Yellow Perch Industry 2013

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Bringing Knowledge to Life
Yellow Perch (*Perca flavescens*)

- Ponds, cages, RAS
- Eggs, fingerlings, pond stockers, food
- Takes 18 months to 8” market
- Optimum temp. 55 – 78 degrees F
- Stocking density is most productive at 3000 lbs./acre
- High demand/high fillet price
- Gaps in production
  - High fingerling cost
  - Fingerling survival/availability
  - Year-round spawning/live feeds
  - Genetic selection (30-40% larger)
  - Sexual dimorphism
  - Nutrition
Why YP in the NCR?
Rankings Comparison – Manci 2001

- Grow Rapidly To A Large Size
- Reach Market Size Before Reaching Sexual Maturity
- Readily Accept a Formulated Diet
- Feed Fairly Low On The Food Chain
- Not Cannibalistic
- Show Uniform Growth In Size
- Readily Reproduce
- Produce Large Numbers Of Offspring
- Fairly Disease-Resistant
- Produce Offspring Large Enough To Accept Pelleted Feeds At First Feeding
- Tolerant Of Poor Water Quality
- Market Value That Exceeds Production Cost

- Ideal Culture Characteristics
  - Eggs/Fry Easily Produced From Captive
  - Fish
  - High Yield Of Edible Flesh
  - Flesh Freezes And Stores Well
  - Tolerant To Wide Range Of Temperature & salinity
Bill Lynch says…

• Pond Stocking demand
  – Alive and well
  – don’t know how big market is
  – $3.50 - $3.75 lb live

• Food Fish Aquaculture has not taken off
  – Tough to get fingerlings/expensive
  – Price point more even with other proteins
  – Processing woes/high processing costs
  – Need to be completely vertically integrated
  – Great lakes harvest 800 lb gorilla
Wild Harvest …The Gorilla

- Prices never been so low – freezers are full (Chris Bennett, Ohio)
- The 2012 yellow perch Total Allowable Catch is 13.637 million pounds, an 8% increase over the 2011
- Ohio’s 2011 sport and commercial catch was estimated to be 2.83 million
- Fish are graded into
  - Small – 6-7”, $0.60/lb
  - Medium – 7-8”, $1.00/lb
  - Large – 8” & up, $1.75/lb
- Port Clinton Fisheries
  - Whole $5.00/lb retail
  - IQF Yellow Perch Fillets $12.75
  - Fish Cleaning $1.25 lb/live weight
## Industry Size and Sales

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of YP Farms</th>
<th>Sales</th>
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<tbody>
<tr>
<td>1998 CoA</td>
<td>75 in US (57 in NCR)</td>
<td>577,000 (NCR sales only)</td>
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<tr>
<td>2005 CoA</td>
<td>99 in US</td>
<td>$692,000</td>
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<tr>
<td>2012</td>
<td>104 (in Ohio)</td>
<td>?</td>
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Would it be “safe” to say there is at least $1,000,000 in sales?

This would equate to 333,000,000 lbs @ $3.00/lb (1/10<sup>th</sup> of Ohio’s commercial and sport’s fishing catch and 1/40<sup>th</sup> of what comes out of the GL).
### Biggest Bottleneck? – Production Costs

**Fingerlings**
- Need 4 fingerlings/lb whole product
- $0.07/inch
- Sold at 2 inches = $0.15
- Minimum $0.60 cents fingerling costs/pound fish

**Feed**
- 35-45% protein
- Trout feeds
- 1.5 FCR
- Current price = $0.50/lb
- Minimum $0.75 feed costs/pound fish

**Other costs**
- Capital
- Energy
- Labor
- Current price = $1.00/lb
- Minimum $1.00 production costs/pound fish

**Total costs**
- Fingerling = $0.60
- Feed = $0.75
- Production = $1.00
- Total = $2.35/pound fish
- Sell $2.75-$3.00/lb

**Processing costs**
- 3 fish/lb live = $3.00
- 42% dressout
- 2.3 lbs live = 1lb fillet
- $7.00 live fish costs/lb fillet
- 1.25/live pound processing costs
- $3.00/lb processing costs
- $10.00 lb/fillets
- $12.50/lb wholesale
- $15.00/lb retail
NCRAC – 9 Funded Perch Projects

- Since 1989 (23 years), nine projects on YP have been funded for a total of $1,584,008
- Illinois, Indiana, Michigan, Missouri, Nebraska, Ohio, and Wisconsin
- Private: FFO, Bay Port, Paragon, Coolwater Farms
What did you get for the money?

