



NOAA TECHNICAL MEMORANDUM NMFS-SEFSC-752
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ECONOMICS OF THE U.S. SOUTH ATLANTIC AND GULF OF MEXICO KING MACKEREL AND SPANISH MACKEREL FISHERIES - 2018

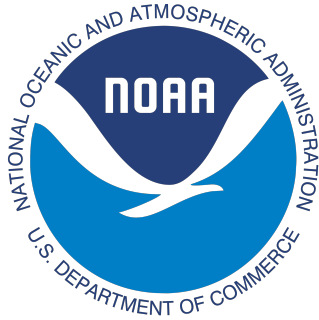
BY

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Contents

Introduction	1
Methods	2
Data	2
Cleaning	3
Definition: Segment of Interest (SOI)	4
Estimation	4
Standardized Results and Definitions	5
Section: Trip-Level Summary	5
Section: Trip-Level Economics	7
Section: Annual, Vessel-Level Summary	9
Section: Annual, Vessel-Level Economics	11
Section: Trip-Level Time Series	13
Section: Annual, Vessel-Level Time Series	14
Results	15
Disclaimer and Overview	15
SOI: 2018 SAT King Mackerel Fishery: All Gears	18
SOI: 2018 GOM King Mackerel Fishery: All Gears	24
SOI: 2018 SAT King Mackerel Fishery: Vertical Line	30
SOI: 2018 SAT King Mackerel Fishery: Trolling	36
SOI: 2018 GOM King Mackerel Fishery: Vertical Line	42
SOI: 2018 GOM King Mackerel Fishery: Trolling	48
SOI: 2018 SAT Spanish Mackerel Fishery: All Gears	54
Appendices	60
Appendix 1 - Groups for the "Percent of Revenue by Species Group" Tables	60
Appendix 2 - Glossary/Abbreviations	61

Introduction

This technical memorandum provides summary information and estimated economic information for the commercial sector of the federally-managed coastal migratory pelagic (CMP) fisheries in both the Gulf of Mexico (GOM) and the U.S. South Atlantic (SAT) in calendar year 2018, including a comparison to earlier years. King mackerel, Spanish mackerel, and cobia are the species managed in the CMP fisheries.¹ The fisheries are jointly managed by the GOM Fishery Management Council and the SAT Fishery Management Council through the CMP Fishery Management Plan (FMP). These fisheries have been managed by a combination of complex regional quotas, regional trip-limits, regional gear limits, and regional closures when sub-quotas are met. For detailed information about the CMP FMP, please consult the GOM Council's website at: <http://gulfcouncil.org> as well as the SAT Council's website at: <http://safmc.net/>.

This report's unique focus is on the economics of the commercial harvesting sector in the GOM and SAT CMP fisheries. The report combines trip logbook data (effort and catch at the trip-level) with two supplemental economic sample surveys—one on the logbook itself (and hence at the trip-level); the other is an annual mail survey at the vessel-level. The economic surveys elicit revenue, variable and/or fixed costs by category, and some auxiliary economic variables, such as a vessel's market value. After extensive cleaning and processing, and linking back to the logbook data, the report summarizes the logbook data by meaningful subsets of the overall data (domains in statistical context). We call these subsets Segments of Interest (SOI). In most cases, they are at the species, region, and/or at the gear-level, such as king mackerel or trolling trips. Based on the sample data, estimates of the SOI population means for the economic variables are provided, including net revenues and margins.

A major disclaimer applies to all the results reported in this technical memorandum. **The processing of data and the presentation of results are guided by the objective of presenting meaningful economic results. These numbers will differ from similar numbers generated for stock assessments and other management or research purposes. For instance, there are known reasons for why logbook totals ("near census") will deviate from official ACL/quota numbers. Further, the underlying databases are dynamic and continuously changing.** So while the numbers reported here should generally be of similar magnitude as reported elsewhere, we do not expect them to be identical.

For the CMP species it is important to note: 1. The CMP FMP manages king mackerel north of the SAT Fishery Management Council's jurisdiction. Historically, a few percent of landings are reported (to dealers) by vessels landing between Virginia and Maine. These landings, trips, and vessels are not included in this report; 2. The CMP FMP defines the boundary between the GOM and SAT king mackerel stocks along a line heading due east from the boundary between Miami-Dade and Monroe counties. In contrast, this report delineates GOM and SAT catches based on the area fished falling into GOM or SAT waters; 3. The assumption of the logbook system being a near-census of a fishery does not hold for Spanish mackerel. Dealer-reported landings of Spanish mackerel far exceed logbook-reported landings. As such, the Spanish mackerel results in this report only represent the portion of the overall

¹Note: The cobia fishery is not included in this technical memorandum due to relatively few pounds being commercially landed and a small sample size.

fishery that is federally-permitted and logbook-compliant.

The Methods section describes the sources of the data in more detail, the cleaning processes and assumptions, the statistical estimation approach, and the standardized results. The presentation of results is standardized across different SOIs to streamline the results sections. The definitions and caveats for each result variable or graph are only reported in the methods section in order to keep repetition to a minimum.

The Results section reports on 7 different SOIs. The results for any one SOI consist of six sections, corresponding to six pages. The first section, Trip-Level Summary, summarizes aggregated logbook data at the trip-level for the particular SOI. The second section, Trip-Level Economics, provides estimated SOI trip economic results based on the trip-level sample survey. The third section, Annual, Vessel-Level Summary, provides information on the vessels within the SOI at the annual, vessel-level by aggregating across all the logbook trip data for each vessel. This section also presents vessel characteristics and permit status gleaned from each vessel’s permit application. The fourth section, Annual, Vessel-Level Economics, provides estimated annual economic results for SOI vessels based on the annual sample survey. The fifth section, Trip-Level Time Series, provides selected trip-level summary and economic results for previous years, side-by-side to the current year results and a three year average. The sixth section, Annual, Vessel-Level Time Series, provides the same temporal perspective for selected annual, vessel-level summary and economic results. In both time series sections, the economic results are expressed as a percent of revenue to better facilitate comparison across time. All dollar values are inflation adjusted to nominal 2018 dollars.

Methods

Data

Beginning in 1993, NMFS’s Southeast Fisheries Science Center (SEFSC) required all fishing vessels to report on their commercial fishing activity for federally managed Gulf of Mexico Reef Fish, South Atlantic Snapper-Grouper, Coastal Migratory Pelagic (mackerels and cobia), Shark, and Atlantic Dolphin/Wahoo fisheries. To maintain compliance, fishers are responsible for submitting a trip report form (aka “logbook”) for every commercial fishing trip that harvests or targets these species. Per logbook instructions, “a commercial trip is defined as a trip for profit with no paying customers onboard. Any commercial trip that targets a federally managed species listed under the aforementioned permits must be reported, even if there were no landings.” This results in near-census data of all commercial trips taken by federally-permitted vessels in the fisheries for Reef Fish, Snapper and Grouper, as well as Mackerel, in the Gulf of Mexico and South Atlantic. How close the logbook’s aggregate landings align with dealer reported landings—the official estimates of landings—varies by species. Across 2016 to 2018, aggregate logbook landings account for **90%** and **54%** of dealer reported landings for the GOM and SAT king and Spanish mackerel species, respectively.²

Since 2006, NMFS’s SEFSC has conducted two economic surveys to collect data at both the trip-level and vessel-level in the GOM and SAT CMP FMP fishery. Each year, a subset of federally permitted vessels is randomly selected to provide additional economic data on

²The official estimates of landings are reported annually in the Fisheries of the U.S. These estimates are based on the total pounds and value by species and time period reported to NMFS by seafood dealers (those buying from harvesters).

the logbook. Selection eligibility is based on whether a vessel has a valid federal permit of interest during late November of the previous year. In 2018, vessels were stratified into three strata based on their days at sea during the two years prior to the selection year (e.g., 2016 and 2017 in this case). The three strata are: 1. Inactive, 2. Active - Low (less than 21 days at sea per year in both years), and 3. Active - High (more than 20 days at sea in at least one year).³ A vessel was considered inactive if it did not report any trips to the logbook system during the two years. Approximately 30% of active vessels were selected, while 10% of inactive vessels were selected. Beyond the initial selection, two further vessel selections were conducted throughout the first half of the year to capture vessels new to the fishery and permit renewals (vessels with invalid permits during initial selection).

For each trip, selected vessels must complete the trip expense section located at the bottom of the trip report form. Data collected in this section are for variable costs including expenses for bait, ice, groceries, and IFQ allocation; the amount of fuel used and the cost per gallon of fuel (which are used to estimate fuel costs); whether or not the vessel owner was present on the trip, and whether or not payment for the catch had been determined. If payment was determined, then gross trip revenue and payment to hired crew and hired captain are collected. Instructions and a copy of the logbook trip report form with the trip expense section can be found at this NOAA SEFSC website: https://www.sefsc.noaa.gov/fisheries/reporting_archive.htm.

Early in the following year, selected vessels are mailed an annual expense survey. This survey asks questions pertaining to cumulative trip-level expenses such as fuel, supplies, IFQ allocation, and hired captain and hired crew payments. In addition, the survey asks for annual, vessel-level economic costs—fixed costs—which are not documented on the trip expense section of the logbook. These expenses include the costs for maintaining and repairing the vessel and gear, insurance, loan payments, and overhead (such as mooring, utilities, office staff, professional services, etc.). The annual survey also collects an estimate of the vessel's market value as well as days at sea and revenue from commercial and for-hire fishing.⁴

Besides logbook and economic survey data, this technical memorandum uses vessel permit and characteristics information from NMFS's Southeast Regional Office (SERO). These data are provided by vessel owners on the application for Federal fishing permits in the Southeast. Finally, dealer landings data obtained from the states, as summarized in the ALS (Accumulated Landings System), are used to estimate the ex-vessel seafood prices. An algorithm, using trip information including the dealer, the dealer's location (state), and the month and year landed, is used to estimate a price per pound for each species at the highest resolution possible. This price per pound is used to estimate trip revenue because the logbook forms do not collect price data.

Cleaning

As with utilizing any survey data, cleaning is necessary to ensure the data are complete, accurate, and suitable for analysis. The largest challenge in cleaning both the trip-level and annual, vessel-level economic data is dealing with variable non-response. Depending on

³The active vessels were separated into low and high strata to ensure a sufficient response from the highly active vessels ("high liners") each year. The particular cutoff point roughly splits the active vessels into similar sized groups.

⁴A substantial fraction of commercially permitted vessels also are permitted for taking for-hire trips, and many vessels engage in both activities in a single year.

the variable, non-response is dealt with in different ways. If a value is missing for certain variables, the entire trip observation is dropped. This occurs when a variable is difficult to estimate accurately, such as fuel used on a trip. We replace missing values with zeros for variables where it is more than likely that the value is actually zero and the respondent left it blank. Finally, estimates of trip revenue and payments to hired crew and hired captain are imputed if payment had not been determined by the time the trip form was submitted. Missing trip revenue is replaced with the estimated trip revenue value. Gross mismatches between actual reported revenue (for observations with these data) and estimated revenue lead to these observations being dropped if no data entry error is found. An estimate for missing payments to hired crew is based on a set of regression models (equations). The variables used in the regression models include: trip revenue, crew days (number of hired crew multiplied by days at sea), and total expenses (total spent on bait, fuel, groceries, ice, IFQ allocation, and miscellaneous expenses).

Definition: Segment of Interest (SOI)

Due to large trip and vessel heterogeneity within the logbook data, it is necessary to subset the commercial vessel “population” into more meaningful and tractable sub-populations, or “domains” in a statistical context. These domains could be based on any variables that are available for all trips (or vessels) within the logbook system. Examples of these variables include: Species landed, gear used, area fished, duration of trip, month landed, dealer state, and valid permit status.

This technical memorandum reports trip- and vessel-level economic estimates for a select number of domains we call Segments of Interest (SOI). A SOI is defined as all trips where at least one pound of fish, which matches the specifications of the domain, was landed. For instance, the SOI “SAT Spanish Mackerel Fishery: All gears” would include all trips that caught one or more pounds of Spanish mackerel using any gear in the U.S. South Atlantic. The following items are primarily used to create the SOIs: Area fished, gear used, and species landed.⁵ It is important to note that not all landings on a SOI trip will match the SOI definition and not all trips by SOI vessels will be in the SOI. The naming convention of the SOIs is: Year of data, waterbody of area fished, species, and gear. It should also be noted that the different SOIs in this tech memo are not at all mutually exclusive. In fact, as the majority of trips harvest different species, most trips will be part of many different SOIs.

Estimation

For the economic variables, we estimated SOI-specific population means (averages) using the economic sample data available for that particular SOI. Post-stratification of a SOI domain and its economic sample data allows the statistical estimation to take into account the realized distribution of the usable economic responses across the sampling strata. The weights used in the estimation are based on the total number of vessels in the SOI for each stratum divided by the number of vessels whose expense data are used in the estimation (as the original selection is at the vessel level before any trips are realized). In the process, we correct for trip-level and vessel-level non-response in the simplest manner. Technically, each

⁵Additional segmenting can be carried out on the SOI in order to include trips which meet specific thresholds on SOI’s share of trip revenue as well as a minimum for SOI trip revenue per day. We do not report these here.

economic observation receives a weight specific to: a) the original sampling strata and b) the particular SOI domain under consideration. The trip-level and annual, vessel-level weights are calculated separately and differ due to the particular response “profile” for each survey.

Standardized Results and Definitions

The presentation of results is standardized across different SOIs in order to streamline the results sections. The standardized results for each SOI begin with a text description of the SOI, focusing on its most pertinent aspects. The text also contains important or critical caveats that apply to particular SOIs. The definitions and caveats for each result variable or graph are only reported in this section in order to keep repetition to a minimum.

The results for any one SOI consist of six sections. The first section, Trip-Level Summary, summarizes the SOI at the trip-level—presenting the aggregate, cleaned logbook data for the particular SOI. The second section, Trip-Level Economics, provides SOI trip economic estimates based on the trip-level sample survey. The third section, Annual, Vessel-Level Summary, provides information on the vessels within the SOI at the annual-level by aggregating across all the logbook trip data (SOI and non-SOI trips). This section also presents vessel characteristics and permit status gleaned from each vessel’s permit application. The fourth section, Annual, Vessel-Level Economics, provides estimated annual economic results for SOI vessels based on the annual sample survey. The fifth section, Trip-Level Time Series, provides selected trip-level summary and economic results for previous years, side-by-side to the current year results and a three year average. The sixth section, Annual, Vessel-Level Time Series, provides the same temporal perspective for selected annual, vessel-level summary and economic results. In both time series sections, the economic results are expressed as a percent of revenue to better facilitate comparison across time. All dollar values are inflation adjusted to nominal 2018 dollars. A description of all tables and graphs that are found in these sections is provided below. Percentages may not always sum to 100% in the tables and graphs due to rounding.

Section: Trip-Level Summary

- **Effort:** Number of SOI trips, number of vessels in SOI, and total number of days at sea and crew-days by all SOI trips in the logbook data. The days at sea variable is known to contain some imprecision.
- **Landings (gutted lbs):** Total gutted weight of landings in pounds by SOI trips; broken down into SOI landings and non-SOI landings. "%SOI" shows the percentage share of total landings that qualify as SOI landings. The non-SOI landings occur on SOI trips. In a species-defined SOI, non-SOI landings would be non-SOI species catch. In a gear-defined SOI, non-SOI landings would be landings caught with non-SOI gear on a multi-gear SOI trip. The %SOI indicates the level of SOI criteria specialization (in terms of landings) of SOI trips. A high value indicates that the SOI trips are mostly explained by the SOI criteria. A low value indicates that the SOI landings (i.e., the landings associated with the SOI criteria) are a minor part of the trip and might just be "bycatch".
- **Percent by Gear:** Trips — Percent of trips in the SOI using a particular gear. Multi-gear trips are assigned a "top gear" based on the gear which generated the most revenue.

