stocks in accordance with the Sustainable Salmon Fisheries Policy for Alaska. This plan emphasizes improving salmon spawning escapements while providing opportunities to maintain subsistence uses, when surpluses are available. The BOF developed a subsistence salmon fishing schedule. The purpose of the schedule was to provide more equitable allocation of fish among subsistence fishers throughout the drainage and to improve the quality of the escapement.

The department has developed a preseason management strategy in cooperation with the U.S. Fish and Wildlife Service and the National Park Service staff annually since 2001. This strategy is described and distributed annually in an information sheet (Appendix C8). Since 2004, the preseason strategy has been to begin the season following the subsistence fishing schedule developed by the BOF. In the event of a poor run, the subsistence schedule will be further reduced to meet escapement goals. If the run is strong and surplus fish are available, the subsistence fishery will follow the pre-2001 schedule (open except before and after commercial openings) and commercial fisheries will be permitted.

Stocks of concern were reviewed by the BOF in October 2006. At that time the department recommended that the BOF continue the classification of yield concern for Chinook salmon but discontinue the management concern for summer chum salmon and yield concern for fall chum salmon.

Sport fishery management objectives are identified in the Sport Fishery Management Plan for Salmon in the Yukon Drainage (ADF&G 1993). In comparison to commercial, subsistence, and personal use fisheries, sport fisheries for salmon in the Yukon sub-area of the A-Y MA have very limited impact on stocks of salmon. Hence, there is very little effect that management of the sport fishery can have on the annual status of the various salmon stocks. Therefore the goal of sport fishery management is to maintain a reliable level of opportunity for anglers to participate in the fisheries throughout the season. To this end, emergency actions to restrict harvest and/or in season regulations for the sport fishery are generally not contemplated unless it becomes apparent that the size of the run is so small that restrictions in the subsistence fishery will be necessary. In the case of summer chum salmon and fall chum salmon management, the

BOF has identified the threshold run size at which emergency restrictions in the sport and personal use fisheries will occur (Appendices C5, C6).

Fishery Outlook

The outlook for 2007 is for a Chinook salmon run similar in size to the 2005 run. The 5-year-old component is expected to be stronger than in 2006 based on the above average proportion of 4-year olds in 2006. Escapements of Chinook salmon have improved since 2002 due largely to conservative management. However, the weak Chinook salmon runs realized in 2000 and 2001 are likely to produce below average returns through at least 2007. During the last three seasons the Chinook salmon runs have been strong enough to support subsistence needs and a growing commercial fishery. Surplus numbers of both summer and fall chum salmon were available in 2005 and 2006.

With the apparent improvements in run strength of salmon in the Yukon the department does not anticipate any reduction in daily bag limits for the salmon sport fishery in 2007. However, if a poor run develops the sport fishery will be managed in a manner consistent with run strength. The intent of sport fishery management continues to be to provide a predictable level of opportunity for anglers throughout the season.

Recent Board of Fisheries Action and In-season Management of Sport Fisheries

In 1987, bag and possession limits were established throughout the drainage for sport fisheries for all salmon species. In 1994, the BOF opened the Ray River and the Yukon River within the Dalton Highway Corridor to Chinook salmon fishing (Burr et al. 1998). The BOF adopted the Yukon River King Salmon Management Plan in January 2001 and modified the plan in 2002 (5AAC 05.360, 2004). In this plan the subsistence fishing schedule is described, and guideline harvest ranges for Yukon River District are modified. The *Yukon River Fall Chum Salmon Management Plan* (Appendix C5) was adopted in 1994 and has been subject to numerous modifications; the most recent in 1998. The *Yukon River Drainage Summer Chum Salmon Management Plan* (Appendix C6) was adopted in January 2001. A *Coho Salmon Management Plan* (Appendix C7) for the drainage was adopted in November 1998. The plan seeks to provide a new directed commercial fishery on coho stocks in the drainage.

On May 3, 2004 the department issued an EO that reduced the daily bag and possession limit for Chinook and chum salmon to one Chinook or one chum salmon for the Yukon drainage. This preseason reduction was consistent with the uncertain preseason outlook for Pacific salmon returns and with the direction of the BOF. On June 28, 2004 this EO was rescinded and the sport daily bag and possession limit for king and chum salmon was restored. No emergency orders were issued concerning Yukon River salmon stocks in 2005 or 2006.

Current Issues

In addition to uncertain performance of salmon returning to the Yukon drainage, a primary issue affecting all users (including recreational anglers) of stocks of salmon in the Yukon subarea is the assumption of management of subsistence fisheries by the federal government in October 1999. Recent decisions in federal courts have found that the navigable waters for which the federal government maintains a reserved water right are federal public land. As a result of this determination, the federal land management agencies assert the right to manage fish and wildlife resources to provide a rural subsistence priority. The state of Alaska also provides for a priority subsistence use of these resources but is unable to discriminate between rural and urban users

due to constitutional restraints. There continues to be concern that federal management will result in loss of opportunity for non-subsistence uses of fish resources, particularly recreational uses. This concern was realized in 2001 when the federal managers issued a special action prior to the beginning of the season. The action closed salmon fishing in all federal waters in the Yukon and Kuskokwim rivers to all but qualified rural residents. This action precluded all commercial and recreational use of salmon in federal waters.

The unanticipated closure of sport fisheries for Chinook salmon in the Yukon River in 2000 and 2001 placed a severe economic burden on fledgling local businesses without any real biological benefit. Maintaining a constant level of fishing opportunity throughout the season is critical for the local economic benefits that can accrue from these cottage industries. Complete closure of the recreational fishery should be contemplated only when substantial subsistence restrictions are needed.

Recommended Research and Management Activities

Currently, there is no active research program concerning the salmon sport fishery in the Yukon River drainage because of the minor nature of the fishery.

The Anvik River is one of very few locations in the Yukon drainage outside of the Tanana basin where catch and harvest of salmon has regularly been reported (Tables 4, 5, and 6). Up to three sport fish guiding businesses are presently using this drainage. These sport fisheries target Chinook and coho salmon primarily for catch-and-release. Resident species including northern pike, grayling and Dolly Varden are sought as secondary targets. Most anglers participating in the fishery are guided and are non-residents although local residents do participate in the fishery. Current levels of harvest are low and are reflected in the results from the SWHS. Over-flights of the Anvik River have been conducted periodically during early July to describe the distribution of angling effort during the peak of the Chinook salmon season. During 2006 only one boat transporting anglers for the Anvik River Lodge was observed. An aerial survey of the Anvik River sport fishery during the Chinook season should be conducted prior to the scheduled 2009 BOF meeting.

YUKON RIVER NORTHERN PIKE

Sloughs, interconnected lakes, and the lower sections of large rivers throughout most of the Yukon portion of the management area are inhabited by northern pike. Many of the lowland areas are particularly noted for large northern pike. Distribution of northern pike on the North Slope of the Brooks Range is much more limited. On the North Slope, northern pike have been documented only in the coastal plain west of the Colville River, in the Ikpikpuk River, and in middle reaches of the Killik River, a tributary to the Colville River (Bendock and Burr 1985). Nearly all of the catch and harvest of northern pike in the management area comes from the Yukon River tributaries (Table 2; Appendices B1 and B2).

Fishery Description and Historical Perspective

In the Yukon River drainage most fishing for northern pike occurs during the open water season. Pike are targeted in early summer immediately following spawning and throughout the summer months. Pike are often fished in the fall in combination with hunting activities. Some of the sport and subsistence harvest in the A-Y MA is taken during winter months through the ice with hook and line gear. Most of the sport harvest of northern pike is taken with hook and line.

Spearing and, bow and arrow techniques are also legal means and account for a small proportion of the total harvest.

Historically, fishing for northern pike in the Yukon area has been conducted by Alaska residents near towns or villages or where access is provided by road or by boat. New or recently reestablished sport fish guiding businesses are promoting opportunities to catch trophy pike in the Nowitna, Koyukuk, Kaiyuh/Khotol, Anvik and Innoko rivers. In these remote locations where sport fish guiding services have become available, most of the angling effort is by guided anglers and most of the guided fishermen are non-residents.

Within the Yukon sub-area, most catch of northern pike has come from five primary locations: the Porcupine, Dall, Nowitna, Koyukuk, and Innoko rivers. The Porcupine and Koyukuk rivers are the two largest first order tributaries of the Yukon River. Sport fishing within these drainages is dispersed and site-specific fishing effort is light. The level of effort directed at northern pike in the Dall, Nowitna, and Innoko rivers is relatively large.

Dall River. Northern pike populations situated near the Dalton Highway bridge on the Yukon River have experienced more angling pressure than have populations in other parts of the drainage. Following construction of the road in the mid 1970s, a summer season sport fishery targeting northern pike developed at the Dall River. Residents of Stevens Village located near the mouth of the Dall River expressed concern over encroachment by outside visitors and by what they perceived as a depletion of resources particularly northern pike.

Because of these concerns and because of the increased use of this fish stock, a series of stock assessment projects and use survey studies were conducted on the population and the fishery between 1987 and 2001 (Arvey and DeCicco 1989; Arvey and Burkholder 1990; Burr and James 1996; Chythlook and Burr 2002). During this period the sport fishing regulations were changed from 10 per day without size limit to 5 per day with only 1 larger than 30 inches (1988). During 1999 and 2000 a management plan was developed by ADF&G, Stevens Village Office of Natural Resources and the USFWS which describes a management area for special management of northern pike (Appendix D). In 2001 the Alaska BOF adopted a special regulation for the Dall River management area consistent with the recommendations of the management plan. For a more complete description of the issues, study results, planning efforts and management actions taken refer to Burr (2004).

Nowitna River. The Nowitna River enters the Yukon River approximately 130 km downstream from the mouth of the Tanana River. The Nowitna River was designated a Wild and Scenic River in 1980 and most of the main stem of the river and its major tributaries are included within the boundaries of the Nowitna National Wildlife Refuge. The lower 50 miles of the river pass through a large wetland as a single-channel meander with numerous connected oxbow lakes and sloughs.

The Nowitna River offers one of the best opportunities in Alaska for sport anglers to catch large northern pike and sheefish in a wilderness setting. Most (>75%) of the sport fishing effort occurs within the lower 30 miles of the river and connected waters. The fishery occurs almost entirely during the open water season with a substantial portion of the fishing effort and harvest of northern pike occurring during September concurrent with hunting activities. Both guided and unguided anglers participate in the fishery. In recent years up to six sport fishing guides have registered with the Nowitna NWR.

Innoko River. The Innoko River and its tributaries drain a large flat wetland area and the foothills of the Kuskokwim Mountains. The Innoko River enters the Yukon River a near the village of Holy Cross. This river system with its extensive wetlands provides excellent habitat for whitefish and northern pike. The lower Innoko and this part of the Yukon River continue to produce some of the largest northern pike in the state. In 1995 a new sport fish guiding business catering to anglers seeking catch-and-release opportunities for trophy sized northern pike began operating in the lower Innoko, using a large house boat as a movable base of operations. Nearby, on the Anvik River, a long-standing sport fishing lodge was renovated and reopened. More recently, additional smaller businesses have begun to provide sport fish guiding services in the Innoko system; two of these businesses are operated by residents of the Holy Cross area.

Recent Fisheries Performance

Little quantitative information is available concerning the status of northern pike stocks in much of the Arctic-Yukon management area, but because of limited access, fishing effort is light except on those stocks near towns and villages where angling and subsistence gill netting effort may be more intense.

In the most recent 10-year period (1995-2004) little change was observed in total harvest or catch from the Yukon River reporting area (Tables 7 and 8). Harvest estimates for 1995-2004 averaged 2,168 compared with 2,301 for 2000-2004. Catch estimates during the most recent 5-year period averaged 25,301 showing a large degree of catch-and-release fishing for this species (Table 8).

Dall River. Recent estimates of fishing effort and harvest in the Dall River sport fishery indicate that this fishery has on average remained stable. During the last 5-year period (2000-2004), fishing effort at the Dall River averaged about 400 angler days (Table 8). Estimated angler effort in 2005 (420 angler days) was similar to recent estimates.

Estimated harvests of northern pike from the Dall River have been higher than from other Yukon area locations in recent years. Between 1995 and 2000, this fishery provided an average of nearly 20% of all pike harvested from the Yukon subarea. Since 2001 when the new regulation was adopted, pike harvests have in general decreased. In contrast, the estimated harvest in 2004 was higher than recent estimates. Harvest estimated from 2005 (270 pike) is similar to other recent estimates.

Catch of northern pike between 1990 and 1999 showed an increasing trend with the estimate for 1999 (3,320) exceeding all previous levels. Since 2003 the total estimated catch has again increased with two of these 3 years (3,600 in 2003 and 13,000 in 2004) higher than all other annual estimates. These results suggest that recent catch rates may be increasing in this fishery; there has been no substantial change in fishing effort. The proportion of the northern pike catch that is released by anglers has increased. Between 1990 and 2000 79% were released compared to 93% released between 2001 and 2005. This result was expected with the adoption of the regulation in 2001 that requires the release of all pike between 30 and 48 inches. The results are also consistent with anecdotal accounts of anglers reporting good catches of fish larger than 30 inches with a few much larger fish.

Nowitna River. Until recently, the Nowitna accounted for about 15% of the sport fish harvest and 33% of the total catch of northern pike in the Yukon River survey area (excludes the Tanana area). In the last 5-year period the proportion of the Yukon area catch and harvest of northern

pike from the Nowitna River has declined to approximately 5% of the harvest and 15% of the total catch. This change is the result of increased use of pike in the Dall River and Innoko River fisheries. The sport fishery in the Nowitna River has shown only minor change during recent years. The estimated level of sport fishing effort by guided and unguided anglers in the Nowitna River has averaged 760 angler-days during the most recent 5-year period (1995-2004); fishing effort since the mid 1980's has varied between 430 and 2,000 angler days (Table 8). Estimated annual sport harvest of northern pike during the recent decade has been about 200 fish. In 2004 the survey estimated that approximately 180 northern pike were harvested. The total estimated annual catch of pike (fish harvested and released) has varied between 500 and 9,500 fish in the 10-year period and averaged 3,200 fish. Estimates for effort, harvest and catch are not available for 2003 and 2005.

To assess stock status of northern pike in the lower Nowitna River a study was conducted in 1997. The objectives of the study were to estimate abundance and size composition of northern pike in three sloughs connected to the river during early, mid and late summer (Burr 1998; Burr and Roach 2003). In addition to accruing current information on this pike stock, the goal of the study was to formulate a sampling protocol that would facilitate future sampling of this and other similarly situated pike stocks. The study found large numbers of northern pike in mature age and size categories. However, although estimates of abundance were obtained, the magnitude of movement of fish in and out of these sloughs and between sloughs was far greater than anticipated and confounded the application of the study findings to future sampling efforts. The movements of individually marked fish indicate that pike using the lower 20 miles of the river are part of a single large stock. The study concluded that the population is currently lightly exploited and that current levels of fishing pressure were within sustainable limits. A recommendation of the study was to conduct a radio telemetry experiment in the lower Nowitna in order to describe the timing and magnitude of seasonal movements of this stock (Burr and Roach 2003).

In 2005 a radio telemetry study was initiated in the lower Nowitna River. The research goal of the study is to obtain understanding of the season movements of northern pike over a 2-year period. Knowledge of seasonal movements will aid efforts to representatively sample northern pike in the lower 25 miles of the drainage and assist in the design of future mark-recapture experiments within an appropriately sized index area and within an appropriate time period.

Movements of radio tagged northern pike during the first year of this study showed that some fish captured in the study area (lower 25 miles of the river) travel upstream of the Titna River (more than 100 river miles) during late summer and remained there throughout the winter. Other fish remained within the study area while still others traveled fifty or more miles up or downstream in the Yukon River.

The portion of the season during which the radio tagged pike remain in the study area should be better understood once the study is completed. It is clear from these preliminary results that northern pike inhabiting the Nowitna River use a very large portion of the Nowitna drainage during the annual cycle and that the fish must be considered as a single stock for management purposes. The study will be completed in 2007 and a completion report should be available during winter 2007-08.

Innoko River. Estimates of sport fishing effort in the Innoko River have generally increased during the last decade with notably higher estimates in 2001-2 and 2004. Current fishing effort

is estimated to be about 1,000 angler days annually (Table 8). During this timeframe, estimates of harvest of northern pike have changed little, averaging about 100 pike per year. In contrast, estimates of total catch increased to 3,000 to 4,000 fish between 1995 and 2000 and currently average about 10,000 fish. Most of this increase probably has come from guided anglers taking advantage of the recently developed facilities and services.

In 2000-2001 a need was identified for better information on the status of pike stocks in the Innoko drainage and on the patterns and levels of use by sport and subsistence fishers. The absence of current stock status studies was contributing to differing perceptions on the status and trends of the pike population in the area. The local perception was that reduced catch rates, fewer large fish and a growing number of sport anglers indicated a stock at risk. Department biologists believed that the northern pike stock is healthy based on the presence of exceptionally large fish, fish in old age classes and low harvest levels.

A stock assessment project of northern pike inhabiting the Innoko River was conducted in 2002-2004 (Scanlon *In prep*). The project used radio telemetry to describe the seasonal movements and the geographic area used by this stock. The project also provided information on the age and size composition of pike in the area.

A separate but related project was also conducted in 2002 – 2004 (Brown et al. 2005). The purpose of this project was to describe current subsistence use patterns of freshwater fish including the geographic distribution of subsistence fishing for northern pike during winter and summer. The project also gathered information on the size and sex composition of the winter subsistence catch and tag returns from fish tagged during the summertime sport fishery.

These studies found that pike spawning in the Innoko River drainage travel extensively (> 200 miles seasonally) but generally remain within the Innoko drainage during the open water season (do not travel into the Yukon River or neighboring drainages). In contrast during winter these fish were regularly found in the Yukon River near Holy Cross and Piamuit Slough.

Sport fishing effort in the Innoko River drainage is confined to the open water season and occurs within the Innoko River and connected lakes and sloughs. The open water season subsistence fishery primarily occurs in the Yukon or at the mouth of tributaries. The winter subsistence fishery occurs in both the Innoko River and in the Yukon River. Along with residents of the Yukon communities, an additional group of winter season subsistence users was identified during the study. Residents of communities situated on the Kuskokwim River travel across country during spring to harvest pike in the lower Innoko/Piamuit slough area. The two fisheries are therefore generally segregated in time and in geographic location. Annual movements of northern pike tracked with radio telemetry together with tag returns by the subsistence fishery of pike marked from the sport fishery demonstrate that the fish targeted by these two user groups are from a single stock migrating seasonally throughout a very large open system.

Several residents of the area expressed the concern that the emerging guided sport fishery is resulting in declining numbers of large pike. Both the sport and subsistence fisheries selectively catch large pike. The sport fishery targets large fish because they are highly valued by sport anglers. Fishing mortality is believed to be low since nearly all sport fish guides in the area insist that their clients practice catch-and-release only fishing. The level of incidental mortality from catch-and-release fishing is not known but is believed to be less than 10% based on other studies (e.g., Burkholder 1992). The subsistence fishery also targets large northern pike that are preferred for traditional foods. It is assumed that nearly all pike caught in the subsistence fishery

are killed. Pike sampled from winter subsistence fishery were large (24 to 41 inches) mostly females (62%) and nearly all fish (99%) were in pre-spawning condition. It is expected that with time the proportion of northern pike in larger and older age classes will decrease with both fisheries directing fishing effort at this part of the stock.

Fishery Objectives and Management

The management of northern pike in the Yukon is reviewed in the Fishery Management Plan for the Yukon River Northern Pike Fishery, 2001-2004 (Burr *In prep*). The goal of sport fishery management for northern pike is to maintain naturally reproducing populations of northern pike with characteristics that will provide sport fisheries with qualities that are desired by anglers.

Management of northern pike in most of the Yukon area is structured to encourage participation in the fishery through liberal harvest limits. These regulations reflect the light level of use of northern pike within most of the Yukon area. The liberal regulations also provide harvest opportunity with rod and reel gear for rural residents within the sport fish regulation framework. In areas where northern pike fisheries are more intensive, management seeks to provide consumptive use (harvest) while maintaining northern pike in large size (>30 in TL) groups. As fishing effort increases, management for continued harvests will be structured around a daily bag limit of more than one northern pike, with a size limit structured to preserve northern pike in large size groups.

