AN ECONOMY OF SCALES

A Look at the FOOD FISH INDUSTRY in Michigan

RECIPEs
Featuring
MICHIGAN FARMED and WILD FISH!

AQUACULTURE and COMMERCIAL FISHING

Exploring the Term ‘SUSTAINABLE SEAFOOD’
EVENTUALLY, I ENDED UP IN ANN ARBOR,
where I began research on aquaculture and
came to understand its impacts on local
income, social stability and quality of life,
especially in very poor communities.

At that same time, the commercial fishing
trade in the Great Lakes was undergoing a
major change, due to recognition of Native
American fishing rights, as well as perceived
conflicts with sport fishing. These experiences
gave me a healthy respect for the quality of life
seafood industries bring to rural communities,
as well as the damages that can occur when
these industries suffer.

I remember doing research in Thailand in
the 1980s, when a nascent culture industry
for tilapia existed that produced cheap fish
valued for local consumption. The farms were
small, market limited, and yet they provided
subsistence to small communities where
tilapia were produced. Then aquaculture
began to build globally, exemplified by the
increase of tilapia production from 170,000
tons in 1983 to 4.5 million tons today. Things
changed dramatically — people in the U.S.
stopped asking me what a tilapia was and
instead bought them at their local grocers or
restaurants. This produced a stronger export-
based economy in many underdeveloped
countries, but at the same time, produced
environmental problems and social inequities.
Over time, producers realized they had to
understand and accommodate the desires and
ethics of consumers, and production systems
changed for the better. While everything is not
perfect today, tilapia culture is moving toward
less environmental damage and becoming
more answerable to demands for a more
environmentally responsive industry.

We still see many troubling trends in wild
seafood production. Marine populations are
often overfished, and the hope for increased
production to compensate for human
population increase is dashed.

In the Great Lakes, we recently completed
an analysis of the sustainability of five
commercially harvested fishes, and all were
considered sustainable, even though the
lakes themselves continue to suffer some
degradation from invasive species and other
abuses. Commercial fishing in the lakes will
continue to produce valuable human food, but
harvests are probably capped near the maximum total level today. So providing more seafood for the future will require continued fishing to maintain that component of our food supply, and expanded aquaculture to produce new crops. Michigan could lead in this — it certainly has the water, fishing history and access to markets to make it a leader in aquaculture.

We often talk about sustainability in regard to seafood production, yet have few means to determine and compare it among production systems in capture and culture fisheries. We recognize the need for more U.S. seafood in the future, as well as the need to reduce our reliance on foreign production, as about 90 percent of the seafood we eat is imported. These trends are not necessarily contradictory or heading for a clash, but they will require some careful change and expansion in aquaculture and sustenance of wild fisheries to enable us to have as high a standard of living in 2050 as we do today.

On March 12, Michigan Sea Grant and a number of other sponsors will host a Michigan Seafood Summit. It is intended to be a celebration of the history, value and future of Michigan fisheries. It will be a place for people interested in opening new seafood businesses to gain some knowledge, for the public to become better educated about environmental performance of Michigan seafood, and for all attending to enjoy the great taste and diverse kinds and preparation styles for our seafood. I hope to see you there.

— Jim Diana
Michigan Sea Grant Director

AQUA GROWERS
EDIBLEWOW
THE FISH MONGER’S WIFE
FORTUNE FISH & GOURMET
HARRIETTA HILLS TROUT FARM
INDIAN BROOK TROUT FARM
MICHIGAN FISH PRODUCERS’ ASSOCIATION
MICHIGAN SEA GRANT
MACKINAC STRAITS FISH COMPANY
NEW HOLLAND BREWING
SUPERIOR FOODS CO.