Vertical line gear includes hand lines, rod and reels, electrical reels and bandit gear. SOI lbs — Percent of SOI landings landed using a particular gear.

- **Price (mean):** Average ex-vessel price per pound of all landings (gutted weight pounds), as well as the average price per pound of SOI landings and of non-SOI landings across SOI trips.
- **Revenue:** Total estimated revenue by all SOI trips; broken down into SOI revenue and non-SOI revenue. %SOI shows the percentage share of total revenue that qualifies as SOI revenue. Revenue is estimated by multiplying catch pounds from the logbook data by the ex-vessel price estimate derived from ALS (dealer) landings data. The %SOI indicates the level of SOI criteria specialization (in terms of revenue) of SOI trips. A high value indicates that the SOI trips are mostly explained by the SOI criteria. A low value indicates that the SOI revenue (i.e., the revenue associated with the SOI criteria) are a minor part of the trip and might just be "bycatch".
- **Revenue Percent by Species Group:** Distribution of estimated revenue on all SOI trips across selected species groups, in percent. Note, these species groups are independent and unrelated to the species-based SOI definitions. See Appendix 1 for the specific species included in each reported group. The first three groups contain the CMP FMP species and some other pelagic species.
- **Revenue for Top 5 Species:** Total estimated species-level revenue for the top 5 species with greatest overall revenue on all SOI trips.
- **SOI Landings by Area Fished:** A bubble map showing where SOI landings are caught in either the Gulf of Mexico, the South Atlantic, or both. Fishing areas are defined based on a 1x1 degree latitude-longitude grid.
- **Share of SOI Landings by Month:** A chart showing the seasonality of total SOI landings.
- **Cumulative SOI Landings:** A graph showing cumulative SOI landings across SOI trips ordered from lowest SOI catch to highest SOI catch. A straight line would indicate very homogeneous trips; a convex shape indicates heterogeneity (in SOI catch). The dashed horizontal line represents 20% of the total SOI landings. Where the line intersects the curve indicates the maximum number of trips which can generate (only) 20% of the SOI landings. One minus the intersects' number of trips (in percent) indicates the (smallest) percent of trips that harvest 80% of SOI landings.
- **SOI Share of Revenue Per Trip:** A graph illustrating the level of specialization (on SOI catch) by SOI trips. The graph maps the SOI share of estimated revenue for each trip in the SOI, with trips ordered from smallest to largest SOI share. Where the dashed horizontal line intersects the curve indicates the percent of trips where the percent of SOI share was 50% or less. The graph illustrates the share of SOI trips where SOI revenue is minor/bycatch (from left, line hugging the x-axis), where the trip is specialized on SOI revenue (moving toward right, line asymptotes toward 100% y-value), and those in between.
- **Trip Descriptive Statistics:** SOI trip summary statistics (mean, minimum, median, maximum) derived from the logbook data: Days at sea, number of crew, (gutted weight) pounds landed, estimated revenue, SOI estimated revenue, and the percent of total

estimated revenue attributed to the SOI. This table allows for an evaluation of the scale of variation and extremes among SOI trips.

Section: Trip-Level Economics

- **Response Rate for SOI Trips:** While the economic survey samples at the vessel level (by design), the rates reported here are at the trip-level. Based on the SOI definition, the total number of trips and the number of trips selected for economic reporting are provided. Further, "Responded" refers to the number of trips that provided at least some economic survey data, while "Used" refers to the number of clean and complete trip observations used in the analysis.
- **Economic Results:** This table reports estimates of the population means for SOI trips based on the sample data; n equals the number of observations in the sample. The population means for the economic variables are generated using a post-stratified, weighted estimation to account for the stratification of the sample and non-response. Also reported are the standard error, the 90% confidence interval for the mean [lower bound (L.B.) and upper bound (U.B.)], and the weighted median. The variables included are:

Owner-Operated: Percentage of SOI trips where the vessel owner was part of the crew, usually the captain. If an owner is not on board, a captain has to be hired (presumably raising the crew expenses).

Days at Sea: The length of trip in days, as reported on the logbook. This variable is known to contain a substantial amount of imprecision (plus or minus one day as fishermen treat partial calendar days and 24 hour periods differently).

Crew Size: Total number of crew members on trip, including the captain.

Fuel Used: The amount of fuel used on a trip in gallons.

Landings (gutted lbs): Total trip landings in gutted weight pounds.

Note, in this section, revenue, costs and net-measures are in nominal U.S. dollars, as reported on the survey (survey year dollars).

Total Revenue: Reported trip revenue when available; augmented with estimated trip revenue when missing. Serious mismatches between reported and estimated trip revenue (when available) were the most frequent reason trips were dropped during data cleaning.

Cost - Fuel: Cost of fuel used on trip; calculated as the price paid per gallon multiplied by the gallons used. In contrast to the other trip costs below, fuel costs are counted regardless of when (or if) the expense for this fuel was incurred, as fuel is easily stored between trips (i.e., fuel purchased prior to but not used on a trip would not be included).

Cost - Bait: Cash expense for bait purchased for trip. The cost of self-caught bait is not included because, presumably, fuel and labor time reflect the production of self-caught bait.

Cost - Ice: Cash expense for ice purchased for trip. The cost of ice generated by

own ice machine(s) is not included because, presumably, fixed costs for gear and electricity reflect the own-production of ice.

Cost - Groceries: Cash expense for groceries purchased for this trip.

Cost - Miscellaneous: Cash expense for other trip-related expenses not accounted for elsewhere, including gloves, supplies for freezing product, etc.

Cost - Hired Crew: Payment to hired crew ("mates") and hired captain (if applicable). Reported expenses for hired crew are the most error-prone data. Substantial cleaning is necessary to make these data usable. Obvious errors and inconsistencies were blanked out, and then hired crew costs were estimated based on a complex algorithm that was developed to distinguish between small, one day trips often taking "voluntary" crew with no or in-kind payment (family, friends, etc.) and longer, professional crew positions where compensation is necessary. The resulting number is a rough estimate and should be treated as such.

IFQ Purchase: Cash expense for IFQ allocation purchased from third parties specifically for the trip. This primarily applies to Gulf of Mexico reef fish fisheries, where two Individual Fishing Quota (IFQ) programs exist for red snapper, groupers and tilefish. Note that many respondents have IFQ shares or long-term/annual arrangements for IFQ allocation. The use ("consumption") of annual allocation on a trip is not accounted for at a trip level in this analysis. Also, the revenue from selling annual allocation is not accounted for as it cannot, in general, be associated with a vessel and hence a trip.

OC Owner-Captain Time: Estimated opportunity cost (OC) of an owner's labor used on the trip. The survey does not collect this information. Instead, a value is imputed based on hired crew remuneration and the profitability of the trip because most labor is compensated based on a share system. The resulting number is a rough estimate and should be treated as such.

Trip Net Cash Flow: Revenue minus the costs for fuel, bait, ice, groceries, miscellaneous, hired crew, and IFQ purchase. The focus is on actual cash transactions/money flows. In-kind contribution to the production process are ignored, including the opportunity cost of owner-captain time, as well as vessel services (fixed costs and overhead) and IFQ allocation use (if not purchased from third parties specifically for the trip). Trip Net Cash Flow represents an estimate of the money (cash) generated by the typical SOI trip over and above the cash cost of taking the trip (marginal or variable costs of trip). This implies a short term perspective.

Trip Net Revenue: Revenue minus the costs for fuel, bait, ice, groceries, miscellaneous, hired crew, and the opportunity cost of owner's time as captain. By including opportunity cost of owner's time (an in-kind, variable factor to production) and excluding IFQ purchase payments, trip net revenue is a measure of the inherent short-term productivity (i.e., economic performance) of the commercial fishing process. For example, if a trip were not taken, with the owner avoiding to pay trip-related costs, then Trip Net Revenue represents the lost income to the owner. Because of the trip perspective, vessel services (fixed costs and overhead) and IFQ allocation use, purchase, or selling is not included. This implies a short term perspective.

- **Trip Net Cash Flow and Trip Net Revenue as Proportion of Trip Revenue**
(**Margins**): A chart showing Trip Net Cash Flow and Trip Net Revenue as a share of trip revenue, i.e., the gross margin of the productive activity before fixed costs are accounted for. The major cost categories that are subtracted from revenue are also displayed in percentage terms. Fuel and Supplies include the cost of fuel, bait, ice, groceries, and miscellaneous. Labor includes just Hired Crew costs for Trip Net Cash Flow and Hired Crew costs and the opportunity cost of Owner's Time for Trip Net Revenue.
- **Input Prices**: The average fuel price per gallon across all gallons used by the SOI trips is reported. This is distinct from the average fuel price across trips (not reported). The Hired Crew Wage (implicit) calculates the average amount paid (as Hired Crew costs) per hired crew-day by the SOI trips. This measure excludes an owner's crew-days in the calculation.
- **Productivity Measures**: Reports the landings (in gutted weight pounds) per gallon of fuel used as well as per crew-day of labor used. The latter measure includes an owner's crew-days in the calculation.

Section: Annual, Vessel-Level Summary

For all SOI vessels, this section summarizes all logbook data. It is important to note that, during a year, some vessels will also engage in commercial fishing trips that do not require federal logbooks, such as lobster, crabs, or other state-managed species. These trips are not accounted for in this section. They ARE accounted for in Section Four: Annual, Vessel-Level Economics.

- **Effort**: Number of SOI vessels, number of total trips by SOI vessels, number of SOI trips, number of non-SOI trips and total number of days at sea and crew-days on all trips by SOI vessels in the logbook data. Non-SOI trips are trips by SOI vessels that did NOT land one pound of fish that matched the SOI definition (species, gear, etc.). The days at sea variable is known to contain some imprecision.
- **Landings (gutted lbs)**: Total gutted weight of landings in pounds of all trips by SOI vessels; broken down into SOI landings and non-SOI landings. "%SOI" shows the percentage share of total landings that qualify as SOI landings. The non-SOI landings occur on all trips by SOI vessels. In a species-defined SOI, non-SOI landings would be non-SOI species catch. In a gear-defined SOI, non-SOI landings would be landings caught with non-SOI gear on a multi-gear SOI trip. The %SOI indicates the level of SOI criteria specialization (in terms of landings) of all trips by SOI vessels. A high value indicates that all trips by SOI vessels are mostly explained by the SOI criteria. A low value indicates that the SOI landings (i.e., the landings associated with the SOI criteria) are a minor part of the vessels' landings and might just be "bycatch".
- **Percent by Gear**: Trips — Percent of all trips by SOI vessels using a particular gear. Multi-gear trips are assigned a "top gear" based on which gear generated the most revenue. Vertical line gear includes hand lines, rod and reels, electrical reels and bandit gear. Total lbs — Percent of total landings by SOI vessels using particular gear.

- **Price (mean)**: Average price of all landings (gutted weight pounds), as well as the average price of SOI landings and of non-SOI landings across all trips by SOI vessels.
- **Revenue**: Total estimated revenue by all trips of SOI vessels; broken down into SOI revenue and non-SOI revenue. %SOI shows the percentage share of total revenue that qualifies as SOI revenue. Revenue is estimated by multiplying catch pounds from the logbook data by the ex-vessel price estimate derived from ALS (dealer) landings data. The %SOI indicates the level of SOI criteria specialization (in terms of revenue) of all trips by SOI vessels. A high value indicates that all trips by SOI vessels are mostly explained by the SOI criteria. A low value indicates that the SOI revenue (i.e., the revenue associated with the SOI criteria) are a minor part of the vessels' landings and might just be incidental catch.
- **Revenue Percent by Species Group**: Distribution of estimated revenue on all trips by SOI vessels across selected species groups, in percent. Note, these species groups are independent and unrelated to the species-based SOI definitions. See Appendix 1 for the specific species included in each reported group. The first three groups contain the CMP FMP species and some other pelagic species.
- **Revenue for Top 5 Species**: Total estimated species-level revenue for the top 5 species with greatest overall revenue on all trips by SOI vessels.
- **Annual, Vessel Descriptive Statistics**: Summary statistics (mean, minimum, median, maximum) for all trips by SOI vessels derived from the logbook data: Number of trips, days at sea, number of crew, (gutted weight) pounds landed, estimated revenue, SOI estimated revenue, and the percent of total estimated revenue attributed to the SOI. This table allows for an evaluation of the scale of variation and extremes among SOI vessels.
- **SOI Share of Monthly Landings**: A chart showing the seasonality of SOI landing relative to all landings.
- **SOI Share of Revenue Per Vessel**: A graph illustrating the level of specialization (on SOI catch) by SOI vessels. The graph maps the SOI share of estimated revenue for each vessel in the SOI, with vessels ordered from smallest to largest SOI share. Where the dashed horizontal line intersects the curve indicates the percent of vessels where the SOI share was 50% or less. The graph illustrates the share of SOI vessels where SOI revenue is minor/bycatch (from left, line hugging the x-axis), where the vessel is specialized on SOI revenue (moving toward right, line asymptotes toward 100% y-value), and those in between.
- **Percent with Federal Permit**: Lists the percent of SOI vessels that had a valid Federal commercial permit for at least one day during the calendar year under consideration by permit or permit category. From the permit database at SERO. Permits or permit categories listed are: GOM and SAT King Mackerel permits, GOM and SAT Spanish Mackerel permits, GOM Reef Fish, SAT Snapper & Grouper (Unlimited and Limited versions), Atlantic Dolphin-Wahoo (applies to SAT, not GOM), Other Commercial Fishing (including permits for sharks, swordfish, spiny lobster, and shrimp), and For-Hire Fishing (any GOM or SAT Federal for-hire permit). The permit status is an indicator for what other fisheries the SOI vessels have the option to participate in (and might be active in).

- **Vessel Characteristics:** Summary statistics (mean, minimum, median, maximum) for SOI vessels derived from the permit database at SERO: Vessel length (in feet), year vessel was built, horsepower of all engines, as well as the percent of vessels with fiberglass hull material, diesel engines, and lack of on-board freezing capability. This table allows for an evaluation of the scale of variation and extremes among SOI vessels.

Section: Annual, Vessel-Level Economics

- **Response Rate for SOI Vessels:** Response rates for the annual economic survey among SOI vessels. Reported are the total number of vessels in the SOI and the number of vessels selected for additional economic reporting. Further, "Responded" refers to the number of vessels that provided (some) annual economic data, while "Used" refers to the number of clean and complete annual, vessel-level observations used in the analysis.
- **Economic Results:** This table reports estimates of the population means for SOI vessels based on the annual economic survey sample data; n equals the number of observations in the sample. The population means for the economic variables are generated using a post-stratified, weighted estimation to account for the stratification of the sample and non-response. Also reported are the standard error, the 90% confidence interval for the mean [lower bound (L.B.) and upper bound (U.B.)], and the weighted median. The variables included are:

Owner-Operated: Percent of SOI vessels where, on the majority of trips, an owner was part of the crew, usually the captain.

For-Hire Active: Percent of SOI vessels that engaged in for-hire fishing during the calendar year.

Days - Commercial Fishing: Number of days at sea a vessel engaged in commercial fishing during a calendar year.

Days - For-Hire Fishing: Number of days at sea a vessel engaged in for-hire fishing during a calendar year.

Days - Non-fishing: Number of days at sea a vessel engaged in non-fishing activities during a calendar year; this could include work in the oil sector, non-fishing for-hire trips, or trips for research purposes. While not the intent of the question, some individuals might be including days the vessel was used for recreational purposes.

