

Dr. Robert Behnke
Department of Fishery and Wildlife Biology
Colorado State University
Ft. Collins, Colorado

2/20/00

Dear Dr. Behnke,

I'm still gathering literature on Arctic char and trying to sort out what's pertinent to South Central Alaska. I've obtained papers by DeLacy and Morton, McPhail and Morrow on Karluk Lake on Kodiak Island. Gharrett is sending a copy of his genetic study on Karluk Lake Dolly Varden and Arctic char. I've also discussed Karluk Lake with Dr. Richard Wilmot who studied this Lake for the USFWS. Dr. Wilmot said there was a glacial refugium on the Southern end of Kodiak Island. Hopefully I will obtain a copy of the Kodiak glaciation paper soon.

Last week I discussed Arctic char in the Susitna flats area of Alaska with ADF&G fishery biologist Al Havens. He said the only known populations in that area are in Big Lake near Wasilla and Benka Lake near Talkeetna. He also said that little work has been done on lakes west of the Susitna River and Arctic char could be present in that area.

My present understanding of Arctic char in South Central Alaska is that there are five known population centers:

1. At least one lake in the Shumagin Islands.
 2. Four lakes on the southern end of Kodiak Island:
 - a. Karluk Lake
 - b. Frazer Lake
 - c. Thumb Lake
 - d. O'Malley Lake
- They may also be present in additional lakes that remain unstudied.
3. Cooper Lake and probably a small tributary lake in the Kenai River watershed on the Kenai Peninsula.
 4. Arctic char have been sampled in about 50 lakes in the Swanson River watershed on the Kenai National Wildlife Refuge.
 5. Big Lake near Wasilla and Benka Lake near Talkeetna in the Susitna River watershed.

There appear to be three forms of Arctic char present in this area:

1. A large char in Big Lake that attains a maximum weight of 14 pounds. Juvenile sockeye salmon are available here as a food source. This lake has a maximum depth in one small basin of 83 feet.
2. A moderate sized char with a maximum reported weight of 3.3 pounds in Karluk Lake and 4.55 pounds in the Swanson River

watershed. The Karluk Lake Arctic char have access to sockeye salmon smolts but do not attain large size in spite of the availability of this food source.

3. The dwarf char in Cooper Lake that are sexually mature at a length of 9 to 10 inches and show parr marks in spawning adults.

I have an E mail from glacial geologist Pat Miller who believes there was a glacial refugium in the Susitna River watershed, in a rain shadow lake, during the Wisconsin glaciation. This information, if verified, could explain the presence of large Arctic char in Big Lake.

The presence of Arctic char on Kodiak Island could be explained by a refugium there.

The source of the Arctic char on the Kenai Peninsula remains unknown. I'm in touch with glacial geologist Richard Reger who studied this area. I hope to meet with him soon to determine if there were unglaciated areas on the Kenai Peninsula during the Wisconsin glacial period.

Your published papers on Arctic char describe our char as Salvelinus alpinus taranetzi and suggest this same subspecies occurs from the Gulf of Alaska to the Chukotsk Peninsula in eastern Siberia. I'm wondering if our dwarf and medium sized Arctic char could have evolved south of the Alaska Peninsula as did the southern subspecies of Dolly Varden. One reason for my belief is the indication that our Arctic char appears to be incompatible with lake trout while many populations in the Bristol Bay area occur with lake trout. Arctic char in Bristol Bay also attain maximum weights 2.5 to 3 times larger than our medium sized char.

The information at my disposal suggests that the dwarf Arctic char in Cooper Lake are unique in South Central Alaska. Cooper Lake is 5 miles long, a mile wide and 475 feet deep. Karluk Lake is over twice that size. It is 12 miles long, slightly over a mile wide and 413 feet deep. Since a variety of habitats seem necessary for dwarf Arctic char to develop I expected there would also be dwarf Arctic char in Karluk Lake. To my knowledge no one has reported dwarf char from this lake and it is one of the most studied lakes in Alaska.

One genetic study I've acquired included Kenai Peninsula Arctic char. This paper was by Phillips, Pleyte and Brown in 1992. They analyzed three fish from East Finger Lake and eight fish from Dolly Varden Lake in the Swanson River watershed. Those fish were shown to be different at one restriction site in rDNR compared to S. a. erythrinus from the North West Territory. At two sites they differed from Dolly Varden from the Fox River on the Kenai Peninsula.

A second paper by Leder and Phillips, that was presented at the 1998 Char Fanatics workshop, also included fish from East Finger

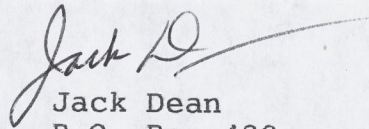
Lake. One analysis grouped the E. Finger Lake Arctic char with char from Lake Aleknegik in Bristol Bay. A second analysis had E. Finger Lake char grouped with Chukotsk and N.W. Territory Arctic char. A third analysis had E. Finger Lake char far removed from all other groupings of the Arctic char and Dolly Varden reported in this study. The inconsistent groupings presented in this paper make little sense.

Hopefully we'll get some char samples to you from Cooper Lake and at least one lake in the Swanson River watershed after breakup.

Your comments and suggestions on this letter would be appreciated. Thank you for your interest, Bob.

cc: Vicki Davis and Ted Bailey,
Kenai Nat'l Wildlife Refuge

Sincerely,



Jack Dean
P.O. Box 428
Sterling, Alaska 99672
(907) 262 9769

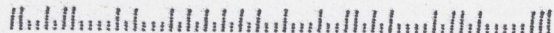
E mail: songbird@alaska.net

Jack Dean
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Sterling, AK 99672



Dr. Robert Behnke
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6/27/00

Hi Bob,

Just a note to let you know that we have 3 Arctic char in formation from Wolf Lake in the Kenai Nat'l Wildlife Refuge and 6 or 7 Arctic char from Cooper Lake in the Chugach Nat'l Forest also in formation. There should be a couple of dwarf char in the Cooper Lake sample.