CHEFS
MATTHEW GREEN
Reserve Wine & Food, Grand Rapids
MICHAEL TROMBLEY
The Henry Ford, Dearborn
BRADFORD CURLEE
Kellogg Center, East Lansing
MATTHEW MILLAR
The Southerner, Saugatuck

Updates via Facebook and Twitter #MiSeafood
miseagrant.umich.edu/seafoodsummit
The histories of the fish and people in the Great Lakes have been so intertwined that it is not possible to look at the progression of one without considering the other. The people here have depended on the Great Lakes for the most essential of resources like drinking water and food fish since the region was settled first by Native Americans and later Europeans.
While we are less dependent on the fishery now than ever before, many in Michigan think it may be the key to the state’s future.

THE MICHIGAN SEAFOOD SUMMIT was established to explore this history and potential future, to bring together the different partners involved in the state’s food fish scene and to raise public awareness of issues surrounding fish in Michigan. The first annual summit will be held March 12, 2015 in East Lansing. The focus of the sessions includes sustainable seafoods, creating a cohesive fishery network, aquaculture, seafood safety and more.

“We thought a summit was important because there was no existing opportunity for commercial fish producers, culturists, and processors to network together,” said Jim Diana, director of Michigan Sea Grant and organizer of the event. “We want to help support a vibrant and collaborative fish future in our state and region and thought this would be a great step forward to help that.”

The morning sessions will be targeted at industry professionals and will provide a more technical look at the past, present and future of Michigan’s fish.

The afternoon session is open to the public and will be more consumer-focused. A Michigan seafood feast will top off the day, with five courses of fish from Michigan, including trout, whitefish, tilapia, shrimp and more. The meal will be prepared by chefs from around the state with a commitment to using locally produced foods.

INCREASED DEMAND FOR FOOD FISH

While at one point there were plenty of fish in these inland seas, fish production and harvests are nowhere near where they once were — and they are unlikely ever to reach those levels again. Demand continues to grow.

“The first thing that people should realize is that 91 percent of the seafood we eat in the U.S. is imported,” said Dan Vogler, the president of the Michigan Aquaculture Association and owner of Harrietta Hills Trout Farm.

“There are all kinds of reasons that is not the best, from the carbon footprint to food security to geopolitics. For the first time in human history, the majority of fish we’re eating now comes from farms — about 55 percent.”

While responsible operations do exist, fishing regulations and farming practices around the world can be sketchy. While federal regulations require packages to be labeled with production type (caught or cultured) and country of origin, it remains difficult to know whether imported seafood is sourced responsibly. Right now, as fish consumers, we largely rely on Asia for seafood supply, a part of the world with a forecasted boom in population and rising middle class. Vogler pointed out that within 15 years, a convergence of factors could dry up our imported supplies of seafood.

Beyond a potential impending supply shortage, eating locally produced food is not just a food trend; it’s a cultural shift in awareness of where food comes from. Since Michigan sits at the heart of the Great Lakes and freshwater is an abundant resource, a strong aquaculture and commercial fishing industry could help feed the region and beyond.
Buying and using local foods generates a slew of benefits for the surrounding community. The money spent at local businesses, such as non-chain restaurants, food suppliers, fish farms and farmer’s markets, recirculates within the community and goes deeper than money spent at chains and non-locally owned businesses. Local spending can help lock in economic stability, bolster jobs, keep traditions like commercial fishing alive, build transparency into food sourcing systems and contribute to a more educated consumer.

“Most importantly,” said Mathew Green, executive chef of Reserve Wine and Food in Grand Rapids, “it often tastes better.”

“Local food is fresher and you’re able to buy it directly from a farmer that you know, that cares about what they do,” he said. “Local farmers, fish farmers, fisherman — they’re bringing something to market that is often better quality than someone producing it on a commodity level.”

Green said he has long supported sourcing local foods, but when he started to really consider what should be found on the menu as a local mainstay, it was fish.

“I started thinking about what foods are local in Michigan, what’s native, what have people eaten here for the last couple hundred years,” he said. “And with all this fresh water around, not just the Great Lakes but all of our inland lakes and rivers, too, it seems like fish should be the local food in Michigan.”

