State of Alaska
Department of Fish and Game
Nomination for Waters
Important to Anadromous Species

1991
Year of Revision

Approved

R Kelt 11/1/90
Regional Supervisor Date

91 062
SIS 12/26/90

FI 12/20/90
Drafted

Name of Waterway RAINBOW Ck.

AWC# of Waterway 332-00-10250-2110-3120-4006

AWC Volume & Number ARCTIC IV

USGS Quad NOME D-1

Addition X Correction ____
Deletion ____ Change ____

Change to ____ Atlas
____ Catalog
X Both

Species	Date(s) Observed	Spawning	Rearing	Migration
AC	8/7/90		X	

Comments: Provide any clarifying information, including number of fish observed, location of fish survey data, etc.

New Nomination

SEE ATTACHED SURVEY DATA

Attach a copy of a map showing location of mouth and upper points of each species, specific stream reaches identified for spawning or rearing, locations of barriers, such as falls. Attach a copy of the fish survey data, if available.

Name of Observer (please print) ROBERT F. MCLEAN

Date: 11/1/90 Signature: Robert F McLean

Address: Alaska Dept. of Fish and Game
Habitat Division
1300 College Road
Fairbanks, Alaska 99701

ALASKA DEPT. OF FISH & GAME
NOV 05 1990
REGION II
HABITAT DIVISION

1990 NORTON SOUND FISHERIES INVESTIGATIONS

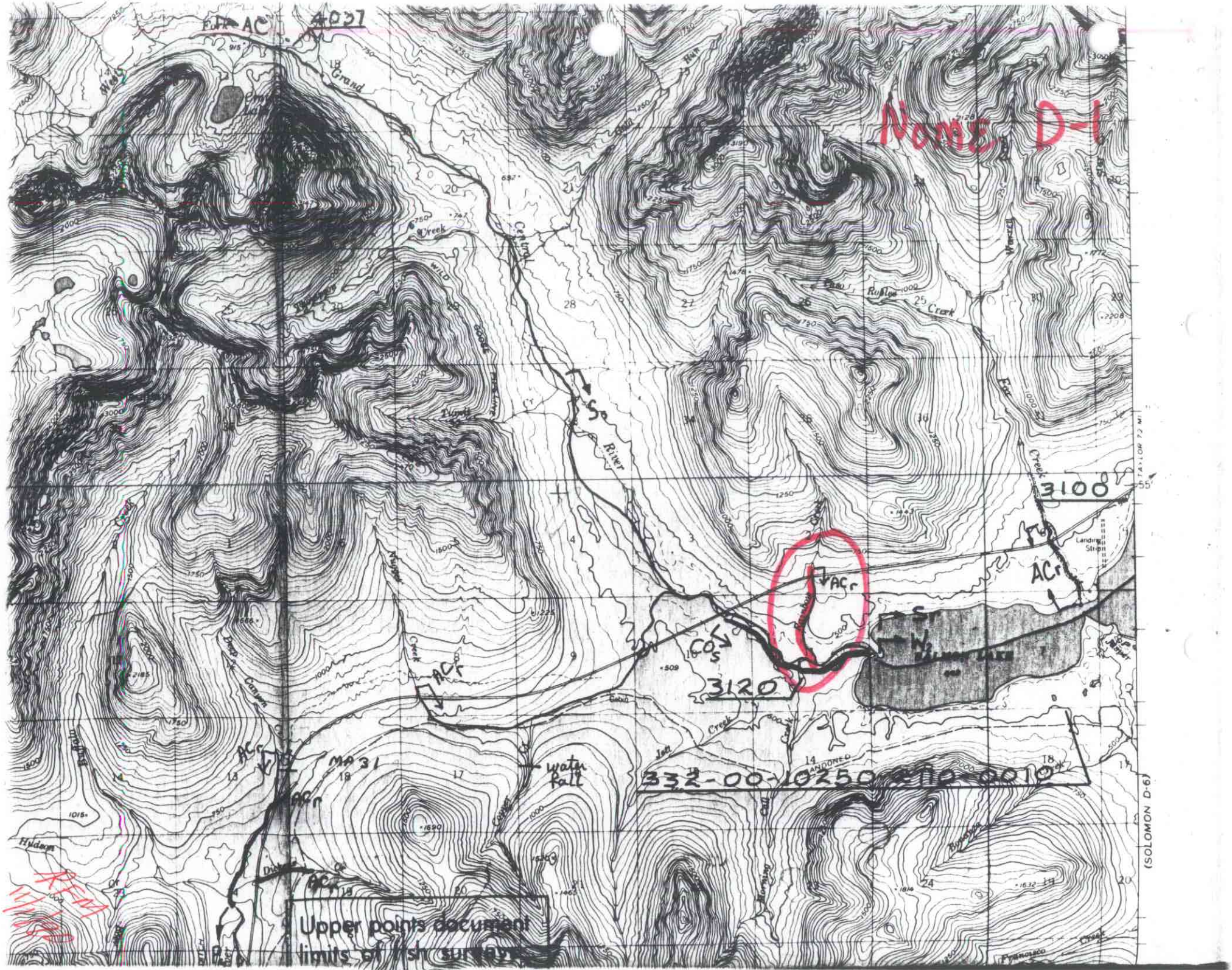
Stream Name: Rainbow Creek Reach: @ Road 100' above CMP

Date: 8/7/90 Time: 1430 Surveyors: McLean

Fisheries Data: 700v 90cycle Salmon Lake

Species	Fork Length (mm)	Weight (gm)	Sex	Other
5'	CMP	Perched	6"	
	3 to 4° Gradient			
	Cascade over outlet	riprap		1 ft.
Inlet				
start	442	stop	658	(216 total)
High Gradient Riffle w/ Cascades 100' upstream of inlet				
DV	90mm	(collected midway up cascade)		
Temp	8.0			
pH	6.0			
Predominately est	cobble w/ Rubble 5 cfs			

