Division of Marketing
Agricultural Development and Diversification (ADD) Program

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Non-Salmonid Diseases

A Survey of Diseases of Non-Salmonid Farm-Raised Wisconsin Aquaculture Species

Final Report

7-20-99

Myron J. Kebus, M.S., DVM

1) Intent of Grant

- Provided the first field survey of non-salmonid diseases in Wisconsin aquaculture. The objectives were adjusted in March of this year. Due to accepting the position of State Aquaculture Veterinarian (WDATCP) the grant was modified for completion in one year rather than two years.

2) Work Conducted in this Project

- This project would not have been conducted without grant funds.
- We were successful in performing the survey procedures. As a result we have contributed to providing guidelines for investigating non-salmonid diseases.
- Challenges to this grant include the broad geographic distribution and diversity of aquaculture in Wisconsin.

3) Public Outreach Efforts

- The "Non-Salmonid Disease Report" included.
- Sixteen farm-visits were conducted, at which fish were examined and fish farmers received information.

4) Results of Project

- See "Non-Salmonid Disease Report".

5) Wisconsin agriculture industry use of this information

- This information will contribute to meaningful disease regulations and health recommendations.

6)&7)

- See "Non-Salmonid Disease Report".

Non-Salmonid Diseases Report

A Survey of Diseases of Non-Salmonid Farm-Raised Wisconsin Aquaculture Species

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Introduction

To respond effectively to non-salmonid (fish other than trout and salmon) fish health concerns, the fish health infra-structure has to be present. Producers need to be quick to respond, field professionals such as veterinarians need to be skilled and available, fish health experts need to have the resources and familiarity with non-salmonids and their diseases. What needs to be realized is that, having everything in place does not happen over-night, but for production of these aquaculture species to grow and expand the infra-structure needs to be available for the producers. We often hear, "we don't know much of anything about non-salmonid diseases" or "they don't get diseases like trout." In general, non-salmonids are significantly more challenging to raise, for varied reasons, than rainbow trout or channel catfish. A significant reason is the failure to maintain health. Sound non-salmonid fish health policies will require adequate and on-going survey information.

This grant does not presume to have addressed all of the needs for a non-salmonid survey. It hopefully will

contribute by guiding a full scale non-salmonid survey in Wisconsin.

Protocol

All testing was conducted by Dr. Myron Kebus. Fish were examined and samples collected at the commercial fish farms. Sixteen groups of fish were tested. The species tested included yellow perch, fathead minnows, white sucker, largemouth bass, and smallmouth bass. Generally, twenty fish were examined. Laboratory diagnostic assistance was provided by Marshfield Laboratories, and the University of Wisconsin School of Veterinary Medicine.

Subjective

Accepted mortality numbers for non-salmonids are significantly higher than mortality numbers for salmonids in Wisconsin. Most of the fish health problems associated with non-salmonids are management diseases, i.e. diseases which result from management problems. These diseases are generally not meaningfully addressed by regulations, rather education is the best approach. This study did not reveal any diseases which would be considered regulatory. This study was not extensive enough to rule out the existence of non-salmonids diseases which warrant regulations. In fact, a recent syndrome in yellow perch in Wisconsin farms resulted in 40-90% mortalities. This

syndrome was clearly infectious in nature, however the specific pathogen has not been isolated.

Objective

No foreign pathogens were detected during this survey. External protozoan and metazoan parasites were the most common pathogen identified. No primary bacterial, viral, or fungal pathogens were found in this survey.

Assessment

It is fun being involved in the health and production of less commonly reared fish, like some of the non-salmonid species. It is exciting, and the producers are fresh and energized by the wonderful potential for success. They have the spirit of pioneers, leading aquaculture into new and great possibilities. They also have the luxury of being unencumbered by "conventional wisdom" telling them "that won't work, I tried that years ago". However, for many, what they soon realize is that being a pioneer is exciting but treacherous, and the survival rate is a lot lower. We are talking about both the financial survival of the farms as well as the survival of their fish. Fish health problems are right up there as a major factor in the great challenge of raising certain non-salmonid species. It is mainly what we don't know which hurts us.

