

Dr. Robert Behnke  
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Dear Bob:

June 14, 1996

Thanks for your note and your response to Ruth. First I'll give you my thoughts on Nome River char. I think that these char are typical of those occurring in both anadromous and resident forms in most Norton Sound drainages, probably extending into the Yukon and Kuskokwim drainages and possibly down to the Aleutian chain, (but I have not seen specimens from the Alaska Peninsula). Their gill raker and pyloric caeca counts are similar to those fish occurring in Chukchi Sea drainages, but fish do not attain the size of more northerly populations, and their movements between salt and fresh water are much more variable than the Chukchi Sea fish. They seem to go about life more like southern form fish as described by Armstrong, but without any movement to "lake" systems because there are no lakes (or very few lakes) in the region. When I called these "intermediate" fish, it was just a way to alert Ruth to the fact that I thought that they were different from true northern form *malma*, and also from true southern form *malma* and that they may be "intermediate" between the two forms. Eventually I think that these will be shown to be a third form, probably best described as the Bering Sea form of *malma*. Dr. Jim Reist of DFO in Winnipeg obtained a sample of about 40 *malma* in spawning condition from the Nome River a few years ago, and he concluded that these were very close to northern form *malma* from the Firth or Babbage rivers (I'm not sure which) based on morphology (basic measurements), but more closely related to southern form *malma* (sample from the Klutina Lake, Copper River drainage, Alaska) based on gel electrophoresis. I do not think that these fish are *alpinus*!

If you would like, I will try to collect a few in spawning condition this fall and send them to you. I have photographs if that would substitute for frozen specimens, let me know.

You might be interested to know that the true northern form *malma* populations extend southward in Alaska to the drainages of Imuruk Basin. These include the Pilgrim River drainage which can be reached from the Nome area road system. I have had two tags returned or observed on prespawning fish in that system that were marked as non spawning (overwintering) fish in the Wulik River. Because the northern form fish move around a lot, there is probably some mixing of fish from north of the Bering Strait to drainages south of the Bering Strait in overwintering aggregations. Occasionally a large sized *malma* is captured in a river near Nome, or further south in Norton Sound. Although I have not observed spawning of northern *malma* (Chukchi type fish) in Norton Sound Streams, I would not be surprised if there is some overlap in distribution of Bering and Chukchi fish. But are these "true" northern *malma* if *malma* was originally described from Kamchatka. Might Kamchatka *malma* be closer or identical to the Norton Sound *malma*, and then the more northern Chukchi Sea *malma* would be the new guys on the block?

When I was on Nunivak Island back in 1973, I captured *malma* spawners up to 30 inches in length. I have also seen large fish in the Togiak and Goodnews drainages. Were these true northern *malma*? or large examples of the basic Norton Sound *malma*? I wish that I had had the interest in char back then that I have now. What I do not know is where on the Russian side the general distributions of northern *malma* and southern *malma* and possibly Bering *malma* are? When I was on the Chukotsk Peninsula, we collected what appeared typical northern *malma* from the south side of Chukotka in the Kurupka River drainage, and Pavel Gudkov told me last year that a fisherman caught a 120cm *malma* from the Seutakan River (farther west on the south coast of Chukotka). However, a *malma* that I marked in the Nome River was recaptured on the East coast of Chukotka in 1992. This suggests that the distribution of the two forms overlaps somewhat. This should be no surprise if a form of *malma* (now the northern form) was isolated north of Beringia, and another (now the Bering form) was isolated south of Beringia.

Now lets go on to the cirque lakes in the Kigluaik Mountains. These are high altitude (for the Seward Peninsula) 1,000 to 1,400 feet, some years, some of the lakes are never totally ice free. Lakes higher than about 1,400 feet have no fish. These lakes probably retained their glaciers longer than lower elevation lakes. Since taranetz char in the anadromous form are common in systems with lakes in Chukotka, it would seem reasonable to expect that lake resident char on the Seward Peninsula would be similar to them. They would have had access through a large shared drainage which flowed north into the Arctic ocean, and during the melting of the glaciers, there must have been enough water to allow access to places that are inaccessible today (like most of these lakes). The fish from these lakes look very much like taranetzi from Chukotka. However, since the populations have been isolated for a fairly long time, variation among lake populations probably exist.

The key to sorting this mess out is to get appropriate samples and examples of fish to the people who can conduct the appropriate analyses. Fish need to be examined morphometrically and genetically using various appropriate techniques. There is still much to be learned.

Bob, do you have an e-mail address? Mine is: [fdecicco@fishgame.state.ak.us](mailto:fdecicco@fishgame.state.ak.us)

Best Wishes

*Fred*

Fred DeCicco

ADF&G Sport Fish

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## United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
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July 1, 1996

Dr. Robert Behnke  
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Dear Dr. Behnke:

I appreciate receiving copies of your correspondence with Ruth Phillips regarding the arctic char from the alpine lakes on the Seward Peninsula. I do not know what material she sent you but I will respond to your questions as I understand them. Pyloric caeca and gill raker counts were made on eight lake resident char taken from some of those lakes in 1987. The pyloric caeca ranged from 35-47 with a mean of 40.4 (SD=3.9). The gill rakers ranged from 23-26 with a mean of 25.2 (SD=1.2). The counts were performed to help verify that the fish were alpinus and not malma. To one accustomed to seeing hundreds, if not thousands, of Dolly Varden from the western Alaska area these fish obviously "looked" different. Since 1987 and my discovery of these populations I have visited some of the lakes on two other occasions, 1992 and 1995. In 1992 we (Fred DeCicco and I) collected specimens which were sent frozen to a Canadian geneticist who had expressed an interest in evaluating them. Those were never evaluated. After arousing Ruth's interest in these fish last year I was able to return to one of the lakes and get samples during August, 1995. They were examined this spring after her return from sabbatical in Seattle. I plan on returning to some of these lakes later this month to obtain more specimens for Ruth's analysis. I also hope to do a more thorough job of reporting on the morphometrics and meristics of the fish that are collected. And hopefully I will be able to obtain some museum specimens. I am consulting with geologists regarding the length of time these fish have been isolated in these lakes and the mechanisms by which they became isolated. To the best of my knowledge the parent stocks of these fish are long gone from this area. All of the lakes containing these fish are cirque lakes except one that lies in a mile-long glacial basin. Apparently there are no other fish inhabiting these lakes, except for slimy sculpin in the one large lake just mentioned.

Hope I answered your questions adequately, if not feel free to call me at (907) 474-2341.

Sincerely,  
Joe Webb

Joe Webb

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DEPARTMENT OF THE INTERIOR  
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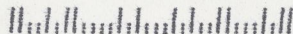
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*F. DeCicca*

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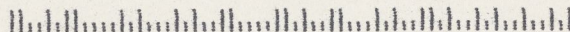


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