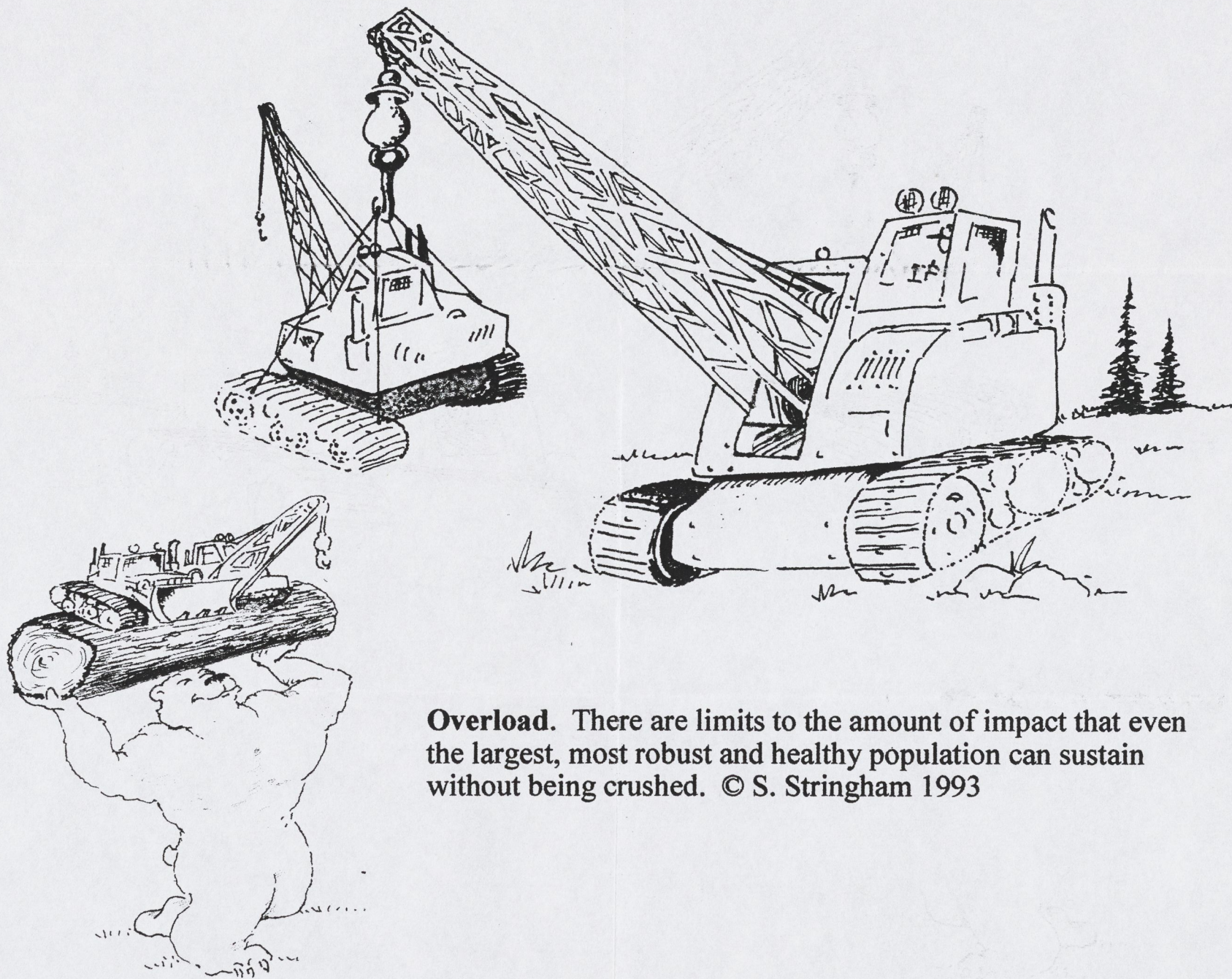
As I recall you wanted these fish pickled for about 3 weeks. They should be ready for shipment by mid July.

If the Tarenets' char has short, stout, thick gill rakers I'm wondering what sub species of Arctic char is present here? Our char, as you will see, does not possess short, thick, stout gill rakers.

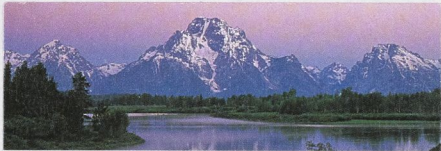
I'm still improving my Arctic char status report. Should be finished with it shortly, although I'm well aware that it is really no more than a work in progress.

Take care, Bob.

Jack



Overload. There are limits to the amount of impact that even the largest, most robust and healthy population can sustain without being crushed. © S. Stringham 1993

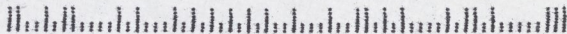


JACK & BETTY DEAN
PO Box 428, Sterling, AK 99672



Dr. Robert Behnke
3429 East Prospect Road
Ft. Collins, CO 80525

28



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together

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paper -

Fairbanks

New. Meets

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Piccolo

6/19/00

Hi Bob,

I was pleased to get your latest letter.

You mentioned that the Tardacts char has short, blunt, stout gill rakers.

I've been counting gill rakers and pyloric coeca on some of the char we caught recently. Our char has long, pointed gill rakers. The longest gill rakers, the ones at the angle between the upper and lower are about 4-5 mm long in a 400 mm fish.

I should have the char report I sent you a draft. I didn't realize, when I sent it, that there were so many misspelled words and typos in it. My next version should remove most of the mistakes.

I'll mail a copy of my char report to Dr. Nielson. I'm looking for all the help I can get. We still have fishery biologists here that don't believe Arctic char and Dolly Varden are separate species.

The USFWS set 3 gills overnight in Cooper Lake recently. I helped them. We caught about 150 char, mostly the dwarf form.