Green has committed to using sustainably grown and harvested fish, whether they are local or sourced from elsewhere.

“I’m not opposed to farmed fish,” he said. “They can be great. We just want to know that, like any kind of farm, it is being done responsibly and sustainably with a good use of resources in mind. Like any industry, fish farming can be reckless and destructive. With whatever farm we use — land or fish — we make sure they line up with our values before we enter into a partnership. Same with wild fisheries. We make sure the commercial fisheries we support are sustainable.”

“LOCAL FOOD IS FRESHER AND YOU RE’ABLE TO BUY IT DIRECTLY FROM A FARMER THAT YOU KNOW...”
— Mathew Green

Great Lakes Chefs Alliance

Chef Green is building an alliance — a group of chefs to focus on Great Lakes conservation as a local food issue. The mission is to organize and educate chefs to promote the conservation of the Great Lakes and their watershed as a safe, sustainable and environmentally sound source of food.

Green and other chefs who join the Alliance pledge to work toward that goal through hosting education programs for other chefs and the public and by using Great Lakes fish on their menus to increase the economic motivation for conservation. Holding fundraising dinners and events is also part of the plan.

At the heart of the Alliance is the belief that chefs — who think about and work with more food than the average person — have the opportunity to make a great impact on the health of the Great Lakes ecosystem and economy.

Mathew Green executive chef of Reserve Wine and Food in Grand Rapids, prepares a steelhead trout fillet with corn sauce, black trumpet mushrooms, leeks and pickled apples. Green is a Michigan native who supports the use of locally grown, raised and harvested foods.

reservegr.com
THE GENERALLY AGREED-UPON definition for fisheries sustainability means meeting today’s need without compromising tomorrow’s ability to do the same. Supporters say aquaculture is a natural answer to the question of how to produce fish locally without draining our existing wild fisheries.

Dan Vogler, owner of Harrietta Hills Trout Farm and president of the Michigan Aquaculture Association, said there are three key considerations of sustainable fisheries in Michigan: environmental, social and financial.

“You really have to have all three of these for aquaculture or any fishing industry to work,” he said. “We have to have an environmentally acceptable impact — ‘acceptable’ being the key there because we know whatever we do in life there is a tradeoff of some kind, and at the end of the day we have to eat. It has to be socially acceptable, including jobs and fair treatment of people and community working together, kind of like a working waterfront. The third is that it has to be economically viable. It’s an economic opportunity for our state and one that is unique to Michigan. It also has to be economic on the individual side. What all this means is that we need to be reasonably protective of our resources while allowing the industry to grow.”

While Vogler advocated for aquaculture, he also noted that his industry could co-exist peacefully with the existing commercial fishery in the state.

“Demand is only going to rise,” he said. “And we can meet that challenge, but biology and responding to biology is difficult. There will always be a role for wild caught fish, simply because there are fish species that aren’t domesticated enough at this point to be raised via aquaculture.”
“WE SEE EVERY CUSTOMER AS AN OPPORTUNITY TO HELP THEM LEARN MORE ABOUT WHAT WE DO.”

— Amber Mae Petersen

RAISING THE PROFILE

IT WAS NOT THAT LONG AGO, SAID Amber Mae Petersen of The Fish Monger’s Wife in Muskegon, that commercial fishing was not recognized as the cultural touchstone and important cog in the local food movement it is now. Being an unseen part of the food system was a measure of self-preservation.

“There was very real animosity against commercial fisherman not so long ago,” said Petersen. “They tried to lay low. So I came along and I’m all gung-ho about it. I was like we should promote this, tell everyone what you do — it went against what most commercial fisherman had learned to do to survive.”

Petersen runs The Fish Monger’s Wife, while her husband Eric Petersen, who is a fourth-generation Great Lakes fisherman, catches whitefish as part of his family’s business. He heads out on Lake Michigan from April to October as part of the Petersen’s Fisheries crew.

