NOAA FISHERIES

SEFSC
Social Science
Research Group

Economic Performance of the U.S. South Atlantic Snapper-Grouper Fishery

Christopher Liese

June 12, 2019

New Annual Reports

Outline

- Method: Economic reporting system
- Quantitative Result: S&G economics
- Qualitative Result: Impact of S&G regulations
- What's the cost? (in lost S&G resource rent)

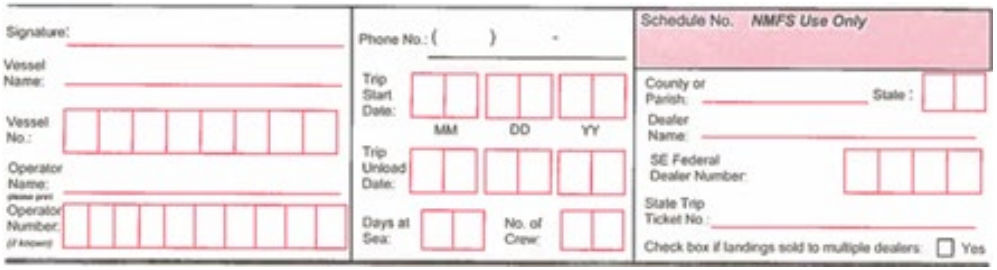
Data and method

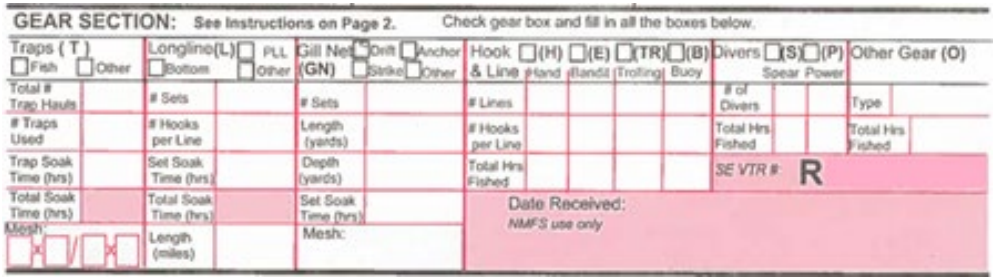
Trip Logbooks (since 1993)

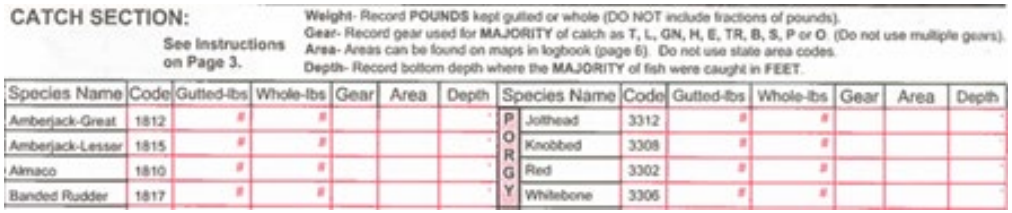
SE Coastal Fisheries Vessels Logbook for:

- Gulf of Mexico Reef Fish
- South Atlantic Snapper-Grouper
- King and Spanish Mackerel
- Shark
- Atlantic Dolphin/Wahoo

Assume: Census


Signature:
Vessel Name:
Vessel No.:
Operator Name:
Operator Number:
Phone No.: ( ) -
Trip Start Date: MM DD YY
Trip Unload Date:
Days at Sea:
No. of Crew:
Schedule No. NMFS Use Only
County or Parish:
State:
Dealer Name:
SE Federal Dealer Number:
State Trip Ticket No.:
Check box if landings sold to multiple dealers: Yes


GEAR SECTION: See Instructions on Page 2. Check gear box and fill in all the boxes below.
Traps (T) Fish Other
Longline(L) Bottom PLL Other
Gill Net (GN) Drift Anchor Strike Other
Hook & Line (H) (E) (TR) (B) Hand Bandit Trolling Buoy
Divers (S) (P) Spear Power
Other Gear (O)
Total # Trap Hauls
Traps Used
Trap Soak Time (hrs)
Total Soak Time (hrs)
Mesh:
Sets
Hooks per Line
Set Soak Time (hrs)
Total Soak Time (hrs)
Length (miles)
Sets
Length (yards)
Depth (yards)
Set Soak Time (hrs)
Mesh:
Lines
Hooks per Line
Total Hrs Fished
# of Divers
Total Hrs Fished
Type
Total Hrs Fished
SE VTR # R
Date Received:
NMFS use only

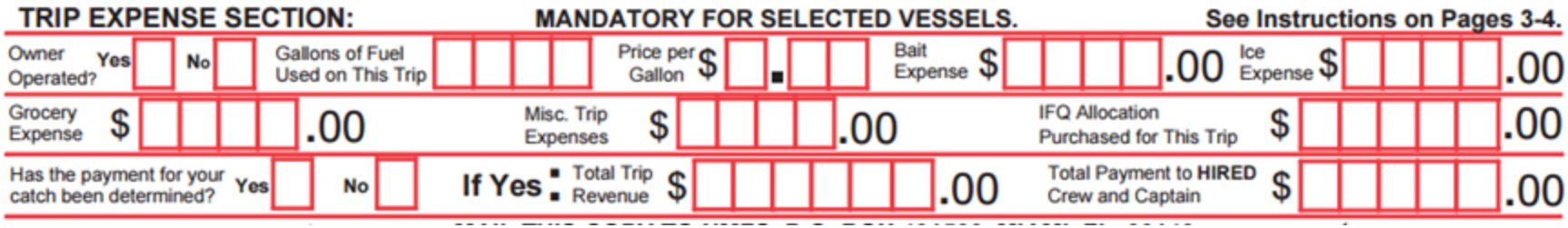

CATCH SECTION: See Instructions on Page 3.
Weight- Record POUNDS kept gutted or whole (DO NOT include fractions of pounds).
Gear- Record gear used for MAJORITY of catch as T, L, GN, H, E, TR, B, S, P or O. (Do not use multiple gears).
Area- Areas can be found on maps in logbook (page 6). Do not use state area codes.
Depth- Record bottom depth where the MAJORITY of fish were caught in FEET.

Species Name	Code	Gutted-lbs	Whole-lbs	Gear	Area	Depth		Species Name	Code	Gutted-lbs	Whole-lbs	Gear	Area	Depth
Amberjack-Great	1812	#	#			'	P	Jolthead	3312	#	#			'
Amberjack-Lesser	1815	#	#			'	O	Knobbed	3308	#	#			'
Almaco	1810	#	#			'	R	Red	3302	#	#			'
Banded Rudder	1817	#	#			'	G	Whitebone	3306	#	#			'
							Y							

Sample Trip-level Economics (since 2002/5)

Stratified sample of permitted **vessels** at start of year

Supposed to report econ data for ALL logbook trips:



TRIP EXPENSE SECTION: **MANDATORY FOR SELECTED VESSELS.** **See Instructions on Pages 3-4.**

Owner Operated? Yes ☐ No ☐ | Gallons of Fuel Used on This Trip ☐☐☐☐ | Price per Gallon $ ☐.☐☐ | Bait Expense $ ☐☐☐☐.00 | Ice Expense $ ☐☐☐☐.00

Grocery Expense $ ☐☐☐☐.00 | Misc. Trip Expenses $ ☐☐☐☐.00 | IFQ Allocation Purchased for This Trip $ ☐☐☐☐.00

Has the payment for your catch been determined? Yes ☐ No ☐ | If Yes: Total Trip Revenue $ ☐☐☐☐☐.00 | Total Payment to **HIRED** Crew and Captain $ ☐☐☐☐.00

