Economic Impacts of Waterfowl Hunting in Mississippi

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1.3 million waterfowl hunters in U.S. in 2006

$1.3 billion spent hunting migratory birds in 2006

24,794 licensed waterfowl hunters in MS in 2005-2006
Justification

- Decreasing hunting participation rates are forcing resource managers to justify support.

- Promoting social, cultural, and economic benefits are effective ways to do so.

- Imbalance of biological vs. economic studies of waterfowl in U.S.

- Nationwide studies are not adequate at the statewide level due to insufficient sample size.
Benefits of Wildlife Resources and Economic Impact Studies

- Businesses benefit directly and indirectly from hunting-related expenditures
- Hunting provides revenues to landowners
- Useful in setting license fees and justifying management focus
- Evaluating past and future land use policies and management practices
Objectives

- Determine expenditures per day for waterfowl hunting by residents and non-residents (trip and long-term related)

- Determine number of waterfowl hunting activity days or effort

- Quantify statewide economic impacts from hunting-related expenditures for 2005-2006 season
Economic Impacts

- Exchange of goods and services, associated $ travels through the economy

- Input-output analysis
  - Economic impacts of activities (e.g., hunting) in an overall economy

- Method of modeling
  - Impact Analysis for Planning (IMPLAN) developed by USDA FS to evaluate impacts of forest management plans
Economic Impacts Using IMPLAN Model

- Built from 440 sectors (e.g. industrial and commercial) collapsed into 9 generally accepted industry categories (e.g., construction, manufacturing, services...)

- “Multipliers” illustrate how direct expenditures (i.e., sales) promote other effects on total economic output; determines economic return

- Multiplier size related to size of area economy and its industrial and commercial development; less development equals more “leakage”
Economic Impact Model Analysis

- Measures of economic impact analysis
  - Direct, indirect, and induced impacts
  - Employment
  - Personal income
  - Tax generation
  - Value-added
  - Multipliers
IMPLAN Model Impacts

- **Direct impacts**
  - Sales, salaries, wages, and jobs created from hunter expenditures on retail goods (e.g., gas, lodging, groceries)

- **Indirect impacts**
  - Generated by direct impacts, income resulting from inter-industry trade and commerce

- **Induced impacts**
  - Household consumption originating from employment in directly or indirectly impacted businesses
Survey of Mississippi Hunters Purchasing a Waterfowl Stamp

- 1,500 randomly selected licensed resident and non-resident hunters, 750 each
- Effort and harvest information collected for waterfowl hunting in Mississippi
- Expenditure data collected for typical waterfowl hunting trip and long-term items
Survey Expenditure Section

- Expenditures on “Typical trip”
  - Transportation, access fees, food, drinks, lodging, heating/cooking fuel, processing and taxidermy costs

- Long-term expenditures
  - Ammunition, clothing, license, guns, hunting dogs, ATV, calls, decoys, food plots, hunting leases
Resident vs. Non-resident Economic Impacts

- Economists divided on whether resident expenditures and resultant economic impacts are relevant

- Mississippi Legislators demand both!

- Resident hunters asked to estimate percent of expenditures they would spend out-of-state if they could no longer hunt waterfowl in MS
Total/Tailored Design Method

- **1st Mailing (Day 1)**
  - Cover letter, survey, postage paid envelope (complete packet)

- **2nd Mailing – (Day 8)**
  - Reminder/thank you postcard

- **3rd and 4th Mailings (Days 22 and 45)**
### Response Rates

<table>
<thead>
<tr>
<th></th>
<th>Number Mailed</th>
<th>Returned</th>
<th>Non-eligible</th>
<th>Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents</td>
<td>750</td>
<td>335</td>
<td>80</td>
<td>49.8%</td>
</tr>
<tr>
<td>Non-res</td>
<td>750</td>
<td>368</td>
<td>48</td>
<td>52.7%</td>
</tr>
<tr>
<td>Total</td>
<td>1,500</td>
<td>703</td>
<td>128</td>
<td>51.2%</td>
</tr>
</tbody>
</table>

Response rate = Returned / (No. mailed – Non-eligible)
Non-Response Check

- Attempted to contact 223 non-respondents; 66 reached

- No significant difference in percent that did not hunt waterfowl ($X^2=1.99; p=0.150$)

- No significant difference in days hunting waterfowl ($z=-1.61; p=0.105$)
# Respondent Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Mean Age</th>
<th>Male (%)</th>
<th>White (%)</th>
<th>Median Income</th>
<th>Median Educ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident</td>
<td>40</td>
<td>99</td>
<td>99</td>
<td>$80-89K</td>
<td>College</td>
</tr>
<tr>
<td>Non-res</td>
<td>45</td>
<td>99</td>
<td>99</td>
<td>$100K+</td>
<td>College</td>
</tr>
</tbody>
</table>
## Mississippi Waterfowl Hunting Activity Days

<table>
<thead>
<tr>
<th></th>
<th>Average Trip Length</th>
<th>Trips</th>
<th>Waterfowl Hunting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents</td>
<td>2.5</td>
<td>83,386</td>
<td>208,466</td>
</tr>
<tr>
<td>Non-res</td>
<td>3.1</td>
<td>18,927</td>
<td>58,672</td>
</tr>
<tr>
<td>Total</td>
<td>2.6</td>
<td>102,313</td>
<td>267,138</td>
</tr>
</tbody>
</table>
Average Daily Expenditures for Waterfowl Hunting in MS (2009 USD)

