ANADROMOUS FISH INVENTORY

KOYUKUK NATIONAL WILDLIFE REFUGE, ALASKA and Associated Area of Ecological Concern

Prepared for

Fish and Wildlife Service

by

Arctic Environmental Information and Data Center

University of Alaska, Anchorage

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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 Common and Scientific Names of Fishes from the United States and Canada (Bailey

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. Each refuge listing begins at the northwesternmost corner of the area of interest.

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

Escapement counts or estimates of total spawning run were obtained almost entirely from Alaska Department of Fish and Game management reports and surveys conducted by the University of Washington's Fisheries Research

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.

Value of catch to the fisherman has been calculated from "price per fish" data provided in Alaska Department of Fish and Game management reports.

i. 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 Heinle (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.

6. Various activities which might become sources of impact on the fisheries resources were plotted including potential gas pipeline stream crossings (Arctic National Wildlife Refuge), oil and gas wells (Arctic

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).

Anadromous Fish
Koyukuk National Wildlife Refuge

(o)	Arctic lamprey	*Lampetra japonica*
o	Bering cisco	*Coregonus laurettae*
(o)	Broad whitefish	*Coregonus nasus*
(o)	Least cisco	*Coregonus sardinella*
o	Pink salmon	*Oncorhynchus gorbuscha*
o	Chum salmon	*Oncorhynchus keta*
o	Coho salmon	*Oncorhynchus kisutch*
o	Sockeye salmon	*Oncorhynchus nerka*
o	Chinook salmon	*Oncorhynchus tshawytscha*
*	Round whitefish	*Prosopium cylindraecum*
(o)	Arctic char	*Salvelinus alpinus*
*	Inconnu	*Stenodus leucichthys*

o Anadromous

(o) Both anadromous and resident

* May enter coastal, brackish water

History of Subsistence Fishery
Koyukuk National Wildlife Refuge, Alaska

The pattern of subsistence fishing by the Natives of the Koyukuk River has changed little from that followed in aboriginal times. The seasonal fishery of the Athapascan Indian has traditionally made extensive use of salmon, whitefish, and inconnu. In fall, a few inconnu are available from the Koyukuk, and whitefish have been plentiful in October. They are caught by netting through the ice. In winter little fishing occurs, except for some anadromous fish taken incidentally to burbot by traps set under the ice. In spring some fishing begins for whitefish, but only a few are taken for immediate use. During the summer months salmon are harvested primarily for human consumption. As early as 1901 Schrader (1904) found that Natives of the Koyukuk River relied upon salmon and whitefish for part of their diet. Aboriginal methods employed for harvesting fish in this region included fish traps, harpoons, fish hooks, shooting with bow and arrow, and in later years the more efficient fishwheels. Fish were preserved by drying in air or by burying roe and allowing it to partially decay for the purpose of making a seasoning or a delicacy. Dependence upon anadromous fish in this area was heavy (Rostland 1952).

The account of the rise and fall of subsistence harvests of salmon from the proposed Koyukuk Refuge area of interest is similar to the Yukon Flats history of subsistence fishing. Salmon were depended upon more heavily, however, especially for dog food. With the advent of mechanized means of travel in this region, the need for dog sleds declined, as did the need for salmon.

Anadromous fish are still an important part of the diet of residents in this region. King and chum salmon are taken by gill nets in the Koyukuk River, and a few pink and coho salmon and inconnu are harvested as well. Villages participating in the subsistence fishery include Huslia, Grayling, Holy Cross, and Anvik. During the period from 1963 to 1972 subsistence catches averaged 11,789 chum and 159 chinook salmon per year from the Koyukuk River.

History of Commercial Fishery
Koyukuk National Wildlife Refuge, Alaska

Although the first recorded commercial salmon fishing on the Yukon River began in 1918 in the delta area, little is known about the history of commercial operations upstream. The known history is similar, however, to that of the proposed Yukon Flats refuge. Fish wheels were utilized in early years, and some are still in use today.

The southern portion of the proposed refuge is primarily within the Alaska Department of Fish and Game's subdistrict 334-30 of the Yukon District, which extends from Owl Slough near Marshall to the mouth of the Koyukuk River. Within this district in recent years, salmon have been commercially harvested utilizing both set and drift gill nets and fish wheels. No commercial fishing is permitted in tributary rivers to the Yukon River.

