Strategic Plan
A Thriving & Sustainable Michigan Aquaculture

February 22, 2014
NCR Aquaculture Conference
Toledo, OH

Today’s Agenda

• The Question
• Context / Framework
• Vision Mission
• Plan – Key Objectives (7)
• 2014 Strategic Actions
• Conclusion
• Status / Next Steps (as of today)
Integrated Assessment Policy Question

• What critical elements are restricting Michigan’s current commercial aquaculture activities from developing into a major sustainable seafood production industry, what actions must be implemented to rectify the situation, and what are the associated benefits to the state of Michigan?

A “Hybrid” Answer:
A Strategic Plan for the sector (MAA)
and
A Research Paper for SGIA
Aquaculture has surpassed wild-capture seafood market share.

The capture fishery is at maximum yield or collapsing worldwide.

Michigan is a global leader in water technology...
...and sustainable water management.

Sustainable aquaculture needs Michigan.

Michigan can be the future of sustainable freshwater aquaculture.
SWOT/Michigan Summary:
- We have the natural resources: water, and land
- We have the foundational infrastructure: Leadership in natural resource stewardship
- We have the markets: 70-100 million people within a day drive
- We have the skilled technical and operations workforce: biologist, engineers, farmers that can be trained and adapt to support the aquaculture sector
Scenarios

Case Studies

Aquaculture
China
Turkey
Ontario
Chile

Poultry
Georgia - $20B

Turkeys
Michigan

China’s Future Seafood Demand
Increase of 6 to 65 million metric tons

Seafood diet
Diet change
Increased calories
Population growth
2005 total

Metric Tons Whole Weight

2005
2025

Source: Int’l Institute for Applied Systems Analysis

Seafood: An Essential Animal Protein
- Government “incubation” support has seeded a wide range of fish farms – by species & systems
- Scale is achieved - $500+MM sector, new feed mill
- Looks like a real industry – segmented along the value chain with combination of vertical integrators as well as segment (brood, hatchery, grow-out) operators profitable & sustainable – and integrated with wild-caught sector
- Successful pioneers continue to grow the sector...on its way to $1B, with multi-state collaboration
- Regulatory clarity, simplified with good compliance (BMPs) – 60-day approval turnaround for new/reissue

Hamburger Nation” (“cause there are “no fish to fry”
- lack of political will in both government and commerce has resulted in no aquaculture development in Michigan
- No commercial aquaculture, fishing, processing
- DNR fishing license revenues at 20% of 2012 level
- Lake Michigan is highly oligotrophic – clean water for swimming and scuba...but lifeless – even the wild-caught fishery is in decline
- A regulatory quandary – too risky for commerce, easier to do it elsewhere...Michigan missed out

Stuck in Second Gear”
- handful of mid-large but embattled fish farms in MI established in the mid-2010s, but no growth since.
- looks like Canada’s NOAA – launched, but stuck
- the cottager’s “view from the boat” trumps the commercial interests
- one urban fish farm in Detroit has good market share, is profitable. But no new farms because urban agricultural zoning has never been enacted
- still easier to raise fish in ASEAN region...content to import (they do it well enough).
Vision:
- A Thriving and Sustainable Michigan Aquaculture Sector

Mission:
- Grow Aquaculture to a $1 Billion Sector by 2025 That Compliments our Natural Resource Conservation and Recreation Uses of Water

Core Values:
- Sustainability
- Economic success as key to funding natural resource stewardship investment
- Trust – stakeholders support

Case Study Learning:
- Large-scale sustainable sector development is achievable
- Globally there are aquaculture and other production agriculture system, market, regulatory framework, siting, finance and investment models that can be adapted to Michigan aquaculture
Strategic Plan: Framework

The shift from reliance on wild-caught to aquaculture:
• Fish farming is the future of seafood

Food security:
• as Asia’s demand increases USA should decrease reliance on imported seafood

Leverage the progress made, Michigan’s “Open for Business”:
• Michigan Aquaculture Development Act,
• The AIM Process,
• Roadmap Through Regulations,
• QOL Aquaculture Streamlining Team

Strategic Plan: Seven Key Objectives for Action to Achieve a Thriving & Sustainable Michigan Aquaculture

1. Social Acceptance & Political Will
2. Achieving Trust: Branding, Regulation, & Certification
3. Invest: Research, Education, & Extension
4. Design for Sustainability: RAS/Cage/Flow Through Systems
5. Leadership: A Sector Champion
6. Improved Business Plans
7. Financing: Attract New Investors
Initial Strategic Actions (2014)

1 **Expand and Establish Aquaculture Enterprises Along the Supply Chain**
   – based on proven species, technologies, and markets to demonstrate sustainable growth
   By: 2014-2016
   Through: Commercial enterprise – achieve near-term targeted quadrupling to $3-8 million in farm-gate sales

