

November 2024

WISCONSIN AQUACULTURE ASSOCIATION



Look for this:

- 2024 Aquaculture Conference Recap and 2025 Save the Date
- Dr. Kebus at Gollon Brothers
- New DATCP Staff Info
- Understanding Your Stock
- Recipes From Our Farm
- Collaborative Article, Dr. Kebus et al.
- WAA Board Members
- WAA ByLaws Updates (attached)
- 2025 Membership Registration Form
- Dec 10-12 Seafood HACCP Training

2024 Aquaculture Conference Recap

This year's Wisconsin Aquaculture Association annual aquaculture conference was a success! The conference included presentations from over 40 experts across the Midwest and beyond discussing various aquaculture topics and best practices. According to the conference evaluation, the topic most beneficial to attendees was Economics and Funding Opportunities. Sessions included panel presentations and discussions on various topics including marketing, processing, farming insights and workforce development.

The conference also supported student engagement and professional development by offering poster and student presentation sessions for both young students and older high school and undergraduate students. Many of these students as well as other attendees were supported travel funds by the Great Lakes Aquaculture Collaborative to be able to attend this conference. Sharon Moen and Titus Seilheimer of Wisconsin Sea Grant, with help from various students, led a 'Eat Wisconsin Fish' cooking demonstration and tasting of aquaculture products. Fresh Atlantic salmon and greens were donated by Superior Fresh, salmon jerky donated by Rushing Waters Fisheries, and smoked fish spread donated by Jeremiah's Eat My Fish Bullfrog Farm.

Student groups representing Emerging Ladies Academy and Fiber Arts Omaha travelled from Omaha, Nebraska to attend the conference and experience aquaculture in a hands-on way during a tour of UWSP NADF. The Great Lakes Aquaculture Collaborative supported these students by providing the funds to travel up to Bayfield, Wisconsin.

CONFERENCE FEEDBACK & FUTURE DIRECTION:

According to conference evaluations:

- Over 50% of attendees had never attended the annual Wisconsin Aquaculture Conference before.
- The top three sessions attendees found beneficial included: economics, best practices presented from the farmers, and water quality.
- Attendees enjoyed most: the tour opportunities, diversity of information and expertise, student involvement, and the overall organization.
- For future conferences, attendees would like to see more: networking and small breakout opportunities for specific interests and hands-on activities.
- For all evaluations, this conference was worth attendees time and funds.

- SAVE THE DATE FOR 2025 - WAA CONFERENCE, JANUARY 24-25, MARSHFIELD, WI

New DATCP Aquaculture Program Manager

A new DATCP Aquaculture Program Manager started in June. Her name is Lauren Kisley, DVM. Contact information: Veterinary Program Manager Division of Animal Health Wisconsin Department of Agriculture, Trade and Consumer Protection 608-982-6414 lauren.kisley@wisconsin.gov

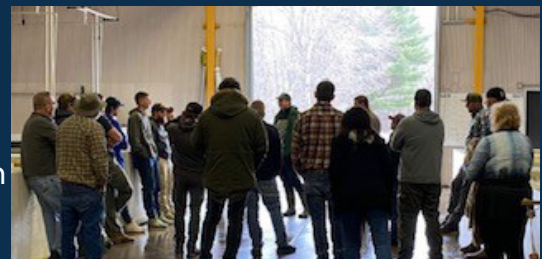
Dr. Kebus Conducts Fish Health Workshop At Gollon Brothers

On April 9th, Michigan State University Aquaculture Outreach Veterinarian Dr Myron Kebus conducted a fish health workshop at Gollon Brothers Wholesale Live Bait in Stevens Point, WI. This was a workshop tailored to the special needs and concerns of baitfish species for the employees of Gollon Brothers. Main points covered were proper fish handling, water quality, salt usage, and quick identifications of health issues and corrective measures. All involved received a great education and refresher on practical fish health.

Part of the many roles Dr Kebus plays in aquaculture is visiting farms and working with them on any fish health issues they may have. As every farm is different, his years of experience really shines on focusing on individual needs. Dr Kebus also works with training prospective fish veterinarians, recently receiving a USDA grant to continue such training. Look for future exciting things in the area.

If your farm or organization could use his services it is highly recommended to contact Dr Kebus for this worthwhile, and free consultation.

Dr. Kebus can be reached at
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FAVORITES FROM OUR FARM TO YOURS

Chef Jessie's Trout House Trout

Lay your fillets on a plate or towel and season with Rushing Waters Citrus Splash, or salt and pepper. Add oil to a nice non-stick pan and turn heat to high. Leave on high until the oil starts to smoke then turn down to medium and add trout meat side down. Be careful, the oil might splash on you. Sear that side for about 2-3 mins and add a splash of white wine. Sear for 2 more mins, flip and cook on the skin side until golden browned around the edges. Plate and enjoy!