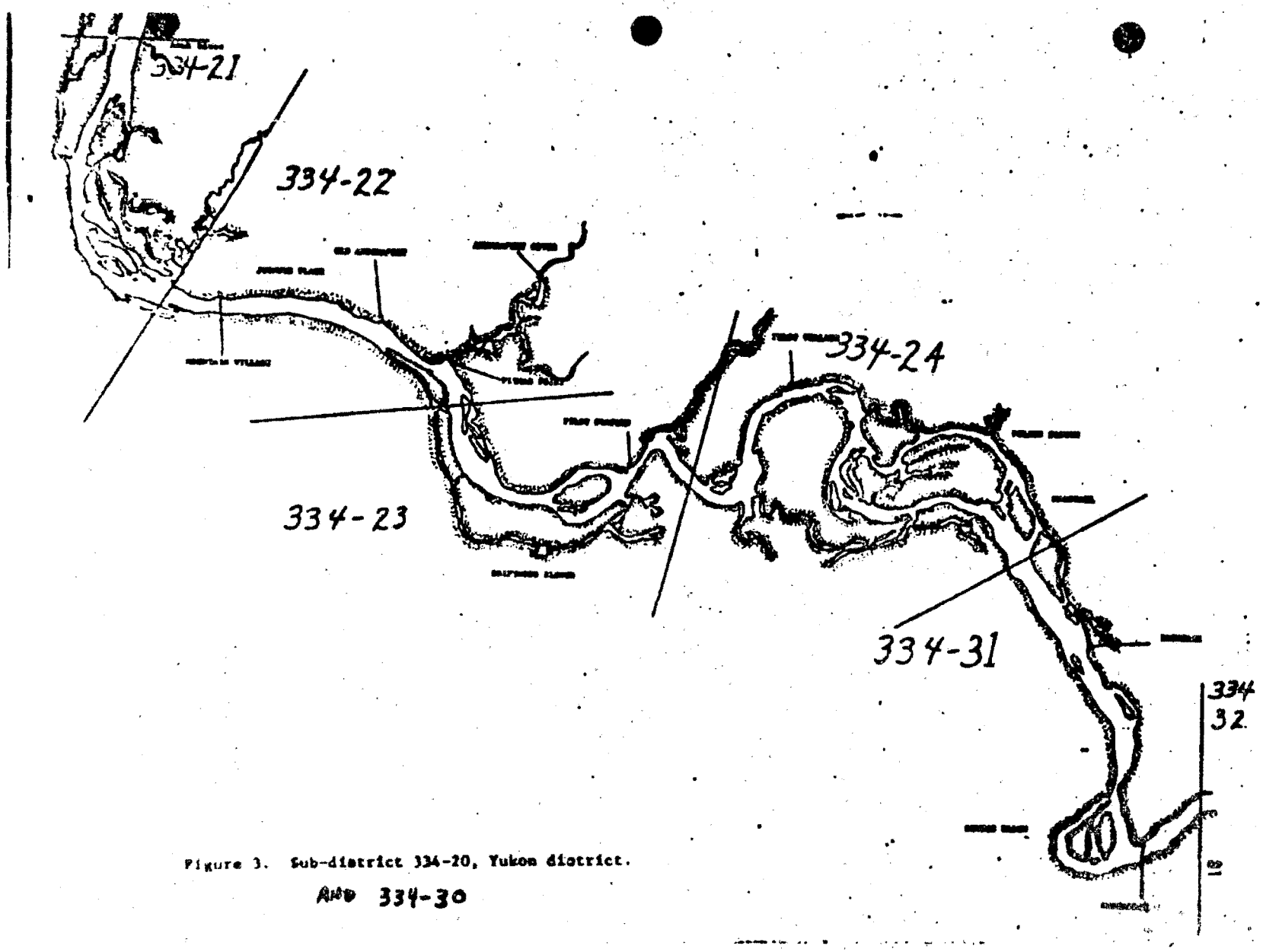

Figure 3. Sub-district 334-20, Yukon district.

AND 334-30

History of Sport Fishery
Koyukuk National Wildlife Refuge, Alaska

Some sport angling for anadromous fish has occurred in the proposed refuge area of interest in recent years. Salmon are the major species sought in the Yukon River, although muddy water precludes good angling much of the time. Salmon runs up the Koyukuk River are small, and thus there has been little sport fishing pressure on salmon in this area. Access is difficult, and sport fishermen must travel by boat from a village or fly in by charter aircraft. Probably 100 to 500 sheefish, the primary sport fish, are taken by sport anglers from the Koyukuk River each year. Some local residents also fish in the area, but fishermen from elsewhere are the primary users. Concentration areas for sport fishing are at river mouths or on the larger lakes.

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
Koyukuk National Wildlife Refuge
and Associated Areas of Ecological Concern

Drainage Name	Anadromous Species (Habitat in miles)								
	KS	PS	CS	SS	RS	AC	AL	IN	UN
Yukon River	195	45	195	195	195	195	195	195	
Innoko River		X	160					25	
Iditarod River			40						
Koserefski River									X
Anvik River	X	X	X						
Shageluk Slough			15						
Holikachuk Slough			10						
Thompson Creek			X						
Simon Creek			X						
Bear Creek			X						
Koyukuk River	300		300	300				300	
Gisasa River	3		3						
Kateel River	5		5						
Huslia River	35		35						
Hawk River	30		30						
Dakli River			15						
Hogatza River	10		10						
Indian River	15		15						

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

Drainage Name	Anadromous Species (Key area in miles)								
	KS	PS	CS	SS	RS	AC	AL	IN	
Yukon River	40		45						
Innoko River			20						
Iditarod River			40						
Koserefski River									
Anvik River									
Shageluk Slough			10						
Holikachuk Slough			10						
Thompson Creek									
Simon Creek									
Bear Creek									
Koyukuk River	300		300						
Gisasa River									
Kateel River									
Huslia River									
Hawk River									
Dakli River									
Hogatza River									
Indian River									

Magnitude of Runs or Escapements

Koyukuk National Wildlife Refuge

Yukon River (Anvik) Chum Salmon			
Year	No. of Fish	Year	No. of Fish
1963		1969	
1964	12,000 - 14,000 *	1970	232,780
		1971	
1965	100,000	1972	245,857
1966	37,500	1973	86,665
1967	116,000	1974	
1968	51,580*		

