SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

Estimating the Economic Impacts of Fisheries For Species Managed by the SAFMC

Socio-Economic Panel Meeting

Charleston, South Carolina

February 2018

....To Conserve and Manage

The Challenge

- Research Question:

"What are the economic impacts of fisheries for SAFMC-managed species?"

  - Both recreational and commercial
    - This discussion to focus on the **recreational** sector
  - Jobs, income, value added, and business sales
  - Part of effort to provide comprehensive overview of SAFMC fisheries (i.e. "the big picture")

Economic Impact Calculations

- Economic impact tool developed by the NOAA Southeast Region Office
  - Examine the economic impacts of recreational trips for a species or group of species
    - Trip expenditures
    - NOT durable goods expenditures
  - Based on trip-level impact coefficients derived from *Fisheries Economics of the United States, 2015* and underlying data from NOAA SEFSC
  - Input/Output model
    - IMPLAN

Why Durable Goods Are Excluded?

- Very difficult to attribute to one species or even a group of species:
  - Last multiple years
  - Used in multiple fisheries
  - Used in other activities
    - Tow vehicle for daily transportation
    - Boat for water skiing

- HMS, Dolphin Wahoo, Snapper Grouper, CMP, Inshore/State Managed, and Freshwater species
- 4 different states
- Bought used in 2010

Model Results

- Jobs
  - Full-time and part-time jobs
- Income
  - Wages, salaries, and self-employed income
- Value Added
  - Contribution to GDP
- Sales (Output)
  - Gross business sales

Model Inputs

- Angler trip estimates by mode
  - Charter, Private/Rental, Shore
  - Trip estimates originate from the Marine Recreational Information Program (MRIP)
    - No headboat effort
    - Excluding headboat effort and durable goods likely leads to lower bound on estimated economic activity
- Highly sensitive to input of:
  - Number of angler trips
  - Mode under which the trips occur
    - Multipliers variable by mode

Types of MRIP Recreational Trips

- Primary Target or Secondary Target
  - Used in SAFMC FMPS
  - Species does not have to be caught
- Harvested
  - Observed catch (A) and Unobserved catch (B1)
- Released
  - Unobserved catch (B2)
- Any combination thereof
  - Harvested (A or B1)
  - "Directed"- Primary Target or Secondary Target or Harvested (A or B1)

Some Caveats of Using MRIP Data

- Primary or secondary target
  - Only 2 species may be listed
  - Large “human factor”
    - Target species can change based on success or lack thereof for a trip
    - “No particular species/Anything” is an option
- Overall
  - Unobserved catch (harvest or release) can be influenced by issues such as recall bias or species misidentification
  - Effort estimates are just that, an “estimate”
    - Considerable uncertainty and error terms in some circumstances
      - Rare event species
      - Effort expansion factor
  - No headboat data
    - Captured via the NMFS Southeast Regional Headboat Survey

Table 1. Recreational king mackerel effort (angler trips) in the South Atlantic Region, 2016

Trip Type	Charter	Private/Rental	Shore	Total
Targeted (Prim or Sec: **Tar**)	19,053	219,588	68,520	307,161
Harvested (Observed: **A** or Unobserved: **B1**)	66,712	99,667	285	166,664
Released (Unobserved: **B2**)	7,826	21,648	1,529	31,003
Targeted or Harvested (**Tar** or **A** or **B1**)	71,291	268,006	68,520	**407,817**
Targeted or Caught (**Tar** or **A** or **B1** or **B2**)	74,516	272,485	68,520	415,521

Table 2. Recreational black sea bass effort (angler trips) in the South Atlantic Region, 2016

Trip Type	Charter	Private/Rental	Shore	Total
Targeted (Prim or Sec: **Tar**)	2,042	33,610	926	36,578
Harvested (Observed: **A** or Unobserved: **B1**)	13,134	65,468	0	77,602
Released (Unobserved: **B2**)	35,577	485,137	91,936	612,650
Targeted or Harvested (**Tar** or **A** or **B1**)	14,071	79,350	926	**94,347**
Targeted or Caught (**Tar** or **A** or **B1** or **B2**)	37,301	498,882	92,862	629,045

Table 3. Recreational effort (angler trips) and landings by mode for SAFMC managed species in the SA Region, average 2014-2016.

Region	Mode	Directed Trips	Harvest Only Trips	Pounds Harvested (ww)
Total Atlantic	Charter	236,855	157,770	5,257,555
	Private/Rental Vessel	1,828,467	841,831	11,388,742
	Shore	640,938	265,624	934,157
	All Modes	2,706,260	1,265,225	17,580,454

Note: Amended version of Table 5 from report

Table 4. Economic impacts of recreational fishing activity on directed trips for SAFMC managed species in the SA region (2016 dollars).

Region	Mode	Jobs	Income Impacts (thousands of dollars)	Value Added Impacts (thousands of dollars)	Sales Impacts (thousands of dollars)
Total Atlantic	Charter	1,717	$84,349	$130,750	$244,030
	Private/Rental Vessel	1,136	$51,696	$91,283	$182,649
	Shore	565	$23,529	$40,605	$77,344
	All Modes	3,418	$159,574	$262,638	$504,023

Note: Amended version of Table 8 from report

Table 5. Comparison of SAFMC report results to *Fisheries Economics of the United States, 2015 (FEUS)*.

Study	Jobs	Income Impacts (thousands of dollars)	Value Added Impacts (thousands of dollars)	Sales Impacts (thousands of dollars)
SAFMC (Average CY 2014-16)- Trip Impacts[1]	3,418	$159,574	$262,638	$504,023
FEUS (CY 2015)-Trip Impacts[2]	12,148	$427,112	$701,606	$1,227,543
FEUS (CY 2015)- Durable Goods Impacts[3]	45,871	$1,951,933	$3,086,013	$5,060,401
FEUS (CY 2015)- Total Impacts[4]	58,019	$2,379,045	$3,787,619	$6,287,944

[1]Examined marine recreational trips for SAFMC-managed species only in the South Atlantic region. Uses regional expenditure data and national level multipliers to account for interstate commerce.
[2]Examined all marine recreational trips (regardless of species) in the South Atlantic region. Summation of state-level data.
[3]Examined all durable goods expenditures for marine recreational fishing activity. Summation of state-level data.
[4]Both trip and durable goods expenditures for marine recreational fishing activity. Summation of state-level data.

Discussion Questions for the SEP

1. Given the nature of the various recreational trip estimates available, is there a specific metric that the SEP would recommend over what is currently used in the report ("directed trips"= targeted or harvested)? Would a range between two of the trip types be better than a point estimate using one trip type? Ex: Harvest and "Directed[1]" (targeted or harvested); Harvest and "Directed[2]" (targeted or harvested or released)

2. Solely using recreational trip expenditures to estimate the economic impacts for a specific species or group of species inherently underestimates the impacts generated by the fishing activity since durable goods expenditures are excluded, thus likely providing a lower bound estimate of the "true" economic impacts. Are there other methods or currently available data that the SEP would recommend to provide a more comprehensive economic impact assessment (jobs, income, etc.) of fishing activity specifically for SAFMC-managed species?

3. When presented with results of economic impact models, reactions often vary, with some reviewers feeling that numbers are inflated while others feel that the numbers presented are too low. Given your knowledge and previous experience with I/O models and economic impact estimates of recreational fishing, do you feel the results provided in the report are within reason under the constraint of using data that are currently available?