Supplemental Annual Cost Survey

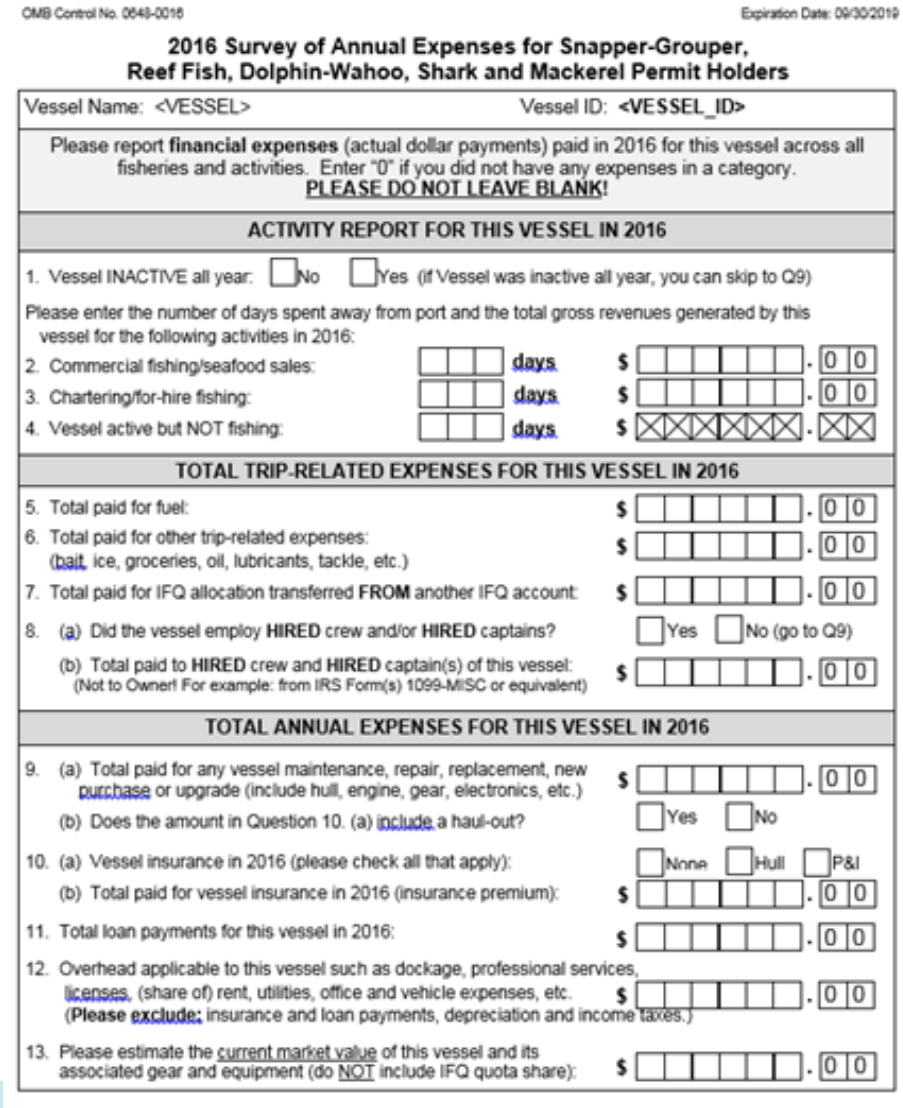
Same sample vessels

Sent after the year is over

Fixed costs

Many activities:

- Logbook fisheries
- Other seafood
- Charter fishing
- Other business



OMB Control No. 0648-0016 Expiration Date: 09/30/2019

2016 Survey of Annual Expenses for Snapper-Grouper, Reef Fish, Dolphin-Wahoo, Shark and Mackerel Permit Holders

Vessel Name: <VESSEL> Vessel ID: <VESSEL_ID>

Please report **financial expenses** (actual dollar payments) paid in 2016 for this vessel across all fisheries and activities. Enter "0" if you did not have any expenses in a category.
PLEASE DO NOT LEAVE BLANK!

ACTIVITY REPORT FOR THIS VESSEL IN 2016

1. Vessel INACTIVE all year: ☐ No ☐ Yes (if Vessel was inactive all year, you can skip to Q9)

Please enter the number of days spent away from port and the total gross revenues generated by this vessel for the following activities in 2016:

2. Commercial fishing/seafood sales: ☐☐☐ days $ ☐☐☐☐☐☐.00
3. Chartering/for-hire fishing: ☐☐☐ days $ ☐☐☐☐☐☐.00
4. Vessel active but NOT fishing: ☐☐☐ days $ XXXXXX.XX

TOTAL TRIP-RELATED EXPENSES FOR THIS VESSEL IN 2016

5. Total paid for fuel: $ ☐☐☐☐☐☐.00
6. Total paid for other trip-related expenses: (bait, ice, groceries, oil, lubricants, tackle, etc.) $ ☐☐☐☐☐☐.00
7. Total paid for IFQ allocation transferred **FROM** another IFQ account: $ ☐☐☐☐☐☐.00
8. (a) Did the vessel employ **HIRED** crew and/or **HIRED** captains? ☐ Yes ☐ No (go to Q9)
   (b) Total paid to **HIRED** crew and **HIRED** captain(s) of this vessel: (Not to Owner! For example: from IRS Form(s) 1099-MISC or equivalent) $ ☐☐☐☐☐☐.00

TOTAL ANNUAL EXPENSES FOR THIS VESSEL IN 2016

9. (a) Total paid for any vessel maintenance, repair, replacement, new purchase or upgrade (include hull, engine, gear, electronics, etc.) $ ☐☐☐☐☐☐.00
   (b) Does the amount in Question 10. (a) include a haul-out? ☐ Yes ☐ No
10. (a) Vessel insurance in 2016 (please check all that apply): ☐ None ☐ Hull ☐ P&I
    (b) Total paid for vessel insurance in 2016 (insurance premium): $ ☐☐☐☐☐☐.00
11. Total loan payments for this vessel in 2016: $ ☐☐☐☐☐☐.00
12. Overhead applicable to this vessel such as dockage, professional services, licenses, (share of) rent, utilities, office and vehicle expenses, etc. (**Please exclude:** insurance and loan payments, depreciation and income taxes.) $ ☐☐☐☐☐☐.00
13. Please estimate the current market value of this vessel and its associated gear and equipment (do NOT include IFQ quota share): $ ☐☐☐☐☐☐.00

Stylized Income Statement (period of time)

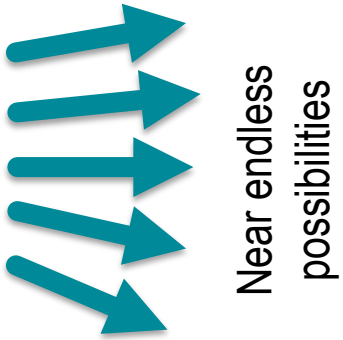
Revenue	Expenditures
From operations • **S&G fish revenue** • **Other commercial fishing revenue**	From operations • **Fuel** • **Crew (hired)** • **Other (supplies)** • *Owner's labor* • **Vessel/gear related** • **Overhead** • *Depreciation* Net revenue from operations
Non-operating • **Other income**	Non-operating • *Interest payments* Profit

Toward Systematic Reporting

Census vs. Post-stratified SOI vs. Econ Sample

Overall logbooks (census) and econ sample

	Vessels	Trips
All Logbooks	1,770	36,962
Econ-Sample	373	8,312



SOI – Gulf Red Snapper

	Vessels	Trips
All Logbooks	402	3,783
Econ-Sample	92	751

SOI – SE Lionfish

	Vessels	Trips
All Logbooks	49	310
Econ-Sample	10	81

Page 1:

SOI: 2016 SAT Snapper-Grouper FMP Fishery: All Gears

Description: This SOI consists of all logbook trips by permitted vessels where at least one pound of fish managed by the SAT Snapper-Grouper FMP was landed in 2016 using any gear type. Species managed include multiple species of snapper, grouper, tilefish, etc. For a complete list of the species, please refer to Appendix 2. For important **disclaimer**, see page 15.

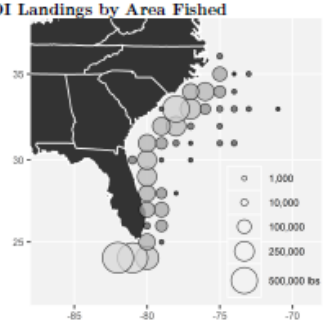
Trip-Level Summary

Effort	
Trips	11,386
Vessels	509
Days at Sea	18,878
Crew Days	40,565
Landings (gutted lbs)	
Total	5,680,861
SOI	5,101,373
Non-SOI	579,488
% SOI	90%

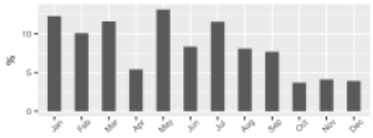
Percent by Gear	**Trips**	**SOI lbs**
Vertical Line	85%	84%
Longline	3%	9%
Diver	7%	4%
Traps/Pots	2%	2%
Other	4%	1%

Price (mean)	
Total	$3.31
SOI	$3.37
Non-SOI	$2.75
Revenue	
Total	$18,789,938
SOI	$17,197,008
Non-SOI	$1,592,930
% SOI	92%
Percent of Revenue by Species Group	
Shallow Water Groupers	12%
Shallow Water Snappers	28%
Mid-Shelf Snappers	16%
Deep Water Groupers/Tilefish	18%
Grunt/Porgy/Sea Bass/Trigger	10%
Mackerels/Dolphinfish/Jacks	10%
Other Species	5%
Revenue for Top 5 Species	
Yellowtail Snapper	$4,649,998
Vermilion Snapper	$2,828,743
Tilefish	$2,259,007
Greater Amberjack	$1,193,133
Gag Grouper	$1,174,131

