OAA Newsletter: Fall 2025

President's Note

Dear Oregon Aquaculture Association Members,

On behalf of the Oregon Aquaculture Association (OAA) Board, I'm excited to share a significant update regarding our efforts to strengthen our organization and enhance our capacity to serve you, our valued members. OAA was initially founded in 2004 to serve inland trout farmers. More recently, OAA transitioned from serving this limited set of stakeholders to serving practitioners of all types of aquaculture in Oregon. This broader scope includes all aquaculturalists, from terrestrial finfish farmers to coastal shellfish and seaweed farmers. OAA also serves practitioners of aquaculture for various purposes, including conservation, restoration, commercial enterprise, or a combination of these activities.

Over the past year, we have worked diligently to reconstitute the OAA Board of Directors, bringing in a dedicated group of leaders to help guide OAA through a crucial transition year. These directors have agreed to serve a one-year term. Their focus will be on strengthening OAA's operations to ensure we provide robust producer representation, coordination, industry cohesion, and advocacy across all sectors of Oregon aquaculture. We are proud to welcome the following individuals to the Board, representing a diverse cross-section of our industry:

- Jon Bonkoski (Ecotrust), OAA Board Vice President
- Thomas Losordo (Retired), OAA Board Treasurer
- Suzie O'Neill (Ecotrust), OAA Board Secretary
- Chuck Toombs (Oregon Seaweed), OAA Board Member
- Mark Arnold (Oyster Bluff Shellfish), OAA Board Member
- Alex Marquardt (Oregon Sea Grant), OAA Board Member
- Joel Kelly (Live Local Organic), OAA Board Member
- Svein Wiese-Hansen (Pacific Seafood), OAA Board Member

This one-year term allows us to immediately inject new energy and expertise while we move forward. In one year's time, the OAA will hold a board election to affirm the board by the OAA membership, ensuring democratic leadership for the future. I invite all original OAA members or any inland fish grower, over the next year, to seriously consider volunteering to be a board member.

We are currently updating the website and membership structure with input from the newly structured board. We are simultaneously working to finalize the OAA's new strategic plan, which will be shared with the full membership in the next few weeks. This plan is the roadmap for the actions we are currently taking and will guide our development over the next three years. These efforts are all aimed at achieving our core goal: Strengthening the Oregon Aquaculture Association to provide producer representation, coordination, industry cohesion, and advocacy. Key actions outlined in the strategic plan to achieve this goal include:

- Create annual action plans with clear, time-bound goals to address emerging aquaculture issues.
- Launch Internal Working Groups.
- Host a biennial Oregon Aquaculture Summit.
- Establish a Legislative/Regulatory Action Committee

The Board is committed to building an OAA that is robust, financially stable, and truly representative of our industry's incredible diversity and potential. We look forward to sharing the full strategic plan with you soon and working side-by-side to bring these initiatives to life. If you have any immediate questions or would like to volunteer for one of the working groups mentioned above, please reach out to the OAA contact email.

Sincerely,
Randy Bentz, OAA Board President

Producer Spotlight

Joel Kelly's journey into aquaponics began with a simple conversation. His uncle told him about an aquaponics system he had visited at his daughter's high school. Intrigued, Joel decided to try it himself. What started as curiosity turned into a full-fledged aquaponics business called Live Local Organic—now supplying fresh, local food across the Pacific Northwest.

Credit: Joel Kelly

Based in Portland, Live Local Organic grows tilapia alongside basil and lettuce. The water from the aquaculture system passes into the vertical farming system, and the plant roots consume the nutrients out of the water. With this setup, the fish waste fertilizes the plants, and the plants purify the water for the fish. "It's a symbiotic relationship that allows us to recycle our water indefinitely and we only replace what is lost to evaporation and plant absorption. It leads to using 90% less water than conventional farming as well as preventing pollution in aquaculture by repurposing what would normally be considered waste in an aquaculture system," Joel explains. It's a model that reflects efficiency, ecological balance, and the kind of forward-thinking agriculture in Oregon is becoming known for.