The department monitors sport fisheries with the SWHS to track levels of harvest and effort at various sites and to detect changes in the distribution of fishing among sites. Selected fisheries are closely monitored with creel surveys and other research projects. Length composition is used as an indicator of stock status for northern pike populations; the presence of large size fish within samples collected is used as an indicator of lightly exploited riverine populations. The department uses this information to remain responsive to changes in these fisheries.

A special regulation was established for the Dall River fishery following a public management planning effort. The department, together with the Stevens Village Natural Resource Office, and interested fish and game advisory committees jointly developed a Fisheries Management Plan (FMP) for the Dall River northern pike fishery. The goal of this planning process is to maintain a high quality northern pike stock for the benefit of local and non-local users. A summary of the current plan including the shared policies, objectives, and issues/action items is found in Appendix D.

- The current objective for the Dall River northern pike fishery is to maintain the proportion of northern pike 30 inches and larger at 0.3 (30%) in the assessed population.¹

Fisheries Outlook

At the present time, all available information suggests that northern pike stocks in the Yukon drainage are healthy. Levels of catch and harvest, although low, have remained stable or have increased modestly throughout the area. Where assessments of local stocks have been conducted, the presence of substantial portions of fish sampled in large size and old age categories further suggests light levels of exploitation.

Dall River. New regulations for the Dall River fishery were adopted by the BOF during January 2001. As a result, the opportunity to harvest large northern pike in this fishery was greatly restricted.

¹ The assessed population includes the portion of the population that is accessible to the sampling gear used in stock assessment. For the Dall River this includes fish larger than 19 inches TL (450 mm FL).

restricted. The current regulations provide for harvest of smaller pike and for catch-and-release fishing of large pike. The intended effect of this regulation is to increase the survival of large northern pike thereby increasing the size of fish available for catch-and-release. The outlook for fishing at the Dall River is good in terms of the number and size of fish expected to be available.

Nowitna River. A proposal to reduce the harvest of large (> 30 inches) northern pike in the Nowitna River will be considered by the AK BOF during the January 2007 meeting. If the proposal is adopted the harvest of large fish will be restricted. As with other fisheries where a similar regulation has been established, the intent is to increase the survival of large northern pike and thereby increase the size of fish available for catch-and-release and for limited harvest. With this category of regulation, the outlook for pike fishing in the Nowitna River is good with increased proportion of larger fish over time.

Innoko River. The stock of northern pike inhabiting the lower Innoko River is not believed to be in danger of over-harvest. Movements of radio-tagged pike show that these fish travel extensively throughout a large area of connected rivers, lakes and sloughs. The population size of northern pike in this area, though unknown, is likely to be very large. At present, approximately 3,000 pike have been tagged; the recapture rate in the sport fishery has been less than 2% annually (Scanlon *In prep*). To date, only six of these tagged fish have been reported captured in the subsistence fishery. A substantial portion of fish in this stock are in old and large size categories as shown in samples collected during tagging (Scanlon *In prep*) and from the subsistence fishery (Brown et al. 2005). The large amount of undisturbed habitat, the large population size, and the presence of many size and age groups, combine to make this stock very resilient to moderate increase in fishing effort and harvest. The abundance of northern pike in the area is not likely to decrease. However, if either the subsistence use by local or non-local residents or the sport use grows substantially, a decrease in the proportion of very large and old fish is anticipated.

Recent Board of Fisheries Action

Current sport fishing regulations for northern pike in the A-Y MA were established in 1987. Prior to 1987, there were no bag, possession, or size limits for northern pike within most of the A-Y MA. Proposals submitted by ADF&G to and adopted by the Alaska BOF in 1987 established the current background regulation of 10 per day, with no size limit for most of the Yukon and North Slope subareas. Because of concern for the maintenance of Yukon River northern pike stocks near the Dalton Highway Bridge, the BOF adopted a more restrictive regulation of five per day, with only one fish over 30 inches for Yukon River tributaries between the Hodzana and the Tanana rivers.

Opening of the entire Dalton Highway to public travel in 1994 caused concern that increases in recreational use would result in localized depletions of fresh water fish populations in waters adjacent to the road way. The BOF addressed this concern in 1994 by adopting new regulations for many of the resident fish species in the highway corridor (Burr et al. 1998). The northern pike bag and possession limit was reduced to five fish with only one over 30 inches.

New sport fishing regulations for the Dall River fishery were adopted by the BOF during January 2001. The regulations established special bag, possession and size limits for northern pike in the Dall and Little Dall River drainages. The regulations are consistent with the recommendations of the Dall River Fisheries Management Plan.

Current regulations are: Season – May 20 –September 30. Daily bag and possession limit is 4 northern pike less than 30 inches and 1 pike larger than 48 inches. No harvest of pike 30 – 48 inches. No bait allowed.

In 2001 the BOF adopted regulations governing the sport fishery for northern pike in the Innoko River. The bag limit is three northern pike per day of which only one may be 30 inches or larger. The sport fishery regulation adopted for the Innoko fishery is consistent with the regulatory strategy outlined in the Yukon River northern pike fishery management plan and recommendations of the GASH (Grayling, Anvik, Shagaluk and Holy Cross) Fish and Game advisory committee.

Current Issues

Dall River. While fishing effort and harvests have changed little in recent years, estimates suggest that recent catch rates may be increasing in this fishery. An increase in catch but not harvest was anticipated with the adoption of the regulation in 2001 that requires the release of all pike between 30 and 48 inches. If catch rates of large fish continue to increase, increased angler participation is expected for the fishery. Growth of the fishery will need to be closely monitored. Management efforts should be consistent with the shared goals outlined in the Dall River Management Plan.

Nowitna River. The department has recognized a need for new sport regulation consistent with other popular northern pike sport fisheries in the Yukon and Tanana areas. If adopted the regulation will help to control the loss of large adult northern pike in the Nowitna sport fishery.

Innoko River. Growth of the guided sport fishery for northern pike in the Innoko River is the source of concern with many residents of local GASH communities. Many residents of this area hold traditional beliefs and live traditional subsistence lifestyles. There is limited acceptance of catch-and-release fishing as practiced by many visiting anglers. Local residents report reduced catch rates during winter and summer fishing with rod and reel. The residents also are concerned over increased winter-time use of northern pike stocks by non-local rural residents. They report that groups travel from communities downstream in the Yukon drainage and from the nearby Kuskokwim area to jig for northern pike through the ice.

Low water levels during late summer 2005 concentrated sport and subsistence users in the lower Innoko. Changing weather patterns may increase the frequency of low water periods and the instances of conflicts between users. Acknowledgement of differing perceptions between local subsistence users and non-local anglers will be needed to reduce the likelihood of these conflicts. The department will continue to seek the opportunity for all users to participate in the fishery.

Recommended Research and Management Activities

The northern pike sport fishery in the Yukon area has gained a higher profile as a result of better access provided by guiding services and facilities established in recent years. The department will continue to monitor the levels of fishing effort, catch and harvest throughout the Yukon area with the intent of identifying additional sites for stock assessment. To ensure the continued quality of these stocks, continued careful monitoring of sport fishing effort, catch, and harvest is needed with the anticipated growth in both sport and subsistence fisheries.

Dall River. To assess the effectiveness of the new protected slot length limit established in 2001, it will be necessary to monitor the Dall River northern pike stock periodically with the goal of estimating the proportion of pike larger than 30 inches (the lower end of the current slot limit).

Nowitna River. The background regulation of 10 per day, with no size limit has applied to the Nowitna River since this same regulation was established in 1987 for most of the Yukon area. This popular fishery continues to provide a substantial portion of the total catch and harvest of northern pike in the Yukon River area. A change in the sport fish regulation is recommended to preserve the quality of the fishery. The current regulation for most other important pike fisheries in the AYK region is 5 per day, with only one larger than 30 inches. The department has submitted a regulatory proposal (Proposal 123, Appendix A4) to align the Nowitna River fishery with these other popular pike fisheries.

The ongoing radio telemetry study of northern pike inhabiting the lower Nowitna River should provide a clearer understanding of the geographic range, spawning areas and annual movements. A further assessment of the characteristics of the sport fishery and of the northern pike stock inhabiting the lower portion of the Nowitna River is recommended.

Innoko River. Given the potential impact by growth in the sport and subsistence fisheries on the proportion of large northern pike present in the lower Innoko River, the department will closely monitor these fisheries for growth in fishing effort or changes in patterns of use. In addition to closely inspecting estimates of catch, effort and harvest in the sport fishery, the department should establish a sampling protocol to monitor changes in proportion of large fish in the sport fish catch.

The seasonal movements and age and size composition of northern pike in the Innoko River upstream of Shageluk should be investigated. According to information recorded by Brown et al. (2005) this area (Holikachuk to several miles upstream of Iditarod) is especially important to residents of Shageluk and Grayling for harvesting freshwater fish. The guided sport fishery also targets northern pike in the area. The pike stock in this area is believed to be generally distinct from the lower Innoko River stock studied by Scanlon (*In prep*) and Brown et al. (2005). To date, no movement of northern pike between these areas has been detected by recapture of tagged fish or by movements of radio-tagged fish.

YUKON RIVER ARCTIC GRAYLING

Fishery Description and Historical Perspective

Grayling are distributed throughout the entire drainage, from extreme headwaters in Canada to streams that originate in the Yukon Delta. Sport fishing effort is likewise widespread. Historic documentation of harvests (Mills 1979-1994; Howe et al. 1995, 1996, 2001a-d; Walker et al. 2003; Jennings et al. 2004, 2006 a-b, *In prep a-b*) indicates that the heaviest sport utilization has occurred in the middle part of the Yukon drainage, between the mouth of the Porcupine River downstream to the Koyukuk River. Within this section, most of the catch and harvest comes from the Koyukuk River tributaries, including those that are crossed by the Dalton Highway. Improved road access has also recently been provided to Nome and Beaver creeks, another popular middle Yukon River site. In addition, an important component of the catch and harvest of grayling comes from the Anvik River in the lower Yukon River section. Most of this fishing effort is believed to come from a lodge located on the upper Anvik River. Virtually all other grayling harvests in the drainage are from

streams that have no, or very limited, road access. Historic sport effort and harvests are estimated to be small relative to road accessible streams (Table 9).

Dalton Highway. The sport fishery for grayling from Koyukuk River tributaries accessed from the Dalton Highway account for about 20% of the harvest and 30% of the catch of grayling from the entire Koyukuk drainage (Table 9). Given the relatively small portion of the Koyukuk drainage that is accessible from the Dalton Highway, grayling stocks along this road are subjected to the highest level of use by anglers in the drainage.

The Jim River supports the largest regional stock, as well as the largest harvest by sport anglers (Fish 1997; Table 9). The Jim River is one of the most accessible of the streams crossed by the Dalton Highway because the roadbed parallels the stream for many miles. In contrast, most other streams generally flow perpendicular to the roadbed. Between 1995 and 1997 studies were conducted to obtain baseline abundance and composition data for stocks of Arctic grayling in rivers and streams crossed by the Dalton Highway. Studies concluded that catchability of fish in the Jim River is not affected by accessibility from the highway, and that fishing pressure at easily accessible locations along the river is probably not great enough to cause changes in catchability throughout the summer.

A study of the movement of grayling captured in the Jim River summer fishery was conducted in 1997 and 1998 using radio telemetry. The goals of the study were to locate spawning and overwintering habitats of grayling and to determine the fidelity of Arctic grayling to summer feeding grounds in the Jim River. The study (Fish 1998) found that most fish tagged in the Jim River remain in the Jim River through the winter. A smaller proportion (about 35%) wintered in other locations including the South Fork Koyukuk River, the Middle Fork Koyukuk River and Prospect Creek. During the spawning season, most grayling were located in the Jim River in either the fishery area or in the lower Jim River. Some fish (< 20%) were located during the spawning season in Fish Creek, Prospect Creek, and the South Fork Koyukuk River. The migration characteristics and patterns of habitat use are very similar to those of other stocks of grayling inhabiting other clearwater rapid-runoff rivers in Interior Alaska (Tanana Valley). This study suggests that Arctic grayling in the Jim River are probably a distinct stock of fish that may share overwintering and feeding habitat with other related Koyukuk River stocks.

In 2000 and 2001, a study was conducted to estimate maturity schedules for grayling in the Jim River (Gryska 2003). This study found that grayling in this system mature at larger size and at an older age than do grayling in the Chena River; 50% maturity was estimated at 7 years and at about 300 mm FL (13 inches TL) compared with 5 years and 270 mm (12 inches TL) for the Chena River stock. In January 2004, the Alaska BOF adopted new regulations for the Dalton Highway grayling fishery. The 12 inch minimum length limit was rescinded; the daily bag limit remains at five fish.

Nome/Beaver Creek. Excellent access has been provided to Beaver Creek by way of the improved road to Nome Creek. Beginning in the early 1990s, BLM upgraded the roadbed and initiated construction of multiple campgrounds. In 1999, construction of the campgrounds and the expanded road system leading to Nome Creek and its confluence with Beaver Creek was completed. This road system is located near the Fairbanks population center and has resulted in increased visitor use and in increased catch of Arctic grayling in this area.

Baseline studies conducted by BLM during the late 1980s indicated a very small resident grayling population in Nome Creek. Concern over increased fishing effort and potentially high

levels of exploitation of the grayling stock in this 3rd order tributary prompted the ADF&G to propose increasingly restrictive regulations for Nome Creek culminating in the current catch-and-release only regulation that was adopted in the winter 1994-95.

During 2000 a mark-recapture experiment was conducted in a 30 mile section of Beaver Creek (excluding Nome Creek) to assess the Arctic grayling population (Fleming and McSweeney 2001). The study found a very high population density (1,325 fish per river mile) of small grayling (>150 mm FL, most 220 – 250 mm FL) with age classes age-3 and age-4 dominating. The density of grayling larger than 250 mm FL in the study area was substantially less (200 – 350 fish per river mile) with larger fish in general distributed farther upstream. As a result of this information, a new sport fishing regulation was adopted for Beaver Creek during the 2001 BOF meeting.

Recent Fishery Performance

The Yukon subarea has provided about 70% of the sport harvest and 70% of the catch of Arctic grayling in the A-Y MA between 2000-2004 (Table 2; Appendix B1). Estimated average harvest in the most recent 5-year period was 3,141 fish, which reflects little change over historic levels (3,366, 1994-2004). In 2005, an estimated 2,883 grayling were harvested from the Yukon area (Table 11). Catch estimates for the Yukon area have averaged about 23,028 annually since 1995; estimated catch in 2005 was approximately 20,940 grayling (Table 9). These data reflect a continued low but stable level of use of the species in the Yukon area as a whole.

Dalton Highway. Sport fisheries for Arctic grayling in the Yukon area along the Dalton Highway have harvested an average of 134 fish annually since 2000. During this period, most of the harvest (84 grayling) has come from the Jim River (Table 9). Total estimated catch from this area since 2000 has averaged 1,500 grayling of which about 1,100 came from the Jim River (Table 9). Estimates of catch and harvest for the Dalton Highway grayling fishery were greater in 2005 (harvest 328 fish, total catch 2,184 fish). This modest increase was observed in spite of large forest fires in the area in July and August. The results from 2005 may reflect the effect of the new regulation adopted for this fishery in January 2004.

Nome/Beaver Creek. The SWHS combines Beaver Creek and Nome Creek data into a single report. The estimated annual catch of Arctic grayling from Nome and Beaver creeks averaged approximately 3,400 fish for the most recent 5-year period (Table 9). Estimated catches from 2004 and 2005 (7,400 and 6,700 fish) are the highest on record for this fishery. The harvest of Arctic grayling from Beaver Creek (Nome Creek is closed to harvest) has averaged about 300 fish during the last 5 and 10 year period. Harvest estimates for 2004 and 2005 (following the regulation change) were estimated to be 570 and 430 fish respectively. These harvests, while higher than the recent overall average, are within the range of harvests estimated from this fishery prior to the regulation change.

Fishery Objectives and Management

Management strategies for Arctic grayling stocks in the Yukon area are found in the Regional Wild Arctic Grayling Management Plan (5 AAC 70.055, 2004). The goal of management is to maintain naturally reproducing populations of Arctic grayling with characteristics that are sustainable and are desirable to the public.

The “regional management approach” for sport fishery regulation is currently applied to all Arctic grayling fisheries in the Yukon Area except for Nome Creek in the Beaver Creek drainage. Under the regional regulation, the bag limit is five fish, bait is permitted and the

season is open year round. The Nome Creek fishery is regulated under the “special management approach”. In Nome Creek the fishery is open year round but is restricted to catch-and-release. In addition, from April 1 through May 31, only unbaited, single-hook, artificial lures may be used. To date, fishery objectives are in place for two fisheries in the Yukon River area: the Dalton Highway and Nome/Beaver Creek.

Dalton Highway. The fishery objective for the Dalton Highway grayling fishery is to maintain total harvest of Arctic grayling from the Jim River below 10% of the estimated abundance of fish larger than 250 mm FL in the assessed area. The most recent applicable estimate of abundance is 12,000 fish. The performance of the Jim River fishery will serve as a proxy for the grayling fishery in the Yukon drainage portion of the Dalton Highway grayling sport fishery.

New regulations for the Dalton Highway Arctic grayling fishery were adopted in January 2004:

- Daily Bag and Possession Limit is 5 grayling, no size limit.

The length limit (12 inch minimum size, adopted in 1994) was rescinded for this fishery because all estimates of effort and harvest and stock status studies indicated that these stocks could sustain greater levels of harvest. Also the 12 inch minimum length limit that had been in place was not large enough to attain the goal of delaying recruitment to the fishery until maturity was attained (Gryska 2003). In order to be effective at protecting pre-spawning fish, the length limit would need to be increased to at least 13 inches. If it becomes necessary to reduce fishing mortality on these stocks, a reduction in bag limit with no length limit is recommended.

Nome/Beaver Creek. The goal of management for Nome Creek is to minimize fishing mortality of Arctic grayling within this small tributary of Beaver Creek with a catch-and-release fishery.

The fishery objective for Beaver Creek is to maintain total harvest of Arctic grayling below 10% of the estimated abundance of fish larger than 250 mm FL in the assessed area. The most recent estimate of abundance of grayling larger than 250 mm FL in the assessed area is 9,900 fish (Fleming and McSweeney 2001).

Current sport fishing regulations were adopted by the Alaska BOF for Beaver Creek Arctic grayling fishery in January 2004. The current regulations for Nome Creek and Beaver Creek are:

- Only unbaited, single hook, artificial lures may be used April 1 – May 31;
- Nome Creek – catch-and-release only for the entire year;
- Beaver Creek (from its headwaters downstream to its confluence with the Yukon River, except for Nome Creek) – daily bag and possession limit is 5 grayling, no size limit.

Fishery Outlook

Dalton Highway. Substantial increases in the levels of angler effort, catch, and harvest have been expected as a result of the large improvements in the road surface (most of the highway north of the Yukon River and south of Wiseman was paved beginning in 2001). However, while modest increases in visitor use have been recorded at the visitor center in Coldfoot (BLM), there is little evidence of significant increases in the sport fishery. With better road access and with a somewhat less restrictive sport fishing regulation, the department continues to anticipate that the participation in the road-side fishery for Arctic grayling will increase.

Prior to the 2004 season, the minimum length limit was rescinded from the regulation for the Dalton Highway grayling sport fishery. A modest increase in the harvest of grayling from area

waters was expected and was realized. However, estimated harvests in 2004 and 2005 have remained substantially below the established harvest threshold. Modest increases in angler effort catch and harvest are expected in this fishery. Management of this fishery will be reviewed prior to the 2009 scheduled BOF meeting for the AYK area.

Nome Creek/Beaver Creek. With the adoption of new regulations in 2001, no changes in the fishery regulations for the Nome and Beaver creeks are anticipated. Only modest increases in visitor use and in angling effort are anticipated as the recreational destination becomes more popular.