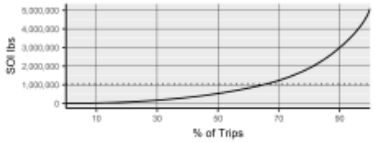
SOI Landings by Area Fished



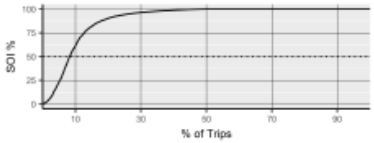
Share of SOI Landings by Month



Cumulative SOI Landings



SOI Share of Revenue Per Trip



Trip Descriptive Statistics (N=11,386)

	Mean	Min	Median	Max
Days at Sea	1.7	1	1	17
Crew Size	2	1	2	8
Landings	499	2	256	7,867
Revenue	$1,650	$8	$868	$28,370
SOI	$1,510	$1	$772	$26,308
% SOI	90%	0.1%	100%	100%

Page 2:

SOI: 2016 SAT Snapper-Grouper FMP Fishery: All Gears

Trip-Level Economics

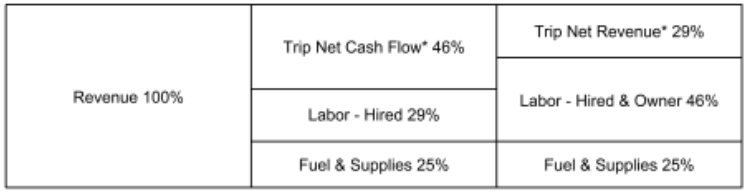
Response Rate for SOI Trips

	Trips	%SOI	%Selected	%Responded
SOI	11,386	-	-	-
Selected	2,766	24%	-	-
Responded	2,711	24%	98%	-
Used	2,612	23%	94%	96%

Economic Results (n=2,612)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Trip					
Owner-Operated	82%	3.1	77%	87%	-
Days at Sea	1.8	0.2	1.5	2.1	1
Crew Size	2	0.1	1.9	2.1	2
Fuel Used	74	7	62	86	50
Landings (gutted lbs)	503	57	408	598	245
Total Revenue	1,761	206	1,420	2,103	938
Cost					
Fuel	165	15	140	189	110
Bait	126	23	88	165	50
Ice	38	5	29	46	16
Groceries	62	10	46	78	20
Miscellaneous	49	16	23	75	10
Hired Crew	517	84	377	657	160
IFQ Purchase	0	0	0	0	0
OC Owner-Captain Time	299	35	241	358	150
Trip Net Cash Flow*	805	86	661	948	410
Trip Net Revenue*	505	74	383	628	169

Trip Net Cash Flow* and Trip Net Revenue* as Proportion of Trip Revenue (Margins)



Input Prices

Fuel Price (average): $2.22 per gallon Hired Crew Wage (implicit): $247 per crew-day

Productivity Measures

Landings/Fuel Use: 6.8 lbs/gallon Landings/Labor Use: 141 lbs/crew-day

* See Definitions in Methods Section or Glossary.

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Page 3:

SOI: 2016 SAT Snapper-Grouper FMP Fishery: All Gears

Annual, Vessel-Level Summary

Effort

Vessels	509
Trips - Total	15,312
SOI Trips	11,386
Non-SOI Trips	3,926
Days at Sea	23,772
Crew Days	49,117

Landings (gutted lbs)

Total	8,197,473
SOI	5,101,373
Non-SOI	3,096,100
% SOI	62%

Percent by Gear	**Trips**	**Total lbs**
Vertical Line	73%	65%
Longline	4%	12%
Diver	5%	3%
Traps/Pots	1%	1%
Other	17%	19%

Price (mean)

Total	$2.87
SOI	$3.37
Non-SOI	$2.04

Revenue

Total	$23,514,107
SOI	$17,197,008
Non-SOI	$6,317,098
% SOI	73%

Percent of Revenue by Species Group

Shallow Water Groupers	12%
Shallow Water Snappers	24%
Mid-Shelf Snappers	13%
Deep Water Groupers/Tilefish	15%
Grunt/Porgy/Sea Bass/Trigger	8%
Mackerels/Dolphinfish/Jacks	20%
Other Species	8%

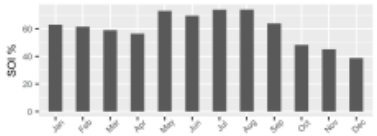
Revenue for Top 5 Species

Yellowtail Snapper	$4,940,022
Vermilion Snapper	$2,857,551
Tilefish	$2,336,490
King and Cero Mackerel	$2,335,984
Greater Amberjack	$1,247,716

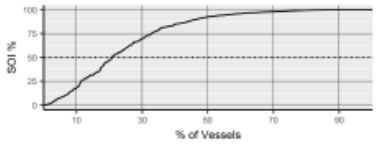
Annual, Vessel Descriptive Statistics (N=509)

	Mean	Min	Median	Max
Trips	30.1	1	19	234
Days at Sea	46.7	1	31	234
Crew Days	96.5	1	61	545
Landings	16,105	10	6,966	210,425
Revenue	$46,197	$34	$21,886	$541,023
SOI	$33,786	$3	$12,699	$239,006
% SOI	75.9%	0%	92.7%	100%

SOI Share of Monthly Landings



SOI Share of Revenue Per Vessel



Percent with Federal Permit

GOM Reef Fish	9%
SAT Snapper & Grouper - Unlimited	91%
SAT Snapper & Grouper - Limited	10%
King Mackerel	62%
Spanish Mackerel	70%
Dolphin-Wahoo	93%
Other Commercial Fishing	29%
For-Hire Fishing	28%

Vessel Characteristics (N=509)

	Mean	Min	Median	Max
Length	33	17	32	70
Year Built	1990	1954	1988	2016
Horsepower	400	50	350	1,350
Fiberglass Hull	98%	-	-	-
Diesel Engine	65%	-	-	-
Ice Refrigeration	93%	-	-	-

Page 4:

SOI: 2016 SAT Snapper-Grouper FMP Fishery: All Gears

Annual, Vessel-Level Economics

Response Rate for SOI Vessels

	Vessels	%SOI	%Selected	%Responded
SOI	509	-	-	-
Selected	132	26%	-	-
Responded	102	20%	77%	-
Used	94	18%	71%	92%

Economic Results (n=94)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Vessel					
Owner-Operated	89%	3.4	83%	94%	-
For-Hire Active	12%	3.5	6%	18%	-
Days - Commercial Fishing	80	6.3	70	91	69
Days - For-Hire Fishing	10	2.9	5	15	0
Days - Non-fishing	3	1.1	1	5	0
Vessel Value	93,685	10,395	76,410	110,960	65,000
Has Insurance	45%	5.3	36%	54%	-
Total Revenue	69,373	9,014	54,393	84,352	40,861
Commercial Fishing	57,489	7,194	45,534	69,444	35,631
For-Hire Fishing	11,883	5,442	2,840	20,926	0
Cost					
Fuel	7,037	717	5,845	8,229	4,836
Other Supplies	10,015	1,277	7,892	12,138	5,000
Hired Crew	19,274	2,853	14,534	24,014	6,152
Vessel Repair & Maintenance	10,503	1,766	7,569	13,437	5,152
Insurance	1,478	265	1,037	1,919	0
Overhead	7,100	974	5,482	8,718	3,642
Loan Payment	3,211	1,173	1,261	5,161	0
IFQ Purchase	23	14	−1	46	0
OC Owner-Captain Time	9,052	984	7,417	10,688	3,793
Depreciation	4,684	520	3,820	5,548	3,250
Net Cash Flow	10,733	4,339	3,522	17,944	6,290
Net Revenue from Operations*	230	4,328	−6,963	7,423	−2,775

Net Cash Flow and Net Revenue from Operations* as Proportion of Vessel Revenue (Margins)

Revenue 100%	Net Cash Flow 16%	Net Revenue - Operations 0%
	Loan Payment 5%	Depreciation 7%
	Vessel R&M, Insur, Overh 28%	Vessel R&M, Insur, Overh 28%
	Labor - Hired Crew 28%	Labor - Hired & Owner 41%
	Fuel & Supplies 25%	Fuel & Supplies 25%

Economic Return* (on Vessel Asset Value): 0.2%

* Accruing to vessel owner AND IFQ shareholder. See Definitions.

