NCRAC Intensification Project

Matthew A. Smith

Aquaculture Boot Camp

07/14/2018

CFAES

THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

What is the reason for this project?

- Yellow perch are a fairly high-value species in the Midwest and we know how to grow them in a system we know works (ponds)
- It's often heard, "3,000 pounds per acre is a typical harvest average for Midwest culture ponds"
- It's understood that there are a lot of economic factors and assumptions that play into affect but…
- based strictly off of **more pounds per acre = greater profit** we believe this research problem can help push the 3,000 lbs/ac boundary and hopefully increase profits for our farmers
- With a highly increased demand from a few fish processors in the region, we investigated potential funding from NCRAC's (North Central Regional Aquaculture Center's) Rapid Response grant program to help answer the fish processor's call for supply

NCRAC?

- The **North Central Regional Aquaculture Center** is one of the five Regional Aquaculture Centers established by Congress that are administered by the U.S. Department of Agriculture's Cooperative State Research, Education, and Extension Service
- NCRAC serves the 12 Midwest states
- This project is funded by USDA NIFA through NCRAC

USDA/NIFA Grant #2014-38500-22138

United States Department of Agriculture
National Institute of Food and Agriculture

What are the objectives?

- 1. Evaluate water quality parameters, fish growth, condition, feed conversion, final length frequencies, survival, and feeding rates of first-year yellow perch fingerlings (stocked at twice normal rate) provided with either intensive aeration or using an aerated split pond design.
- 2. Collect the economic data of producing first year yellow perch in either an intensively aerated or an aerated split pond design.
- 3. Compare these data to long-term historical pond data (stocked at the normal rate) available from both Millcreek Perch Farm and Brehm Perch Farm.
- 4. To immediately disseminate results to industry via final termination report, fact sheet, presentations, and other information technology transfer strategies.

What ponds are in the study?

- Three individual ponds (totaling 1 acre) at Brehm's Perch Farm – Made into one split pond
- Two individual ponds (totaling 1.5 acre) at Millcreek Perch Farm – 1 one acre and 1 half acre pond

What's a split pond?

- Dr. Torrans explained both a split pond and intensively aerated ponds very well at the last OAA meeting

What's a split pond?

