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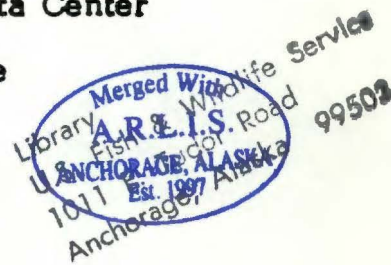


ANADROMOUS FISH INVENTORY
YUKON DELTA NATIONAL WILDLIFE REFUGE, ALASKA
and Associated Area of Ecological Concern

Prepared for
Fish and Wildlife Service
by

Arctic Environmental Information and Data Center
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Anadromous Fish Inventory Information Framework

a. Bibliography

The files of the Arctic Environmental Information and Data Center were utilized for the compilation of an initial bibliography. Referenced titles were then obtained and citations pertaining to the area and species of interest which appeared in these reports were added to expand the initial bibliography. References were deleted if, when obtained, the study was not found to pertain to the area or species of interest. In a few cases where references were unobtainable, such citations are followed by the note "(not seen)" to indicate that any pertinent data contained in this reference is not included in the remainder of the inventory.

All possible reference sources are listed with the exception of those containing extremely general subject matter, most early (before 1910) exploratory reports, and annual report series such as Alaska Fishery and Fur-Seal Industries in (year) which were issued prior to 1960.

b. Species Lists

A list of anadromous and coastal marine fishes for each proposed refuge or proposed additions to existing refuges was compiled. An initial list was taken from each final environmental statement; however, three major taxonomic references were consulted to add to, or delete from this initial list - List of Fishes of Alaska and Adjacent Waters with a Guide to Some of Their Literature (Quast and Hall 1972), Pacific Fishes of Canada (Hart 1973), and Freshwater Fishes of Canada (Scott and Crossman 1973). Species on the lists which were considered to be coastal marine inhabitants were verified with A List of

et al. 1970). However, further studies of certain families of fishes inhabiting Alaskan waters are needed - e.g. Cottidae - since some species have not been included in the American Fisheries Society list because their taxonomic status has not been determined. Species which have been included in some of the earlier ichthyological literature and have not recently been verified are not included in the present lists.

An anadromous species was considered to be one which spawns in fresh water, and at some point in its early life cycle, undergoes a migration to salt or brackish water. In some regions (Koyukuk, Yukon Flats) a non-migratory form of an anadromous species (inconnu, some whitefish) was determined from the literature, and therefore, this species was not included in the list. Coastal marine species were considered to be residents of nearshore neritic, lagoon, or estuarine habitats. Species which generally inhabit fresh water, but have been found to enter coastal, brackish water, were included as coastal marine forms and were indicated thus - e.g. ninespine stickleback.

c. Histories of Commercial, Sport, and Subsistence Fisheries

Historical references were consulted as well as management reports and periodicals for any data which document the commercial, sport, or subsistence utilization of anadromous fish within the boundaries of ecological concern for each proposed refuge. Knowledgeable research and management personnel with state and federal agencies also were consulted to provide additional unpublished data. In many refuge areas, historical information was sparse. However, considerable use was made of descriptions of subsistence life styles documented in Alaska Natives and the Land (Federal Field Committee 1968). Sport and commercial historical information was largely

taken from Alaska Department of Fish and Game publications.

Each refuge historical summary is a brief description of trends of activity rather than a year-by-year account. For example, some publications have traced the history of cannery operation in a particular region and have indicated when and where each company began or ceased operation. These types of data were synthesized into a general account of the contribution and significance of cannery operation in that area. Significant sources of information are appropriately referenced.

d. Habitat

Anadromous fish habitat was regularly calculated to the most upstream record for any species. All habitat, except the largest lakes, was measured in linear statute miles from drainage mouth to most upstream record using a fine string to follow the main channel as charted on standard U.S. Geological Survey 1:250,000 scale quadrangle sheets. For major lakes, habitat areas are recorded in square miles.

For major rivers such as the Yukon, Kobuk and Kuskokwim, standard mileage reference points utilized by the Alaska Department of Fish and Game were used.

In the Wood River and Kvichak River drainages, extensive spawning ground catalogs have been published (Demory, Orrell and Heinle 1964; Marriott 1963). In these two systems linear miles of habitat are taken directly from these previous calculations.

In the tabular record of this data, tributaries are listed immediately following and indented from the larger watercourse into which they flow.

Where species are not known but anadromous fish are recorded as present (Alaska Department of Fish and Game 1975), waterways are so indicated. All other systems are recorded by species present. A series of annotated U.S. Geological Survey quadrangles compiled by the Alaska Department of Fish and Game, Habitat Division, was helpful in clarifying certain habitat areas and species.

e. Key Spawning and Rearing Areas

This section is one of the weakest of this report. Almost all information came from Atkinson, Rose and Duncan (1967) except for the excellent data in the spawning ground catalogs for the Wood River and Kvichak River drainages (Demory, Orrell and Heinle 1964; Marriott 1963). Little other compiled information exists and that in Atkinson, Rose and Duncan (1967) was, at times, found to be questionable in its accuracy—for example, the existence of spawning grounds in the main channels of the lower Yukon River and above the Tazimina River falls in the Lake Iliamna area is suspect.

Areas of major lakes which are prime rearing areas for sockeye salmon, are recorded in square miles. In the Wood River and Kvichak River drainages, spawning grounds are measured in both linear miles of waterway and in acres of utilized or potentially utilizable area.

Tabular data, including the method of listing tributaries, is handled in the same manner as the habitat information.

f. Runs/Escapement

Institute on the Kvichak River and Wood River drainages. These counts are a variety of weir, aerial and tower counts and are so indicated. In a few cases, population estimates from tagging studies are available.

g. Harvest Data

Harvest includes separate statistics for the subsistence, commercial and sport fisheries. Data are in numbers of fish as reported to the managing agency.

Harvest data were obtained almost entirely from Alaska Department of Fish and Game management reports and International North Pacific Fisheries Commission Statistical Yearbooks. Where possible, commercial harvest data are tabulated by statistical district sub-units. Often such detail is not readily accessible, and data are portrayed by entire statistical district. Subsistence data are listed by village or by statistical district. Sport harvest data are almost nonexistent except for a few selected survey sites in the Kvichak River and Naknek River drainages.

h. Effort

Effort includes the amount of gear used, number of licenses and time fished where these data are available. Commercial effort is moderately documented while little sport and subsistence effort is available.

Effort information has been derived almost entirely from Alaska Department of Fish and Game management reports. The statistical divisions used in reporting the data vary. In some cases, entire areas may not have been subdivided for effort statistics, while in other parts of the state, this information is available by statistical district or even subdistrict.

1. Mylar Overlays

The following information was plotted on mylar overlays of U.S. Geological Survey 1:250,000 scale quadrangles:

1. All waterways inhabited by anadromous fish are indicated to their most upstream record of any species of interest.
2. Anadromous inhabitants are named for all waterways where present.
3. Spawning and rearing areas are identified and are rated in value for each species. This rating is most often based on a minimum of data and should be used with extreme care and recognition that, at most, only the relative abundance of spawners utilizing such an area is indicated. Where data for salmon are more readily available, a low rating indicates a spawning population of less than 5,000 fish; a medium rating indicates a spawning population of between 5,000 and 20,000 fish; and a high rating indicates in excess of 20,000 spawners may regularly use such an area. Much of the information base for this section was obtained from escapement statistics reported in Alaska Department of Fish and Game management reports and in Demory, Orrell and Heinale (1964) and Marriott (1963).
4. Recorded harvest areas are indicated as commercial, sport or subsistence along with major species harvested. Again, much of this information involved the interpretation of data presented in Alaska Department of Fish and Game management reports.
5. All operating or recently operating federal or state research research stations or field sites are plotted.

National Wildlife Refuge), potential dam sites, existing airfields, and locations of mineral occurrence of potential economic value including concentrations of existing mineral claims.

j. Statewide Mylar Overlay of Major Anadromous Fish Streams

"Major" is defined as having a regular run of the indicated species in excess of 50,000 fish. Primary data for this section was obtained from Atkinson, Rose and Duncan (1967).

Coastal Marine and Anadromous Fish
Yukon Delta National Wildlife Refuge

(o)	Pacific Lamprey	<u>Entosphenus tridentatus</u>
(o)	Arctic Lamprey	<u>Lampetra japonica</u>
	Salmon Shark	<u>Lamna ditropis</u>
	Spiny Dogfish	<u>Squalus acanthias</u>
	Pacific Herring	<u>Clupea harengus pallasii</u>
o	Bering Cisco	<u>Coregonus laurettae</u>
(o)	Broad Whitefish	<u>Coregonus nasus</u>
o	Least Cisco	<u>Coregonus sardinella</u>
o	Pink Salmon	<u>Oncorhynchus gorbuscha</u>
o	Chum Salmon	<u>Oncorhynchus keta</u>
o	Coho Salmon	<u>Oncorhynchus kisutch</u>
o	Sockeye Salmon	<u>Oncorhynchus nerka</u>
o	Chinook Salmon	<u>Oncorhynchus tshawytscha</u>
*	Round Whitefish	<u>Prosopium cylindraceum</u>
(o)	Arctic Char	<u>Salvelinus alpinus</u>
*	Inconnu	<u>Stenodus leucichthys</u>
o	Pond Smelt	<u>Hypomesus olidus</u>
	Capelin	<u>Mallotus villosus</u>
(o)	Rainbow Smelt	<u>Osmerus eperlanus</u>
j	Eulachon	<u>Thaleichthys pacificus</u>
	Toothed Cod	<u>Arctogadus borisovi</u>
	Arctic Cod	<u>Boreogadus saida</u>
	Saffron Cod	<u>Eleginus gracilis</u>
	Pacific Cod	<u>Gadus morhua macrocephalus</u>
	Walleye Pollock	<u>Theragra chalcogramma</u>
	Alaska Halibut	<u>Bothrocara pusillum</u>
	Fish Doctor	<u>Gymnelis viridis</u>
	Shortfin Halibut	<u>Lycodes brevipes</u>
	Black Halibut	<u>Lycodes diapterus</u>
	Wattled Halibut	<u>Lycodes palearis</u>
	Polar Halibut	<u>Lycodes turneri</u>
*	Threespine Stickleback	<u>Gasterosteus aculeatus</u>
*	Ninespine Stickleback	<u>Pungitius pungitius</u>
	Sailfin Sandfish	<u>Arctoscopus japonicus</u>
	Pacific Sandfish	<u>Trichodon trichodon</u>
	Alaskan Ronquil	<u>Bathymaster caeruleofasciatus</u>
	Searhcar	<u>Bathymaster signatus</u>
	Northern Ronquil	<u>Ronquilus jordani</u>
	Pighead Prickleback	<u>Acantholumpenus nackayi</u>
	Lesser Prickleback	<u>Alectridium aurantiacum</u>
	High Cockscomb	<u>Anoplarchus purpur escens</u>
	Nutcracker Prickleback	<u>Bryozoichthys lysimus</u>
	Decorated Warbonnet	<u>Chirolophis polyactocephalus</u>
	Fourline Snakeblenny	<u>Eumesogrammus praecisus</u>
	Trident Prickleback	<u>Gymnoclinus cristulatus</u>
	Slender Halibleny	<u>Lumpenus fabricii</u>
	Stout Halibleny	<u>Lumpenus medius</u>
	Snake Prickleback	<u>Lumpenus sagitta</u>

Ribbon Prickleback
 Whitebarred Blenny
 Arctic Shanny
 Stippled Gunnel
 Banded Gunnel
 Bering Gunnel
 Crescent Gunnel
 Saddleback Gunnel
 Bering Wolffish
 Quillfish
 Graveldiver
 Pacific Sand Lance
 Pacific Ocean Perch
 Silvergray Rockfish
 Dusky Rockfish
 Darkblotched Rockfish
 Blackgill Rockfish
 Northern Rockfish
 Redstripe Rockfish
 Sablefish
 Masked Greenling
 Whitespotted Greenling
 Atka Mackerel
 Scaled Sculpin
 Crested Sculpin
 Silverspotted Sculpin
 * Sharpnose Sculpin
 * Calico Sculpin
 * Coastrange Sculpin
 Spinyhead Sculpin
 Antlered Sculpin
 Unnamed Cottid
 Armorhead Sculpin
 Threaded Sculpin
 Arctic Staghorn Sculpin
 Red Irish Lord
 Yellow Irish Lord
 Northern Sculpin
 Twohorn Sculpin
 Spatulate Sculpin
 Belligerent Sculpin
 Brightbelly Sculpin
 Plain Sculpin
 Warthead Sculpin
 Great Sculpin
 * Fourhorn Sculpin
 Arctic Sculpin
 Shorthorn Sculpin
 Eyeshade Sculpin
 Tidepool Sculpin
 Spineless Sculpin
 Grunt Sculpin

Phytichthys chirus
Poroclinus rothrocki
Stichaeus punctatus
Pholis dolichogaster
Pholis fasciata
Pholis gilli
Pholis laeta
Pholis ornata
Anarhichas orientalis
Ptilichthys goodei
Scytalina cerdale
Ammodytes hexapterus
Sebastes alutus
Sebastes brevispinis
Sebastes ciliatus
Sebastes crameri
Sebastes melanostomus
Sebastes polyspinis
Sebastes proriger
Anoplopoma fimbria
Hexagrammos octogrammus
Hexagrammos stelleri
Pleurogrammus monopterygius
Archaulus biseriatus
Blepsias bilobus
Blepsias cirrhosus
Clinocottus acuticeps
Clinocottus embryum
Cottus aleuticus
Dasycottus setiger
Enophrys diceraus
Eurymen gyrinus
Gymnocanthus galeatus
Gymnocanthus pistilliger
Gymnocanthus tricuspis
Hemilepidotus hemilepidotus
Hemilepidotus jordani
Icelinus borealis
Icelus bicornis
Icelus spatula
Megalocottus platycephalus
Microcottus sellaris
Myoxocephalus jaok
Myoxocephalus niger
Myoxocephalus polyacanthocephalus
Myoxocephalus quadricornis
Myoxocephalus scorpioides
Myoxocephalus scorpius
Nautichthys pribilovius
Oligocottus maculosus
Phallocottus obtusus
Rhamphocottus richardsoni

Kelp Sculpin
 Arched Sculpin
 Scissortail Sculpin
 Roughspine Sculpin
 Ribbed Sculpin
 Spectacled Triglops
 Sturgeon Poacher
 Aleutian Alligatorfish
 Arctic Alligatorfish
 Gray Starsnout
 Spinycheek Starsnout
 Bigeye Poacher
 Blackfin Poacher
 Fourhorn Poacher
 Bering Poacher
 Tubenose Poacher
 Sawback Poacher
 Longnose Poacher
 Smooth Lumpsucker
 Blotched Snailfish
 Pimpled Lumpsucker
 Pacific Spiny Lumpsucker
 Spotted Snailfish
 Ribbon Snailfish
 Polka-dot Snailfish
 Tidepool Snailfish
 Unnamed Cyclopterid
 Showy Snailfish
 Ringtail Snailfish
 Tadpole Snailfish
 Bering Snailfish
 Lobefin Snailfish
 Arrowtooth Flounder
 Rex Sole
 Flathead Sole
 Bering Flounder
 Pacific Halibut
 Butter Sole
 Rock Sole
 Yellowfin Sole
 Longhead Dab
 Dover Sole
 Starry Flounder
 Alaska Plaice
 Greenland Halibut