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Page 5:

SOI: 2016 SAT Snapper-Grouper FMP Fishery: All Gears

Trip-Level Time Series

Trip-Level Summary

	2014	2015	2016	Average
Effort				
Trips	12,140	11,036	11,386	11,521
Vessels	527	518	509	518
Days at Sea	20,768	19,357	18,878	19,668
Landings (gutted lbs)				
Total	6,281,668	5,763,319	5,680,861	5,908,616
SOI	5,655,496	5,267,893	5,101,373	5,341,587
Non-SOI	626,172	495,426	579,488	567,029
% SOI	90%	91%	90%	90%
Price (mean)				
Total	$3.23	$3.27	$3.31	$3.27
SOI	$3.19	$3.30	$3.37	$3.29
Non-SOI	$3.46	$2.97	$2.75	$3.06
Revenue				
Total	$20,235,150	$18,886,806	$18,789,938	$19,303,965
SOI	$18,065,600	$17,415,709	$17,197,008	$17,559,439
Non-SOI	$2,169,552	$1,471,097	$1,592,930	$1,744,526
% SOI	89%	92%	92%	91%

Trip-Level Economics

	2014	2015	2016	Average
Number of Observations	2,962	2,588	2,612	
Response Rate (%)	83%	83%	94%	
SOI Trip				
Owner-Operated	83%	88%	82%	84.3%
Fuel Used per Day at Sea (gallons/day)	33	38	41	37
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	13.4%	11.4%	9.3%	11.4%
Bait	6.9%	7.2%	7.2%	7.1%
Ice	1.9%	1.9%	2.1%	2%
Groceries	3.2%	2.8%	3.5%	3.2%
Miscellaneous	2.8%	2.7%	2.8%	2.8%
Hired Crew	32.6%	32.7%	29.4%	31.6%
IFQ Purchase	0%	0%	0%	0%
OC Owner-Captain Time	19.6%	17.8%	17%	18.1%
Trip Net Cash Flow*	39.1%	41.3%	45.7%	42%
Trip Net Revenue*	19.5%	23.5%	28.7%	23.9%
Labor - Hired & Owner	52.2%	50.5%	46.4%	49.7%
Fuel & Supplies	28.3%	25.9%	24.9%	26.4%
Input Prices				
Fuel Price (per gallon)	$3.68	$2.87	$2.22	$2.92
Hire Crew Wage (per crew-day)	$268	$283	$247	$266
Productivity Measures				
Landings/Fuel Use (lbs/gallon)	8.7	7.8	6.8	8
Landings/Labor Use (lbs/crew-day)	150	150	141	147

Page 6:

SOI: 2016 SAT Snapper-Grouper FMP Fishery: All Gears

Annual, Vessel-Level Time Series

Annual, Vessel-Level Summary

	2014	2015	2016	Average
Effort				
Vessels	527	518	509	518
Trips - Total	16,452	14,965	15,312	15,576
SOI Trips	12,140	11,036	11,386	11,521
Non-SOI Trips	4,312	3,929	3,926	4,056
Days at Sea	26,219	24,454	23,772	24,815
Landings (gutted lbs)				
Total	9,044,887	8,262,325	8,197,473	8,501,562
SOI	5,655,496	5,267,893	5,101,373	5,341,587
Non-SOI	3,389,391	2,994,432	3,096,100	3,159,974
% SOI	63%	64%	62%	63%
Revenue				
Total	$25,363,247	$23,704,881	$23,514,107	$24,194,078
SOI	$18,065,600	$17,415,709	$17,197,008	$17,559,439
Non-SOI	$7,297,648	$6,289,173	$6,317,098	$6,634,640
% SOI	71%	73%	73%	72%
Vessel Characteristics				
Length	33	33	33	33
Year Built	1989	1989	1990	1989
For-Hire Fishing Permit	27%	26%	28%	27%

Annual, Vessel-Level Economics

	2014	2015	2016	Average
Number of Observations	75	101	94	
Response Rate (%)	50%	75%	71%	
SOI Vessel				
Owner-Operated	85%	91%	89%	88%
For-Hire Active	22%	19%	12%	18%
Vessel Value	$77,267	$77,428	$93,685	$82,793
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	15%	11.7%	10.1%	12.3%
Other Supplies	12.1%	12.9%	14.4%	13.1%
Hired Crew	28.4%	23.8%	27.8%	26.7%
Vessel Repair & Maintenance	14.7%	15.7%	15.1%	15.2%
Insurance	1.5%	1.6%	2.1%	1.7%
Overhead	6.8%	8.4%	10.2%	8.5%
Loan Payment	2.5%	3.3%	4.6%	3.5%
IFQ Purchase	0%	0.1%	0%	0%
OC Owner-Captain Time	10.6%	12.8%	13%	12.1%
Net Cash Flow	18.9%	22.4%	15.5%	18.9%
Net Revenue for Operations*	5.6%	7.7%	0.3%	4.5%
Depreciation	5.3%	5.3%	6.8%	5.8%
Vessel R&M, Insur, Overh	23%	25.7%	27.5%	25.4%
Labor - Hired & Owner	39%	36.6%	40.8%	38.8%
Fuel & Supplies	27.1%	24.6%	24.6%	25.4%
Economic Return* (on asset value)	5.4%	7.3%	0.2%	4.3%

Snapper-Grouper Fishery

Segments of Interest (SOI) in the Report

Overall Snapper-Grouper FMP SOI

1. SAT Snapper-Grouper FMP Fishery: All Gears

SOIs based on species perspective

2. SAT Yellowtail Snapper Fishery: All Gears
3. SAT Vermilion Snapper Fishery: All Gears
4. SAT Gag Grouper Fishery: All Gears
5. SAT Black Sea Bass Fishery: All Gears
6. SAT Triggerfish Fishery: All Gears
7. SAT Scamp Fishery: All Gears

SOIs based on species group perspective

8. SAT FMP Deepwater Fishery: All Gears
9. SAT FMP Jacks Fishery: All Gears
10. SAT FMP SWGCS[8] Fishery: All Gears

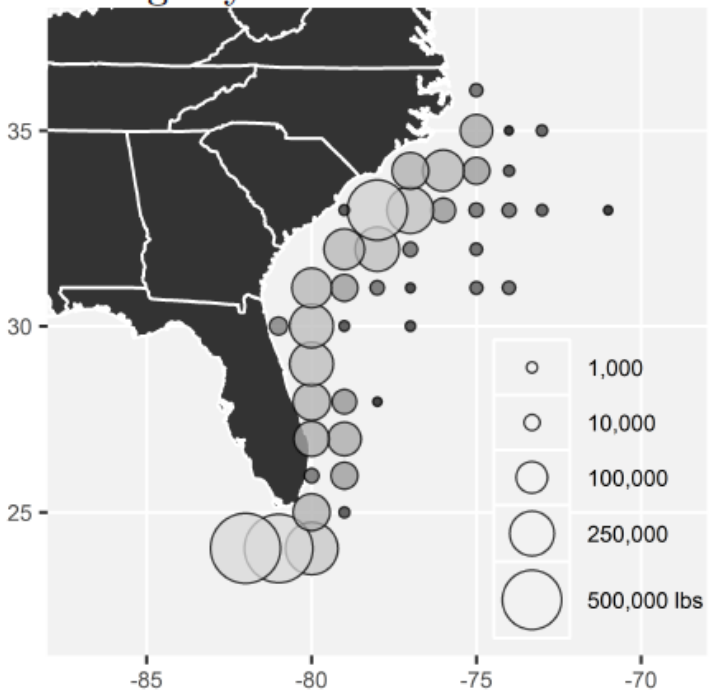
SOI based on permit perspective

11. SAT Snapper-Grouper FMP Fishery: All Gears, SG2 Permit

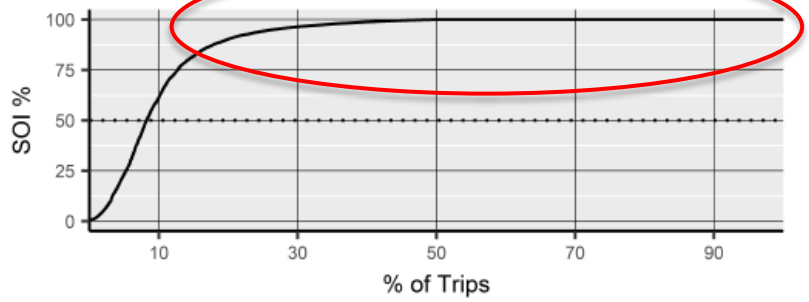
Trip-Level Summary

Effort	
Trips	11,386
Vessels	509
Days at Sea	18,878
Crew Days	40,565
Revenue	
Total	$18,789,938
SOI	$17,197,008
Non-SOI	$1,592,930
% SOI	92%