Notes: Aerial survey - summer chum run only
*Incomplete survey, probably a low count
1972 and 1973 include tower counts on Anvik River

Yukon River (upstream) Chum Salmon			
Year	No. of Fish	Year	No. of Fish
1963		1970	7,879
1964	250*	1971	306*
1965	2,375	1972	947*
1966	2,200	1973	290*
1967		1974	
1968	3,790		
1969	425*		

Notes: Aerial survey - summer chum run only from Salcha River
*Incomplete survey--probably a low count

Yukon River (upstream) Chum Salmon			
Year	No. of Fish	Year	No. of Fish
1963		1970	1,600
1964		1971	115,000+
1965		1972	58,633
1966		1973	33,575
1967		1974	
1968			
1969			

Notes: Aerial survey - fall chum run only
Includes weir counts on Fishing

Year	No. of Fish	Year	No. of Fish

Notes:

Magnitude of Runs or Escapements

Koyukuk National Wildlife Refuge

Yukon River (Anvik River) King Salmon			
Year	No. of Fish	Year	No. of Fish
1963		1970	368
1964		1971	
1965	650*	1972	
1966	638	1973	
1967	336	1974	
1968	297*		
1969	296*		

Notes:
Aerial survey
*Incomplete survey, probably low count

Yukon River (upstream) King Salmon			
Year	No. of Fish	Year	No. of Fish
1963	484	1970	3,792
1964	1,037	1971	1,854
1965	1,311	1972	
1966	1,363	1973	
1967	533	1974	
1968	1,849 - 1,949		
1969	1,186*		

Notes:
Aerial surveys except Fishway counts at Whitehorse Dam at Yukon Territory
*Incomplete survey, probably low count

Year	No. of Fish	Year	No. of Fish

Notes:

Year	No. of Fish	Year	No. of Fish

Notes:

Magnitude of Runs or Escapements

Koyukuk National Wildlife Refuge

Yukon River (Koyukuk R.) — Inconnu

Year	No. of Fish	Year	No. of Fish
1963		1970	
1964		1971	
1965		1972	
1966		1973	
1967		1974	
1968			
1969	1,710		

Notes: Counted on spawning grounds above refuge

Year	No. of Fish	Year	No. of Fish

Notes:

Year	No. of Fish	Year	No. of Fish

Notes:

Year	No. of Fish	Year	No. of Fish

Notes:

Subsistence Harvest

Koyukuk National Wildlife Refuge

King Salmon			Yukon (334-30)
Year	No. of Fish	Year	No. of Fish
1963		1970	
1964		1971	2,799
1965		1972	2,202
1966		1973	3,338
1967			
1968			
1969			

Notes: Holy Cross village

King Salmon			Yukon (334-30)
Year	No. of Fish	Year	No. of Fish
1963		1970	
1964		1971	137
1965		1972	72
1966		1973	67
1967			
1968			
1969			

Notes: Anvik village

King Salmon			Yukon (334-30)
Year	No. of Fish	Year	No. of Fish
1963		1970	
1964		1971	394
1965		1972	185
1966		1973	489
1967		1974	
1968			
1969			

Notes: Grayling village

King Salmon			Yukon (334)
Year	No. of Fish	Year	No. of Fish
1963		1970	
1964		1971	2
1965		1972	1
1966		1973	29
1967		1974	
1968			
1969			

Notes: Huslia village

Subsistence Harvest

Koyukuk National Wildlife Refuge

Other Salmon*			Yukon (334-30)
Year	No. of Fish	Year	No. of Fish
1963		1970	
1964		1971	2,203
1965		1972	2,695
1966		1973	3,176
1967		1974	
1968			
1969			

Notes: Holy Cross village
*Mostly chums, but includes small numbers of pink and coho salmon

Other Salmon*			Yukon (334-30)
Year	No. of Fish	Year	No. of Fish
1963		1970	
1964		1971	7,309
1965		1972	3,362
1966		1973	20,917
1967			
1968			
1969			

Notes: Anvik village
*Mostly chums, but includes small numbers of pink and coho salmon

Other Salmon*			Yukon (334-30)
Year	No. of Fish	Year	No. of Fish
1963		1970	
1964		1971	6,537
1965		1972	6,428
1966		1973	12,105
1967		1974	
1968			
1969			

Notes: Grayling village
*Mostly chums, but includes small numbers of pink and coho salmon

Other Salmon*			Yukon (334)
Year	No. of Fish	Year	No. of Fish
1963		1970	
1964		1971	652
1965		1972	256
1966		1973	3,363
1967		1974	
1968			
1969			

Notes: Huslia village
*Mostly chums, but includes small numbers of coho salmon

Subsistence Effort

Koyukuk National Wildlife Refuge

Year	Number of 5½-inch Gill Nets	Number of 8½-inch Gill Nets	Fish Wheels	
1963				Note: Holy Cross village
1964				
1965				
1966				
1967				
1968				
1969				
1970				
1971	9	18		
1972	7	40		
1973	28	21		
1974				

Subsistence Effort

Koyukuk National Wildlife Refuge

Year	Number of 5½-inch Gill Nets	Number of 8½-inch Gill Nets	Fish Wheels	
1963				Note: Anvik village
1964				
1965				
1966				
1967				
1968				
1969				
1970				
1971	6	1	4	
1972	9	2	4	
1973	6	2	3	
1974				

