



Sustainable Agriculture & Food Systems

Michigan State University

Spring-Summer Newsletter
April 2026

Congratulations SAFS Spring '26 Graduates!

Undergraduate:

Abigail Golembiewski
Chante Hardaway
Michelle Kline
Mckenzi McGill
Olivia Schaefer
Emily Schneider
Alexander Smith
Emiliano Stockdill Garay

Graduate:

Catlin Goodwin
Grace Densham
Ryan Jayne

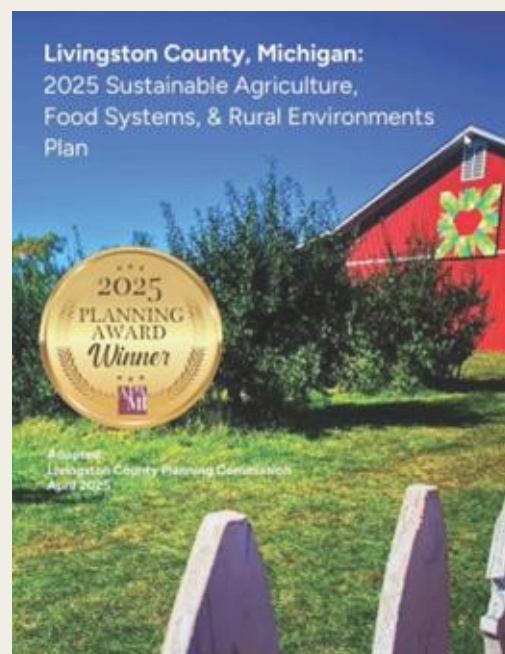
Early Summer
congratulations to
Jonathon Vivas
Aragon!

***We wish you all the best – and find
SAFS on LinkedIn!***

Undergraduate wanted for SAFS Steering Committee!

The SAFS Steering Committee invites SAFS student voices to join in shaping our curriculum, community events, campus connections, and alumni networks. If you would like to serve on the SAFS Steering Committee, please submit your resume or CV and a brief letter of interest to safs@msu.edu. Selections will be made by the end of Spring 2026; 1-year appointments start in Fall 2026.

Congratulations to SAFS Alumnus **Abigail Carrigan**, who along with her co-authors received the Michigan Association of Planning's Outstanding Undergraduate Student Project award for writing Livingston County's Sustainable Agriculture, Food Systems, and Rural Environments Plan. Well done!





MSU DEPARTMENTAL SEMINARS

*Seminar season is almost over!
Join us for a few last speaker events:*

Plant & Soil Science & Horticulture Seminar Series

Wednesday at 12:00pm

- Apr 22nd - Jahi Johnson-Chappell, CRFS MSU
Thinking and Acting Critically Towards “Good Food”

Kellogg Biological Station Seminars

Fridays at 10:45am

- Apr 17th - Ashley Keiser, U. of Massachusetts, carbon and nutrient exchange between plant and soil communities
****SAFS will have a van for those who have registered, but you can join via Zoom!****

Summer Food and Garden Fun in the Greater Lansing Area!

Visit a Farmers Market! You might catch a band playing, too!

Go on a Community Garden Tour! Lansing, Flint, Detroit, and more!

Get a new plant or garden starts at the MSU Horticulture Gardens Spring Plant Sale! May 15-16

Details for events on **AGROECO listserv** !

Summer Happenings

Stay involved over the summer!

MSU Sustainability Events

Public calendar highlighting events at MSU.

Indigenous Three Sisters Garden and MSU Indigenous Seed work

SAFS Capstone students worked with the Nokomis Cultural Heritage Center in Okemos to start Indigenous corn varieties to be planted at the Center and the MSU Student Organic Farm. There will likely be some work days when you can come get your hands in the soil! Keep an eye out for announcements!

Be the [Food] Rescue!

Julie and SAFS Capstone students have been working with Food Rescue US – Lansing Communities. Known for being the most reliable food rescue in town, you can volunteer for a one-time pick up, or become a regular for a donor site! Keep food out of the landfill and in the hands that need it most.