RFM 11/1/90



Nome D-1
AC
4037
Grand
Central
River
So
3100
ACr
Sr
W
COs
3120
ACr
MA 31
water fall
332-00-10250 & 110-0010
Upper points document limits of fish surveys
(SOLOMON D-6)

ALASKA DEPT. OF
FISH & GAME

DEC 17 1990

REGION II
HABITAT DIVISION

MEMORANDUM

State of Alaska
Department of Fish and Game

To: Lance Trasky
Regional Supervisor
Habitat Division

Date: December 12, 1990

File No:

Telephone Number: 451-6192

From: Alvin G. Ott
Regional Supervisor
Habitat Division
Department of Fish and Game

Subject: 1991 Anadromous Catalog Nominations

RE: Justification for designation of Arctic char as anadromous; Seward Peninsula Area.

In response to Stewart Seaberg's request, the following justification has been prepared for the record and reflects the factual basis for our determination that Seward Peninsula Arctic char (now recognized as Dolly Varden) are predominately anadromous.

As you are aware, arctic and sub-arctic char populations exhibit a number of life history patterns. This variation is further complicated in that char within a single drainage exhibit considerable "plasticity" in which sympatric and allopatric forms exist with different life history patterns. McCart (1980) describes four life history types. Three of these types (isolated stream residents, residual and anadromous) occupy stream habitats while the fourth type resides in lakes. The lake resident type is generally regarded to be a resident, non-anadromous, population (recent taxonomic clarification regards this morph type as a true Arctic char - other char morph types are now considered to be Dolly Vardens). However, McCart concludes that all three stream morphs cannot be distinquished by meristic characteristics. The only way to distinguish anadromous and non-anadromous populations is to document the life history pattern of the fish in question or examine external characteristics such as parr-marks and coloration. All three stream morphs are identical for the first several years of life and are indistinguishable until either (1) anadromous populations undertake their first sea-ward migration (Age III to V) or (2) stream residents and residual morphs first reach sexual maturity (typically Age VI).

Within this framework, research conducted by Dr. Hans Norbeng of Norway is particularly noteworthy. Dr. Norbeng artifically spawned both resident and anadromous char as separate groups and presented the results of his research at the First International Symposium on Arctic char in 1981. Dr. Norbeng's research demonstrated that both matings between resident adults and matings between anadromous adults produced the same ratio of resident versus anadromous offspring. Regardless of whether resident or anadromous adults were spawned, the offspring produced were 30% small residents, 10% large residents, and 60% anadromous. He concluded that small and large resident char were analogous to precocious individuals in salmon populations and that the life history pattern that develops may be a function of gene ratio.

Based on these findings, we believe that a reasonable basis exists for concluding that a significant percentage of juvenile char collected in mainstem and tributary streams on the Seward Peninsula are anadromous morphs. This finding is further strengthened by the following observations by department staff:

1. All nominations to the catalog for the Seward Peninsula which are based on the presence of juvenile char have been for tributary streams in close proximity to documented adult anadromous char spawning areas or locations where adult ocean-run fish have been observed:

   (a) **Nome River drainage** - adult spawners documented to approximately 1 mile north of David Creek (within 2 miles of new nominations).

   (b) **Salmon Lake/Pilgrim River drainage** - anadromous adults documented in Pilgrim River, Salmon Lake, and the Grand Central River. All nominations are immediately proximate to these waterways.

   In addition, confirmation was received from Sport Fisheries Division (Fred DeCicco) this summer (August) that spawning anadromous char were observed by him in lower Iron Creek (mouth located approximately 10 to 12 miles downstream of the Salmon Lake outlet) in the early 1980's.

   (c) **Fox River drainage** - anadromous adults documented in the mainstem Fox River to approximately 1/2 mile upstream of Hugh Rowe Creek. All juvenile anadromous char nominations are either immediately proximate to the documented mainstem anadromous char distribution or upstream (within several miles) of previously documented anadromous adult distribution.

   (d) **Bluestone Creek drainage** - anadromous adults documented in the mainstem. All juvenile anadromous char nominations are either immediately proximate to the documented mainstem anadromous char distribution or upstream (within several miles) of previously documented anadromous adult distribution.

   (e) **Feather River/Wooley Lagoon drainages** - anadromous adults previously documented in the Feather River and Wooley Lagoon. Anadromous adults annually harvested in the Wooley Lagoon subsistence fishery. All juvenile nominations are proximate tributaries to known anadromous char distributions.

2. The extremely infrequent collection of large, dark-colored char (?? potentially resident) in electro-shock, seine or minnow trap surveys (less than 10%);

3. The predominate collection of small (less than 120 mm), brightly colored, parr-marked juveniles in electro-shock, seine and minnow trap surveys (suggestive of anadromous populations);

4. The nearly absent documentation of sexually mature char less than 300 mm in length (to date, only two brightly colored char less than 300 mm have

been collected - one 170 mm char was collected in an old dredge channel and one 192 mm char was collected from a bedrock plunge pool);

5. Saltwater interception and high subsistence catch rates of anadromous char proximate to river mouths; and

6. The close proximity of inland streams and tributaries to Norton Sound.

If there are any questions regarding this analysis, please contact Mac McLean at 451-6192.

Literature Cited

McCart, P.J. 1980. A review of the systematics and ecology of Arctic char, Salvelinus alpinus, in the Western Arctic. Can. Tech. Rep. Fish. Aquat. Sci. 935:vii+ 89 p.

cc: Stewart Seaberg

AGO:BM