- Trip Residents: $107.69
- Long-term Residents: $254.47
- Trip Non-residents: $140.36
- Long-term Non-residents: $89.03
Resident Expenditures

- Estimate of potential leakage

- If No Waterfowl Hunting in Mississippi...
  - Hypothetically, residents would spend 51.7% of their money out-of-state on waterfowl hunting or something else

- Adjusting for this...
Average Daily Expenditures for Waterfowl Hunting in MS (2009 USD)

Residents

- Trip: $107.69
- Long-term: $254.47

Non-residents

- Trip: $140.36
- Long-term: $89.03
Average Daily Expenditures for Waterfowl Hunting in MS (2009 USD)

Estimated leakage of 51.7%

Residents

- Trip: $55.68
- Long-term: $131.56

Non-residents

- Trip: $140.36
- Long-term: $89.03
Economic Impacts of Waterfowl Hunting (In 1,000s, 2009 USD)

- **Resident**
  - Total: $147,098
  - Direct: $124,906
  - Secondary: $22,192

- **Non-resident**
  - Total: $0

- **Total**
  - Direct: $40,000
  - Secondary: $80,000
  - Total: $120,000
  - Total Direct: $160,000
  - Total Secondary: $160,000

- **Total**
  - Direct: $120,000
  - Secondary: $160,000
  - Total: $280,000
Economic Impacts of Waterfowl Hunting (In 1,000s, 2009 USD)

- Resident: $64,576
- Non-resident: $22,192
- Total: $86,768

Estimated leakage of 51.7%
Economic Impacts of Waterfowl Hunting (In 1,000s, 2009 USD)

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<th>Non-resident</th>
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<tr>
<td>Direct</td>
<td>$64,576</td>
<td>$22,192</td>
<td>$86,768</td>
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<tr>
<td>Secondary</td>
<td>$40,000</td>
<td>$80,000</td>
<td>$120,000</td>
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<tr>
<td>Total</td>
<td>$104,576</td>
<td>$102,192</td>
<td>$206,768</td>
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</table>

Multipliers = 1.55
Economic Impacts of Waterfowl Hunting (In 1,000s, 2009 USD)

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<th>Resident</th>
<th>Non-resident</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value Added</td>
<td>$64,702</td>
<td>$12,659</td>
<td>$77,362</td>
</tr>
<tr>
<td>Emp. Income</td>
<td>$35,527</td>
<td>$7,010</td>
<td>$42,537</td>
</tr>
<tr>
<td>Bus. Taxes</td>
<td>$9,258</td>
<td>$1,718</td>
<td>$10,976</td>
</tr>
</tbody>
</table>
Economic Impacts of Waterfowl Hunting (In 1,000s, 2009 USD)

- Value Added
- Emp. Income
- Bus. Taxes

Resident
- Value Added: $33,451
- Emp. Income: $18,367
- Bus. Taxes: $4,786
- Total: $46,111

Non-resident
- Value Added: $12,659
- Emp. Income: $7,010
- Bus. Taxes: $1,718
- Total: $25,377

Total
- Value Added: $12,659
- Emp. Income: $1,718
- Bus. Taxes: $6,504
- Total: $25,377

Estimated leakage of 51.7%
Full & Part-time Jobs Supported by Waterfowl Hunting in Mississippi

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<th>Residents</th>
<th>Non-residents</th>
<th>Total</th>
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<tr>
<td></td>
<td>1,572</td>
<td>326</td>
<td>1,898</td>
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</table>

- Residents: 1,572 jobs
- Non-residents: 326 jobs
- Total: 1,898 jobs
Full & Part-time Jobs Supported by Waterfowl Hunting in Mississippi

Estimated leakage of 51.7%
Resident Economic Impact

- If No Waterfowl Hunting in Mississippi...
  - Hypothetically, residents would spend 51.7% of their money out-of-state on waterfowl hunting or something else

- $65 million of economic impact would potentially leave state without waterfowl hunting; 813 jobs and $18 million of employment income would be lost
What is the impact of a duck?

- 503,105 waterfowl harvested by licensed hunters in 2005-2006 hunting season

- $172 in economic impact (2009 USD) for Mississippi for each waterfowl harvested by licensed hunters in 2005-2006 hunting season
Related Economic Impact Studies

- **Deer hunting in MS**
  - 2.8 million activity days
  - $144/hunter/activity day
  - $874 million statewide
  - 32,325 full- or part-time jobs

- **Wild turkey in MS**
  - 334,856 activity days (MS)
  - $44/hunter/activity day
  - $16.7 million statewide
  - 385 full- or part-time jobs

(Grado et al. 2001)
Related Economic Impact Studies

- Most outdoor recreation expenditure multipliers between 1.5 – 2.7
- MS waterfowl hunting estimate of 1.55 low
- Due to lack of industrial development in MS
Management Implications

- Land-use and policy decisions will likely affect economic impacts and rural communities and businesses.

- Justifies management focus on waterfowl.

- Helps in evaluating possible effects of wildlife habitat loss, and changes in hunting regulations.
Acknowledgements
Questions?