“The demand is definitely there,” said Petersen. “People are starting to understand where their fish comes from. We see every customer as an opportunity to help them learn more about what we do.”

△

AMBER MAE PETERSEN owns and operates The Fish Monger’s Wife, a retail store in Muskegon featuring fish from the Great Lakes and beyond. She gets most of her fish from Eric Petersen — a fourth-generation commercial fisherman for Petersen’s Fisheries on the Great Lakes — who she also happens to be married to.

thefishmongerswife.net
As with investments and old colloquial warnings, not putting all of Michigan’s fish eggs in one basket is likely the wisest route. That is to say, the future of Michigan’s fishery is one of diversity.

“We need to have a robust system in Michigan, one that accepts all the technologies we have available that we have deemed acceptable, and the right regulatory system that is both protective of our environment but also allows for sustainable use,” said Vogler. “We have the opportunity right now to build that system. There has to be a balance.”
**WHY A SEAFOOD SUMMIT?**

**COMMERCIAL FISHING PERSPECTIVE:**

“It is important to help raise awareness. We’re surrounded by freshwater, but yet, very little of our fish that we eat comes from here. The biggest challenge I have is that many people do not understand where fish come from in Michigan. Having these types of events is crucial.”

— Amber Mae Petersen
Owner, The Fish Monger’s Wife

**CHEF PERSPECTIVE:**

“It’s important that we all have an understanding of the current state of our fisheries, what’s available and what needs to get better. I think it’s going to be a great learning experience for me and for the other chefs who are going. We think about food and where it comes from probably more than the average person. We’re so passionate about making sure we’re buying carrots from the right farmer, but most of us don’t put that kind of thought into our seafood – yet.”

— Mathew Green
Executive Chef, Reserve Food and Wine

**AQUACULTURE PERSPECTIVE:**

“It’s important because holding a summit says: this matters. There has long been a perceived conflict between aquaculture and commercial fishing and recreational fishing. But when we put them all together, there is a potential here that has been held at bay for years. We have a chance now to build a really robust food fish industry in Michigan. We’ve worked on broadening this discussion and taking it more mainstream. We’re able to finally have reasonable discourse with state regulators, and we’ve got people talking about where our food fish comes from. It’s good timing. In the past five years we’ve had a quantum shift in seafood production and availability is going to change in the next 10-15 years.”

— Dan Vogler
President, Michigan Aquaculture Association; Owner, Harrietta Hills Trout Farm

**SCIENCE PERSPECTIVE:**

“As human populations expand, agriculture lands become saturated, and water becomes limiting to expanding food production, we must look to new production methods like aquaculture and maintain existing production systems that are efficient, like commercial fisheries, to help feed the growing population and maintain our quality of life. Protein is important to our food supply, and production of fish remains one of the most ecologically and economically efficient means of producing this protein. Michigan has been a leader in fisheries for inland states and should become a leader in aquaculture using ecologically sensitive methods in order to boost our economy and the food supply for future generations.”

— Jim Diana
Professor of Fisheries and Aquaculture, UM and Director of Michigan Sea Grant
SEAFOOD WATCH CARDS NOW INCLUDE GREAT LAKES FISH

A group of University of Michigan School of Natural Resource and Environment graduate students worked with Shedd Aquarium in Chicago and Monterey Bay Aquarium’s Seafood Watch program to assess food fish from the Great Lakes. The students conducted a review of the Great Lakes commercial fisheries to assess the sustainability of commercially harvested and consumed fish in the Great Lakes. Michigan Sea Grant Director Jim Diana, who is also on the Seafood Watch Science Advisory Board, assembled and oversaw the group. The students provided an updated report on Great Lakes seafood sustainability. They examined fishing practices of both wild caught and farmed fish found in the Great Lakes for the report.

The information was analyzed and translated into seafood recommendations specific to Great Lakes states. The recommendations, which are used to help consumers make decisions about which fish to eat, were released in early 2015. The Seafood Watch cards are updated every six months. The information is also available through an app called Seafood Watch.

