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

1991
Year of Revision

Approved

Al Hett 11/1/90
Regional Supervisor Date

91 069

F1 12/20/90
Drafted

Name of Waterway CHRISTIAN CRK.

AWC# of Waterway 333-10-11250-2120

AWC Volume & Number ARCTIC V

USGS Quad NOME D-1

Addition ____ Correction ____
Deletion ____ Change X

Change to ____ Atlas
____ Catalog
X Both

Species	Date(s) Observed	Spawning	Rearing	Migration
AC	8/4/90		X	

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

UPSTREAM EXTENSION

SEE ATTACHED SURVEY FORM

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: ADF&G 1300 COLLEGE
FAIRBANKS AK 99701

ALASKA DEPT. OF
FISH & GAME

NOV 05 1990

REGION II

1990 NORTON SOUND FISHERIES INVESTIGATIONS

Stream Name: CHRISTIAN CREEK Reach: 1

Date: 8/4/90 Time: 11:00 Surveyors: MACLEAN/BLM

Fisheries Data: 500 Volt 90 cycle 200 ft Reach 1ST SHOCK

Species	Fork Length (mm)	Weight (gm)	Sex	Other
SCU	80			
DV	88			
DV	108			
SCU	73			
DV	132			
SCU	76			
SCU	81			
SCU	70			
SCU	78			
SCU	80			
SCU	78			
SCU	67			
DV	47			
DV	84			
SCU	70			
SCU	76			
DV	47			
DV	43			
DV	73			
DV	78			
DV	66			
DV	64			
DV	46			
DV	74			

RFM 11/1/90

1990 NORTON SOUND FISHERIES INVESTIGATIONS

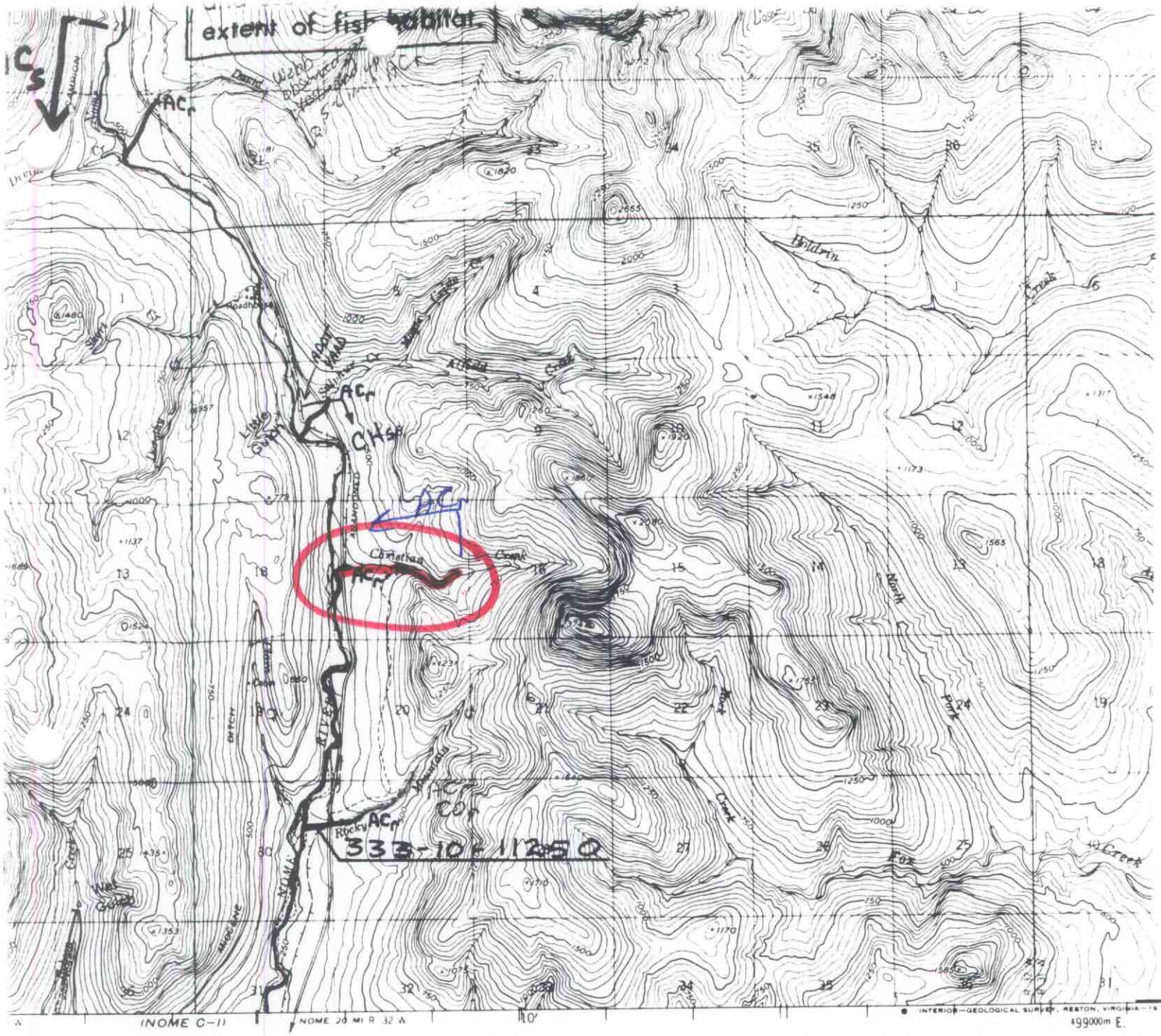
Stream Name: CHRISTIAN CREEK Reach: 1

Date: 8/4/90 Time: 11:30 Surveyors: MACLEAN/BUM

Fisheries Data: 2ND SHOCK

Species	Fork Length (mm)	Weight (gm)	Sex	Other
SCU	85			
SCU	77			
SCU	82			
SCU	75			
SCU	86			
SCU	75			
SCU	67			
DV	35			
SCU	84			
DV	40			
DV	41			
DV	122			
DV	142			
SCU	82			
DV	75			
SCU	68			
SCU	72			
DV	86			
DV	40			
DV	39			
SCU	65			
DV	56			
DV	41			
DV	36			
DV	40			

RFM 11/2/90



SCALE 1:63 360

4 MILES

3000 6000 9000 12000 15000 18000 21000 FEET

0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 50 FEET
DASHED LINES REPRESENT 25 FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

1989 ROAD CLASS
Light duty

1990

ALASKA
QUADRANGLE LOCATION

NOME (D-1), A
N6445—W16500/

1950
MINOR REVISIONS

AWC63 10341 NOM

RFM
11/1/90

ROJ. TITLE

ANADROMOUS WATERS CATALOG

ANADROMOUS WATERS ARE LISTED PURSUANT TO AS 16.05.870 (a)

ALASKA DEPARTMENT OF FISH AND GAME

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