SOI Landings by Area Fished



SOI Share of Revenue Per Trip



Trip Descriptive Statistics (N=11,386)

	Mean	Min	Median	Max
Days at Sea	1.7	1	1	17
Crew Size	2	1	2	8
Landings	499	2	256	7,867
Revenue	$1,650	$8	$868	$28,370
SOI	$1,510	$1	$772	$26,308
% SOI	90%	0.1%	100%	100%

Trip-Level Economics

Economic Results (n=2,612)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Trip					
Owner-Operated	82%	3.1	77%	87%	-
Days at Sea	1.8	0.2	1.5	2.1	1
Crew Size	2	0.1	1.9	2.1	2
Fuel Used	74	7	62	86	50
Landings (gutted lbs)	503	57	408	598	245
Total Revenue	1,761	206	1,420	2,103	938
Cost					
Fuel	165	15	140	189	110
Bait	126	23	88	165	50
Ice	38	5	29	46	16
Groceries	62	10	46	78	20
Miscellaneous	49	16	23	75	10
Hired Crew	517	84	377	657	160
IFQ Purchase	0	0	0	0	0
OC Owner-Captain Time	299	35	241	358	150
Trip Net Cash Flow*	805	86	661	948	410
Trip Net Revenue*	505	74	383	628	169

Trip-Level Economics, cont.

Trip Net Cash Flow* and Trip Net Revenue* as Proportion of Trip Revenue (Margins)

<table>
<tr><td rowspan="3">Revenue 100%</td><td>Trip Net Cash Flow* 46%</td><td>Trip Net Revenue* 29%</td></tr>
<tr><td>Labor - Hired 29%</td><td rowspan="2">Labor - Hired & Owner 46%</td></tr>
<tr><td>Fuel & Supplies 25%</td><td>Fuel & Supplies 25%</td></tr>
</table>

Input Prices

Fuel Price (average): $2.22 per gallon

Hired Crew Wage (implicit): $247 per crew-day

Productivity Measures

Landings/Fuel Use: 6.8 lbs/gallon

Landings/Labor Use: 141 lbs/crew-day

* See Definitions in Methods Section or Glossary.

Time Series – Trip-Level Economics

	2014	2015	2016	Average
Number of Observations	2,962	2,588	2,612	
Response Rate (%)	83%	83%	94%	
SOI Trip				
Owner-Operated	83%	88%	82%	84.3%
Fuel Used per Day at Sea (gallons/day)	33	38	41	37
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	13.4%	11.4%	9.3%	11.4%
Bait	6.9%	7.2%	7.2%	7.1%
Ice	1.9%	1.9%	2.1%	2%
Groceries	3.2%	2.8%	3.5%	3.2%
Miscellaneous	2.8%	2.7%	2.8%	2.8%
Hired Crew	32.6%	32.7%	29.4%	31.6%
IFQ Purchase	0%	0%	0%	0%
OC Owner-Captain Time	19.6%	17.8%	17%	18.1%
Trip Net Cash Flow*	39.1%	41.3%	45.7%	42%
Trip Net Revenue*	19.5%	23.5%	28.7%	23.9%
Labor - Hired & Owner	52.2%	50.5%	46.4%	49.7%
Fuel & Supplies	28.3%	25.9%	24.9%	26.4%
Input Prices				
Fuel Price (per gallon)	$3.68	$2.87	$2.22	$2.92
Hire Crew Wage (per crew-day)	$268	$283	$247	$266
Productivity Measures				
Landings/Fuel Use (lbs/gallon)	8.7	7.8	6.8	8
Landings/Labor Use (lbs/crew-day)	150	150	141	147

Annual, Vessel-Level Summary

Effort	
Vessels	509
Trips - Total	15,312
SOI Trips	11,386
Non-SOI Trips	3,926

Revenue	
Total	$23,514,107
SOI	$17,197,008
Non-SOI	$6,317,098
% SOI	73%

Annual, Vessel Descriptive Statistics (N=509)

	Mean	Min	Median	Max
Trips	30.1	1	19	234
Days at Sea	46.7	1	31	234
Crew Days	96.5	1	61	545
Landings	16,105	10	6,966	210,425
Revenue	$46,197	$34	$21,886	$541,023
SOI	$33,786	$3	$12,699	$239,006
% SOI	75.9%	0%	92.7%	100%

Percent with Federal Permit	
GOM Reef Fish	9%
SAT Snapper & Grouper - Unlimited	91%
SAT Snapper & Grouper - Limited	10%
King Mackerel	62%
Spanish Mackerel	70%
Dolphin-Wahoo	93%
Other Commercial Fishing	29%
For-Hire Fishing	28%

Vessel Characteristics (N=509)

	Mean	Min	Median	Max
Length	33	17	32	70
Year Built	1990	1954	1988	2016
Horsepower	400	50	350	1,350
Fiberglass Hull	98%	-	-	-
Diesel Engine	65%	-	-	-
Ice Refrigeration	93%	-	-	-

Annual, Vessel-Level Economics

Economic Results (n=94)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Vessel					
Owner-Operated	89%	3.4	83%	94%	-
For-Hire Active	12%	3.5	6%	18%	-
Days - Commercial Fishing	80	6.3	70	91	69
Days - For-Hire Fishing	10	2.9	5	15	0
Days - Non-fishing	3	1.1	1	5	0
Vessel Value	93,685	10,395	76,410	110,960	65,000
Has Insurance	45%	5.3	36%	54%	-
Total Revenue	69,373	9,014	54,393	84,352	40,861
Commercial Fishing	57,489	7,194	45,534	69,444	35,631
For-Hire Fishing	11,883	5,442	2,840	20,926	0
Cost					
Fuel	7,037	717	5,845	8,229	4,836
Other Supplies	10,015	1,277	7,892	12,138	5,000
Hired Crew	19,274	2,853	14,534	24,014	6,152
Vessel Repair & Maintenance	10,503	1,766	7,569	13,437	5,152
Insurance	1,478	265	1,037	1,919	0
Overhead	7,100	974	5,482	8,718	3,642
Loan Payment	3,211	1,173	1,261	5,161	0
IFQ Purchase	23	14	−1	46	0
OC Owner-Captain Time	9,052	984	7,417	10,688	3,793
Depreciation	4,684	520	3,820	5,548	3,250
Net Cash Flow	10,733	4,339	3,522	17,944	6,290
Net Revenue from Operations*	230	4,328	−6,963	7,423	−2,775

Annual, Vessel-Level Economics, cont.

Net Cash Flow and Net Revenue from Operations* as Proportion of Vessel Revenue (Margins)

<table>
<tr><td rowspan="5">Revenue 100%</td><td>Net Cash Flow 16%</td><td>Net Revenue - Operations 0%</td></tr>
<tr><td>Loan Payment 5%</td><td>Depreciation 7%</td></tr>
<tr><td>Vessel R&M, Insur, Overh 28%</td><td>Vessel R&M, Insur, Overh 28%</td></tr>
<tr><td>Labor - Hired Crew 28%</td><td rowspan="2">Labor - Hired & Owner 41%</td></tr>
<tr><td>Fuel & Supplies 25%</td><td>Fuel & Supplies 25%</td></tr>
</table>

Economic Return* (on Vessel Asset Value): 0.2%

* Accruing to vessel owner AND IFQ shareholder. See Definitions.