- Morrow, J.E. 1980. The freshwater fishes of Alaska. 248 p.
- Morrow, J.E. 1980. Analysis of the Dolly Varden charr, *Salvelinus malma* of northwestern North America and northeastern Siberia. In: E.K. Balon (ed.) Charrs, salmonid fishes of the genus *Salvelinus*. 323-338. Junk Publ. The Hague.
- Phillips, R.B., L.I. Gudex, K.M. Westrich and A.L. DeCicco. 1999. Combined pylogenetic analysis of ribosomal ITS1 sequences and new chromosome data supports three subgroups of Dolly Varden char (*Salvelinus malma*). *Can. J. Fish. Aquat. Sci.* 56: 1504-1511.
- Phillips, R.B., K.A. Pleyte and M.R. Brown. 1992. Salmonid phylogeny inferred from ribosomal DNA restriction maps. *Can. J. Fish. Aquat. Sci.* 49: 2345-2353.
- Reger, R.D. and D.S. Pinney. 1997. Last major glaciation of Kenai lowland. Alaska Geological Society, 1997. 54-67.
- Scott, W.B. and E.J. Crossman. 1973. Freshwater fishes of Canada. Fish. Res. Bd. Can. Bull. 184. 966 p.
- Sternberg, R. 1987. Freshwater gamefish of North America. Prentice Hall Press. New York, NY. 54-55.
- Tobin, J.H. and D.E. Palmer. 1997. Fishery and limnological surveys of 25 lakes on the Kenai National Wildlife Refuge, Alaska, 1993. U.S. Fish and Wildlife Service. Alaska Fish. Data Ser. 97-3. 51 p.
- Woods, P.F. 1985. Limnology of Big Lake, southcentral Alaska, 1983-1984. U.S. Geological Survey.
- Woods, P.F. 1986. Deep-lying chlorophyll maxima at Big Lake: Implications for trophic state classification of Alaska lakes. In Proceedings: Cold water hydrology symposium. Amer. Water Resources Assoc. 195-199. Bethesda, MD. 29811.

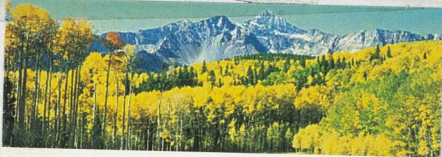
Hopefully I'll get a few of these to preserve in formalin and eventually send them to you. They also have 10 Arctic cher in their freezer from Wolf Lake on the Kenai Nat'l Wildlife Refuge. Don't know if they'll let me have any of those but will try to get a couple preserved in formalin.

Last fall I staked a canoe at a cher lake on the refuge. I planned to get a good sample by fishing this spring. Unfortunately I didn't feel good most of the month of May, when they were in shallow water, and missed most of the fishing season. When I did fish I didn't have much to show for it.

Give my regards to Bill McConnell.

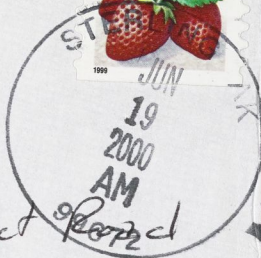
Cheers,

Lack



JACK & BETTY DEAN
PO Box 428, Sterling, AK 99672

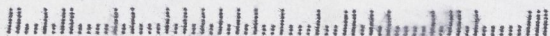
33 USA



Dr. Robert Behnke

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80525

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P.S. I didn't get to say goodbye to Mullan
but he will be missed.

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- marine, taken
solar AS counter
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Nov - Piccolo Wick
AZS Wick
Zinbank Hymn

Subject: Char

Date: Mon, 13 Dec 1999 16:36:53 -0900

From: "Fred Decicco" <fred_decicco@fishgame.state.ak.us>

To: <songbird@alaska.net>

Hi Jack,

Thank you for the photos and copy of your letter to Behnke. It is good to hear that somebody down in south central Alaska is interested in char. By the way, pass on my regards to Larry Larson if you see him. The fish in the canoe is quite spectacular. I haven't seen too many Arctic char that close to spawning. We caught some anadromous *S. taranetzi* over in Chukotka in 1997. They were a rose color, but not as bright as the ones you show in the canoe. We also caught some lake resident *traraneti* that were bright golden-orange. I've caught small sexually mature lake resident char over there and up near Nome in high altitude lakes in the Kigluaik Mountains. Some dwarf populations tend not to lose par marks throughout their life. Some of these populations may be present in the same lakes as other "normal" char populations. This may be what is going on in Cooper Lake. You mention "golden fin" Dollies. Are these only in rivers? or are some in Lakes? If rivers, they are likely small resident Dolly Varden. If in lakes, maybe Arctic char. I had heard about the golden fin char of Idavain Lake down in the Naknek drainage, and was able to visit it this summer. We only caught two char, but both were Arctic char, and rather typical small sexually mature males.

I will get back to you later,

I have to run now.

Thanks again.

Oh, I think that Terry Johnson is now in Sitka. He works for the Marine Advisory Program and was in Dillingham for a number of years.

Best wishes,

Fred DeCicco



This large, about 12 lbs, [♂] Arctic char was taken in Kegati Lake at the headwaters of the Kenektook River that flows into Bristol Bay about 50 miles east of the Kuskowim River.

This lake also has lake trout. Duff & Dolly Varden occur in small headwater streams in the mountains above Kegati Lake. Duff & Dolly Varden are abundant in the Kenektook River.

Date Sept. 1980's.



♂ Arctic char caught on the spawning grounds in Dralle Lake on the Kenai Nat'l Wildl. Refuge, Alaska
Late Oct. 1998.

This fish weighed about 2 lbs.

Jack Deery

12/14/99

Hi Bob,

Here is an E mail I received from
Fral Decicco in Fairbanks,

Here are two photos of male Arctic
char. The big Arctic char shows the
same golden color as most of the
prespawning ♂ Arctic char I catch in
the fall from lakes on the Kenai
Nat'l wild life Refuge. The smaller ♂
Arctic char is not the typical color
I see. This one was caught at a
spawning area I've located in Drake
Lake.

I've been gathering the Arctic char
literature I can access here in Alaska.
I'm reading Charos, edited by E. K. Balon.