Their products—live tilapia, living lettuce, living basil, and cut basil—are distributed throughout the region. You'll find their greens in grocery stores like Fred Meyer, Whole Foods, New Seasons, Safeway, Market of Choice, Roth's, and Chuck's Produce. Their live market fish go directly to ABC Seafood in Portland. While the fish and produce are sold separately, the reception from consumers has been overwhelmingly positive.

At its core, Live Local Organic is all about shortening the distance between food production and the table. "Local food production improves quality, transparency, and freshness," Joel says. "It reduces food miles and the need for preservatives and stabilizers. It also improves food security. We are all about LOCAL!"

Credit: Joel Kelly

Of course, the work isn't without its challenges. Like many small farms, Live Local Organic faces rising rent, energy, and labor costs. But Joel remains optimistic, with goals to expand both the range of products and the scale of operations in the coming years.

When asked what he finds most rewarding, Joel doesn't hesitate: "Giving people healthy food that tastes delicious." For him, aquaponics isn't just about efficient farming—it's about creating a system where both people and the planet thrive. And if he could leave Oregon consumers with one message, it would be this: "You play a significant role in the success of your local farmers. We need small local farmers in all industries in order to have a healthy and robust food system. So when you see locally grown food and it looks good—support it."

Project & Partner Updates

Ecotrust is producing a podcast called Tending the Tides: Stories of Mariculture on the Oregon Coast. The first episode is available now on Spotify, Apple, Podcast Addict, and Pocket Cast.

Oregon Sea Grant hired Alex Marquardt as the Coastal Mariculture Extension Specialist in March 2025. Alex supports the shellfish and seaweed aquaculture industry across the Oregon coast, partnering with growers, managers, researchers, and others. You can reach Alex at alex.marquardt@oregonstate.edu.

If you'd like us to share updates about your work related to Oregon aquaculture in upcoming newsletters, reach out to admin@oregonaquaculture.org.

Credit: Ecotrust

Technical Corner

The Heartbeat of Your Farm: Understanding the RAS Accumulation Equation

In Recirculating Aquaculture Systems (RAS), success hinges on maintaining a delicate balance. RAS can be thought of as a life-support system in which every critical water quality parameter—from oxygen to ammonia—must be kept within a precise range for your stock to thrive. Governing the management of this system is the accumulation equation. Think of your fish tank like a bank account for a specific water quality parameter, let's say dissolved oxygen. You have oxygen "deposits" (inflow from fresh water and aeration) and "withdrawals" (outflow and consumption by fish and bacteria respiring). The accumulation equation is the daily statement that tells you whether your account balance is growing, shrinking, or staying the same. It's the fundamental principle that governs the dynamics of everything in your system.

The Formula

The accumulation equation is known as a mass balance—an algebraic way of knowing how much of a particular substance is accumulating or diminishing in your system. It basically states that the rate of change of a substance within a defined volume (your tank) is the sum of everything coming in, minus the sum of everything going out. The equation looks like this:

$$\textbf{Accumulation} = [(\textbf{Flow}_{in} \times \textbf{Concentration}_{in}) + \textbf{Production})] - [(\textbf{Flow}_{out} \times \textbf{Concentration}_{out} + \textbf{Consumption})]$$

Accumulation: This is the **net result**, the bottom line. It's how much a parameter is changing inside your rearing tank. If it's positive, the concentration is increasing. If it's negative, it's decreasing. If it's zero, you've achieved a **steady state**, where inputs equal outputs. The goal for most parameters is to keep accumulation at or near zero.

Flow_{in}: This represents the rate at which water is entering your rearing tank, usually represented by a volume-per-time notation (like gallons/minute or liters/second).

Flow_{out}: This represents the rate at which water is leaving your rearing tank, with a similar denotation. This is typically equal to the **Flow_{in}** rate, otherwise tanks would overflow. Water leaving the tank is then recirculated into the tank after passing through systems that remove undesirable water quality components (like feces, uneaten feed, nitrite, and ammonia) to minimize its accumulation in the rearing tank when the water passes back in.

