The following slideshow was presented at the Gulf of Mexico Sector Separation Workshop, hosted by the Gulf of Mexico Fishery Management Council and the Fisheries Leadership & Sustainability Forum, November 8-10 in Tampa, FL.

For questions or additional information about the workshop please contact: Assane Diagne, Economist, Gulf of Mexico Fishery Management Council (813) 348-1630 or Assane.Diagne@gulfcouncil.org
Information & Analysis in Support of Fisheries Allocation Decisions

The For-Hire and Private Recreational Fishing Sectors

Presentation to:
Gulf of Mexico Fishery Management Council
Sector Separation Workshop

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Some Quotes from US Fishery Management Council Members

1. “The politics of fish are fierce”.

2. “Significant change in fisheries – including allocation – only seems to happen in a time of crisis”.

3. “Until allocation is settled, nothing much else get done”.

4. “Every council decision is an allocation decision”.

5. “Allocation is seen as the first step to accountability between sectors”.

6. “Allocation is – how large is the pie, who gets to eat and how much?”

7. “The goal of management councils in making allocation decisions is to minimize the whinge”.

8. “The key to success in allocation are well-defined goals and proper evaluation”. 
The Need for Allocation

• Formal allocation
  – need driven by scarcity & conflict
  – reduces business uncertainty
  – can reduce fighting among competing interests

• Formal allocation also can enhance
  – environmental sustainability
  – economic viability
  – social performance

• Allocation closely aligned with economics discipline
  – economics: "the study of the allocation of scarce resources"
# The Commercial & Recreational Fisheries Differ

<table>
<thead>
<tr>
<th>Activity</th>
<th>Commercial Fishery</th>
<th>Recreational Fishery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Renewable Resource Extraction</td>
<td>Outdoor Recreation</td>
</tr>
<tr>
<td></td>
<td>• Processing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Marketing</td>
<td></td>
</tr>
<tr>
<td>Product</td>
<td>Fish</td>
<td>Angling Experience</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Catching Fish</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Harvesting Fish</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Aesthetics</td>
</tr>
<tr>
<td>Output Measure</td>
<td>Tonnes</td>
<td>Angler-days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Producing Sector</td>
<td>• Commercial Fishermen</td>
<td>• Independent Anglers</td>
</tr>
<tr>
<td></td>
<td>• Processors</td>
<td>• For-Hire Businesses</td>
</tr>
<tr>
<td></td>
<td>• Retailers</td>
<td></td>
</tr>
<tr>
<td>Consumers</td>
<td>Seafood Consumers</td>
<td>Anglers</td>
</tr>
</tbody>
</table>
Allocation Parameters

• What are the allocation goals? roles of fairness & equity? constituency of interests?

• What is the allocation currency?
  – catch (does it include discard mortality? no. of fish or weight?)
  – effort
  – space ...

• Is transferability allowed?

• What is the licence fee/economic rent policy?

• What are monitoring requirements and who pays for them?
The Need for Information & Analysis to Support Allocation

- Initial allocation decisions
  - who is eligible?
  - how much do they get?
  - implications i.e., who benefits, who loses, ...
  - baseline against which to assess future performance

- Monitoring allocation performance
  - tracking transfers & catch
  - assessing environmental, economic & social performance
  - identifying needed program adjustments
  - are goals being achieved?

- Broad interest groups impacted by allocation
  - people
  - business
  - communities
## Types of Information Needed

### Annual
- participation
  - licenced entities
  - active entities
- catch & effort & revenues
  - by sector, gear type, etc.
  - by individual
- labour
  - jobs/positions
  - duration of jobs
  - wage bill
- segmentation of above
  - by region/community/residence
  - by type of activity

### Periodic
- markets & products
- financial performance
  - Income Statements
  - Balance Sheets
  - viability, EBITDA, ROI
  - taxes/royalties
- non-financial parameters
  - consumer/angler surplus
  - opportunity cost : labour : capital
  - motivation for fishing
Information Sources*