Vessel Value: The estimated current market value of the vessel by respondents. Missing values are imputed. In nominal U.S. dollars, as reported on the survey.

Has Insurance: Percent of SOI vessels that have vessel insurance, either hull insurance, P&I insurance ("liability") or both.

Note, in this section, revenue, costs and net-measures are in nominal U.S. dollars, as reported on the survey (survey year dollars).

Total Revenue: Total revenue is sum of commercial and for-hire fishing revenues as reported on annual survey, i.e., total receipts from seafood sales and for-hire fees, respectively.

Commercial Fishing Revenue: Annual gross revenue from commercial fishing, i.e., total ex-vessel receipts from seafood sales. This can include amounts generated from fisheries outside the logbook reporting system, e.g., lobster or blue crab.

For-Hire Fishing Revenue: Annual gross revenue from for-hire fishing.

Cost - Fuel: Annual expenditures for fuel used by vessel.

Cost - Other Supplies: Annual expenditures for non-labor variable inputs other than fuel, including bait, ice, groceries, and miscellaneous.

Cost - Hired Crew: Annual expenditures for hired crew ("mates") and hired captain (if applicable), including fringe, bonuses, and other employment costs (if applicable).

Cost - Vessel Repair & Maintenance: Annual expenditures for vessel and associated gear repair and maintenance.

Cost - Insurance: Annual expenditures for vessel hull and P&I insurance.

Cost - Overhead: Annual expenditures for overhead, such as expenses for dockage, licenses, rent, utilities, vehicles, and professional services (or share thereof if the overhead is spread over multiple vessels).

Cost - Loan Payment: Annual payment for vessel loans, including both principal and interest.

Cost - IFQ Purchase: Cash expense for IFQ allocation purchased specifically for the vessel from a different IFQ shareholder ("arm's length" transactions, in principle). This primarily applies to Gulf of Mexico reef fish fisheries, where two Individual Fishing Quota (IFQ) programs exist for red snapper, groupers and tilefish. Note that many respondents own IFQ shares. The use ("consumption") of these rights is not accounted for in this analysis. Note also that the sale of IFQ allocation (or the buying or selling of IFQ shares) is not accounted for (as it cannot, in general, be associated with a vessel).

Cost - OC Owner-Captain Time: Estimated opportunity cost of an owner's labor as captain over the year. The survey does not collect this information, instead a value is imputed based on hired crew remuneration and the profitability of the trip (since most labor is compensated on a share system) at the logbook trip level; and then summed to the annual, vessel level. Time spent by an owner as a captain of for-hire trips or commercial fishing trips not reported to the logbook system is not accounted for (though it would be quite minor). The resulting number is a rough estimate and should be treated as such.

Cost - Depreciation: The estimated contribution in dollar terms of the vessel asset to the production process. The survey does not collect this information; instead a value is calculated as 5% of the vessel's current market value.⁶ The resulting number is a rough estimate and should be treated as such.

Net Cash Flow: Revenue minus the costs for fuel, other supplies, hired crew, vessel repair and maintenance, insurance, overhead, loan payments, and IFQ purchase.

⁶Five percent is a rough estimate. It is based on an author's experience with the Gulf shrimp fishery and the fact that the IRS requires non-fishing vessels to be depreciated over 23 years.

The focus is on actual cash transactions/money flows. In-kind contributions to the production process, i.e., the opportunity cost of owner-captain time and depreciation are ignored. The sale of IFQ allocation or shares is also not accounted for, as these transactions cannot be associated with a vessel.

Net Revenue from Operations: Revenue minus the costs for fuel, other supplies, hired crew, vessel repair and maintenance, insurance, overhead, and the opportunity cost of an owner's time as captain as well as the vessel's depreciation. By including in-kind contributions to the production process (opportunity cost of an owner's time and depreciation) and excluding transfer payments (loan payments and IFQ purchase), net revenue from operations is a measure of the inherent productivity, i.e., economic performance, of the commercial fishery. Note that IFQ share ownership is ignored here. See 'Economic Return' below for more discussion of the relationship between IFQ shareholders/transactions and the economics of the commercial fishery, primarily applicable to Gulf of Mexico fisheries.

- **Net Cash Flow and Net Revenue from Operations as Proportion of Vessel Revenue (Margins):** A chart showing Net Cash Flow and Net Revenue from Operations as a share of trip revenue, i.e., the margins of the productive activity after variable and fixed costs are accounted for. The major cost categories that are subtracted from revenue are also displayed in percentage terms. Fuel and Supplies include the cost of Fuel and Other Supplies. Labor includes just Hired Crew costs only for Net Cash Flow and Hired Crew costs and the opportunity cost of an owner's time for Net Revenue from Operations.
- **Economic Return (on Asset Value):** The economic return is calculated by dividing the mean Net Revenue from Operations by the mean Vessel Value. For Gulf of Mexico fisheries, it is critical to note that, practically, this return is shared between owners of vessel capital AND IFQ shares. By purposefully ignoring the IFQ shareholder distribution, the focus is on the real productive capacity of the commercial fishery. All IFQ transactions are zero-sum in that they transfer wealth. The catch share management structure of the fishery allows for the realization of resource rents that will, in all likelihood, accrue to the IFQ shareholders.

Section: Trip-Level Time Series

This section provides selected trip-level summary and trip-level economic results for the years 2016, 2017, and 2018 (current) and a simple three year average. The definitions and caveats for each result variable are equivalent to and hence reported in the respective trip-level sections. All 2016 and 2017 dollar values are inflation adjusted to nominal 2018 U.S. dollars using the U.S. Bureau of Economic Analysis's Implicit Price Deflator for GDP. Most economic results are expressed as a percent of trip revenue to better facilitate comparison across time. It should be noted that the economic estimates are derived from a sample survey and exhibit significant uncertainty (large confidence intervals). As a result, fluctuating numbers from one year to the next are not necessarily statistically significant and do not necessarily imply that the fishery has changed.

Section: Annual, Vessel-Level Time Series

This section provides selected annual, vessel-level summary and annual, vessel-level economic results for the years 2016, 2017, and 2018 (current) and a simple three year average. The definitions and caveats for each result variable are equivalent to and hence reported in the respective annual, vessel-level sections. All 2016 and 2017 dollar values are inflation adjusted to nominal 2018 U.S. dollars using the U.S. Bureau of Economic Analysis's Implicit Price Deflator for GDP. Most economic results are expressed as a percent of annual vessel revenue to better facilitate comparison across time. It should be noted that the economic estimates are derived from a sample survey and exhibit significant uncertainty (large confidence intervals). As a result, fluctuating numbers from one year to the next are not necessarily statistically significant and do not necessarily imply that the fishery has changed.

Results

Disclaimer and Overview

All vessel and logbook trip data utilized in this report were pulled from the various databases on December 4, 2020. **The processing of data and the presentation of results are guided by the objective of presenting meaningful economic results. These numbers will differ from similar numbers generated for stock assessments and other management or research purposes. For instance, there are known reasons for why logbook totals ("near census") will deviate from official ACL/quota numbers. Further, the underlying databases are dynamic and continuously changing.** All dollar values are inflation adjusted to nominal 2018 U.S. dollars using the U.S. Bureau of Economic Analysis' Implicit Price Deflator for GDP.

This technical memorandum reports trip and vessel economic estimates for a select number of domains or Segments of Interest (SOI). A SOI is defined as all trips where at least one pound of fish, which matches the specifications of the domain, was landed. The SOIs reported are specified on species landed, region and/or gear used. Note that the different SOIs in this tech memo are not at all mutually exclusive. In fact, as the majority of trips harvest different species, most trips will be part of different SOIs. The SOIs featured in this report include:

The King Mackerel fisheries:

SOIs based on region perspective:

1. SAT King Mackerel Fishery: All Gears
2. GOM King Mackerel Fishery: All Gears

SOIs based on region AND gear perspective:

3. SAT King Mackerel Fishery: Vertical Line
4. SAT King Mackerel Fishery: Trolling
5. GOM King Mackerel Fishery: Vertical Line
6. GOM King Mackerel Fishery: Trolling

The Spanish Mackerel fisheries:

SOIs based on region perspective:

7. SAT Spanish Mackerel Fishery: All Gears

Note: The GOM Spanish Mackerel fishery data suffers from low sample sizes in 2016-2018 and is not reported in this report. The previous version of this report, Economics of . . . - 2016, does report economics for this fishery. Also, the cobia fishery is not included in this technical memorandum due to relatively few pounds being commercially landed and a small sample size.

The presentation of results is standardized across different SOIs to streamline the results sections. The definitions and caveats for each result variable or graph are only reported in the Methods section in order to keep repetition to a minimum. The results for any one SOI consists of six sections. The first section, Trip-Level Summary, summarizes the SOI at the trip-level- presenting the aggregate, cleaned logbook data for the particular SOI. The

second section, Trip-Level Economics, provides estimated SOI trip economic results based on the trip-level sample survey. The third section, Annual, Vessel-Level Summary, provides information on the vessels within the SOI at the annual-level by aggregating across all the logbook trip data. The section also presents vessel characteristics and permit status gleaned from each vessel's permit application. The fourth section, Annual, Vessel-Level Economics, provides estimated annual economic results for SOI vessels based on the annual sample survey. The fifth section, Trip-Level Time Series, provides selected trip-level summary and economic results for previous years, side-by-side to the current year results and a three year average. The sixth section, Annual, Vessel-Level Time Series, provides the same temporal perspective for selected annual, vessel-level summary and economic results. In both time series sections, the economic results are expressed as a percent of revenue to better facilitate comparison across time. All dollar values are inflation adjusted to nominal 2018 dollars.

A description of all tables and charts that are found in any of these sections is provided in the Methods Section - Standardized Results and Definitions. Note that percentages may not always sum to 100% in the tables and graphs due to rounding.

The reported SOIs were selected among the many possible ones after an extensive evaluation⁷ of the validity and applicability of the economic results, including:

1. The raw data problems specific to the SOI (outliers, frequency of missing values; zeros; etc.);
2. The impact of our standardized cleaning routines (dropping records and imputing missing values);
3. The representativeness (or bias) of the SOI's economic-sample trips or vessels of the SOI population (the logbook and permit application data are a census, so there are many variables available for comparison);
4. The impact of the statistical estimation routines;
5. The economic reasonableness of the aggregate results;
6. The size of the confidence intervals; and
7. A general consistency between the trip-level and vessel-level economic results (as they are based on two different raw data streams). For the trip-level economics, an additional "separate data stream" validation is conducted that compares the economic results for selected vessels (the focus of this entire report) with the trip economics from "volunteer" vessels that fill out the economic section on the logbook report in spite of not being required to.

⁷The evaluation is facilitated by the use of a standardized 6-page "diagnostic results" product that we can quickly generate for any SOI.

SOI: 2018 SAT King Mackerel Fishery: All Gears

Description: This SOI consists of all logbook trips by permitted vessels where at least one pound of king mackerel from U.S. South Atlantic waters was landed in 2018 using any type of gear. For important **disclaimer**, see page 15.

Trip-Level Summary

Effort

Trips	10,738
Vessels	616
Days at Sea	11,959
Crew Days	18,431

Landings (gutted lbs)

<u>Total</u>	3,513,949
SOI	2,394,440
Non-SOI	1,119,510
% SOI	68%

Percent by Gear

	Trips	SOI lbs
Vertical Line	46%	43%
Trolling	51%	55%
Gill Net	2%	2%
Other	0.5%	0.1%

Price (mean)

<u>Total</u>	\$2.36
SOI	\$2.36
Non-SOI	\$2.38

Revenue

<u>Total</u>	\$8,307,081
SOI	\$5,639,671
Non-SOI	\$2,667,409
% SOI	68%

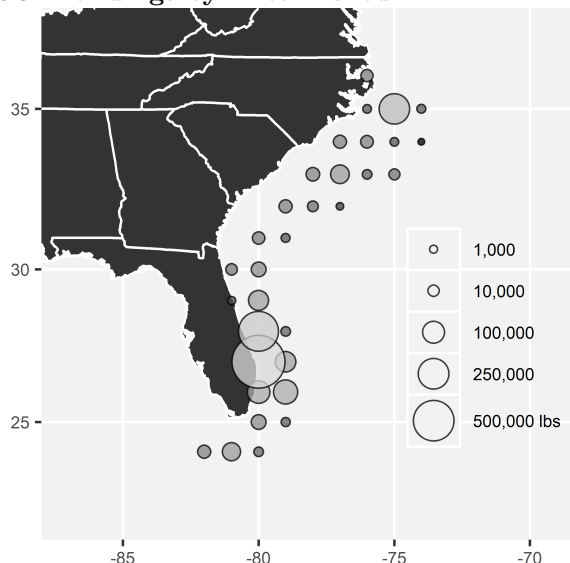
Percent of Revenue by Species Group

King and Cero Mackerel	68%
Spanish Mackerel	3%
Dolphinfish/Cobia/Jacks	4%
Shallow Water Snappers/Groupers	8%
Mid-Shelf Snappers	9%
Deep Water Groupers/Tilefish	1%
Grunt/Porgy/Sea Bass/Trigger	3%
Other Species	4%

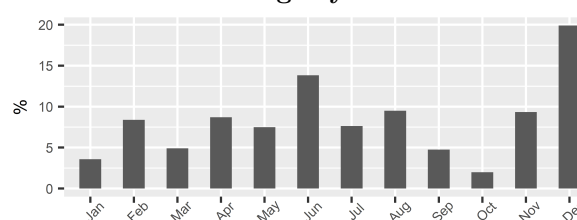
Revenue for Top 5 Species

King and Cero Mackerel	\$5,639,832
Vermilion Snapper	\$635,724
Gag Grouper	\$271,355
Spanish Mackerel	\$232,341
Greater Amberjack	\$148,467

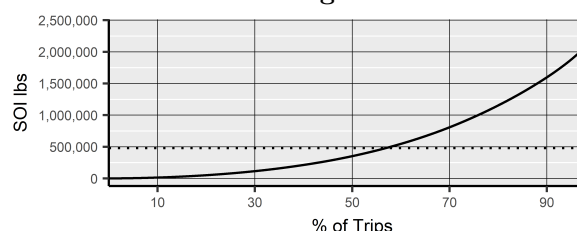
SOI Landings by Area Fished



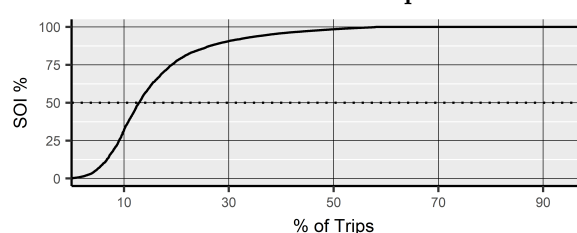
Share of SOI Landings by Month



Cumulative SOI Landings



SOI Share of Revenue Per Trip



Trip Descriptive Statistics (N=10,738)

	Mean	Min	Median	Max
Days at Sea	1.1	1	1	14
Crew Size	1.4	1	1	7
Landings	327	1	208	5,473
Revenue	\$774	\$2	\$472	\$23,204
SOI	\$525	\$2	\$360	\$8,220
% SOI	84%	0%	98.4%	100%

SOI: 2018 SAT King Mackerel Fishery: All Gears

Trip-Level Economics

Response Rate for SOI Trips

	Trips	%SOI	%Selected	%Responded
SOI	10,738	-	-	-
Selected	2,838	26%	-	-
Responded	2,793	26%	98%	-
Used	2,767	26%	97%	99%

Economic Results (n=2,767)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Trip					
Owner-Operated	88%	3.7	82%	94%	-
Days at Sea	1.1	0.1	1	1.3	1
Crew Size	1.5	0.1	1.4	1.6	1
Fuel Used	36	4	29	43	25
Landings (gutted lbs)	313	35	255	371	191
Total Revenue	803	128	591	1,016	477
Cost					
Fuel	104	11	86	123	75
Bait	26	9	11	42	15
Ice	14	3	9	20	10
Groceries	22	8	9	35	10
Miscellaneous	24	7	13	35	10
Hired Crew	175	52	88	262	0
IFQ Purchase	0	0	0	0	0
OC Owner-Captain Time	191	23	153	229	106
Trip Net Cash Flow*	438	60	339	537	246
Trip Net Revenue*	247	48	167	327	115

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

Revenue 100%	Trip Net Cash Flow* 54%	Trip Net Revenue* 31%
	Labor - Hired 22%	Labor - Hired & Owner 46%
	Fuel & Supplies 24%	Fuel & Supplies 24%

Input Prices

Fuel Price (average): \$2.89 per gallon

Hired Crew Wage (implicit): \$267 per crew-day

Productivity Measures

Landings/Fuel Use: 8.7 lbs/gallon

Landings/Labor Use: 189 lbs/crew-day

* See Definitions in Methods Section or Glossary.