Sigmistes caulias
Sigmistes smithi
Triglops forficata
Triglops macellus
Triglops pingeli
Triglops scepticus
Podothecus acipenserinus
Aspidophoroides bartoni
Aspidophoroides olriki
Asterotheca alascana
Asterotheca infraspinata
Asterotheca pentacanthus
Bathyagonus nigripinnis
Hypsagonus quadricornis
Ocella dodecaedron
Pallasina barbata
Sarritor frenatus
Sarritor leptorhynchus
Aptocycclus ventricosus
Crystallichthys cyclospilus
Eumicrotremus anadriashevi
Eumicrotremus orbis
Liparis calliodon
Liparis cyclopus
Liparis cyclostigma
Liparis florum
Liparis megacephalus
Liparis pulchellus
Liparus rutteri
Nectoliparis pelagicus
Polypera beringiana
Polypera greeni
Atheresthes stomias
Glyptocephalus zachirus
Hippoglossoides elassodon
Hippoglossoides robustus
Hippoglossoides stenolepis
Isopsetta isolepis
Lepidopsetta bilineata
Limanda aspera
Limanda proboscidea
Microstomus pacificus
Platichthys stellatus
Pleuronectes quadrituberculatus
Reinhardtius hippoglossoides

- o Anadromous
- (o) Both anadromous and resident
- * May enter coastal, brackish water

History of Subsistence Fishery
Yukon Delta National Wildlife Refuge, Alaska

Probably the earliest investigations of subsistence fishing in the Yukon Delta area occurred in 1918 at the opening of the first commercial fishing operation. The Bureau of Fisheries calculated catches on the Yukon, primarily of salmon, which totalled over one million excluding king salmon. The personal-use fishery was, and presently is, of great importance to the people of this area. Before 1900, anadromous fish taken for human consumption or for dog food were caught in wooden and woven traps, weirs, and by use of dip nets (U.S. Fish and Wildlife Service 1964). Harpoons, fish decoys (carved fish images jiggled in water to attract fish), fish hooks, bow and arrow, and fish clubs also may have been used in aboriginal times (Rostlund 1952). All five species of salmon as well as other fishes have been taken in the subsistence fishery. Chum salmon were utilized extensively for dog food, perhaps even more than for human consumption. Pink, king, coho, and sockeye salmon also were perhaps fed to dogs.

The subsistence fishery on the Yukon and its tributaries in 1918 employed several hundred fish wheels and several thousand fathoms of gill net. It is estimated chum salmon may have made up 90% of the total catch (Mattson 1962). On the Kuskokwim River, chum salmon also were used extensively by local residents for subsistence. Some conflicts between commercial and subsistence fisheries arose in various years and in several cases led to the closure of the commercial fishery on both the Yukon and Kuskokwim Rivers.

During the gold rush period, the need for more fish increased rapidly

completion of the Alaska Railroad in 1923 probably initiated the decrease in numbers of dog teams in this area. In the late 1920's the demand for salmon as dog food continued to retrogress as the airplane was beginning to replace the sled dog teams as a method of fur transport from this area to Fairbanks and Anchorage. However, salmon continued to be important in the livelihood of the Native residents of the Yukon/Kuskokwim River area, for some of the largest annual catches were made after 1928. The dependency of villages on salmon resources was greatest in the lower river areas.

The advent of airmail contracts in the late 1920's and early 1930's resulted in further elimination of dog teams which previously had carried the mail throughout this vast region. By 1938 the number of subsistence fish wheels in the Yukon River had been reduced from the 1918 high of 393 to 168. Only 115 fish wheels were in operation in the entire state in 1956.

Since the time when white men began to frequent this region, dried salmon were widely used by Natives for trading to obtain flour, sugar and other modern commodities. This type of exchange is still carried on to some extent, but has greatly declined with the advent of more cash in the economy from employment in canneries, increased construction work, some year-round employment, and primarily due to reduced values of dried fish as a commodity.

Anadromous fish harvested in this region traditionally have been air dried on racks. Some were probably buried and allowed to partially decay, providing a seasoning or a delicacy (Rostlund 1952). Considerable numbers of salmon were, and presently are, consumed during the fishing season, particularly king salmon.

Presently, there are approximately 15 villages on the lower Yukon and many

king and chum salmon. Whitefish and inconnu are also taken for subsistence purposes, primarily in the Kuskokwim. The present-day pattern of subsistence fishing in the Yukon/Kuskokwim delta region is similar to the aboriginal personal-use fishery. The following seasonal account of this fishery was adapted from Federal Field Committee (1968).

The Eskimo of the Yukon and Kuskokwim River deltas has always heavily depended on a seasonal subsistence harvest of fish, wildlife, and berries. Early in the fall, whitefish are taken before freeze-up by hook and line, by dip netting or by modified fish traps. At Kasigluk, west of Bethel, the men of the village construct a willow fence across Willidulli Slough. During the run of inconnu, the Natives dip from their boats which are moored at this fence all day and night as long as the run lasts. Much of the fish catch is air-dried, and certain visceral organs are highly prized as human food and are used in a variety of mixtures.

Intermittently during the winter, limited supplies of fresh whitefish and inconnu are caught in willow root traps placed underneath river ice. This sporadic fishing usually supplies moderate quantities of fish sufficient to satisfy day-to-day needs only. A few Natives from the village of Hooper Bay may travel to the Kuttak River to net whitefish under the ice. Occasionally in the Hooper Bay - Scammon Bay - Kashunuk area, a late winter run of smelt may be fished.

Immediately after the ice leaves the rivers in spring, smelt are obtained in large quantities, usually by dip netting, by the Eskimo of Akiak. Most of this catch is dried and stored for dog food. King salmon follow this

run of smelt and are taken and used fresh, with the majority dried for human consumption. Smaller quantities may be salted, smoked, or canned. Some families preserve 25 to 50 pounds of king salmon roe for human use, but the bulk of the roe is stored in barrels and used as dog food. King salmon are taken with both set and drift nets and are often accompanied by a few inconnu. Similar activities occur during this season at the village of Napaskiak on the Kuskokwim River. At Kasigluk, a few families remain at the village year-round to fish almost continuously for whitefish. However, salmon are not available here, so the remainder of the villagers move to traditional fish campsites on the banks of the Kuskokwim near Bethel and do not return home until late summer. Considerable quantities of salmon are taken, dried, and stored for winter use. At Newtok, near Baird Inlet, herring are available in spring and are dried for use in winter diets. Smelt may run after the herring, but not every year, and are similarly taken and preserved. Sculpins and flounder, estuarine fishes, are also utilized by these coastal Eskimos, and are taken by nets deployed in the Niglick River. The flounder are utilized fresh, but most are dried for dog food.

During the summer months, most of the subsistence fishery in the Yukon/Kuskokwim delta is directed towards salmon, which continues through July and early August. Most of the salmon are salted or dried for winter use. Whitefish and inconnu are obtained in limited amounts by netting or with fish traps. In coastal areas, herring and flounder are caught and dried. Large quantities of herring roe also are dried and used primarily for dog food.

History of Commercial Fishery
Yukon Delta National Wildlife Refuge, Alaska

Several brief historical accounts document the rise of a commercial salmon fishery within the Yukon/Kuskokwim River delta area. A synopsis of the development of this commercial fishery is presented here in two sections, one dealing with the Kuskokwim River delta, and a second documenting events in the Yukon River delta.

Kuskokwim River Delta

Prior to 1935, the Kuskokwim River had been closed to commercial fishing, while Kuskokwim Bay was being fished commercially at least as early as 1913. The first recorded report of any commercial operation occurs in the 1913 annual report, Alaska Fishery and Fur-Seal Industries, when the power schooner Bender Brothers, operated by J. E. Shields of Seattle, put up a mild cure pack of king salmon. Later, red salmon were taken from the area and hard salt packed for export. The 1920 season represented the largest commercial catch ever taken on the Kuskokwim, with five operators processing a total of some 35,000 king salmon that year. Later, in 1924 the second highest commercial harvest of salmon occurred, with three processors canning king salmon. The third highest catch recorded on the Kuskokwim was in 1961. Fishing effort on the Kuskokwim fluctuated considerably over these early years. The only period of sustained commercial effort was from 1917 to 1926, a period of nine years in which 97,591 king salmon were harvested.

Commercial fishing on the Kuskokwim River historically was primarily limited to king and sockeye salmon. Salmon were salted, pickled, or dried by small commercial enterprises. Many residents of the area felt that the export of salmon products was working a hardship on the local inhabitants, and thus commercial fishing on the Kuskokwim River was closed in 1925. It was opened in 1930, with restrictions in the form of quotas.

In the spring of 1930, a floating cannery operated in Kuskokwim Bay, but was not very successful and returned to the Alaska Peninsula in early July. Later, in the early 1930's, fishing in Kuskokwim Bay was extended, and purse seines were permitted. Several salteries began operation near the Kuskokwim River mouth, and in later years packed king and red salmon. In general, the early history of commercial fishing efforts on the Kuskokwim has shown that only one or two small operators have existed in the area, putting up a limited pack of salted fish, or else an occasional larger operation existed which usually was short-lived.

Local residents again requested a closure of the river to commercial fishing. In 1952, the export of salmon from the Kuskokwim ceased, but in 1954 the U. S. Fish and Wildlife Service provided for the taking of only king salmon for commercial purposes. In 1960, the Alaska Department of Fish and Game regulations also provided for the commercial harvest of coho salmon. Coho salmon on the Kuskokwim have never been utilized to any extent, either commercially or for subsistence purposes. This has been due primarily to the lateness of the run in August when the rainy season precludes proper drying, and many of the people are leaving their fish camps to return to the villages with their winter's supply of fish.

Commercial fishing methods on the Kuskokwim have varied greatly over the years. Purse seining and drift fishing off the mouth of the river were tried a few times, but the combination of tides, sand bars and difficult weather resulted in these ventures being short-lived. Net fishing in the river is the basic and most successful method of fishing. In the lower reaches of the river, where sand bars are extensive and where there is tidal action, set nets are primarily used. Further upriver, particularly in the Bethel area, drift nets are widely used and are the most efficient gear, but

Recently, drift gill nets have been preferred, although set gill nets have been utilized extensively. Principal species harvested have been king and coho salmon, with a few red and pink salmon. Some fish wheels are also employed. Since 1961, the commercial salmon fishery has expanded considerably, with more fish harvested by increased effort and efficiency.

In recent years, commercial operations on the Kuskokwim River delta were conducted primarily by residents of Bethel. In 1971, there were ten buyers purchasing fish at Bethel, Aniak and Goodnews (outside the refuge area of interest). The majority of the king salmon are fresh frozen, with some being mild cured. All chum, silver and red salmon are fresh frozen.

The present boundaries of the Kuskokwim management district include all waters of the Kuskokwim River drainage and all coastal waters of Alaska from Cape Newenham to 62° north latitude. This area is further divided into four subdistricts: subdistrict 335-10 includes the lower Kuskokwim River from Eek Island to Mishevik Slough near Tuluksak; subdistrict 335-20 extends from Mishevik Slough to the Kolmakoff River above Aniak; subdistrict 335-30 includes the upper Kuskokwim River above the Kolmakoff River; subdistrict 335-40 includes approximately five miles of shoreline adjacent to the village of Quinhagak located at the mouth of the Kanektok River in Kuskokwim Bay; and subdistrict 335-50 includes Goodnews Bay. Subdistrict 335-30 (Upper Kuskokwim River) has been closed to commercial salmon fishing since 1966. Subdistricts 335-10 and 335-20 almost entirely fall within the proposed Yukon Delta refuge area of concern. The remaining subdistricts are entirely outside this area, with subdistricts 335-40 and 335-50 encompassed within the area of concern of the proposed Togiak National Wildlife Refuge.

The largest commercial salmon catches and the greatest amount of fishing effort traditionally occur in the lower subdistrict (335-10). There are 12 villages within this area, with the majority of residents utilizing

salmon for both commercial and subsistence purposes. Commercial fishing presently is limited to two 12-hour periods each week during both seasons (king salmon season in June and early July and chum salmon season in the fall). During the "chum salmon season" commercial fishing is allowed only below Napakiak. In the middle subdistrict (335-20) a limited commercial salmon fishery exists which is restricted to catch quotas of 2,000 king and a combined total of 2,000 red, chum and coho salmon. Legal gear which can be fished on the Kuskokwim River are set gill nets, drift gill nets and fish wheels. This latter type of gear has not been utilized on the Kuskokwim for the past several years (Alaska Department of Fish and Game, 1974).

Yukon River Delta

Probably the first recorded interest in commercial utilization of salmon of the Yukon River occurred in the spring of 1918 when the Bureau of Fisheries and the U. S. Department of Commerce considered establishing a commercial fishing operation. As a result of this meeting, fishing commenced near the Yukon River mouth in 1918. With the exception of the years 1925 through 1931, commercial fishing was permitted every year in this area. The initial operator in this area was the Carlisle Packing Company which started a floating cannery at Andreafsky (now St. Marys) on the lower Yukon River in 1918. This floating cannery processed coho, chum, pink and king salmon. In addition, some coho and chum salmon were dry-salted. The commercial fishery in this area concentrated from the mouth of the Yukon, chiefly in Kwikluak Pass.

An investment of \$48,000 was made in this plant. One stern-wheeler, one gas boat, and three smaller power boats were operated in connection with the cannery. Fish were harvested by gill nets and with wheels of the 2-scoop pattern (Cobb 1930).

A small saltery also operated on the lower Yukon, and packed 15 barrels of chum salmon. Also reported at this time was a saltery on the Yukon approximately 12 miles from salt water which packed 110 barrels of chum and coho salmon. The Delta Fishing Company apparently also processed salmon in the area (Cobb, 1930). At the end of the 1918 season, Cobb (1930) indicates that, exclusive of gear operated by the Carlisle cannery and other processors located near the river mouth, the whites and natives on the Yukon and tributary waters used 393 fish wheels and 130 gill nets (3,250 fathoms). This catch for local requirements was 1,400,000 salmon (700 tons dried), valued at \$140,000.

The Carlisle Packing Company established several fishing camps on Kwikluak channel up to Dogfish Village. This company also purchased fish from a few independent fishermen. During the two years following 1918, the same company operated a cannery in Kwiguk Slough. The 1919 salmon run was poor, and as a result of the heavier commercial pressure the Native subsistence fishery suffered severely from a lack of adequate supplies of salmon. The 1920 runs were greater than those of 1919, but due to poor commercial fishing conditions, the cannery operation was unsuccessful. This early conflict between commercial and subsistence fisheries on the lower Yukon River led to its closure for commercial taking of salmon for export. In 1922 the Carlisle Packing Company's cannery moved out of the area to Kvichak Bay.