Recent Board of Fisheries Action

Dalton Highway. In 1994, the BOF reduced the bag and possession limit for grayling within the Dalton Highway Corridor from 10 to 5 fish and added a minimum length limit of 12 inches total. This action was taken in response to increases in recreational use and harvest (Burr et al. 1998). As described above (Fisheries Objectives and Management) the 12 inch minimum size limit was rescinded in 2004.

Nome Creek/Beaver Creek. During 1994, the BOF adopted a catch-and-release only regulation for grayling in Nome Creek in anticipation of continued increasing recreational use of this small tributary of Beaver Creek. In January 2001 the sport fishery bag limit regulation for Beaver Creek from its headwaters downstream to its confluence with O'Brien Creek, except for Nome Creek, was reduced from 10 to 5 per day.

Current Issues

Dalton Highway. Local roadside depletion of fish stocks near crossings of the Koyukuk River tributaries by the Dalton Highway has been a concern because such depletions would reduce angling opportunity for sport fishers traveling this route. More restrictive sport fishing regulations have been imposed to alleviate harvest pressure in the immediate road crossing areas. It is likely that fishing effort will increase in the next few seasons with the major improvements of the Dalton Highway. Changes in fishing effort catch and harvest will be closely monitored to ensure that management of the fishery will be modified if necessary to meet objectives for this fishery.

In addition to changes in the sport fishery, a new gill net subsistence fishery in these streams was authorized by the BOF during winter 2004 (Proposal 164, Appendix A3). To date only two individuals have participated in this new permit fishery and harvest have been insignificant. As this permit fishery grows, the additional subsistence harvest will need to be factored into the estimated annual harvest. Adjustments will likely be needed in the regulation of the sport fishery to ensure that harvest levels remain sustainable.

Nome/Beaver Creek. Improved access to Beaver and Nome creeks has resulted in a growing sport fishery for Arctic grayling, particularly in Nome Creek (catch-and-release fishery). However, it is unlikely that additional modifications in regulation of the fishery will be needed for several seasons. Current annual harvest levels from Beaver Creek (less than 500 fish) have not yet approached the 1,000 fish threshold level established in the objective for this fishery.

Recommended Research and Management Activities

At present, there is little concern for over-harvest of grayling in streams crossed by the Dalton Highway or in the Nome/Beaver Creek fishery. A conservative annual sustainable harvest levels have been established. As fishing effort and harvests increase and begin to approach threshold

use levels, reassessment of the stocks will be needed. In addition an on-site creel census will be recommended for the Dalton Highway to better describe the sport fishery.

NORTH SLOPE DOLLY VARDEN/ARCTIC CHAR

Fishery Description and Historical Perspective

In the Arctic-Yukon management area, Arctic char occur in lakes in the Brooks Mountain Range and in some headwater lakes in the Kuskokwim River drainage. Dolly Varden, a closely related species, are common inhabitants of most large rivers on the North Slope in most drainages of the eastern coastal plain from the Canadian Border to the Colville River. The species is widely distributed throughout the Yukon drainage as well. The department groups Dolly Varden and Arctic char together for regulatory purposes. However, the two species have distinct life history traits. Distribution of Arctic char is very limited in the A-Y MA and the vast majority of fisheries are directed toward Dolly Varden. For the purposes of the following discussion this species complex will be referred to as “char”

In most of the A-Y MA char provide a minor contribution to the total catch and harvest in comparison to other species. In the Yukon drainage char contribute only about 5% of the catch and harvest to the total numbers in the drainage. In contrast, char are a major component of the catch and harvest in the North Slope area contributing more than 40% of the harvest and 30% of the catch during the recent 10-year period (Table 10; Appendix B2). On the North Slope most sport fisheries for char target overwintering populations of Dolly Varden either in the fall as the fish return to freshwater from the sea, or in the spring as they move toward the sea to feed.

On the North Slope, char spawn and overwinter in spring water upwelling areas. The char become increasingly concentrated in the spring areas beneath and adjacent to the in-river glaciers (aufeis) that form during winter. Streams that are known to support significant populations of char include the Kongakut, Hulahula, Canning, Sagavanirktok, and Anaktuvuk rivers. Overwintering locations are in some cases different from spawning locations such that non-spawning fish from several neighboring tributaries may concentrate in a single drainage. The upper Ivishak River, a tributary of the Sagavanirktok River provides a large overwintering area used by fish in non-spawning years from nearby tributaries such as the Ribdon, Lupine and Echooka rivers.

The population of char using the Sagavanirktok River is considered particularly vulnerable because of potential habitat degradation resulting from oil and gas development that has occurred in Prudhoe Bay (Sagavanirktok River Delta). Access for anglers to the migratory route of this stock is provided by the Dalton Highway which parallels most of the main stem of the Sagavanirktok River. In 1994, the entire length of the Dalton highway was opened to public travel. Prior to this, the North Slope portion of the road was technically open only as far north as the Wiseman area in the upper Koyukuk drainage.

Aerial surveys of index areas in the Ivishak River were initiated in 1971 and attempted annually through 1984 as a means of monitoring changes in this stock. The number of char counted in the Ivishak index area ranged from about 8,000 to as many as 36,000 in the 12 years the survey was conducted (Appendix E). In 1989, 1993, and 1995 the aerial surveys were again conducted; counts were 12,650, 3,057, and 27,036 char. The low estimate from 1993 was conducted at least two weeks earlier than other counts and it is likely that many of the fish had not completed the upstream migration.

Between 2000 and 2003 a 3-year study funded by the federal OSM was conducted. One aspect of this project was an investigation of the validity of using aerial surveys as a char stock assessment tool. The project was designed to estimate the precision of aerial surveys of overwintering aggregations, and determine the relationship between aerial survey index counts and traditional mark-recapture abundance estimates of the same overwintering aggregations. Another part of the project used radio telemetry to better describe overwintering and spawning locations and to investigate the year-to-year variability in the location of these habitats.

In 2001, 2002 and 2003 the abundance of char in an index reach of the Ivishak River was estimated with mark recapture experiments and was indexed with aerial counts (Viavant 2002, 2003, 2005). The index reach is a 28 km stretch of the Ivishak River extending from the mouth of the Echooka upstream to the mouth of the Saviukviayak River. The reach is consistent with the aerial index section used between 1971 and 1995 and appears to include most overwintering fish.

The estimated abundances of char in the index area from the mark-recapture experiments in 2001, 2002 and 2003 were 49,523 fish (SE=7,277), 21,634 fish (SE=3,075) and 9,259 (SE=1,156) respectively. The average aerial index count based on all surveys was 10,932 (SE=314) in 2001 and 5,408 (SE=363) for 2002 and 2,720 (SE=133) for 2003 (Appendix E). These results indicate that the replicate aerial counts have relatively low variability and that these aerial counts appear to represent approximately 22% to 24% of the abundance in the same index area as measured by mark-recapture methods. The study also shows substantial variability in the annual number of char overwintering in the index area. During the 3 years of the study a significant decrease in the number of char was observed. Most significantly this study demonstrates that aerial surveys of overwintering aggregations of char in North Slope drainage can be used as an indicator of overwintering abundance.

In the Anaktuvuk River drainage, an index area was established in 1979 and annual counts were attempted through 1984 (Appendix E). Counts ranged from 15,717 to 5,462, declining each year. In 1989 anecdotal reports from local residents and long-time users of this stock indicated that the fish were not present in traditional areas including the overwintering/spawning area near Rooftop Ridge (index area). The primary users of char from this area are Barrow residents that fly into a nearby privately owned airstrip. ADF&G personnel planned to conduct an aerial survey of the Anaktuvuk River in 1989 but the survey was not conducted due to weather conditions. No survey of the Anaktuvuk River char stock was conducted since that time until 2002 when the overwintering aggregations were again counted in a helicopter survey. In 2002 the index count was 4,800 fish (Appendix E).

The Kongakut River is a popular destination for float trips in the eastern part of the Arctic National Wildlife Refuge (ANWR). Concern by refuge staff and members of the public over perceived declines in the number of char available during summer resulted in a joint project to assess this stock. In 1995, the project attempted to estimate abundance of char in a section of the river. However, too few fish were captured during the summer sampling period. The ADF&G conducted an aerial survey in September of 1995 to determine if there had been a substantial decrease in the number of spawning and overwintering fish that were using the river. The count in 1995 was 14,080, substantially greater than the other two estimates available (Appendix E). More recent survey counts of char in the Kongakut River are not available.

Recent Fishery Performance

Estimates of catch and harvest of char from the North Slope subarea through 2002 have suggested a stable level of use. Total average annual catch has been about 5,000 and average harvest about 1,000 fish (Table 10). Estimates of use since 2002 have been lower; harvests and catch in 2003 and 2004 were approximately 1/5 of the previous 10-year average (1993-2002). In 2005 and modest increase in use was reported; harvest was estimated to be about 500 char with a total catch of 1,800 fish. Historically about 50% of the total use of char has come from waters adjacent to the Dalton Highway. In contrast in 2005, an estimated 100 char (20%) were harvested from waters in the corridor and the total catch was about 600 fish (35% of total North Slope use).

A large increase in fishing effort and catch of char and the other two key sport species (Arctic grayling and lake trout) was anticipated with the opening of the entire length of the Dalton Highway to public travel in 1994 and again with the improvement of the roadway south of Atigun Pass in 2001 and 2002. Estimates from the SWHS do not indicate that this has occurred (Table 10).

Fishery Objectives and Management

Fishery management for char reflects the different life history characteristics that these two closely related species exhibit. Dolly Varden (which inhabit streams and are often anadromous) can be exploited at much higher rates than can lake-dwelling Arctic char. The life history characteristics of lake-dwelling Arctic char are very similar to lake trout and these populations can support only low rates of exploitation.

In lakes char (primarily Arctic char) are managed to provide a conservative level of yield. In streams char (primarily Dolly Varden) are managed to encourage participation in the fishery while limiting harvest of spawning adults.

Fishery Outlook

Char will likely continue to provide a substantial portion of the sport fishery that occurs on the North Slope. The waters within the Dalton Highway corridor will continue to support a substantial portion of the total catch and harvest of char in the North Slope sub area. Increased numbers of visitors are reportedly floating streams (Kongakut, Hulahula, Caning rivers) in the Arctic National Wildlife Refuge. Modest increases in catch and harvest of char can be anticipated with the increased visitor use of the area.

No changes in the regulation of the char fishery are expected prior to the 2007 season.

Recent Board of Fisheries Action

In 1994, the BOF adopted new regulations for Dolly Varden and Arctic char for the entire AYK region. It is difficult for many anglers to distinguish between Dolly Varden and Arctic char in the field. However these two species have substantially different biological characteristics and cannot withstand the same exploitation rates. Dolly Varden (which inhabit streams and are often anadromous) can be exploited at much higher rates than can lake dwelling Arctic char.

The BOF adopted the following regulations: in flowing waters the bag and possession limit for these species is 10 per day with only two over 20 inches in length; in all lakes the bag and possession limit is two per day with no size limit. The BOF aligned lake trout harvest regulations with lake dwelling Arctic char in 2004 (Proposal 108, Appendix A3).

Current Issues

There is a concern among indigenous people of the North Slope that a growing sport fishery for char may conflict with local subsistence fisheries.

Oil and gas development adjacent to and within the migration routes of char in North Slope waters carries the potential for serious impacts through contamination or alteration of habitat. Char using the Sagavanirktok drainage pass through Prudhoe Bay, one of the most heavily industrialized areas in Alaska. Current plans for oil and gas leases in the foothill region of NPRA are of particular concern. These new lease areas include the critical overwintering/spawning habitat in the spring areas of the Anaktuvuk River drainage. Seismic surveys are planned for the portions of the Sagavanirktok, Anaktuvuk and Canning rivers that are the primary spawning and overwintering habitats for these char stocks. Department staff continues to assert that these critical habitats must be excluded from all surface development and that travel routes be redirected.

Recent studies in the Sagavanirktok River drainage (Viavant 2005) report declining abundance of overwintering and spawning char. Fluctuations in the abundance of char stocks on the North Slope have been reported before (Yoshihara 1973; Bendock and Burr 1984) but not of this magnitude.

The results from the radio telemetry study show that the specific locations of critical spawning and overwintering habitat used by anadromous char in the Beaufort Sea drainages may change significantly between years within a relatively large area within a drainage (Viavant 2003). Protection of such habitat should not be based on locations determined only for one or a few seasons.

Recommended Research and Management Activities

Establishment of annual aerial index counts of the Ivishak and Anaktuvuk rivers overwintering areas is recommended. Annual monitoring of these stocks is important particularly in light of apparent declining abundance of char in the area and the increased oil and gas development activity in this area.

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TABLES AND FIGURES

Table 1.—Fishing effort by sub-area for the A-Y management area, 1977-2005.

Year	A-Y Area Angler Days	Arctic Angler-Days (%) ^a	Yukon Angler-Days (%)
1977	7,163	2,434 (34)	4,729 (66)
1978	7,736	1,422 (18)	6,314 (82)
1979	9,240	1,526 (17)	7,714 (83)
1980	8,991	2,142 (24)	6,849(76)
1981	9,280	2,601 (28)	6,679 (72)
1982	15,913	4,879 (31)	11,034 (69)
1983	16,808	5,738 (34)	11,070 (59)
1984	14,702	8,344 (57)	6,358 (39)
1985	13,160	4,490 (34)	8,670 (61)
1986	14,160	4,779 (34)	9,381 (65)
1987	12,273	5,256 (43)	7,017 (47)
1988	10,802	2,541 (24)	8,261 (67)
1989	14,830	4,118 (28)	10,712 (61)
1990	19,303	3,764 (19)	15,539 (72)
1991	18,040	7,291 (40)	10,749 (54)
1992	17,771	4,940 (28)	12,831 (65)
1993	19,611	5,600 (29)	14,011 (63)
1994	18,279	5,407 (30)	12,872 (61)
1995	24,321	5,644 (23)	18,677 (70)
1996	15,165	4,487 (30)	10,678 (64)
1997	18,003	5,278 (29)	12,725 (62)
1998	13,780	3,653 (27)	10,127 (62)
1999	18,136	5,230 (29)	12,906 (63)
2000	16,066	4,739 (29)	11,327 (61)
2001	16,563	6,032 (36)	10,531(52)
2002	19,814	4,770 (24)	15,044(66)
2003	11,827	2,710 (23)	9,117 (77)
2004	16,420	3,311 (20)	13,109 (80)
2005	13,317	4,352 (33)	8,965 (67)
Average			
1990-04	17,540	4,857 (28)	12,683 (72)
1995-04	17,010	4,585 (27)	12,424 (73)
2000-04	16,138	4,312 (27)	11,826 (73)

^a Percentage of total for the Arctic - Yukon management area from this sub-area.

Table 2.—Number of fish harvested and total catch by species by recreational anglers within the Arctic - Yukon Management Area, 1986-2005.

Year	All Fish	Pacific Salmon						
	Total	Total	Chinook	Coho	Sockeye	Pink	Chum	
			Harvest					
1986	20,161	476	15	161	0	98	202	
1987	17,697	287	0	61	0	0	226	
1988	14,510	875	91	183	0	55	546	
1989	18,603	1,312	100	215	0	0	997	
1990	11,430	750	105	228	0	0	417	
1991	18,934	1,202	143	430	180	0	449	
1992	3,852	1,600	313	551	58	45	633	
1993	11,054	951	122	619	0	0	210	
1994	11,325	1,228	410	728	0	0	90	
1995	9,315	388	37	162	0	0	189	
1996	11,445	667	128	432	0	30	77	
1997	9,306	606	221	179	0	0	206	
1998	9,864	874	207	154	64	98	351	
1999	9,714	272	22	158	11	0	81	
2000	8,304	407	99	244	0	0	64	
2001	9,824	191	12	126	0	0	53	
2002	13,001	710	8	551	3	66	82	
2003	8,015	360	99	160	0	73	28	
2004	11,877	1,406	194	907	79	108	118	
2005	9,888	729	0	360	78	0	291	
			Averages					
1990-04	11,151	774	141	375	26	28	203	
		6.9% ^a	1.3%	3.4%	0.2%	0.3%	1.8%	
1995-04	10,067	588	103	307	16	38	125	
		5.8%	1.0%	3.1%	0.2%	0.4%	1.2%	
2000-04	10,204	615	82	398	16	49	69	
		6.0%	0.8%	3.9%	0.2%	0.5%	0.7%	

-continued-

Table 2.-Page 2 of 4.

Year	All Fish Total	Pacific Salmon						
		Total	Chinook	Coho	Sockeye	Pink	Chum	
			<u>Catch</u>					
1990	74,262	2,881	199	533	0	0	2,149	
1991	61,574	3,296	316	859	205	77	1,839	
1992	54,978	4,951	1,242	1,329	107	237	2,036	
1993	58,966	2,923	640	1,023	9	10	1,241	
1994	48,872	2,005	510	1,109	9	16	361	
1995	41,395	1,453	177	542	0	0	734	
1996	74,010	5,392	2,785	813	0	991	803	
1997	62,814	1,642	673	386	30	37	516	
1998	56,704	6,219	456	385	1,019	815	3,544	
1999	60,613	1,503	56	804	343	0	300	
2000	62,817	1,691	602	684	0	39	366	
2001	54,746	1,834	315	822	0	0	697	
2002	76,435	1,578	18	1,064	3	109	384	
2003	67,214	9,302	863	3,386	21	102	4,930	
2004	100,580	10,610	1,088	4,329	678	1,146	3,369	
2005	61,920	4,188	455	504	151	848	2,230	
			<u>Averages</u>					
1990-04	65,733	4,122	703	1,322	209	324	1,564	
		6.3%	1.1%	2.0%	0.3%	0.5%	2.4%	
2000-04	72,358	5,003	577	2,057	140	279	1,949	
		6.9%	0.8%	2.8%	0.2%	0.4%	2.7%	

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Table 2.-Page 3 of 4.

Year	Non-Salmon											
	All Fish Total	Lake Trout	Char	Rainbow Trout	Grayling	Whitefish	Sheefish	Northern Pike	Burbot	Smelt	Halibut	Other Fish
<u>Harvest</u>												
1986	19,685	923	1,074	0	9,665	4,104	214	3,489	216	0	0	0
1987	17,410	274	3,217	0	10,986	281	128	2,492	32	0	0	0
1988	13,635	73	1,636	0	7,098	628	656	3,526	18	0	0	0
1989	17,291	754	1,757	0	99,604	34	757	3,516	515	0	0	34
1990	10,680	388	880	0	5,752	339	323	2,474	524	0	0	0
1991	17,732	610	1,874	0	8,871	422	1,341	4,454	160	0	0	0
1992	12,252	572	1,508	0	5,316	266	553	3,590	447	0	0	0
1993	10,103	207	1,620	0	4,962	173	436	2,405	300	0	0	0
1994	10,097	132	1,077	0	5,381	147	391	1,968	498	0	0	503
1995	8,927	104	1,018	0	4,404	100	476	1,937	285	0	0	603
1996	10,778	28	1,989	0	5,194	196	606	2,502	244	0	0	19
1997	8,700	57	1,362	0	4,359	398	231	1,870	415	0	0	8
1998	8,990	248	1,659	0	5,094	121	258	1,452	158	0	0	0
1999	9,442	622	1,132	0	4,370	579	133	2,418	168	0	20	0
2000	7,897	73	1,551	0	4,216	293	372	1,277	118	0	0	0
2001	9,633	93	1,957	0	4,039	954	492	1,772	68	0	0	258
2002	12,291	364	1,324	0	5,047	516	538	3,342	1,160	0	0	0
2003	7,655	155	551	0	4,253	304	238	1,529	616	0	0	0
2004	10,471	173	347	0	4,134	434	1,352	3,670	181	0	28	147
2005	9,159	267	623	0	4,196	79	1,348	1,931	534	0	0	181
<u>Averages</u>												
1990-04	10,377	255	1,323	0	5,026	349	516	2,444	356	0	3	103
	93.1%	2.3%	11.9%		45.1%	3.1%	4.6%	21.9%	3.2%		0.0%	0.9%
1995-04	9,478	192	1,289	0	4,511	390	470	2,177	341	0	5	140
	94.2%	1.9%	12.8%		44.8%	3.9%	4.7%	21.6%	3.4%		0.0%	1.0%
2000-04	9,589	172	1,146	0	4,338	500	598	2,318	429	0	6	83
	94.0%	1.7%	11.2%		42.5%	4.9%	5.9%	22.7%	4.2%		0.1%	0.8%

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Table 2.-Page 4 of 4.