Rushing Waters Pecan Trout

Pat-dry your trout fillets. Coat both sides with Rushing Waters Pecan Toasted Breading. Add oil to a non-stick pan and turn heat to high. Leave on high until the oil starts to smoke then turn down to medium and add trout meat side down. Sear that side for about 3-4 mins. Flip and cook on the skin side until golden browned around the edges. Plate and enjoy!

Tarragon Trout

4 Boneless Trout Fillets, 4 T Grape Seed Oil, 2 T Chopped Fresh Tarragon, 1/2 Lemon Juiced Kosher Salt, Cracked Pepper, Sweet Smoked Paprika.

Prepare your herb oil 20 minutes in advance. Combine 4T grape seed oil with the juice of half a lemon and 2T of chopped fresh tarragon. Wisk together to emulsify and allow to sit for 20 mins to meld the flavors. Preheat your skillet to medium and drizzle with grape seed oil and 1/2 of your herb oil. Sear fish, beginning with flesh side down about 3-4 minutes. Carefully flip your fillets and complete the cooking process on the skin side (around 2 mins). Once you turn your fish, generously baste the flesh side of the fish with your tarragon herb oil. remove your fillets from the skillet and finish each fillet with a sprinkling of kosher salt, freshly cracked pepper and smoked paprika. Serve immediately and enjoy!

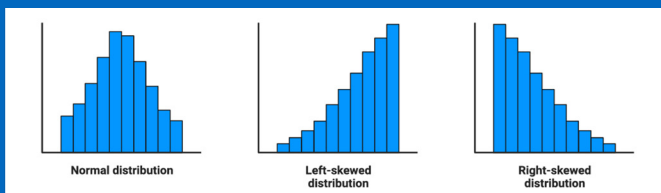
Understanding Your Stock

As many fish farmers are aware, not all fish are created equal, nor do they grow equally. These variations can be seen among cohorts and even within a cohort of the same age of a given species. The ability to predict sizes and consequently harvest volumes can be challenging for many, yet many find the larger challenge to be just getting them to harvest size to even be able to have the conversation. Once a farmer has been able to establish their standard practices and harvest scheduling, they can begin to look into the proverbial crystal ball of predicting what's to come.

The factors that affect growth can be endless, but establishing some level of empirical/anecdotal correlations drives progress. Gathering hard data can also be just as valuable as the work itself. Finally, the ability to digest that data into a usable form can be the most formidable task and often falls to the wayside in aquaculture. Intermittent tracking of each cohort's average size throughout their life is the first step to establishing a "Growth Curve". You then can compare independent variables, like water temp and feed ration, to the dependent variable growth per day, per week, etc. Over time and over multiple cohorts you can begin to paint a picture of what you can expect given the culture conditions. Given a single cohort of fish are generally under the same culturing conditions no matter their rearing method, there still will be variations among individual fish in a single population. These size variations can have multiple causative agents including behavioral, genetic, etc.

An unaltered cohort of fish generally follow a normal distribution, or bell curve. The range of these sizes, or variance of this curve can vary cohort to cohort and species to species, but again generally the data follows a normal distribution. To determine the variance a farm should take at least 60 fish from a cohort and weigh them individually. That data then can be categorized into buckets with various size ranges of the 60+ fish. Example: 5 fish from 1.0 -1.25 lbs, or 8.3% of sample. Once you've established those buckets and number fish in each you will see that bell curve develop where in you see the most fish around the average weight and fewer further away. These percentages of the total 60 fish then can be applied to the entire population to estimate the total of poundage in each bucket. You will observe that this bell curve will naturally widen as fish get larger, increasing the variance. For those Excel savvy individuals, this growth and predictive modeling can be done with simple formulas for standard deviation and graphs with surprising accuracy and ease.

A top graded cohort will again exhibit an asymmetric curve, or a left skewed curve. A bottom graded group of fish will exhibit an asymmetric curve, now only a right skew. In either scenario, the new average sized fish is no longer the most numerous fish in that cohort. Over time cohorts will begin to reestablish a normal distribution of the cohort



So, why does this all matter? The average weight can be used to determine total harvestable pounds when applied to the total number of fish. The percentages can tell you how much of that poundage is even sellable, and those that are, at what price! Overtime, through repetition, you then can tell customers what they can expect to receive well before produced. When you create a healthy "Say:Do Ratio" with customers, they return again and again.

