

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

AWC Volume SE SC SW W AR IN USGS Quad Dixon Entrance D-3

Anadromous Water Catalog Number of Waterway 103 - 30 - 10400

Name of Waterway Grace Harbor Creek USGS name _____ Local name _____

Addition _____ Deletion _____ Correction Backup Information _____

For Office Use JGJ 1/25/00

Nomination # <u>99 327</u>	<u>Jana Flanders</u> <u>12-23-99</u> Regional Supervisor Date
Revision Year: <u>00</u>	<u>Ed Win</u> <u>1/20/00</u> FISH & GAME
Revision to: Atlas _____ Catalog _____	<u>DEC 29 1999</u>
Both <input checked="" type="checkbox"/>	Drafted REGION II Date
Revision Code: <u>B-1 B-2</u>	HABITAT AND RESTORATION DIVISION

OBSERVATION INFORMATION

Species	Date(s) Observed	Spawning	Rearing	Migration	Anadromous
Dolly Varden char	July 21, 1999		≈ 38		No
Rainbow trout	July 21, 1999		≈ 68		No
Coho Salmon	By Jeffery Davis July 26 1996		Numerous		Yes

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 any other information such as: specific stream reaches observed as spawning or rearing habitat; locations, types, and heights of any barriers; etc.

Comments: See attachments. Two separate field inspection reports are included.

Action Recommended: Change the catalog to show the upper extent of anadromous habitat is the falls that is approximately 850 feet from salt water. Also change the Atlas so that the small lake in sec 32, T80S, R83E is connected to Grace Harbor creek.

Name of Observer (please print) Steve McCurdy
 Date: 12-16-99 Signature: Steve McCurdy
 Address: PO Box 668
Craig Alaska 99921

This certifies that in my best professional judgement 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: Maura A. Single

MEMORANDUM

State of Alaska DEPARTMENT OF FISH AND GAME

FROM: Steven McCurdy
Habitat Biologist
Habitat and Restoration Division
Craig

Date: November 17, 1999

RE: Grace Harbor Creek

On Thursday July 21, 1999, Dave Archambault, and Bruce Askren from Sealaska Timber Corporation (STC) and I visited STC's Grace Harbor operation. The purpose of the trip was to determine if a series of cascades and falls in the lower portion of Grace Harbor Creek (ADF&G stream number 103-30-10400, cataloged for pink, chum and coho salmon) was a barrier to anadromous fish.

Grace Harbor Creek is a relatively large stream that drains a small lake on Dall Island. I examined portions of the stream from approximately 200 meters above salt water to 1,400 meters upstream. The stream has an average width of approximately 10 meters, and other than a series of cascades and falls near salt water, is a low gradient stream with several old beaver dams in places. The stream appears to contain excellent salmonid fish habitat for both spawning and rearing.

The Atlas currently indicates that Grace Harbor Creek is utilized by coho salmon for over a mile of length and that chum and pink salmon can access approximately ½ mile of the stream. The Atlas is incorrect in the amount of stream that is accessible by the various species of salmon. An area of steep gradient that may be a block to fish passage occurs where STC's 2,000 road crosses the stream. From the map provided by STC (as part of a forest practices notification submitted 10/98 to DNR) it appears that this is approximately 850 feet from salt water. There are two sections of the cascade that may be barriers to upstream migration of anadromous fish. Using a hand level and level rod, STC personnel took measurements of the falls. The lower falls is split into two separate channels at most flows. The right channel (looking downstream) is a near vertical falls of 8 feet with a pool depth of 2 feet. The left channel spills onto bedrock and is a steep cascade, not a vertical falls. The second set of falls is located within 50 meters of the first falls and is similar to the first falls in that it also splits into two channels. The right channel is a vertical falls of nine feet that drops into a pool that is 7 feet deep. The left channel is a cascade that has a small vertical falls at its base of approximately 2 feet. Both sets of falls are obvious barriers to pink and chum salmon.

The stream was sampled for the presence of juvenile fish using baited minnow traps. Two traps were set downstream of the falls, and five were set upstream. Two of the upstream traps were set just upstream of the 3000 road bridge and the other three were

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set near a blown out beaver dam approximately half way between the upper bridge (3000 road) and lower bridge (2000 road). I set the upstream traps near what I considered to be good coho rearing habitat. All the traps were allowed to soak from one to two hours.