As a result of this controversy over commercial and subsistence fishing rights, biological investigations ensued (Gilbert and O'Malley, 1921). The objective of these studies was to ascertain the advisability of permitting the operation of one or more salmon canneries on the Yukon River, since such an operation might reduce the salmon run upriver and ultimately deprive the Natives and white residents of their subsistence stores of fish (Gilbert 1922).

These studies concluded that the 1919 salmon run was one of the poorest ever known on the Yukon and that the operation of the cannery at the river mouth aggravated the condition upstream.

Commercial fishing continued until the end of the 1924 season. Opposition by upstream subsistence fishermen led to the closure of the Yukon from 1925 to 1931. In 1931 a quota of 50,000 king salmon was permitted outside the river mouth, and in 1934 a cannery was established near the mouth. In 1935 the quota of king salmon was increased to 100,000, allowing only half of this catch to be taken inside the Yukon River mouth. Fish wheels were legalized at this time for Natives and permanent white residents. King salmon have been taken commercially every year since 1932. Since 1921 commercial catches of chum and coho salmon have been made only during 1952 to 1954, 1956, and since 1961.

Prior to 1940 the Yukon River commercial fishery was regulated by the Secretary of Commerce. However, in 1940 fishery regulation passed into the hands of the U. S. Department of Interior, Fish and Wildlife Service. Later, in 1960, the State of Alaska, Department of Fish and Game, assumed management of the fishery.

The history of regulation on the Yukon River has been one of an attempt to protect the large Eskimo and Indian subsistence fisheries. This has been accomplished by restriction of commercial fishing activities. Biological management of the resource was not attempted previous to 1953, at which time a U. S. Fish and Wildlife Service biologist was assigned part-time to the Yukon. Periodic complaints of a lack of fish in the subsistence fishery led to sporadic short term research and the subsequent closure or strict limitation of commercial fishing.

The need for acquiring biological data and a method of better utilizing the existing fisheries resources on a sustained yield basis led to a revision

system of 1960 was retained for the upper two districts, but the lower district was placed on an experimental time fishery to spread the catch, thereby insuring adequate escapement and better utilization as well as a sampling of the entire king salmon run. This relaxation of restrictions also permitted the taking of chum and coho salmon.

Operations on the Yukon River processed king, silver, chum, pink, and red salmon by canning, freezing, mild curing, hard salting, or fresh to local markets. Gear utilized on this river included gill nets and fish wheels. Set gill nets were most common, although drift gill net use is increasing. A few fish wheels are still in use.

The present-day Yukon District includes all waters of the Yukon River and its tributary streams in Alaska, and all coastal waters from Cape Stephens, including Stuart Island, southward to 62° north latitude. This large district is divided into four subdistricts: subdistrict 334-10 from the river mouth to the Anuk River, including the Black River; subdistrict 334-20 from the Anuk River to Owl Slough near Marshall; subdistrict 334-30 from Owl Slough to the mouth of the Koyukuk River; and subdistrict 334-40, the remaining drainage upstream of the Koyukuk River mouth to the Canadian border. The proposed Yukon Delta refuge area of concern encompasses all of subdistricts 334-10 and 334-20, and the lower portion of subdistrict 334-30.

King salmon catch quotas were eliminated for subdistricts 334-10 and 334-20 in 1961, and these fisheries have been regulated by scheduled weekly fishing periods since then. Two commercial salmon fishing seasons presently are permitted within these two subdistricts. The first, the king salmon season, opens June 1 and is closed by late June or early July, depending upon the timing and magnitude of runs. The second, or "fall season," occurs for four days a week following closure of the king salmon season. During this second season, primarily fall chum and coho salmon are taken. Commercial

fishing in subdistrict 334-30 is allowed for a total of four days a week until quotas of 3,000 king and 3,000 chum and coho salmon combined are taken.

History of Sport Fishery
Yukon Delta National Wildlife Refuge, Alaska

Little historical data are available documenting sport fishing in the Yukon and Kuskokwim River deltas, although sport angling was, and presently is, of low importance. Most of the residents of this subregion are engaged in subsistence and commercial fishing and, therefore, do little sport fishing; and the remoteness of the area precludes any great influx of anglers. Also, since most rivers in the area are very turbid, anadromous sport fishing is fairly unproductive. Available to the anglers are the five species of salmon, inconnu, Dolly Varden and Arctic char. Resident sport fishermen may fish occasionally for pike and grayling. No data are available on the number of anglers using the area or the number of fish harvested. Travel to this region is either by plane or boat. No private sport fishing camps exist within the area of interest. In the Yukon River area, the Andreafsky and Innoke Rivers support a minor inconnu sport fishery. Some sport angling also may occur in Kuskokwim Bay.

Anadromous Species Abbreviations

AL = Arctic lamprey

AC = Arctic char

PS = Pink salmon

CS = Chum salmon

RS = Sockeye salmon

KS = King salmon

SS = Coho salmon

In = Inconnu

BWF = Broad whitefish

ACI = Arctic cisco

LC = Least cisco

WF = Whitefish (species unidentified)

RBS = Rainbow smelt

BC = Bering cisco

UN = Species unidentified

Anadromous Fish Habitat
Yukon Delta National Wildlife Refuge
and Associated Areas of Ecological Concern

Drainage Name	Anadromous Species (Habitat in miles)								
	CS	KS	RS	SS	PS	AC	IN	AL	RES
Yukon River	255	255	255	255	255	255	255	255	70
Archuelinguk River	20	X		X	20				
Andreafsky River	95	95		75	80		X		
East Fork	100	100		85	60				
Atchuelinguk River	90	90	X						
Wilson Creek	6	6							
Spruce Creek	5	5							
Unnamed Creek (Mile 176)	3					3			
Unnamed Creek (Mile 178)	8								
Unnamed Creek	5								
Unnamed Creek (Mile 204)									
Unnamed Creek (Mile 205)	6								
Kako Creek	4					4			
Unnamed Creek (Mile 220)	2	2							
Stuyahok River	8								
Pastolik River	30		X	X		X			
Unnamed Creek	8								
Pastoliak River	X				X				
Pikmiktalik River	35			X	30	X	X		
Kogok River	.5								
Kuskokwim River	210	210	210	210	210	210	210		
Eek River	50	X	50	50	50	X	X		
Eenayarak River			35						
Kialik River	15								
Meroyuk River	25								
Johnson River	20	20		20			X		

Anadromous Fish Habitat
Yukon Delta National Wildlife Refuge
and Associated Areas of Ecological Concern

Drainage Name	Anadromous Species (Habitat in miles)							
	WF	UN						
Yukon River	X							
Archuelinguk River								
Andreafsky River								
East Fork								
Atchuelinguk River								
Wilson Creek								
Spruce Creek								
Unnamed River (Mile 170)								
Unnamed Creek (Mile 178)								
Unnamed Creek								
Unnamed Creek (Mile 204)		X						
Unnamed Creek (Mile 205)								
Kako Creek								
Unnamed Creek (Mile 220)								
Stuyahok River								
Pastolik River	X							
Unnamed Creek								
Pastoliak River								
Pikmiktalik River	X							
Kogok River								
Kuskokwim River	X							
Eek River	X							
Eenayarak River								
Kialik River								
Meroyuk River								
JOHNSON RIVER								
CONTINUED								

Anadromous Fish Habitat
Yukon Delta National Wildlife Refuge
and Associated Areas of Ecological Concern

Drainage Name	Anadromous Species (Habitat in miles)							
	CS	KS	RS	SS	PS	AC	IN	AL
Kwethluk River	30	30		30				
Unnamed River	20							
Kisaralik River	15				12			
Unnamed Creek					10			
Unnamed Creek					3			
Tuluksak River	20	20	20					
Birch Slough	12							
Ophir Creek								
Kuguklik River	30							
Unnamed Creek	5							
Unnamed Creek	5							
Kolavindrak River								
Chakehak Creek								
Unnamed Creek								
Unnamed Creek								
Toksook River	8							
Tanunak River								
Manokinak River	10							
Mashunak River	60							
Manokinak River	12							
Unnamed Creek	10							
Kokechik River								
Kun River	X	X		X	X			
B... River								
Total Habitat								

Anadromous Fish Habitat
Yukon Delta National Wildlife Refuge
and Associated Areas of Ecological Concern



Drainage Name	Anadromous Species (Key Area in miles)							
	WF	UN						
Kwathluk River								
Unnamed River								
Kiseralik River								
Unnamed Creek								
Unnamed Creek								
Tuluksak River								
Birch Slough								
Ophir Creek		X						
Kuguklik River								
Unnamed Creek								
Unnamed Creek								
Lavinarak River		X						
Chakehak Creek		X						
Unnamed Creek		X						
Unnamed Creek		X						
Toksook River								
Tanunak River		X						
Manokinak River								
Kashunak River								
Manokinak River								
Unnamed Creek								
Kakechik River		X						
Kun River								
River		X						
Total HABITAT								



**Key Anadromous Fish Spawning and Rearing Areas
Yukon Delta National Wildlife Refuge
and Associated Areas of Ecological Concern**

Drainage Name	Anadromous Species (Key Area in miles)								
	CS	KS	RS	SS	PS	AC	IN	AL	CB
Yukon River	103	105		20	25				
Archuelinguk River					20				
Andreafsky River	88	88		68	73				
East Fork	95	95		80	55				
Atchuelinguk River	40	40							
Wilson Creek									
Spruce Creek									
Unnamed Creek (Mile 170)									
Unnamed Creek (Mile 178)									
Unnamed Creek									
Unnamed Creek (Mile 204)									
Unnamed Creek (Mile 205)									
Kako Creek									
Unnamed Creek (Mile 220)									
Stuyahok River	8								
Pastolik River	30								
Unnamed Creek	8								
Pastolik River									
Pikmiktalik River	35				30				
Kogoh River									
Kuskokwilt River	90	35		85	42				
Lek River	25				25				
Eenayarak River			15						
Elalik River									
Meroyuk River	20								

**Key Anadromous Fish Spawning and Rearing Areas
Yukon Delta National Wildlife Refuge
and Associated Areas of Ecological Concern**

Drainage Name	Anadromous Species (Key Area in miles)					
	WF	UN				
Yukon River						
Archuelinguk River						
Andreafsky River						
East Fork						
Archuelinguk River						
Wilson Creek						
Spruce Creek						
Unnamed Creek (Mile 170)						
Unnamed Creek (Mile 178)						
Unnamed Creek						
Unnamed Creek (Mile 204)						
Unnamed Creek (Mile 205)						
Nake Creek						
Unnamed Creek						
Stuyahok River						
Pastolik River						
Unnamed Creek						
Pastolik River						
Pikmiktalik River						
Koguk River						
Pastolik River						
Lek River						
Lenayarak River						
Pastolik River						
Meroyuk River						
Yukon River						

Key Anadromous Fish Spawning and Rearing Areas
Yukon Delta National Wildlife Refuge
and Associated Areas of Ecological Concern

Drainage Name	Anadromous Species (Key Area in miles)						
	CS	KS	RS	SS	PS	AC	IN
Kwethluk River	22	28		28			
Unnamed River	12						
Kisaralik River	10				10		
Unnamed Creek							
Unnamed Creek					3		
Tuluksak River							
Birch Slough							
Ophir Creek							
Kuguklik River	30						
Unnamed Creek	5						
Unnamed Creek							
Kolavinarak River							
Chakchak Creek							
Unnamed Creek							
Unnamed Creek							
Toksook River	5						
Tanunak River							
Manokinak River							
Lashunuk River							
Manokinak River							
Unnamed Creek							
Kokechik River							
Kun River							
Black River							
Key Area Total	634	399	15	289	283		

Key Anadromous Fish Spawning and Rearing Areas
Yukon Delta National Wildlife Refuge
and Associated Areas of Ecological Concern

Drainage Area	Anadromous Species (Key Area in circle)					
	WF	UN				
Witlak River						
Unnamed River						
Kisratik River						
Unnamed Creek						
Unnamed Creek						
Tuluksak River						
Birch Slough						
Ophir Creek						
Kuguklik River						
Unnamed Creek						
Unnamed Creek						
Kolavinarak River						
Chakchak Creek						
Unnamed Creek						
Unnamed Creek						
Toksook River						
Tanunak River						
Manokinak River						
Kashuuk River						
Manokinak River						
Unnamed Creek						
Eokechik River						
Kun River						
Black River						
Key Area Total						

Magnitude of Runs or Escapements

Yukon Delta National Wildlife Refuge

Yukon River (Total drainage)		Chum Salmon Total Run		Yukon River (Total drainage)		Chum Salmon Escapement	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	3,175,824	1963		1970	
1964		1971	1,560,157	1964		1971	
1965		1972		1965		1972	
1966		1973		1966		1973	
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Petersen Tag - recapture population estimates, summer chum run only

Notes: Petersen Tag - recapture population estimates, summer chum run only

Yukon River (Andreafsky East Fork)		Chum Salmon		Yukon River (Andreafsky)		Chum Salmon	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	84,090	1963		1970	91,717
1964		1971	98,095	1964	12,810	1971	71,748
1965		1972	41,460	1965	14,670*	1972	23,770
1966	25,619	1973	10,149*	1966	18,145	1973	61,761
1967		1974		1967	14,495	1974	
1968	17,600	1975		1968	74,600	1975	
1969	119,000			1969	159,500		

Notes: Aerial survey
*Incomplete survey, probably low count
Summer chum run only
1968 contains small numbers of pink salmon

Notes: Aerial survey
*Incomplete survey, probably low count
Summer chum run only
1967 and 1968 contain small numbers of pink salmon

Magnitude of Runs or Escapements
Yukon Delta National Wildlife Refuge

Yukon River (Kukvelinguk River) Chum Salmon				Yukon River (upstream of refuge) Chum Salmon			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	10,000
1964		1971	8,265*	1964	12,250 - 14,250*	1971	10,000
1965		1972		1965	102,375	1972	100,000
1966		1973		1966	39,700	1973	86,900
1967		1974		1967	116,000	1974	
1968		1975		1968	55,370*	1975	
1969				1969	425*		
Notes: Aerial survey * Incomplete survey - count probably low Summer chum run only				Notes: Aerial survey * Incomplete survey - count probably low Summer chum run only Anvik and Salcha Rivers were included in various years in these surveys			
Yukon River (Total drainage) King Salmon Total Run				Yukon River (Total drainage) King Salmon Total Escapement			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	226,740	1963		1970	127,900
1964		1971		1964		1971	
1965		1972		1965		1972	
1966		1973		1966		1973	
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			
Notes: Petersen Tag - recapture estimates				Notes: Petersen Tag - recapture estimates			

Magnitude of Runs or Escapement
Yukon Delta National Wildlife Refuge

Yukon River (Andreafsky) King Salmon				Yukon River (Andreafsky East Fork) King Salmon			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	574*	1963		1970	665
1964	705	1971	1,284	1964	867	1971	1,904
1965	355*	1972	582*	1965		1972	798
1966	303	1973	788	1966	361	1973	825*
1967	276*	1974		1967		1974	
1968	383	1975		1968	380	1975	
1969	274*			1969	231*		

Notes: Aerial survey
*Incomplete survey - probably low count

Notes: Aerial survey
* Incomplete survey - probably low count

Yukon River (Atchuelinguk River) King Salmon				Yukon River (upstream of refuge) King Salmon			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963	484	1970	4,160*
1964		1971	137*	1964	1,037	1971	1,854*
1965		1972		1965	1,961*	1972	
1966		1973		1966	2,001	1973	
1967		1974		1967	869	1974	
1968		1975		1968	2,146 - 2,246*	1975	
1969				1969	1,482		

Notes: Aerial survey
*Incomplete survey - probably a low low count

Notes: Aerial surveys except for fishway counts at Whitehorse Dam in Yukon Territory
*Incomplete survey - probably low count

Magnitude of Runs or Escapements
Yukon Delta National Wildlife Refuge

Kuskokwim River (Kwithluk River) King Salmon				Kuskokwim River (Kisaralik River) King Salmon			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	531
1964		1971		1964		1971	
1965		1972	68*	1965	194*	1972	
1966	516	1973		1966	204*	1973	152
1967		1974		1967		1974	
1968	800	1975		1968	487	1975	
1969				1969			

Notes: Aerial survey
* Incomplete survey - probably a low count

Notes: Aerial survey
* Incomplete survey - probably a low count

Kuskokwim River (upstream)* King Salmon							
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	8,014	1963		1970	
1964		1971	636**	1964		1971	
1965	646**	1972	2,132**	1965		1972	
1966	5,447**	1973	939**	1966		1973	
1967	1,233**	1974		1967		1974	
1968	5,179	1975		1968		1975	
1969	3,386			1969			

Notes: Aerial surveys except for tower counts on the Kogrukluk R. during 1969, 1970 & 1972.