Technical Corner (cont.)

Concentration: When water flows in or out of the rearing tank, it has a concentration of water quality components that are denoted with a mass-per-volume unit to express how much of a substance is contained in a specific volume of water (commonly **mg/l**). In the equation, this concentration is multiplied by the flow rate to help understand how much of a substance is entering or leaving the tank.

Production: This term accounts for a substance being created or added **within the tank itself**, not from an external water source. A great example is an oxygen cone or aeration system that injects O_2 directly into the tank water. Another is the unwanted production of ammonia excreted by the fish.

Consumption: Also known as reaction or removal, this is any process that consumes or removes the substance within the tank. For dissolved oxygen, the two biggest consumers are the fish themselves (respiration) and the beneficial bacteria in your biofilter (nitrification). For ammonia, consumption is the work done by your biofilter.

Example Problem 🐟
Let's make this real with a common, critical scenario: managing dissolved oxygen (DO) for a production aquaculture tank.

Scenario: You have a **100,000-liter** (100 m^3) tank. Your management target is to maintain a steady DO level of **15 mg/L**. You feed the fish a total of **50 kg of feed per day**.
Let's analyze the system over one day (24 hours) to see if the DO level is stable, rising, or falling.

1. **Consumption (R):** This is what's using up your oxygen.
    - **Fish Respiration:** A common rule of thumb is that fish consume about 0.25 kg of O_2 for every 1 kg of feed.
        - 50 kg feed × 0.25 kg of O_2 per kg feed = 12.5 kg O_2 per day.
    - **Biofilter Respiration:** The nitrification process also consumes a lot of oxygen, roughly 4.57 kg of O_2 for every kg of Total Ammonia Nitrogen (TAN) processed. Let's assume your 50 kg of feed produces 1.5 kg of TAN.
        - 1.5 kg TAN × 4.57 kg O_2 per kg of TAN = 6.86 kg O_2 per day.
    - **Total Consumption (R) =** 12.5 + 6.86 = **19.36 kg O_2/day.**

2. **Production (P):** This is your primary oxygen input.
    - Let's say you have a pure oxygen injection system (like an oxygen cone) that is set to deliver **20 kg of O_2 per day**.
    - **Total Production (P) =** 20.0 kg O_2/day.

3. **Inflow and Outflow:** For this example, let's assume the inflow water and outflow water have the same DO concentration as the tank **(15 mg/L).** In this specific case, the amount of oxygen entering with the water is equal to the amount leaving, so the net effect of (Inflow - Outflow) is zero. This simplifies our calculation to focus on what happens inside the tank.

The Calculation: Now, plug the numbers into our simplified equation:
Accumulation = Production − Consumption
Accumulation = 20.0 kg O_2/day − 19.36 kg O_2/day
Accumulation = +0.64 kg O_2/day

The Verdict: The accumulation rate is **positive**. This means that over 24 hours, you are adding 0.64 kg more oxygen than is being consumed. Your DO concentration is slowly **increasing**. This gives you a slight safety buffer, which is good! If the number were negative, it would be an alarm bell that indicates your fish are consuming oxygen faster than you are supplying it, and a dangerous drop in DO is coming. With this knowledge, you can slightly dial back your oxygen cone to save money or increase feeding with confidence, knowing you have the capacity.

Aquaculture Classifieds

Property For Sale: Rogue Aquaponics in Rogue River, OR. Click here for listing.

Contact us at admin@oregonaquaculture.org to add a listing for gear, property, jobs, and other aquaculture classifieds in the next newsletter issue.

Credit: Desert Springs

Credit: Michael Monroe

Aquaculture in the News

NOAA Release New Gear Guide for U.S. Marine Aquaculture Industry

National Aquaculture Association: The Economic Contribution of Aquaculture to Western States

Upcoming Events

Mariculture Future Forum, Coos Bay, OR, November 2025

Aquaculture America, Las Vegas, NV, February 2026

National Shellfisheries Association, Annual Meeting in Portland, OR, March 2026