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## WISCONSIN LEGISLATIVE COUNCIL INFORMATION MEMORANDUM

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### **Aquaculture: A Maturing Agricultural Sector**

#### **INTRODUCTION**

Aquaculture is the fastest growing sector of the agricultural economy. Currently, there are more than 330 producers raising fish for food, bait, fee-fishing, and stocking into the waters of the state. The value of these products is estimated at \$8.8 million annually. Fish farm production is growing at an estimated 11% annually, more than twice as fast as any other agricultural sector.

This Information Memorandum looks at this rapidly growing sector of the agricultural economy of Wisconsin. It reviews the rise of fish farming as an industry and the evolving state relationship with the industry. It identifies the main players in aquaculture, in the government, private and academic arenas, and looks at how these players are meeting the challenges that aquaculture faces as it strives to become an economically viable and environmentally sustainable industry.

#### **EVOLVING STATE ROLE IN AQUA-CULTURE**

Historically, the State of Wisconsin, like other states, has viewed the regulation of aquaculture as a natural resource matter. Fish hatcheries used waters of the state, which are public. Many, if not most, fish hatcheries raised fish species that are native to the state. Consequently, issues of concern to the state

included: protection of public interests in natural waters that are used for fish rearing; protection of wild fish stocks from poaching in the guise of fish rearing; and protection of wild fish stocks from diseases and exotic species that might be introduced to the state by the transportation of fish to and from fish hatcheries.

Over the years, a comprehensive scheme for the regulation of private fish hatcheries was developed, under the oversight of the Department of Natural Resources (DNR). At the center of this scheme was the requirement that fish hatcheries be licensed by the DNR. The licensing statute set standards for the use of natural water bodies by fish hatcheries and the withdrawal of water from natural water bodies. Other statutes regarding the alteration of natural water bodies and protecting water quality generally applied to fish hatcheries and both federal and state wetland regulations applied to them, as well. In addition, the DNR regulated the importation of fish into the state and their stocking into the waters of the state.

The Department of Agriculture, Trade and Consumer Protection (DATCP) had a smaller and less defined role in overseeing fish hatcheries. Under a broad reading of its animal health statutes, the DATCP had the same responsibility to protect the health of domestically raised fish as other domestic animals. It was also responsible for overseeing the safety of fish raised and sold for human

consumption. In addition, it took an active role in promoting commercial fish farming.

In the second half of the 20<sup>th</sup> Century, especially in the last two decades, fish farming in Wisconsin grew to the point that it could be called an industry. To address the needs of this growing industry, state study groups were formed involving state agencies, the University of Wisconsin (UW) and the industry. Important reports were published in 1988 and 1997 that identified barriers to the further development of aquaculture in Wisconsin and recommended actions to be taken to overcome those barriers. Throughout this period, the growing industry increasingly saw itself as an agricultural activity. Although the state's concerns in regulating this industry were unchanged, there was a growing acceptance that the way that it was regulated should change. In addition, many saw a conflict in the fact that the DNR regulated commercial fish producers but was itself a producer of fish for stocking in the waters of the state.

In the 1997-98 Legislative Session, the Legislature created a new scheme for the regulation of aquaculture, based on the view of aquaculture as an agricultural activity. It transferred the primary oversight functions from the DNR to the DATCP and replaced the licensing requirement with a simple registration. It expanded the DATCP's fish health responsibilities and retained for the DNR adequate regulatory authority to allow that agency to continue its role in the protection of the waters of the state and wild fish stocks.

## **CURRENT STATE REGULATION OF AQUACULTURE**

### **FISH FARM REGISTRATION**

Any person operating a fish farm must register the farm with the DATCP. The DATCP is required to inspect all fish farms at the time that they are initially registered and may make

additional inspections as it finds necessary. The registration provides the DATCP with information regarding the industry and, in particular, facilitates its fish health work.

### **WATERS USED BY FISH FARMS**

In general, current law discourages fish farms from operating in natural water bodies, encouraging the use of "self-contained" facilities, instead. Self-contained facilities are bodies of water that have no inlet or outlet to a natural body of water except for pipes or similar conduits that are equipped with fish barriers. They include tanks, artificial ponds, and freeze-out ponds, which are natural ponds that have no inlet or outlet and that are not capable of supporting a natural fishery because of winter kill. Fish farms that rely on self-contained facilities are exempt from various DNR regulations, including: (a) the requirement to obtain a DNR permit to stock fish into the farm; (b) limits on the application of toxicants used in fish farms; and (c) the DNR's authority to remove detrimental fish from the fish farm.

