NADF PROJECT SUMMARY

**Title:** Determine effects of photoperiod manipulation on Arctic char growth, processing attributes, and sexual maturity to 24 months post-hatch in freshwater RAS.

**Dates:**
2010-2011

**Support:**
NADF

**Facilities/Resources utilized/needed:**
NADF – heath incubation trays, fingerling rearing (400gal tanks flow thru), CWRAS

**Lead Personnel:**
Greg, Kendall

**Collaborators:**
Steve Summerfelt Freshwater Institute, Bill Wolters-USDA-ARS Cold water Facility, Star Prairie Trout Farm, Troutlodge

**Targeted audience/end user groups:**
Private sector coldwater trout producers

**Goal/Objectives:**
There has been much interest and recent research in artic char for the food fish industry. Arctic char is marketable as a high value, top end food fish demanding higher prices per pound than many standard coldwater species that are available today. Arctic Char have been shown to withstand higher densities than rainbow trout and still maintain good growth rates and fish health in cold water typical of Northern Wisconsin. Several Wisconsin Aquaculture Operations are interested in exploring if Artic Char would be a new profitable coldwater species for rearing in Wisconsin.

Photo period control has been an important aspect of rearing artic char and several studies have looked at various strategies. According to char research, culture from first feeding to the onset of first winter is optimal with continuous light. The best photoperiod for the following growout year has not been identified yet, although several studies have been
conducted. This study will attempt to answer the question, after Arctic char have gone through their first winter, is natural photoperiod as good as constant-continuous light for char growout to 24 months post-hatch? This study will compare two different photoperiod treatments that occur from first winter until harvest.

**Progress (include statistical outcomes, specific findings, additional information)**

December 2009 - Coordinated study design with Steve Summerfelt and Bill Wolters
January 2010 - Obtained disease free certified Artic Char eggs from Troutlodge.
Feb 2010 - Incubated and hatched eggs at NADF.
March 2010 - Initial feeding and rearing of fingerlings under 24 hr light and feed in flow through 400 gal tanks at 48F.
July 2010 - Moved fingerlings into CWRAS eight foot tanks continued 24hr light and feeding at 54-56F.

**Impacts:**

This project will demonstrate the feasibility of rearing artic char under specific conditions to maximize growth in a short time and potentially increase production capacity of cold water trout hatcheries. It will also demonstrate the feasibility and profitability producing artic char from fry to final food size product. We fully expect our studies to demonstrate that artic char will outperform rainbow trout and potentially may demand higher market prices. This study may lead to another new product for Wisconsin aquaculture.

**Follow-up needed:**
Evaluate fish growth and potential market demand in Wisconsin.