SOI: 2018 SAT King Mackerel Fishery: All Gears

Annual, Vessel-Level Summary

Effort

Vessels	616
<u>Trips - Total</u>	18,993
SOI Trips	10,738
Non-SOI Trips	8,255
Days at Sea	22,958
Crew Days	38,958

Landings (guttled lbs)

<u>Total</u>	8,789,386
SOI	2,394,440
Non-SOI	6,394,947
% SOI	27%

Percent by Gear

Vertical Line	57%	Trips	54%	Total lbs	54%
Trolling	34%		27%		27%
Gill Net	5%		13%		13%
Longline	0.9%		3%		3%
Other	3%		4%		4%

Price (mean)

<u>Total</u>	\$2.33
SOI	\$2.36
Non-SOI	\$2.33

Revenue

<u>Total</u>	\$20,510,801
SOI	\$5,639,671
Non-SOI	\$14,871,129
% SOI	27%

Percent of Revenue by Species Group

King and Cero Mackerel	41%
Spanish Mackerel	8%
Dolphinfish/Cobia/Jacks	8%
Shallow Water Snappers/Groupers	15%
Mid-Shelf Snappers	11%
Deep Water Groupers/Tilefish	6%
Grunt/Porgy/Sea Bass/Trigger	5%
Other Species	7%

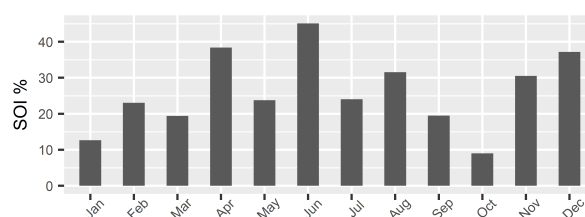
Revenue for Top 5 Species

King and Cero Mackerel	\$8,353,798
Vermilion Snapper	\$1,752,781
Spanish Mackerel	\$1,697,014
Yellowtail Snapper	\$1,316,398
Gag Grouper	\$845,740

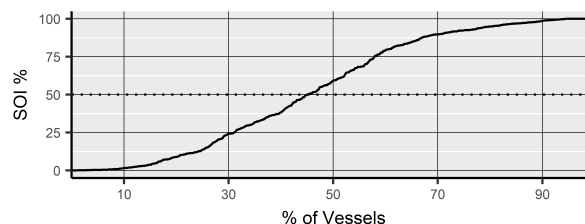
Annual, Vessel Descriptive Statistics (N=616)

	Mean	Min	Median	Max
Trips	30.8	1	20	205
Days at Sea	37.3	1	23	218
Crew Days	63.2	1	34	480
Landings	14,268	16	5,740	163,037
Revenue	\$33,297	\$42	\$13,435	\$324,840
SOI	\$9,155	\$7	\$3,616	\$88,730
% SOI	54.4%	0%	59.3%	100%

SOI Share of Monthly Landings



SOI Share of Revenue Per Vessel



Percent with Federal Permit

King Mackerel	100%
Spanish Mackerel	88%
Dolphin-Wahoo	96%
GOM Reef Fish	3%
SAT Snapper & Grouper - Unlimited	31%
SAT Snapper & Grouper - Limited	4%
Other Commercial Fishing	24%
For-Hire Fishing	32%

Vessel Characteristics (N=616)

	Mean	Min	Median	Max
Length	30	16	28	57
Year Built	1990	1948	1988	2018
Horsepower	351	25	300	1,200
Fiberglass Hull	97%	-	-	-
Diesel Engine	52%	-	-	-
Ice Refrigeration	92%	-	-	-

SOI: 2018 SAT King Mackerel Fishery: All Gears

Annual, Vessel-Level Economics

Response Rate for SOI Vessels

	Vessels	%SOI	%Selected	%Responded
SOI	616	-	-	-
Selected	154	25%	-	-
Responded	124	20%	81%	-
Used	123	20%	80%	99%

Economic Results (n=123)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Vessel					
Owner-Operated	88%	2.8	83%	93%	-
For-Hire Active	14%	3	9%	19%	-
Days - Commercial Fishing	65	4.3	58	72	43
Days - For-Hire Fishing	11	3.5	5	17	0
Days - Non-fishing	2	0.7	1	3	0
Vessel Value	68,955	5,396	60,010	77,900	50,000
Has Insurance	51%	4.3	44%	58%	-
Total Revenue	53,079	5,803	43,461	62,697	26,000
Commercial Fishing	42,528	3,528	36,681	48,376	19,804
For-Hire Fishing	10,551	4,688	2,781	18,321	0
Cost					
Fuel	6,756	648	5,682	7,830	3,750
Other Supplies	6,939	796	5,619	8,258	3,250
Hired Crew	9,266	1,312	7,091	11,442	0
Vessel Repair & Maintenance	9,185	1,070	7,411	10,960	5,000
Insurance	1,304	167	1,027	1,581	260
Overhead	5,054	734	3,836	6,271	2,200
Loan Payment	1,291	289	812	1,770	0
IFQ Purchase	0	0	0	0	0
OC Owner-Captain Time	8,737	955	7,155	10,320	2,493
Depreciation	3,448	270	3,001	3,895	2,500
Net Cash Flow	13,284	3,489	7,500	19,068	2,747
Net Revenue from Operations	2,390	3,214	-2,938	7,717	-3,238

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

Revenue 100%	Net Cash Flow 25%	Net Revenue - Operations 5%
		Depreciation 6%
	Loan Payment 2%	Vessel R&M, Insur, Overh 29%
	Vessel R&M, Insur, Overh 29%	
	Labor - Hired 17%	Labor - Hired & Owner 34%
	Fuel & Supplies 26%	Fuel & Supplies 26%

Economic Return (on Vessel Asset Value): 3.5%

SOI: 2018 SAT King Mackerel Fishery: All Gears

Trip-Level Time Series

Trip-Level Summary

	2016	2017	2018	Average
Effort				
Trips	10,648	11,689	10,738	11,025
Vessels	642	637	616	632
Days at Sea	11,606	12,861	11,959	12,142
Landings (guttled lbs)				
<u>Total</u>	3,274,907	3,741,653	3,513,949	3,510,170
SOI	2,330,146	2,695,737	2,394,440	2,473,441
Non-SOI	944,762	1,045,916	1,119,510	1,036,729
% SOI	71%	72%	68%	70%
Price (mean)				
<u>Total</u>	\$2.25	\$2.21	\$2.36	\$2.27
SOI	\$2.33	\$2.16	\$2.36	\$2.28
Non-SOI	\$2.10	\$2.31	\$2.38	\$2.26
Revenue				
<u>Total</u>	\$7,387,800	\$8,259,403	\$8,307,081	\$7,984,761
SOI	\$5,410,425	\$5,834,566	\$5,639,671	\$5,628,221
Non-SOI	\$1,977,376	\$2,424,837	\$2,667,409	\$2,356,541
% SOI	73%	71%	68%	71%

Trip-Level Economics

	2016	2017	2018	Average
Number of Observations	2,632	3,501	2,767	
Response Rate (%)	96%	97%	97%	
SOI Trip				
Owner-Operated	86%	85%	88%	86.3%
Fuel Used per Day at Sea (gallons/day)	29	32	32	31
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	11.1%	12.4%	13%	12.2%
Bait	3.3%	3.6%	3.3%	3.4%
Ice	1.6%	2%	1.8%	1.8%
Groceries	2.8%	3%	2.7%	2.8%
Miscellaneous	2.7%	3.7%	3%	3.1%
Hired Crew	16.8%	21%	21.8%	19.9%
IFQ Purchase	0%	0%	0%	0%
OC Owner-Captain Time	30.7%	28.7%	23.8%	27.7%
Trip Net Cash Flow	61.6%	54.3%	54.5%	56.8%
Trip Net Revenue	30.9%	25.5%	30.7%	29%
Labor - Hired & Owner	47.5%	49.7%	45.6%	47.6%
Fuel & Supplies	21.6%	24.8%	23.7%	23.4%
Input Prices				
Fuel Price (per gallon)	\$2.42	\$2.68	\$2.89	\$2.66
Hire Crew Wage (per crew-day)	\$204	\$243	\$267	\$238
Productivity Measures				
Landings/Fuel Use (lbs/gallon)	8.8	8.8	8.7	9
Landings/Labor Use (lbs/crew-day)	184	193	189	189

SOI: 2018 SAT King Mackerel Fishery: All Gears

Annual, Vessel-Level Time Series

Annual, Vessel-Level Summary

	2016	2017	2018	Average
Effort				
Vessels	642	637	616	632
Trips - Total	19,641	20,089	18,993	19,574
SOI Trips	10,648	11,689	10,738	11,025
Non-SOI Trips	8,993	8,400	8,255	8,549
Days at Sea	24,351	24,830	22,958	24,046
Landings (guttled lbs)				
Total	8,855,575	9,132,353	8,789,386	8,925,771
SOI	2,330,146	2,695,737	2,394,440	2,473,441
Non-SOI	6,525,429	6,436,616	6,394,947	6,452,331
% SOI	26%	30%	27%	28%
Revenue				
Total	\$20,698,335	\$21,443,448	\$20,510,801	\$20,884,195
SOI	\$5,410,425	\$5,834,566	\$5,639,671	\$5,628,221
Non-SOI	\$15,287,910	\$15,608,882	\$14,871,129	\$15,255,974
% SOI	26%	27%	27%	27%
Vessel Characteristics				
Length	31	30	30	30
Year Built	1989	1989	1990	1989
For-Hire Fishing Permit	32%	34%	32%	33%

Annual, Vessel-Level Economics

	2016	2017	2018	Average
Number of Observations	114	139	123	
Response Rate (%)	70%	75%	80%	
SOI Vessel				
Owner-Operated	88%	93%	88%	90%
For-Hire Active	20%	23%	14%	19%
Vessel Value	\$72,239	\$71,709	\$68,955	\$70,968
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	11.6%	12.9%	12.7%	12.4%
Other Supplies	12.3%	13.5%	13.1%	13%
Hired Crew	22.9%	19.5%	17.5%	20%
Vessel Repair & Maintenance	14.9%	15.5%	17.3%	15.9%
Insurance	2.1%	2.2%	2.5%	2.3%
Overhead	9.5%	8.8%	9.5%	9.3%
Loan Payment	6%	2.1%	2.4%	3.5%
IFQ Purchase	0%	0.2%	0%	0.1%
OC Owner-Captain Time	15.3%	16.9%	16.5%	16.2%
Net Cash Flow	20.7%	25.3%	25%	23.7%
Net Revenue for Operations	4.5%	4.6%	4.5%	4.5%
Depreciation	6.8%	6.1%	6.5%	6.5%
Vessel R&M, Insur, Overh	26.5%	26.5%	29.3%	27.4%
Labor - Hired & Owner	38.2%	36.4%	33.9%	36.2%
Fuel & Supplies	23.9%	26.4%	25.8%	25.4%
Economic Return (on asset value)	3.3%	3.7%	3.5%	3.5%

SOI: 2018 GOM King Mackerel Fishery: All Gears

Description: This SOI consists of all logbook trips by permitted vessels where at least one pound of king mackerel from Gulf of Mexico waters was landed in 2018 using any type of gear. For important **disclaimer**, see page 15.

Trip-Level Summary

Effort

Trips	2,348
Vessels	249
Days at Sea	3,386
Crew Days	6,421

Landings (gutted lbs)

<u>Total</u>	2,922,925
SOI	2,576,522
Non-SOI	346,403
% SOI	88%

Percent by Gear

	Trips	SOI lbs
Vertical Line	49%	31%
Trolling	50%	49%
Gill Net	1%	20%
Other	0.1%	0%

Price (mean)

<u>Total</u>	\$2.51
SOI	\$2.32
Non-SOI	\$3.87

Revenue

<u>Total</u>	\$7,327,175
SOI	\$5,985,458
Non-SOI	\$1,341,716
% SOI	82%

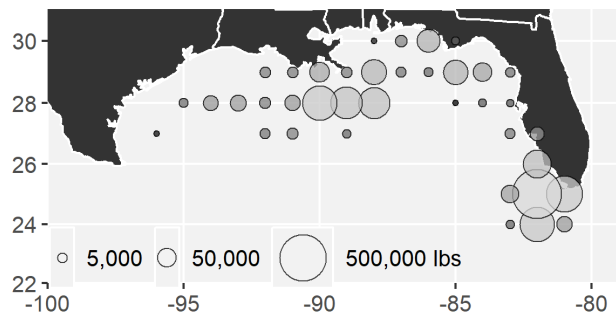
Percent of Revenue by Species Group

King and Cero Mackerel	82%
Spanish Mackerel	0.4%
Dolphinfish/Cobia/Jacks	0.6%
Shallow Water Snappers/Groupers	3%
Mid-Shelf Snappers	14%
Deep Water Groupers/Tilefish	0%
Grunt/Porgy/Sea Bass/Trigger	0.1%
Other Species	0.3%

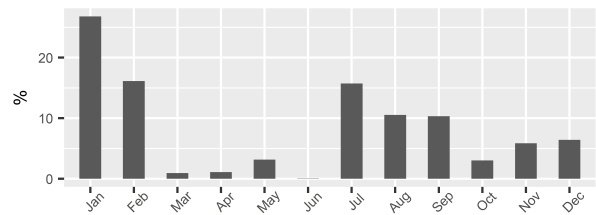
Revenue for Top 5 Species

King and Cero Mackerel	\$5,985,458
Red Snapper	\$875,726
Vermilion Snapper	\$142,884
Yellowtail Snapper	\$118,225
Gag Grouper	\$60,719

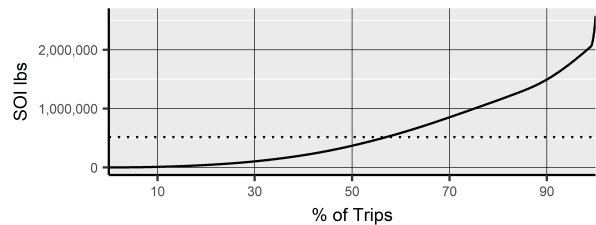
SOI Landings by Area Fished



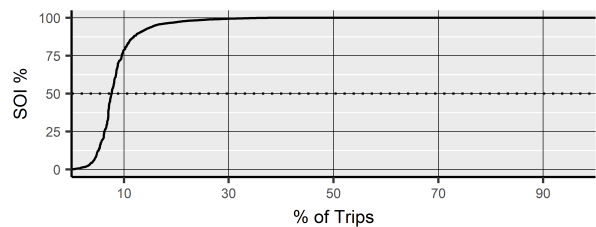
Share of SOI Landings by Month



Cumulative SOI Landings



SOI Share of Revenue Per Trip



Trip Descriptive Statistics (N=2,348)

	Mean	Min	Median	Max
Days at Sea	1.4	1	1	10
Crew Size	1.8	1	2	10
Landings	1,245	3	908	57,821
Revenue	\$3,121	\$6	\$2,175	\$139,868
SOI	\$2,549	\$6	\$1,893	\$139,868
% SOI	91%	0%	100%	100%

SOI: 2018 GOM King Mackerel Fishery: All Gears

Trip-Level Economics

Response Rate for SOI Trips

	Trips	%SOI	%Selected	%Responded
SOI	2,348	-	-	-
Selected	677	29%	-	-
Responded	638	27%	94%	-
Used	632	27%	93%	99%

Economic Results (n=632)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Trip					
Owner-Operated	88%	3.8	82%	94%	-
Days at Sea	1.4	0.2	1.1	1.7	1
Crew Size	1.5	0.1	1.2	1.7	1
Fuel Used	67	11	48	86	50
Landings (gutted lbs)	1,031	243	625	1,438	870
Total Revenue	2,316	603	1,309	3,324	1,944
Cost					
Fuel	186	29	138	234	150
Bait	36	22	-2	73	20
Ice	44	6	34	54	35
Groceries	46	14	23	69	25
Miscellaneous	46	20	12	80	10
Hired Crew	302	185	-8	612	0
IFQ Purchase	17	202	-321	355	0
OC Owner-Captain Time	753	92	599	907	600
Trip Net Cash Flow*	1,641	268	1,193	2,089	1,385
Trip Net Revenue*	905	323	364	1,445	724

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

Revenue 100%	Trip Net Cash Flow* 71%	Trip Net Revenue* 39%
	IFQ Purchase 0.7%	Labor - Hired & Owner 46%
	Labor - Hired 13%	
	Fuel & Supplies 15%	Fuel & Supplies 15%

Input Prices

Fuel Price (average): \$2.78 per gallon

Hired Crew Wage (implicit): \$383 per crew-day

Productivity Measures

Landings/Fuel Use: 15.4 lbs/gallon

Landings/Labor Use: 516 lbs/crew-day

* See Definitions in Methods Section or Glossary.