Time Series – Annual, Vessel-Level Economics

	2014	2015	2016	Average
Number of Observations	75	101	94	
Response Rate (%)	50%	75%	71%	
SOI Vessel				
Owner-Operated	85%	91%	89%	88%
For-Hire Active	22%	19%	12%	18%
Vessel Value	$77,267	$77,428	$93,685	$82,793
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	15%	11.7%	10.1%	12.3%
Other Supplies	12.1%	12.9%	14.4%	13.1%
Hired Crew	28.4%	23.8%	27.8%	26.7%
Vessel Repair & Maintenance	14.7%	15.7%	15.1%	15.2%
Insurance	1.5%	1.6%	2.1%	1.7%
Overhead	6.8%	8.4%	10.2%	8.5%
Loan Payment	2.5%	3.3%	4.6%	3.5%
IFQ Purchase	0%	0.1%	0%	0%
OC Owner-Captain Time	10.6%	12.8%	13%	12.1%
Net Cash Flow	18.9%	22.4%	15.5%	18.9%
Net Revenue for Operations*	5.6%	7.7%	0.3%	4.5%
Depreciation	5.3%	5.3%	6.8%	5.8%
Vessel R&M, Insur, Overh	23%	25.7%	27.5%	25.4%
Labor - Hired & Owner	39%	36.6%	40.8%	38.8%
Fuel & Supplies	27.1%	24.6%	24.6%	25.4%
Economic Return* (on asset value)	5.4%	7.3%	0.2%	4.3%

Economics of the S&G fishery

	SAT S&G
Landings	5,341,587
Revenue	**17,559,439**
Costs	
Fuel & Supplies	25.4%
Labor - Hired & Owner	38.8%
Vessel R&M, Insure, Overhead	25.4%
Depreciation	5.8%
Net Revenue from Operations	**4.5%**
Opportunity Cost - Capital	4.5%
Resource Rent (approx)	**0.1%**

Comparison with a fishery with resource rent

Economics of the S&G fishery, compared

	SAT S&G	GOM RF
Landings	5,341,587	15,176,791
Revenue	**17,559,439**	**61,199,156**
Costs		
Fuel & Supplies	25.4%	17.1%
Labor - Hired & Owner	38.8%	31.5%
Vessel R&M, Insure, Overhead	25.4%	14.1%
Depreciation	5.8%	3.3%
Net Revenue from Operations	**4.5%**	**34.0%**
Opportunity Cost - Capital	4.5%	2.4%
Resource Rent (approx)	**0.1%**	**31.6%**

Lots of vessels, lots of trips, more effort

	SAT S&G	GOM RF	S&G/RF Ratio (per lb basis)
Fishery			
Landings	5,341,587	15,176,791	1.0
Price	3.29	4.03	0.8
Revenue	17,559,439	61,199,156	0.8
Effort			
Vessels	518	522	2.8
Trips	11,521	6,751	4.8
Crew days	40,565	89,035	1.3

Comparison of Trips (2016)

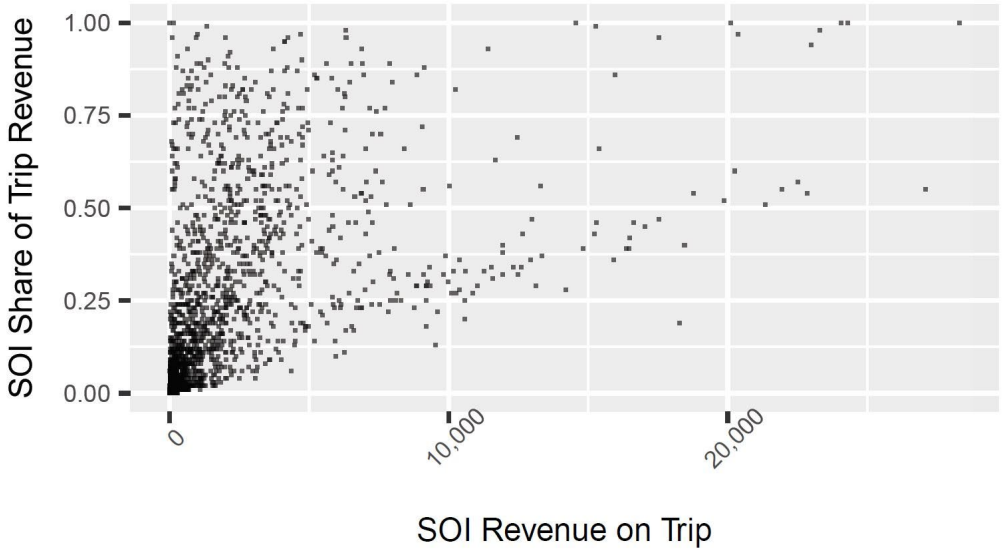
	SAT S&G	GOM RF
Population		
Days at sea	1.7	4.4
Crew size	2.0	2.8
Landings (lbs)	499	2,262
% of Landings in Fishery	90%	96%
Survey		
Owner operated	82%	68%
Fuel used (gallons)	74	179
Landings/gallon	6.8	11.4
Landings/crew-day	141	169

Why so many trips?

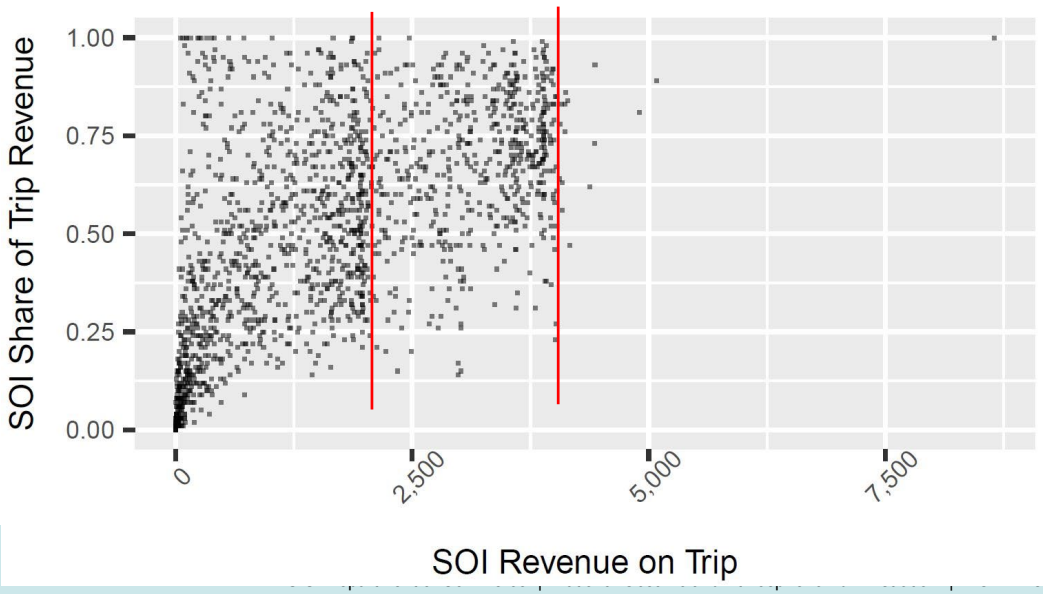
(trip limits)

Vermilion % of Rev vs. Vermilion Rev on Trip

GOM - Vermilion Snapper



SAT - Vermilion Snapper



FB19-023

FISHERY BULLETIN ISSUE DATE: May 1, 2019

CONTACT: Sustainable Fisheries (727) 824-5305

South Atlantic Vermilion Snapper Commercial Trip Limit Reduced to 555 Pounds Whole Weight on May 6, 2019

WHAT/WHEN:

- The daily trip limit for the commercial harvest of vermilion snapper in federal waters of the South Atlantic is reduced from 1,100 to 555 pounds whole weight or from 1,000 to 500 pounds gutted weight, effective **12:01 a.m., local time, on May 6, 2019.**

WHY THIS TRIP LIMIT REDUCTION IS HAPPENING:

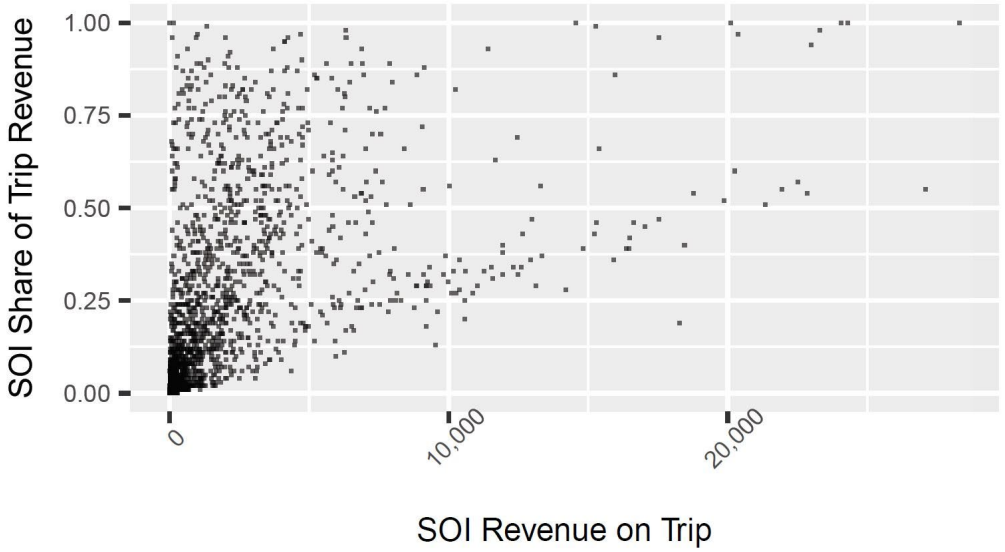
- When commercial landings of South Atlantic vermilion snapper reach or are projected to reach 75 percent of the quota, regulations are in place to reduce the daily trip limit.
- The trip limit reduction is necessary to slow the rate of commercial harvest to avoid exceeding the quota.