Subsistence Effort

Koyukuk National Wildlife Refuge

Year	Number of 5½-inch Gill Nets	Number of 8½-inch Gill Nets	Fish Wheels	
1963				Note: Grayling village
1964				
1965				
1966				
1967				
1968				
1969				
1970				
1971	14	0	4	
1972	15	5	4	
1973	21	5	6	
1974				

Subsistence Effort

Koyukuk National Wildlife Refuge

Year	Number of 5½-inch Gill Nets	Number of 8½-inch Gill Nets	Fish Wheels	
1963				Note: Huslia village
1964				
1965				
1966				
1967				
1968				
1969				
1970				
1971	3			
1972	3			
1973	8			
1974				

Commercial Harvest

Koyukuk National Wildlife Refuge

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

Notes:

King Salmon (King Season)			Yukon 334-31
Year	No. of Fish	Year	No. of Fish
1963		1970	
1964		1971	1,352
1965		1972	1,783
1966		1973	2,264
1967		1974	
1968			
1969			

Notes: Outside (downstream) Area of Ecological Concern.

King (King Season)			Yukon 334-32
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:

Year	No. of Fish	Year	No. of Fish

Notes:

Commercial Harvest

Koyukuk National Wildlife Refuge

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

Notes:

Chum Salmon (King Season)			Yukon (334-31)
Year	No. of Fish	Year	No. of Fis
1963		1970	
1964		1971	26
1965		1972	
1966		1973	
1967		1974	
1968			
1969			

Notes: Outside (downstream) Area of Ecological concern.

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

Notes:

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

Notes:

Commercial Harvest

Koyukuk National Wildlife Refuge

Coho Salmon (Total) — Yukon 334-30

Year	No. of Fish	Year	No. of Fish
1963		1970	
1964		1971	
1965		1972	
1966		1973	
1967	1,122	1974	
1968	150		
1969	845		

Notes:

Sockeye Salmon (Total) — Yukon 334

Year	No. of Fish	Year	No. of Fish
1963		1970	
1964		1971	< 50
1965	10,539	1972	
1966		1973	
1967	2	1974	
1968			
1969			

Notes:

Pink Salmon (Total) — Yukon 334

Year	No. of Fish	Year	No. of Fish
1963		1970	300
1964		1971	
1965		1972	
1966	13	1973	
1967	201	1974	
1968			
1969			

Notes:

Year	No. of Fish	Year	No. of Fish

Notes:

Commercial Value

Koyukuk National Wildlife Refuge

King Salmon			Yukon 334-30	Chum Salmon			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:

Commercial Effort

Koyukuk 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

Koyukuk National Wildlife Refuge

Year	No. of Fish	Year	No. of Fish

Notes: Little documented sport utilization of anadromous species in this area

Year	No. of Fish	Year	No. of Fish

Notes:

Year	No. of Fish	Year	No. of Fish

Notes:

Year	No. of Fish	Year	No. of Fish

Notes:

Anadromous Fish Inventory Update System
Koyukuk National Wildlife Refuge, Alaska

A limited amount of information on anadromous fishes in the Yukon and Koyukuk River drainages 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 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 results from the previous field season will have been compiled.

Comprehensive statistical summaries of commercial anadromous fish data for the proposed refuge are compiled in the Annual Management Report, Arctic-Yukon-Kuskokwim Region, an informal unpublished report by the A-Y-K regional management biologists 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 the opportune time to request the report for the previous year.

Little investigation is currently conducted by the Division of Sport Fish, Alaska Department of Fish and Game in the area of interest under the Federal Aid in Fish Restoration Program. This program might be observed for future data which could appear.

Anadromous Fish Inventory Study Needs
Koyukuk National Wildlife Refuge, Alaska

1. Anadromous fish habitat of the Yukon and Koyukuk drainages is poorly known. Anadromous fish surveys need to be conducted in these areas for all major drainages that might contain anadromous fish. These studies should be conducted late enough in the season so that the late run of chum salmon will be inventoried.

2. Key spawning areas are poorly delineated due to the turbidity of the Yukon and many of its tributaries. Key spawning areas probably exist and their value could be quite high, since escapements through this section of the Yukon River are in the hundreds of thousands for chum and tens of thousands for king salmon.

3. Population estimates need to be conducted to ascertain the escapement levels for the Yukon and Koyukuk drainages. A few such studies were conducted upstream on the Yukon River during the early 1960's in conjunction with the Rampart Canyon Dam project and indicated large escapements. Data that would accurately assess the size of the late chum salmon run are lacking.

4. A program of regular aerial surveys of identified spawning areas need to be conducted where clearwater streams have been identified as key spawning areas for chum, king or coho salmon. Such counts are almost totally lacking from this area.

5. Sport harvest data (creel census) need to be collected from this area since so little is presently known of the limited sport fishing which does occur.