• Secondary Data
  – administrative data e.g. participation, catch
  – research/reports e.g., benefits transfer, case studies, industry profiles

• Primary Data
  – primary surveys e.g., financial, effort response, contingent valuation
  – other primary research/interviews e.g., fishermen, industry organizations

* Good fisheries policy requires good information which requires good cooperation & input from stakeholders.
Analysis Tools

- **Environmental impact analysis**
  - impacts on resource/sustainability
  - ability to adhere to TAC

- **Economic impact analysis e.g., input-output analysis**
  - traces changes in expenditures through economy
  - GDP, wages, employment
  - no account for alternative uses in economy

- **Economic value analysis**
  - net benefits i.e., benefits less opportunity costs
  - tangible/financial plus intangible
  - accounts for alternative uses in economy

- **Social impact analysis**
  - impacts on people & communities, particular subgroups e.g., natives
Economic Impact Framework

**COMMERCIAL FISHERY**

- **Fish**

**Expenditures**

- Ex-vessel Price to Fishermen
- Processor Margins
- Retail Margins

**Direct Impacts**

- Fishing Vessels
- Processors
- Retailers
- Direct Suppliers to Above

**Indirect Impacts**

- Second Stage and Subsequent Suppliers

**Economic Indicators**

- Employment (person years)
- Wages & Benefits ($)
- GDP or Value-Added ($)
- Government Revenues ($)

**RECREATIONAL FISHERY**

- **Product**

- Angling Experience
  - Catching fish
  - Harvesting fish
  - Aesthetic experience

- **Private Angler Expenditures**
- **For-Hire Revenues**

- **For-Hire**
- **Direct Suppliers to Anglers & For-Hire**

- **Second Stage and Subsequent Suppliers**
Economic Value Framework

**COMMERCIAL FISHERY**

- Fish

**RECREATIONAL FISHERY**

- Angling Experience
  - catching fish
  - harvesting fish
  - aesthetic experience

**Economic Value Framework**

- Willingness-to-Pay Less Consumer Expenditures
- Revenues Less Costs
  - vessel owners
  - processors
  - retailers
- Wages Paid Less Opportunity Job Income
  - crew labour
  - processing labour
  - retail labour
- Commercial Licence Fees Commodity Taxes

**Product**

- Consumer Surplus + Business Surplus* + Worker Surplus* + Adjustments for Government Revenues = Economic Value

- Willingness-to-Pay Less Angler Expenditures
- Revenues Less Costs
  - for-hire
- Wages Paid Less Opportunity Job Income
  - for-hire labour
- Recreational Licence Fees Commodity Taxes

* Adjusted for subsidies if necessary
For-Hire vs Private Recreational Fishing Data Needs

<table>
<thead>
<tr>
<th>Base/Current Case</th>
<th>For-Hire</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity Measure by Angler Residence*</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>- effort</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>- species focus</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>- catch</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>- expenditures</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>- angler surplus</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Business Profile</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Income Statement</td>
<td>X</td>
</tr>
<tr>
<td>- ROI, EBITDA target</td>
<td>X</td>
</tr>
<tr>
<td>- employment &amp; wages</td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Change in Allocation Case</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response by Angler Residence*</td>
<td>X</td>
</tr>
<tr>
<td>- effort elasticity**</td>
<td>X</td>
</tr>
<tr>
<td>- value elasticity***</td>
<td>X</td>
</tr>
</tbody>
</table>

* local, rest of US, outside US
** % change in angler days from % change in fish availability
*** % change in angler surplus from % change in fish availability
## BC Saltwater Recreational Fishery 1994 – Base Case Profile

### Activity Measure

#### A. Day Fished Total ’000

<table>
<thead>
<tr>
<th>For-Hire Anglers</th>
<th>Private Anglers</th>
<th>All Anglers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lodge</td>
<td>Charter</td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>150</td>
<td>2,350</td>
</tr>
<tr>
<td>140</td>
<td>75</td>
<td>940</td>
</tr>
<tr>
<td>60</td>
<td>75</td>
<td>1,410</td>
</tr>
</tbody>
</table>