The only natural waters that may be used as part of a fish farm are freeze-out ponds and previously licensed fish hatcheries. In both cases, a DNR permit is required. The DNR may issue a permit for use of a freeze-out pond that was *not* previously licensed as a fish hatchery only if it finds that no substantial public interest exists in the pond and that no public or private rights will be damaged. This review does not apply to freeze-out ponds or other water bodies that *were* previously licensed as fish hatcheries.

All fish farms are required to maintain barriers that prevent the passage of fish between any water body they use and the other waters of the state.

### **FISH HEALTH, IMPORTATION AND STOCKING**

The DATCP is required to establish standards for fish health and fish health inspections, in

consultation with the DNR. All fish farm operators, including the DNR, are required to obtain annual health certificates for all fish and fish eggs on their farms. The DATCP may inspect any fish or fish eggs that are being imported or are on a fish farm, to determine their health status.

A person, including the DNR, who imports fish or fish eggs into this state for stocking into the waters of the state, use as bait or rearing in a fish farm must obtain a permit from the DATCP; if the fish or eggs are of a species not native to Wisconsin, the person must obtain a permit from the DNR, also. Fish or eggs of the salmon family that are imported must be certified as being free of such diseases as the DATCP designates.

A person who stocks fish into the waters of the state must obtain a permit from the DNR. The DNR may regulate the species and number of fish that are stocked and where they are stocked. DATCP health certificate requirements apply to all stocked fish. The DNR is exempt from the stocking permit requirement, but not the health certificate requirement.

### **FARM-RAISED FISH**

The term “farm-raised fish” is defined as fish raised on a fish farm or kept on a fish farm for propagation; the term does not include fish that have been stocked or that have escaped into the waters of the state. Farm-raised fish are excluded from many statutes that regulate the taking and possession of wild fish, including statutes relating to fishing licenses, legal methods and equipment for harvesting fish, possession, sale, transportation and removal from the state of fish and regulation of wildlife exhibits and wild animal parks.

## **OTHER PLAYERS**

### **UNIVERSITY OF WISCONSIN**

The UW plays an important supporting role for the aquaculture industry. Several UW campuses, including those in Madison, Stevens Point and Milwaukee, have established programs conducting pure and applied research relating to aquaculture. A unique resource is a commercial-scale research facility at the UW Great Lakes WATER Institute in Milwaukee, which allows the testing and demonstration of solutions to fish production problems on the same scale as that on which industry operates.

The UW also provides educational and outreach services. Workshops are offered, ranging from a general introduction to commercial fish production to specialized training opportunities. Technical assistance is offered to established producers and to those considering entering the industry. UW personnel work closely with producers, the Wisconsin Aquaculture Association, tribal governments and others.

In 1999, the Legislature authorized construction of a \$3 million UW Aquaculture Demonstration Facility. This facility, now in the planning stage, will be constructed on the Red Cliff Indian Reservation, adjacent to the Red Cliff tribal fish hatchery, and operated by the UW-Superior. It will complement and build upon many of the current UW aquaculture activities, providing outreach and educational services to aquaculturists and conducting research to solve the practical problems encountered in commercial fish production in Wisconsin.

### **WISCONSIN AQUACULTURE ASSOCIATION**

The professional association of fish farmers in this state is the Wisconsin Aquaculture Association (WAA). Although it was formed only in the 1990s, it grew out of the Wisconsin Trout Farmers, an association formed several decades earlier. The WAA acts as a network

through which its members can share information and advise on all topics affecting their businesses, including technical, economic and regulatory matters. It actively promotes environmentally sustainable and economically successful fish farming techniques and practices, using its quarterly newsletter and its annual conference to educate members. The WAA also advocates on behalf of the industry before state government, participating in state advisory groups, testifying in public hearings and by other means.