- **Broodstock**
  - Before wild stocks, now domesticated and working on genetically selected
- **Production**
  - Good numbers on stocking densities, growth, survival, water quality parameters, dressout and FCR
- **Fingerling production**
  - Fertilization strategies
  - Ponds versus tanks
  - Working on live feeds/first feeds (green water, rotifers, micro-diets)
- **Spawning**
  - Now spawn year-round
- **All-females**
  - Triploidy
  - Sex reversal
- **Nutrition**
  - Nutritional needs identified
  - No commercial diet yet
- **Economics**
  - Good numbers on production costs in a variety of systems
- **Extension**
  - Multiple fact sheets, videos, workshops (live and virtual), list serves, network of experts
Current NCRAC YP Projects

Determination of Production Parameters of Selected Yellow Perch Lines at Commercial Densities in Ponds at Two or More Facilities in the North Central Region

- On-station and on-farm tests of improved fish
  - Year-2 of the on-station and on-farm tests of genetically improved perch was conducted on three sites in two states
  - This is an important step for commercialization of genetically improved strains.
  - The testing results showed improved fish
    - 42.1% – 59.4% higher production
    - 25.5% - 32.0% higher growth rate
    - 12.3% - 27.8% higher survival than local
Current NCRAC YP Project

Efficacy of Eugenol to Reduce Transport Stress and Mortality of Tilapia and Yellow Perch

- Yellow perch were exposed to 0, 10, 20 and 30 mg/L eugenol at 0.12, 0.24, 0.36 kg/L (1, 2 and 3 lb/gal) loading densities.
  - Preliminary results suggest that total ammonia – nitrogen (TAN) was generally lower in eugenol treated tanks relative to controls (0 mg/L eugenol).
  - The difference in TAN provides evidence that eugenol is altering stress responses across treatments.
  - Mortality was low in all treatment groups, but was most prevalent at the heaviest loading densities and highest eugenol concentrations.
  - Most treatment combinations had no mortality.
  - The pivotal eugenol transport studies will be conducted in the summer of 2013 based on results from the range finding study.
Current NCRAC YP Project

A cost-effective diet for yellow perch has been developed for future analyses as a diet for fish cultured under commercial conditions.

- Yellow perch appear capable of using high-quality poultry byproduct meal (PBM) at high inclusion levels.
- PBM is able to replace as much as 50% of fish meal protein without impairing growth performance.
- In addition, replacement could be up to 75% without reducing feed efficiency and protein efficiency ratio.
Other YP Research Initiatives

- Alejandro Buentello, Amy Stinton, Steven Craig, Norman McCowan, John Schillinger. NUTRITIONAL VALUE OF A HIGH-PROTEIN, LOW-OLIGOSACCARIDE NON-GMO SOY VARIETY TO JUVENILE YELLOW PERCH Perca flavescens
- Konrad Dabrowski, Małgorzata Korzeniowska, Karolina Kwasek, Michał Wojno. EFFECT OF SWIM BLADDER NON-INFLATION ON YELLOW PERCH PERFORMANCE – IS THERE A LATE INFLATION AFTER PNEUMATIC DUCT ATHROPHY?
- Timothy Parker, Konrad Dabrowski, Karolina Kwasek, Michał Wojno. EFFECTS OF OXYGEN SATURATION ON GROWTH AND METABOLIC RATE IN YELLOW PERCH Perca flavescens WITH UN-INFLATED OR INFLATED SWIM-BLADDER
- Konrad Dabrowski, Karolina Kwasek, Michał Wojno, Grayson John. THE ART OF RAISING YELLOW PERCH LARVAE AND JUVENILES IN CAPTIVITY
- Christopher Hartleb, Bryan Rehwinkel, John Tix, Brandon Gottsaker. EFFECTS OF DIFFERENT COMMERCIAL LIGHTING ON YELLOW PERCH GROWTH
- Kurt A. Rosentrater. PROCESSING AND PERFORMANCE STUDIES OF ALTERNATIVE INGREDIENTS IN YELLOW PERCH DIETS
- Brian Shepherd, Osvaldo Sepulveda Villet, Frederick Goetz, Fred Binkowski. STATUS AND PROSPECTS FOR THE YELLOW PERCH GENETIC IMPROVEMENT PROGRAM IN MILWAUKEE, WISCONSIN
- Hanping Wang, Hong Yao, Paul O’Bryant, Dean Rapp, Laura Tiu, Geoff Wallat. GENETIC IMPROVEMENT OF YELLOW PERCH THROUGH COMMERCIAL-SCALE MARKER-AIDED COHORT SELECTION FOR GROWTH
- Nour Eissa, Han-Ping Wang, Zhigang Shen, Hong Yao, Paul O’Bryant, Dean Rapp. PHYSIOLOGICAL AND MOLECULAR STRESS RESPONSE OF YELLOW PERCH SUBJECTED TO HANDLINGS AT DIFFERENT TEMPERATURES
What Needs to Happen?

• How do we get the costs down?
  – Must reduce fingerling costs
    • Broodstock improvement (nutrition/genetics)
    • Year-round spawning
    • First feeding/live feeds
  – Lower production costs
    • Species specific diets
    • Alternative ingredients
  – Centralized marketing, distribution
    • Cooperative arrangements
Regional Highlight

“...Then there's Bell Aquaculture of Albany, Ind., the nation's largest yellow perch producer, shipping 1 million pounds in 2011 for a potential market value of more than $12 million wholesale and $20 million retail."
Bell Aquaculture (2005-2013) with a dream to bring the local favorite yellow perch back to the Midwest and eventually the nation – especially since the wild-caught supply has been decreasing.

Bell Aquaculture is currently a leader in the aquaculture field and the nation’s largest producing yellow perch farm, with planned capacity of 3,000 metric tons (or 24 million fish) by the year 2016.
OUR OPERATION
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