The common use of the term non-salmonids, amongst some of us, says much about how many of these fish are

viewed from a number of standpoints including, fish health. Obviously, non-salmonids include many species, of which a good number are reared commercially. In the upper midwest we have many non-salmonid species which are raised on fish farms. Fish farmers don't talk about non-salmonids, they talk about walleye, largemouth bass, fathead minnows, and yellow perch to name a few.

Of course, channel catfish are the best-known successfully raised U.S. non-salmonid. This is not to diminish the success of select producers raising striped bass, tilapia, numerous baifish species as well as other non-salmonids. Channel catfish have enabled several southern states, particularly Mississippi, to proudly declare aquaculture a success. Most catfish farmers live and breath catfish every day, yet they don't talk about non-ictalurid, or non-catfish diseases. They talk about the diseases that impact their production, take a bite out of their profits, and insult their pride.

Non-salmonids are raised throughout the country, and in a number of regions non-salmonids hold the hope and promise of aquaculture's growth. The success stories of Mississippi catfish are envied by other states. In the search for "our own success story like catfish" states are looking at many of the non-salmonids. In Wisconsin hope is high for yellow perch to be the success species here.

We often hear, "we don't know much of anything about non-salmonid diseases" or "they don't get diseases like

trout." I have always found it curious how we try to generalize about non-salmonids, while from an aquaculture or veterinary standpoint it doesn't make much sense. I have been involved in rearing non-salmonids and providing veterinary service to non-salmonid producers for a number of years. In general, non-salmonids are significantly more challenging, for varied reasons, than rainbow trout or channel catfish. A significant reason is the failure to maintain health.

There is a fair volume of information on non-salmonid diseases but it doesn't make it to the producers or between producers very well. Trout producers have more handy packets of disease lists, descriptions, diagnostics, treatments and "experts". Most discussions of non-salmonid diseases get blurred (Unless you are catfish folk) because the whole range of species are heaped together: fathead with largemouths with yellow perch with tilapia. Diseases that affect channel catfish are relatively well characterized because catfish disease experts look close and frequently at channel catfish and have resources to do so. It is not that yellow perch or walleye are less susceptible to diseases it has more to do with how close and frequently we are looking, and how abundant and well functioning the resources to look at disease problems are applied.

The level of accepted mortalities is considerably higher among many of the commercially reared non-salmonids. "That is just the way they are, you lose a certain

percentage," is commonly heard. The problem is that certain percentage can be 20 or greater. I understand from experience, a number of these species are tougher to raise. Before you think fins and feathers are so different talk to someone who raised chicken several decades ago. It is interesting to hear my poultry colleagues get very concerned when mortalities rise from 0.8 to 1.2 percent. They would be spinning in a panic dealing with non-salmonid mort numbers, and wonder how anyone can make a living rearing these fish. Until we begin to reduce mortalities we can't distinguish many of these diseases, nor improve profitability. This is very much the same as the struggle pioneers of "traditional livestock" had with diseases of their animals.

The importance of disease kicks in when markets develop. If you don't have ready markets, or just a limited market for your fish, significant mortalities have less impact. If you have a market for your fish then fish losses are viewed as more costly, and the need to find answers more urgent.

To respond effectively, the fish health infra-structure has to be present. Producers need to be quick to respond, field professionals such as veterinarians need to be skilled and available, fish health experts need to have the resources and familiarity with non-salmonids and their diseases. What needs to be realized is that, having everything in place does not happen over-night, but for production of

these aquaculture species to grow and expand the infra-structure needs to be there for the producers.

Conclusion & Recommendations

On-going survey should be performed to assess the status of fish health in non-salmonids in Wisconsin. The growth of aquaculture in Wisconsin will continue to be limited by fish health problems of non-salmonids unless these issues are seriously addressed. A major challenge to a "new" animal production industry is disease.