The two upper-most traps set above the upper bridge captured 8 juvenile Dolly Varden char and 8 juvenile steelhead/rainbow trout¹. The three traps set by the broken down beaver dam captured a total of approximately 30 juvenile Dolly Varden char and 60 juvenile steelhead/rainbow trout. The two traps set below the falls captured approximately 20 Dolly Varden char, 30 steelhead/rainbow trout, and 10 sculpins. No cutthroat trout or coho salmon were captured or observed. The steelhead/rainbow trout that were captured ranged in size from 70 mm to 150 mm fork length. All of the steelhead/rainbow trout captured were visually examined for external features to determine species and several were further examined after being anesthetized (using MS-222) for the presence or absence of hyoid teeth. Two steelhead/rainbow trout captured from above the falls were sacrificed and brought back to the office for further examination. Due to the large size of the steelhead/rainbow trout captured there was no difficulty in distinguishing the fish from cutthroat trout.

On July 26, 1996, a similar field inspection was conducted at the request of STC for the same purpose of determining the upper extent of anadromous habitat. Jeffery Davis from ADF&G along with John Karoly and Chris Westwood (DNR) and Bruce Askren (STC) were present. Jeffery Davis set baited minnow traps both below and above the falls. According to Bruce Askren the areas where the baited minnow traps were set were generally the same as the areas sampled during the July 21, 1999, field inspection. Jeffery Davis reported catching cutthroat trout and Dolly Varden char above the falls, and numerous juvenile coho below the falls. Jeffery Davis's conclusion was that Grace Harbor Creek above the falls was non-anadromous.

The major difference between the two field inspections was the presence of juvenile steelhead/rainbow trout in 1999. Since it is often difficult to distinguish between juvenile steelhead/rainbow trout and cutthroat trout it may be that the cutthroat reported in the 1996 field inspection were misidentified.

The field inspection of July 21, 1999, appeared to demonstrate that the falls in question was a barrier to the salmon species listed in the Atlas. However, it also demonstrated that steelhead/rainbow trout were present in the system. Because the height of the falls are close to the known limits of what steelhead are capable of migrating past, I

¹ In referring to individuals of the species *Oncorhynchus mykiss*, I use the term rainbow to refer to resident fish, the term steelhead to refer to anadromous fish, and the term steelhead/rainbow when it is unknown if the fish are resident or anadromous.

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focused my efforts on trying to determine if steelhead were able to access the habitat above the falls.

Because individuals of the species *Oncorhynchus mykiss* often exhibit different life history strategies, the presence of juveniles above the falls does not necessarily signify that anadromous fish are passing upstream. It may be that there is a population of resident fish (rainbow trout) above the falls. It is also possible to have both life history strategies (resident and anadromous) present in the same population if no barriers exist between the two types. In such a population it is also possible to have fish of one life-history type produce progeny of the other life-history type. The presence of adult rainbow trout by itself does not preclude the presence of anadromous steelhead.

I had the otoliths from two of the juvenile fish captured from above the falls analyzed for their Strontium/Calcium ratio. The Sr/Ca ratio of marine and fresh water differ. The otoliths are the first bony structures formed after fertilization. The Sr/Ca ratio of the primordia (the center of the otolith) would reflect the nutrient composition of the yolk and therefore can determine if the maternal parent has been in the marine environment (since the egg is formed in the mother while in the marine environment). Because the fish has to be killed to sample the otoliths, this method is not practical for a large number of fish. On October 21, 1999, I received an e-mail from Chris Zimmerman, a graduate student from Oregon State University working under Dr. Gordie Reeves, who analyzed the otoliths from Grace Harbor Creek. Chris indicated that neither of the two samples he analyzed appeared to have anadromous origins. These results (by themselves) do not rule out the possibility that anadromous steelhead contribute to the population of fish, but they do indicate that there is a population of resident rainbow trout above the falls.

According to the Anadromous Fish Blockage Table listed in the Alaska Forest Resources and Practices Regulations, section 11 AAC 95.265, steelhead are capable of clearing falls up to 13' in height. However, the upper falls at Grace Harbor Creek does not meet the criteria for pool depth in order for a fish to clear a 9' falls. The steep channel in the lower falls may also exceed the criteria for fish passage listed in the table. The falls at Grace Harbor Creek meet the criteria for fish blockage listed in the table, and no evidence of anadromous fish have been found upstream.