6. 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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Koyukuk National Wildlife Refuge

Anadromous Fish Inventory

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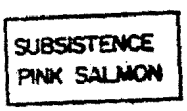
Anadromous Fish Stream with Identified Species

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

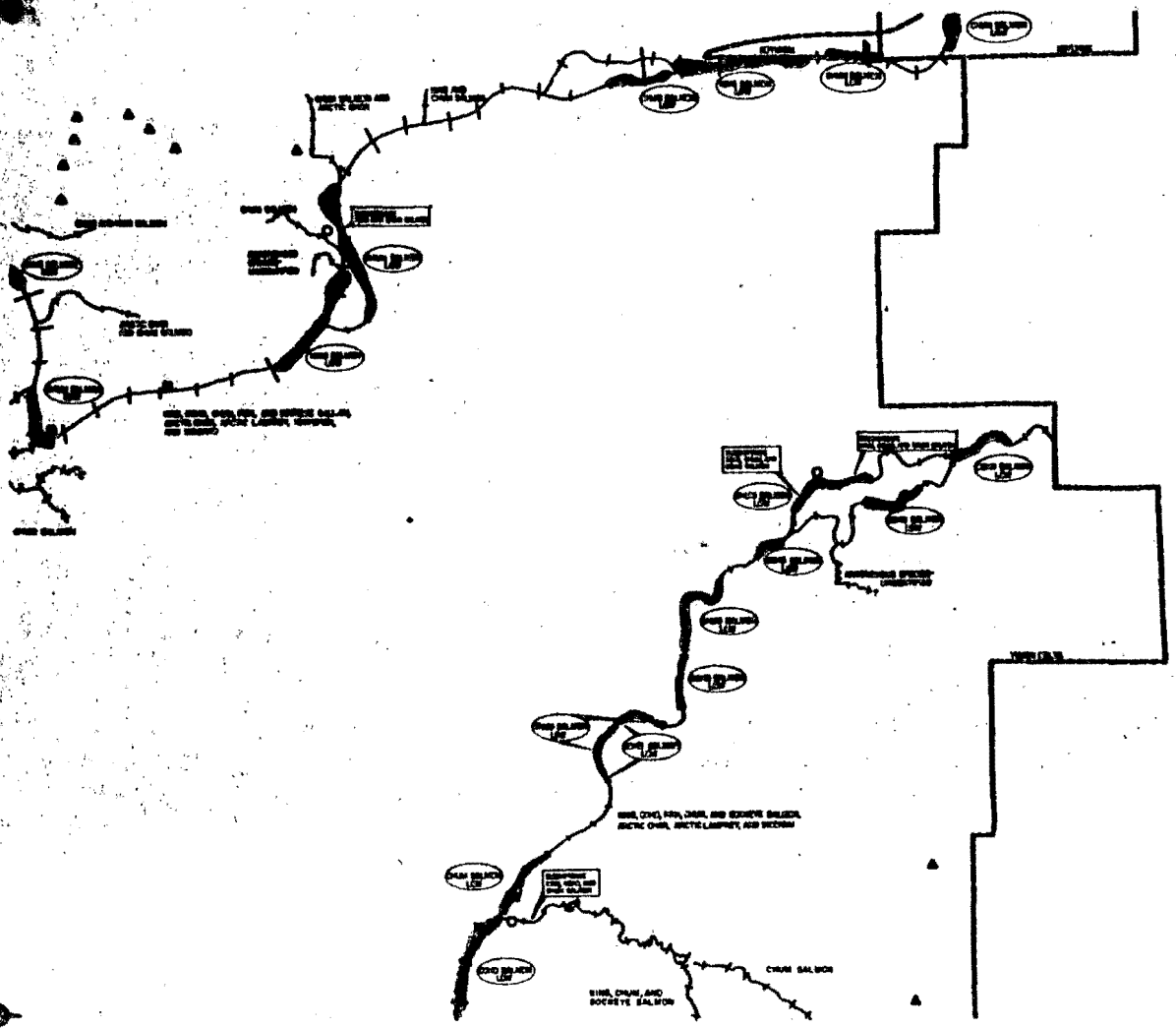
Fisheries Research Station