MEET THE CURRENT WAA BOARD

Ben Gollon - Gollon Brothers Wholesale Live Bait, Inc

Spence Driver - Valley Springs Trout Farm

Doug Sackett - Cedar Hill Game Farm

Kyle Woolever - Superior Fresh

Tyler Firkus - Northern Aquaculture Demonstration Facility, UWSP

Mark H Schmitz - Concordia University, WI

Peter Fritsch - Rushing Waters Fisheries


Administrative Assistant - Staci Griffiths

More Frequent Removal of Dead Fish Shows Promise for Reducing Bacterial Coldwater Disease-Associated Losses**Nisha Shrestha^{1,2}, Thomas Loch^{1,2,3,4}, and Myron Kebus³****¹Michigan State University – Aquatic Animal Health Laboratory, Aquatic Animal Disease Ecology Program; ²Department of Fisheries and Wildlife, College of Agriculture and Natural Resources, Michigan State University; ³Department of Pathobiology and Diagnostic Investigation, College of Veterinary Medicine, Michigan State University; ⁴Department of Comparative and Integrative Biology, Michigan State University**

Diseases increase costs and decrease productivity in hatcheries and farms that propagate and raise fish. One such disease that kills substantial numbers of farm and hatchery-raised salmon and trout is bacterial cold water disease (BCWD), which typically occurs at cold water temperatures (often below 15 °C). Bacterial cold water disease is caused by *Flavobacterium psychrophilum*, a bacterium that causes a range of disease signs in affected fish, including fin erosion, ulcers of the skin and muscle, and bulging of eyes. Preventing and controlling BCWD is challenging for several reasons, including the ability of the bacterium to be transmitted from fish to fish and from infected brood fish to their offspring via reproductive fluids and inside infected eggs, limited treatment options with varying effectiveness, and the absence of commercially available vaccines in the USA. In addition, *Flavobacterium psychrophilum* survives for lengthy periods in water and sediments, and for these and other reasons, it can be difficult to control this bacterium in farms and hatcheries. However, recent research suggests that more frequent removal of dead fish, known as “picking mortis” is likely a promising means of reducing BCWD-associated losses.

For some time, it has been recognized that dead, *F. psychrophilum*-infected fish release high loads of the bacterium into the water, which can then infect other salmon and trout in the facility and persist in systems. For scale, a recent study led by researchers at the Michigan State University – Aquatic Animal Health Laboratory showed that a dead fish (coho salmon, Atlantic salmon, or rainbow trout) released higher numbers of *F. psychrophilum* cells into water (upto ~100000000 to 1000000000 cells/fish/hour) compared to infected live fish (10000000 to 1000000000 cells/fish/hour) and continued the shedding activity for about 98 days (<https://pubmed.ncbi.nlm.nih.gov/11129378/>).

Given the apparent importance that dead fish play in elevating *F. psychrophilum* transmission risk and perpetuating disease outbreaks, researchers at Michigan State University ([sciencedirect.com/science/article/pii/S0044848622009851](https://www.sciencedirect.com/science/article/pii/S0044848622009851)) sought to explore how the daily frequency of mort removal would affect BCWD-associated losses using a simulation model. Results showed that by increasing the frequency of dead fish removal from once to twice daily, a significant decrease in fish mortality (from 177,546 to 31,887) was projected to occur across a 180-day steelhead rearing cycle. Further increasing the frequency of mort picking to three times per day decreased mortality to an average of 19,254 fish. This study also explored how varying disease-causing capacity of different *F. psychrophilum* strains and water exchange rates in serial reuse systems affected simulated BCWD-associated losses. Although lower water exchange rates and higher disease-causing capacity were both associated with higher simulated fish mortality, increasing frequency of picking mortis was most important in significantly reducing fish mortality. Hence, regular and frequent removal of dead fish is a highly efficient method to reduce the spread of *F. psychrophilum* in rearing water, ultimately decreasing fish mortality while also reducing the need of expensive chemicals and antibiotics treatments.

The background of the top half of the page is a photograph of a pond with many green lily pads and a few white lily flowers. The water is dark blue. The text is overlaid on a white rectangular box in the upper right portion of this image.

MI Sea Grant, MSU Extension, and GLIFWC will be offering Seafood HACCP Training this December 10-12, 2024, in Brimley, Michigan!

What is Seafood HACCP?

The Association of Food and Drug Officials and the Seafood HACCP Alliance have developed a uniform and cost-effective AFDO/Alliance hazard analysis & critical control point (HACCP) training program for fish and fishery products. The primary purpose of the AFDO/Alliance HACCP Training Protocol is to assist the implementation of HACCP programs in commercial and regulatory settings. The primary audience is the seafood processing and importing industry, and regulatory officials based in the United States. The Basic HACCP course teaches the principles of HACCP and empowers processors to develop HACCP plans specific for each seafood product they handle or produce.

Registration is required and participants must attend the entire course to receive their certificate.

Location: Bay Mills Resort & Casino, Brimley, MI

Course Registration Cost: \$160

Registration link: <http://tinyurl.com/39wx8zmh>