UWSP Northern Aquaculture Demonstration Facility

Partnership to Advance Wisconsin Aquaculture

Presented by: Gregory Fischer
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UWSP-Northern Aquaculture Demonstration Facility
“Promote & advance the development of commercial aquaculture in a northern climate”

Over 2,000 registered fish farms in WI

NADF: A Wisconsin concept, not just a location…
Partnerships to Advance Wisconsin Aquaculture

• Partnerships with private, federal, tribal, state and university entities around the world.

• Research projects with various cold, cool and warmwater fish species encompassing a variety of areas including aquaponics, baitfish, food fish production, outdoor ponds, wetlands, native species rehabilitation and supplementation.
UWSP-NADF Recipe for Success

= Partnerships

- Feasibility of raising Arctic Char utilizing sustainable, intensive rearing systems for food fish production.
  - Private Partnerships with Safe Harbor and Aquaterra, Wisconsin
Multiple Rearing Systems
Partnerships=
UWSP-NADF Recipe for Success

• Developing Rearing Protocols for Lake Herring production
  – Collaborations with U.S. Fish & Wildlife Service, Red Cliff Band of Lake Superior Chippewa, Great Lakes Fish Commission, Great Lakes Fishery Commission and others
  – Stock rehabilitation and enhancement for the Great Lakes
Partnerships=

UWSP-NADF Recipe for Success
Outreach & Technology Transfer

• Partnership with UW-Extension
  – Helped create >30 jobs in 5 years
  – Helped save >450 WI jobs
  – Over 17 workshops in:
    • New aquaculture business
    • Using farm ponds to raise fish
    • Rules & regulations
    • Aquaponics
  – >7,000 direct contacts with fish farmers
  – >300,000 indirect contacts with farmers, investors & future farmers

• Liaisons for understanding state regulations and establishing new laws
Why Walleye??

- Strong Stocking Markets - enhancement
- Wisconsin Walleye Initiative - $12 million
- Partnerships with Private, Tribal and Public Fish Culturists and Hatcheries
- Typically reared in outdoor ponds with natural forage for summer season and stocked in the fall
- WDNR buyback of extended growth walleye for $1.75
Why Walleye??

- Food Fish Market
- Friday night fish fry
- Importing a lot of fish
- >11 million pounds
Bob Summerfelt
The Real Walleye Guru
Pond Culture Resources
Walleye Pond Culture
Wild Broodstock Collection

- Conservation
- Stocking
- Local Genetics
Egg Preparation

Adding tempered clay

Stirring to coat eggs
Egg Preparation

- Pour off clay
- Rinse with fresh water
- Allow to water harden
- Freshen water periodically
- Iodophor disinfection
- Move to incubators
Walleye Egg Preparation

• Eggs are collected from adult male and female walleyes in spring (April-May) utilizing fyke nets set in natural spawning areas.

• Eggs are fertilized, clayed and transported back to hatchery.

• Eggs are cleaned with fresh water and disinfected with 100 mg/L Iodine/15 min.

• Water hardened eggs are measured and placed into bell jars.
Bell Jar Incubation Setup with Fry Collecting Tanks
Fry Collecting Tanks with Inserts

**Critical components:**
- Removal Fry insert tank
- External standpipe system
- Screen Box with aeration tubing
- Light for fry collection
Walleye Egg Incubation

- Initial water temperature 48-50°F
- Gently roll eggs in the beginning (0.4gpm) with aerated/degassed groundwater
- Increase water temperature slowly to 58°F to speed up hatching
- Increase flow rate to 0.7gpm once eggs are eyed up
Walleye Egg Incubation

Dead egg removal

• Dead eggs (white) accumulate at the top of jar

• Dead eggs need to be removed daily to limit fungus growth

• Use of simple siphoning tube constructed of piping and clear plastic hose
Walleye Egg Incubation
Chemical Treatment

• Modified chicken waterer with hole drilled in bottom ring

• Chicken waterer is placed to drip into water headtank feeding bell jar system

• Set up for 15 minute (1,600ppm) formalin drip daily based on flow rate

• Use safety equipment when using chemicals
Walleye Hatching and Fry Collection

• Discontinue formalin treatments

• **FORMALIN WILL KILL FRY!!!**

• Remove screens from bell jars to allow fry to swim out

• Fry swim out of bell jar into collection tanks
Walleye Hatching and Fry Collection

• Collection tanks have large box style screens over drains to maximize screen surface area

• Run air bubble strips along screen to prevent clogging and clean frequently during hatching

• Strong swimming fry 3-5 days old can be concentrated in the collection tank utilizing a light source
Fry Size

8-10 mm
Fry Enumeration

Jensorter Fry Counter

XperCount Fry Counter
End of Egg Incubation and Hatch

- Questions – 5 minutes
Fish Management

- Fry stocking into ponds
- Walleye
- Generally hatched out from eggs in bell jars
- Stock ponds with 3-5 day old strong swimming fry collected by light
- Stock fry on calm day
- Temper fry into ponds slowly