- Tucker states

ca. 80-85% waste treatment

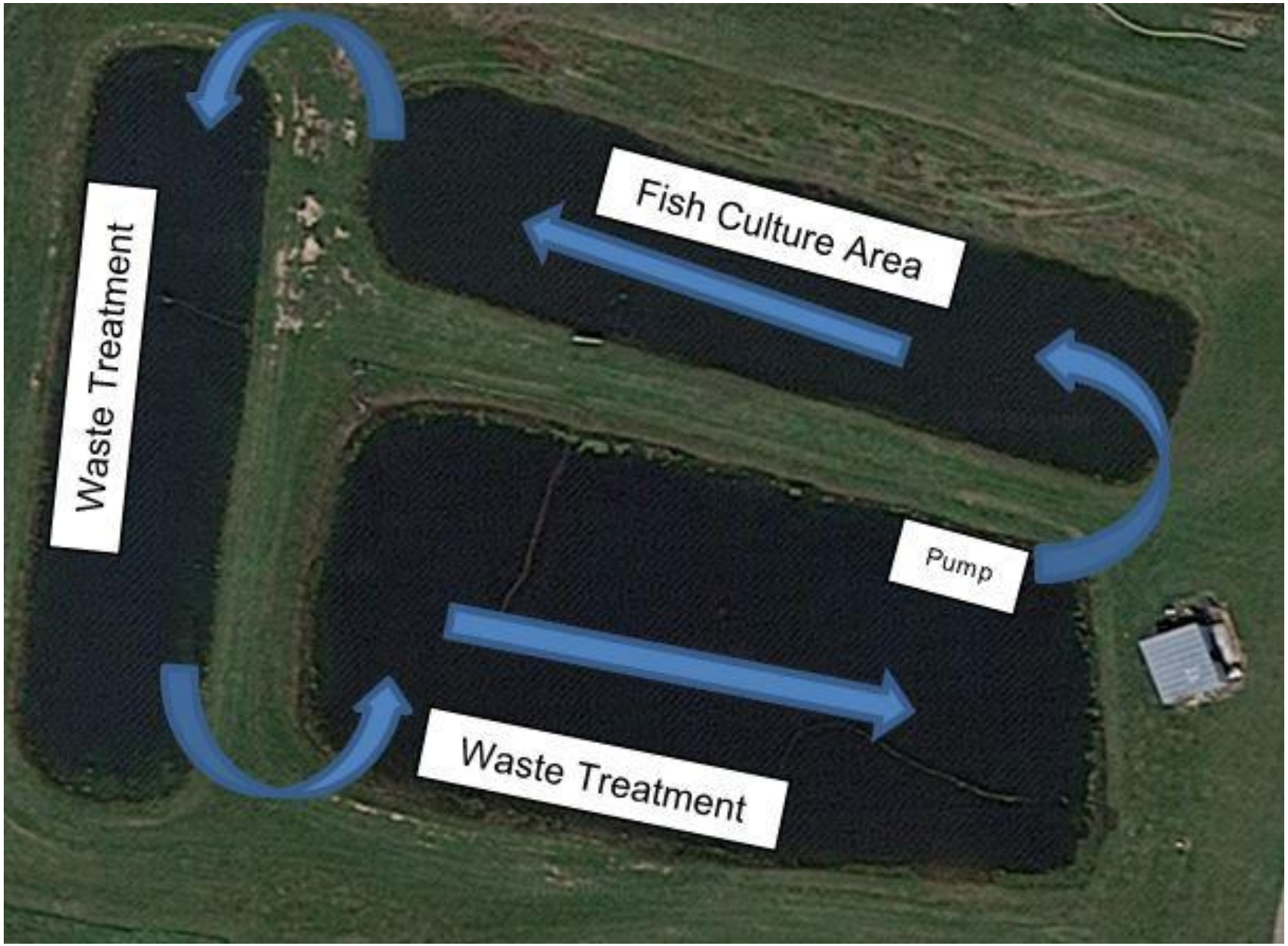
15-20% fish culture

- Brehm's is ca. 1 ac total

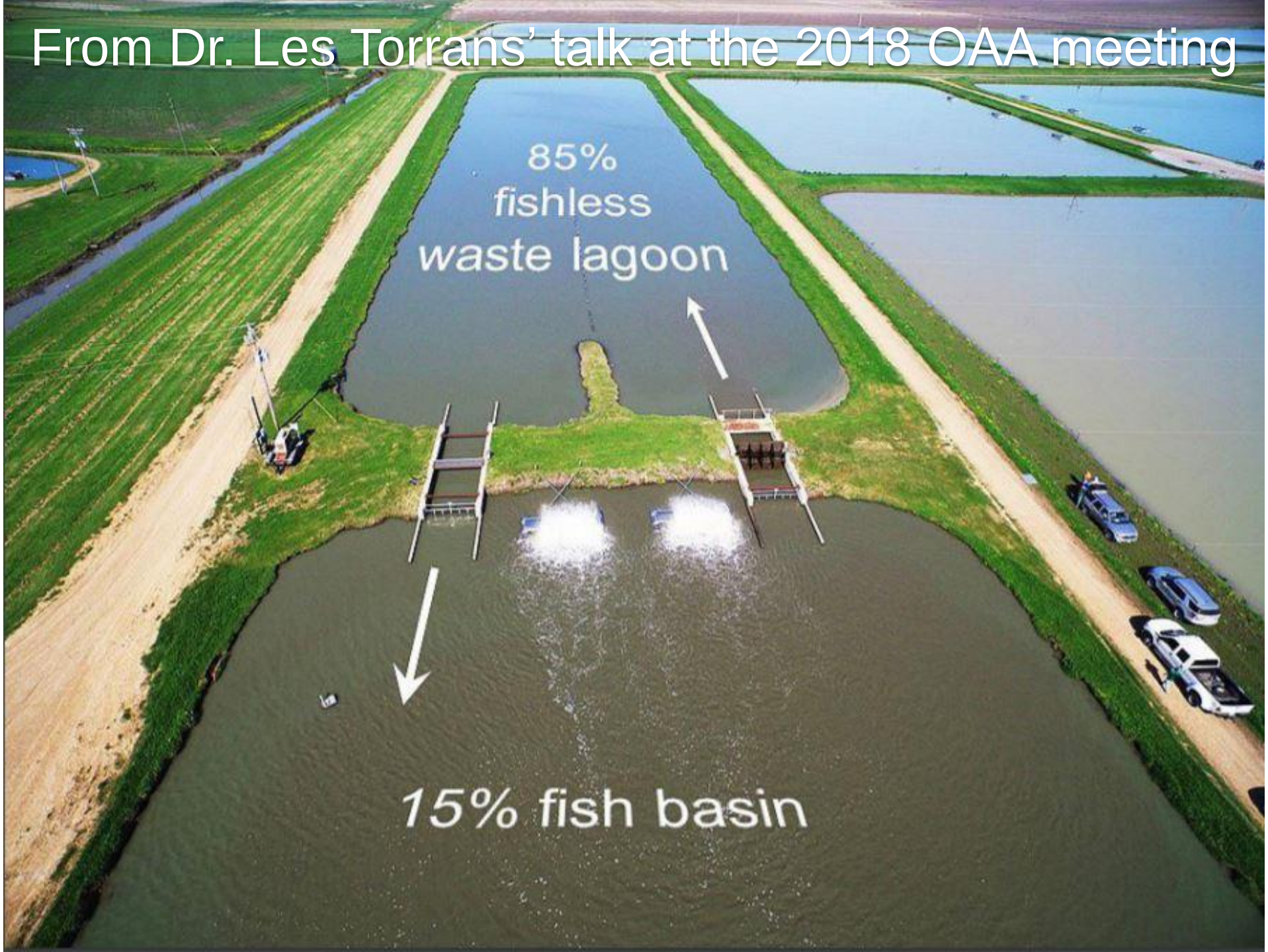
with 0.25 ac fish culture