In your paper (page 456) Chereshev
is mentioned as being able to completely
separate DOU from AKC by the number
of spots below the lateral line. Do
you know what kind of numbers
Chereshev had for both species, Bob?
I'm also curious about the number

of spots his taranetzi char had
below the lateral line and how they
differed from DUV and ARC,

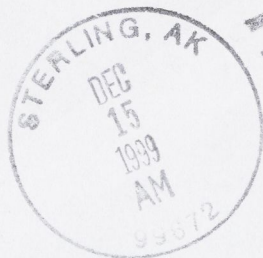
Its been unusually cold here, -12°F
here again this morning, we've already
had 11 days of zero or below this winter
and we still have January and Feb,
to get thru.

I sent a copy of the letter on Cooper
Lake to Mullan but haven't heard from
him. Hope he's still getting out hunting.

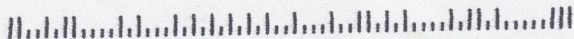


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33^{USA}



Dr. Robert Behnke
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28

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Mellen

- Swits - 21-22
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Yellow fin

leuzhideni

Swits to Ololel

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The gray char from ^{the} Dolly Varden ⁴ is a puzzle. ^{Little photo}
I asked the guy who caught it if it had a pink
air bladder. He gave it away before cleaning
it so we don't know. These are Dolly Varden
in the Swenson River watershed but only a
few and they seem to prefer the running water
of the river. At Cooper Lake there appear to
be two color phases. One color phase is
gray. They are so gray they've been called Lake
trout in the past. They occur in both Cooper
and Char Lakes. Two I looked at this summer
from Char Lakes were getting ready to spawn
in the fall but still retained the gray color.
We don't know if the gray ones spawn with the
normal colored ones in either Lake. I've also
seen the gray color phase in the Bristol Bay area.
I've never caught a gray color phase Arctic char
in a Swenson River lake.

The fish in the lower half of the photo is a
female spawner from Dolly Varden Lake. She appears
to have pair marks after being frozen. I'll have
to take another look at the possibility of dwarf
char in Dolly Varden Lake.

We shipped off another 40 alpinus and malme genetic
samples to Canada. They now have about 80 samples from
Alaska.

Cheers, Jack

...g Lake. One is about the potential impacts from a northern pike population. Pike are known to be effective predators of other fish. Another concern is the impact from increased eutrophication as the human presence at the lake shore increases.

The primary cause for concern in the Swanson River watershed is the potential for hazardous material spills associated with the oil and gas industry. Fortunately, the Swanson River watershed is in public ownership within Captain Cook State Park and the Kenai National Wildlife Refuge. Many of the Arctic char lakes are further protected by wilderness designations. Many of them are within the Swan Lake and Swanson River Canoe Systems.

At Cooper Lake the primary concern is the impact of water level fluctuations from dam operations on spawning fish. Water level fluctuations can affect a lake spawning species such as Arctic char. Fluctuating water levels also reduce the productivity of benthic invertebrates that are a part of the food for the char. Another concern is the stocking of non-indigenous species for the sport fishery that may have been degraded by water level fluctuations.

The lakes on the southwestern side of Kodiak Island are in a roadless area that is only reached by aircraft. Since most of these lakes are within the Kodiak National Wildlife Refuge, the protection of the native Arctic char populations should be assured. Habitat manipulations have been manipulated, however, to benefit the sockeye salmon population. These activities have included fish way construction, lake fertilization and sockeye salmon stocking. The impacts of these alterations on resident fish populations have not been studied.

11/27/00

Hi Bob,

On the pink salmon: These are the 3 lakes at the headwaters of the Moose River that I recall had pink salmon populations. I'll have to have another look at the data sheets to get an accurate idea on sizes. I'll try to get to town tomorrow to do that.

Loon Lake, 213' elevation, 604 acres, 70 feet max depth. When I've been on this lake its outlet was blocked by a beaver dam and there was no surface flow leaving the lake. At times it obviously drains to the south into the west Fork of the Moose River. Longnose suckers are present and may be spawning successfully on sand or gravel shorelines.
60°39' - 150°36'

Rock Lake, 215' elevation, 330 acres, 51 feet deep, 51 alkalinity. This lake also supports longnose suckers. This lake's outlet was flowing about 1 c.f.s. last time I was here. There is nothing, except beaver dams, to stop pink salmon from coming or going. 60°39' - 150°38'

Swan Lake, 210' elevation, 803 acres, 48 feet deep, 75 alkalinity. This lake has a permanent outlet to the south. It normally flows only about 0.5 to 1 c.f.s. Sockeye salmon are able to reach the lake, usually several hundred at a time, and spawn successfully. Rainbow trout are present in good numbers. Anglers have reported catching them in May around an underwater spring. This lake also supports longnose suckers. This lake is more productive than most Klamath Refuge lakes.

Betty Dean

From: Marla McPherson <marla@inletkeeper.org>
To: <marla@inletkeeper.org>
Sent: Monday, November 20, 2000 8:40 AM
Subject: FW: sample email announcing reports and web page, please give your feedback

I am writing to you to let you know of a few exciting developments at Cook Inlet Keeper.

- 1) Keeper has released two new and important water quality reports which can be downloaded from Cook Inlet Keeper's web page (more info below);
- 2) You can now, for the first time, view water quality data on Keeper's web page (<http://www.inletkeeper.org/cemp/cempd1.asp>), and
- 3) Cook Inlet Keeper's office is moving to the Center for Alaskan Coastal Studies building at 708 Smoky Bay Way (across the parking lot from the Lakeside Mall).