AFTER THE TRIP LIMIT REDUCTION:

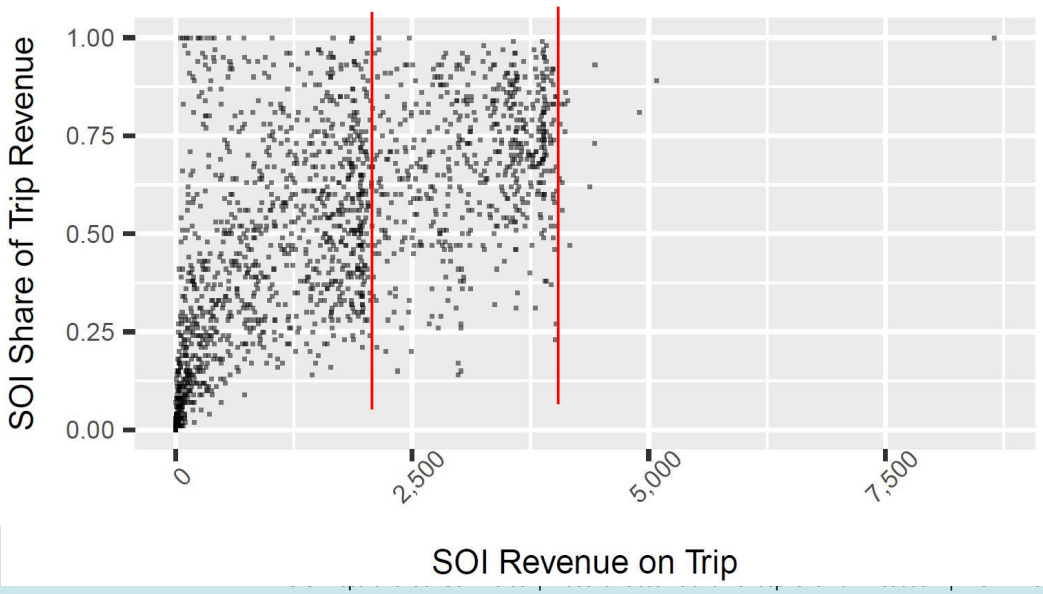
- The 555-pound whole weight or 500-pound gutted weight trip limit will remain in effect until the end of the current fishing season on June 30, 2019, or when 100 percent of the quota is reached or projected to be reached, whichever occurs first. The second 2019 vermilion snapper season in the South Atlantic will open at 12:01 a.m., local time, on July 1, 2019, with a 1,100-pound whole weight or 1,000-pound gutted weight trip limit.

Vermilion % of Rev vs. Vermilion Rev on Trip

GOM - Vermilion Snapper



SAT - Vermilion Snapper



Why so many vessels?

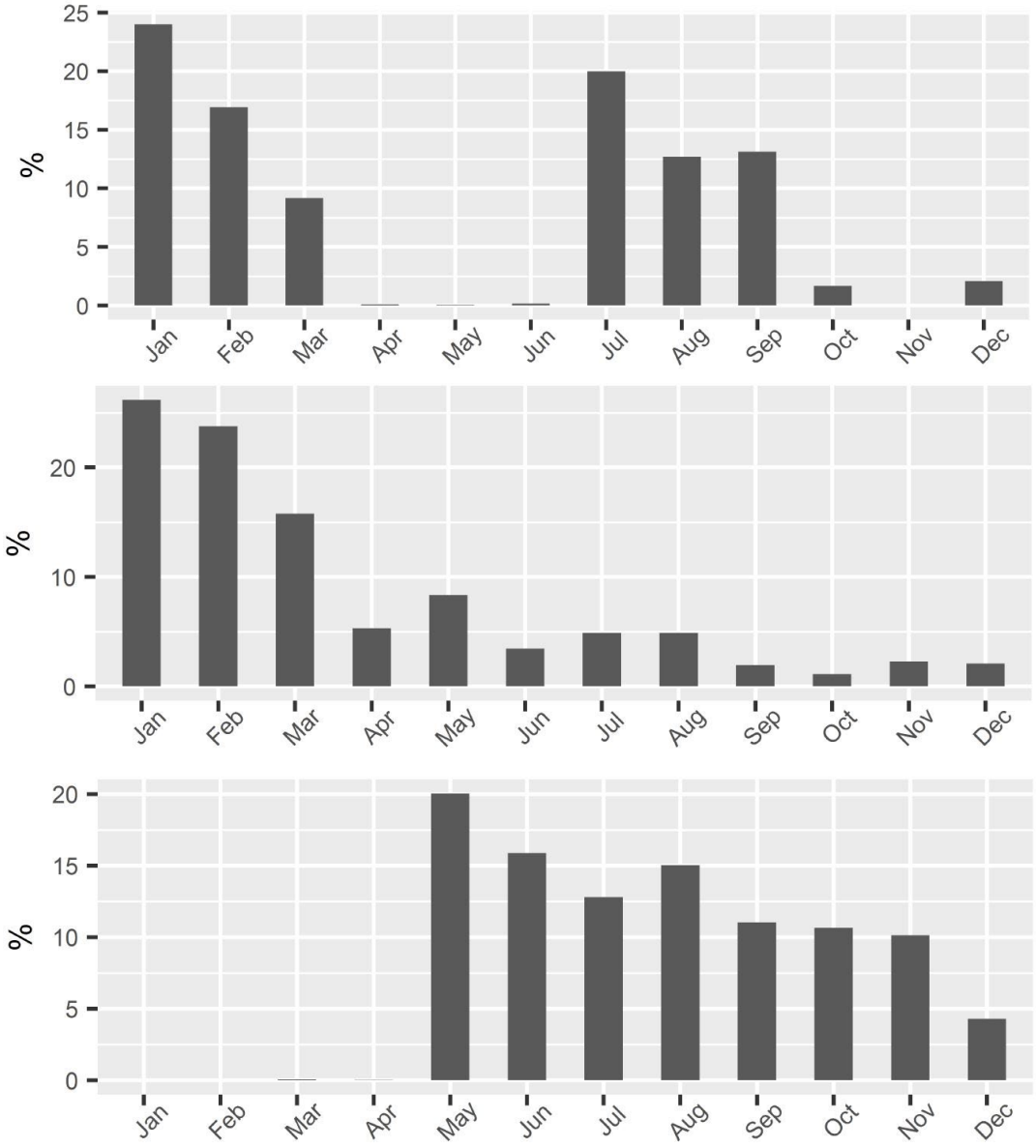
(races to fish due to quota closures)