Art, Land, and Nature at Cooley Garden

SAFS coordinator Julie Cotton will be working with a team of MSU folks to develop an interdisciplinary performance experience out at Cooley Garden in Lansing's REO town. How does this garden reflect the ecology, history, and modern interpretations of place? You can help us find out!

Featured Article

Building Sustainable Fisheries: A Deep Dive with Hatchery Manager Dan Sampson

by Faith Ojelade

*SAFS PhD Student and Research Assistant
Department of Fisheries and Wildlife*



Dan Sampson, manager of the Michigan Department of Natural Resources northern fish hatcheries, observes a tank full of Arctic grayling being raised as part of an effort to reintroduce the fish into Michigan waters. (Bridge photo by Kelly House)

Dan Sampson has spent over three decades in fish culture from wild salmon enhancement in Alaska to broodstock work in Minnesota. He now oversees the Michigan Department of Natural Resources' Oden, Thompson, and Marquette State Fish hatcheries, along with the electronics unit that maintains the SCADA alarm systems protecting millions of fish. His experience across regions and species offers a rare look at how hatcheries support sustainable fisheries and ecosystem recovery in Michigan.

Faith: *Many people think hatcheries are just places where fish are grown and released. How do you explain what a hatchery really does?*

Dan: That's one of the biggest misconceptions. Yes, hatcheries support recreation, but their broader purpose is ecological. In Alaska, hatcheries supported commercial and subsistence fisheries. In Michigan, Chinook salmon were introduced decades ago to control invasive alewife and recreation came a bonus. Hatcheries are also vital for species restoration. Programs for Arctic grayling and lake sturgeon aim to rebuild naturally reproducing populations, not rely on stocking forever.

Featured articles are written by SAFS students, highlighting sustainable agriculture and food systems in current science, events, and popular media.

Faith: *How does a hatchery improve survival and what is your role?*

Dan: I often start by explaining this to visitors using a simple example about population dynamics. Imagine two female brown trout that each reproduce twice in their lifetime: one in the wild and one in a hatchery. Each produces about 3,000 eggs per year, totaling 6,000 eggs.

When I ask people how many of those eggs survive to become mature adults, the guesses are usually in the hundreds or thousands. In reality, survival is dramatically different between the two environments.

In a natural stream with a stable population, almost all those 6,000 eggs will result in only two adults that survive to reproduce, just enough to replace the parents. If four survived on average, the population would double, which can happen each year but not consistently, or the stream would become overcrowded. Nature limits survival.

In a hatchery, we mimic natural conditions but eliminate most early risks. Fertilization success in our system is often 70–95%, in part because we use a slightly saline solution that keeps the micropyle open longer, giving sperm more time to reach the egg and washing away fluids that may carry pathogens. As fry grow, we carefully control temperature, oxygen, lighting, feeding, hygiene, and overall water quality.

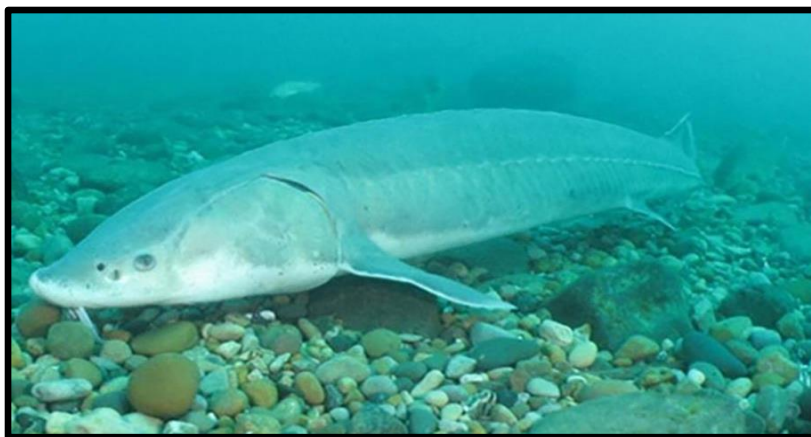
Because of this controlled environment, losses are much lower: roughly 30% at the egg stage, about 5% as newly hatched sac fry, another 5% in the first six months, and then less than 1% mortality each year after that (or even assuming 3% per year for three years). From the original 6,000 eggs, we can easily see over 50% survive to adulthood (around 3,000 fish).