SOI: 2018 GOM King Mackerel Fishery: All Gears

Annual, Vessel-Level Summary

Effort

Vessels	249
<u>Trips - Total</u>	<u>6,061</u>
SOI Trips	2,348
Non-SOI Trips	3,713
Days at Sea	10,314
Crew Days	23,184

Landings (guttled lbs)

<u>Total</u>	<u>7,032,363</u>
SOI	2,576,522
Non-SOI	4,455,841
% SOI	37%

Percent by Gear

Vertical Line	61%
Trolling	35%
Gill Net	0.9%
Longline	2%
Other	0.6%

Price (mean)

<u>Total</u>	<u>\$3.05</u>
SOI	\$2.32
Non-SOI	\$3.47

Revenue

<u>Total</u>	<u>\$21,456,503</u>
SOI	\$5,985,458
Non-SOI	\$15,471,045
% SOI	28%

Percent of Revenue by Species Group

King and Cero Mackerel	34%
Spanish Mackerel	1%
Dolphinfish/Cobia/Jacks	2%
Shallow Water Snappers/Groupers	12%
Mid-Shelf Snappers	48%
Deep Water Groupers/Tilefish	2%
Grunt/Porgy/Sea Bass/Trigger	0.7%
Other Species	2%

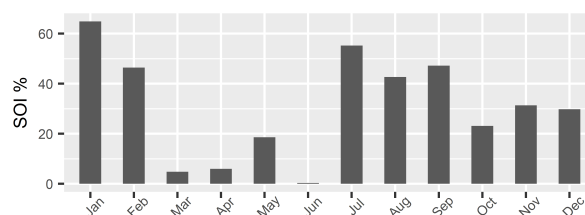
Revenue for Top 5 Species

Red Snapper	\$8,681,492
King and Cero Mackerel	\$7,188,910
Vermilion Snapper	\$1,618,114
Yellowtail Snapper	\$1,178,941
Gag Grouper	\$493,380

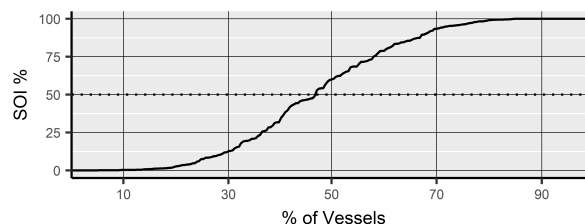
Annual, Vessel Descriptive Statistics (N=249)

	Mean	Min	Median	Max
Trips	24.3	1	15	162
Days at Sea	41.4	1	27	218
Crew Days	93.1	1	51	588
Landings	28,242	49	15,982	403,969
Revenue	\$86,171	\$111	\$41,518	\$2,066,649
SOI	\$24,038	\$20	\$6,803	\$194,923
% SOI	53.3%	0%	60.5%	100%

SOI Share of Monthly Landings



SOI Share of Revenue Per Vessel



Percent with Federal Permit

King Mackerel	100%
Spanish Mackerel	85%
Dolphin-Wahoo	67%
GOM Reef Fish	45%
SAT Snapper & Grouper - Unlimited	13%
SAT Snapper & Grouper - Limited	3%
Other Commercial Fishing	25%
For-Hire Fishing	22%

Vessel Characteristics (N=249)

	Mean	Min	Median	Max
Length	35	21	34	65
Year Built	1987	1956	1985	2018
Horsepower	433	12	360	1,800
Fiberglass Hull	96%	-	-	-
Diesel Engine	67%	-	-	-
Ice Refrigeration	91%	-	-	-

SOI: 2018 GOM King Mackerel Fishery: All Gears

Annual, Vessel-Level Economics

Response Rate for SOI Vessels

	Vessels	%SOI	%Selected	%Responded
SOI	249	-	-	-
Selected	61	24%	-	-
Responded	45	18%	74%	-
Used	41	16%	67%	91%

Economic Results (n=41)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Vessel					
Owner-Operated	83%	5.6	73%	92%	-
For-Hire Active	5%	3.3	0%	11%	-
Days - Commercial Fishing	80	9.8	63	96	41
Days - For-Hire Fishing	7	6.1	-3	17	0
Days - Non-fishing	1	0.7	0	3	0
Vessel Value	74,439	11,151	55,650	93,227	50,000
Has Insurance	25%	6.5	15%	36%	-
Total Revenue	65,547	10,639	47,620	83,473	40,000
Commercial Fishing	64,154	10,692	46,139	82,170	40,000
For-Hire Fishing	1,392	1,006	-302	3,087	0
Cost					
Fuel	6,678	742	5,428	7,928	5,028
Other Supplies	9,471	1,622	6,738	12,205	3,530
Hired Crew	12,638	3,478	6,778	18,497	200
Vessel Repair & Maintenance	10,442	2,584	6,089	14,795	5,000
Insurance	611	194	284	938	0
Overhead	5,207	1,116	3,326	7,087	2,560
Loan Payment	1,371	521	493	2,249	0
IFQ Purchase	3,077	2,193	-617	6,772	0
OC Owner-Captain Time	13,960	2,358	9,987	17,932	3,880
Depreciation	3,722	558	2,783	4,661	2,500
Net Cash Flow	16,052	5,303	7,117	24,988	5,260
Net Revenue from Operations*	2,819	5,036	-5,666	11,305	-1,214

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

Revenue 100%	Net Cash Flow 24%	Net Revenue - Operations 4%
		Depreciation 6%
	IFQ Purchase 5%	Vessel R&M, Insur, Overh 25%
	Loan Payment 2%	
	Vessel R&M, Insur, Overh 25%	Labor - Hired & Owner 41%
	Labor - Hired 19%	
Fuel & Supplies 25%	Fuel & Supplies 25%	

Economic Return* (on Vessel Asset Value): 3.8%

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

SOI: 2018 GOM King Mackerel Fishery: All Gears

Trip-Level Time Series

Trip-Level Summary

	2016	2017	2018	Average
Effort				
Trips	2,262	2,863	2,348	2,491
Vessels	250	293	249	264
Days at Sea	3,850	4,636	3,386	3,957
Landings (guttled lbs)				
<u>Total</u>	2,881,111	3,463,129	2,922,925	3,089,055
SOI	2,344,260	2,691,031	2,576,522	2,537,271
Non-SOI	536,852	772,098	346,403	551,784
% SOI	81%	78%	88%	82%
Price (mean)				
<u>Total</u>	\$2.52	\$2.49	\$2.51	\$2.51
SOI	\$2.26	\$2.15	\$2.32	\$2.24
Non-SOI	\$3.66	\$3.69	\$3.87	\$3.74
Revenue				
<u>Total</u>	\$7,274,127	\$8,634,888	\$7,327,175	\$7,745,397
SOI	\$5,305,790	\$5,791,262	\$5,985,458	\$5,694,170
Non-SOI	\$1,968,337	\$2,843,626	\$1,341,716	\$2,051,226
% SOI	73%	67%	82%	74%

Trip-Level Economics

	2016	2017	2018	Average
Number of Observations	505	772	632	
Response Rate (%)	98%	96%	93%	
SOI Trip				
Owner-Operated	71%	78%	88%	79%
Fuel Used per Day at Sea (gallons/day)	58	50	49	52
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	6.2%	6.5%	8%	6.9%
Bait	1.7%	2.1%	1.5%	1.8%
Ice	2%	2.1%	1.9%	2%
Groceries	2.1%	2.3%	2%	2.1%
Miscellaneous	2.6%	2.4%	2%	2.3%
Hired Crew	24.3%	21.1%	13%	19.5%
IFQ Purchase	5.6%	5.1%	0.7%	3.8%
OC Owner-Captain Time	14.3%	21.1%	32.5%	22.6%
Trip Net Cash Flow	55.5%	58.4%	70.8%	61.6%
Trip Net Revenue	46.8%	42.4%	39%	42.7%
Labor - Hired & Owner	38.6%	42.3%	45.5%	42.1%
Fuel & Supplies	14.6%	15.4%	15.4%	15.1%
Input Prices				
Fuel Price (per gallon)	\$2.18	\$2.48	\$2.78	\$2.48
Hire Crew Wage (per crew-day)	\$376	\$369	\$383	\$376
Productivity Measures				
Landings/Fuel Use (lbs/gallon)	16.1	15.7	15.4	16
Landings/Labor Use (lbs/crew-day)	460	422	516	466

SOI: 2018 GOM King Mackerel Fishery: All Gears
Annual, Vessel-Level Time Series

Annual, Vessel-Level Summary

	2016	2017	2018	Average
Effort				
Vessels	250	293	249	264
Trips - Total	6,632	6,970	6,061	6,554
SOI Trips	2,262	2,863	2,348	2,491
Non-SOI Trips	4,370	4,107	3,713	4,063
Days at Sea	13,444	13,098	10,314	12,285
Landings (guttled lbs)				
Total	8,808,498	8,799,473	7,032,363	8,213,445
SOI	2,344,260	2,691,031	2,576,522	2,537,271
Non-SOI	6,464,238	6,108,442	4,455,841	5,676,174
% SOI	27%	31%	37%	32%
Revenue				
Total	\$28,774,965	\$27,894,695	\$21,456,503	\$26,042,054
SOI	\$5,305,790	\$5,791,262	\$5,985,458	\$5,694,170
Non-SOI	\$23,469,175	\$22,103,433	\$15,471,045	\$20,347,884
% SOI	18%	21%	28%	22%
Vessel Characteristics				
Length	36	36	35	36
Year Built	1987	1987	1987	1987
For-Hire Fishing Permit	24%	28%	22%	25%

Annual, Vessel-Level Economics

	2016	2017	2018	Average
Number of Observations	50	64	41	
Response Rate (%)	75%	75%	67%	
SOI Vessel				
Owner-Operated	64%	74%	83%	74%
For-Hire Active	23%	27%	5%	18%
Vessel Value	\$116,587	\$126,729	\$74,439	\$105,918
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	7.3%	9.1%	10.2%	8.9%
Other Supplies	9.7%	11.5%	14.4%	11.9%
Hired Crew	23.4%	25%	19.3%	22.6%
Vessel Repair & Maintenance	8.9%	9.7%	15.9%	11.5%
Insurance	1.1%	1.1%	0.9%	1%
Overhead	4.2%	7.3%	7.9%	6.5%
Loan Payment	0.6%	1.6%	2.1%	1.4%
IFQ Purchase	6.4%	5.5%	4.7%	5.5%
OC Owner-Captain Time	4.9%	8%	21.3%	11.4%
Net Cash Flow	38.5%	29.1%	24.5%	30.7%
Net Revenue for Operations*	36.7%	23.9%	4.3%	21.6%
Depreciation	3.8%	4.4%	5.7%	4.6%
Vessel R&M, Insur, Overh	14.2%	18.1%	24.8%	19%
Labor - Hired & Owner	28.3%	33%	40.6%	34%
Fuel & Supplies	17%	20.6%	24.6%	20.7%
Economic Return* (on asset value)	47.9%	27.1%	3.8%	26.3%

SOI: 2018 SAT King Mackerel Fishery: Vertical Line

Description: This SOI consists of all logbook trips by permitted vessels where at least one pound of king mackerel from U.S. South Atlantic waters was landed in 2018 using Vertical Line gear type. For important **disclaimer**, see page 15.