Effect of seasons and quotas

SAT Vermilion Snapper

SAT Deepwater Species

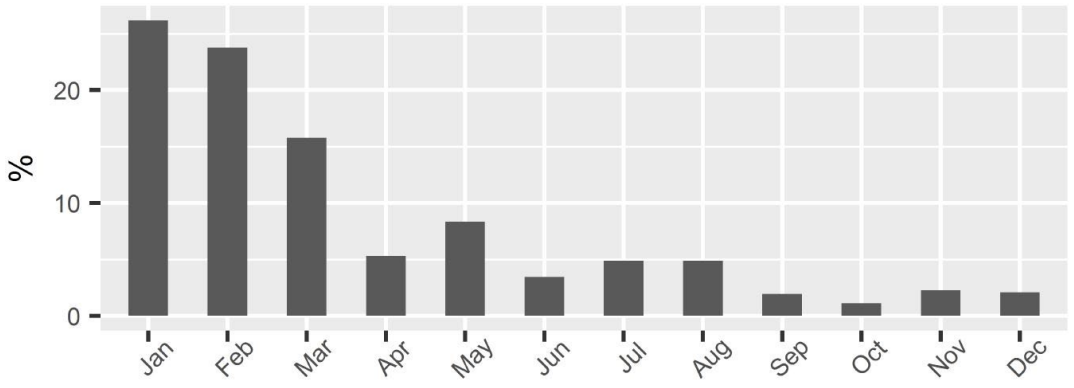
SAT Gag, Scamp, Shallow Groupers

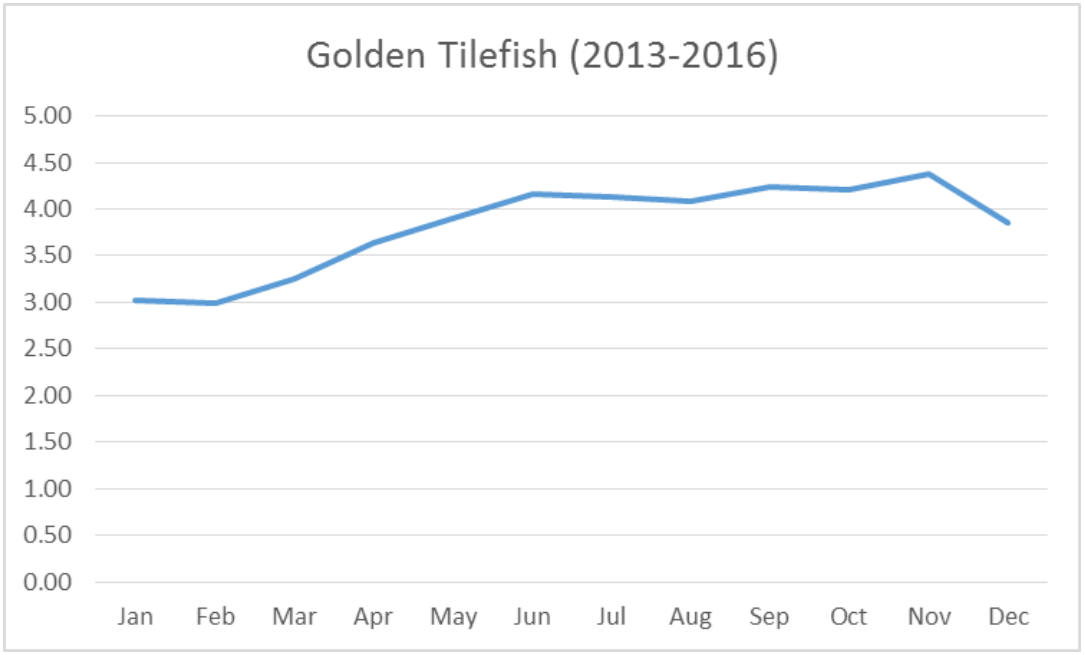


Price effect of regulation?

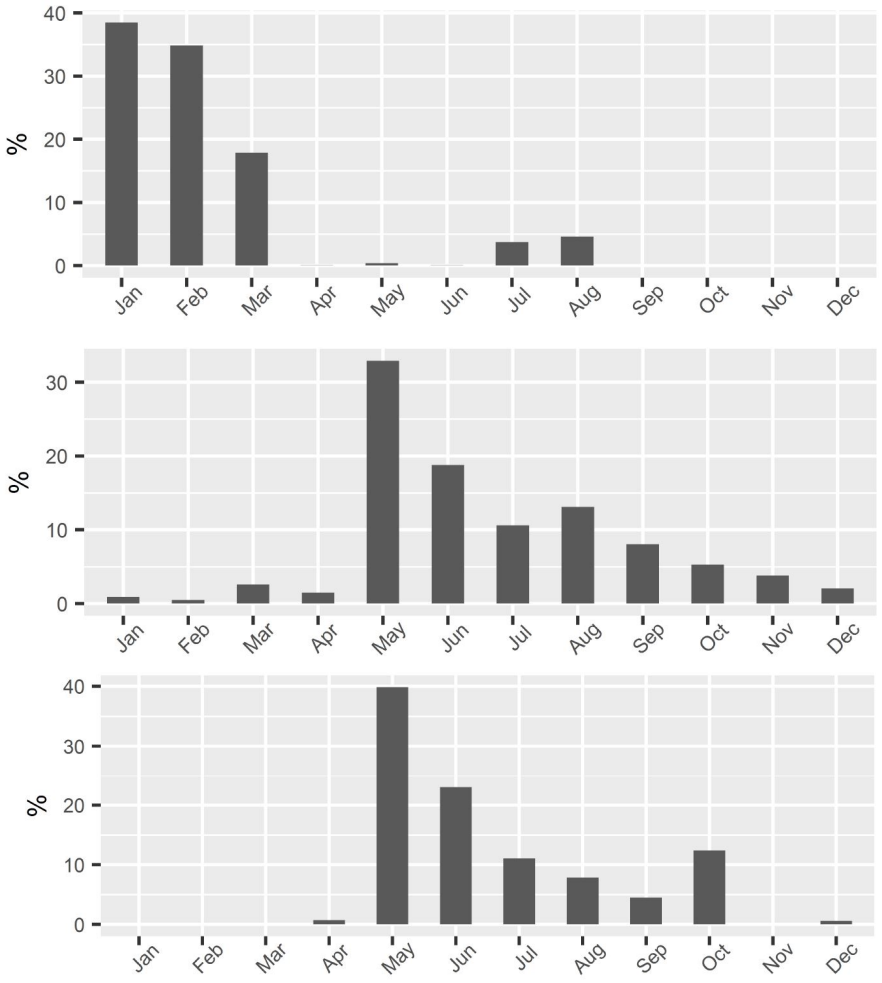
Prices?

More research Needed!





Monthly landings by gear use:
SAT S&G vs. GOM RF



What's lost?

Scenarios: SAT S&G Fishery as economically efficient as GOM RF (in USD millions)

	Current	Scenario A Efficient Production	Scenario B adds Price Increase	Changes
Revenue	**17.6**	**17.6**	**20.9**	**+3.3**
Costs				
Fuel & Supplies	4.5	3.6	3.6	-0.9
Labor - Hired & Owner	6.8	6.6	6.6	-0.2
Vessel R&M, Insure, Overhead	4.5	2.9	2.9	-1.5
Depreciation	1.0	0.7	0.7	-0.3
Net Revenue from Operations	**0.8**	**3.8**	**7.1**	**+6.3**
Opportunity Cost - Capital	0.8	0.5	0.5	-0.3
Resource Rent (approx)	**0.0**	**3.3**	**6.6**	**+6.6**

Scenarios: SAT S&G Fishery as economically efficient as GOM RF (in USD millions)

	Current	Scenario A Efficient Production	Scenario B adds Price Increase	Changes
Revenue	**17.6**	**17.6**	**20.9**	**+3.3**
Costs				
Fuel & Supplies	4.5	3.6	3.6	-0.9
Labor - Hired & Owner	6.8	6.6	6.6	-0.2
Vessel R&M, Insure, Overhead	4.5	2.9	2.9	-1.5
Depreciation	1.0	0.7	0.7	-0.3
Net Revenue from Operations	**0.8**	**3.8**	**7.1**	**+6.3**
Opportunity Cost - Capital	0.8	0.5	0.5	-0.3
Resource Rent (approx)	**0.0**	**3.3**	**6.6**	**+6.6**

Scenarios: SAT S&G Fishery as economically efficient as GOM RF (in USD millions)

	Current	Scenario A Efficient Production	Scenario B adds Price Increase	Changes
Revenue	**17.6**	**17.6**	**20.9**	**+3.3**
Costs				
Fuel & Supplies	4.5	3.6	3.6	-0.9
Labor - Hired & Owner	6.8	6.6	6.6	-0.2
Vessel R&M, Insure, Overhead	4.5	2.9	2.9	-1.5
Depreciation	1.0	0.7	0.7	-0.3
Net Revenue from Operations	**0.8**	**3.8**	**7.1**	**+6.3**
Opportunity Cost - Capital	0.8	0.5	0.5	-0.3
Resource Rent (approx)	**0.0**	**3.3**	**6.6**	**+6.6**

Scenarios: SAT S&G Fishery as economically efficient as GOM RF (in USD millions)

	Current	Scenario A Efficient Production	Scenario B adds Price Increase	Changes
Revenue	**17.6**	**17.6**	**20.9**	**+3.3**
Costs				
Fuel & Supplies	4.5	3.6	3.6	-0.9
Labor - Hired & Owner	6.8	6.6	6.6	-0.2
Vessel R&M, Insure, Overhead	4.5	2.9	2.9	-1.5
Depreciation	1.0	0.7	0.7	-0.3
Net Revenue from Operations	**0.8**	**3.8**	**7.1**	**+6.3**
Opportunity Cost - Capital	0.8	0.5	0.5	-0.3
Resource Rent (approx)	**0.0**	**3.3**	**6.6**	**+6.6**

Summary

SAT S&G fishery economics/management

- Lots of reactive management (limited entry, species quotas and closures, seasons, trip limits) drive behavior and determine economics

- Dissipating ~$3-6 million of annual resource rent by using:
  - Twice as many vessels and associated gear
  - Using 300,000 more gallons of fuel on shorter, inefficient trips
  - 20% too much labor
  - Lower price of fish?
  - Probably lots of discarding

Questions