2 **“Open for Business”**
   – AQUACULTURE IS ENDORSED IN THE MICHIGAN GREAT LAKES WATER STRATEGY AS A NEEDED ECONOMIC ACTIVITY
   By: Q1, 2014
   Through: Office of the Great Lakes, with support from Quality of Life Departments, MEDC, Governor

3 **Engage Tribal Leadership & State Regulators in Great Lakes Water Usage**
   – DEFINE WATER AREAS FOR SHIPPING, FISHING, PRESERVES, RECREATION, and AQUACULTURE AS PART OF A COMPREHENSIVE USE PLAN THAT CONSIDERS THE NEED FOR COMMERCIAL ACTIVITY FOR THE PUBLIC GOOD FROM PUBLIC RESOURCES.
   By: Initiate dialog in 2014, work towards definition ahead of expiration of current 1836 Consent Decree (by 2020)
   Through: Negotiations and/or legislation towards consensus that seeks the economic/social/environmental welfare of all stakeholders in society

4 **Permitting and Regulation**
   – Continue to DRIVE SIMPLIFICATION OF PERMITTING THROUGH STATE GOVERNMENT, building on the current QOL Working Group process, ACHIEVING WORLD-CLASS TURN-AROUND (< 60 days)
   By: Year End 2014
   Through: Continuous Improvement practices, while handling new incoming applications

5 **Drive RAS Operations Cost Reduction**
   By: 2014 and ongoing – secure research grant for 2015 and implement research program
   Through: Research Program to Improve on Energy Usage and Capital Costs per unit of Production - secure first research grant funding through Michigan Sea Grant or other sources
Initial Strategic Actions (2014)

6 Funding Sector Leadership

–HIRE A CHAMPION FOR A THRIVING AND SUSTAINABLE MICHIGAN AQUACULTURE, ENGAGING STAKEHOLDERS, ATTRACTING INVESTORS, LEADING PUBLIC-SECTOR PARTNERING
By: year-end 2014
Through: The trade association (MAA), with private and/or public funds (with matching “kick-start” funds for up to 5 years from an MEDC Aquaculture Development Program - negotiated or legislated)

7 Attracting Investors and Financing Growth

–BEGIN MESSAGING IN SUPPORT OF “OPEN FOR BUSINESS”
By: 2014 & 2015 aquaculture sector annual meetings and conferences – and ongoing
Through: MAA Leadership, in partnership with AIM stakeholders including MEDC and MDARD-OAD

<table>
<thead>
<tr>
<th>Economic Impact of Aquaculture Production</th>
<th>Direct Impact</th>
<th>Total Economic Impact</th>
<th>Total Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario</td>
<td>($ million, Farm Gate)</td>
<td>Direct Employment</td>
<td>($ million)</td>
</tr>
<tr>
<td>Seafood: An Essential Animal Protein</td>
<td>$500 - $1 billion</td>
<td>8,600 - 17,200</td>
<td>$780 - $1.5 billion</td>
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<tr>
<td>Stuck in Second Gear</td>
<td>$70 - $150</td>
<td>1,200 - 2,580</td>
<td>$110 - $236</td>
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<tr>
<td>Blue Bayou</td>
<td>$30 - $50</td>
<td>500 - 860</td>
<td>$47 - $78</td>
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<tr>
<td>Hamburger Nation</td>
<td>&lt;$5</td>
<td>80 - 100</td>
<td>$7 - $20</td>
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Figure 7 - Aquaculture in 2025 - Jobs and Economic Impact
As in any dynamic and growing sector, achieving this balance will be a work in process. In 2013 there is a lot of ‘sorting out’ happening in the 3rd Party space, brands are underdeveloped, and some deem regulation as burdensome. Looking to 2025 our vision is to achieve the desired balance in support of a thriving sector.

Leading to the Future

- A strategic plan should never be static
- Guide further dialog and discovery on what exactly the sector can become
Conclusion

• The development of a thriving and sustainable Michigan aquaculture sector that can:
  – contribute to the state economy,
  – provide jobs and food,
  – while ensuring that our natural resources are preserved and available for recreation
    • is desirable and doable
  – another opportunity for “relentless positive action” by Michigan, for the benefit of Michigan and the world.

Status/Next Steps: Feb 20/14

• MAA – Adopted the Strategic Plan, Jan 2014
  – Online at www.michiganaquaculture.org
    • Strategic Plan, 2014
      – 107 pages, 70+ references/links, 9 appendices
  – Engaging Stakeholders: OOGL Water Strategy, House Competitiveness, CGL, commercial interests, NAA, USTFA, WAA, NCRAC
• Peer Review – C Weeks, pending final version
• Taking Action
• Acknowledgements & Thanks
  – Funding:
    • Michigan Sea Grant and private foundation
  – Contributions of 100+ people:
    • work sessions, meetings, interviews, insights, critique
    • Critical to advancing the project and the sector

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