Great Lakes whitefish, yellow perch and lake trout were rated and added to the recommendations. To find out the latest recommendations, visit the website or download the Seafood Watch app.

seafoodwatch.org

SEAFOOD WATCH SYSTEM OF RECOMMENDATIONS

GREEN = BEST CHOICES
Buy. Well managed and caught or farmed in environmentally friendly ways.

YELLOW = GOOD ALTERNATIVES
Buy, but be aware there are concerns with how they’re caught or farmed.

RED = AVOID
Pass on these for now. Items are overfished, caught or farmed in ways that harm other aquatic life or the environment.

RESEARCHING AQUACULTURE

As part of our 2012-2014 research funding, Michigan Sea Grant provided support for an Integrated Assessment team to investigate aquaculture in Michigan. The team was led by Chris Weeks, regional aquaculture Extension specialist, and coordinated by Joe Colyn from the consulting firm Originz.

The project was designed to identify and address what is considered an underdeveloped aquaculture industry in Michigan, specifically the production of seafood for human consumption. As part of the project, the research team developed a Strategic Action Plan for expanding the state’s current commercial aquaculture program into a major sustainable seafood industry.

The project outcomes included:

* A written strategic plan for expanding Michigan’s aquaculture activities into a sustainable seafood production industry, which can be used as a guide for future planning and implementation.
* A better understanding of sustainable aquaculture and benefits associated with seafood in general by stakeholders.
* A better understanding by stakeholders for planned development of sustainable aquaculture in Michigan and how this can be beneficial to the state.

Visit the website to see the report: wp.me/P2Wb84-VM
TIPS ON CHOOSING SUSTAINABLE SEAFOOD

How do you know the seafood at the market or on your menu came from sustainable sources? Here are some tips that can guide you and your purchases to support sustainable practices:

- If it’s harvested in the United States, it is inherently sustainable as a result of the rigorous U.S. management process that ensures fisheries are continuously monitored, improved and sustainable.
- Stay informed and make sure you’re using the most up-to-date, credible resources. FishWatch is one of those resources.
- Buy seafood from knowledgeable, reputable dealers. Many retailers and chefs are implementing seafood purchasing policies, making sustainable sourcing a priority.
- Ask questions about seafood to learn how to identify high-quality, sustainable seafood. Where is it from? Does that country manage its fisheries sustainably?
- Imported seafood can also be safe and sustainable, but comes from a variety of sources and may not be produced to the same standards as U.S. seafood. In the United States, our standard is sustainability.
- Seafood from specific sources may be certified as sustainable by the Marine Stewardship Council, the Aquaculture Stewardship Council or the Seafood Watch Program.

fishwatch.gov

ACCORDING TO NOAA FISH WATCH:

“We are committed to improving our understanding of sustainability and its impact on the health of our oceans and the people who depend on them.”

“Sustainability” is based on a simple principle — meeting today’s needs without compromising the ability of future generations to meet their needs. In terms of seafood, this means catching or farming seafood responsibly, with consideration for the long-term health of the environment and the livelihoods of the people that depend upon the environment.
### Salad-Stuffed Rainbow Trout

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>1 whole rainbow trout, butterflied</td>
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<tr>
<td>1/2 pound greens (arugula, mizuna, tatsoi, baby kale, or baby chard), washed and dried</td>
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<tr>
<td>1 small russet potato</td>
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<td>1 lemon</td>
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<td>1/4 c. really good olive oil</td>
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<tr>
<td>1 tsp. Dijon mustard</td>
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<tr>
<td>Kosher salt</td>
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#### Preheat oven to 350°F.

- Season the fish inside and out with kosher salt.
- Cut the potato into small cubes and pan fry until crispy and brown like small croutons. Put a piece of wax paper or lightly oiled parchment paper between the two filets and close the fish over it.
- Lightly oil the outside of the fish and put it on a baking pan. Bake for 10-15 minutes until cooked through.