(75% waste treatment & 25% fish)

- Normally 40k p/acre
- 80k for this on-farm project

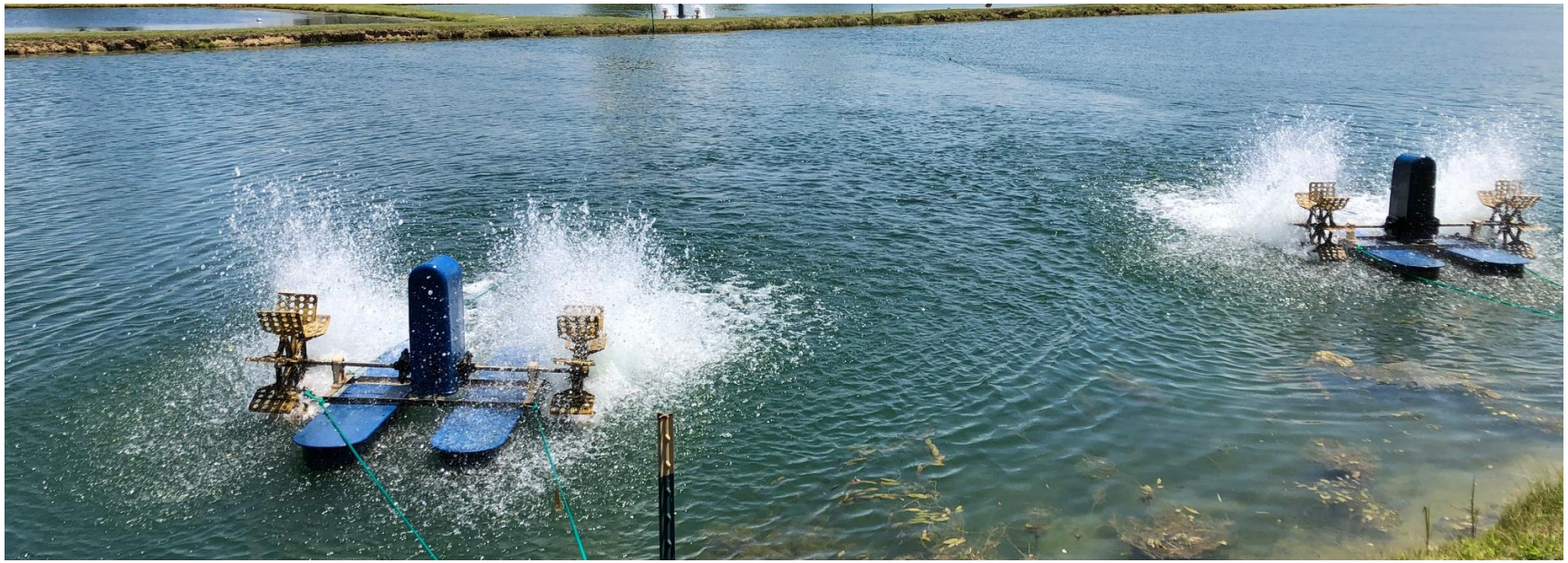


From Dr. Les Torrans' talk at the 2018 OAA meeting



What's an intensively aerated pond?

