



State of Alaska
Department of Fish and Game
Habitat and Restoration Division

Nomination for Waters
Important to Anadromous Fish

Region SOUTHCENTRAL USGS Quad Seward D-3

Anadromous Water Catalog Number of Waterway 223-303110

Name of Waterway Davis Lake USGS Name Local Name

Addition Deletion Correction Backup Information

For Office Use

Nomination #	<u>01 567</u>	Regional Supervisor	Date
Revision Year:	<u>2001</u>	<u>[Signature]</u>	<u>4/8/02</u>
Revision to:	Atlas <input checked="" type="checkbox"/> Catalog <input type="checkbox"/>	AWC Project Biologist	Date
Revision Code:	<u>E-9</u>	<u>[Signature]</u>	<u>4/23/02</u>
		Drafted	Date

OBSERVATION INFORMATION

Species	Date(s) Observed	Spawning	Rearing	Present	Anadromous
kokanee salmon	8/15,16,17/201			x	<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>

IMPORTANT: Provide all supporting documentation that this water body is important for the spawning, rearing or migration of anadromous fish, including: number of fish and life stages observed; sampling methods, sampling duration and area sampled; copies of field notes; etc. Attach a copy of a map showing location of mouth and observed upper extent of each species, as well as other information such as: specific stream reaches observed as spawning or rearing habitat; locations, types, and heights of any barriers; etc.

Comments:

Please see the attached document "Davis Lake Habitat Assesment" for supporting documentation.

BARRIERS START ABOUT 300 yds ABOVE
TIDEWATER. PER W. FROST USFS
4/8/02

ALASKA DEPT. OF
FISH & GAME
MAR 26 2002
REGION II
HABITAT AND RESTORATION
DIVISION

Name of Observer (please print): William D. Frost

Signature: [Signature]

Date: 3/22/02

Address: P.O. Box 129

Girdwood, Alaska 99587

This certifies that in my best professional judgment and belief the above information is evidence that this waterbody should be included in or deleted from the Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes per AS 16.05.870.

Signature of Area Biologist: _____

Davis Lake Habitat Assessment

Western Prince William Sound

Final Report
FY 2001

Draft

United States Department of Agriculture
Forest Service
Chugach National Forest
Glacier Ranger District

November, 2001

Introduction

Davis Lake is located within the jurisdiction of the Chugach National Forest, Glacier Ranger District. This report describes both the available fish habitat of streams and lake inventoried and describes the methods used to investigate the presence of juvenile and adult fish in the streams and lake of the Davis Lake system, western Prince William Sound. Limited fish sampling and bathometric studies were conducted by the Alaska Department of Fish and Game (ADF&G Field Data Summary: Copper River and Prince William Sound Lake Investigation, 1982). It was determined by the Forest Service that more habitat information was needed to help resource managers understand the nature of Davis Lake system. Information collected in this survey will enable program managers to assess possible future enhancement projects, such as improving rearing habitat or possible stocking of the lake system.

Study Site

Located in Western Prince William Sound, Davis Lake (Appendix 1) (Alaska Department of Fish and Game Anadromous Waters Catalog stream I.D. # 223-30-311) is located in Northwest Prince William Sound (PWS), 60 58' N, 147 59' W. The study site consisted of one lake, 230 acres and four reaches totaling 2,178 meters.

Methods

Habitat Availability

Habitat data was collected in streams and Davis Lake. Data collected for stream surveys were divided into reaches based on R10 channel morphology characteristics (USDA Forest Service, 1992). Breaks were determined by variables measured using this methodology including: channel type, confinement, channel sinuosity, channel incision depth, flood prone width, bankfull width and estimated channel gradient. Each reach was surveyed for stream habitat characteristics using the R1/R4 Basin Wide Survey Method (Overton et. al. 1997). The following R1/R4 variables were measured: length, width and average depth of habitat type, pocket pools, max depth and crest depth of pools, large woody debris and Wolman pebble count. Wolman pebble count was conducted once per 1000 m in selected reaches and serve as a general indicator of substrate size for what was considered a typical habitat unit. Spawning habitat was estimated along the littoral zone in Davis Lake. Available spawning habitat was estimated in meters and mapped. Data collected for Davis Lake consisted of the total available spawning habitat found in the lake. Physical barriers were documented to help determine the limitations to spawning range and biological potential of this system.