I recommend that the Catalog be changed to show Grace Harbor Creek as being anadromous only to the falls that is approximately 850 feet from salt water. Jeffery Davis captured juvenile coho salmon here in 1996. The habitat up to the falls is easily accessible by chum and pink salmon and this should be considered the upper extent of their habitat also. It was reported to me by loggers in the area that adult anadromous steelhead have been observed and captured (sport fishing) below the falls (during the spring), however I personally did not observe any adult steelhead during my visit to the site. Although Grace Harbor Creek above the falls appears to be non-anadromous, it is still high quality fish habitat that supports populations of rainbow trout and Dolly Varden char (and possibly cutthroat trout).

November 17, 1999

Grace Harbor Creek

Another correction that should be made: The lake in the SW corner of section 32, T80S, R83E CRM is connected to Grace Harbor Creek and should be drawn in on the Atlas.

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPARTMENT OF FISH AND GAME HABITAT AND RESTORATION DIVISION

2030 SEA LEVEL DRIVE, #205
KETCHIKAN, AK 99901
PHONE: (907) 225-2027
FAX: (907) 225-2676

MEMORANDUM

TO: Chris Westwood *gcd*
Ketchikan Area Forester
Department of Natural Resources
Ketchikan

FROM: Jeffrey C. Davis
Habitat Biologist

DATE: 1 August, 1996
FILE NO.: SE-83-006

SUBJECT: Grace Harbor Inspection Report.

On 26 July 1996, you, John Karoly, Bruce Askren, and I inspected Sealaska's Grace Harbor Tract. This inspection was in response to the operator's request to determine anadromous fish presence.

The stream in question is Grace Creek (catalog # 103-30-10430) which is in sections 28, 29, and 32 of T80S, R83E of the Copper River Meridian. We traveled the 2000 road to the bridge crossing of Grace Creek (see attached map). Numerous juvenile coho salmon were captured with baited minnow traps downstream of the bridge. Directly below the bridge is a 6 to 8 ft. waterfall and upstream of the bridge is a second fall/cascade of 10 to 15 feet which may form a barrier to upstream fish migration. We then traveled up the 3000 road to a beaver dam on Grace Creek. One baited minnow trap was placed below the dam and one upstream of the dam. Numerous cutthroat trout and one Dolly Varden char were captured below the dam and no fish were captured in the beaver dam pool. We then continued up the 3000 road to the second bridge crossing of Grace Creek. Two baited minnow traps were placed in this location and after roughly 1 hour yielded 3 cutthroat trout. Based on observation of the falls, absence of anadromous fish upstream, and previous reports, the section of Grace Creek upstream of the 2000 road bridge does not support anadromous fish.

Upper Grace Creek is a large stream (30 to 40 feet wide) with a low slope (2 to 6%) and abundant spawning and rearing habitat. This stream had numerous cutthroat trout and may prove to be a high-value resident fish stream. We would encourage Sealaska to retain a 66 ft timber retention area along both banks of this stream.

cc: Jack Gustafson, ADF&G, Ketchikan
Wayne Valentic, Sealaska Timber Corporation, Ketchikan

Edward W. Weiss

From: Edward W. Weiss [ed_weiss@fishgame.state.ak.us]
Sent: Wednesday, June 21, 2000 2:19 PM
To: 'mark_minnillo@fishgame.state.ak.us'
Subject: RE: Grace Harbor Creek

Yes, the nomination was received and the changes have been made to the draft coverage. They won't actually take effect until the next legal revision to the AWC regulations (late 2000 or early 2001). However, I probably wouldn't press any 870 issues in the area above the road since we don't believe it's anadromous and will be shortening it.

-----Original Message-----

From: Mark Minnillo [mailto:mark_minnillo@fishgame.state.ak.us]
Sent: Tuesday, June 20, 2000 1:20 PM
To: Edward W Weiss
Subject: Grace Harbor Creek

Ed,
On December 16, 1999, Steve McCurdy nominated Grace Harbor Creek, #103-30-10400, for a change in the delineation of the extent of anadromous habitat to a point approx. 850' from salt water. This is a stream that Steve caught rainbows in and had them identified as such and not as steelhead. Can you please tell me if this change has taken place or if it will take place in the near future? Thanks, Mark

Edward W. Weiss

From: Don McKay [don_mckay@fishgame.state.ak.us]
Sent: Monday, November 22, 1999 1:28 PM
To: Edward W Weiss
Cc: Wayne Dolezal; Lance L Trasky
Subject: FW: Grace Harbor and Sr/Ca ratio

Interesting.

-----Original Message-----

From: **Bill Hanson** [mailto:bill_hanson@adfg.state.ak.us]
Sent: Monday, November 22, 1999 9:24 AM
To: Donald O McKay; Robert F Mclean; Lana S Flanders
Subject: FW: Grace Harbor and Sr/Ca ratio

Results of otolith testing.