Trip-Level Summary

Effort

Trips	4,909
Vessels	344
Days at Sea	5,891
Crew Days	9,979

Landings (gutted lbs)

<u>Total</u>	1,668,480
SOI	1,034,389
Non-SOI	634,091
% SOI	62%

Percent by Gear

	Trips	SOI lbs
Vertical Line	100%	100%
Trolling	0%	0%
Gill Net	0%	0%
Other	0.1%	0%

Price (mean)

<u>Total</u>	\$2.61
SOI	\$2.36
Non-SOI	\$3.01

Revenue

<u>Total</u>	\$4,352,342
SOI	\$2,443,088
Non-SOI	\$1,909,253
% SOI	56%

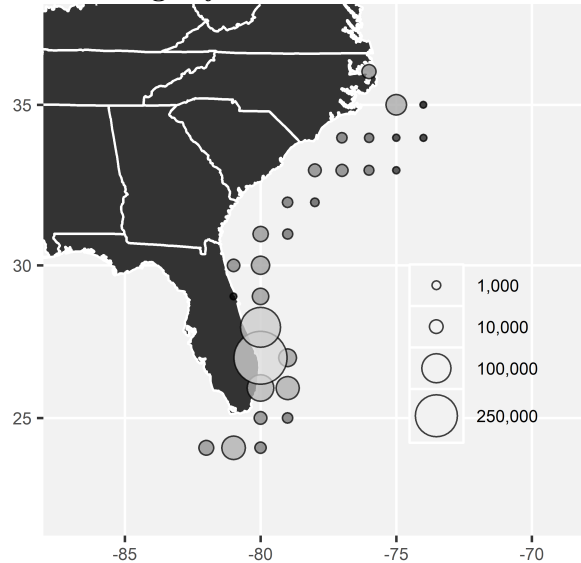
Percent of Revenue by Species Group

King and Cero Mackerel	56%
Spanish Mackerel	0.8%
Dolphinfish/Cobia/Jacks	6%
Shallow Water Snappers/Groupers	13%
Mid-Shelf Snappers	17%
Deep Water Groupers/Tilefish	1%
Grunt/Porgy/Sea Bass/Trigger	5%
Other Species	2%

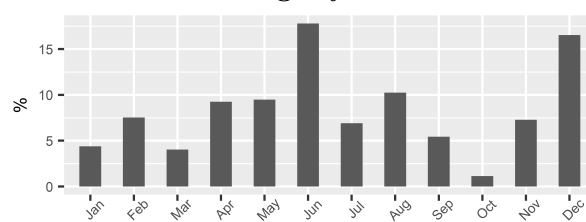
Revenue for Top 5 Species

King and Cero Mackerel	\$2,443,245
Vermilion Snapper	\$607,265
Gag Grouper	\$228,975
Yellowtail Snapper	\$130,140
Greater Amberjack	\$129,140

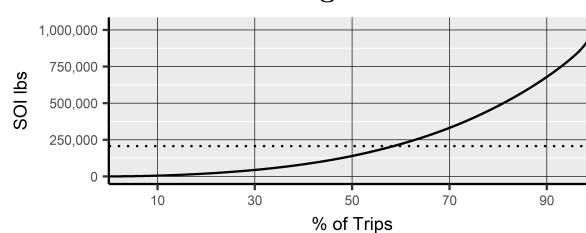
SOI Landings by Area Fished



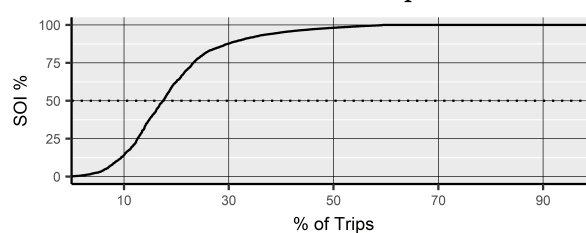
Share of SOI Landings by Month



Cumulative SOI Landings



SOI Share of Revenue Per Trip



Trip Descriptive Statistics (N=4,909)

	Mean	Min	Median	Max
Days at Sea	1.2	1	1	14
Crew Size	1.5	1	1	7
Landings	340	3	206	4,048
Revenue	\$887	\$8	\$479	\$15,915
SOI	\$498	\$4	\$329	\$8,220
% SOI	81%	0.1%	98.1%	100%

SOI: 2018 SAT King Mackerel Fishery: Vertical Line

Trip-Level Economics

Response Rate for SOI Trips

	Trips	%SOI	%Selected	%Responded
SOI	4,909	-	-	-
Selected	1,144	23%	-	-
Responded	1,111	23%	97%	-
Used	1,101	22%	96%	99%

Economic Results (n=1,101)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Trip					
Owner-Operated	84%	3.6	78%	90%	-
Days at Sea	1.3	0.2	1	1.6	1
Crew Size	1.6	0.1	1.5	1.7	1
Fuel Used	41	7	30	52	25
Landings (gutted lbs)	356	55	265	448	196
Total Revenue	1,020	207	676	1,363	515
Cost					
Fuel	115	18	85	145	72
Bait	39	16	12	66	10
Ice	19	6	9	29	7
Groceries	34	14	11	57	10
Miscellaneous	28	10	11	45	10
Hired Crew	291	91	139	443	23
IFQ Purchase	0	0	0	0	0
OC Owner-Captain Time	192	27	146	237	114
Trip Net Cash Flow*	493	85	352	634	258
Trip Net Revenue*	301	76	175	428	109

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

Revenue 100%	Trip Net Cash Flow* 48%	Trip Net Revenue* 30%
	Labor - Hired 29%	Labor - Hired & Owner 47%
	Fuel & Supplies 23%	Fuel & Supplies 23%

Input Prices

Fuel Price (average): \$2.83 per gallon

Hired Crew Wage (implicit): \$295 per crew-day

Productivity Measures

Landings/Fuel Use: 8.8 lbs/gallon

Landings/Labor Use: 172 lbs/crew-day

* See Definitions in Methods Section or Glossary.

SOI: 2018 SAT King Mackerel Fishery: Vertical Line

Annual, Vessel-Level Summary

Effort

Vessels	344
<u>Trips - Total</u>	<u>12,119</u>
SOI Trips	4,909
Non-SOI Trips	7,210
Days at Sea	15,435
Crew Days	27,846

Landings (guttled lbs)

<u>Total</u>	<u>5,571,020</u>
SOI	1,034,389
Non-SOI	4,536,632
% SOI	19%

Percent by Gear

	Trips	Total lbs
Vertical Line	85%	82%
Trolling	9%	7%
Gill Net	1%	4%
Longline	0.6%	3%
Other	4%	4%

Price (mean)

<u>Total</u>	<u>\$2.53</u>
SOI	\$2.36
Non-SOI	\$2.57

Revenue

<u>Total</u>	<u>\$14,096,109</u>
SOI	\$2,443,088
Non-SOI	\$11,653,020
% SOI	17%

Percent of Revenue by Species Group

King and Cero Mackerel	30%
Spanish Mackerel	8%
Dolphinfish/Cobia/Jacks	9%
Shallow Water Snappers/Groupers	20%
Mid-Shelf Snappers	16%
Deep Water Groupers/Tilefish	6%
Grunt/Porgy/Sea Bass/Trigger	6%
Other Species	4%

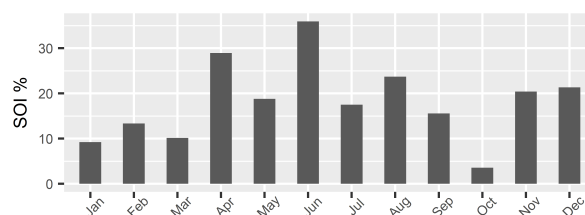
Revenue for Top 5 Species

King and Cero Mackerel	\$4,271,088
Vermilion Snapper	\$1,725,206
Yellowtail Snapper	\$1,286,466
Spanish Mackerel	\$1,133,642
Gag Grouper	\$746,210

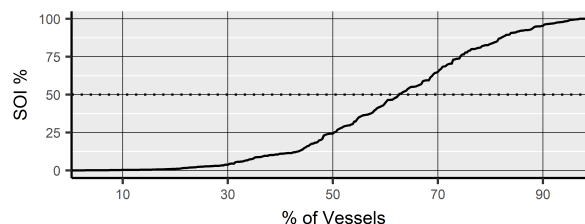
Annual, Vessel Descriptive Statistics (N=344)

	Mean	Min	Median	Max
Trips	35.2	1	23	205
Days at Sea	44.9	1	29	218
Crew Days	80.9	1	45	480
Landings	16,195	47	8,052	130,125
Revenue	\$40,977	\$105	\$17,692	\$324,840
SOI	\$7,102	\$7	\$2,246	\$88,730
% SOI	38.2%	0%	24.8%	100%

SOI Share of Monthly Landings



SOI Share of Revenue Per Vessel



Percent with Federal Permit

King Mackerel	100%
Spanish Mackerel	87%
Dolphin-Wahoo	97%
GOM Reef Fish	5%
SAT Snapper & Grouper - Unlimited	41%
SAT Snapper & Grouper - Limited	4%
Other Commercial Fishing	26%
For-Hire Fishing	33%

Vessel Characteristics (N=344)

	Mean	Min	Median	Max
Length	30	16	28	49
Year Built	1990	1948	1988	2018
Horsepower	350	25	300	1,000
Fiberglass Hull	98%	-	-	-
Diesel Engine	46%	-	-	-
Ice Refrigeration	92%	-	-	-

SOI: 2018 SAT King Mackerel Fishery: Vertical Line

Annual, Vessel-Level Economics

Response Rate for SOI Vessels

	Vessels	%SOI	%Selected	%Responded
SOI	344	-	-	-
Selected	86	25%	-	-
Responded	70	20%	81%	-
Used	69	20%	80%	99%

Economic Results (n=69)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Vessel					
Owner-Operated	87%	3.8	81%	94%	-
For-Hire Active	13%	3.8	7%	19%	-
Days - Commercial Fishing	78	6.4	68	89	51
Days - For-Hire Fishing	13	5.4	4	22	0
Days - Non-fishing	1	0.6	0	2	0
Vessel Value	76,137	8,997	61,130	91,143	50,000
Has Insurance	52%	5.7	43%	61%	-
Total Revenue	69,303	9,089	54,143	84,462	47,627
Commercial Fishing	55,460	5,483	46,315	64,605	29,354
For-Hire Fishing	13,843	7,506	1,324	26,362	0
Cost					
Fuel	8,521	1,015	6,827	10,214	5,560
Other Supplies	9,576	1,334	7,351	11,801	5,000
Hired Crew	14,063	2,157	10,465	17,661	0
Vessel Repair & Maintenance	10,926	1,677	8,129	13,723	5,000
Insurance	1,678	273	1,224	2,133	140
Overhead	6,359	1,218	4,327	8,391	2,400
Loan Payment	1,455	456	695	2,215	0
IFQ Purchase	0	0	0	0	0
OC Owner-Captain Time	10,210	1,475	7,750	12,670	2,900
Depreciation	3,807	450	3,057	4,557	2,500
Net Cash Flow	16,725	5,405	7,710	25,739	7,131
Net Revenue from Operations	4,163	5,055	-4,269	12,595	-1,266

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

Revenue 100%	Net Cash Flow 24%	Net Revenue - Operations 6%
		Depreciation 5%
	Loan Payment 2%	Vessel R&M, Insur, Overh 27%
	Vessel R&M, Insur, Overh 27%	
	Labor - Hired 20%	Labor - Hired & Owner 35%
	Fuel & Supplies 26%	Fuel & Supplies 26%

Economic Return (on Vessel Asset Value): 5.5%

SOI: 2018 SAT King Mackerel Fishery: Vertical Line

Trip-Level Time Series

Trip-Level Summary

	2016	2017	2018	Average
Effort				
Trips	4,722	5,026	4,909	4,886
Vessels	377	371	344	364
Days at Sea	5,455	5,899	5,891	5,748
Landings (guttled lbs)				
<u>Total</u>	<u>1,518,346</u>	<u>1,670,928</u>	<u>1,668,480</u>	<u>1,619,251</u>
SOI	956,427	1,050,042	1,034,389	1,013,619
Non-SOI	561,919	620,886	634,091	605,632
% SOI	63%	63%	62%	63%
Price (mean)				
<u>Total</u>	<u>\$2.43</u>	<u>\$2.41</u>	<u>\$2.61</u>	<u>\$2.48</u>
SOI	\$2.34	\$2.17	\$2.36	\$2.29
Non-SOI	\$2.59	\$2.80	\$3.01	\$2.8
Revenue				
<u>Total</u>	<u>\$3,691,651</u>	<u>\$4,021,319</u>	<u>\$4,352,342</u>	<u>\$4,021,771</u>
SOI	\$2,239,927	\$2,284,886	\$2,443,088	\$2,322,634
Non-SOI	\$1,451,724	\$1,736,433	\$1,909,253	\$1,699,137
% SOI	61%	57%	56%	58%

Trip-Level Economics

	2016	2017	2018	Average
Number of Observations	939	1,957	1,101	
Response Rate (%)	93%	96%	96%	
SOI Trip				
Owner-Operated	88%	87%	84%	86.3%
Fuel Used per Day at Sea (gallons/day)	31	31	31	31
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	11.1%	11.3%	11.3%	11.2%
Bait	4.1%	4.2%	3.8%	4%
Ice	1.8%	2%	1.9%	1.9%
Groceries	3.4%	3.2%	3.4%	3.3%
Miscellaneous	2.7%	4.2%	2.7%	3.2%
Hired Crew	25.8%	25.1%	28.6%	26.5%
IFQ Purchase	0%	0%	0%	0%
OC Owner-Captain Time	24.9%	26.6%	18.8%	23.4%
Trip Net Cash Flow	51.1%	50.1%	48.4%	49.9%
Trip Net Revenue	26.1%	23.4%	29.6%	26.4%
Labor - Hired & Owner	50.7%	51.7%	47.4%	49.9%
Fuel & Supplies	23.2%	24.9%	23.1%	23.7%
Input Prices				
Fuel Price (per gallon)	\$2.43	\$2.60	\$2.83	\$2.62
Hire Crew Wage (per crew-day)	\$251	\$294	\$295	\$280
Productivity Measures				
Landings/Fuel Use (lbs/gallon)	8.4	8.7	8.8	9
Landings/Labor Use (lbs/crew-day)	165	182	172	173

SOI: 2018 SAT King Mackerel Fishery: Vertical Line
Annual, Vessel-Level Time Series

Annual, Vessel-Level Summary

	2016	2017	2018	Average
Effort				
Vessels	377	371	344	364
Trips - Total	12,424	13,119	12,119	12,554
SOI Trips	4,722	5,026	4,909	4,886
Non-SOI Trips	7,702	8,093	7,210	7,668
Days at Sea	16,296	17,266	15,435	16,332
Landings (guttled lbs)				
Total	5,529,274	6,381,291	5,571,020	5,827,195
SOI	956,427	1,050,042	1,034,389	1,013,619
Non-SOI	4,572,847	5,331,249	4,536,632	4,813,576
% SOI	17%	16%	19%	17%
Revenue				
Total	\$14,082,310	\$15,793,505	\$14,096,109	\$14,657,308
SOI	\$2,239,927	\$2,284,886	\$2,443,088	\$2,322,634
Non-SOI	\$11,842,383	\$13,508,619	\$11,653,020	\$12,334,674
% SOI	16%	14%	17%	16%
Vessel Characteristics				
Length	30	30	30	30
Year Built	1990	1990	1990	1990
For-Hire Fishing Permit	32%	33%	33%	33%

Annual, Vessel-Level Economics

	2016	2017	2018	Average
Number of Observations	71	86	69	
Response Rate (%)	72%	73%	80%	
SOI Vessel				
Owner-Operated	94%	93%	87%	91%
For-Hire Active	16%	24%	13%	18%
Vessel Value	\$77,053	\$69,125	\$76,137	\$74,105
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	11.5%	12.2%	12.3%	12%
Other Supplies	14.5%	13.5%	13.8%	13.9%
Hired Crew	26.6%	19.4%	20.3%	22.1%
Vessel Repair & Maintenance	13.2%	15.2%	15.8%	14.7%
Insurance	2%	2.2%	2.4%	2.2%
Overhead	9.6%	8.1%	9.2%	9%
Loan Payment	4.4%	2.2%	2.1%	2.9%
IFQ Purchase	0%	0.3%	0%	0.1%
OC Owner-Captain Time	15%	18%	14.7%	15.9%
Net Cash Flow	18.2%	27%	24.1%	23.1%
Net Revenue for Operations	0.9%	6.3%	6%	4.4%
Depreciation	6.7%	5.3%	5.5%	5.8%
Vessel R&M, Insur, Overh	24.8%	25.5%	27.4%	25.9%
Labor - Hired & Owner	41.6%	37.3%	35%	38%
Fuel & Supplies	26%	25.6%	26.1%	25.9%
Economic Return (on asset value)	0.7%	5.9%	5.5%	4%

SOI: 2018 SAT King Mackerel Fishery: Trolling

Description: This SOI consists of all logbook trips by permitted vessels where at least one pound of king mackerel from U.S. South Atlantic waters was landed in 2018 using Trolling gear type. For important **disclaimer**, see page 15.