#### Prepare the dressing while the fish is in the oven. Zest and juice the lemon, mix with Dijon mustard and really good olive oil. Toss greens, potatoes and dressing together with a pinch of salt.

- Remove the wax paper and stuff the fish with the salad.
- Let it spill out recklessly onto the plate. Drizzle a little more dressing over the whole plate.

**Enjoy!**
Recipe courtesy
FISH MONGER'S WIFE

Lake Michigan “Scallops” Recipe

Scallops are one of our favorite seafoods, but sadly not native to Lake Michigan. Here’s a good alternative.

1 lb. ground or flaked lake whitefish
10 slices of applewood smoked bacon
1/8 tsp. salt
1/4 tsp. lemon pepper
1/4 c. grated Parmesan cheese

Preheat oven to 350°F.

In a large bowl, mix together whitefish, seasoning and vegetables. All ingredients should be evenly mixed together.

Roll whitefish mixture into mock “scallops,” flattening the top and bottoms of each scallop so they will not roll while cooking. The size scallops you make will depend on how big you like your scallops.

Wrap bacon around the scallop. You may have to secure the bacon with a wooden toothpick.

***Tip: In taste testing we found that bacon can very easily overpower the taste of whitefish.

Choose your bacon carefully, avoiding heavily smoked varieties. You can also omit the bacon.

On the stovetop, heat olive oil in oven-safe frying pan. Sear the scallops on each side for 2-3 minutes. Carefully turn scallops with tongs — the less handling, the better. Slide frying pan into heated oven to finish cooking.

Bake in the oven for an additional 5-8 minutes. Time will vary depending on the thickness of your scallop and how well done you like your bacon.

Want to build your fish-cooking repertoire? Check out Wild Caught and Close to Home: Selecting and Preparing Great Lakes Whitefish. This cookbook features more than 60 recipes, as well as general directions on fish preparation methods (broiling, frying, etc.). Other types of fish can easily be swapped into the recipes for some variety.

miseagrant.com
### Smoked Whitefish Cakes

3 large fresh jalapeño peppers  
1/4 c. coarsely chopped fresh cilantro
2 tbsp. olive oil  
2 tbsp. favorite seafood seasoning
1 medium red bell pepper, finely diced  
2 tbsp. minced garlic
1 medium yellow bell pepper, finely diced  
Black pepper to taste
1/2 c. plain bread crumbs  
1 1/2 lbs. smoked whitefish
3/4 c. mayonnaise

Preheat oven to 350°F.

Prepare the Peppers: Place jalapeños on oven rack and roast until skin is dark, about 15–20 minutes. Let them cool and then peel skin, remove seeds and chop. In a sauté pan, add 1 tbsp of olive oil and cook the bell peppers until softened. Let cool.

Make the Cakes: In a bowl, combine bread crumbs, mayonnaise, cilantro, seafood seasoning and garlic. Then add all peppers. Mix well.

Remove bones from the smoked fish, leaving chunks of fish if possible. Gently add fish to cake mixture. Refrigerate for 20 minutes.

Preheat frying pan to medium heat. Add remaining olive oil. Scoop fish mixture using an ice cream scoop and drop into hot pan. Carefully using your fingers or a spatula, flatten each cake to about 1-inch thickness. Mixture will be crumbly. Brown cakes, about 5–7 minutes on each side.

Serve with sweet cherry coulis, found in the Wild Caught and Close to Home cookbook, or the fish cakes also partner well with traditional condiments such as tartar sauce or cocktail sauce.

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Recipe courtesy CHEF DARLENE KLINE

**PRINTABLE RECIPE CARD ONLINE:** [wp.me/P2Wb84-2sm](http://wp.me/P2Wb84-2sm)

**MODIFIED FROM WILD CAUGHT AND CLOSE TO HOME: SELECTING AND PREPARING GREAT LAKES WHITEFISH (AS SEEN ON THE COVER).**