-----Original Message-----

From: **McCurdy, Steve J.**
Sent: Thursday, October 21, 1999 4:38 PM
To: Hanson, Bill
Cc: Kevin M Brownlee; Ingle, Moira
Subject: Grace Harbor and Sr/Ca ratio

Bill, You had asked me to get back to you when I received results on my otolith samples from Grace Harbor.

I heard back from Gordie Reeves and Chris Zimmerman concerning the samples from Grace Creek that I sent down. Chris ran two of the samples and said that neither appears to have a steelhead origin. He said that the area of the otolith outside of the primordia (this would be the region of freshwater growth in the fish) had the lowest SR/Ca levels that he has ever seen. What this means is that it should be easy to detect higher levels in the primordial of a juvenile fish with a steelhead maternal parent. In other words, he has a high degree of confidence that the samples I sent down do not have an anadromous origin.

I'm still waiting to hear from STC concerning the actual measurement of the falls, so we can compare them to the literature. I would also still like to get out to Grace Harbor in the spring and have a look around for adult fish. I wouldn't want to base a decision on whether or not the falls is a barrier just on the two samples of juvenile fish that were analyzed. I also don't feel that killing more juvenile fish is the way to go, I was mostly just taking a long shot by keeping the fish that I did. I think the decision should be based on a combination of:

1. the fact that we now know that there are resident rainbows above the falls.
2. Comparison of the measurements of the falls/cascade to what is in the literature. 3. And hopefully one more site visit in the spring.

Also I know Kevin was interested in literature, and for anyone else that might be here are two references that Chris passed on to me.

Kalish, J.M. 1990. Use of otolith microchemistry to distinguish progeny of sympatric anadromous and nonanadromous salmonids. Fishery Bulletin. 88:657-666.

Rieman, B.E., Myers, and R.L. Nielsen. 1994. Use of otolith microchemistry to discriminate *Oncorhynchus nerka* of resident and anadromous origin. Can. J. Fish. Aquat. Sci. 51:68-77.

Chris also said that he will have a paper done in the near future on steelhead and resident rainbow trout.

Weiss, Ed

From: Weiss, Ed
Sent: Friday, August 06, 1999 2:46 PM
To: McCurdy, Steve J.
Cc: Gustafson, Jack
Subject: RE: Grace Harbor Creek

It appears that the stream currently listed as 103-30-10400 was improperly mapped during the 1982 creation of the atlas. It was added during the 1982 creation of the maps and, I believe, is supposed to correspond to the stream at the head of the bay, CF survey stream 103-30-40 and AWC stream 103-30-10410.

During the initial mapping they usually tried to work the CF stream numbers into the new AWC number as much as possible (40 becoming 10400). However, I believe it was mapped in the wrong location. The 1968 and 1975 versions of the catalog list 103-30-40 at latitude 54 54 31 and longitude 132 55 50. The 1968 catalog goes on to describe the stream as being at the "extreme west head of Grace Harbor the southern most stream". This is also consistent with Edgington (March 1981). The current location and latitude longitude for 103-30-10400 do not match this.

In 1983 stream 103-30-10410 was added. There are two nominations for stream 103-30-10410 the file. Both came in about the same time. One from Phillip Doherty for Coho rearing and Pink spawning. And one from Don Cornelius / John Valentine. Pink, Coho and Chum carcasses were observed, presumably by Don in March 1983. Apparently, some 1972 observation by Valentine back this up however no details were given. Both of these nominations were early ones and thus did not provide much detail. The 1972 observation may correspond to September of 72 observations listed in Edgington for stream 103-30-40.

In short I believe stream 103-30-10400 and it's associated species, are the same as and should be in place of stream 10410. If you or any of your research can confirm this I would appreciate knowing.

In terms of what data there is to back up it's listing, Edgington (ADF&G Tech. Data Report 59, March 1981) also lists survey observations between 1953 & 1980. I suspect that CF has this and subsequent observation data in their database under stream 103-30-40. Again I believe this data corresponds to the stream currently shown as 10410.

What I will plan on doing is deleting stream number 10410 and moving 10400 to that location. I have no specific nominations or other information indicating the stream currently shown as 10400 contains anadromous fish. Are there any anadromous fish resources in the stream currently shown as 10400 that you are aware of? I will place this in the file for pending changes until I hear from you. Thanks.