Non-Salmon												
Year	All Fish	Lake	Rainbow				Northern				Other	
	Total	Trout	Char	Trout	Grayling	Whitefish	Sheefish	Pike	Burbot	Smelt	Halibut	Fish
<u>Catch</u>												
1990	71,381	2,695	6,586	0	40,141	1,216	2,251	17,734	526	0	0	285
1991	58,278	1,689	7,872	0	32,658	509	1,495	16,092	160	0	0	0
1992	50,027	1,628	7,594	0	23,908	469	1,569	14,801	58	0	0	0
1993	56,043	462	8,195	0	30,765	494	2,127	13,637	363	0	0	0
1994	46,867	504	4,957	0	24,503	408	1,121	11,748	765	0	45	2,861
1995	39,942	525	3,980	0	16,881	127	1,335	15,828	357	0	0	909
1996	68,618	358	10,144	0	28,873	524	2,915	25,502	277	0	0	25
1997	61,172	852	5,542	0	39,566	593	593	13,367	713	0	0	85
1998	50,485	1,366	9,707	0	25,847	431	568	12,349	191	0	0	26
1999	59,110	2,243	6,624	0	28,388	622	812	20,213	168	0	20	20
2000	61,126	623	9,257	0	35,547	823	1,144	13,589	143	0	0	0
2001	52,912	322	7,646	0	23,035	1,154	1,531	18,788	89	0	0	347
2002	74,857	2,006	4,337	0	28,568	988	1,483	36,258	1,217	0	0	0
2003	57,912	1,460	3,773	0	32,409	349	769	18,414	670	0	0	68
2004	89,970	1,093	3,223	0	39,469	533	5,329	39,776	303	0	57	187
2005	57,732	973	2,163	0	33,210	260	1,999	18,364	534	0	0	229
<u>Averages</u>												
1995-04	61,610	1,085	6,423	0	29,858	614	1,634	21,408	413	0	8	167
	93.7%	1.7%	9.8%		45.4%	0.9%	2.5%	32.6%	0.6%		0.0%	0.3%
2000-04	67,335	1,101	5,647	0	31,806	769	2,051	25,365	484	0	11	120
	93.1%	1.5%	7.8%		44.0%	1.1%	2.8%	35.1%	0.7%		0.0%	0.2%

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^a Percentage of total of all fish species for the Arctic-Yukon management area.

Table 3.—Commercial, subsistence, and sport harvest of salmon in the US portion of the Yukon River drainage, 1977-2005.

Year	Area								
	Tanana River			Yukon River ^a			All US Yukon River		
	Commercial ^b	Subsistence ^c	Sport	Commercial	Subsistence	Sport	Commercial	Subsistence	Sport
1977	25,282	nd	498	903,199	nd	99	928,481	276,187	597
1978	63,697	36,344	560	1,386,621	257,362	716	1,450,318	293,706	1,276
1979	67,300	52,853	759	1,275,483	358,797	173	1,342,783	411,650	932
1980	61,830	63,675	1,491	1,467,065	334,549	15	1,528,895	398,224	1,506
1981	66,743	43,919	1,403	1,872,392	301,868	23	1,939,135	345,787	1,426
1982	39,291	35,771	1,734	1,063,534	277,786	243	1,102,825	313,557	1,977
1983	68,596	62,407	1,844	1,395,765	348,020	401	1,464,361	410,427	2,245
1984	85,759	64,160	1,754	1,212,685	366,413	13	1,298,444	430,573	1,767
1985	123,709	79,177	3,407	1,284,433	354,549	36	1,408,142	433,726	3,443
1986	56,094	56,891	2,848	1,420,000	368,618	378	1,476,094	425,509	3,226
1987	14,398	212,623	2,353	742,903	461,998	287	757,301	635,940	2,640
1988	80,159	85,494	3,581	1,873,341	383,909	820	1,953,500	470,002	4,401
1989	121,254	92,078	3,694	1,802,132	385,842	1,312	1,923,386	477,261	5,006
1990	82,768	73,013	2,213	708,534	313,321	750	793,952	385,153	2,963
1991	79,187	69,614	3,563	1,046,163	278,611	1,022	1,128,393	348,225	4,585
1992	34,982	55,209	1,923	656,768	275,437	1,482	693,379	330,705	3,405
1993	5,150	23,722	2,222	229,076	237,287	934	234,226	261,099	3,156
1994	42,860	69,482	3,296	342,171	258,411	1,228	385,031	327,974	4,524
1995	121,192	83,869	4,589	1,151,344	244,579	388	1,272,536	328,448	4,977
1996	72,053	61,706	6,336	841,984	245,261	626	914,037	306,967	6,962
1997	28,015	39,019	3,638	407,354	234,492	606	435,369	273,511	4,244
1998	1,533	30,217	1,121	70,965	190,611	712	72,498	220,828	1,833
1999	838	30,271	1,926	120,110	203,926	261	120,948	234,197	2,187

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Table 3.-Page 2 of 2.

Year	Area								
	Tanana River			Yukon River			All US Yukon River		
	Commercial ^b	Subsistence ^c	Sport	Commercial	Subsistence	Sport	Commercial	Subsistence	Sport
2000	0	7,660	585	15,142	127,205	407	15,142	134,865	992
2001	0	15,543	1,818	0	170,568	191	0	186,111	2,009
2002	4,034	14,604	1,326	34,398	151,681	636	38,432	166,285	1,962
2003	25,488	29,703	5,045	62,672	191,625	287	88,160	221,328	5,799
2004	30,766	24,613	2,133	61,347	193,250	1,206	106,920	217,863	3,339
2005	80,748	46,878	896	229,938	219,104	651	310,686	265,982	1,547
Averages									
1977-04	50,165	56,061	2,416	840,650	277,136	545	892,291	331,259	2,978
1995-04	28,392	33,721	2,852	280,793	189,671	532	311,823	222,885	3,430
2000-04	12,058	18,425	2,181	34,695	155,567	545	49,788	173,041	2,820

^a Yukon River exclusive of Tanana River.

^b Commercial harvest includes fish harvested by commercial fishery and fish harvested to produce roe sold.

^c Subsistence harvest includes subsistence and personal use.

Table 4.—Sport harvest of Chinook salmon in the Yukon River drainage (1995-2005).

Harvest	Year											Averages	
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995-04	2000-04
Yukon R. drainages (Ft. Yukon to Canadian Border)													
Sub Total	28	0	10	0	0	0	0	0	0	0	0	3	0
Fortymile River	0	0	0	0	0	0	0	0	0	0	0	0	0
Charley River	0	0	0	0	0	0	0	0	0	0	0	0	0
Yukon R. drainages (Koyukuk R – Ft. Yukon)													
Sub Total	0	32	39	0	22	81	12	0	0	35	0	22	26
Porcupine River	0	0	0	0	0	0	0	0	0	0	0	0	0
Chandalar River	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaver and Nome Creeks	0	0	0	0	0	0	0	0	0	0	0	0	0
Dall River	0	0	0	0	0	0	0	0	0	0	0	0	0
Haul Road Streams	0	0	0	0	0	0	0	0	0	0	0	0	0
Nowitna River	0	320	0	0	0	12	0	0	0	35	0	8	9
Melozitna River	0	0	0	0	0	0	0	0	0	0	0	0	0
Koyukuk River	0	0	0	0	22	9	0	0	0	0	0	3	2
Yukon R. drainages (downstream from Koyukuk R.)													
Sub Total	9	96	172	207	0	18	0	0	99	159	0	76	55
Nulato River	0	0	0	0	0	0	0	0	0	0	0	0	0
Anvik River	0	21	12	45	0	0	0	0	60	147	0	29	41
Innoko River	0	0	0	0	0	0	0	0	0	0	0	0	0
Andreafsky River	9	11	160	6	0	18	0	0	39	11	0	25	14
Total	37	128	221	207	22	99	12	8	99	194	0	103	82

Table 5.—Sport harvest of chum salmon in the Yukon River drainage (1995-2005).

Harvest	Year											Averages	
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995-04	2000-04
Yukon R. drainages (Ft. Yukon to Canadian Border)													
Sub Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Fortymile River	0	0	0	0	0	0	0	0	0	0	0	0	0
Charley River	0	0	0	0	0	0	0	0	0	0	0	0	0
Yukon R. drainages (Koyukuk R – Ft. Yukon)													
Sub Total	0	11	197	0	81	0	21	0	0	0	0	39	4
Porcupine River	0	0	0	0	0	0	0	0	0	0	0	0	0
Chandalar River	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaver and Nome Creeks	0	0	0	0	0	0	0	0	0	0	0	0	0
Dall River	0	0	0	0	0	0	0	0	0	0	0	0	0
Haul Road Streams	0	0	0	0	0	0	0	0	0	0	0	0	0
Nowitna River	0	0	0	0	0	0	0	0	0	0	0	0	0
Melozitna River	0	0	0	0	0	0	0	0	0	0	0	0	0
Koyukuk River	90	0	197	0	81	0	21	0	0	0	0	39	4
Yukon R. drainages (downstream from Koyukuk R.)													
Sub Total	99	55	9	351	0	64	32	77	28	105	291	82	61
Nulato River	0	0	0	0	0	0	0	53	0	0	26	5	11
Anvik River	0	0	0	216	0	64	32	9	28	49	90	41	36
Innoko River	0	0	0	58	0	0	0	0	0	0	0	6	0
Andreafsky River	99	56	0	15	0	0	0	15	0	56	175	24	14
Total	189	66	206	351	81	64	53	77	28	105	105	121	65

Table 6.—Sport harvest of coho salmon in the Yukon River drainage (1995-2005).

Harvest	Year											Averages	
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995-04	2000-04
Yukon R. drainages (Ft. Yukon to Canadian Border)													
Sub Total	0	28	40	0	0	0	0	0	0	0	0	7	0
Fortymile River	0	0	0	0	0	0	0	0	0	0	0	0	0
Charley River	0	0	0	0	0	0	0	0	0	0	0	0	0
Yukon R. drainages (Koyukuk R – Ft. Yukon)													
Sub Total	0	30	17	0	0	129	0	0	57	52	0	29	48
Porcupine River	0	0	0	0	0	0	0	0	0	0	0	0	0
Chandalar River	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaver and Nome Creeks	0	0	0	0	0	0	0	0	12	0	0	2	2
Dall River	0	0	0	0	0	0	0	0	0	0	0	0	0
Haul Road Streams	0	0	10	0	0	0	0	0	0	0	0	1	0
Nowitna River	0	0	0	0	0	25	0	0	0	0	0	4	5
Melozitna River	0	0	0	0	0	0	0	0	0	0	0	0	0
Koyukuk River	0	0	0	0	0	0	0	0	0	52	0	7	10
Yukon R. drainages (downstream from Koyukuk R.)													
Sub Total	162	315	33	154	85	115	80	551	103	855	360	245	341
Nulato River	0	0	0	0	0	0	0	0	0	0	0	0	0
Anvik River	0	0	11	93	85	53	23	56	69	457	0	85	132
Innoko River	0	0	0	61	0	61	0	0	0	0	0	6	0
Andreafsky River	162	220	0	0	0	37	0	412	0	45	360	88	99
Total	162	432	179	154	158	244	126	551	160	907	360	307	398

Table 7.—Sport harvest of northern pike in the Yukon River drainage (1995-2005).

	Year											Averages	
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995-05	2000-05
Yukon R. drainages (Ft. Yukon to Canadian Border)	0	86	63	39	19	102	0	259	12	60	0	58	87
Fortymile River	0	0	15	18	0	0	0	0	0	0	0	0	0
Charley River	0	0	0	0	0	0	0	0	0	0	0	0	0
Yukon R. drainages (Koyukuk R – Ft. Yukon)	759	1,670	1,580	959	2,032	1,108	333	1,899	992	2,428	724	1,317	1,352
Porcupine River	50	138	50	340	9	10	47	774	206	45	0	152	216
Chandalar River	30	0	21	0	0	10	0	0	0	0	0	0	0
Birch Creek	77	26	41	32	19	29	28	0	0	15	19	26	14
Beaver & Nome Crks	126	43	7	0	16	38	0	157	28	0	47	42	45
Dall River	350	334	414	182	862	257	13	115	246	1,252	268	390	377
Haul Road Streams	116	108	14	0	0	0	0	0	0	0	0	22	0
Nowitna River	302	651	148	218	286	201	0	114	12	181	0	192	102
Melozitna River	0	11	76	11	8	0	0	13	0	0	0	11	3
Koyukuk River	99	171	701	105	634	204	97	299	111	629	265	301	268
Yukon R. drainages (downstream from Koyukuk R.)	367	646	227	433	358	102	0	1,122	549	1,002	1,127	539	555
Nulato River	86	0	7	0	0	0	10	41	36	0	9	17	17
Kaiyuh/Khotol River	27	0	0	8	28	34	0	103	0	60	0	24	39
Anvik River	11	51	14	34	0	41	0	40	22	13	48	25	23
Innoko River	90	110	56	93	145	10	28	40	120	249	59	91	89
Andreafsky River	30	97	115	42	0	0	1,318	629	11	302	884	312	452
Total	1,937	2,502	1,870	1,452	2,418	1,277	1,772	3,291	1,507	3,656	1,899	2,144	2,301

Table 8.—Total fishing effort, and northern pike catch and harvest from principal fisheries in the Yukon River area, 1988-2005.

Year	Yukon	Dall River			Nowitna River			Innoko River		
	Total	Effort	Number	Percent ^a	Effort	Number	Percent	Effort	Number	Percent
Harvest										
1988	3,526	217	418	12%	946	982	28	164	18	1%
1989	3,516	438	125	4%	773	548	16	206	368	8%
1990	2,474	273	372	15%	652	118	5	415	118	5%
1991	4,454	359	559	13%	1,238	1,617	36	520	118	3%
1992	3,590	224	342	10%	491	196	6	53	43	1%
1993	2,347	845	352	15%	446	63	3	637	151	6%
1994	1,968	455	215	11%	733	161	8	93	9	1%
1995	1,937	1,018	350	18%	1,977	302	16	430	90	5%
1996	2,502	341	334	13%	834	651	26	654	110	4%
1997	1,870	694	414	22%	605	148	8	445	56	3%
1998	1,452	360	182	13%	645	218	15	847	93	6%
1999	2,418	687	862	36%	862	286	12	551	145	6%
2000	1,277	316	257	20%	843	201	16	327	10	1%
2001	1,772	300	13	1%	434	-	0%	1,458	28	2%
2002	3,291	165	115	3%	525	114	3%	2,533	40	1%
2003	1,507	360	246	16%	na	na	na	310	120	8%
2004	3,656	686	1,252	34%	664	181	5%	1,522	249	7%
2005	1,899	423	268	14%	na	na	na	355	59	3%
Averages										
1995-04	2,168	493	403	18%	821	233	11%	908	94	4%
2000-04	2,301	365	377	15%	617	124	6%	1,230	89	4%
Catch										
1990	17,717	273	1,810	10%	652	694	4%	415	964	5%
1991	13,895	359	1,029	7%	1,238	2,749	20%	520	1,544	11%
1992	14,801	224	1,042	7%	491	1,426	10%	53	171	1%
1993	13,502	845	2,645	20%	446	1,362	10%	637	1,661	12%
1994	11,694	455	1,308	11%	733	2,868	25%	93	18	0%
1995	15,828	1,018	2,463	15%	1,977	3,049	19%	430	1,039	7%
1996	25,502	341	1,358	5%	834	9,493	37%	654	4,090	16%
1997	13,349	694	1,961	15%	605	1,154	9%	445	3,024	23%
1998	12,349	360	1,304	11%	645	1,290	10%	847	4,433	36%
1999	20,213	687	3,320	16%	862	1,357	7%	551	3,770	19%
2000	13,589	316	1,740	13%	843	4,509	33%	327	1,912	14%
2001	18,788	300	1,550	8%	434	478	3%	1,458	12,866	68%
2002	35,975	165	1,356	4%	525	5,488	15%	2,533	17,551	49%
2003	18,392	360	3,599	20%	na	na	na	310	1,763	10%
2004	39,762	686	11,900	30%	664	2,429	6%	1,522	10,572	27%
2005	18,332	423	2,944	16%	na	na	na	355	9,271	51%
Averages										
1995-04	21,377	493	3,055	14%	821	3,250	15%	908	6,102	27%
2000-04	25,301	365	4,029	15%	6,178	3,226	14%	1,230	8,933	34%

^a Percent of total catch or harvest of northern pike in the Yukon area.

Table 9.—Sport harvest and catch of Arctic grayling in the Yukon River drainage (1995-2005).

Harvest	Year											Averages	
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995-04	2000-04
Yukon R. drainages (Canadian Border to Ft. Yukon)													
Sub Total	528	205	1,207	677	833	569	318	308	916	371	129	551	496
Fortymile River	517	54	90	497	178	0	0	39	690	0	0	188	146
Charley River	18	49	489	149	289	20	65	61	70	272	0	135	98
Kandik River	0	0	0	0	34	239	172	0	128	0	0	52	108
Other	0	0	628	0	332	310	81	208	28	99	129	241	145
Yukon R. drainages (Ft. Yukon to Koyukuk R)													
Sub Total	2,087	3,140	1,883	2,398	2,085	2,078	2,006	1,483	1,420	2,571	1,777	2,084	1,912
Porcupine River	237	309	99	270	83	0	601	251	141	227	226	222	244
Birch Creek	52	0	54	169	61	178	500	75	47	178	109	129	196
Beaver and Nome Cr	53	665	122	371	311	672	0	156	324	568	432	334	344
Haul Road Streams	217	235	143	230	497	88	249	75	70	188	328	211	134
Jim River	53	235	86	184	321	10	163	75	70	104	0	118	84
Koyukuk River	1,174	1,535	1,118	800	863	735	571	577	490	1,035	415	890	682
Other	571	631	490	788	767	493	334	424	418	563	595	548	446
Yukon R. drainages (downstream from Koyukuk R)													
Sub Total	334	594	252	837	77	307	677	1,041	739	253	881	545	603
Nulato River	35	146	98	48	0	0	0	492	0	0	78	90	98
Anvik River	52	217	0	422	27	174	67	154	310	146	0	143	170
Innoko River	0	158	41	0	0	42	112	0	141	16	0	57	52
Andreafsky River	62	61	27	84	0	11	463	365	141	0	803	202	196
Other	185	12	86	283	50	80	35	30	147	91	0	100	77
Total Yukon Harvest	3,421	4,000	3,456	3,912	3,164	3,279	3,193	2,832	3,131	3,271	2,883	3,322	3,141

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Table 9.-Page 2 of 2.

Catch	Year											Averages	
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995-04	2000-04
Yukon R. drainages (Canadian Border to Ft. Yukon)													
Sub Total	765	1,426	3,826	1,335	2,883	2,428	1,869	2,026	3,815	981	452	1,982	2,224
Fortymile River	522	449	280	510	490	0	0	103	2,461	65	0	444	526
Charley River	18	243	1,079	615	1,151	249	377	61	256	692	0	431	327
Kandik River	35	0	1,014	0	373	1,167	601	0	618	0	0	346	477
Other	190	734	1,453	210	869	1,012	891	1,862	480	224	452	793	894
Yukon R. drainages (Ft. Yukon to Koyukuk R)													
Sub Total	7,949	16,822	17,116	10,494	13,786	14,453	10,500	9,454	11,163	20,256	18,730	13,702	13,165
Porcupine River	385	1,332	513	1,094	1,327	1,626	3,521	607	197	707	705	1,092	1,332
Birch Creek	78	850	874	254	331	1,089	1,455	1,163	967	246	508	710	984
Beaver and Nome Cr	957	4,030	4,065	1,747	1,427	2,405	1,517	1,971	3,379	7,424	6,661	3,235	3,339
Haul Road Streams	648	936	2,776	1,656	5,293	756	919	705	1,786	3,258	2,184	1,902	1,485
Jim River	157	924	2,749	1,229	5,075	517	566	666	1,139	2,687	437	1,468	1,115
Koyukuk River	4,610	8,354	7,061	4,630	4,630	7,964	1,761	3,920	3,438	6,242	4,505	5,192	4,665
Other	1,919	2,256	4,603	2,769	6,071	1,369	2,246	1,793	3,182	5,637	6,351	3,185	2,845
Yukon R. drainages (downstream from Koyukuk R)													
Sub Total	1,145	2,810	1,441	6,489	1,215	4,191	3,381	7,490	8,783	10,723	1,340	5,006	6,914
Nulato River	61	364	166	48	0	38	35	796	493	0	78	189	272
Anvik River	158	1,342	599	2,748	945	3,670	2,575	4,857	6,925	7,197	368	2,853	5,045
Innoko River	0	0	81	0	0	67	129	0	423	3,352	11	435	794
Andreafsky River	219	408	54	1,151	0	49	584	1,712	457	0	803	494	560
Other	707	696	541	2,542	270	367	58	125	485	174	80	597	242
Total Catch	11,454	21,417	23,318	18,318	18,432	23,024	16,000	19,194	24,465	32,455	20,940	20,820	23,028

Table 10.—Sport fishing effort, and harvest and catch of principal species in the North Slope subarea.

