Aquaculture Webinar Series

Introduction: David Cline, USAS President Elect
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Regulatory Costs of U.S. Aquaculture Business

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ENGL E-STONE Aquatics$
Current state of U.S. aquaculture

**Source:** FAO (2016)
Current state of U.S. aquaculture

• 15th largest aquaculture producer (NOAA, 2013)

• $11.2 billion annual seafood trade deficit (NOAA, 2013)

• Developing slower than other countries (FAO, 2013)

• 22% decline in U.S. aquaculture (Olin, 2011)
  • Increased feed costs (Engle & Stone, 2013)
  • Increased pressure of imports (Engle & Stone, 2013)
  • Regulatory environment (Engle & Stone, 2013)
In excess of 1,300 laws affecting U.S. aquaculture!
As a society, we do not want our rivers to burn.....

1969: Cuyahoga River, Ohio
No one wants to go back to the days of abusive child labor
Economics tells us that laws & regulations are needed to “internalize” costs of externalities, like pollution.
New Research on Effects of Regulations

2013
- Engle & Stone: Call for comprehensive analysis of regulatory costs

2013
- Asche & Roll: Evidence that regulatory environment affects growth, development of salmon aquaculture

2016
- Abate et al.: Negative relationship between aquaculture growth & stringency of regulations

Called for “comprehensive and thorough estimates of the effects on production costs and the subsequent economic impact of the total set of regulations faced by U.S. aquaculture growers.”
Justification

• We were approached by individuals working to streamline regulations asking for data on compliance costs

• Need to *capture and publicize* the magnitude of regulatory costs
Research needed on effects of total suite of regulations
Baitfish/Sportfish Survey: Regulatory Costs
Funding from USDA-APHIS

- Alabama
- Arkansas
- Florida
- Illinois
- Kansas
- Louisiana
- New York
- North Carolina
- Ohio
- Pennsylvania
- Texas
- Virginia
- Wisconsin

Jonathan van Senten
Postdoc, Virginia Tech University

Designed & conducted as a census

74% of US production
Types of Results

• Farm Characteristics
• Number of Regulations & Renewals
• Average Regulatory Costs
• Regulatory Cost Breakdown
• Regulatory Cost and Farm Size
• Cost by Regulatory Category
The Cost of Regulations
Number of Regulations and Renewals

<table>
<thead>
<tr>
<th>State / Grouping</th>
<th>Total number of regulations identified</th>
<th>Average number of state permits/licenses</th>
<th>Average number of federal permits/licenses</th>
<th>Average renewal frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>10</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Arkansas</td>
<td>305</td>
<td>9</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>New York</td>
<td>23</td>
<td>2</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>North Carolina</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Ohio</td>
<td>45</td>
<td>3</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>64</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>Other</td>
<td>41</td>
<td>7</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>National</td>
<td>498</td>
<td>6</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Large farms (&gt;202 ha)</td>
<td>251</td>
<td>11</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Medium farms (202 ha to 20 ha)</td>
<td>103</td>
<td>5</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>Small farms (&lt;20 ha)</td>
<td>144</td>
<td>4</td>
<td>0</td>
<td>17</td>
</tr>
</tbody>
</table>

498 Regulations
86% State
13 Renewals/Year
As many as 203/farm
# The Cost of Regulations

## Average Regulatory Cost per Farm

<table>
<thead>
<tr>
<th>State</th>
<th>Average regulatory cost per farm</th>
<th>Average regulatory cost per acre</th>
<th>Estimated regulatory cost per state</th>
<th>Regulatory cost as percent of total (production + marketing) cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>$30,716</td>
<td>$449</td>
<td>$184,306</td>
<td>7%</td>
</tr>
<tr>
<td>Arkansas</td>
<td>$260,171</td>
<td>$418</td>
<td>$7,284,781</td>
<td>18%</td>
</tr>
<tr>
<td>New York</td>
<td>$29,948</td>
<td>$2,253</td>
<td>$239,586</td>
<td>61%</td>
</tr>
<tr>
<td>North Carolina</td>
<td>$52,425</td>
<td>$1,658</td>
<td>$1,100,919</td>
<td>52%</td>
</tr>
<tr>
<td>Ohio</td>
<td>$40,960</td>
<td>$7,096</td>
<td>$1,474,569</td>
<td>23%</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>$35,741</td>
<td>$6,192</td>
<td>$679,075</td>
<td>40%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>$379,629</td>
<td>$13,942</td>
<td>$2,657,401</td>
<td>37%</td>
</tr>
<tr>
<td>Other states</td>
<td>$63,558</td>
<td>$2,418</td>
<td>$1,542,342</td>
<td>12%</td>
</tr>
<tr>
<td>National</td>
<td>$148,554</td>
<td>$2,953</td>
<td>$12,027,128</td>
<td>25%</td>
</tr>
</tbody>
</table>
Baitfish/Sportfish