Airfield

Mineral Location

Hydroelectric Dam Site

Oil or Gas Well



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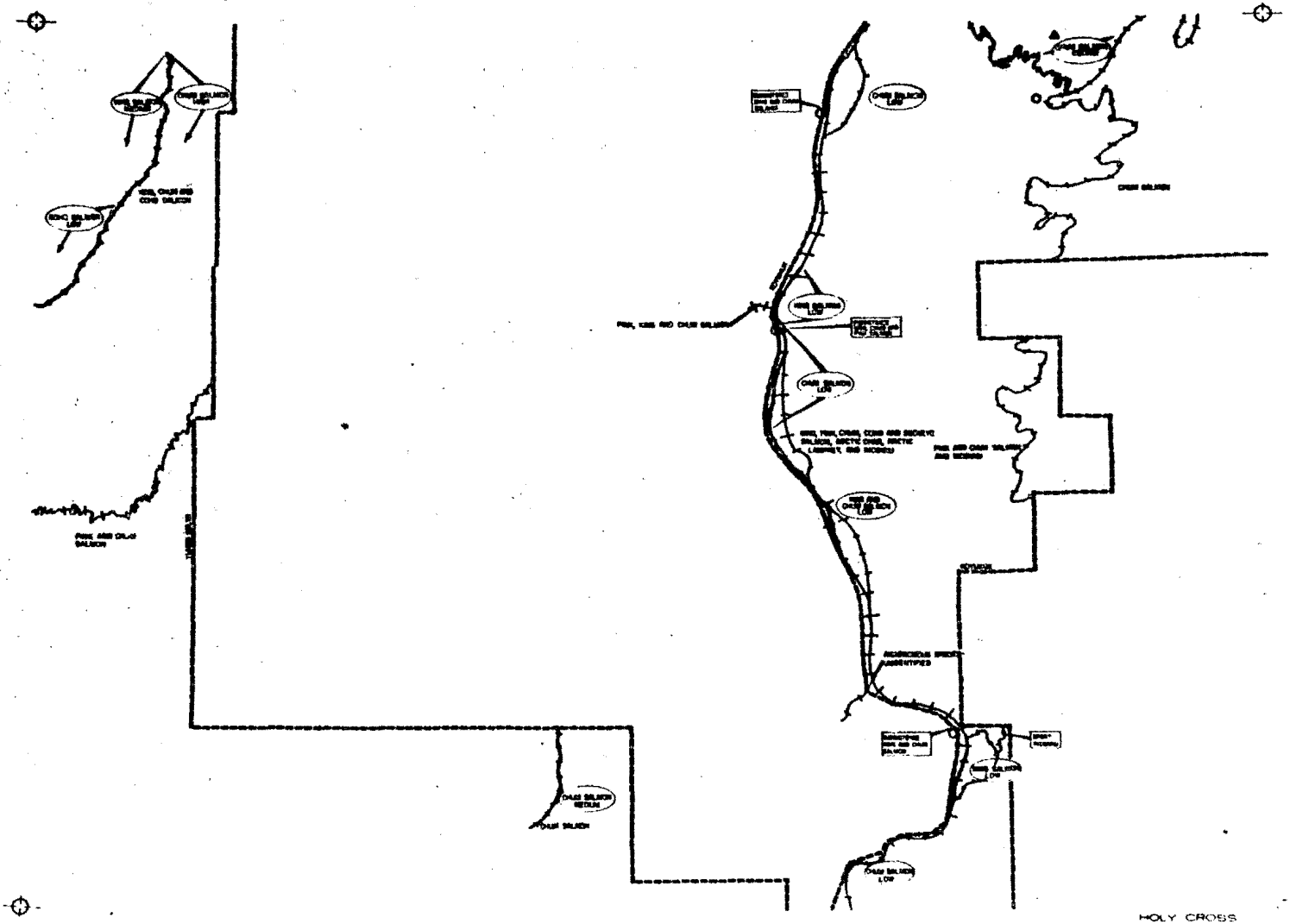
YUKON DELTA NWR
KOYUKUK NWR



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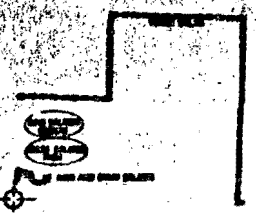

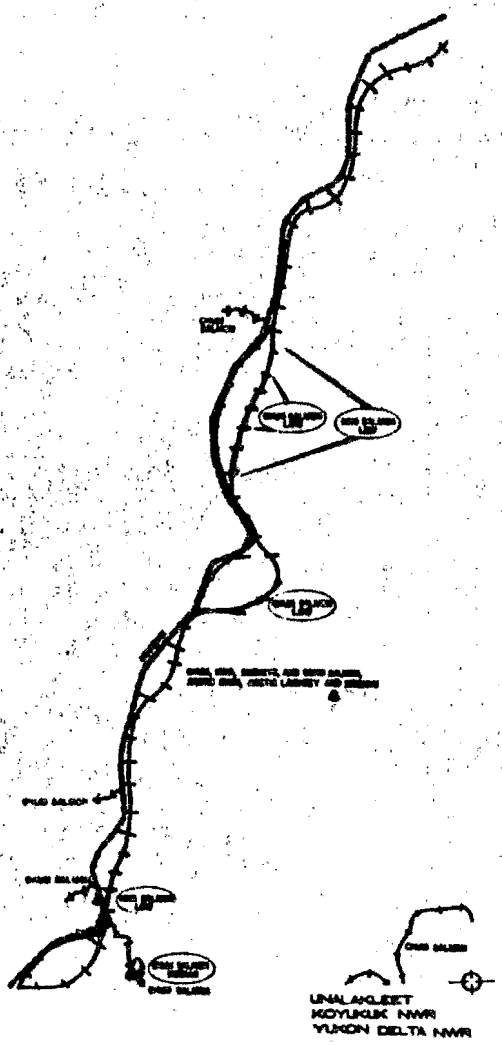
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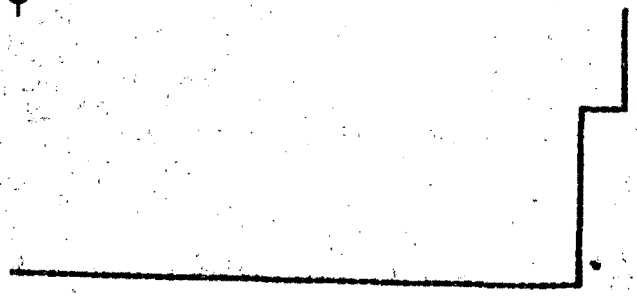