Year	Angler-Days		Lake Trout		Char		Arctic Grayling	
	Total	Haul Road	Total	Haul Road	Total	Haul Road	Total	Haul Road
Harvest								
1980	2,142		379		827		1,765	
1981	2,601		454		1,188		2,904	
1982	4,879		629		2,065		4,077	
1983	5,738	911	367	31	2,966	105	2,884	524
1984	8,344	1,620	481	416	1,507	351	2,441	1,247
1985	4,490	1,558	1,707	37	3,489	296	5,382	2,078
1986	4,779	842	415	-	983	322	4,099	907
1987	5,256	2,278	274	50	2,676	1,560	1,932	1,065
1988	2,541	1,265	73	73	1,018	327	983	528
1989	4,118	1,266	482	149	1,031	241	2,113	993
1990	3,764	2,502	168	118	489	219	791	554
1991	7,291	3,535	176	-	1,199	640	3,301	1,921
1992	4,940	2,211	379	293	836	336	1,145	324
1993	5,600	3,421	106	57	1,092	623	1,632	547
1994	5,407	2,926	73	73	589	451	807	371
1995	5,644	3,275	38	38	896	437	983	579
1996	4,487	2,700	19	-	1,108	547	1,194	619
1997	5,278	3,224	57	34	1,018	413	903	426
1998	3,653	2,121	221	129	1,454	1,071	1,182	604
1999	5,230	2,473	77	-	929	341	1,206	365
2000	4,739	2,325	18	18	1,178	267	934	370
2001	6,032	4,256	37	-	1,589	1,006	846	510
2002	6,032	2,224	217	-	773	266	2,215	590
2003	2,710	1,103	98	-	193	-	1,122	263
2004	3,311	873	75	-	180	105	868	103
2005	4,352	1,881	96	-	493	99	1,313	810
Average ^a								
1990-04 (%)	4,941 (100) ^a	2,611 (53) ^b	117 (5) ^a	51 (43) ^b	902 (37) ^a	448 (50) ^b	1,275 (53) ^a	543 (39) ^b
1995-04 (%)	4,712 (100)	2,457 (52)	86 (4)	22 (26)	932 (41)	445 (48)	1,145 (50)	443 (39)
2000-04 (%)	4,565 (100)	2,156 (47)	89 (4)	4 (4)	783 (35)	329 (42)	1,197 (53)	367 (31)

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Table 10.-Page 2 of 2.

Year	Angler-Days		Lake Trout		Char		Arctic Grayling	
	Total	Haul Road	Total	Haul Road	Total	Haul Road	Total	Haul Road
Catch								
1990			1,728	1,225	3,744	1,141	5,842	3,240
1991			932	161	2,670	1,635	9,200	4,668
1992			887	556	3,850	1,769	6,608	2,135
1993			266	180	3,946	2,454	9,345	5,505
1994			327	316	3,178	2,371	8,552	5,165
1995			370	319	3,229	1,780	5,427	3,828
1996			298	159	8,06	6,933	7,456	4,708
1997			783	67	4,094	1,433	16,248	12,524
1998			1,292	269	7,716	4,166	7,529	4,862
1999			913	55	4,520	497	9,956	4,875
2000			457	457	7,579	2,561	12,523	8,244
2001			266	87	6,027	3,244	7,035	5,413
2002			410	54	2,195	433	9,374	4,767
2003			1,164	103	936	398	7,944	3,326
2004			540	163	803	345	7,014	2,525
2005			433	288	1,756	621	12,270	7,769
Average ^a								
1995-04 (%)			649 (4) ^a	173 (27) ^b	4,531 (31) ^a	2,179 (48) ^b	9,051 (63) ^a	5,507 (61) ^b
2000-04 (%)			567 (4)	173 (30)	3,508 (27)	1,396 (40)	8,778 (66)	4,855 (55)

^a Percentage of total effort, harvest, or catch for all species from North Slope sub-area

^b Percentage of effort, harvest or catch from Haul Road waters..

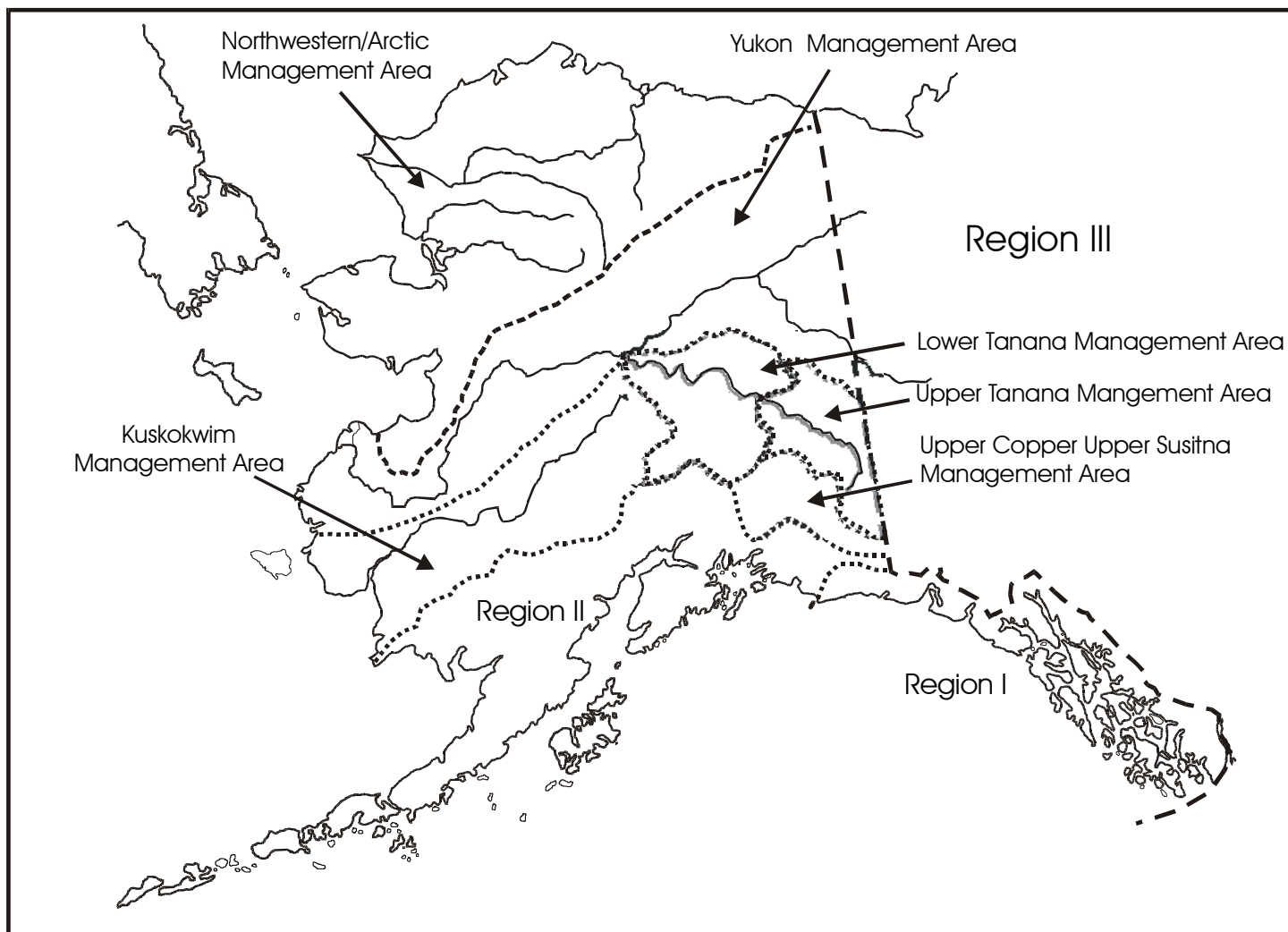


Figure 1.—Map of the sport fish regions in Alaska and the six Region III management areas.

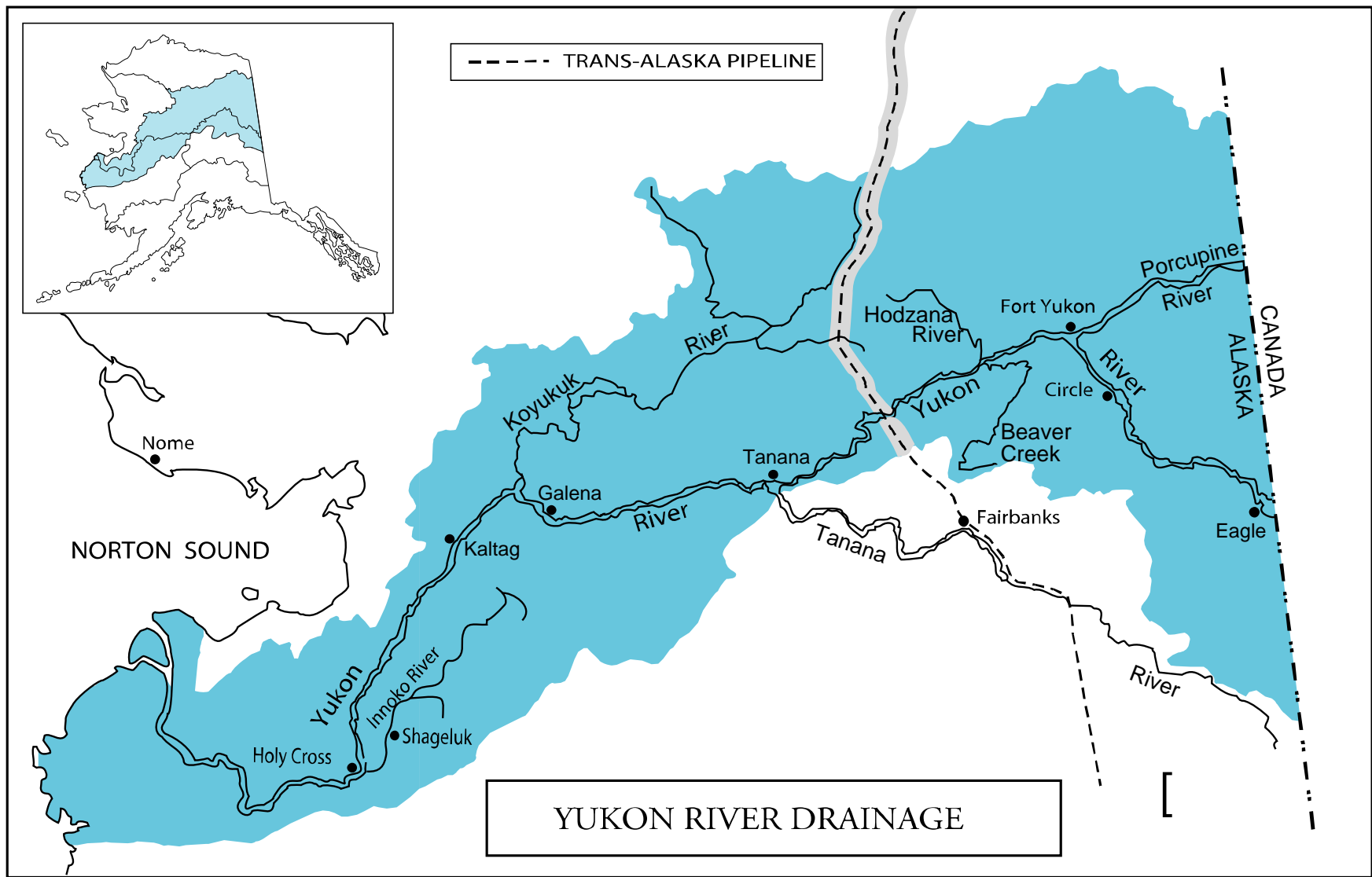


Figure 2.—Yukon subarea, Tanana River drainage is excluded from the AYKMA.

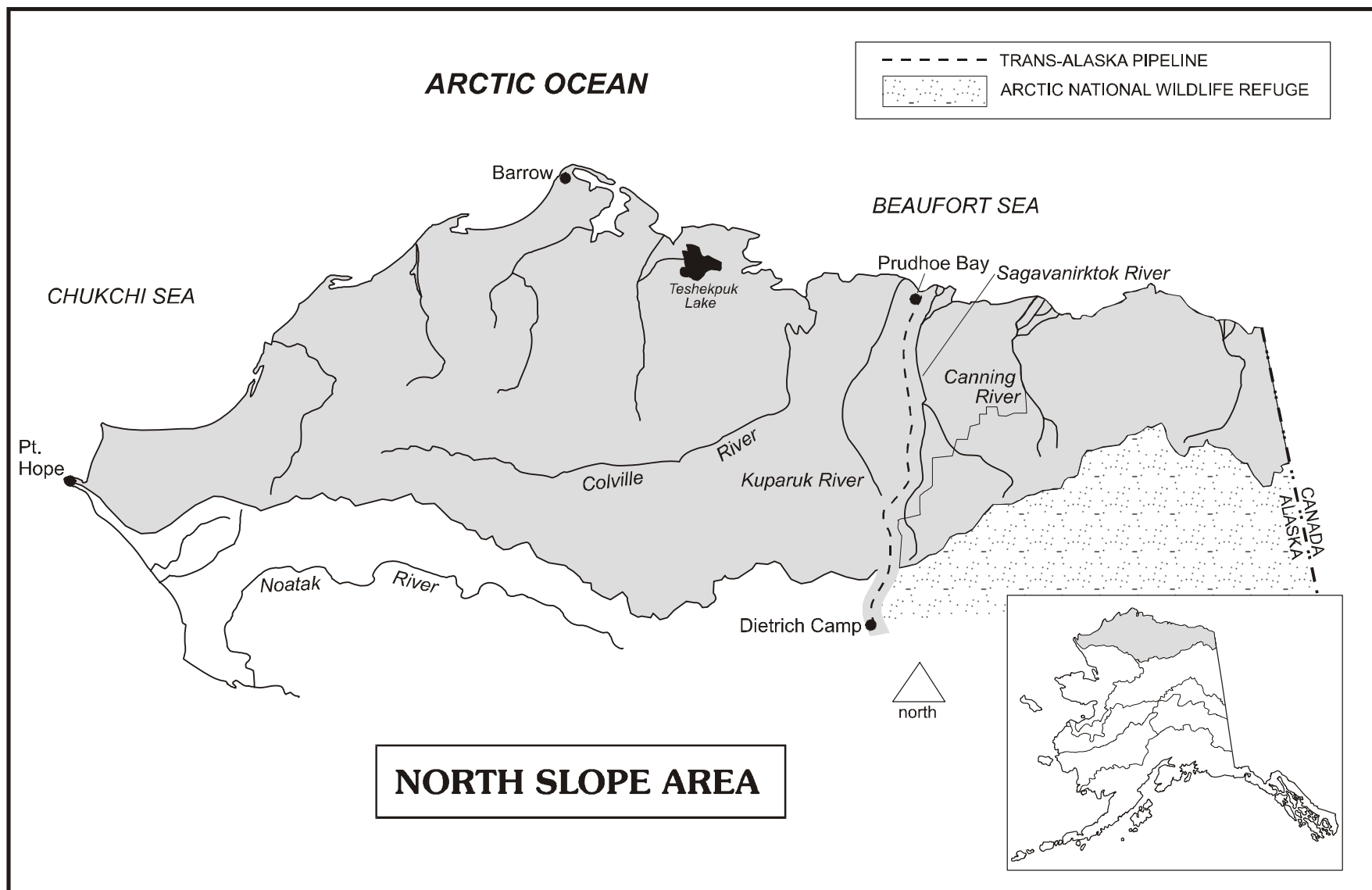


Figure 3.—Map of the North Slope subarea.

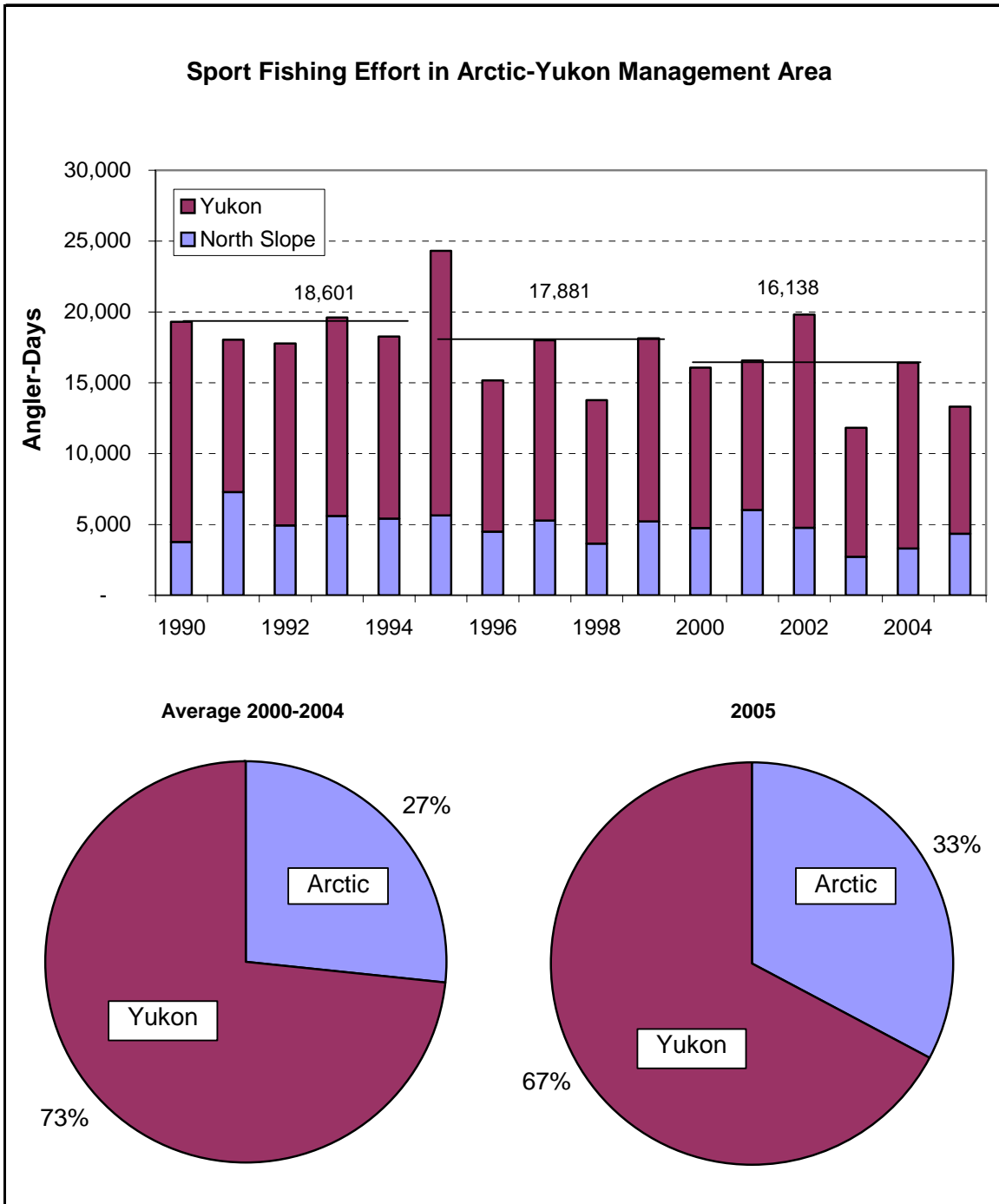


Figure 4.—Sport fishing effort in Arctic and Yukon Management Area.