- I guess that depends on who you ask as it is a relative question
- Not uncommon in Ohio to just bottom aerate or bottom aerate and only surface aerate a few nights a year
- Also not uncommon to surface aerate most nights but at minimal hp/acre
- For this project Millcreek Perch Farm went from bottom aerating with minimal (<15 nights per year) surface aeration to 2 hp/acre 24/7 for the duration of the study
- Les **"Aeration doesn't cost money – it makes money!!"**

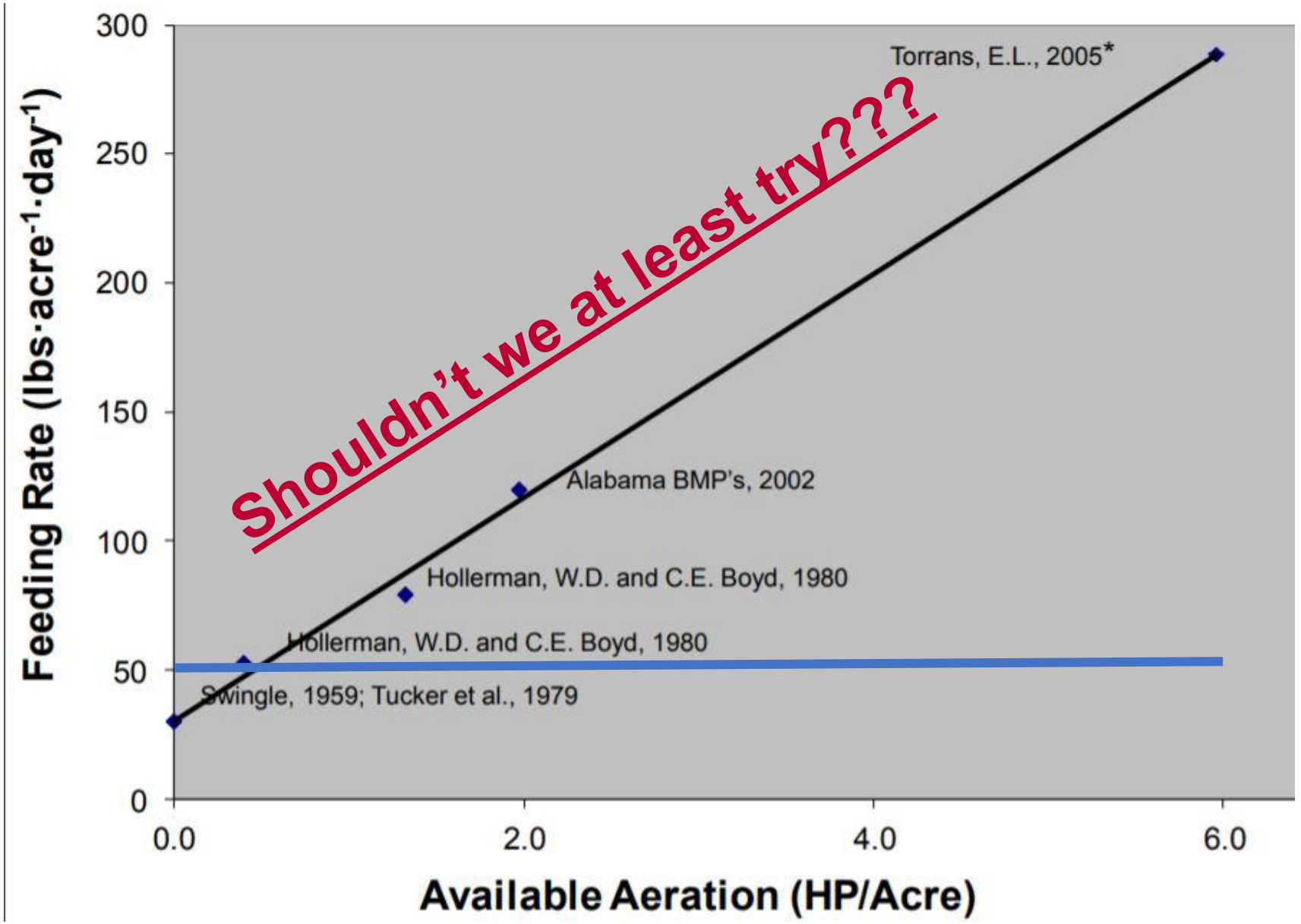


Les at OAA 2018

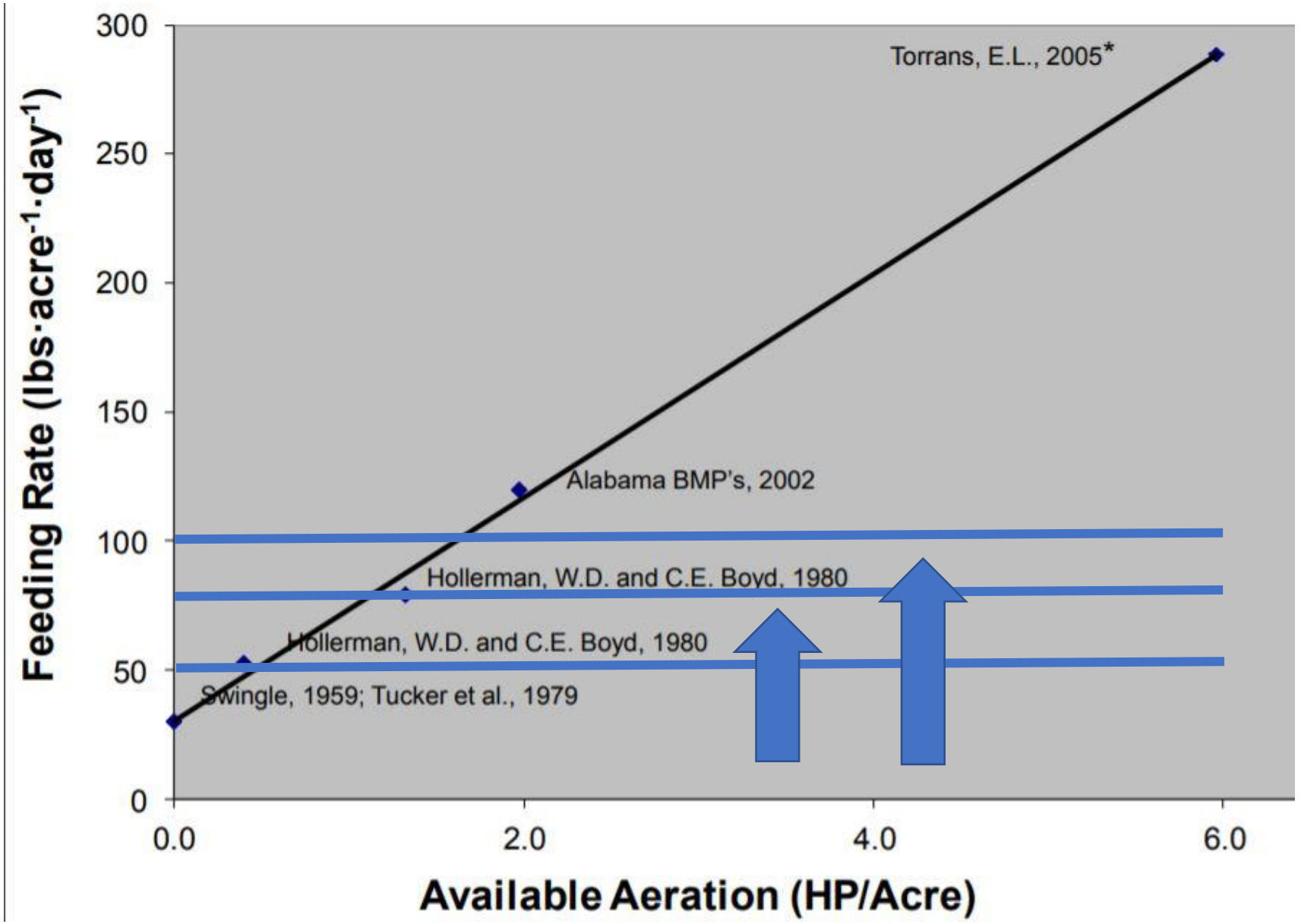
Does DO affect FCR???

- Poor FCR with very low morning DOs (maintenance ration)
- Poorer feeding response at lower DOs, or with sick fish, making over-feeding more likely
- *Reduced food consumption* with morning DOs below 5? ppm, resulting in *reduced growth*, a *longer production cycle*, *greater mortality*, and a *poorer FCR*.

From Dr. Torrans' water quality talk at OAA 2018



From Dr. Torrans' water quality talk at OAA 2018



Understanding risks and negatives of intensification

- A definite learning curve is taking place – design & engineering and water quality
- Kinks take time to work out
- A lot of time needs dedicated managing
- **Is intensification worth it?**
- Time will tell – next 6 weeks critical
- If you're not serious about the business?

Questions?

Matthew A. Smith
OSU South Centers
smith.11460@osu.edu
740.289.2071 ext 121