*Aniak, Salmon, Kipchuk, Chukowan, & Kogrukluk Rivers were included in various years.

Notes:

Subsistence Harvest

Yukon Delta National Wildlife Refuge

King Salmon				King Salmon			
		Kuskokwim 335-10				Kuskokwim 335-10	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	2,065	1963		1970	3,931
1964	1,857*	1971	1,882	1964	1,857*	1971	1,645
1965	2,737	1972	1,969	1965	513	1972	1,292
1966	2,872	1973	1,981	1966	1,875	1973	1,864
1967	4,375	1974		1967	2,766	1974	
1968	2,760			1968	1,360		
1969	2,037			1969	2,888		

Notes: Eek village
*Includes Kasigluk village harvest

Notes: Kasigluk village
*Includes Eek village harvest

King Salmon				King Salmon			
		Kuskokwim 335-10				Kuskokwim 335-10	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	3,558	1963		1970	1,111
1964	1,826	1971	1,841	1964	414	1971	241
1965	1,978	1972	3,214	1965		1972	10
1966	3,061	1973	2,859	1966	205	1973	75
1967	3,338	1974		1967	957	1974	
1968	2,026			1968	70		
1969	2,195			1969	385		

Notes: Tuntutuliak village

Notes: Kwigillingok, Kipnuk, and Konigan villages

Subsistence Harvest
Yukon Delta National Wildlife Refuge

King Salmon Kuskokwim 335-10				King Salmon Kuskokwim 335-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	4,680	1963		1970	1,205
1964	636	1971	1,978	1964		1971	548
1965	490	1972	2,496	1965		1972	864
1966	2,875	1973	2,663	1966		1973	1,106
1967	1,926	1974		1967		1974	
1968	1,360			1968			
1969	2,279			1969			

Notes: Nunapitchuk village

Notes: Armauthluak village

King Salmon Kuskokwim 335-10				King Salmon Kuskokwim 335-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	4,960	1963		1970	542
1964	2,677	1971	1,868	1964	339	1971	570
1965	1,670	1972	2,009	1965	678	1972	196
1966	3,592	1973	1,763	1966	301	1973	586
1967	3,922	1974		1967	1,327	1974	
1968	2,317			1968	393		
1969	3,546			1969	457		

Notes: Napakiak village

Notes: Oscarville village

Subsistence Harvest

Yukon Delta National Wildlife Refuge

King Salmon				King Salmon			
		Kuskokwim 335-10				Kuskokwim 335-10	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	17,026	1963		1970	7,932
1964	4,114	1971	8,731	1964	3,262	1971	5,564
1965	3,342	1972	8,371	1965	4,538	1972	5,137
1966	7,604	1973	8,898	1966	6,135	1973	3,444
1967	11,772	1974		1967	6,889	1974	
1968	4,900			1968	3,549		
1969	7,472			1969	3,187		

Notes: Bethel Village

Notes: Kwethluk village

King Salmon				King Salmon			
		Kuskokwim 335-10				Kuskokwim 335-10	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	7,022	1963		1970	3,290
1964	3,488	1971	4,818	1964	2,495	1971	2,688
1965	3,952	1972	3,872	1965	1,774	1972	1,899
1966	4,957	1973	2,592	1966	3,941	1973	1,895
1967	5,543	1974		1967	3,790	1974	
1968	3,415			1968	1,332		
1969	2,602			1969	1,275		

Notes: Akiakchak village

Notes: Akiak village

Subsistence Harvest

Yukon Delta National Wildlife Refuge

King Salmon				King Salmon			
		Kuskokwim 335-20				Kuskokwim 335-20	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	1,995	1963		1970	2,146
1964	572	1971	1,280	1964	710	1971	2,355
1965	1,019	1972	1,318	1965	841	1972	2,604
1966	1,559	1973	1,322	1966	1,918	1973	1,309
1967	1,710	1974		1967	1,733	1974	
1968	1,048			1968	1,463		
1969	1,131			1969	2,083		

Notes: Tuluksak Village

Notes: Lower Kalskag Village

King Salmon				King Salmon			
		Kuskokwim 335-20				Kuskokwim 335-10	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	734	1963		1970	3,446
1964	1,143	1971	601	1964	2,201	1971	1,916
1965	719	1972	401	1965	1,412	1972	1,578
1966	1,333	1973	938	1966	2,935	1973	2,048
1967	1,699	1974		1967	3,091	1974	
1968	1,404			1968	1,647		
1969	1,623			1969	2,227		

Notes: Upper Kalskag Village

Notes: Napaskiak Village

Subsistence Harvest
Yukon Delta National Wildlife Refuge

Coho Salmon Kuskokwim 335-10				Coho Salmon Kuskokwim 335-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	265	1964		1971	35
1965		1972	46	1965		1972	
1966		1973	3,282	1966		1973	
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Eek village

Notes: Kasigluk village

Coho Salmon Kuskokwim 335-10				Coho Salmon Kuskokwim 335-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	15	1964		1971	
1965		1972	28	1965		1972	
1966		1973	389	1966		1973	
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Tuntutuliak village

Notes: Kwigillingok, Kipnuk, and Kongig-anak villages

Subsistence Harvest
Yukon Delta National Wildlife Refuge

Coho Salmon Kuskokwim 335-10				Coho Salmon Kuskokwim 335-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	133	1964		1971	673
1965		1972		1965		1972	
1966		1973	11	1966		1973	
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Nunapitchuk village

Notes: Atmauthluak village

Coho Salmon Kuskokwim 335-10				Coho Salmon Kuskokwim 335-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	66	1964		1971	1
1965		1972	28	1965		1972	
1966		1973	660	1966		1973	
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Napakiak village

Notes: Oscarville village

Subsistence Harvest
Yukon Delta National Wildlife Refuge

Coho Salmon Kuskokwim 335-10				Coho Salmon Kuskokwim 335-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	11	1964		1971	3,184
1965		1972		1965		1972	352
1966		1973		1966		1973	8,902
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Napaskiak village

Notes: Bethel village

Coho Salmon Kuskokwim 335-10				Coho Salmon Kuskokwim 335-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	1,038	1964		1971	168
1965		1972	292	1965		1972	125
1966		1973	2,089	1966		1973	1,341
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Kwethluk village

Notes: Akiakchak village

Subsistence Harvest
Yukon Delta National Wildlife Refuge

Coho Salmon				Coho Salmon			
		Kuskokwim				Kuskokwim	
		335-10				335-20	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	25	1964		1971	50
1965		1972	9	1965		1972	25
1966		1973	1,116	1966		1973	69
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Akiak village

Notes: Tuluksak village

Coho Salmon				Coho Salmon			
		Kuskokwim				Kuskokwim	
		335-20				335-20	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	194	1964		1971	125
1965		1972	178	1965		1972	43
1966		1973	1,943	1966		1973	194
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Lower Kalskag village

Notes: Upper Kalskag village

Subsistence Harvest
Yukon Delta National Wildlife Refuge

Other Salmon**

**Kuskokwim
335-10**

Other Salmon**

**Kuskokwim
335-10**

Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	4,855	1963		1970	5,731
1964	3,151 *	1971	2,213	1964	3,151 *	1971	2,043
1965	2,898	1972	783	1965	4,041	1972	1,934
1966	1,324	1973	2,401	1966	3,058	1973	6,090
1967	1,922	1974		1967	2,309	1974	
1968	3,503	1975		1968	4,311	1975	
1969	3,436			1969	3,308		

Notes: Eek village
**Majority is chum salmon but includes small numbers of red, coho, pink and small king salmon
* includes Kasigluk village harvest

Notes: Kasigluk village
**Majority is chum salmon but includes small numbers of red, coho, pink and small king salmon
* includes Eek village harvest

Other Salmon**

**Kuskokwim
335-10**

Other Salmon**

**Kuskokwim
335-10**

Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	10,600	1963		1970	3,937
1964	8,421	1971	9,964	1964	2,353	1971	1,110
1965	18,993	1972	11,103	1965	0	1972	1,284
1966	9,747	1973	13,512	1966	680	1973	807
1967	11,531	1974		1967	2,846	1974	
1968	14,090	1975		1968	2,800	1975	
1969	17,462			1969	2,481		

Notes: Tuntutuliak village
**Majority is chum salmon but includes small numbers of red, coho, pink and small king salmon

Notes: Kwigillingok, Kipnuk, Kongiganak villages
**Majority is chum salmon but includes small numbers of red, coho, pink and

Subsistence Harvest
Yukon Delta National Wildlife Refuge

Other Salmon**				Kuskokwim 335-10				Other Salmon**				Kuskokwim 335-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	11,412	1963		1970	1,191	1963		1970		1963		1970	1,191
1964	1,171	1971	3,375	1964		1971	1,197	1964		1971		1964		1971	1,197
1965	4,251	1972	5,600	1965		1972	947	1965		1972		1965		1972	947
1966	4,145	1973	7,663	1966		1973	2,818	1966		1973		1966		1973	2,818
1967	6,278	1974		1967		1974		1967		1974		1967		1974	
1968	7,731	1975		1968		1975		1968		1975		1968		1975	
1969	6,934			1969				1969				1969			

Notes: Nunapitchuk village

**Majority is chum salmon but includes small numbers of red, coho, pink and small king salmon

Notes: Atmauthluak village

**Majority is chum salmon but include small numbers of red, coho, pink and small king salmon

Other Salmon**				Kuskokwim 335-10				Other Salmon**				Kuskokwim 335-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	16,371	1963		1970	4,669	1963		1970		1963		1970	4,669
1964	12,312	1971	4,427	1964	487	1971	1,675	1964	487	1971		1964	487	1971	1,675
1965	12,928	1972	5,191	1965	8,010	1972	498	1965	8,010	1972		1965	8,010	1972	498
1966	9,275	1973	8,461	1966	407	1973	3,081	1966	407	1973		1966	407	1973	3,081
1967	12,685	1974		1967	2,580	1974		1967	2,580	1974		1967	2,580	1974	
1968	12,700	1975		1968	2,104	1975		1968	2,104	1975		1968	2,104	1975	
1969	12,390			1969	2,743			1969	2,743			1969	2,743		

Notes: Napakiak village

**Majority is chum salmon but includes small numbers of red, coho, pink

Notes: Oscarville village

**Majority is chum salmon but include small numbers of red, coho, pink

Subsistence Harvest
Yukon Delta National Wildlife Refuge

Other Salmon** Kuskokwim 335-10				Other Salmon** Kuskokwim 335-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	11,169	1963		1970	33,475
1964	6,275	1971	7,039	1964	15,623	1971	9,905
1965	25,206	1972	8,858	1965	19,099	1972	16,885
1966	8,743	1973	8,478	1966	14,011	1973	33,930
1967	8,585	1974		1967	14,055	1974	
1968	12,409	1975		1968	28,603	1975	
1969	11,655			1969	14,613		

Notes: Napaskiak village

**Majority is chum salmon but includes small numbers of red, coho, pink and small king salmon

Notes: Bethel village

**Majority is chum salmon but include small numbers of red, coho, pink and small king salmon

Other Salmon** Kuskokwim 335-10				Other Salmon** Kuskokwim 335-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	27,702	1963		1970	29,776
1964	19,186	1971	13,941	1964	10,096	1971	12,298
1965	37,780	1972	11,721	1965	25,138	1972	9,266
1966	18,707	1973	19,565	1966	15,049	1973	9,864
1967	23,872	1974		1967	13,584	1974	
1968	36,645	1975		1968	19,461	1975	
1969	23,462			1969	10,306		

Notes: Kwethluk village

**Majority is chum salmon but includes

Notes: Akiakchak village

**Majority is chum salmon but include

Subsistence Harvest

Yukon Delta National Wildlife Refuge

Other Salmon** Kuskokwim 335-10				Other Salmon** Kuskokw 335-2			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	13,003	1963		1970	7,626
1964	9,659	1971	9,264	1964	9,777	1971	5,115
1965	12,297	1972	5,108	1965	12,820	1972	5,145
1966	10,622	1973	6,118	1966	11,670	1973	5,946
1967	9,332	1974		1967	8,898	1974	
1968	13,775	1975		1968	11,114	1975	
1969	9,854			1969	6,058		

Notes: Akiak village

**Majority is chum salmon but includes small numbers of red, coho, pink and small king salmon

Notes: Tuluksak village

**Majority is chum salmon but includes small numbers of red, coho, pink and small king salmon

Other Salmon** Kuskokwim 335-20				Other Salmon** Kuskokw 335-2			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	11,158	1963		1970	5,309
1964	9,472	1971	3,509	1964	11,391	1971	3,530
1965	21,906	1972	3,490	1965	11,970	1972	1,460
1966	10,346	1973	2,873	1966	6,236	1973	5,607
1967	16,018	1974		1967	8,364	1974	
1968	8,114	1975		1968	9,733	1975	
1969	8,468			1969	9,413		

Notes: Lower Kalskag village

**Majority is chum salmon but includes small numbers of red, coho, pink and small king salmon

Notes: Upper Kalskag village

**Majority is chum salmon but includes small numbers of red, coho, pink and small king salmon

Subsistence Harvest

Yukon Delta National Wildlife Refuge

King Salmon				King Salmon			
		Yukon				Yukon	
		334-10				334-10	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	731	1964		1971	986
1965		1972	462	1965		1972	647
1966		1973	165	1966		1973	373
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Sheldon's Point village

Notes: Alakanuk village

King Salmon				King Salmon			
		Yukon				Yukon	
		334-10				334-10	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	543	1964		1971	
1965		1972	300	1965		1972	
1966		1973	899	1966		1973	94
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Emmonak village