My role as a hatchery manager is to oversee everything that makes that possible: fish biology and health, the infrastructure that maintains water quality, the alarm systems, disease prevention, staff coordination, and regulatory compliance. The goal is simple; give fish the best possible chance of survival before they are stocked into Michigan's waters.

Faith: *What are the biggest challenges in raising healthy fish?*

Dan: Regulations and costs remain key challenges. All six Michigan DNR hatcheries operate under NPDES discharge permits, which are essential for protecting waterways but require constant monitoring and maintenance. We also follow additional regulations, including mandatory fish health inspections before stocking and federally regulated fish health treatments. Rising costs (feed, energy, equipment) add pressure, and funding from license sales and excise taxes doesn't always keep pace.

The pandemic further complicated operations, as fish require daily care. Still, the economic return from Michigan's fisheries far exceeds the cost of hatchery programs.



Lake Sturgeon Quick Facts

Scientific name: *Acipenser fulvescens*

- One of the oldest species in the Great Lakes
- Currently threatened and rare due to overharvest and habitat loss
- Grow very slowly but may reach 8 feet long and 300 pounds
 - Can live for 55-150 years!

Facts: [Michigan Sea Grant](#); Photo: Adam Lintz, Blue Vision Media

Faith: *How do you make breeding and stocking decisions?*

Dan: Broodstock crosses follow strict genetic guidelines: at least 100 one-to-one male–female pairs, avoiding pooled milt (sperm from male fish) to prevent dominant males from overcontributing. We use parents from multiple year classes and periodically add wild fish to maintain diversity. Stocking decisions come entirely from field biologists, who match species and strains to habitat and management goals.

Faith: *What does sustainability look like at a hatchery?*

Dan: It includes infrastructure such as reliable pumps, SCADA alarms, backup oxygen and energy efficiency. Solar panels installed from 2021–2023 help offset rising energy costs. Water security matters too. Groundwater systems are more stable, while surface-water sources are vulnerable to land use, sediment, pollutants, and warming. And sustainability depends on people; thankfully, hatchery work attracts dedicated staff who stay long-term.

Faith: *Will climate change affect hatchery operations?*

Dan: Yes. Even slight changes in water chemistry, temperature, or feed availability will matter over time. Groundwater will change slowly, but stocked fish will feel immediate effects from altered temperatures, runoff patterns, and habitat shifts..

Faith: *Do regulations help or hinder operations?*

Dan: They can be expensive, but they protect the environment and align with our mission. For example, at Oden we reduced annual flow-meter certification challenges by installing a partial flume system. Regulations add work, but they ensure responsible stewardship

Faith: *Where do you see Michigan's hatcheries in the next decade?*

Dan: Major changes are unlikely. Hatchery systems move slowly like an aircraft carrier, not a speedboat. Developing new broodstock programs or strains takes years of research and biological time for fish to mature. The six hatcheries will likely operate as they do now, with gradual shifts driven by conservation needs and funding. Tweaks like adjusting muskie broodstock collection timing may improve outcomes, but overall, the system is built for long-term stability.

Faith: *What inspired you to pursue hatchery management?*

Dan: I grew up on a dairy farm and loved caring for animals. Fisheries appealed to me because of the blend of biology and math analyzing fish scales for age and growth fascinated me. My early experience in Alaska confirmed that hatchery work was the path for me.

Faith: *What's the most rewarding part of your job?*

Dan: Seeing results. In Alaska, over a million-chum salmon returned to Deep Inlet, supporting a terminal fishery without harming wild stocks. In Michigan, it's everything from kids catching their first trout to sturgeon returning to rivers after decades of restoration. Each species offers its own rewards.

Faith: *Any lessons for those working toward sustainability?*

Dan: Sustainability is always changing. Be flexible, patient, and celebrate small wins. And remember none of this works without committed people.