Trip-Level Summary

Effort

Trips	5,531
Vessels	329
Days at Sea	5,723
Crew Days	7,701

Landings (gutted lbs)

<u>Total</u>	1,507,929
SOI	1,310,497
Non-SOI	197,432
% SOI	87%

Percent by Gear

	Trips	SOI lbs
Vertical Line	1%	0%
Trolling	99%	100%
Gill Net	0%	0%
Other	0.1%	0%

Price (mean)

<u>Total</u>	\$2.28
SOI	\$2.35
Non-SOI	\$1.79

Revenue

<u>Total</u>	\$3,437,909
SOI	\$3,084,243
Non-SOI	\$353,666
% SOI	90%

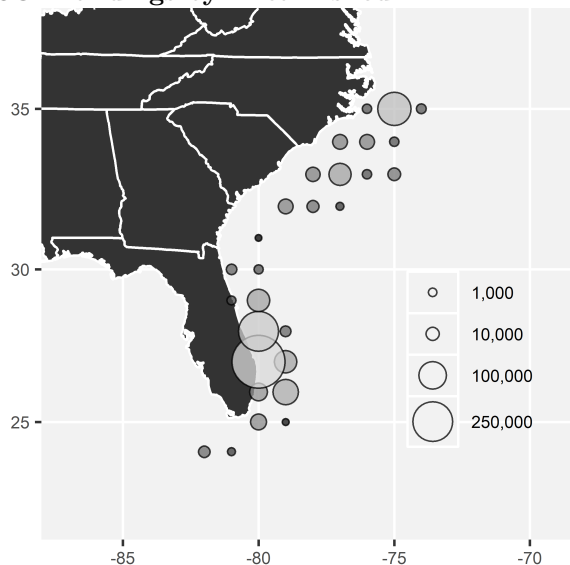
Percent of Revenue by Species Group

King and Cero Mackerel	90%
Spanish Mackerel	0.4%
Dolphinfish/Cobia/Jacks	2%
Shallow Water Snappers/Groupers	1%
Mid-Shelf Snappers	1%
Deep Water Groupers/Tilefish	1%
Grunt/Porgy/Sea Bass/Trigger	0.8%
Other Species	3%

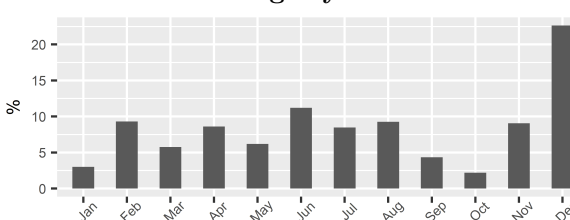
Revenue for Top 5 Species

King and Cero Mackerel	\$3,084,247
Little Tunny	\$61,294
Tilefish	\$25,142
Dolphinfish	\$24,385
Vermilion Snapper	\$21,574

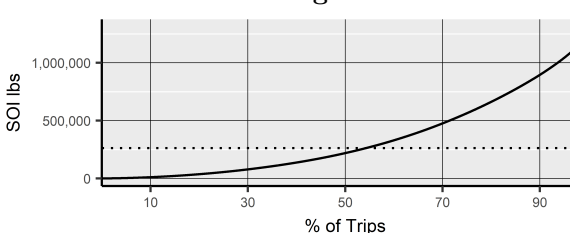
SOI Landings by Area Fished



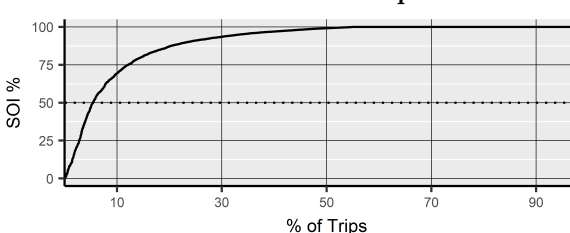
Share of SOI Landings by Month



Cumulative SOI Landings



SOI Share of Revenue Per Trip



Trip Descriptive Statistics (N=5,531)

	Mean	Min	Median	Max
Days at Sea	1	1	1	7
Crew Size	1.3	1	1	6
Landings	273	1	200	4,616
Revenue	\$622	\$2	\$445	\$23,204
SOI	\$558	\$2	\$400	\$6,415
% SOI	91%	0%	99.1%	100%

SOI: 2018 SAT King Mackerel Fishery: Trolling

Trip-Level Economics

Response Rate for SOI Trips

	Trips	%SOI	%Selected	%Responded
SOI	5,531	-	-	-
Selected	1,610	29%	-	-
Responded	1,598	29%	99%	-
Used	1,583	29%	98%	99%

Economic Results (n=1,583)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Trip					
Owner-Operated	89%	4.2	82%	96%	-
Days at Sea	1	0.1	0.9	1.1	1
Crew Size	1.4	0.1	1.2	1.5	1
Fuel Used	30	3	25	36	25
Landings (gutted lbs)	250	38	186	313	177
Total Revenue	624	126	413	834	445
Cost					
Fuel	89	8	75	102	71
Bait	17	4	9	24	15
Ice	11	2	8	14	10
Groceries	14	3	9	20	10
Miscellaneous	22	6	12	31	10
Hired Crew	84	42	14	154	0
IFQ Purchase	0	0	0	0	0
OC Owner-Captain Time	180	32	128	233	100
Trip Net Cash Flow*	388	78	257	518	255
Trip Net Revenue*	207	61	107	308	129

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

Revenue 100%	Trip Net Cash Flow* 62%	Trip Net Revenue* 33%
	Labor - Hired 13%	Labor - Hired & Owner 42%
	Fuel & Supplies 24%	Fuel & Supplies 24%

Input Prices

Fuel Price (average): \$2.94 per gallon

Hired Crew Wage (implicit): \$174 per crew-day

Productivity Measures

Landings/Fuel Use: 8.3 lbs/gallon

Landings/Labor Use: 178 lbs/crew-day

* See Definitions in Methods Section or Glossary.

SOI: 2018 SAT King Mackerel Fishery: Trolling

Annual, Vessel-Level Summary

Effort

Vessels	329
<u>Trips - Total</u>	<u>9,139</u>
SOI Trips	5,531
Non-SOI Trips	3,608
Days at Sea	10,326
Crew Days	15,454

Landings (guttled lbs)

<u>Total</u>	<u>3,712,116</u>
SOI	1,310,497
Non-SOI	2,401,619
% SOI	35%

Percent by Gear

	Trips	Total lbs
Vertical Line	21%	22%
Trolling	71%	62%
Gill Net	3%	10%
Longline	1%	2%
Other	3%	4%

Price (mean)

<u>Total</u>	<u>\$2.35</u>
SOI	\$2.35
Non-SOI	\$2.34

Revenue

<u>Total</u>	<u>\$8,706,256</u>
SOI	\$3,084,243
Non-SOI	\$5,622,013
% SOI	35%

Percent of Revenue by Species Group

King and Cero Mackerel	59%
Spanish Mackerel	4%
Dolphinfish/Cobia/Jacks	5%
Shallow Water Snappers/Groupers	6%
Mid-Shelf Snappers	8%
Deep Water Groupers/Tilefish	6%
Grunt/Porgy/Sea Bass/Trigger	5%
Other Species	7%

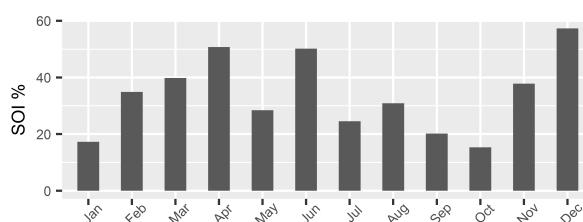
Revenue for Top 5 Species

King and Cero Mackerel	\$5,107,672
Vermilion Snapper	\$440,702
Spanish Mackerel	\$364,705
Gag Grouper	\$233,021
Tilefish	\$203,449

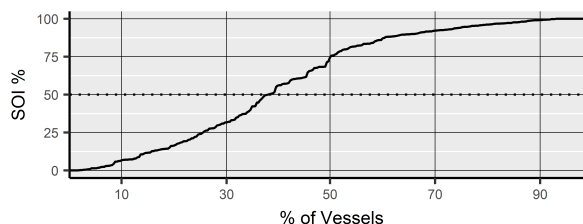
Annual, Vessel Descriptive Statistics (N=329)

	Mean	Min	Median	Max
Trips	27.8	1	16	164
Days at Sea	31.4	1	18	165
Crew Days	47	1	27	315
Landings	11,283	16	4,147	130,125
Revenue	\$26,463	\$42	\$9,821	\$220,294
SOI	\$9,375	\$8	\$3,570	\$67,953
% SOI	60.8%	0%	75.7%	100%

SOI Share of Monthly Landings



SOI Share of Revenue Per Vessel



Percent with Federal Permit

King Mackerel	100%
Spanish Mackerel	88%
Dolphin-Wahoo	95%
GOM Reef Fish	2%
SAT Snapper & Grouper - Unlimited	25%
SAT Snapper & Grouper - Limited	5%
Other Commercial Fishing	21%
For-Hire Fishing	33%

Vessel Characteristics (N=329)

	Mean	Min	Median	Max
Length	30	17	29	57
Year Built	1990	1962	1988	2018
Horsepower	354	60	315	1,200
Fiberglass Hull	97%	-	-	-
Diesel Engine	58%	-	-	-
Ice Refrigeration	92%	-	-	-

SOI: 2018 SAT King Mackerel Fishery: Trolling

Annual, Vessel-Level Economics

Response Rate for SOI Vessels

	Vessels	%SOI	%Selected	%Responded
SOI	329	-	-	-
Selected	84	26%	-	-
Responded	67	20%	80%	-
Used	67	20%	80%	100%

Economic Results (n=67)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Vessel					
Owner-Operated	88%	3.9	82%	95%	-
For-Hire Active	16%	4.5	9%	24%	-
Days - Commercial Fishing	53	5	45	62	40
Days - For-Hire Fishing	8	2.9	3	13	0
Days - Non-fishing	3	1.2	1	5	0
Vessel Value	64,830	5,263	56,049	73,612	60,000
Has Insurance	54%	6	44%	64%	-
Total Revenue	39,410	4,505	31,893	46,926	22,237
Commercial Fishing	32,584	3,691	26,425	38,743	15,191
For-Hire Fishing	6,826	2,433	2,767	10,885	0
Cost					
Fuel	5,489	657	4,393	6,584	3,750
Other Supplies	4,239	563	3,300	5,178	1,900
Hired Crew	6,498	1,401	4,160	8,836	0
Vessel Repair & Maintenance	8,015	1,340	5,780	10,251	4,708
Insurance	1,224	204	883	1,564	369
Overhead	4,502	949	2,918	6,086	3,000
Loan Payment	1,204	340	637	1,771	0
IFQ Purchase	0	0	0	0	0
OC Owner-Captain Time	7,173	1,050	5,421	8,926	1,716
Depreciation	3,242	263	2,802	3,681	3,000
Net Cash Flow	8,240	2,328	4,355	12,124	1,557
Net Revenue from Operations	-971	2,067	-4,421	2,479	-3,537

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

Revenue 100%	Net Cash Flow 21%	Net Revenue - Operations -2.5%
	Loan Payment 3%	Depreciation 8%
	Vessel R&M, Insur, Overh 35%	Vessel R&M, Insur, Overh 35%
	Labor - Hired 16%	Labor - Hired & Owner 35%
	Fuel & Supplies 25%	Fuel & Supplies 25%

Economic Return (on Vessel Asset Value): -1.5%

SOI: 2018 SAT King Mackerel Fishery: Trolling

Trip-Level Time Series

Trip-Level Summary

	2016	2017	2018	Average
Effort				
Trips	5,687	6,435	5,531	5,884
Vessels	337	348	329	338
Days at Sea	5,903	6,711	5,723	6,112
Landings (guttled lbs)				
<u>Total</u>	<u>1,484,632</u>	<u>1,808,524</u>	<u>1,507,929</u>	<u>1,600,362</u>
SOI	1,299,211	1,592,239	1,310,497	1,400,649
Non-SOI	185,421	216,285	197,432	199,713
% SOI	88%	88%	87%	88%
Price (mean)				
<u>Total</u>	<u>\$2.23</u>	<u>\$2.12</u>	<u>\$2.28</u>	<u>\$2.21</u>
SOI	\$2.31	\$2.16	\$2.35	\$2.27
Non-SOI	\$1.68	\$1.83	\$1.79	\$1.77
Revenue				
<u>Total</u>	<u>\$3,313,725</u>	<u>\$3,833,312</u>	<u>\$3,437,909</u>	<u>\$3,528,315</u>
SOI	\$3,001,599	\$3,436,023	\$3,084,243	\$3,173,955
Non-SOI	\$312,127	\$397,289	\$353,666	\$354,361
% SOI	91%	90%	90%	90%

Trip-Level Economics

	2016	2017	2018	Average
Number of Observations	1,662	1,498	1,583	
Response Rate (%)	98%	98%	98%	
SOI Trip				
Owner-Operated	84%	93%	89%	88.7%
Fuel Used per Day at Sea (gallons/day)	27	31	29	29
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	11.3%	13.7%	14.2%	13.1%
Bait	2.8%	2.6%	2.7%	2.7%
Ice	1.5%	2%	1.8%	1.8%
Groceries	2.4%	2.5%	2.3%	2.4%
Miscellaneous	2.8%	2.8%	3.5%	3%
Hired Crew	9.4%	11.1%	13.5%	11.3%
IFQ Purchase	0%	0%	0%	0%
OC Owner-Captain Time	35.1%	34.5%	28.9%	32.8%
Trip Net Cash Flow	69.8%	65.2%	62.2%	65.7%
Trip Net Revenue	34.7%	30.7%	33.2%	32.9%
Labor - Hired & Owner	44.5%	45.6%	42.4%	44.2%
Fuel & Supplies	20.8%	23.7%	24.4%	23%
Input Prices				
Fuel Price (per gallon)	\$2.42	\$2.80	\$2.94	\$2.72
Hire Crew Wage (per crew-day)	\$130	\$167	\$174	\$157
Productivity Measures				
Landings/Fuel Use (lbs/gallon)	8.8	8.6	8.3	9
Landings/Labor Use (lbs/crew-day)	189	198	178	188

SOI: 2018 SAT King Mackerel Fishery: Trolling
Annual, Vessel-Level Time Series

Annual, Vessel-Level Summary

	2016	2017	2018	Average
Effort				
Vessels	337	348	329	338
Trips - Total	10,111	10,423	9,139	9,891
SOI Trips	5,687	6,435	5,531	5,884
Non-SOI Trips	4,424	3,988	3,608	4,007
Days at Sea	11,706	12,181	10,326	11,404
Landings (guttled lbs)				
Total	4,301,676	4,340,087	3,712,116	4,117,960
SOI	1,299,211	1,592,239	1,310,497	1,400,649
Non-SOI	3,002,465	2,747,849	2,401,619	2,717,311
% SOI	30%	37%	35%	34%
Revenue				
Total	\$9,782,331	\$9,870,070	\$8,706,256	\$9,452,886
SOI	\$3,001,599	\$3,436,023	\$3,084,243	\$3,173,955
Non-SOI	\$6,780,732	\$6,434,048	\$5,622,013	\$6,278,931
% SOI	31%	35%	35%	34%
Vessel Characteristics				
Length	30	31	30	30
Year Built	1989	1990	1990	1990
For-Hire Fishing Permit	35%	38%	33%	35%

Annual, Vessel-Level Economics

	2016	2017	2018	Average
Number of Observations	62	72	67	
Response Rate (%)	73%	77%	80%	
SOI Vessel				
Owner-Operated	85%	94%	88%	89%
For-Hire Active	23%	25%	16%	21%
Vessel Value	\$66,181	\$67,396	\$64,830	\$66,136
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	11.5%	14.9%	13.9%	13.4%
Other Supplies	12.5%	9.8%	10.8%	11%
Hired Crew	21.2%	14.9%	16.5%	17.5%
Vessel Repair & Maintenance	15.6%	17.6%	20.3%	17.8%
Insurance	1.7%	3.2%	3.1%	2.7%
Overhead	9%	9.1%	11.4%	9.8%
Loan Payment	6.4%	2.2%	3.1%	3.9%
IFQ Purchase	0%	0%	0%	0%
OC Owner-Captain Time	17.4%	19%	18.2%	18.2%
Net Cash Flow	22%	28.3%	20.9%	23.7%
Net Revenue for Operations	4%	4%	-2.5%	1.8%
Depreciation	7.1%	7.5%	8.2%	7.6%
Vessel R&M, Insur, Overh	26.3%	29.8%	34.9%	30.3%
Labor - Hired & Owner	38.6%	33.9%	34.7%	35.7%
Fuel & Supplies	24%	24.8%	24.7%	24.5%
Economic Return (on asset value)	2.8%	2.7%	-1.5%	1.3%

SOI: 2018 GOM King Mackerel Fishery: Vertical Line

Description: This SOI consists of all logbook trips by permitted vessels where at least one pound of king mackerel from Gulf of Mexico waters was landed in 2018 using Vertical Line gear type. Due to small sample sizes, the economic results are quite variable and should be used carefully. For important **disclaimer**, see page 15.