### **AMERICAN INDIAN TRIBES AND BANDS**

Many of the American Indian tribes and bands in Wisconsin are engaged in aquaculture. All six Lake Superior Chippewa bands operate fish hatcheries, as does the Menominee Nation. The facilities range from small egg hatching facilities to a \$1 million state-of-the-art facility at Lac du Flambeau. All of these tribes and bands use their facilities for conservation work, raising fish species of cultural and economic importance to them for stocking in the wild.

In addition to conservation purposes, some tribal facilities are used for commercial fish production. In particular, the St. Croix Band of Lake Superior Chippewa are in the development phase of what is expected to be the largest recirculating water fish production system in North America. This is a cutting-edge aquaculture technology and several observers note that, if successful, this project will be a significant step forward for the industry.

### **CURRENT ISSUES AND ACTIVITIES**

#### **FISH HEALTH**

Fish health remains the DATCP's primary concern regarding the aquaculture industry. The DATCP monitors fish diseases in wild and domestic fish populations to prevent the importation of diseases into the state or the transfer of diseases between wild or domestic

stocks. Of particular concern currently is whirling disease, a disease affecting trout; so far, this disease has not occurred in Wisconsin but it has been detected recently in the Upper Peninsula of Michigan.

Two pieces of current legislation address the DATCP's fish health program. A provision of 2001 Act 16, the 2001-03 Biennial Budget Act, authorizes the DATCP to provide training to veterinarians and others in the performance of fish health inspections and the issuance of fish health certificates. This training will help to provide the pool of qualified staff that fish farm operators need to obtain the required health certificates and that the DATCP needs to help it monitor fish health.

In addition, 2001 Assembly Bill 361 repeals the requirement that all fish farms obtain an annual health certificate for any fish or fish eggs on the farm. Instead, it authorizes the DATCP to promulgate rules that require the operator of a fish farm, including the DNR, to provide such evidence of fish health as the DATCP deems necessary. This legislation would give the DATCP greater flexibility in determining what information it needs to monitor the health of farm-raised fish.

#### **PERMITTING OF NATURAL WATER BODIES**

While an increasing number of fish farms utilize artificial ponds in upland locations, some sites do not allow this approach. As a result, the ability to use natural water bodies in some circumstances remains important to the aquaculture industry.

The DNR has promulgated ch. NR 16, Wis. Adm. Code, to govern the use of natural water bodies as fish farms. The aquaculture industry takes exception to certain provisions of this rule. In particular, it objects to the inclusion in the definition of "natural body of water" of historical water bodies that may no longer exist at the time that a permit is requested. This and

other aspects of the permitting of natural water bodies for use as fish farms are points of conflict between the industry and the DNR.

### **STURGEON**

Under current law, no person except the DNR may rear lake sturgeon in a fish farm. This prohibition, which is supported by the DNR and recreational lake sturgeon fishers, is intended to protect the state's natural sturgeon populations. However, the aquaculture industry argues that a relaxation or even repeal of the prohibition may be justified.

Demand for caviar has led to the over harvesting and poaching of lake sturgeon in other parts of the world, especially in Russia, causing a decline in those populations. While Wisconsin is home to the most significant sturgeon population in North America, the DNR is concerned that the world market for caviar could lead to poaching of this population, as well. It is further concerned that private fish farms raising sturgeon could be used to introduce illegally-harvested wild sturgeon into commerce, hampering law enforcement efforts and potentially compromising the state's wild lake sturgeon population.

On the other hand, the aquaculture industry argues that it could play an important role in sturgeon conservation by raising sturgeon for stocking programs designed to restore lost or reduced populations in Wisconsin and elsewhere. In addition, some argue that the ban on private sturgeon production deprives honest fish farmers of a legitimate business opportunity. The economics of commercial sturgeon production are unproven and seriously questioned by some. However, others note that the ban prevents on-farm experimentation which could lead to an economically viable commercial sturgeon fishery, just as similar experimentation has produced many of the successes of the current industry.

In 1997, the Legislature ordered the DATCP, in consultation with the DNR, to study regulatory options that would allow the commercial rearing of lake sturgeon while protecting the wild lake sturgeon population. This report was released in December 2000. Reflecting the divided opinions on this issue, the report did not make a single policy recommendation. Instead, it offered five options ranging from maintaining the current ban on private sturgeon production to a complete repeal of the ban. The three intermediate options involve varying degrees of private sturgeon production, for conservation purposes only or for limited commercial production, and the creation of various oversight bodies composed of state, federal and private entities. To date, no consensus has formed around any of the options identified in the report and no legislation has been introduced on this topic.