25% of Total Costs & prevent expansion to benefit from economies of scale.

Regulations?
Estimated Annual Regulatory Cost to the Baitfish/Sportfish Industry

$12.1 million per year

Adjusted by Volume of Production
What types of costs do regulations create?

**Direct Cost = 1%**

**Indirect Cost = 99%**

- Permits & Licenses: 60%
- Changes due to Regulations: 23%
- Fish Health: 11%
- Manpower: 5%
- Foregone Sales: 1%
Average Cost Per Farm by Farm Size

Farm Size

- Small Farms
- Medium Farms
- Large Farms
Average cost of regulations per acre by farm size

- Small: $6,000
- Medium: $1,000
- Large: $500
Cost by Regulatory Category

- Environmental Management: 61%
- Legal and Labor Standards: 14%
- Interstate Transport: 4%
- Fish Health: 20%
- Culture of Commercially Harvested Species: 1%

Greatest number of regulations!
Is a Study Like This Useful?

Example:

- For baitfish/sportfish industry, fish health regulations are frustrating and costly.

- Economic Effect of a Voluntary Uniform CAHPS Program
  
  - 8 Scenarios developed to model potential changes and effects

  - Study results pointed to opportunities to reduce costs.
CAHPS Program & Baitfish/Sportfish

Net Benefit Scenario

Reduced Costs: $148,000/farm to $66,000/farm
Is a Study Like This Useful?

Example

- Results being presented widely, especially in venues with regulators of import to baitfish/sportfish farms.

- Comments heard from regulators to date:
  - “I had no idea it was costing that much...”
  - “I didn’t know it was taking up so much of their time...”
  - “No wonder they are unhappy with us....”
Conclusions of Baitfish/Sportfish Regulatory Cost Study

• Estimated Total Cost to the Industry is $12 million / Year
• Average National Cost of $148,554/Farm
• Average National Cost of $2,953/Acre
• 86% of Regulations are State Regulations
• Permits / Licenses = 1% of Regulatory Costs
• Indirect Costs = 99% of Regulatory Costs
• Small Farms Have Relatively Higher Costs Per Acre
• Environmental Management & Fish Health are the most expensive regulatory categories
Conclusions of Baitfish/Sportfish Study

• Regulatory burden faced by Baitfish and Sportfish producers is substantial

• There is little room for doubt that the regulatory environment is resulting:
  • In additional costs
  • Restricted access to markets
  • Effecting farm efficiency

• Potential for streamlining through a uniform model for aquatic animal health to reduce costs for producers
Shellfish & Trout Farming Costs:

How Much is Due to Regulations?

We are working to find out.
The Economic Impact of Regulations on Shellfish and Trout Aquaculture Growth in the Western United States

Carole Engle, Gary Fornshell, Fred Conte, Bill Hanshumaker, Bobbi Hudson, Michael Schwarz, Jonathan van Senten

Industry Advisor: Bill Dewey

Project Monitor: Gunnar Knapp
Permitting processes for West Coast shellfish

The Impact of Regulations

Existing Permitting Processes 6/25/2012
Procedures

Farm-level Survey 1

- Shellfish
  - Washington
  - Oregon
  - California

Farm-level Survey 2

- Trout
  - California
  - Colorado
  - Idaho
  - Oregon
  - Washington
~99% of value of trout sold nationally &
~87% of the farms nationally
Special Acknowledgment

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- Mr. Bill Lynch

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- Kansas Aquaculture Association
- Dr. Michael Schwarz
- Dr. Chris Weeks
- Mr. Charlie Conklin
- Dr. Robert Smith
Questions?

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