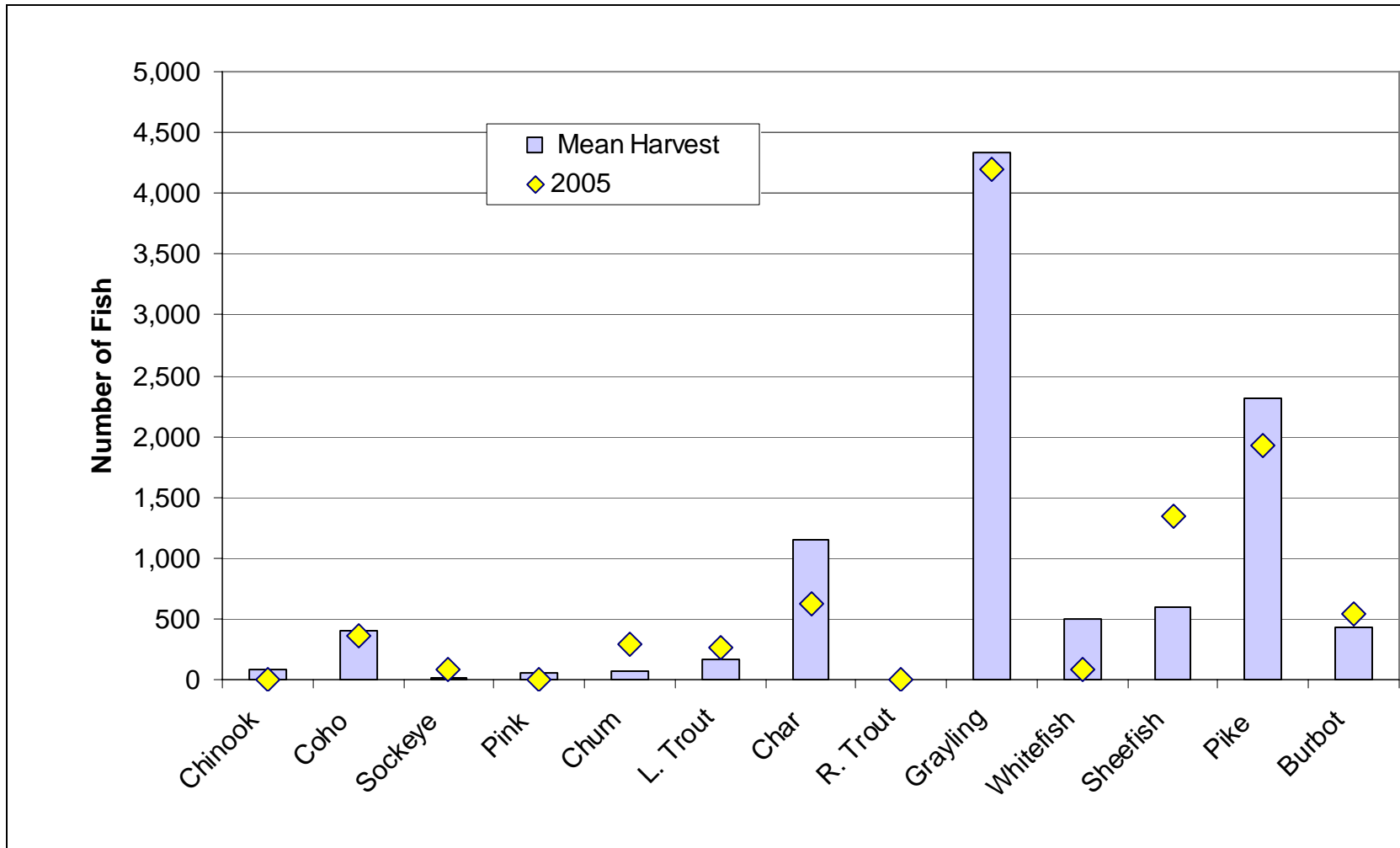


Figure 5.—Sport fishery harvests in Arctic and Yukon Management Area, 2000-2004 and 2005.

APPENDIX A

Appendix A1.—Reference information specific to 2006 Board of Fisheries proposals.

Proposal(s)	Reference Text	Pages	Tables	Page
123	Yukon Northern Pike	18, 19, 21, 24–26,	7, 8	52, 53

Appendix A2.—List of regulatory proposals to be considered in 2006 by the Alaska Board of Fisheries concerning A-Y MA Sport Fisheries.

PROPOSAL NO. 123, PAGE. 88, - 5 AAC 70.013. Seasons; bag; possession, and size limits in the Yukon River Management Area. Amend this regulation to include the following:

(c)(#) in all wates of the Nowitna River drainage, the bag and possession limit for northern pike is 5 fish, of which only one fish may be 30 inches of greater in length.

WHAT WOULD THE PROPOSAL DO?

The proposal if adopted would reduce the bag and possession limit for northern pike from ten fish to five fish per day. In addition only one of the fish harvested could be larger than 30 inches in length.

PROPOSAL NO. 137, PAGE 98, - 5 AAC 70.XXX. Lake Trout Management Plan. Amend this regulation to include the following:

- (a) **Notwithstanding the other provisions in this chapter regarding lake trout, the department shall manage wild lake trout populations in the Arctic-Yukon-Kuskokwim Region by employing a conservative harvest regime and by maintaining harvests below the maximum sustained yield level. Following sustained yield principles, the department may manage wild lake trout fisheries to provide or maintain fishery qualities that are desired by sport anglers.**
- (b) **In a sport fishery covered by this management plan, the commissioner, by emergency order, may take one or more of the management actions specified in this subsection if there is a conservation or biological concern for the sustainability of the fishery or for a stock harvested by that fishery. The concern must arise from harvest, effort, or catch data for that fishery which has been derived from statewide harvest survey data, on-site creel survey data, stock status data, stock exploitation rates, or from inferential comparisons with other fisheries. The management actions are as follows:**
 - (1) **reduce the bag and possession limits;**
 - (2) **reduce fishing time;**
 - (3) **allow only a catch-and-release fishery;**
 - (4) **modify methods and means of harvest.**
- (c) **If the harvest level in the Arctic-Yukon-Kuskokwim Region exceeds sustained yield for a two-year time period, the commissioner by emergency order, may close the fishery and immediately reopen a fishery during which one or more of the following restrictions apply:**

-continued-

- (1) set lines are prohibited;
 - (2) bag and possession limit of one lake trout;
 - (3) a minimum size limit applies, the size limit shall be established based on the following considerations:
 - (A) length of maturity, with two years of protection from harvest for spawning fish before recruitment to the fishery;
 - (B) lake size, with no size limits for a trout population in a lake with a surface area less than 250 acres;
 - (C) uniformity of size limits, with the minimum size limit 24 inches unless the department determines that there is a biological justification for an alternate size limit;
 - (4) if the reduced bag limit or size limits do not keep harvest below maximum sustained yield levels the commissioner may further restrict harvest opportunity, through
 - (A) seasonal closures;
 - (B) spawning closures, winter closures, or both;
 - (C) allowing single-hook, artificial lures only or no bait, or both;
 - (D) allowing catch-and-release fishing only;
 - (E) a complete closure of the fishery.
 - (d) Special management waters are waters designated by regulation of the Board of Fisheries, where harvests are within sustained yield levels and where the management objectives include higher stock abundance or a need for a higher percentage of trophy-sized fish. Within special management areas, if the department determines that management objectives will not be met under existing regulatory provisions, the commissioner may, by emergency order, close the fishery and immediately reopen a fishery during which one or more of the following management measures apply:
 - (1) reduced fishing season;
 - (2) special gear restrictions;
 - (3) alternative size limits;
 - (4) catch-and-release fishing only.
 - (e) The department shall minimize potential conflicts with a subsistence fishery, or other fisheries that overlap the sport fishery, that harvest other fish within the same body of water.
-

WHAT WOULD THE PROPOSAL DO?

If adopted, this proposal will provide regulatory guidelines to manage lake trout populations in the Arctic-Yukon-Kuskokwim (AYK) sport fish management areas. These guidelines are the same as adopted in 2005 for the Upper Copper Upper Susitna Management Area (UCUSMA). The plan would provide the Board of Fisheries with a consistent means to address proposals submitted by the public and Department. The management plan would set bag, possession, size limits, seasons, and methods and means for lake trout waters based upon current harvest levels and population data.

Appendix A3.—Changes to sport fishing regulations in the Arctic-Yukon Management Area by the Alaska Board of Fisheries in 2004.

During the January, 2004, Board of Fisheries meeting in Fairbanks. Nine proposals were considered that could change sport fishing regulations in the Arctic-Yukon Management Area. The Board adopted five of these proposals, resulting in changes to some sport fishing regulations in the area. These regulations became effective about April 15, 2004, with the release of the 2004-2005 Regulation Summary. Changes are listed below by area, and then by species.

Region-wide changes

Arctic grayling bag, possession, and length limits.

The Board adopted a Regional Arctic Grayling Management Plan. The plan created three management categories with associated regulatory options; Background Regulations, Conservative Harvest Regulations, and Special Management Regulations.

The plan categorized the following waters as **Conservative Harvest management** with a bag and possession limit of two fish, with size limits specific to the water bodies: Snake River (Nome), Pilgrim River (Nome); 5-mile Clearwater (Fairbanks), Mendeltna Creek (Glennallen); Aniak, Holitna, Kanektok and Goodnews Rivers (Kuskokwim).

Wild Arctic grayling waters classified as **Special Management** are: Nome and Solomon Rivers (Nome); **Nome Creek (Yukon)**, Chena River (Fairbanks); Piledriver Slough (Fairbanks); and the Delta Clearwater River (Delta Junction).

The regulations adopted under the plan as **Background Regulations** changed the general Arctic grayling regulations in the Arctic, Yukon areas. The Board also adopted proposals removing the length limit in the Dalton Highway Corridor. Specific changes from previous regulations are listed in the table below.

Water	Previous Regulation	New Regulation
Yukon River Drainage	10/day, no size limit	5/day, no size limit
North Slope Drainage	10/day, no size limit	5/day, no size limit
Dalton Hwy Corridor/Yukon	5/day, 12 inch minimum	5/day, no size limit
Dalton Hwy Corridor/North Slope	5/day, 12 inch minimum	5/day, no size limit

Wild Lake Trout and Arctic char/Dolly Varden bag and possession limits.

The general bag and possession limit for these species changed for all lakes in the Arctic, Yukon Areas

Species	Previous Regulation/Lakes	New Regulation/Lakes
Lake trout	4/day, no size limit	2/day in combination, no size limit.
Arctic char/Dolly Varden	2/day, no size limit	

Appendix A4.–List of regulatory proposals considered by the Alaska Board of Fisheries concerning AYKMA Sport Fisheries during the January 2004 meeting.

PROPOSAL 108, PAGE. 112, - 5 AAC 70.022(a-c) and (e). Waters; seasons; bag; possession, and size limits in the Arctic-Yukon-Kuskokwim Area. Amend this regulation as follows:

Lake trout and Arctic char/Dolly Varden in all lakes: the bag and possession limit is two fish in combination, with no size limit.

WHAT WOULD THE PROPOSAL DO? The proposal would reduce the background sport fishery bag and possession limit for lake trout from four to two and combine this limit with the existing two fish limit for lake resident Arctic char/Dolly Varden. This regulation would apply to lakes in the North Slope, Northwest Alaska, Kuskokwim and Yukon portions of AYK. This regulation would not apply to the Tanana portion of the Yukon drainage.

ACTION TAKEN BY THE BOF: **The BOF adopted the proposal as written.**

PROPOSAL 109, PAGE. 113, - 5 AAC 70.XXX. Management Plan for Arctic Grayling for the Arctic-Yukon-Kuskokwim Area. Create a new regulation as follows:

Management Plan for Arctic grayling for the A-Y-K Area.

WHAT WOULD THE PROPOSAL DO? The proposal would create a Regional Arctic grayling Management Plan that would provide a framework for setting regulations for all Arctic grayling fisheries in the AYK and UC/US regulatory areas.

ACTION TAKEN BY THE BOF: **The BOF adopted the Management Plan. The effect of the action for the AYKMA was to reduce the background bag limit from 10 to 5 Arctic grayling per day. Regulations for Nome Creek (catch-and-release), and Holitna River (2 per day) were not affected by adoption of the plan**

PROPOSAL 111, PAGE. 115, - 5 AAC 70.022(c)(10)(D)(iii). Waters; seasons; bag; possession, and size limits in the Arctic-Yukon-Kuskokwim Area. Amend this regulation as follows:

In the Dalton Highway corridor (Trans-Alaska Pipeline corridor) within the Yukon River portion of the Arctic-Yukon-Kuskokwim Area...the bag and possession limit for Arctic grayling is five fish, no size limit

WHAT WOULD THE PROPOSAL DO? The proposal would remove the 12 inch minimum size limit from the regulation for Arctic grayling in waters within the Dalton Highway corridor in the Yukon River drainage.

ACTION TAKEN BY THE BOF: **The BOF adopted the proposal as written.**

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PROPOSAL 112, PAGE. 116, - 5 AAC 70.022(a)(14)(D) Waters; seasons; bag; possession, and size limits in the Arctic-Yukon-Kuskokwim Area. AMEND THIS REGULATION AS FOLLOWS:

In the Dalton Highway corridor (Trans-Alaska Pipeline corridor) within the North Slope portion of the Arctic-Yukon-Kuskokwim Area...the bag and possession limit for Arctic grayling is five fish, no size limit

WHAT WOULD THE PROPOSAL DO? The proposal would remove the 12 inch minimum size limit from the regulation for Arctic grayling in waters within the Dalton Highway corridor on the North Slope.

ACTION TAKEN BY THE BOF: **The BOF adopted the proposal as written.**

PROPOSAL 115, PAGE. 119, - 5 AAC 70.022(c). Waters; seasons; bag; possession, and size limits in the Arctic-Yukon-Kuskokwim Area. Amend this regulation to provide the following:

A ten fish bag limit with one fish greater than 20 inches allowed on Bray Lakes and Beaver Lake

WHAT WOULD THE PROPOSAL DO? The proposal would change the daily bag and possession limit for lake trout in Bray and Beaver Lakes from 4 fish, no size limit to 10 fish with only one greater than 20 inches.

ACTION TAKEN BY THE BOF: **The BOF failed to adopt the proposal.**

PROPOSAL 159, PAGE 160. 5 AAC 01.220. Lawful gear and gear specifications. Amend this regulation as follows:

Increase the mesh size regulation for Birch Creek

WHAT WOULD THE PROPOSAL DO?

The proposal if adopted would allow the use of gill nets with mesh size larger than three inches in the Birch Creek drainage.

ACTION TAKEN BY THE BOF: **The BOF failed to adopt the proposal.**

-continued-

PROPOSAL 164, PAGE 164. 5 AAC 01.220(f). Lawful gear and gear specifications. Amend this regulation as follows:

In the middle fork and south fork of the Koyukuk River, gillnet mesh size may not exceed 3 ½ inches.

Legal subsistence methods and means may be used year round except gill net fishing is closed July 1 – October 31 on the middle fork and south fork drainages to protect spawning salmon.

WHAT WOULD THE PROPOSAL DO? The proposal if adopted would allow the use of gillnets with mesh size 3 ½ inches or less in the portions of Koyukuk River tributaries within the Dalton Highway corridor except when salmon are traditionally present (July 1 – October 31).

ACTION TAKEN BY THE BOF: **The proposal was amended to allow only gill nets with mesh size not to exceed 3 inches and to require a permit for participation in the subsistence fishery. This fishery will be open only from November 1 to June 30. The BOF adopted the proposal as amended.**

PROPOSAL 165, PAGE 164. 5 AAC 01.225. Waters closed to subsistence fishing; 5 AAC 05.350. Closed waters; and 5 AAC 70.022. Waters; seasons; bag, possession and size limits in the Arctic-Yukon-Kuskokwim Area. Amend this regulation as follows:

All spawning streams will be closed to any fishing ½ mile downstream from the mouth and ¼ mile upstream. No fishing until the department by emergency order opens when they have reached the escapement goal and the department makes sure they monitor these spawning streams.

WHAT WOULD THE PROPOSAL DO? The proposal, if adopted, would close all fishing in the Yukon River and its tributaries ½ mile down stream of tributary confluence and the lower ¼ mile of each tributary. All Yukon River tributaries would also be closed near their confluence with higher order tributaries that provide salmon spawning habitat.

ACTION TAKEN BY THE BOF: **The BOF failed to adopt the proposal.**

PROPOSAL 174, PAGE 171. 5AAC 05.360 (f). Yukon River King Salmon Management Plan. Amend this regulation as follows:

The sport fishery in the Yukon River drainage will be managed in accordance with the subsistence salmon net and fish wheel openings and closure set forth in 5 AAC 05.360(d)(1)-(5). Sport fishing restrictions necessary for conservation purposes will correspond to the level of abundance of king salmon.

WHAT WOULD THE PROPOSAL DO? The proposal, if adopted, would align the opening and closing of the sport fishery with the gill net and fish wheel subsistence fisheries.

ACTION TAKEN BY THE BOF: **The BOF failed to adopt the proposal.**

APPENDIX B

Appendix B1.—Sport harvest and catch from the Yukon subarea (SWHS Area Y), 1977-2005.

Year	All Fish Total	Salmon					Non-Salmon							
		Chinook	Coho	Sockeye	Pink	Chum	Lake Trout	Char	Grayling	Whitefish	Sheefish	Northern Pike	Burbot	Other Fish
Harvest														
1980	13,291	15	0	0	19	0	293	506	9,640	9	251	2,498	60	0
1981	10,173	6	0	0	11	17	302	197	6,176	18	509	2,718	219	0
1982	13,580	22	139	0	41	82	720	470	7,171	568	372	3,551	444	0
1983	13,225	0	52	0	0	349	305	856	8,014	52	259	3,318	10	10
1984	10,531	13	0	0	78	0	143	143	6,856	182	104	2,960	52	0
1985	7,985	12	12	0	0	12	485	382	4,180	315	245	2,132	210	0
1986	10,775	15	161	0	98	202	508	91	5,566	328	214	3,470	122	0
1987	12,740	0	61	0	0	226	0	541	9,054	206	128	2,492	32	0
1988	12,363	91	183	0	0	546	0	618	6,115	610	656	3,526	18	0
1989	14,720	100	215	0	0	997	272	726	7,491	245	757	3,516	367	34
1990	9,948	105	228	0	0	417	220	391	4,961	322	323	2,474	507	0
1991	14,258	143	430	180	0	449	434	675	5,570	422	1,341	4,454	160	0
1992	11,416	313	551	58	27	618	193	672	4,171	248	553	3,590	422	0
1993	8,128	122	619	0	0	193	101	528	3,330	173	436	2,347	279	0
1994	9,445	410	728	0	0	90	59	488	4,574	89	391	1,968	145	503
1995	7,311	37	162	0	0	189	66	122	3,421	82	476	1,937	216	603
1996	9,036	128	432	0	30	66	9	881	4,000	160	606	2,502	203	19
1997	7,328	221	179	0	0	206	0	344	3,456	398	231	1,870	415	8
1998	6,969	207	154	64	85	351	27	205	3,912	121	258	1,452	133	0
1999	7,434	22	158	11	0	81	545	203	3,164	511	133	2,418	168	0
2000	6,103	99	244	0	0	64	55	373	3,279	222	372	1,277	118	0
2001	7,308	12	126	0	0	53	56	368	3,193	928	492	1,772	50	258
2002	9,655	8	551	3	0	77	147	551	2,832	497	538	3,291	1,160	0
2003	6,205	99	160	0	24	28	57	358	3,131	0	238	1,507	594	9
2004	10,432	194	907	79	33	105	98	167	3,271	284	1,352	3,656	111	147
2005	7,954	0	360	78	0	291	171	130	2,883	79	1,348	1,899	534	181
Averages^a														
1990-04	8,732	141	375	26	13	199	138	422	3,751	297	516	2,434	312	103
		(1.6)	(4.3)	(0.3)	(0.2)	(2.3)	(1.6)	(4.8)	(43.0)	(3.4)	(5.9)	(27.9)	(3.6)	(1.2)
1995-04	7,778	103	307	16	17	122	106	357	3,366	320	470	2,168	317	104
		(1.3)	(4.0)	(0.2)	(0.2)	(1.6)	(1.4)	(4.6)	(43.3)	(4.1)	(6.0)	(27.9)	(4.1)	(1.3)
2000-04	7,941	82	398	16	11	65	83	363	3,141	386	598	2,301	407	83
		(1.0)	(5.0)	(0.2)	(0.1)	(0.8)	(1.0)	(4.6)	(39.6)	(4.9)	(7.5)	(29.0)	(5.1)	(1.0)

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Appendix B1.-Page 2 of 2.