Notes: Lamont Slough village

Subsistence Harvest

Yukon Delta National Wildlife Refuge

King Salmon Yukon 334-10				King Salmon Yukon 334-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	2	1964		1971	315
1965		1972	37	1965		1972	366
1966		1973	12	1966		1973	714
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Aproka Pass village

Notes: Kotlik village

Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish

Notes:

Notes:

Subsistence Harvest

Yukon Delta National Wildlife Refuge

Other Salmon* Yukon 334-10				Other Salmon* Yukon 334-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	1,680	1964		1971	6,716
1965		1972	3,514	1965		1972	5,633
1966		1973	2,267	1966		1973	5,614
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Sheldon's Point village
*Mostly chum salmon, but includes small numbers of pink and coho salmon

Notes: Alakanuk village
*Mostly chum salmon, but includes small numbers of pink and coho salmon

Other Salmon Yukon 334-10				Other Salmon Yukon 334-10			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	4,370	1964		1971	
1965		1972	5,178	1965		1972	12
1966		1973	9,724	1966		1973	156
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Emmonak village
*Mostly chum salmon, but includes small numbers of pink and coho salmon

Notes: Lamont Slough village
*Mostly chum salmon, but includes small numbers of pink and coho salmon

Subsistence Harvest

Yukon Delta National Wildlife Refuge

Other Salmon*				Other Salmon*			
		Yukon 334-10				Yukon 334-10	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	541	1964		1971	4,583
1965		1972	332	1965		1972	4,824
1966		1973	520	1966		1973	5,775
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Aproka Pass village
*Mostly chum salmon, but includes small numbers of pink and coho salmon

Notes: Kotlik village
*Mostly chum salmon, but includes small numbers of pink and coho salmon

Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish

Notes:

Notes:

Subsistence Harvest

Yukon Delta National Wildlife Refuge

King Salmon Yukon 334-20				King Salmon Yukon 334-20			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	1,648	1964		1971	346
1965		1972	907	1965		1972	203
1966		1973	741	1966		1973	391
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Mountain Village

Notes: Pitkas Point Village

King Salmon Yukon 334-20				King Salmon Yukon 334-20			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	1,352	1964		1971	1,120
1965		1972	1,312	1965		1972	1,513
1966		1973	672	1966		1973	1,303
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: St. Mary's village

Notes: Pilot Station Village

Subsistence Harvest

Yukon Delta National Wildlife Refuge

King Salmon				King Salmon			
		Yukon 334-20,-30				Yukon 334-30	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	819	1964		1971	849
1965		1972	656	1965		1972	914
1966		1973	955	1966		1973	1,126
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Marshall village

Notes: Russian Mission village

Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish

Notes:

Notes:

Subsistence Harvest
Yukon Delta National Wildlife Refuge

Other Salmon*				Other Salmon*			
		Yukon 334-20				Yukon 334-20	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	6,649	1964		1971	3,561
1965		1972	5,923	1965		1972	2,329
1966		1973	6,142	1966		1973	1,393
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Mountain Village

*Mostly chum salmon, but includes small numbers of pink and coho salmon

Notes:

Pitkas Point village

*Mostly chum salmon, but includes small numbers of pink and coho salmon

Other Salmon				Other Salmon			
		Yukon 334-20				Yukon 334-20	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	7,988	1964		1971	5,058
1965		1972	8,803	1965		1972	7,021
1966		1973	6,962	1966		1973	7,424
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: St. Mary's village

*Mostly chum salmon, but includes small numbers of pink and coho salmon

Notes: Pilot Station village

*Mostly chum salmon, but includes small numbers of pink and coho salmon

Subsistence Harvest
Yukon Delta National Wildlife Refuge

Other Salmon*				Other Salmon*			
		Yukon 334-20,-30				Yukon 334-30	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	5,455	1964		1971	2,378
1965		1972	4,743	1965		1972	2,737
1966		1973	4,400	1966		1973	1,997
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Marshall village
*Mostly chum salmon, but includes small numbers of pink and coho salmon

Notes: Russian Mission village
*Mostly chum salmon, but includes small numbers of pink and coho salmon

Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish

Notes:

Notes:

Subsistence Effort

Yukon Delta National Wildlife Refuge

		Number of 5½-inch Gill Nets	Number of 8½-inch Gill Nets		
	1963				Note: Mountain Village
	1964				
	1965				
	1966				
	1967				
	1968				
	1969				
	1970				
	1971	46	10		
	1972	45	26		
	1973	59	32		
	1974				
	1975				

Subsistence Effort

Yukon Delta National Wildlife Refuge

		Number of 5 $\frac{1}{2}$ -inch Gill Nets	Number of 8 $\frac{1}{2}$ -inch Gill Nets		
	1963				Note: Pitkas Point village
	1964				
	1965				
	1966				
	1967				
	1968				
	1969				
	1970				
	1971	12	1		
	1972	6	5		
	1973	11	4		
	1974				
	1975				

Subsistence Effort

Yukon Delta National Wildlife Refuge

		Number of 5 $\frac{1}{2}$ -inch Gill Nets	Number of 8 $\frac{1}{2}$ -inch Gill Nets		
	1963				Note: St. Mary's village
	1964				
	1965				
	1966				
	1967				
	1968				
	1969				
	1970				
	1971	41	15		
	1972	37	24		
	1973	27	7		
	1974				
	1975				

Subsistence Effort

Yukon Delta National Wildlife Refuge

		Number of 5 $\frac{1}{2}$ -inch Gill Nets	Number of 8 $\frac{1}{2}$ -inch Gill Nets		
1963					Note: . Pilot Station village
1964					
1965					
1966					
1967					
1968					
1969					
1970					
1971		20	28		
1972		24	29		
1973		43	23		
1974					
1975					

Subsistence Effort

Yukon Delta National Wildlife Refuge

		Number of 5½-inch Gill Nets	Number of 8½-inch Gill Nets	Fish Wheel	
	1963				Note: Marshall village
	1964				
	1965				
	1966				
	1967				
	1968				
	1969				
	1970				
	1971	33	14		
	1972	27	13	1	
	1973	33	18		
	1974				
	1975				

Subsistence Effort

Yukon Delta National Wildlife Refuge

		Number of 5 $\frac{1}{2}$ -inch Gill Nets	Number of 8 $\frac{1}{2}$ -inch Gill Nets		
	1963				Note: Russian Mission village
	1964				
	1965				
	1966				
	1967				
	1968				
	1969				
	1970				
	1971	15	8		
	1972	10	17		
	1973	14	5		
	1974				
	1975				

Subsistence Effort

Yukon Delta National Wildlife Refuge

		Number of 5½-inch Gill Nets	Number of 8½-inch Gill Nets		
	1963				Note: Sheldon's Point village
	1964				
	1965				
	1966				
	1967				
	1968				
	1969				
	1970				
	1971	26	14		
	1972	22	17		
	1973	36			
	1974				
	1975				

Subsistence Effort

Yukon Delta National Wildlife Refuge

		Number of 5 $\frac{1}{2}$ -inch Gill Nets	Number of 8 $\frac{1}{2}$ -inch Gill Nets		
	1963				Note: Alakanuk village
	1964				
	1965				
	1966				
	1967				
	1968				
	1969				
	1970				
	1971	93	23		
	1972	67	41		
	1973	90	27		
	1974				
	1975				

Yukon Delta National Wildlife Refuge

		Number of 5 $\frac{1}{2}$ -inch Gill Nets	Number of 8 $\frac{1}{2}$ -inch Gill Nets		
	1963				Note: Emmonak village
	1964				
	1965				
	1966				
	1967				
	1968				
	1969				
	1970				
	1971	74	0		
	1972		25		
	1973	76	27		
	1974				
	1975				

	Number of 5½-inch Gill Nets	Number of 8½-inch Gill Nets		
1963				Note: Lamont Slough village
1964				
1965				
1966				
1967				
1968				
1969				
1970				
1971				
1972	4			
1973	2	1		
1974				
1975				

Yukon Delta National Wildlife Refuge

		Number of 5 $\frac{1}{2}$ -inch Gill Nets	Number of 8 $\frac{1}{2}$ -inch Gill Nets		
1963					Note: Aproka Pass village
1964					
1965					
1966					
1967					
1968					
1969					
1970					
1971		2			
1972		4	3		
1973		6			
1974					
1975					

Yukon Delta National Wildlife Refuge

		Number of 5½-inch Gill Nets	Number of 8½-inch Gill Nets		
	1963				Note: Kotlik village
	1964				
	1965				
	1966				
	1967				
	1968				
	1969				
	1970				
	1971	53	3		
	1972	36	16		
	1973	49	7		
	1974				
	1975				

Yukon Delta National Wildlife Refuge

King Salmon		Kuskokwim 335-10		King Salmon		Kuskokwim 335-20	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	37,827	1963		1970	1,463
1964	15,754	1971	37,835	1964	1,395	1971	2,439
1965	21,452	1972	39,040	1965	537	1972	1,755
1966	25,212	1973	30,594	1966	333	1973	2,244
1967	29,371	1974		1967	615	1974	
1968	33,452	1975		1968	826	1975	
1969	43,144			1969	853		

Notes:

Notes:

Coho Salmon		Kuskokwim 335-10		Coho Salmon		Kuskokwim 335-20	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	37,300	1963		1970	1,463
1964	26,013	1971	5,253	1964	1,823	1971	
1965	12,191	1972	22,579	1965	1,111	1972	
1966	21,675	1973	130,793	1966	1,310	1973	
1967	54,997	1974		1967	1,316	1974	
1968	125,929	1975		1968	1,377	1975	
1969	81,953			1969	1,812		

Notes:

Notes:

Commercial Harvest

Yukon Delta National Wildlife Refuge

Chum Salmon

Kuskokwim
335-10,-20 *

Year	No. of Fish	Year	No. of Fish
1963		1970	1,664
1964		1971	68,914
1965		1972	78,619
1966		1973	148,746
1967	148	1974	
1968	187	1975	
1969	7,165		

Notes: * Majority of harvest occurs in
335-10

Sockeye Salmon

Kuskokwim
335-10,-20 *

Year	No. of Fish	Year	No. of Fish
1963		1970	117
1964		1971	2,606
1965		1972	102
1966		1973	369
1967		1974	
1968		1975	
1969	-322		

Notes: * Majority of harvest occurs in
335-10

Pink Salmon

Kuskokwim
335-10,-20 *

Year	No. of Fish	Year	No. of Fish
1963		1970	44
1964		1971	
1965		1972	8
1966		1973	33
1967		1974	
1968		1975	
1969			

Notes: * Majority of harvest occurs in
335-10.

Whitefish

Kuskokwim
335-10,-20 *

Year	No. of Fish	Year	No. of Fish
1963		1970	10,447
1964		1971	12,214
1965		1972	4,503
1966		1973	5,910
1967	2,817	1974	
1968	6,182	1975	
1969	6,393		

Notes: * Majority of harvest occurs in 335-10

Commercial Harvest
Yukon Delta National Wildlife Refuge

Inconnu		Kuskokwim 335-10, -20*		Arctic Char		Kuskokwim 335-10, -20*	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	21	1963		1970	
1964		1971		1964		1971	
1965		1972	100	1965		1972	
1966		1973	637	1966		1973	
1967	1	1974		1967		1974	
1968	48	1975		1968		1975	
1969	140			1969	34		

Notes: * Majority of harvest occurs in 335-10

Notes: * Majority of harvest occurs in 335-10

King Salmon		Yukon 334-10		King Salmon		Yukon 334-11	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	57,681	1963		1970	4,992
1964	67,555	1971	86,042	1964		1971	3,038
1965	89,268	1972	70,052	1965	2,266	1972	2,730
1966	70,788	1973	56,981	1966	2,495	1973	7,193
1967	104,350	1974		1967	2,110	1974	
1968	79,465	1975		1968	4,047	1975	
1969	70,862			1969	1,405		

N

Notes: King Salmon Season only

Commercial Harvest

Yukon Delta National Wildlife Refuge

King Salmon Yukon 334-12				King Salmon Yukon 334-13			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	23,367	1963		1970	5,258
1964		1971	25,105	1964		1971	7,135
1965	18,140	1972	11,638	1965	8,137	1972	3,435
1966	20,038	1973	28,166	1966	5,460	1973	4,302
1967	25,811	1974		1967	6,203	1974	
1968	27,859	1975		1968	7,997	1975	
1969	21,894			1969	9,635		

Notes: Taken during king salmon season only

Notes: Taken during king salmon season only

King Salmon Yukon 334-14				King Salmon Yukon 334-15			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	5,351	1963		1970	6,079
1964		1971	10,342	1964		1971	16,853
1965	6,836	1972	9,073	1965	23,729	1972	18,375
1966	4,143	1973	3,468	1966	10,858	1973	756
1967	7,730	1974		1967	27,202	1974	
1968	3,202	1975		1968	6,700	1975	
1969	5,594			1969	12,875		

Notes:

Commercial Harvest

Yukon Delta National Wildlife Refuge

King Salmon Yukon 334-16				King Salmon Yukon 334-17			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	849	1963		1970	4,890
1964		1971	3,924	1964		1971	12,037
1965	4,458	1972	5,276	1965	16,114	1972	13,059
1966	3,009	1973	40	1966	12,898	1973	6,683
1967	4,729	1974		1967	18,583	1974	
1968	919	1975		1968	17,378	1975	
1969	3,833			1969	9,930		

Notes: Taken during king salmon season only

Notes: Taken during king salmon season only

King Salmon Yukon 334-18				King Salmon Yukon 334-19			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	6,716	1963		1970	179
1964		1971	5,963	1964		1971	1,645
1965	9,588	1972	4,473	1965		1972	1,993
1966	11,822	1973	2,182	1966	5	1973	4,191
1967	11,967	1974		1967	15	1974	
1968	11,363	1975		1968		1975	
1969	5,422			1969	274		

Notes: Taken during king salmon season only

Notes: Taken during fall salmon season only

Commercial Harvest

Yukon Delta National Wildlife Refuge

King Salmon * Yukon 334-11				King Salmon * Yukon 334-12			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971		1964		1971	574
1965		1972	115	1965		1972	669
1966		1973	282	1966		1973	1,796
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: * Taken during fall season only

Notes: * Taken during fall season only

King Salmon * Yukon 334-13				King Salmon * Yukon 334-14			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	69	1964		1971	234
1965		1972	173	1965		1972	330
1966		1973	355	1966		1973	176
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: * Taken during fall season only

Notes: * Taken during fall season only

Commercial Harvest

Yukon Delta National Wildlife Refuge

King Salmon* Yukon 334-15				King Salmon* Yukon 334-16			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	287	1964		1971	25
1965		1972	207	1965		1972	55
1966		1973	618	1966		1973	236
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: *Taken during fall season only

Notes: *Taken during fall season only

King Salmon * Yukon 334-17				King Salmon* Yukon 334-18			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	409	1964		1971	47
1965		1972	410	1965		1972	34
1966		1973	501	1966		1973	227
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: *Taken during fall season only