For more information, read below:

1) Water Quality Reports

Cook Inlet Keeper and the Homer Soil and Water Conservation District announce the release of two new reports on water quality in lower Kenai Peninsula streams and bays. "A Preliminary Water Quality Assessment of Lower Kenai Peninsula Salmon-bearing Streams" presents twenty-one months of professionally collected water quality data from the Anchor River, Stariski Creek, Deep Creek and the Ninilchik River. The "Cook Inlet Citizens' Environmental Monitoring Project Annual Water Quality Status Report" presents and discusses water quality information collected by citizen volunteers during more than 800 site visits in the Kachemak Bay watershed between November 1996 and April 2000 (download zipped MS Word 2000 documents of the citizen's report:

<http://www.inletkeeper.org/cemp/keeper%20cemp%20report.zip> or the Lower Kenai Peninsula Watershed Health project report: <http://www.inletkeeper.org/319%20Reports/summer%202000%20keeper%20lkwph%20report.zip>).

In 1996, Cook Inlet Keeper established Alaska's first comprehensive citizen-based water quality monitoring program. Since that time, Keeper has trained more than 160 volunteers to test water quality in the Kachemak Bay area. More recently, Keeper has partnered with other groups to foster and support similar efforts in Anchorage, the Mat-Su Valley and on the Kenai River. In addition to this effort, Keeper and the Homer Soil and Water Conservation District conduct professional level water quality sampling on important lower Kenai Peninsula salmon streams.

2) Water Quality Data Available Online

a gets a moderate algal bloom in the summer. There's nothing except beaver dams, to prevent pink salmon from leaving this lake. This lake drains into Moosehorn Lake. Moosehorn L. is drained by Moosehorn Creek into the Moose River. I caught a funny looking rainbow trout, probably a pink salmon, here on 9/2/88 that weighed 11 ounces. $60^{\circ}40' - 150^{\circ}32'$
You can see on the enclosed map that the 3 lakes are neighbors.

Hungry Lake. This little lake is in the Swanson River watershed. The FWS caught a 8-9" pink salmon in this lake this year. It's in formalin at their office. 125' elevation, 60 acres, 10 feet max depth. This lake supports a good rainbow trout population. I was at this lake only once. At the time its outlet was flowing about 0.1 c.f.s. to the Swanson River. This is the only lake in the Swanson River where fresh water pink salmon have been reported. Kokanee have been reported from 6 Swanson River lakes. It's possible they have been misidentified in one or more of these lakes. $60^{\circ}44' - 150^{\circ}46'$

It's possible pink salmon survived the last glaciation in either the Swanson or Moose River watershed. I believe the Arctic char survived the last glaciation in the Swanson River water and somewhere in the Kenai River watershed. The sockeye salmon in the Russian ^{River} are reported to be different genetically from all other Cook Inlet sockeye salmon stocks suggesting they survived the last glaciation here on the Kenai peninsula. We also have dwarf longnose sucklers in one part of the Swanson River watershed. To my knowledge there are no other dwarf longnose sucklers in Alaska. Perhaps we had four species, at least, survive the last glaciation here on the Kenai Peninsula. Lake trout might also be related to that list.

I should mention that there may also be a fair amount of missidentification on pink salmon here. Rock, Loun and Swan lakes were all originally said to contain Kokanee, not pink salmon. I sent a seasonal brook out to gill net these three lakes ^{in 1986}. He thought they were pink salmon but identified them as Kokanee. It wasn't until Rae Baxter got involved that they were identified as pink salmon.

I would suggest that you take a look at the pink salmon from Hungry Lake. It's in taraslin and I could send it whenever you're ready for it.

Now about Arctic char and spots. Here are three photos of a mature male I caught in Fish Lake this fall. If you count the spots on the head this one has about 50 spots on or below the lateral line. This char has unusually large spots. Every local Arctic char that I have a decent photo of has at least 50 spots below the lateral line. The table in my report on spots, is obviously wrong. It was based on info in Delacy and Montans report on Arctic char in Kaktuk lake.

The photo of this Fish Lake Arctic char was placed in our freezer. Before freezing it was a golden orange (yellow) color like the photo I sent you earlier. This char turned dark on the dorsal surface after freezing. It struck me that the golden color on the back is of more recent origin and the color shows above the evidence of a common ancestor with European Arctic char. The European char photo's I've seen are dark on top and red on the belly.

Swanson River watershed colonized adjacent lakes in the Moose
 ds? At one time the Swanson River was a tributary of the Kenai
 colonize the Moose River from the Kenai River? What species of
 tic char? Can humans become infected by eating undercooked
 harvest levels from these nutrient poor lakes?

ange sculpins get into Cooper Lake? Are Arctic char present in
 River watershed? How many species of char occur in Cooper
 ul forms of Arctic char are present in this lake? If dwarf Arctic
 hy aren't they present in other deep lakes in southcentral Alaska?
 ctic char spawn in Cooper Lake? What impacts are water level
 voirs fish and aquatic invertebrates?

end support Arctic char populations? Are dwarf Arctic char
 eper lakes? Are the Kodiak char genetically different from the
 rea?

the southcentral Taranets char to populations in the Bristol Bay
 a? Which of the other recognized subspecies of Arctic char is the
 ted to?

Concerns

ake One is about the potential impact of





Head of a male Arctic char spawned from Fish Lake
Kenai Nat'l Wildlife Refuge, Alaska 10/19/00

photo by
John I.



Male Arctic char, Fish Lake, Kenai Natl Wildl. & Refuge, Alaska
10/19/00



Top:

Mature male Arctic char from
Fish Lake, Kenai Nat'l Wildlife Refuge,
Alaska. 10/19/00 Caught by Jack Deon
2.06 pounds

photo by

John Iverson



JACK & BETTY DEAN
P.O. Box 472 • Sterling, AK 99672

Kensi

pinkish brown

Rock, Swan, Leon

Hungry L.
↓
Swanson R.

Wet. (Moose R.)