Year	All Fish Total	Salmon					Non-Salmon							
		Chinook	Coho	Sockeye	Pink	Chum	Lake Trout	Char	Grayling	Whitefish	Sheefish	Northern Pike	Burbot	Other Fish
Catch														
1990	62,327	199	533	0	0	2,149	914	2,842	34,299	914	2,251	17,717	509	0
1991	48,722	316	859	205	77	1,839	757	5,202	23,458	459	1,495	13,895	160	0
1992	43,322	1,242	1,329	107	155	1,960	741	3,744	17,300	349	1,569	14,801	25	0
1993	45,034	640	1,023	9	0	1,224	196	4,249	21,420	302	2,127	13,502	342	0
1994	36,015	510	1,109	9	0	351	177	1,779	15,951	301	1,121	11,694	152	2,861
1995	32,282	177	542	0	0	734	155	751	11,454	109	1,335	15,828	288	909
1996	57,857	2,785	813	0	964	792	60	1,938	21,417	434	2,915	25,502	212	25
1997	41,491	673	386	30	28	516	70	1,448	23,318	430	453	13,367	687	85
1998	40,070	456	385	1,019	802	3,544	74	1,991	18,318	415	568	12,349	149	0
1999	45,136	56	804	343	0	300	1,330	2,104	18,432	554	812	20,213	168	0
2000	41,907	562	684	0	39	366	166	1,678	23,024	524	1,144	13,589	130	0
2001	41,269	315	822	0	0	697	56	1,619	16,000	1,037	1,531	18,788	57	347
2002	63,955	18	1,064	3	38	363	1,596	2,142	19,194	862	1,483	35,975	1,217	0
2003	56,760	850	3,386	21	53	4,930	296	2,837	24,465	45	769	18,392	648	68
2004	91,804	1,088	4,329	678	1,041	3,356	553	2,420	32,455	371	5,329	39,762	178	187
2005	47,429	455	504	151	848	2,230	540	407	20,940	260	1,999	18,332	534	229
Averages^a														
1995-04	51,253	698	1,322	209	297	1,560	436	1,893	20,808	448	1,634	21,377	373	162
		(1.4)	(2.6)	(0.4)	(0.6)	(3.0)	(0.8)	(3.7)	(40.6)	(0.9)	(3.2)	(41.7)	(0.7)	(0.3)
2000-04	59,139	567	2,057	140	234	1,942	533	2,139	23,028	568	2,051	25,301	446	120
		(1.0)	(3.5)	(0.2)	(0.4)	(3.3)	(0.9)	(3.6)	(38.9)	(1.0)	(3.5)	(42.8)	(0.8)	(0.2)

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^a Percentage of all fish from Yukon subarea are within parenthesis.

Appendix B2.—Sport harvest and catch from the North Slope subarea (SWHS Area Z), 1977-2005.

Year	All Fish Total	Salmon		Non-Salmon						
		Pink	Chum	Lake Trout	Char	Grayling	Whitefish	Northern Pike	Burbot	Other Fish
Harvest										
1980	2,971	0	0	379	827	1,765	0	0	0	0
1981	4,546	0	0	454	1,188	2,904	0	0	0	0
1982	6,771	0	0	629	2,065	4,077	0	0	0	0
1983	6,708	283	0	367	1,966	2,884	125	0	83	0
1984	5,896	0	0	481	1,507	2,441	13	0	0	1,454
1985	10,615	0	0	1,707	3,489	5,382	0	37	0	0
1986	9,386	0	0	415	983	4,099	3,776	19	94	0
1987	4,957	0	0	274	2,676	1,932	75	0	0	0
1988	2,147	55	0	73	1,018	983	18	0	0	0
1989	3,883	0	0	482	1,031	2,113	109	0	148	0
1990	1,482	0	0	168	489	791	17	0	17	0
1991	4,676	0	15	176	1,199	3,301	0	0	0	0
1992	2,436	18	17	379	836	1,145	18	0	25	0
1993	2,926	0	0	106	1,092	1,632	0	58	21	0
1994	1,880	0	0	73	589	807	58	0	353	0
1995	2,004	0	0	38	896	983	18	0	69	0
1996	2,409	0	11	19	1,108	1,194	36	0	41	0
1997	1,978	0	0	57	1,018	903	0	0	0	0
1998	2,895	13	0	221	1,454	1,182	0	0	25	0
1999	2,280	0	0	77	929	1,206	68	0	0	0
2000	3,612	0	763	18	1,178	934	71	0	0	0
2001	2,516	0	0	37	1,589	846	26	0	18	0
2002	3,346	66	5	217	773	2,215	19	51	0	0
2003	1,810	49	0	98	193	1,122	304	22	22	0
2004	1,445	75	13	75	180	868	150	14	70	0
2005	1,934	0	0	96	493	1,313	0	32	0	0
Averages^a										
1990-04	2,419	15(0.6)	4(0.2)	117(4.8)	902(37.3)	1,275(52.7)	52(2.2)	10(0.4)	44(1.8)	0(0.0)
1995-04	2,288	20(0.9)	3(0.1)	86(3.7)	932(40.7)	1,145(50.0)	69(3.0)	9(0.4)	25(1.1)	0(0.0)
2000-04	2,264	38(1.7)	4(0.2)	89(3.9)	783(34.6)	1,197(52.9)	114(5.0)	17(0.8)	22(1.0)	0(0.0)

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Appendix B2.-Page 2 of 2.

Year	All Fish Total	Salmon		Non-Salmon						
		Pink	Chum	Lake Trout	Char	Grayling	Whitefish	Northern Pike	Burbot	Other Fish
Catch										
1990	11,935	0	0	1,728	3,744	5,482	302	17	17	285
1991	12,852	0	0	932	2,670	9,200	50	0	0	0
1992	11,656	82	76	887	3,850	6,608	120	0	33	0
1993	13,932	10	17	266	3,946	9,345	192	135	21	0
1994	12,857	16	10	327	3,178	8,552	107	54	613	0
1995	9,113	0	0	370	3,229	5,427	18	0	69	0
1996	16,153	27	11	298	8,206	7,456	90	0	65	0
1997	21,323	9	0	783	4,094	16,248	163	0	26	0
1998	16,634	13	0	1,292	7,716	7,529	16	0	42	26
1999	15,477	0	0	913	4,520	9,956	68	0	0	20
2000	22,331	0	763	457	7,579	12,523	298	0	13	0
2001	13,477	0	0	266	6,027	7,035	117	0	32	0
2002	12,480	71	21	410	2,195	9,374	126	283	0	0
2003	10,454	49	0	1,164	936	7,944	304	22	22	0
2004	8,776	105	13	540	803	7,014	162	14	125	0
2005	14,491	0	0	433	1,756	12,270	0	32	0	0
Averages^a										
1995-04	14,480	27(0.2)	5(0.0)	649(4.5)	4,531(31.3)	9,051(62.5)	136(0.9)	32(0.2)	39(0.3)	5(0.0)
2000-04	13,219	45(0.3)	7(0.1)	567(4.3)	3,508(26.5)	8,778(66.4)	2012(1.5)	64(0.5)	38(0.3)	9(0.1)

^a Percentage of all fish from Yukon subarea are within parenthesis.

APPENDIX C

Appendix C1.—Commercial, subsistence and sport harvest of Chinook salmon in the Yukon River drainage.

Year	Tanana River			Yukon River without Tanana			All Yukon River		
	Commercial	Subsistence	Sport	Commercial	Subsistence	Sport	Commercial	Subsistence	Sport
1980	1,947	1,826	941	152,038	40,898	15	153,985	42,724	956
1981	987	2,085	763	157,031	27,605	6	158,018	29,690	769
1982	981	2,443	984	122,663	25,715	22	123,644	28,158	1,006
1983	911	2,706	1,048	146,999	46,772	0	147,910	49,478	1,048
1984	867	3,599	338	119,037	38,829	13	119,904	42,428	351
1985	1,142	7,375	1,356	145,046	32,396	12	146,188	39,771	1,368
1986	950	3,701	781	99,020	41,537	15	99,970	45,238	796
1987	3,338	4,096	502	131,422	49,028	0	134,760	53,124	502
1988	762	5,507	853	99,602	40,525	91	101,445	46,032	944
1989	1,741	2,999	963	102,457	48,063	100	105,491	51,062	1,063
1990	2,156	3,069	439	93,504	48,112	105	97,708	51,181	544
1991	1,072	2,515	630	105,344	44,258	143	107,105	46,773	773
1992	753	2,438	118	120,419	43,188	313	122,134	45,626	431
1993	1,445	2,098	1,573	92,665	60,814	122	95,682	65,701	1,695
1994	2,606	2,370	1,871	111,234	50,707	410	115,471	54,563	2,281
1995	2,747	2,178	2,488	121,305	46,756	37	126,204	48,934	2,525
1996	447	1,392	3,102	89,745	42,435	128	91,890	43,521	3,230
1997	2,728	3,025	1,953	110,882	53,266	221	116,421	56,291	2,174
1998	963	2,276	447	42,736	51,814	207	44,625	54,090	654
1999	690	1,955	1,001	68,873	50,570	22	70,767	52,525	1,023
2000	0	1,058	178	8,518	34,858	99	9,115	35,916	277
2001	0	2,449	667	0	50,610	12	0	53,059	679
2002	836	1,193	478	24,044	41,553	8	24,880	42,746	486
2003	1,813	2,349	2,153	38,851	52,964	99	40,664	55,313	2,719
2004	2,057	1,589	1,319	54,111	52,287	194	56,168	53,876	1,513
2005	453	1,966	485	31,499	51,581	0	31,952	53,547	485
2006	84			45,745			45,829		
				Average					
1977-04	1,298	2,624	994	95,669	43,493	98	97,634	44,521	1,031
1995-04	1,228	1,946	1,319	55,907	47,711	103	58,073	50,738	1,502
2000-04	941	1,728	959	25,105	46,454	82	26,165	48,468	624

Appendix C2.—Commercial, subsistence, and sport harvest of summer and fall chum salmon in the Yukon River.

Year	Tanana River			Yukon River without Tanana			All Yukon River		
	Commercial	Subsistence	Sport	Commercial	Subsistence	Sport	Commercial	Subsistence	Sport
1980	58,657	56,686	483	1,307,508	278,656	0	1,366,165	335,342	483
1981	63,472	32,573	595	1,693,965	262,296	17	1,757,437	294,869	612
1982	30,530	25,910	698	911,475	223,595	82	942,005	249,505	780
1983	61,517	52,769	649	1,241,614	284,275	349	1,303,131	337,044	998
1984	77,204	45,776	585	1,019,396	293,349	0	1,096,600	339,125	585
1985	110,805	60,041	1,255	1,093,477	301,650	12	1,204,282	361,691	1,267
1986	54,703	39,869	693	1,274,166	305,934	202	1,328,869	345,803	895
1987	11,060	153,056	620	611,481	383,547	226	622,541	536,603	846
1988	65,425	48,639	491	1,687,804	305,652	546	1,753,229	354,291	1,037
1989	103,429	69,507	1,135	1,630,266	315,768	997	1,733,695	385,275	2,132
1990	65,808	51,176	55	585,547	239,336	417	651,355	290,512	472
1991	68,340	45,538	588	843,980	218,526	449	912,320	264,064	1,037
1992	26,250	35,217	690	536,349	197,882	618	562,599	233,099	1,308
1993	3,705	17,320	371	136,411	165,055	193	140,116	182,375	564
1994	35,803	40,623	260	230,937	192,499	90	266,740	233,122	350
1995	111,545	62,472	985	997,120	188,400	189	1,108,665	250,872	1,174
1996	64,464	45,223	1,880	732,425	187,407	66	767,889	232,630	1,946
1997	25,287	24,049	456	264,609	168,876	206	286,896	192,925	662
1998	570	20,460	70	31,247	128,497	351	318,917	148,957	421
1999	148	18,769	474	49,635	141,934	81	49,783	160,703	555
2000	0	1,452	97	7,272	82,780	64	7,272	84,232	161
2001	0	4,094	29	0	89,445	53	0	93,539	82
2002	3,198	3,892	307	10,587	87,936	77	13,785	91,828	384
2003	8,556	16,442	1,575	13,125	109,188	28	21,681	125,630	1,603
2004	10,060	11,207	98	20,079	121,132	105	30,139	132,339	203
2005	58,464	25,245	144	161,921	159,833	291	220,385	185,078	435
2006	67,974			198,684			266,658		
					Average				
1977-04	43,116	39,262	565	683,606	214,493	208	762,672	255,297	773
1995-04	22,383	20,806	597	212,610	130,560	122	234,993	151,366	719
2000-04	4,363	7,417	421	10,213	98,096	65	14,575	105,514	487

Appendix C3.—Commercial, subsistence and sport harvest of coho salmon in the Yukon River drainage.

Year	Tanana River			Yukon River without Tanana			All Yukon River		
	Commercial	Subsistence	Sport	Commercial	Subsistence	Sport	Commercial	Subsistence	Sport
1980	1,226	5,163	67	7,519	14,995	0	8,745	20,158	67
1981	2,284	9,261	45	21,396	11,967	0	23,680	21,228	45
1982	7,780	7,418	52	29,396	28,476	139	37,176	35,894	191
1983	6,168	6,932	147	7,152	16,973	52	13,320	23,905	199
1984	7,688	14,785	831	74,252	34,235	0	81,940	49,020	831
1985	11,762	11,761	796	45,910	20,503	12	57,672	32,264	808
1986	441	13,321	1,374	46,814	21,147	161	47,255	34,468	1,535
1987	0	55,471	1,231	0	29,423	61	0	46,213	1,292
1988	13,972	31,348	2,237	85,935	37,732	183	99,907	69,679	2,420
1989	16,084	19,572	1,596	69,409	22,011	215	85,493	40,924	1,811
1990	14,804	18,768	1,719	29,483	25,873	228	46,937	43,460	1,947
1991	9,775	21,561	2,345	96,839	15,827	430	109,657	37,388	2,775
1992	7,979	17,554	1,115	0	34,367	551	9,608	51,980	1,666
1993	0	4,304	278	0	11,418	619	0	15,812	897
1994	4,451	26,489	1,165	0	15,205	728	4,451	41,775	1,893
1995	6,900	19,219	1,116	40,113	9,423	162	47,013	28,642	1,278
1996	7,142	15,091	1,354	48,840	15,419	432	55,982	30,510	1,786
1997	0	11,945	1,229	35,320	12,350	179	35,320	24,295	1,408
1998	0	7,481	604	1	10,300	154	1	17,781	758
1999	0	9,547	451	1,601	11,423	158	1,601	20,970	609
2000	0	5,150	310	0	9,567	244	0	14,717	554
2001	0	9,000	1,122	0	13,156	126	0	22,156	1,248
2002	0	9,519	541	0	5,990	551	0	15,261	1,092
2003	15,119	10,912	1,317	10,124	13,217	160	25,243	24,129	1,477
2004	18,649	11,817	716	1,344	9,148	907	19,993	20,965	1,623
2005	21,831	19,667	267	36,518	7,690	360	58,349	27,357	627
2006	11,137			53,805			64,942		
				Average					
1977-04	5,781	14,174	837	26,311	16,978	238	31,985	30,723	1,096
1995-04	4,781	10,968	876	13,734	10,999	307	18,757	21,892	1,183
2000-04	6,754	9,280	801	2,294	10,216	398	9,047	19,345	1,199

Appendix C4.—Guideline harvest ranges and mid-points for commercial harvest of chinook, summer chum and fall chum salmon, Yukon area, Alaska.

Chinook Salmon						
District or Subdistrict	Guideline Harvest Range ^a					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1 and 2	0 to 60,000	89.1	90,000	91.6	120,000	92.9
3	0 to 1,800	2.7	2,000	2.0	2,200	1.7
4	0 to 2,250	3.3	2,550	2.6	2,850	2.2
5B and C	0 to 2,400	3.6	2,600	2.6	2,800	2.2
5D	0 to 300	0.4	400	0.4	500	0.4
6	0 to 600	0.9	700	0.7	800	0.6
Total	67,350	100.0	98,250	100.0	129,150	100.0

Summer Chum Salmon						
District or Subdistrict	Guideline Harvest Range ^b					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1 and 2	0 to 251,000	62.8	503,000	62.9	755,000	62.9
3	0 to 6,000	1.5	12,500	1.6	19,000	1.6
4A ^c	0 to 113,000	28.3	225,500	28.2	338,000	28.2
4B, C	0 to 16,000	4.0	31,500	3.9	47,000	3.9
5B, C, D	0 to 1,000	0.3	2,000	0.3	3,000	0.3
6	0 to 13,000	3.3	25,500	3.2	38,000	3.2
Total	400,000	100.0	800,000	100.0	1,200,000	100.0

^d Anvik River Management Area roe cap of 100,000 pounds.

Fall Chum Salmon						
District or Subdistrict	Guideline Harvest Range ^e					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1, 2 and 3	60,000	82.5	140,000	71.2	220,000	68.6
4B, C	5,000	6.9	22,500	11.4	40,000	12.5
5B, C	4,000	5.5	20,000	10.2	36,000	11.2
5D	1,000	1.4	2,500	1.3	4,000	1.2
6	2,750	3.8	11,625	5.9	20,500	6.4
Total	72,750	100.0	196,625	100.0	320,500	100.0

^f Subdistrict 5A range of 0 to 4,000 pounds of roe

^a The chinook salmon guideline harvest ranges have been in effect since 1981.

^b Summer chum salmon guideline harvest ranges were established in February 1990 based on the average harvest shares from 1975-1989.

^c Or the equivalent roe poundage of 61,000 to 183,000 pounds or some combination of fish and pounds of roe.

^d The current Anvik River Management Area roe cap was established in March 1996.

^e The current fall chum salmon guideline harvest ranges were established in 1990.

^f Subdistrict 5A was removed from the guideline harvest ranges for chinook and summer chum and a separate guideline harvest range of 0-4,000 pounds of fall chum salmon roe was established in November 1998.

Appendix C5.–The Yukon River Drainage Fall Chum Salmon Management Plan.

Fall Chum Salmon Management Plan Overview					
Projected Run Size ^a	Recommended Management Action				Targeted Drainage-wide Escapement
	Commercial	Personal Use	Sport	Subsistence	
300,000 or less	Closure	Closure	Closure	Closure ^b	
300,000 to 500,000	Closure	Closure ^b	Closure ^b	Possible Restrictions ^{b, c}	300,000 to 600,000
500,000 to 600,000	Restrictions ^b	Open	Open	Pre-2001 Fishing Schedules	
Greater than 600,000	Open ^d	Open	Open	Pre-2001 Fishing Schedules	

^a PROJECTED RUN SIZES use the best available data (including preseason projections, mainstem river sonar passage estimates, test fisheries indices, subsistence and commercial fishing reports, and passage estimates from escapement monitoring projects)

^b The fishery may be opened or less restrictive in areas that indicator(s) suggest the escapement goal(s) in that area will be achieved.

^c Subsistence fishing will be managed to achieve a minimum drainage-wide escapement goal of 300,000.