- for King (chinook) salmon
- for other fish

#### B. Fish Caught & Kept Total ’000

<table>
<thead>
<tr>
<th>For-Hire Anglers</th>
<th>Private Anglers</th>
<th>All Anglers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lodge</td>
<td>Charter</td>
<td></td>
</tr>
<tr>
<td>124</td>
<td>108</td>
<td>954</td>
</tr>
<tr>
<td>56</td>
<td>42</td>
<td>141</td>
</tr>
<tr>
<td>68</td>
<td>66</td>
<td>813</td>
</tr>
</tbody>
</table>

- King salmon
- Other fish

#### C. CDN Expenditures Total $ million

<table>
<thead>
<tr>
<th>For-Hire Anglers</th>
<th>Private Anglers</th>
<th>All Anglers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lodge</td>
<td>Charter</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>50</td>
<td>441</td>
</tr>
<tr>
<td>94</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>26</td>
<td>20</td>
<td>441</td>
</tr>
</tbody>
</table>

- For-hire
- Other

#### D. CDN Economic Impacts

<table>
<thead>
<tr>
<th>For-Hire Anglers</th>
<th>Private Anglers</th>
<th>All Anglers</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP $ million</td>
<td>96</td>
<td>41</td>
</tr>
<tr>
<td>Wages $ million</td>
<td>52</td>
<td>26</td>
</tr>
<tr>
<td>Employment person-years</td>
<td>1,760</td>
<td>870</td>
</tr>
</tbody>
</table>

#### E. CDN Net Benefits $ million

<table>
<thead>
<tr>
<th>For-Hire Anglers</th>
<th>Private Anglers</th>
<th>All Anglers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angler surplus</td>
<td>12.7</td>
<td>8.6</td>
</tr>
<tr>
<td>Producer surplus - for-hire business</td>
<td>4.5</td>
<td>0</td>
</tr>
<tr>
<td>- &quot; workers</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gov’t revenues</td>
<td>11.3</td>
<td>4.3</td>
</tr>
</tbody>
</table>
## Measure per Extra King Salmon Kept

<table>
<thead>
<tr>
<th></th>
<th>For-Hire Anglers</th>
<th>Private Anglers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lodge&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Charter&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>A. Expenditures $</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For-hire</td>
<td>476</td>
<td>91</td>
</tr>
<tr>
<td>Other expenses</td>
<td>132</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>608</td>
<td>153</td>
</tr>
<tr>
<td>B. Economic Impacts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP $ million</td>
<td>486</td>
<td>125</td>
</tr>
<tr>
<td>Wages $ million</td>
<td>263</td>
<td>80</td>
</tr>
<tr>
<td>Employment person-years</td>
<td>.0089</td>
<td>.0027</td>
</tr>
<tr>
<td>C. Net Benefits $</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angler surplus</td>
<td>32</td>
<td>16</td>
</tr>
<tr>
<td>Producer surplus - for-hire business</td>
<td>47</td>
<td>0</td>
</tr>
<tr>
<td>- &quot;workers&quot;</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gov't revenues&lt;sup&gt;c&lt;/sup&gt;</td>
<td>56</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>135</td>
<td>29</td>
</tr>
</tbody>
</table>

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<sup>a</sup> Package includes accommodation & meals as well as guide, gear, boat & fuel etc.

<sup>b</sup> Package includes only guide, gear, boat & fuel etc.

<sup>c</sup> Sales taxes, licence fees
Conclusions

1. Need to assess environmental, economic & social repercussions.

2. Need to communicate results in “Plain English”.

3. Rigorous & transparent catch monitoring data are needed.

4. Information to support allocation decisions are formidable & often not available. This deficiency is chronic to fisheries policy analysis.

5. Collect information now to support the policy decisions of tomorrow.