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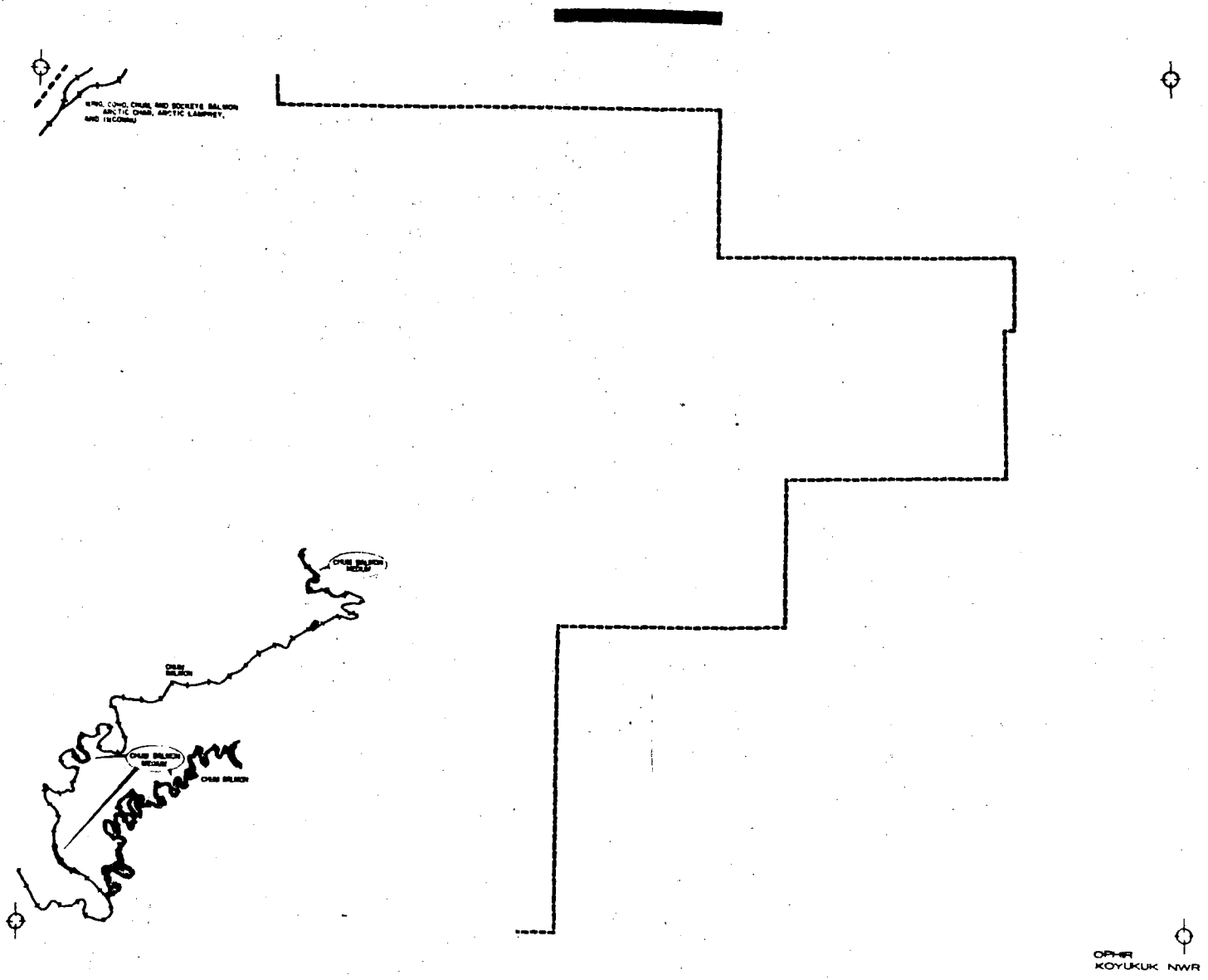
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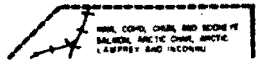

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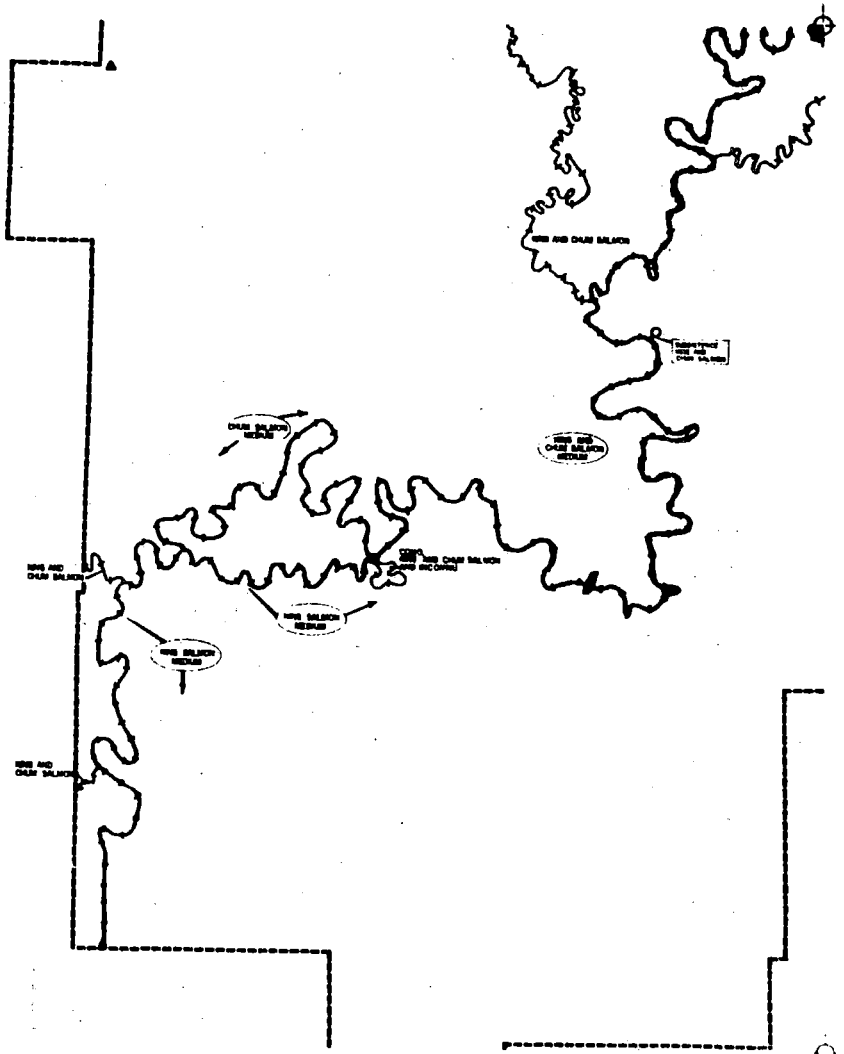