Dr. Robert Behnke
Department of Fishery and Wildlife Biology
Colorado State University
Fort Collins, Co



UNITED STATES
POSTAL SERVICE

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80523

U.S. POSTAGE
PAID
STERLING, AK
99672
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80523+1474



12/22/00

Dear Bob,

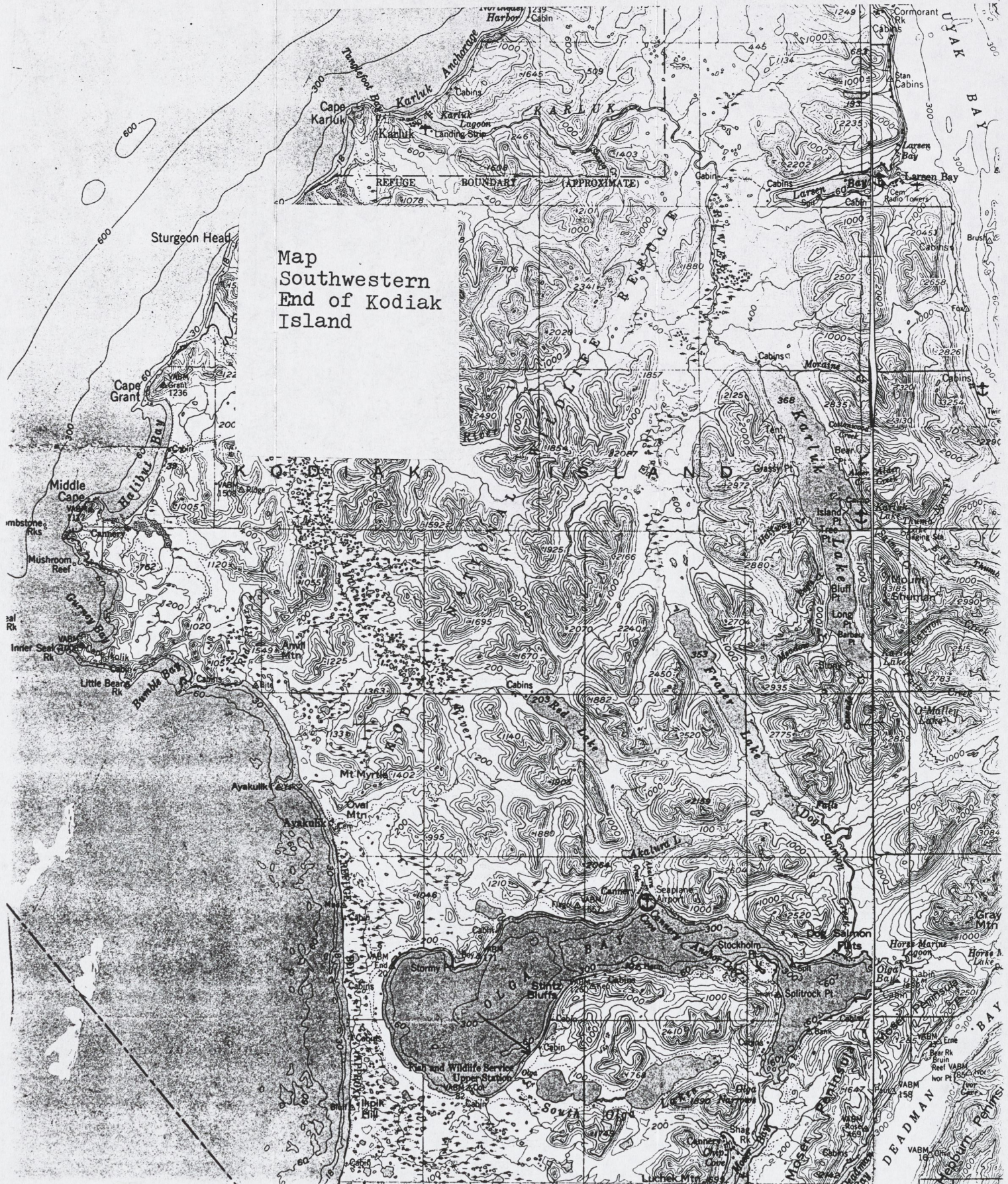
Just a note to let you know that the U.S. F.W.S. took a more indepth look at the so called Pink Salmon from Hungry Lake on the Kenai Nat'l Wildlife Refuge. They counted lateral line scales, gill rakers and pyloric caeca and determined that the fish was actually a Sockeye salmon.

A Nat'l Park Service technician at Kenai Fjords Nat'l Park believes they've discovered the shorelines of an ice dammed lake on the Resurrection River. Last week the local Glacier Geologist (Dr. Peger) and retired ADF&G Fishery Biologist and I went over to Seward to look at their evidence. According to their (NPS) evidence the lake would have crested at about 900 feet above sea level. At that level the ice dammed lake could have had an outlet to the north towards Upper Russian Lake and the Russian River. Field work will have to be undertaken to verify their findings. Since the old shoreline is overgrown with alders and on a steep mountain side helicopter access will be required to reach the area with the necessary

Table 10. Known Arctic char lakes on Kodiak Island.

Lake	Surface acres	Maximum depth	Conductivity mhos	Elevation	Heaviest Arctic char	Land-locked	Geographical location
Frazer	4,100	193'	52	353'		*	57°15'N-154°10'W
Karluk	9,728	413'	71	365'	3.19 Lbs.	No	57°23'N-154°03'W
Total	13,828 acres						

* There was a water falls at Frazer Lakes outlet that has been bypassed by a fish ladder.



equipment to dig into the old moraines.
I'll probably be a while before we get a
verification.

The sedimentologist (Dr. Reger) reviewed my report
and made a number of suggestions. I've
been busy revising it and just completed
the latest version today. I don't plan any
further work on it until we get the results
back from Canada on their genetic determinations.

Hopefully next summer will get a chance
to sample the deep waters of Cooper Lake
for a benthic crew and also gill net upper
Russian Lake to see if there are any alpinus
in that lake.

We'll be leaving here on Jan 3. We catch
a ferry at Seward to transport us to Juneau
and up to Haines. We'll watch eagles for
2 days at Haines and catch another ferry to
Bellingham. We've ordered a new truck that
we'll pick up in Seattle. Then it's on to
Colorado to visits and birds and treks. From
there we'll head south, hopefully to the
panhandle of Florida for a month or two.
By late March we should be heading north again
and return to Sterling by late April.

