

A Consumer's Guide for Wisconsin Farm-Raised Fish



Developed and compiled by:

Wisconsin Aquaculture Association

**UW Stevens Point – Northern Aquaculture Demonstration
Facility**

UW-Extension Aquaculture Outreach

And the

**Wisconsin Department of Agriculture, Trade and
Consumer Protection**

**Something Special
from
Wisconsin**

What is Wisconsin Aquaculture?

- A Picture of Wisconsin Aquaculture
- Types of Products and Aquaculture Activities
- Aquaculture Systems

Fish farms have been a part of Wisconsin agriculture since 1856.

What is Wisconsin Aquaculture?

Aquaculture is the controlled, agricultural cultivation of aquatic plants or animals. In Wisconsin, fish farmers raise fish for use as food, stocking, bait and recreation. Some common species include: trout, yellow perch, bluegill, walleye, northern pike, muskellunge, bass and minnows.

The Wisconsin aquaculture industry is composed primarily of recreational fish ponds, family farms, and state, tribal and federal hatcheries. Fish farms have been a part of Wisconsin agriculture since 1856.

A. Picture of Wisconsin Aquaculture

1. Registered Fish farms in Wisconsin (As of 6-1-09):

- 2314 of registered fish farms
- (1984) Type 1: Includes fish farms that have private fishing, public fee fishing and selling eggs/fish to a processing plant or restaurant.
- (330) Type 2 or 3: Includes fish farms which may conduct all Type I fish farm activities and in addition, may sell live fish or eggs to other entities.

2. Size and Scope of Industry ⁽¹⁾

- Wisconsin aquaculture sells over \$14 million annually in fish and baitfish.
- Wisconsin aquaculture contributes \$21 million in economic activity and provides 441 jobs to the State.
- Wisconsin has 125 farms with sales of \$1000 or more.
- The Wisconsin sport-fishing industry is valued at \$1.1 billion in direct expenditures and \$2.7 billion in economic activity.
- Wisconsin DNR has 14 state hatcheries and almost 100 cooperative rearing stations all registered with Wisconsin DATCP, with an annual budget of \$23 million (2001) and employment of 270 fisheries staff.
- Wisconsin has two federal hatcheries with a combined annual budget of \$1.6 million and a permanent staff of 14.
- There are 6 tribal hatcheries in Wisconsin rearing fish for restoration and sport fishing.
- There are three aquaculture programs in the UW System located at UW-Madison, UW-Milwaukee and UW-Stevens Point.

3. Compared to Aquaculture in the U.S. ⁽²⁾

- United States \$1.4 billion
- Wisconsin is 20th overall in aquaculture sales in the US at \$14,116,000 (1%)
- Wisconsin is #1 in total sales of aquaculture products for Midwestern states.
- Wisconsin is #9 in U.S. trout production.
- Wisconsin is #6 in U.S. game fish production.
- Wisconsin is #2 in U.S. Baitfish production.

4. Compared to Aquaculture in the World ⁽³⁾

- Worldwide aquaculture is about \$94 billion.
- The United States makes up approximately 1% of world aquaculture.
- China makes up about half of world aquaculture.
- The most eaten fish in the world is the Silver Carp.

What is Wisconsin Aquaculture?

B. Types of Products and Aquaculture Activities:

1. Food Fish

These fish are raised for human consumption. They may be sold live or processed as ready to cook fillets, smoked fish or other food products. Some farmers direct market their fish to consumers.

- Wisconsin value: \$5.53 million ⁽²⁾
- Top Wisconsin food fish species include trout and yellow perch.

2. Bait Fish

Most bait fish are hatched from eggs, raised in a pond and sold in bait shops to sport fishermen. The Wisconsin DNR and some private farmers raising game fish for stocking will also purchase bait fish as live feed.

- Wisconsin value: \$4.65 million ⁽²⁾
- Top Wisconsin bait fish species include shiners, fathead minnows and suckers.

3. Stocking (Game Fish)

Stockers are game fish raised for the DNR, Lake Associations, sport clubs and similar organizations for release into public waters to enhance fishing opportunities. These fish may also be sold to other registered fish farms for stocking into private fishing ponds. Stocking of any waters other than a registered fish farm require a stocking permit from DNR and a fish health certificate from DATCP.

- Wisconsin value: \$3.07 million ⁽²⁾
- Top Wisconsin game fish species include walleye, northern pike, muskie, bass and trout.

4. Fee Fishing

Fee fishing ponds offer the consumer the opportunity to catch and keep fish for a certain fee, which is generally based on the size or weight of the fish.

- Economic Value: 213 operations in Wisconsin.
- Top Wisconsin fee fishing species include trout, bass and panfish.

5. Non-fish animals & Plants

Other animals and plants can be raised in aquatic systems for food, research or ecological enhancement and water gardens. Some examples may include prawns, frogs, mollusks & clams, algae, and water plants.