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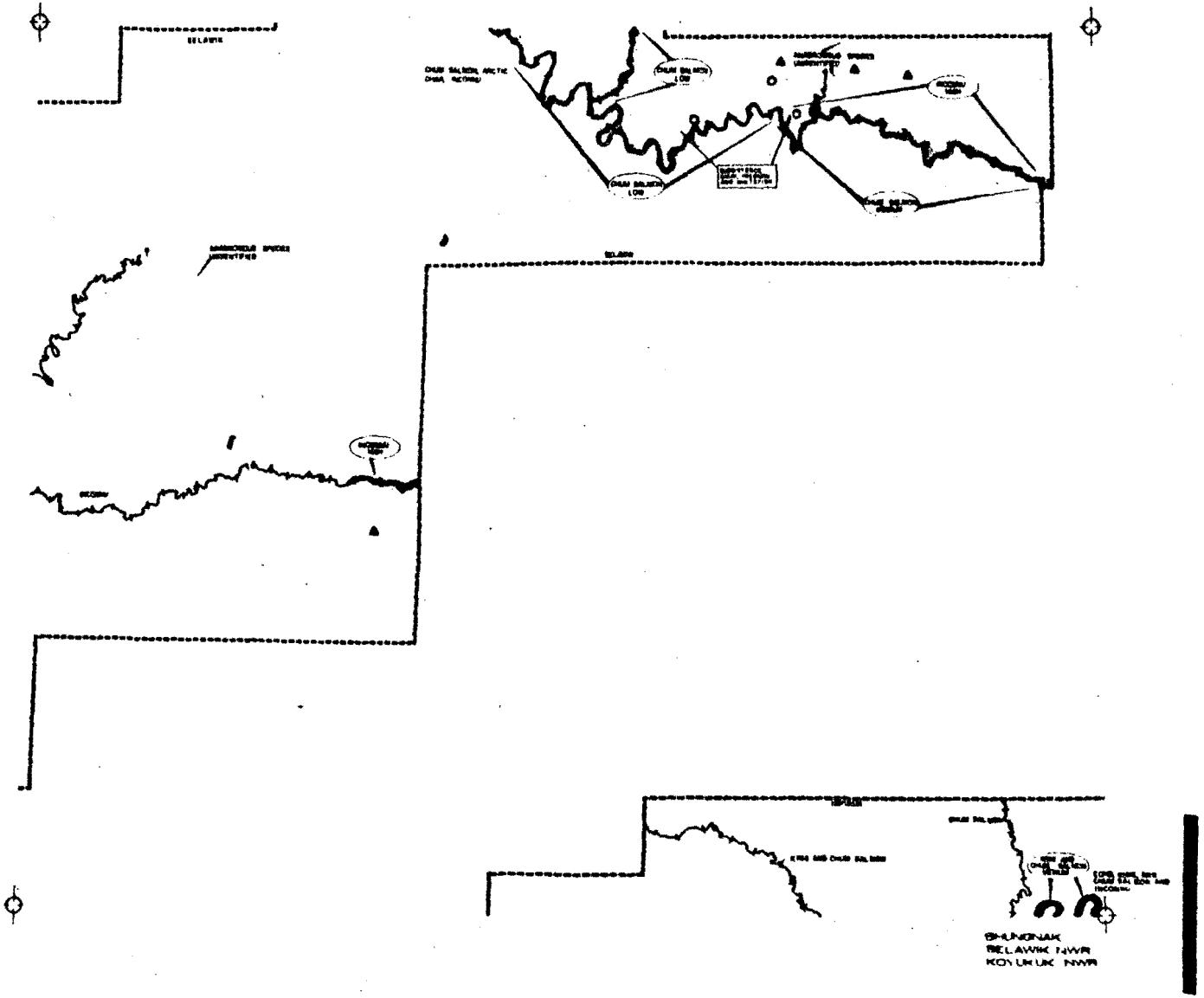
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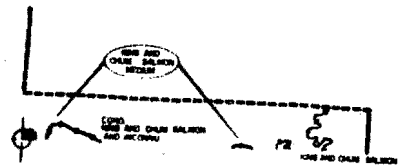

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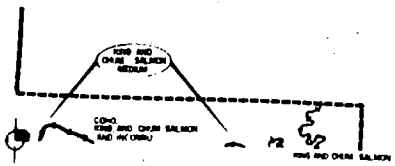

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