Take care Bob and Merry Christmas,

Jack

AK
* symp. D.V.

- late Apr - return
Colo.

- clean office

Apr. 95 letter ~~to~~ comment
on Fish Mgt. Plan for
Kosciusko Nat. Wildlife Refuge

- Tustumena Lk. ^{newly}
violation of ^{wildlife} ~~habitat~~ ^{policy}
restoration ^{massive} stocking -
program ^{who spent the}
money ^{to}

Apr. 97 - sockeye salmon
stocking in Tustumena Lk

July 97 - comment
EPA for Tustumena Lk
stocking project

Aug. 97 - further
comment.

cc Environmental orgs
& individuals.

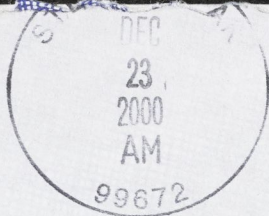
- what happened?

- why you were so popular
with Randy Bailey.

→ Why ^{pleasing} incompetent, equivocal, incompetent
people rise to top in business.

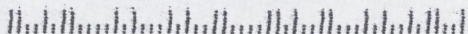


Jack & Betty Dean
PO Box 428
Sterling AK 99672-0428



Dr. Robert Behnke
Dept of Fishery and Wildlife Biology
Colorado State University
Ft. Collins, CO 80523-1474

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11/4/00

Hi Bob,

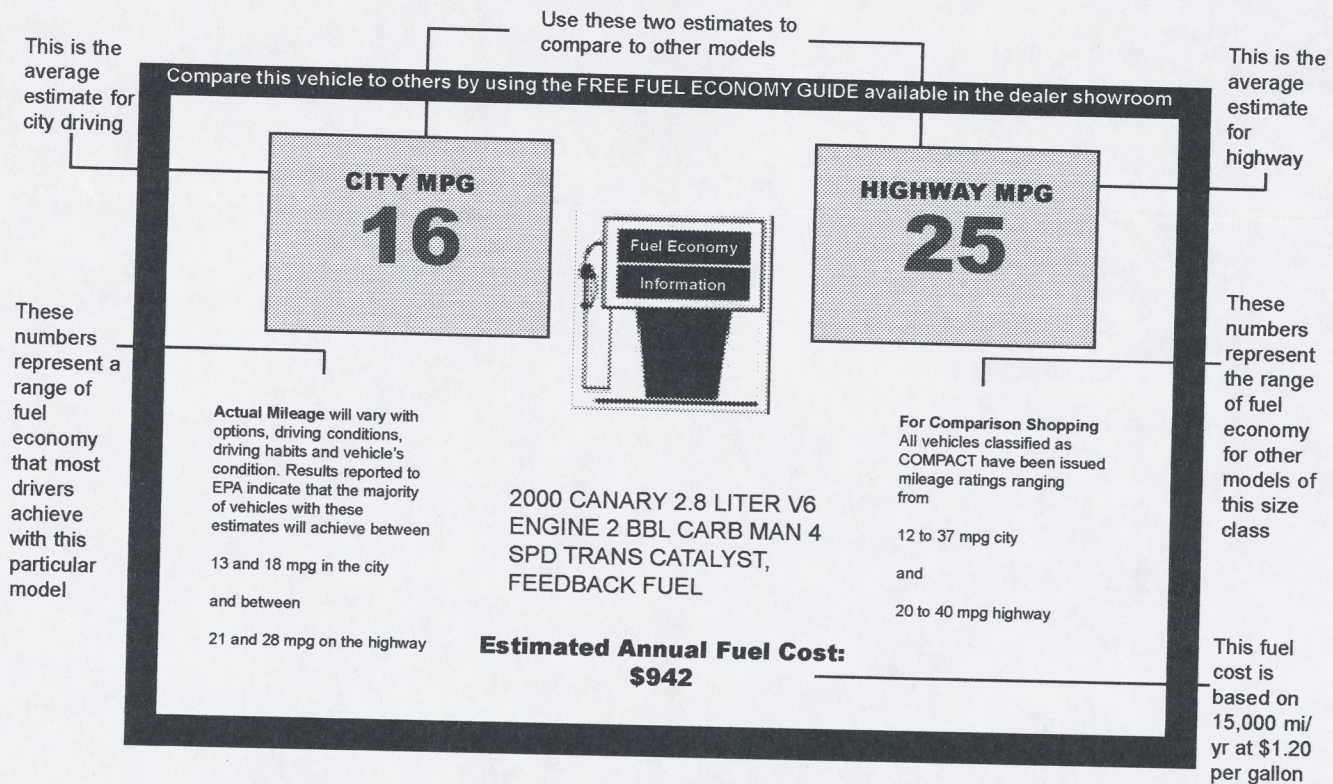
Rae Baxter, as I remember, worked for the U.S. Fish (Fumble and wobble) Service in the 1950's. I believe he was stationed in Anchorage, when Alaska became a state in 1959 he apparently transferred. For many years he was a sport fishery biologist stationed at Bethel. We got involved with him in 1986 when we were writing the fishery sections of the Yukon Delta NWR Refuge plan for the FWS. He gave us access to his notes and raw fishery data. He was quite helpful.

One thing I noticed was that all his summer seasonal assistants were females. Since I had a tendency to hire women I asked him about this. He said they were more fun to work with than the guys. I could relate to that.

Another thing that impressed me was that he apparently was good at operating on a shoe string. If he wanted to float a river from the headwaters he would pull an aluminum boat over the snow the winter before ^{on a snowmobile} and stash it. The next summer he would get down in within walking distance of his boat for his float trip. He was reported to do much of his summer field work bare footed.

SAMPLE FUEL ECONOMY LABEL

(Attached to New Vehicle Window)



Check the fuel economy label on the vehicle at the dealer showroom for its specific fuel economy (mpg) ratings. The ratings may vary slightly from the values in this Guide because of engine and fuel system differences not listed here.

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Second Edition

There is also a story of him traveling from Bethel to Seattle in a 15 foot boat with a 5 or 10 hp. outboard motor.