-----Original Message-----

From: **McCurdy, Steve J.**
Sent: Friday, August 06, 1999 1:37 PM
To: Weiss, Ed
Subject: Grace Harbor Creek

Ed, I was doing some work on Grace Harbor Creek (#103-30-10400) on Dall Island (SE Alaska. USGS Quad Dixon Entrance D-3) and I was hoping to get some information on the history of how this stream was originally cataloged. Thanks. Steve

Weiss, Ed

From: McCurdy, Steve J.
Sent: Sunday, August 08, 1999 4:39 PM
To: Weiss, Ed
Subject: RE: Grace Harbor Creek

Thanks for the info Ed. I also believe that the stream currently listed as 103-30-10400 is incorrectly cataloged. The stream is on Sealaska Timber Corporation land and they requested that I determine the upper extent of anadromous habitat. There is a series of falls/cascades approximately 800 feet from salt water that may be a barrier to upstream migration (it is a definite barrier to pink and chum salmon). I did some minnow trapping upstream of this falls hoping to see some juvenile coho. I caught none, however I did catch a large number of juvenile steelhead/rainbow. I'm unsure if these are resident fish or not. Right now I'm thinking adult steelhead are making it upstream of these falls. Until I can check it out further my only recommendation for changes to the Atlas is to limit pink and chums to the lower 800 feet of stream. As soon as I learn anything new I'll let you know.

-----Original Message-----

From: Weiss, Ed
Sent: Friday, August 06, 1999 2:46 PM
To: McCurdy, Steve J.
Cc: Gustafson, Jack
Subject: RE: Grace Harbor Creek

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During the initial mapping they usually tried to work the CF stream numbers into the new AWC number as much as possible (40 becoming 10400). However, I believe it was mapped in the wrong location. The 1968 and 1975 versions of the catalog list 103-30-40 at latitude 54 54 31 and longitude 132 55 50. The 1968 catalog goes on to describe the stream as being at the "extreme west head of Grace Harbor the southern most stream". This is also consistent with Edgington (March 1981). The current location and latitude longitude for 103-30-10400 do not match this.

In 1983 stream 103-30-10410 was added. There are two nominations for stream 103-30-10410 the file. Both came in about the same time. One from Phillip Doherty for Coho rearing and Pink spawning. And one from Don Cornelius / John Valentine. Pink, Coho and Chum carcasses were observed, presumably by Don in March 1983. Apparently, some 1972 observation by Valentine back this up however no details were given. Both of these nominations were early ones and thus did not provide much detail. The 1972 observation may correspond to September of 72 observations listed in Edgington for stream 103-30-40.

In short I believe stream 103-30-10400 and it's associated species, are the same as and should be in place of stream 10410. If you or any of your research can confirm this I would appreciate knowing.

In terms of what data there is to back up it's listing, Edgington (ADF&G Tech. Data Report 59, March 1981) also lists survey observations between 1953 & 1980. I suspect that CF has this and subsequent observation data in their database under stream 103-30-40. Again I believe this data corresponds to the stream currently shown as 10410.

What I will plan on doing is deleting stream number 10410 and moving 10400 to that location. I have no specific nominations or other information indicating the stream currently shown as 10400 contains anadromous fish. Are there any anadromous fish resources in the stream currently shown as 10400 that you are aware of? I will place this in the file for pending changes until I hear from you. Thanks.

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Sent: Friday, August 06, 1999 1:37 PM
To: Weiss, Ed
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Weiss, Ed

From: Gustafson, Jack
Sent: Monday, August 09, 1999 9:21 AM
To: Weiss, Ed; McCurdy, Steve J.
Subject: RE: Grace Harbor Creek

Ed, Steve; My memory of this (Stream # 103-30-10400 on the catalog map) may be way off, but does a Sealaska bridge cross this stream just above a large barrier falls not too far from saltwater? As I remember it, the road winds its way up a steep ridge to the south, where it goes over to Port Bazan. At a place where the road cuts through a rather hairy cliff, it overlooks a lake with resident fish; this forms the headwaters of 10400. I thought I remembered Sealaska folks saying salmon got up to the falls, but not over it, and that all of the fish above the falls were non-anadromous residents. I am not certain of the location, and I have never done any work on this stream, but if the falls is the one I am thinking of, I do remember it as a barrier. I don't remember seeing much (if any) habitat below the falls, but I only saw it in high water and was not looking into this as an issue. It might be worth checking out though, before completely removing the stream from the catalog. Just a suggestion. Jack

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To: McCurdy, Steve J.
Cc: Gustafson, Jack
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