Notes: *Taken during fall season only

Commercial Harvest

Yukon Delta National Wildlife Refuge

Chum Salmon *				Chum Salmon *			
		Yukon 334-10				Yukon 334-10	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	87,169	1963		1970	232,969
1964		1971	36,077	1964	8,347	1971	246,384
1965		1972	69,658	1965	22,936	1972	181,287
1966		1973	76,779	1966	69,836	1973	320,648
1967	9,697	1974		1967	36,451	1974	
1968	12,995	1975		1968	49,857	1975	
1969	36,394			1969	148,017		

Notes: *Includes small numbers of pink or red salmon
Taken during king salmon season

Notes: *Includes small numbers of pink or red salmon
Taken during fall season

Chum Salmon *				Chum Salmon*			
		Yukon 334-11				Yukon 334-12	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	834	1964		1971	15,003
1965		1972	3,277	1965		1972	34,881
1966		1973	10,535	1966		1973	43,667
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: *Taken during king salmon season

Notes: *Taken during king salmon season

Commercial Harvest

Yukon Delta National Wildlife Refuge

Chum Salmon* Yukon 334-13.				Chum Salmon* Yukon 334-14			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	1,917	1964		1971	2,198
1965		1972	1,309	1965		1972	4,868
1966		1973	2,330	1966		1973	1,532
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: *Taken during king salmon season only

Notes: *Taken during king salmon season on

Chum Salmon* Yukon 334-15				Chum Salmon* Yukon 334-16			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	7,120	1964		1971	171
1965		1972	11,325	1965		1972	1,611
1966		1973	161	1966		1973	4
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: *Taken during king salmon season only

Notes: *Taken during king salmon season on

Commercial Harvest
Yukon Delta National Wildlife Refuge

Chum Salmon* Yukon 334-17				Chum Salmon* Yukon 334-18			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	5,728	1964		1971	3,106
1965		1972	7,933	1965		1972	4,454
1966		1973	13,548	1966		1973	3,002
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes:

*Taken during king salmon season only

Notes:

*Taken during king salmon season only

Chum Salmon Yukon 334-11				Chum Salmon Yukon 334-12			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971		1964		1971	72,737
1965		1972	1,909	1965		1972	64,028
1966		1973	6,724	1966		1973	132,452
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: *Taken during fall season only

Notes: *Taken during fall season only

Commercial Harvest

Yukon Delta National Wildlife Refuge

Chum Salmon* Yukon 334-13				Chum Salmon* Yukon 334-14			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	22,849	1964		1971	32,693
1965		1972	10,837	1965		1972	21,075
1966		1973	37,253	1966		1973	17,075
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: *Taken during fall season only

Notes: *Taken during fall season only

Chum Salmon* Yukon 334-15				Chum Salmon* Yukon 334-16			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	33,497	1964		1971	7,892
1965		1972	44,714	1965		1972	2,462
1966		1973	61,809	1966		1973	6,409
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: *Taken during fall season only

Notes: *Taken during fall season only

Commercial Harvest

Yukon Delta National Wildlife Refuge

Chum Salmon* Yukon 334-17				Chum Salmon* Yukon 334-18			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	61,907	1964		1971	14,809
1965		1972	30,341	1965		1972	5,921
1966		1973	39,222	1966		1973	19,704
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

*Taken during fall season only

Notes: *Taken during fall season only

Coho Salmon* Yukon 334-10							
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	12,245	1963		1970	
1964	2,446	1971	12,165	1964		1971	
1965	350	1972	21,705	1965		1972	
1966	19,254	1973	34,860	1966		1973	
1967	9,925	1974		1967		1974	
1968	13,153	1975		1968		1975	
1969	14,041			1969			

Notes: *Taken during fall season only

Notes:

Commercial Harvest

Yukon Delta National Wildlife Refuge

Coho Salmon Yukon 334-11				Coho Salmon Yukon 334-12			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971		1964		1971	4,117
1965		1972		1965		1972	7,296
1966		1973	4	1966		1973	9,900
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Fall season only

Notes: Fall season only

Coho Salmon Yukon 334-13				Coho Salmon Yukon 334-14			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	1,966	1964		1971	1,680
1965		1972	1,219	1965		1972	1,944
1966		1973	4,799	1966		1973	2,274
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Fall season only

Notes: Fall season only

Commercial Harvest
Yukon Delta National Wildlife Refuge

Coho Salmon Yukon 334-15				Coho Salmon Yukon 334-16			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	1,164	1964		1971	240
1965		1972	5,821	1965		1972	1,156
1966		1973	9,230	1966		1973	70
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Fall season only

Notes: Fall season only

Coho Salmon Yukon 334-17				Coho Salmon Yukon 334-18			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	2,100	1964		1971	898
1965		1972	3,518	1965		1972	751
1966		1973	7,253	1966		1973	1,330
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Fall season only

Notes: Fall season only

Commercial Harvest

Yukon Delta National Wildlife Refuge

King Salmon				King Salmon			
		Yukon 334-20				Yukon 334-20	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	17,210	1963		1970	
1964	20,246	1971	19,226	1964		1971	
1965	13,763	1972	17,317	1965		1972	538
1966	16,927	1973	12,479	1966		1973	1,380
1967	20,289	1974		1967		1974	
1968	21,392	1975		1968		1975	
	14,799			1969			

Notes:

Taken during king salmon season only

Notes:

Taken during fall season only

Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971		1964		1971	
1965		1972		1965		1972	
1966		1973		1966		1973	
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes:

Notes:

Commercial Harvest
Yukon Delta National Wildlife Refuge

King Salmon Yukon 334-21				King Salmon Yukon 334-22			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	5,926	1964		1971	7,893
1965		1972	1,802	1965		1972	10,916
1966		1973	5,779	1966		1973	4,863
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Taken during king salmon season

Notes: Taken during king salmon season

King Salmon Yukon 334-23				King Salmon Yukon 334-24			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	3,061	1964		1971	2,346
1965		1972	1,337	1965		1972	3,262
1966		1973	899	1966		1973	938
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Taken during king salmon season

Notes: Taken during king salmon season

Commercial Harvest

Yukon Delta National Wildlife Refuge

King Salmon Yukon 334-21				King Salmon Yukon 334-22			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971		1964		1971	
1965		1972	37	1965		1972	300
1966		1973	180	1966		1973	711
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes:

Taken during fall season only

Notes:

Taken during fall season only

King Salmon Yukon 334-23				King Salmon Yukon 334-24			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971		1964		1971	
1965		1972	89	1965		1972	112
1966		1973	207	1966		1973	282
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Taken during fall season only

Notes: Taken during fall season only

Commercial Harvest

Yukon Delta National Wildlife Refuge

Chum Salmon				Coho Salmon *			
		Yukon 334-20				Yukon 334-20	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	22,394	1963		1970	
1964		1971	6,112	1964		1971	
1965		1972	33,805	1965		1972	506
1966		1973	109,041	1966		1973	1,781
1967	1,425	1974		1967		1974	
1968	1,407	1975		1968		1975	
1969	5,024			1969			

Notes:

Notes:

*Taken during fall season only

Chum Salmon				Chum Salmon			
		Yukon 334-21				Yukon 334-22	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	2,255	1964		1971	3,144
1965		1972	1,806	1965		1972	6,992
1966		1973	3,042	1966		1973	8,902
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Taken during king salmon season

Notes: Taken during king salmon season

Commercial Harvest

Yukon Delta National Wildlife Refuge

Chum Salmon Yukon 334-23				Chum Salmon Yukon 334-24			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	286	1964		1971	
1965		1972	65	1965		1972	427
1966		1973	283	1966		1973	177
1967		1974		1967		1974	1,835
1968		1975		1968		1975	
1969				1969			

Notes: Taken during king salmon season

Notes: Taken during king salmon season

Chum Salmon Yukon 334-21				Chum Salmon Yukon 334-22			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971		1964		1971	
1965		1972	1,285	1965		1972	15,754
1966		1973	19,165	1966		1973	47,626
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Taken during fall season only

Notes: Taken during fall season only

Commercial Harvest
Yukon Delta National Wildlife Refuge

Chum Salmon Yukon 334-23				Chum Salmon Yukon 334-24			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971		1964		1971	
1965		1972	185	1965		1972	7,541
1966		1973	5,898	1966		1973	22,290
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Taken during fall season only

Notes: Taken during fall season only

Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971		1964		1971	
1965		1972		1965		1972	
1966		1973		1966		1973	
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes:

Notes:

Commercial Harvest

Yukon Delta National Wildlife Refuge

Chum Salmon (Total)				Chum Salmon (King Season)			
Yukon (334-30)		Yukon (334-31)					
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	3,285	1963		1970	
1964		1971	50	1964		1971	26
1965		1972	1,840	1965		1972	
1966	1,209	1973	463	1966		1973	
1967	1,880	1974		1967		1974	
1968	3,136	1975		1968			
1969	1,722			1969			

es:

Notes:

Chum Salmon (King Season)				Chum Salmon (Fall Season)			
Yukon (334-32)		Yukon (334-32)					
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971	24	1964		1971	1,313
1965		1972	527	1965		1972	
1966		1973	463	1966		1973	
1967		1974		1967		1974	
1968				1968			
1969				1969			

Notes:

Notes:

Commercial Harvest

Yukon Delta National Wildlife Refuge

King Salmon (Total)				King Salmon (King Season)			
Yukon 334-30		Yukon 334-31					
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	3,712	1963		1970	
1964	4,705	1971	3,480	1964		1971	1,352
1965	3,204	1972	3,841	1965		1972	1,783
1966	3,612	1973	3,204	1966		1973	2,264
1967	3,618	1974		1967		1974	
1968	4,543	1975		1968			
1969				1969			

Notes:

Notes:

King (King Season)							
Yukon 334-32							
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970					
1964		1971	2,138				
1965		1972	2,058				
1966		1973	940				
1967		1974					
1968							
1969							

Notes:

Notes:

Commercial Harvest

Yukon Delta National Wildlife Refuge

Coho Salmon (Total)				Yukon 334-30				Sockeye Salmon (Total)				Yukon 334			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970		1963		1970		1963		1970	
1964		1971		1964		1971		1964		1971		1964		1971	< 50
1965		1972		1965	10,539	1972		1965		1972		1965		1972	
1966		1973		1966		1973		1966		1973		1966		1973	
1967	1,122	1974		1967	2	1974		1967		1974		1967		1974	
1968	150			1968				1968				1968			
1969	845			1969				1969				1969			

Notes:

Notes:

Pink Salmon (Total)				Yukon 334											
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	300												
1964		1971													
1965		1972													
1966	13	1973													
1967	201	1974													
1968															
1969															

Notes:

Notes:

Commercial Value

Yukon Delta National Wildlife Refuge

King Salmon				King Salmon			
		Kuskokwim 335-10				Kuskokwim 335-20	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	142,985	1963		1970	5,530
1964	51,200	1971	171,390	1964	4,535	1971	11,050
1965		1972	192,075	1965		1972	8,635
1966	75,640	1973	208,955	1966	1,000	1973	15,325
1967	104,270	1974		1967	2,185	1974	
1968	125,110	1975		1968	3,090	1975	
1969	163,950			1969	3,240		

Notes:

Notes:

Coho Salmon				Coho Salmon			
		Kuskokwim 335-10				Kuskokwim 335-20	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	38,420	1963		1970	1,505
1964	9,105	1971	4,310	1964	640	1971	
1965		1972	22,580	1965		1972	
1966	8,670	1973	196,190	1966	524	1973	
1967	28,600	1974		1967	685	1974	
1968	84,370	1975		1968	925	1975	
1969	62,285			1969	1,375		

Notes:

Notes:

Commercial Value

Yukon Delta National Wildlife Refuge

Chum Salmon				Sockeye Salmon			
		Kuskokwim 335-10,-20*				Kuskokwim 335-10,-20*	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	850	1963		1970	135
1964		1971	34,460	1964		1971	1,850
1965		1972	42,450	1965		1972	90
1966		1973	190,400	1966		1973	855
1967	37	1974		1967		1974	
1968	65	1975		1968		1975	
1969	3,085			1969	293		

Notes: * MAJORITY OF HARVEST OCCURS IN
335-10.

Notes: * MAJORITY OF HARVEST OCCURS IN
335-10.

Pink Salmon				Minor Species			
		Kuskokwim 335-10,-20*				Kuskokwim 335-10,-20*	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	11	1963		1970	3,122
1964		1971		1964		1971	6,107
1965		1972	2	1965		1972	2,352
1966		1973	20	1966		1973	4,910
1967		1974		1967	1,260	1974	
1968		1975		1968	3,138	1975	
1969				1969	3,302		

Notes: * Majority of harvest occurs in
335-10

Notes: * Majority of harvest occurs in
335-10

Commercial Value
Yukon Delta National Wildlife Refuge

King Salmon				Chum Salmon *			
		Yukon 334-10				Yukon 334-10	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	288,400	1963		1970	195,300
1964	253,300	1971	459,500	1964	2,090	1971	181,000
1965	401,700	1972	413,300	1965	8,030	1972	188,000
1966	318,500	1973	424,500	1966	24,400	1973	467,000
1967	469,600	1974		1967	16,200	1974	
1968	368,700	1975		1968	31,400	1975	
1969	326,000			1969	92,200		

Notes: INCLUDES KING AND FALL SEASONS

Notes: * Includes small numbers of pink and red salmon

INCLUDES KING AND FALL SEASONS

Coho Salmon				King Salmon*			
		Yukon 334-10				Yukon 334-20	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	10,300	1963		1970	86,000
1964	1,220	1971	9,980	1964	75,900	1971	103,000
1965		1972	20,000	1965	107,000	1972	105,000
1966	9,630	1973	44,300	1966	76,200	1973	103,000
1967	4,960	1974		1967	91,300	1974	
1968	6,580	1975		1968	99,300	1975	
1969	7,720			1969	68,100		

Notes: Fall season only

Notes: Includes king and fall salmon seasons

Commercial Value

Yukon Delta National Wildlife Refuge

Chum Salmon				Coho Salmon*			
		Yukon 334-20				Yukon 334-20	
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970	13,700	1963		1970	
1964		1971	3,900	1964		1971	
1965		1972	25,400	1965		1972	466
1966		1973	129,000	1966		1973	2,260
1967	500	1974		1967		1974	
1968	700	1975		1968		1975	
1969	2,500			1969			

Notes:

Notes: *Fall season only

Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971		1964		1971	
1965		1972		1965		1972	
1966		1973		1966		1973	
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes:

Notes:

Commercial Value

Yukon Delta National Wildlife Refuge

King Salmon				Chum Salmon			
		Yukon 334-30				Yukon 334-30	
Year	\$ Value	Year	\$ Value	Year	\$ Value	Year	\$ Value
1963		1970	18,600	1963		1970	2,000
1964	17,600	1971	18,600	1964		1971	32
1965	14,400	1972	22,700	1965		1972	1,380
1966	16,300	1973	23,900	1966	425	1973	545
1967	16,300	1974		1967	660	1974	
1968	21,100	1975		1968	1,570	1975	
1969	16,500			1969	860		

Notes:

Notes:

Coho Salmon							
		Yukon 334-30					
Year	\$ Value	Year	\$ Value	Year	\$ Value	Year	\$ Value
1963		1970					
1964		1971					
1965		1972					
1966		1973					
1967	560	1974					
1968	75						
1969	465						