^d DRAINAGE-WIDE COMMERCIAL FISHERIES may be open and the harvestable surplus above 600,000 will be distributed by district or subdistrict (in proportion to the guidelines harvest levels established in 5 AAC 05.365 and 5 AAC 05.367).

Appendix C6.–Yukon River Summer Chum Salmon Management Plan overview.

Summer Chum Salmon Management Plan Overview					
Projected Run Size ^a	Recommended Management Action				Targeted Drainage-wide Escapement
	Commercial	Personal Use	Sport	Subsistence	
600,000 or less	Closure	Closure	Closure	Closure ^b	≤600,000
600,001 to 700,000	Closure	Closure	Closure	Possible Restrictions ^b	
700,001 to 1,000,000	Restrictions ^b	Restrictions ^b	Restrictions ^b	Normal Fishing Schedules	
Greater than 1,000,000	Open ^c	Open	Open	Normal Fishing Schedules	≥800,000

^a PROJECTED RUN SIZE: Mainstem river sonar passage estimate plus the estimated harvests below the sonar site and the Andreafsky River escapement.

^b The fishery may be opened or less restrictive in areas that indicator(s) suggest the escapement goal(s) in that area will be achieved.

^c DRAINAGE-WIDE COMMERCIAL FISHERIES: The harvestable surplus will be distributed by district or subdistrict in proportion to the guidelines harvest levels established in 5 AAC 05.362 (f) and (g) and 5 AAC 05.365 if buying capacity allows.

Appendix C7.—Yukon River Coho Salmon Management Plan.

5 AAC 05.369. YUKON RIVER COHO SALMON MANAGEMENT PLAN.

- (a) The goal of this plan is to provide for the management of directed commercial coho salmon fishing in the Yukon River. The majority of Yukon River coho salmon spawn in tributaries that flow into the Yukon River from the mouth of the Yukon River up to and including the Tanana River drainage. The management of directed coho salmon fishing during the fall season is complicated by an overlapping run of more abundant fall chum salmon stocks.
- (b) For the purpose of (c) of this section, the department shall use the best available information to assess coho salmon abundance including mainstem river sonar passage estimates, test fisheries indices, subsistence and commercial fishing reports, and estimates from escapement monitoring projects.
- (c) The department may allow a directed coho salmon fishery under this section in years when
- (1) the return of coho salmon measured under (b) of this section is above the average of previous years;
 - (2) the fall chum salmon return is assessed by the department to be more than 625,000 fish; and,
 - (3) no directed fall chum salmon commercial fishing has occurred or the department determines that it is not expected to occur.
- (d) Fall chum salmon harvested during a directed commercial coho salmon fishery under this section will be considered incidental any may only occur on the harvestable surplus of fall chum salmon above 625,000 fish.
- (e) In a year when a directed commercial coho salmon fishery is opened under this section in
- (1) Districts 1, 2, and 3, the commissioner shall close, by emergency order, the coho salmon fall season no later than September 5;
 - (2) Subdistricts 4-B, 4-C, and 5-A, and District 6, the commissioner shall close, by emergency order, the coho salmon fall season no later than October 5; and,
 - (3) Subdistrict 4-A, the commissioner may open, by emergency order, the directed commercial coho salmon fishery on or after August 20, and shall close the fishery no later than September 15.
- (f) In Subdistrict 5-B, 5-C, and 5-D there will be no directed commercial coho salmon fishery unless the department determines that there will be a harvestable surplus of coho salmon.
- (g) The department shall distribute, to the extent practicable, the harvest opportunity in the directed coho salmon fishery between districts and subdistricts as follows:

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- (1) 24 hours of combined fishing time in Districts 1, 2, and 3 will be considered equal to 32 hours of fishing time in:
 - (A) Subdistrict 4-A;
 - (B) Subdistricts 4-B and 4-C combined;
 - (C) Subdistrict 5-A; and,
 - (D) District 6;
 - (2) to ensure an orderly and conservative fishery, coho salmon fishing will be managed as follows:
 - (A) in Districts 1, 2, and 3 combined, fishing time shall not exceed 24 hours in a seven-day period;
 - (B) in District 4-A, fishing time shall not exceed 32 hours in a seven-day period;
 - (C) in Subdistricts 4-B and 4-C combined, fishing time shall not exceed 32 hours in a seven-day period;
 - (D) in Subdistrict 5-A, fishing time shall not exceed 32 hours in a seven day period; and,
 - (E) in District 6, fishing time shall not exceed 32 hours in a seven-day period.
- (h) The provisions of this section do not apply after January 1, 2001.
-

Appendix C8.—Yukon River salmon fisheries preseason information sheet, 2006.



2005 Yukon River Salmon Fisheries Summary



The most recent averages (1995-2004; excluding 2001) for commercial harvest are listed below. The subsistence harvest information provided for 2005 is preliminary.

Chinook Salmon Harvest		Summer Chum Salmon Harvest		Fall Chum Salmon Harvest	
32,000 Commercial (average = 63,400)	52,400 Subsistence (average = 51,000)	41,200 Commercial (average = 204,200)	88,800 Subsistence (average = 94,200)	180,000 Commercial (average = 48,200)	88,500 Subsistence (average = 70,200)

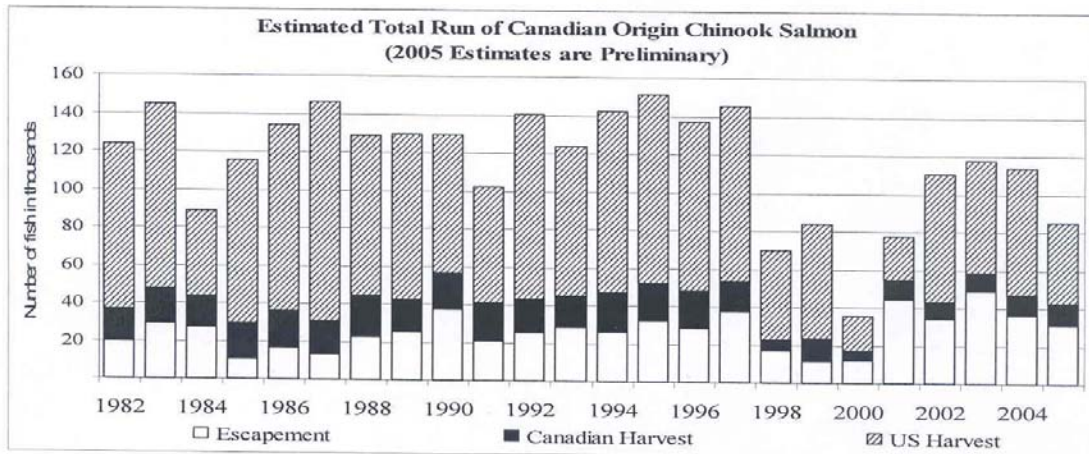
- ❑ The Alaska coho salmon commercial harvest of 58,311 was 215% above the recent 10-year average and the subsistence harvest of 25,900 was above the recent 10-year average of 21,900.
- ❑ The Canadian Aboriginal harvest of 6,376 Chinook salmon was 12% below the recent 10-year average.
- ❑ The Canadian commercial harvest of 4,066 Chinook salmon was 5% below the recent 10-year average.

2005 YUKON RIVER ESCAPEMENT SUMMARY

- ❑ The Yukon River Chinook salmon run in 2005 was near average, based on harvest data and escapement estimates from selected tributaries.
- ❑ The estimated Canadian Chinook salmon escapement was approximately 31,600 fish.
- ❑ The Pilot Station Sonar estimate of 2.4 million summer chum salmon was the highest since 1995.
- ❑ The fall chum salmon run was estimated to be 2.0 million fish with an estimated escapement of 1.8 million, which is the largest on record.
- ❑ The coho salmon run continued the trend of above average returns.

U.S. AND CANADIAN 2006 COMMITMENTS

- ❑ The US/Canada Yukon River Panel agreed to an interim rebuilding escapement objective of 28,000 Chinook salmon for 2006. If the run is stronger than anticipated, the run may be managed to obtain a higher escapement objective.
- ❑ The Yukon Panel also agreed to a Canadian Yukon River fall chum salmon mainstem escapement objective of 80,000 fish. The Yukon Panel set an interim rebuilding escapement objective for the Fishing Branch River of 28,000 fall chum salmon which is below the treaty goal of 50,000 to 120,000 fall chum salmon. This interim goal is to allow some subsistence and aboriginal harvest by Alaska and Canadian fishermen.



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2006 Yukon River Salmon Fisheries Outlook



This information sheet describes the anticipated management of the 2006 season. State and Federal fishery managers will coordinate management of the Yukon River subsistence salmon fishery.

RUN AND HARVEST OUTLOOK

Chinook Salmon	Chum Salmon	Coho Salmon
Average to below average run is projected to provide for escapement and subsistence purposes.	Average to above average run is projected to provide for escapement and subsistence purposes.	Average to above average run is projected to provide for escapement and subsistence purposes.
2006 Chinook salmon run is anticipated to be similar to 2005.	Runs have been increasing due to improved production.	Runs have been increasing due to improved production.
Commercial harvest is anticipated to be between 30,000 and 60,000 fish.	Summer chum commercial harvest is anticipated to be between 500,000 and 900,000 fish.	Commercial harvest is anticipated to be between 50,000 and 70,000 fish.
	Fall chum commercial harvest is anticipated to be between 100,000 and 400,000 fish.	

MANAGEMENT STRATEGIES

- Manage for escapement and provide for subsistence salmon fishing harvest opportunity along the entire Yukon River drainage, beginning the season using the regulatory subsistence salmon fishing schedule.
- Anticipated management actions based on the evaluation of inseason run strength indicators include:
 - When a harvestable surplus of fish is projected, return to the pre-2001 subsistence salmon fishing schedule and allow commercial harvest of Chinook, chum, and coho salmon. Chum and coho salmon commercial harvest are dependent on markets.
 - In 2006, based on preseason projections, the management strategy is to schedule a commercial fishing period, near the first quarter point (historically, June 15) for Chinook salmon in District 1 or 2, which may be of short duration, and continue with spreading the harvest over the middle 50% of the run. Additional harvest after the third quarter point depends on information from assessment projects and available markets.
 - If a poor run develops, reduce the subsistence salmon fishing schedule to meet escapement goals.
- Present run assessment information and discuss management strategies during weekly Yukon River Drainage Fisheries Association sponsored teleconferences. Input from fishers along the river is important to management.

For additional information:

ADF&G Steve Hayes in Anchorage 907-267-2383; Fred Bue, Fairbanks 907-459-7274; or Emmonak 907-949-1320
Subsistence Fishing Schedule-1-866-479-7387 (toll free outside of Fairbanks); in Fairbanks, call 459-7387
 USFWS: Russ Holder in Fairbanks 907-455-1849 or 1-800-801-5108; or in Emmonak 907-949-1798

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2006 Subsistence Fishing Schedule



The subsistence salmon fishing schedule is intended to reduce harvest impacts during years of low salmon runs on any particular run component and to spread subsistence harvest opportunity among users. The schedule is based on current, or past, fishing schedules and should provide reasonable opportunity for subsistence users to meet their needs. The goal of the schedule is to provide periods during which salmon fishing is closed. Please Note: this schedule is subject to change depending on run strength.

Area	Regulatory Subsistence Fishing Periods	Schedule to Begin	Days of the Week
Coastal District	7 days/week	By Regulation	M/T/W/TH/F/SA/SU – 24 hours
District 1	Two 36-hour periods/week	May 29, 2006	Mon. 8 pm to Wed. 8 am /Thu. 8 pm to Sat. 8 am
District 2	Two 36-hour periods/week	May 31, 2006	Wed. 8 pm to Fri. 8 am / Sun. 8 pm to Tue. 8 am
District 3	Two 36-hour periods/week	June 2, 2006	Fri. 8 am to Sat. 8 pm / Tue. 8 am to Wed. 8 pm
District 4	Two 48-hour periods/week	June 11, 2006	Sun. 6 pm to Tue. 6 pm / Wed. 6 pm to Fri. 6 pm
Koyukuk River	7 days/week	By Regulation	M/T/W/TH/F/SA/SU – 24 hours
Subdistricts 5-A, B, C	Two 48-hour periods/week	June 20, 2006	Tue. 6 pm to Thu. 6 pm /Fri. 6 pm to Sun. 6 pm
Subdistrict 5-D	7 days/week	By Regulation	M/T/W/TH/F/SA/SU – 24 hours
District 6	Two 42-hour periods/week	By Regulation	Mon. 6 pm to Wed. Noon /Fri. 6 pm to Sun. Noon
Old Minto Area	5 days/week	By Regulation	Friday 6 pm to Wednesday 6 pm

All subsistence salmon fishing with gillnets and fish wheels must be stopped during subsistence salmon fishing closures.

Summer and fall chum salmon runs will be managed using the regulatory management plans. If it is determined that salmon runs are insufficient to provide for escapement, then subsistence fishing time may be reduced from the regulatory subsistence salmon fishing schedule and/or gear restrictions may be implemented. Subsistence salmon fishing opportunity on waters applicable to ANILCA TITLE VIII may be further restricted to “Federally qualified users”. Once enacted, this restriction could be rescinded if the salmon run size is determined to be sufficient to provide for escapement and subsistence needs. Fishermen are reminded that they should consult both State of Alaska fishing regulations and the Federal Subsistence Management regulations for waters subject to ANILCA Title VIII before fishing within the Yukon River drainage.

Yukon River Chum Salmon Regulatory Management Plans

SUMMER (5 AAC 05.362)		FALL (5 AAC 01.249)	
Projected Run Size	Actions	Projected Run Size	Actions
Below 600,000	Then NO directed fishing by any user except that subsistence fishing may be allowed in a specific district or area projected to meet escapement goal.	Below 300,000	Then NO directed fishing by any user except that subsistence fishing may be allowed in a specific district or area projected to meet escapement goal.
600,000 TO 700,000	Then limited subsistence fishing No directed commercial, sport or personal use fishing.	300,000 TO 500,000	Then variable subsistence fishing. NO directed commercial fishing. May allow sport or personal use fishing if specific district or area is projected to meet escapement goal and subsistence needs.
700,000 TO 1 million	Then Board of Fisheries subsistence schedule. No river wide directed commercial, sport, or personal use fishing. Fishing may be allowed if a specific district or area is projected to meet escapement goal. (e.g. Anvik River).	500,000 TO 600,000	Then return to the pre-2001 subsistence fishing schedule and allow river wide personal use fishing and retention of sport caught fish. Consider commercial fishing if specific district or area is projected to meet escapement goal and subsistence needs.
Greater than 1 million	Then directed summer chum salmon fishing by all users.	Greater Than 600,000	Then directed fall chum salmon fishing by all users.

APPENDIX D

Appendix D1.–Dall River Fisheries Management Plan.

Purpose of Plan

- To provide the public, state and federal agencies, the Stevens Village Natural Resource agency and the Alaska BOF with a clear understanding of the underlying principles by which northern pike inhabiting the Dall River Area will be managed and provide guidance in developing future regulations.

Philosophy of Plan

- Conservative Wild Stock Management.
- Protect biological integrity of the wild stock while maximizing the benefits to various users of the stock consistent with the subsistence priority.

Goal

- Ensure the long term quality of the northern pike fishery in Dall River Area.

Principles/Policies

- Native pike population(s) to be managed for maintenance of historic age and size composition (avoid enhancement or supplementing the wild stocks).
- Maintain opportunities for traditional (subsistence) and recreational use of the northern pike stock.

Objective

- Proportion of northern pike 30 inches and longer to be greater than 0.30 in the assessed population.

Issues / Action Items

- Establish a special management area for the protection of large size northern pike.
- Evaluate the effective size of the special management area.
- Control fishing mortality within special management area; minimize fishing mortality for northern pike > 30 inches.
- Evaluate and establish sport fishing regulations that will promote survival of large size northern pike.
- Encourage local efforts to minimize mortality of large size northern pike in the subsistence fishery.
- Educate prospective anglers concerning proper fish handling techniques.
- Educate prospective anglers concerning proper fishing gear.
- Reduce friction between local traditional users and non-local recreational users.
- Educate non-locals on the extent of private/public land.
- Incorporate local knowledge with scientific information to a greater degree in management decisions.
- Encourage greater local acceptance of non-local recreational angling as a legitimate use of the Dall River pike resource.
- Encourage local economic opportunities associated with recreational use.

Definitions

Dall River Area The Dall River Area includes the Dall and Little Dall River drainages.

Benefits The concept of benefit varies with users. Traditional subsistence users seek fish resources for traditional purposes including human food. Village residents have recognized the potential for economic opportunities in providing services to recreational users of the fish and land resources. Urban anglers seek continued opportunity to participate in the fishery; both consumptive and non-consumptive uses are desired.

Quality All groups stress the importance of a quality fishery. In the present context quality is defined as a stock with historic size and age composition. The presence of fish in large size and old age categories is recognized by all groups as an appropriate indicator of stock health.

Assessed Population The assessed population includes the portion of the population that is accessible to the sampling gear used in stock assessment efforts. For northern pike in the Dall River area, this includes fish larger than 450 mm FL (19 inches Total Length).

APPENDIX E

Appendix E1.-Aerial estimates of Arctic char from the Ivishak, Anaktuvuk, and Kongakut rivers of the North Slope.

Year	Date	Ivishak River	Anaktuvuk River	Kongahut River	Survey Method	Survey Rating	Data Source
1971	22-Sept	24,470	-	-	H	Good	Yoshihara 1973
1972	24-Sept	11,937	-	-	H	Good	Yoshihara 1972
1973	11-Sept	8,992	-	-	H	Excellent	Furniss 1975
1974	10-Sept	11,000	-	-	H	Not Rated	Furniss 1975
1975	22-Sept	8,306	-	-	H	Not Rated	Bendock 1982
1976	22-Sept	8,570	-	-	H	Fair	Bendock 1982
1977	NS	-	-	-	-	-	-
1978	NS	-	-	-	-	-	-
1979	22-Sept	24,403	15,717	-	S	Excellent	Bendock 1980
1980	NS	-	-	-	-	-	-
1981	22-Sept	24,873	10,536	-	S	Excellent	Bendock 1982
1982	22-Sept	36,432	6,222	-	S	Excellent	Bendock 1983
1983	22-Sept	27,820	8,743	-	S	Excellent	Bendock and Burr 1984
1984	22-Sept	24,818	5,462	-	S	Excellent	Bendock and Burr 1985
1985	NS	-	-	-	-	-	-
1986	NS	-	-	8,900	?	?	Millard USFWS files ^a
1987	NS	-	-	-	-	-	-
1988	NS	-	-	-	-	-	-
1989	22-Sept	12,650	-	6,355	H	Good	DeCicco ADF&G files ^a
1990	NS	-	-	-	-	-	-
1991	NS	-	-	-	-	-	-
1992	NS	-	-	-	-	-	-
1993	3-Sept	3,057	-	-	H	Good	Millard USFWS files ^a
1994	NS	-	-	-	-	-	-
1995	27-Sept	27,036	-	14,080	H	Good	Burr ADF&G files ^a

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Year	Date	Ivishak River	Anaktuvuk River	Kongahut River	Survey Method	Survey Rating	Data Source
2000	22-Sept	4,530 ^b	-	-	H	Excellent	Viavant 2001
2001	22-Sept	10,932 ^c	-	-	H	Excellent	Viavant 2002
2002	22-Sept	5,408 ^c	4,800	-	H	Excellent	Viavant 2003
2003	22-Sept	2,720 ^c	-	-	H	Good	Viavant 2005
2004		-	-	-			
2005		-	-	-			
2006	22-Sept	5,411 ^b	5,477	-	H	Good	Viavant ADF&G files ^a

NS = no survey, H = helicopter, S = fixed wing aircraft (Super Cub; PA-18)

^a M. Millard, Fishery Biologist, USFWS, Fairbanks; personal communication; F. DeCicco, SF Biologist, ADF&G, Fairbanks; personal communication; J. Burr, SF Biologist, ADF&G, Fairbanks; personal communication; T. Viavant, SF Biologist, ADF&G, Fairbanks; personal communication.

^b 6 km reach based on multiple aerial surveys.

^c Complete 28 km index area, based on multiple aerial surveys Sept 18-22.