When he retired him and his wife moved to Homer. He was shot and killed there his son over a disagreement about money.

As I remember he got several fresh water pink salmon from us for taxonomic analysis. There may be more information available if the FWS can find it in their office. As I recall we had 6 or 8 fresh water pink salmon in formalin. One of my predecessors threw them out.

The seasonal biologist working for me caught fresh water in three lakes as I recall. They were all nearby lakes at the top of the Moore River watershed. No one has done any work on these lakes since 1986.

We have a fresh water pink salmon from a small lake in the middle of the Swanson River oil field. It's in formalin. No counts have been done on it, we also have several Arctic char in formalin for you when you're ready for them. They are from Upper Tazimina Lake in Lake Clark ^{North} Preserve.

I looked at one of the Tazimina char. It appeared to be a dwarf with 25 gill rakers and 48 pyloric caeca. The gill rakers were pointed but only about 1/3rd as long as our Kenai Peninsula

Arctic char

3

Several months ago you sent info on the Taranets char from Siberia that included counts of spots below the lateral line.

The highest number reported from Asia was 44 spots. I counted 2 char from the Kenai Refuge from photos. Both fish had over 50 spots below the lateral line. Here's 2 photos of a ^{pre} spawning male Arctic char from Dolly Varden Lake on the Kenai Natl Wildlife Refuge. The lateral line is not apparent in this photo but you can see there are over 50 spots below where the lateral line should be.

You & Joe Tomelleri should make a great team. He sent me a print of a brook trout that looks real enough to take a fly. I used to appreciate the drawings by the artist whose work appeared in the June Fish and Fishing books. He was the best in the business in the 1950's but Tomelleri is the best I've seen, what a gift he has. He's also an accomplished fisherman.

Will your new book on Trout and Salmon in N. America include char, Bob?

I'm hoping we can get in another gill netting effort on Cooper Lake before ice freezes over this winter. No one has ever set a gill net in water over 30 feet deep and I'm curious

proceeded more rapidly than could have been expected.

The second reason I believe we were successful was the fact that the Misfits squad had more than its fair share of warriors. My definition of a warrior is a combat soldier who is aggressive and courageous in battle. Along with that is the combat knowledge and confidence in his ability to use his weapons effectively. Most American infantry squads included no more than one or two warriors. When Floyd Pope was still with us, our squad was half warriors. We still had more warriors than any other squad we were aware of when Pope transferred out to take over another squad.

The rest of the men in the Misfits could be described as soldiers. These men would do as well as they could in combat but would not "stick their neck out." Most of the American infantrymen in Korea were in this category.

There was also a category of men who did not perform or performed poorly in combat. Fortunately they were in the minority. Their ineffectiveness may have been caused by overwhelming fear, lack of self confidence, or lack of expertise with their weapons. It could also have happened to some men who had little confidence in leaders, squad mates or were conscientious objectors.

Any combat veteran is well aware of the third reason the Misfits were successful. We were just damn lucky! We were fortunate to be in the right place at the right time. In combat that is often the difference between victory and defeat or life and death.

A final reason for our success and survival may have been Mrs. Musella's prayers. In her effort to protect her son, she may have also protected all but one of the Misfits.

When our company rotated back to Hill 820, I was sent to the rear to get a pair of glasses. We stopped at a rear echelon unit on the way south. I had an urgent need to take a leak after the long truck ride. I couldn't see the sign for the latrine without my glasses and took a good piss right in the unit area. A fat, rear echelon, Captain saw me and read me the riot act. When he was through chewing me out, he showed me where the latrine was but by then I didn't need it.

I traveled south to the 7th Division Medical Clearing Company for the second time. This time a corporal tested my eyes and made new glasses for me. He did an excellent job. I hitchhiked back to the front to rejoin the unit. At the company rear they told me I'd been in Korea long enough to qualify for five days of rest and relaxation. The next day I joined a group of enlisted men being flown to Japan in a Curtiss twin engine C-46. The army outfitted us with dress khakis and turned us loose in the Tokyo area. For most enlisted men, this was anything but rest and relaxation. It was usually five days of wine, women and song and I was no exception.

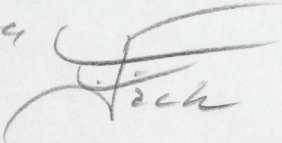
When I returned from Japan, the 3rd Battalion had returned to our old positions on the Main Line of Resistance (MLR) near Hill 1118. 8th Army named this MLR, the Wyoming Line.

You would probably assume that the MLR was a continuous defended line across the 155 mile wide Korean Peninsula. A continuous line probably existed in the flatter western side of Korea but a continuous MLR did not exist in the higher

it there might be a benthic chit present in deep water. I still have some unfilled genetic sample bottles if we can get out to Cooper Lake. I tried to get the Alaska Fish and Game Dept to test net upper Russian Lake for Arctic chit. They would not let us do any gill netting but did fly in several anglers who caught only rainbow trout in 1.5 hours of fishing. The supervisor who rixed our gill netting will be leaving so perhaps we'll get a good sample from upper Russian lake in 2001.

Betty and I are planning to leave Alaska in January for a breake. We will probably be in Colorado by late January or early February.

Sounds like your doing your share of fishing, Bob. I also had a good year working on my fish life lists. Added 3 new species. For the year I recorded 201 fish or 0.5 pounds or more taken on 44 successful fishing trips. The highlight was a day on a river near Cordova Alaska where I caught 14 silver salmon that collectively weighed nearly 146 pounds. They wore me out. I could have caught more but was too tired to handle any more that day.

Taka Cooper




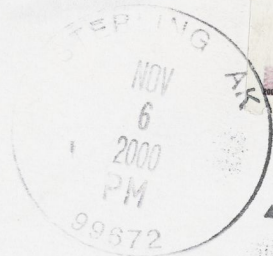
Arctic char from Dolly Varden
Lake - Kenai Nat'l Wildlife Refuge

mid Oct. 2, 1992

Caught by John Nelson
Soldotna



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