6. Ornamentals or Demonstration

Fish and other aquatic life can also be raised for research/education purposes or as pets in aquariums or water gardens.

What is Wisconsin Aquaculture?

C. Aquaculture Systems

1. Pond systems:

A typical pond in Wisconsin is less than 1 acre (43,560 sq. ft.) in size and under 20 feet deep. The man-made fish-pond is designed to meet the natural environmental requirements of the fish being raised. When these environmental conditions are met, pond culture can be the most economical way to raise fish.

The natural growth of aquatic organisms provides a natural food for the fish and makes the pond an attractive habitat for other aquatic animals.

Wisconsin cool and warm-water species such as baitfish, yellow perch, walleye and bass are typically raised in ponds.

2. Flow-through systems:

Flow-through systems often use a pond or channels (called raceways) with a constant flow of water to create a favorable place to raise fish. The constant flow of water helps provide oxygen into the system while removing wastes from the system.

Often the water source for a raceway is a spring or artesian well. Because Wisconsin's ground water temperatures range from 45-52°, cold water species such as trout are normally raised.

A significant amount of aquaculture uses a hybrid pond/flow-through system to raise fish. In these systems, water flows from a pond through a pond-side tank or floating raceway. The farmer can then control temperature or other water parameters in the system and raise cool-water fish such as yellow perch.

3. Recirculation systems

A recirculation system cycles water through fish rearing units (tanks) and a series of filters to remove wastes and oxygenate the water. As a result, the system reuses up to 95% of the water. An aquarium is an example of a small recirculating system. Most commercial recirculating aquaculture systems are in buildings raising tropical species like tilapia or cool-water species like perch. An advantage of recirculating systems is the fish are grouped together, making it easier for the fish farmer to feed or care for the fish, make health assessments, or harvest the fish. Although the system has some advantages, recirculating systems often require a large amount of money to build and require tight management control over production parameters to be cost effective.

4. Aquaponic systems

In an aquaponic system, fish and plants are raised together in a special type of recirculating system similar to hydroponics. As the fish grow, they produce waste which plants use as fertilizer. The plants use the excess nitrogen from the fish waste and uneaten food particles to grow, and in turn filter the water for the fish. Although aquaponics has existed for many years, commercial systems in Wisconsin are relatively new and small. Typical crops include leafy vegetable, tomatoes and some fruit crops. Typical fish species in Wisconsin systems are Yellow Perch and Tilapia. Most aquaponic systems rely on the produce for profitability – the fish raised are a small added benefit.

What is Wisconsin Aquaculture?

Resources

Wisconsin Aquaculture Association (WAA):

<http://www.wisconsinaquaculture.com/>

University of Wisconsin- Stevens Point – Northern Aquaculture Demonstration Facility (NADF):

<http://aquaculture.uwsp.edu>

The National Aquaculture Association (NAA)

<http://www.thenaa.net/>

Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) – Aquaculture Information:

<http://www.datcp.state.wi.us/mktg/business/marketing/val-add/aqua/wynk/index.jsp>

Wisconsin Department of Natural resources (DNR) - Aquaculture Information:

<http://dnr.wi.gov/org/caer/cea/assistance/aquaculture/>

Superscript References

⁽¹⁾“Wisconsin Aquaculture Industry: Value and Economic Impact” (Brochure)[Online] Available http://www.wisconsinaquaculture.com/Forms/2009_WI_Aqua_Industry_brochure_2.pdf , 2009.

⁽²⁾USDA, National Agricultural Statistics Service. “Census of Agriculture (2007) – State Data.” Table 23 Aquaculture Sold: 2007 and 2002. [Online] Available http://www.agcensus.usda.gov/Publications/2007/Full_Report/index.asp http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_US_State_Level/st99_2_023_023.pdf , 2007.

⁽³⁾Food and Agriculture Organization of the United Nations. “State of the World Fisheries and Aquaculture (SOFIA - 2008).” [Online] Available <http://www.fao.org/fishery/sofia/en> , (2009)

Other References:

USDA, National Agricultural Statistics Service. “Census of Aquaculture (2005).” Table 1 Value of Aquaculture Products Sold by Type, by State and United States: 2005 and 1998. [Online] Available <http://www.agcensus.usda.gov/Publications/2002/Aquaculture/index.asp>, 2005.

“Wisconsin Aquaculture: Value and Economic Value” (Report), 2009:

“WAA Food fish Brochure” [Online] Available

http://www.wisconsinaquaculture.com/Forms/Food_fish_brochure_2009.pdf , 2009.

“WAA Gamefish Brochure” [Online] Available

http://www.wisconsinaquaculture.com/Forms/Bait_and_Gamefish_brochure_2009.pdf , 2009.

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