Notes:

Notes:

Kuskokwim District (335-10)

Year	Commercial Licenses	Number of Set Nets	Number of Drift Nets	Boat * Hours	
1963					* Boat Hours = (No. of vessels licensed) x (Hours open to fish) Boat Hours total for king salmon season only KING SALMON SEASON
1964	139	22	114	6,457	
1965	237	24	186	13,492	
1966	235	8	184	18,270	
1967	302	13	227	23,686	
1968	444	20	320	30,690	
1969	461	39	332	30,383	
1970	488	38	355	22,251	
1971	551	49	412	13,418	
1972	512	38	416	26,767	
1973	646	18	471	14,839	
1974					
1975					

Kuskokwim District (335-20)

Year	Commercial Licenses	Number of Set Nets	Number of Drift Nets	Boat Hours	
1963					KING SALMON SEASON
1964	14	7	10	1,143	
1965	5		5	548	
1966	4	1	2		
1967	5	3	2		
1968	10	7	2	359	
1969	5	1	2	836	
1970	6	3	2	1,076	
1971	24	4	16	3,127	
1972	14	4	11	3,191	
1973	15	6	13	8,014	
1974					
1975					

Yukon Delta National Wildlife Refuge

Kuskokwim District (335-10)

	Year	Number of Fishermen	Fishermen- Hours (Daily)		
	1963				Coho SALMON HARVEST
	1964		7,236		
	1965		6,552		
	1966	107	12,876		
	1967	147	27,360		
	1968	242	38,394		
	1969	231	36,660		
	1970	266	34,482		
	1971	83	4,644		
	1972	245	21,072		
	1973	411	46,038		

Yukon Delta National Wildlife Refuge

Kuskokwim District (335-20)

	Year	Number of Fishermen	Fishermen- Hours (Daily)		
	1963				Cotto SALMON HARVEST
	1964		552		
	1965		240		
	1966	1	318		
	1967	3	456		
	1968	2	600		
	1969	1	432		
	1970	11	528		
	1971				
	1972				
	1973				
	1974				
	1975				

Commercial Effort

Yukon Delta National Wildlife Refuge

Kuskokwim District (335-10,-20)

	Year	Number of Fishermen			
	1963				CHUM SALMON HARVEST
	1964				
	1965				
	1966				
	1967				
	1968				
	1969				
	1970				
	1971	216			
	1972	176			
	1973	341			
	1974				
	1975				

Commercial Effort

Yukon Delta National Wildlife Refuge

Kuskokwim District (335-10,-20) *

Year	Number of Fishermen			
1963				*Minor species - WHITE FISH, INCONNU AND ARCTIC CHAR
1964				
1965				
1966				
1967				
1968				
1969				
1970	191			
1971	372			
1972	178			
1973	330			
1974				
1975				

Commercial Effort

Yukon Delta National Wildlife Refuge

Yukon District (334-10)

	Year	Commercial Licenses	Number of Set Nets	Number of Drift Nets	Boat Hours	
					King Season/Fall Season	
	1963					
	1964	319	277	65	56,736	8,346
	1965	327	292	62	78,096	
	1966	393	345	97	69,894	41,994
	1967		333	135	102,456	19,272
	1968		314	111	92,450	47,232
	1969	406	346	142	84,864	47,352
	1970	393	345	110	61,260	68,712
	1971	459	399	140	73,272	108,336
	1972	473	439	155	79,236	106,974
	1973	515	450	165	75,036	140,304
	1974					
	1975					

Commercial Effort

Yukon Delta National Wildlife Refuge

Yukon District (334-20)

Year	Commercial Licenses	Number of Set Nets	Number of Drift Nets	Boat Hours King Season/Fall Season
1963				
1964	119	100	89	22,398
1965	143	98	98	31,008
1966	143	101	88	22,380
1967		72	109	37,488
1968		62	104	32,280
1969	131	62	100	27,828
1970	164	105	127	20,460
1971	162	115	134	19,956
1972	193	130	142	19,872
1973	206	159	151	23,496
1974				
1975				

Commercial Effort

Yukon Delta National Wildlife Refuge

Yukon District (334-30)

Year	Commercial Licenses	Number of Set Nets	Number of Drift Nets	Number of Fish Wheels	Boat Hours
1963					
1964	31	28	5		4,596
1965	34	23	4		2,286
1966	21	17	4		1,782
1967		21	5		4,050
1968		26	8		3,745
1969	32	15	10		3,577
1970	33	24	16		3,566
1971	37	30	19		4,790
1972	43	36	17		5,916
1973	50	30	18	4	7,282
1974					
1975					

Sport Harvest

Yukon Delta National Wildlife Refuge

Inconnu				Yukon 334-20			
Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971		1964		1971	
1965		1972		1965		1972	
1966		1973		1966		1973	
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes: Limited sport harvest of inconnu in the lower reaches of the Andreafsky River

Notes:

Year	No. of Fish	Year	No. of Fish	Year	No. of Fish	Year	No. of Fish
1963		1970		1963		1970	
1964		1971		1964		1971	
1965		1972		1965		1972	
1966		1973		1966		1973	
1967		1974		1967		1974	
1968		1975		1968		1975	
1969				1969			

Notes:

Notes:

**Anadromous Fish Inventory Update System
Yukon Delta National Wildlife Refuge, Alaska**

Information on anadromous fishes in the Yukon drainage can be obtained from the Division of Commercial Fisheries, Alaska Department of Fish and Game. Generally, these studies are coordinated through the department's Anchorage office and have been recently been conducted under the National Marine Fisheries Service Grant-in-Aid Study Program. Recently these reports have been titled Yukon River Anadromous Fish Investigations. The current research coordinator for this project is James Mauney. The opportune time to contact this agency for the most recent data would be early spring when the results from the previous field season will have been compiled.

Comprehensive statistical summaries of anadromous fish data for the proposed refuge are compiled in the Annual Management Report Arctic-Yukon-Kuskokwim Region, an informal report by the A-Y-K regional management biologist of the Alaska Department of Fish and Game. This document is prepared at the Anchorage office with contributions from the various field personnel. Usually this data will be available in the spring following the field season--probably April or May would be opportune time to request the report for the previous year.

Past investigations have been conducted by the Division of Sport Fish, Alaska Department of Fish and Game on inconnu in the area of interest under the Federal Aid in Fish Restoration Program. These programs are not currently active, but this division might be observed for future data which could be developed.

**Anadromous Fish Inventory Study Needs
Yukon Delta National Wildlife Refuge, Alaska**

1. Anadromous fish habitat of the Yukon River drainage is poorly known. Anadromous fish surveys need to be conducted in these areas for all major drainages that might contain anadromous fish.
2. Key spawning areas are poorly delineated due to the turbidity of the Yukon River and many of its tributaries. Key spawning areas probably exist, and their value must be quite high, since escapements to the Yukon River are in the hundreds of thousands for the chum salmon and tens of thousands for king salmon.
3. Population estimates must be conducted to ascertain the escapement levels for the Yukon River. The few existing population estimates appear to be extremely low for the probable population which exists.
4. Sport harvest data (creel census) need to be collected from this area since little is presently known of the limited sport fishery which does occur.
5. Data on coho salmon are particularly lacking. Emphasis needs to be placed on obtaining any information defining habitat and spawning areas for this species.

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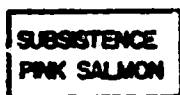
Anadromous Fish Stream with Identified Species