### **BEST MANAGEMENT PRACTICES MANUAL**

A project is now being started to prepare a manual of best management practices for the aquaculture industry. The project is being led by one of the leading UW aquaculture researchers and will involve the DATCP, DNR, industry and other interested parties. The manual will identify practices that, if followed, can be expected to result in successful fish farm operations with minimum impacts on the environment. It is to be a guidance document, identifying recommended practices, not a regulatory document. The manual will address impacts of commercial aquaculture on land and water use, water quality, and wild fish populations. It will also address on-farm impacts, especially in the area of fish health. Funding for the project, from the Sea Grant program, runs for one year from September 1, 2001, and the final report is expected by January 2003.

## **COMMUNICATION**

According to one industry representative, good communication between the aquaculture industry and state government is one of the greatest needs of aquaculture in Wisconsin. Important steps are being taken to ensure that communication. The DATCP has established the Wisconsin Aquaculture Industry Advisory Council. This council, which includes representatives of the industry, DATCP, DNR, UW and others, has helped the industry to communicate with state government and the various state agencies to communicate with each other on matters related to aquaculture. Now, the DNR is assembling a similar group, the DNR Aquaculture Industry Working Group, that

will focus more specifically on the resource protection issues that are the DNR's jurisdiction. The industry is hopeful that the DNR working group will prove to be an equally valuable channel of communication with an agency that greatly affects their operations.

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This information memorandum was prepared on September 4, 2001, by *David L. Lovell, Senior Analyst*.

This information memorandum is not a policy statement of the Joint Legislative Council or its staff.

## **PRINCIPAL STATUTES AND RULES AFFECTING AQUACULTURE**

### **DATCP STATUTES AND RULES**

- s. 95.60, Stats., *Importing fish; fish farms.*
- s. ATCP 10.68, Wis. Adm. Code, *Fish farms.*
- s. ATCP 11.58, Wis. Adm. Code, *Fish imports.*
- s. ATCP 11.59, Wis. Adm. Code, *Health standards for fish introduced into waters of the state.*

### **DNR STATUTES AND RULES**

- s. 29.733, Stats., *Natural waters used in fish farms.*
- s. 29.735, Stats., *Importation of fish.*
- s. 29.736, Stats., *Stocking of fish.*
- Ch. NR 16, subch. II, Wis. Adm. Code, *Permitting the use of natural water bodies as fish farms.*

## **OTHER SOURCES OF INFORMATION**

### **REPORTS AND DIRECTORIES**

Departments of Agriculture, Trade and Consumer Protection and Natural Resources, *Regulatory Options for the Commercial Rearing of Lake Sturgeon, Report to the Legislature*, December 2000.

Governor's Blue Ribbon Task Force on Aquaculture, *Final Report*, July 1999.

Department of Agriculture, Trade and Consumer Protection, *Aquaculture Directory*, June 1998.

Department of Natural Resources and others, *Role of Private Fish Hatcheries in Wisconsin*, (the "Poff Report") 1997.

Wisconsin Aquaculture Study Committee, *Wisconsin Aquaculture: A State Plan*, July 1988.

**WEB SITES**

Department of Agriculture, Trade and Consumer Protection:

<http://datcp.state.wi.us/mktg/business/value-added/aqua.html>

Department of Natural Resources:

<http://www.dnr.state.wi.us/org/caer/cea/compliance/aquaculture/>

<http://www.dnr.state.wi.us/org/water/fhp/fish/aquaculture/envperm.htm>

Wisconsin Aquaculture Association:

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

University of Wisconsin Aquaculture Demonstration Facility:

<http://aquaculture.uwsuper.edu>

University of Wisconsin Sea Grant Institute:

<http://www.seagrants.wisc.edu/outreach/aquaculture/>

University of Wisconsin-Madison Food Science Department:

<http://www.wisc.edu/foodsci/aquaculture/>

University of Wisconsin-Milwaukee Great Lakes WATER Institute:

<http://www.uwm.edu/Dept/GLWI/index.html>

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