Fish Population Information

Presence and distribution of fish species in Davis Lake was estimated using trapping with minnow traps baited with betadine treated salmon eggs to assess presence/absence, age structure and species diversity of fish populations. However, it is noted that juvenile sockeye may be missed by minnow trapping and can potentially underestimate sockeye abundance because of this species tendency towards a planktivorous diet (Burgner, 1991). Davis Lake trapping effort was based on surface area (Table 1). Hook and line sampling was used at the outlets of stream reaches into Davis Lake to determine the presence of adult fish populations. Hook and line data should only be considered as a general indicator for presence of adult fish as this method was not applied evenly to all areas of Davis Lake.

Table 1. Acres to traps ratio.

Acres	Traps/Acre
0-20	3
20-50	2
50-100	1
100+	.5

Stream reaches were sampled using visual observation with snorkel survey. Slow and fast water habitats were snorkeled from the downstream tail upstream using dry suit and a diving light. Every other fast or slow water habitat was snorkeled and species type and age class in inches was recorded.

Table 3. Snorkel survey results.

Reach	Channel Type	Habitat #	Habitat Type	Species	Number	Size/Inches
1	HC4	1	HGR	None	0	0
1	HC4	11	STP	DV	8	3
1	HC4	11	STP	DV	15	5
1	HC4	11	STP	DV	5	9
1	HC4	13	STP	None	0	0
2	LC1	2	LGR	None	0	0
4	GO1	2	SLM	None	0	0
4	GO1	4	SMR	None	0	0

Discussion

Reach one is a deeply incised muskeg channel, dominated by a series of velocity barriers and falls that limit the movement of adult fish into Davis Lake. Adult sockeye were observed in the lower portion of habitat unit one, along with Dolly Varden char. Reach two is located above the falls and is a low gradient contained channel located at the outlet to Davis Lake. No fish were observed in this reach. Reach three is a moderate width glacial channel that was formed after 1976, as indicated by the flight line photograph of that year. Spawning habitat is comprised of gravel and small cobbles. No snorkel survey was conducted on this reach due to the velocity of the current. Reach four did not have stream morphology characteristics taken but appears to be the old glacier channel that was abandoned when reach three was formed. No fish were observed during the snorkel survey. Davis Lake had high quality spawning habitat at the outlet and along various portions of shoreline. The discovery of Kokanee salmon in Davis Lake was of significance due to past surveys that indicated the lake being fishless. Enquiries into the possible reason for the presence of fish in Davis Lake were made to the Alaska Department of Fish and Game. It was determined that stocking of the lake with sockeye fry occurred in or around 1988. The possibility exists that portions of the stocked sockeye fry remained in the lake and continued their life cycle as Kokanee. Davis Lake, while at one time isolated to anadromous fish by its topography has an established population of kokanee salmon. Further investigations are warranted to determine spawning time and location of spawning in Davis Lake system.

Bibliography

ADF&G.1982. Field data summary: Copper River and Prince William Sound Lake Investigations. pp.64-91.

Burgner, R.L. 1991. Life history of sockeye salmon (*Onchorhynchus nerka*). Pages 3 117 *in.* C.Groot and L. Margolis, editors. Pacific Salmon Life Histories. UBC Press, Vancouver.

Overton, K.C. 1997. R1/R4 (Northern/Intermountain Regions) Fish and Fish Habitat Standards Inventory Procedures Handbook. Intermountain Research Station. Ogden, UT.

USDA (United States Department of Agriculture). 1992. A Channel Type Users Guide for the Tongass National Forest, Southeast Alaska.

Davis Lake, Port Wells, Prince William Sound

Cabir 36

31

35

T 11 N

T 10 N

*ADD BARRIER
300 yds Above
ITZ*

728

10

Reach-1

11 Golden

Reach-2

12

Avery

7

Reach-3

Davis Lake

13

18

Cap

Reach-4

15

14

22

23

24

19

x 2180