Key Spawning or Rearing Area



Key Area Value for Identified Species



Significant Harvest Locale
with Important Species Named

SELAWIK NWR

Proposed Refuge Name



Boundary of Proposed Refuge
and Area of Ecological Concern



Existing Refuge Boundary



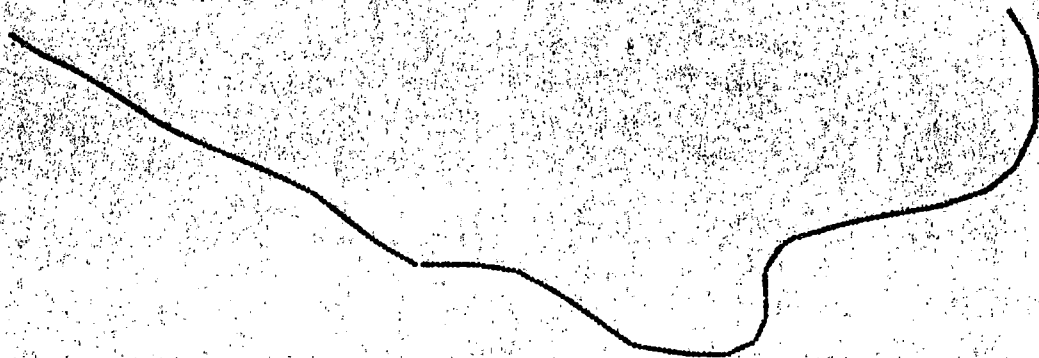
Fisheries Research Station

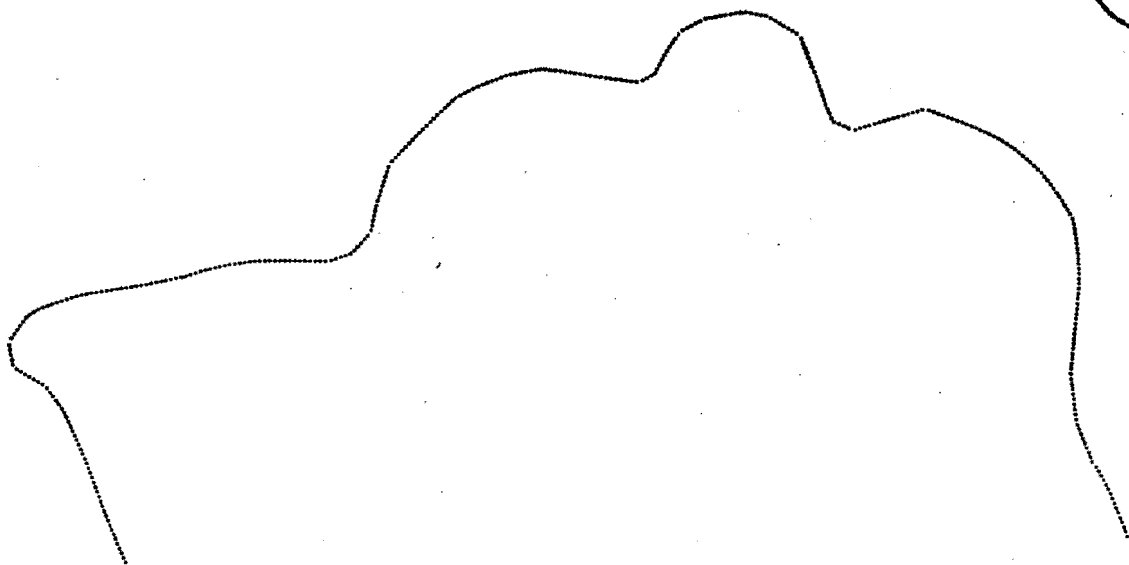


Airfield

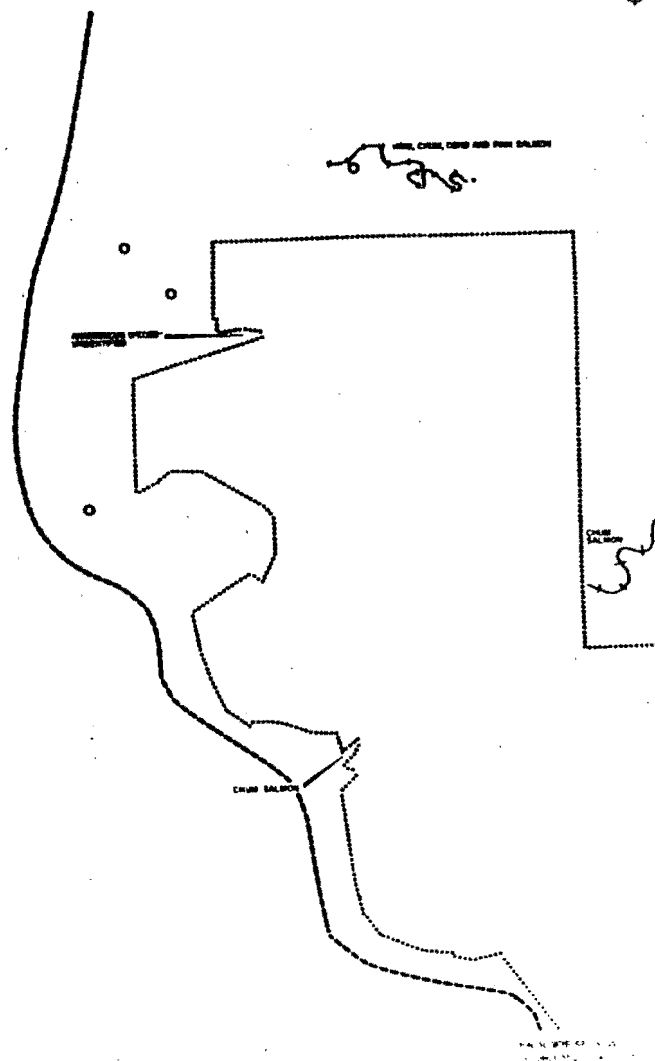


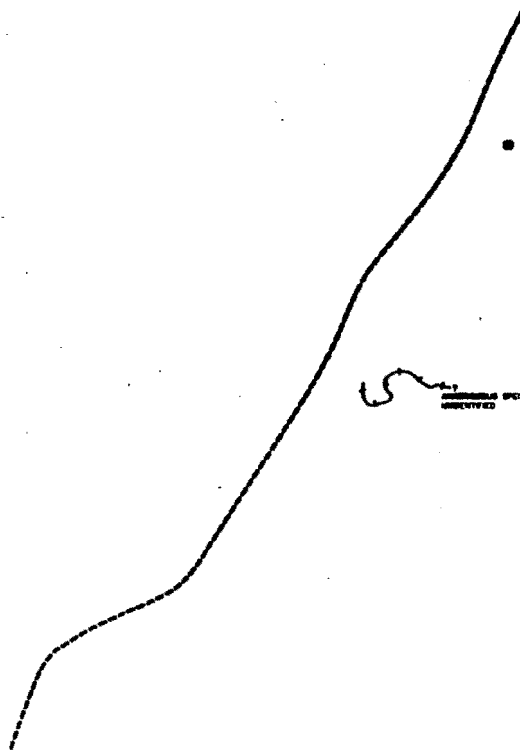
Mineral Location





NUNIVAK ISLAND
YUKON DELTA AREA

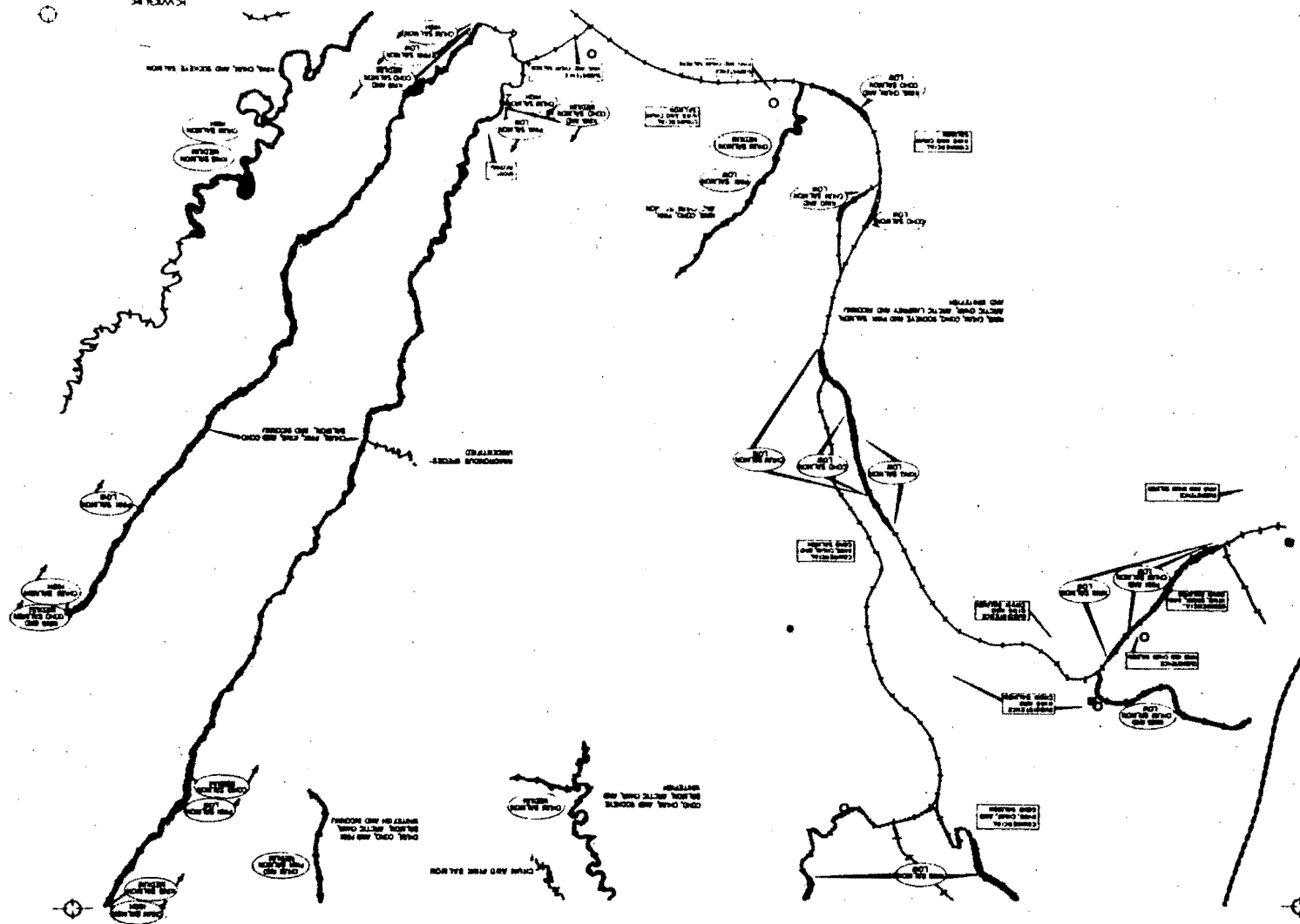


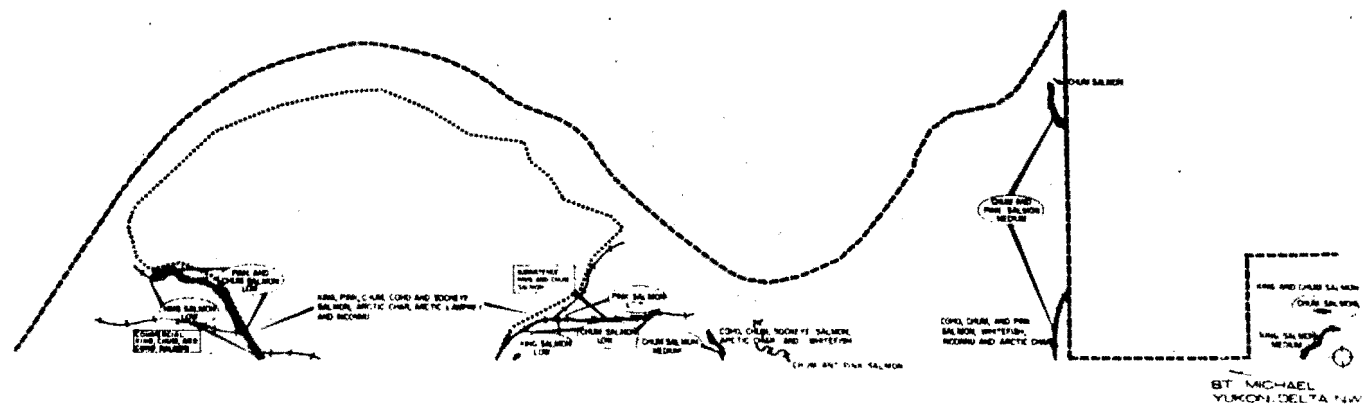


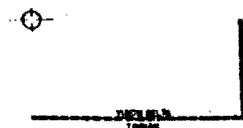
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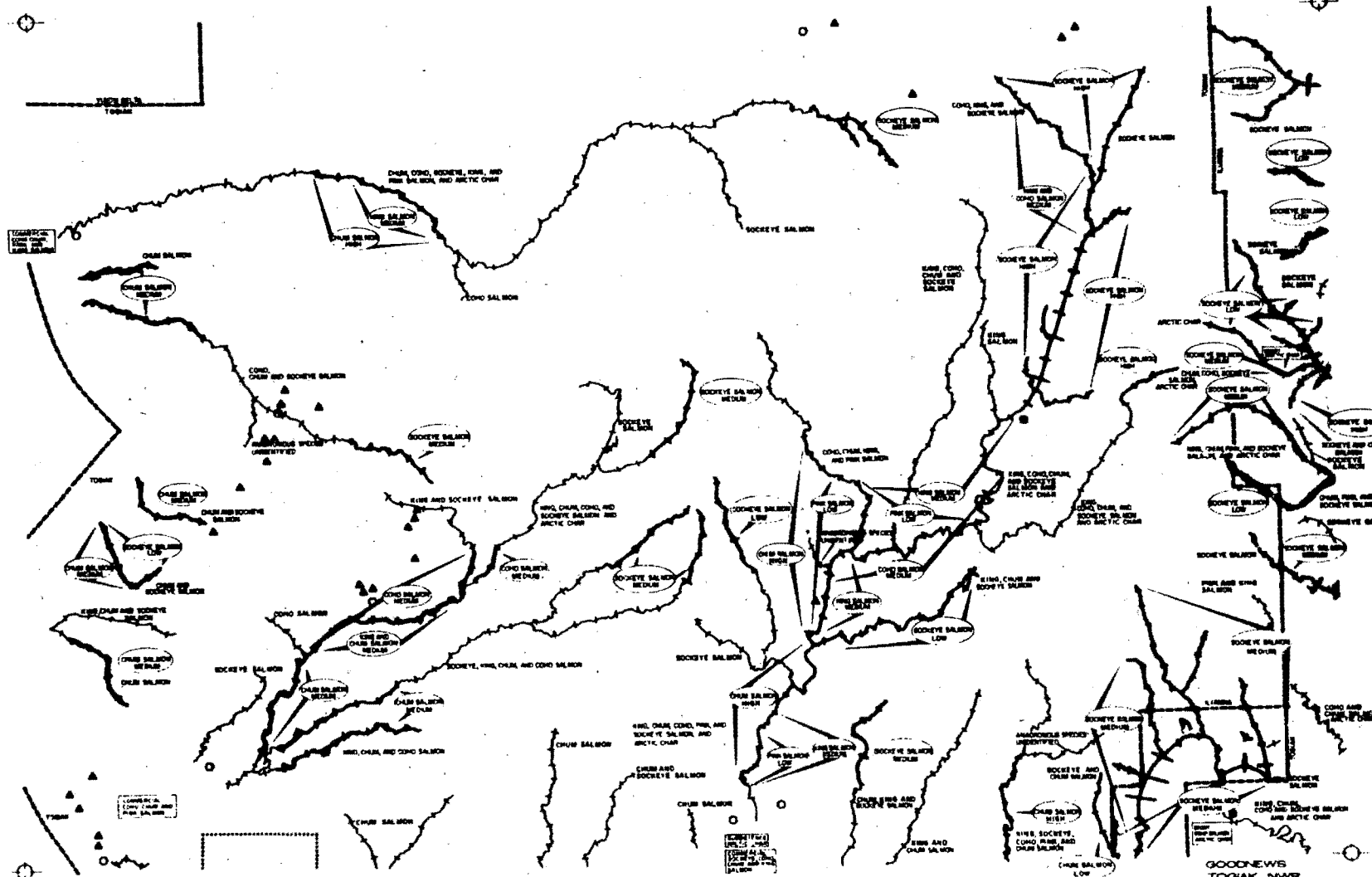
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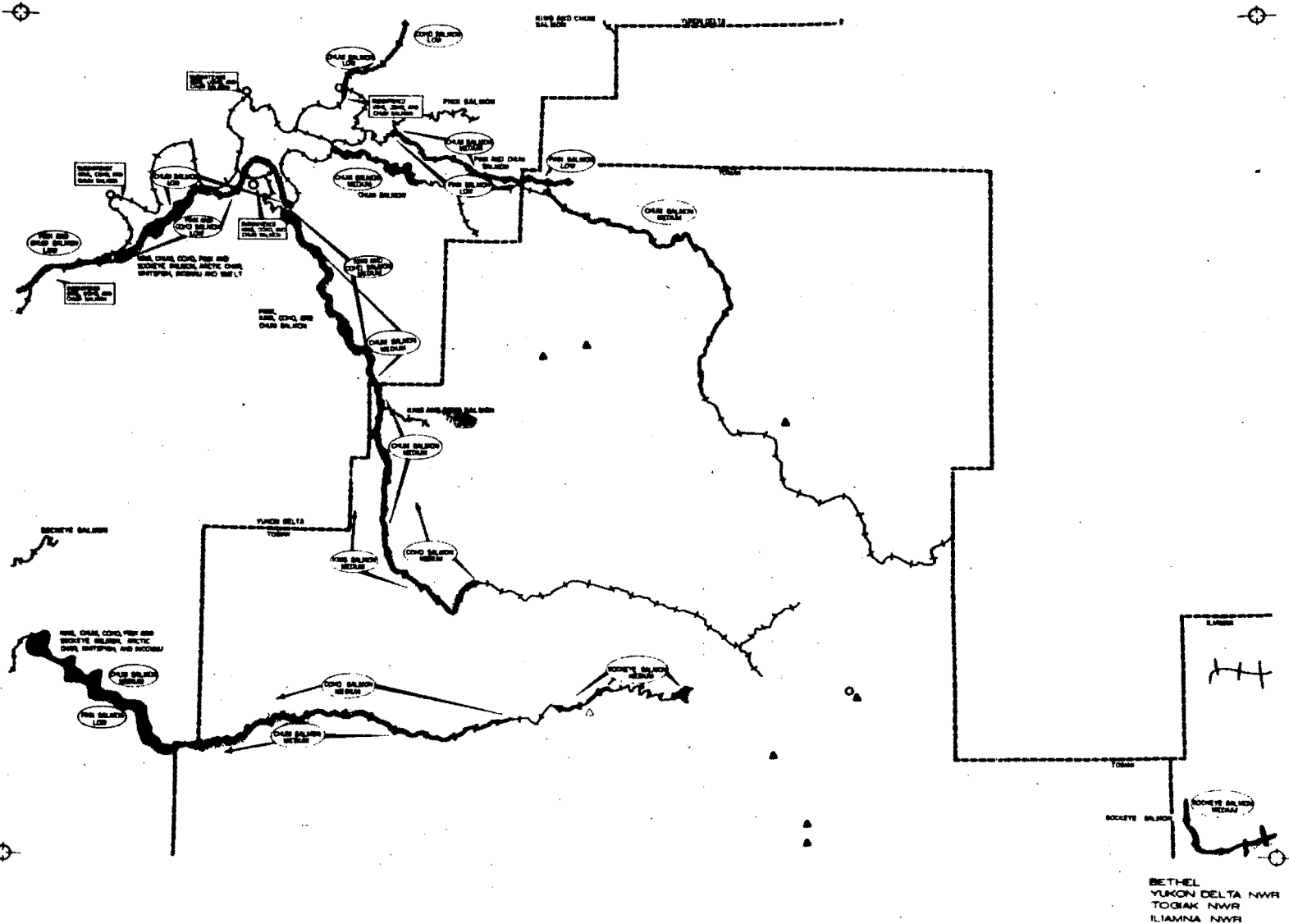
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SALMON
CHUM
COHO
SILVER
ARCTIC
CHIN
OYSTER
PACIFIC
HERRING
UNIDENTIFIED

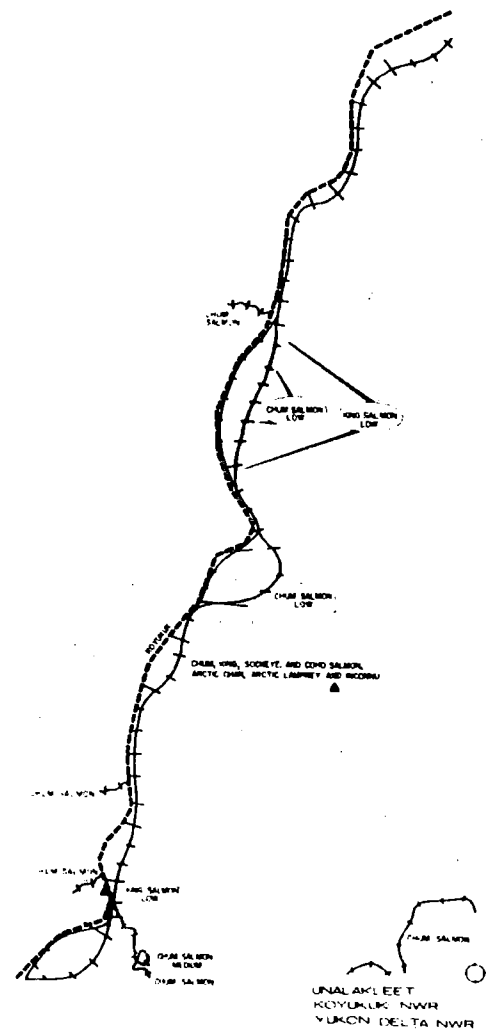
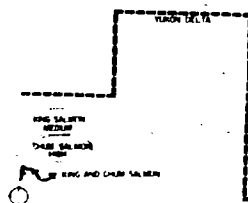


CHUM SALMON
COHO SALMON
SILVER SALMON
ARCTIC CHIN
OYSTER SALMON
PACIFIC HERRING

CHUM SALMON
COHO SALMON
SILVER SALMON
ARCTIC CHIN
OYSTER SALMON
PACIFIC HERRING

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