Trip-Level Summary

Effort

Trips	1,139
Vessels	156
Days at Sea	1,699
Crew Days	3,671

Landings (gutted lbs)

<u>Total</u>	1,105,396
SOI	790,798
Non-SOI	314,599
% SOI	72%

Percent by Gear

	Trips	SOI lbs
Vertical Line	100%	100%
Trolling	0%	0%
Gill Net	0%	0%
Other	0.1%	0%

Price (mean)

<u>Total</u>	\$2.82
SOI	\$2.32
Non-SOI	\$4.08

Revenue

<u>Total</u>	\$3,118,938
SOI	\$1,834,355
Non-SOI	\$1,284,583
% SOI	59%

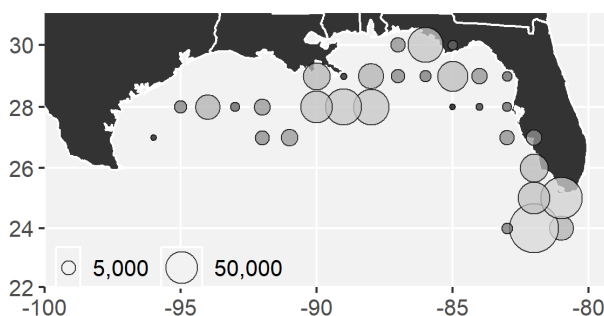
Percent of Revenue by Species Group

King and Cero Mackerel	59%
Spanish Mackerel	0.2%
Dolphinfish/Cobia/Jacks	1%
Shallow Water Snappers/Groupers	7%
Mid-Shelf Snappers	32%
Deep Water Groupers/Tilefish	0.1%
Grunt/Porgy/Sea Bass/Trigger	0.3%
Other Species	0.5%

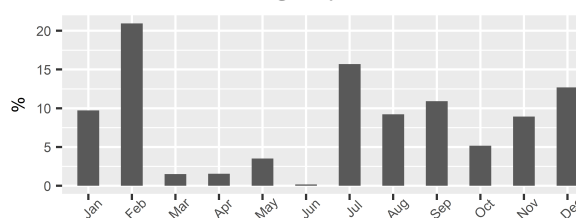
Revenue for Top 5 Species

King and Cero Mackerel	\$1,834,355
Red Snapper	\$864,210
Vermilion Snapper	\$139,970
Yellowtail Snapper	\$117,663
Gag Grouper	\$60,506

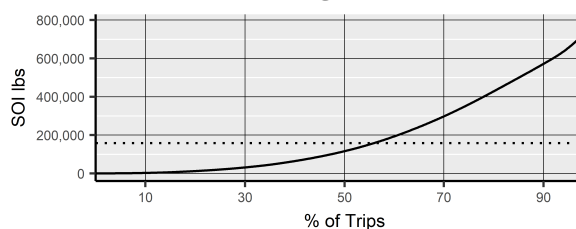
SOI Landings by Area Fished



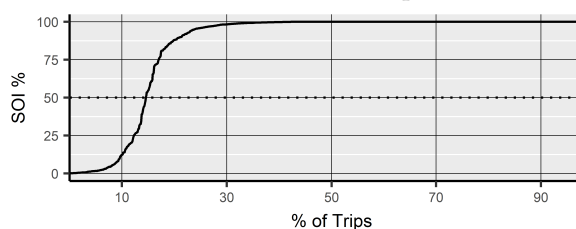
Share of SOI Landings by Month



Cumulative SOI Landings



SOI Share of Revenue Per Trip



Trip Descriptive Statistics (N=1,139)

	Mean	Min	Median	Max
Days at Sea	1.5	1	1	10
Crew Size	2	1	2	10
Landings	970	7	758	15,260
Revenue	\$2,738	\$16	\$1,865	\$80,189
SOI	\$1,610	\$11	\$1,253	\$6,680
% SOI	85%	0%	100%	100%

SOI: 2018 GOM King Mackerel Fishery: Vertical Line

Trip-Level Economics

Response Rate for SOI Trips

	Trips	%SOI	%Selected	%Responded
SOI	1,139	-	-	-
Selected	329	29%	-	-
Responded	329	29%	100%	-
Used	326	29%	99%	99%

Economic Results (n=326)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Trip					
Owner-Operated	86%	5.3	77%	95%	-
Days at Sea	1.5	0.3	1	1.9	1
Crew Size	1.6	0.2	1.3	1.9	2
Fuel Used	68	14	44	92	50
Landings (gutted lbs)	840	153	581	1,099	698
Total Revenue	2,103	798	753	3,452	1,738
Cost					
Fuel	186	37	123	248	150
Bait	43	32	-12	97	13
Ice	43	9	28	58	35
Groceries	46	19	13	79	25
Miscellaneous	24	29	-25	74	0
Hired Crew	284	178	-17	585	0
IFQ Purchase	32	305	-483	547	0
OC Owner-Captain Time	665	128	448	882	501
Trip Net Cash Flow*	1,445	351	851	2,038	1,235
Trip Net Revenue*	812	456	41	1,584	655

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

Revenue 100%	Trip Net Cash Flow* 69%	Trip Net Revenue* 39%
	IFQ Purchase 2%	Labor - Hired & Owner 45%
	Labor - Hired 14%	
	Fuel & Supplies 16%	Fuel & Supplies 16%

Input Prices

Fuel Price (average): \$2.72 per gallon

Hired Crew Wage (implicit): \$260 per crew-day

Productivity Measures

Landings/Fuel Use: 12.3 lbs/gallon

Landings/Labor Use: 358 lbs/crew-day

* See Definitions in Methods Section or Glossary.

SOI: 2018 GOM King Mackerel Fishery: Vertical Line

Annual, Vessel-Level Summary

Effort

Vessels	156
<u>Trips - Total</u>	3,520
SOI Trips	1,139
Non-SOI Trips	2,381
Days at Sea	6,840
Crew Days	17,412

Landings (guttled lbs)

<u>Total</u>	4,530,669
SOI	790,798
Non-SOI	3,739,872
% SOI	17%

Percent by Gear

Vertical Line	93%
Trolling	4%
Gill Net	0.3%
Longline	2%
Other	0.9%

Price (mean)

<u>Total</u>	\$3.42
SOI	\$2.32
Non-SOI	\$3.66

Revenue

<u>Total</u>	\$15,515,435
SOI	\$1,834,355
Non-SOI	\$13,681,080
% SOI	12%

Percent of Revenue by Species Group

King and Cero Mackerel	16%
Spanish Mackerel	0.8%
Dolphinfish/Cobia/Jacks	2%
Shallow Water Snappers/Groupers	14%
Mid-Shelf Snappers	63%
Deep Water Groupers/Tilefish	2%
Grunt/Porgy/Sea Bass/Trigger	0.8%
Other Species	1%

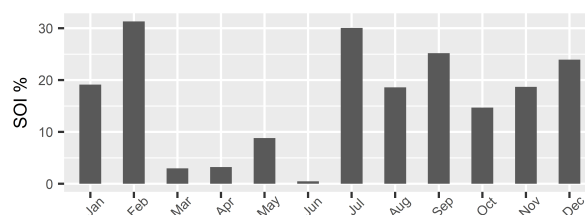
Revenue for Top 5 Species

Red Snapper	\$8,266,657
King and Cero Mackerel	\$2,501,594
Vermilion Snapper	\$1,558,355
Yellowtail Snapper	\$1,121,077
Gag Grouper	\$458,520

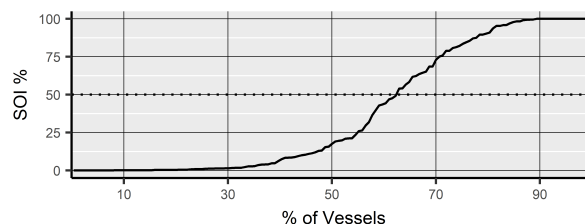
Annual, Vessel Descriptive Statistics (N=156)

	Mean	Min	Median	Max
Trips	22.6	1	15	158
Days at Sea	43.8	1	30	218
Crew Days	111.6	1	57	588
Landings	29,043	85	12,178	403,969
Revenue	\$99,458	\$217	\$39,019	\$2,066,649
SOI	\$11,759	\$13	\$2,435	\$189,774
% SOI	38.6%	0%	18.3%	100%

SOI Share of Monthly Landings



SOI Share of Revenue Per Vessel



Percent with Federal Permit

King Mackerel	100%
Spanish Mackerel	81%
Dolphin-Wahoo	65%
GOM Reef Fish	55%
SAT Snapper & Grouper - Unlimited	12%
SAT Snapper & Grouper - Limited	3%
Other Commercial Fishing	25%
For-Hire Fishing	28%

Vessel Characteristics (N=156)

	Mean	Min	Median	Max
Length	35	21	33	65
Year Built	1989	1963	1986	2018
Horsepower	424	12	375	1,800
Fiberglass Hull	94%	-	-	-
Diesel Engine	60%	-	-	-
Ice Refrigeration	90%	-	-	-

SOI: 2018 GOM King Mackerel Fishery: Vertical Line

Annual, Vessel-Level Economics

Response Rate for SOI Vessels

	Vessels	%SOI	%Selected	%Responded
SOI	156	-	-	-
Selected	36	23%	-	-
Responded	28	18%	78%	-
Used	26	17%	72%	93%

Economic Results (n=26)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Vessel					
Owner-Operated	84%	6.8	73%	96%	-
For-Hire Active	4%	3.5	-2%	10%	-
Days - Commercial Fishing	72	13	50	95	41
Days - For-Hire Fishing	1	0.9	-1	3	0
Days - Non-fishing	1	0.8	0	3	0
Vessel Value	74,948	11,910	54,572	95,324	50,000
Has Insurance	27%	8.3	13%	41%	-
Total Revenue	62,097	11,147	43,025	81,169	40,000
Commercial Fishing	61,459	11,292	42,140	80,778	40,000
For-Hire Fishing	638	580	-355	1,631	0
Cost					
Fuel	7,204	1,103	5,316	9,092	4,811
Other Supplies	9,482	1,982	6,092	12,872	4,487
Hired Crew	13,805	4,914	5,398	22,211	500
Vessel Repair & Maintenance	10,675	3,066	5,429	15,922	5,000
Insurance	635	240	224	1,046	0
Overhead	5,955	1,616	3,190	8,720	2,560
Loan Payment	1,399	749	116	2,681	0
IFQ Purchase	5,291	3,766	-1,152	11,734	0
OC Owner-Captain Time	15,065	3,314	9,396	20,735	3,900
Depreciation	3,747	595	2,729	4,766	2,500
Net Cash Flow	7,652	4,652	-308	15,611	4,505
Net Revenue from Operations*	-4,472	4,621	-12,377	3,434	-1,790

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

Revenue 100%	Net Cash Flow 12%	Net Revenue - Operations -7.2%
	IFQ Purchase 9%	Depreciation 6%
	Loan Payment 2%	Vessel R&M, Insur, Overh 28%
	Vessel R&M, Insur, Overh 28%	Labor - Hired & Owner 46%
	Labor - Hired 22%	Fuel & Supplies 27%
	Fuel & Supplies 27%	Fuel & Supplies 27%

Economic Return* (on Vessel Asset Value): -6%

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

SOI: 2018 GOM King Mackerel Fishery: Vertical Line

Trip-Level Time Series

Trip-Level Summary

	2016	2017	2018	Average
Effort				
Trips	1,081	1,396	1,139	1,205
Vessels	158	187	156	167
Days at Sea	1,935	2,537	1,699	2,057
Landings (guttled lbs)				
<u>Total</u>	<u>1,188,172</u>	<u>1,604,244</u>	<u>1,105,396</u>	<u>1,299,271</u>
SOI	712,793	862,447	790,798	788,679
Non-SOI	475,379	741,797	314,599	510,592
% SOI	60%	54%	72%	62%
Price (mean)				
<u>Total</u>	<u>\$2.89</u>	<u>\$2.88</u>	<u>\$2.82</u>	<u>\$2.86</u>
SOI	\$2.24	\$2.15	\$2.32	\$2.24
Non-SOI	\$3.87	\$3.73	\$4.08	\$3.89
Revenue				
<u>Total</u>	<u>\$3,437,762</u>	<u>\$4,622,303</u>	<u>\$3,118,938</u>	<u>\$3,726,334</u>
SOI	\$1,599,631	\$1,855,856	\$1,834,355	\$1,763,281
Non-SOI	\$1,838,131	\$2,766,448	\$1,284,583	\$1,963,054
% SOI	47%	40%	59%	49%

Trip-Level Economics

	2016	2017	2018	Average
Number of Observations	242	383	326	
Response Rate (%)	99%	97%	99%	
SOI Trip				
Owner-Operated	64%	75%	86%	75%
Fuel Used per Day at Sea (gallons/day)	59	58	47	55
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	6.5%	8.5%	8.8%	7.9%
Bait	2.8%	3%	2%	2.6%
Ice	1.8%	2.2%	2%	2%
Groceries	2.1%	2.4%	2.2%	2.2%
Miscellaneous	2.4%	2.7%	1.2%	2.1%
Hired Crew	23.4%	22.6%	13.5%	19.8%
IFQ Purchase	11.4%	9.2%	1.5%	7.4%
OC Owner-Captain Time	11.6%	16%	31.6%	19.7%
Trip Net Cash Flow	49.6%	49.4%	68.7%	55.9%
Trip Net Revenue	49.4%	42.6%	38.6%	43.5%
Labor - Hired & Owner	35%	38.5%	45.1%	39.5%
Fuel & Supplies	15.6%	18.8%	16.3%	16.9%
Input Prices				
Fuel Price (per gallon)	\$2.22	\$2.63	\$2.72	\$2.52
Hire Crew Wage (per crew-day)	\$313	\$295	\$260	\$289
Productivity Measures				
Landings/Fuel Use (lbs/gallon)	10.2	11.1	12.3	11
Landings/Labor Use (lbs/crew-day)	279	306	358	314

SOI: 2018 GOM King Mackerel Fishery: Vertical Line
Annual, Vessel-Level Time Series

Annual, Vessel-Level Summary

	2016	2017	2018	Average
Effort				
Vessels	158	187	156	167
Trips - Total	3,851	4,199	3,520	3,857
SOI Trips	1,081	1,396	1,139	1,205
Non-SOI Trips	2,770	2,803	2,381	2,651
Days at Sea	9,162	9,123	6,840	8,375
Landings (guttled lbs)				
Total	5,958,692	6,186,715	4,530,669	5,558,692
SOI	712,793	862,447	790,798	788,679
Non-SOI	5,245,899	5,324,268	3,739,872	4,770,013
% SOI	12%	14%	17%	14%
Revenue				
Total	\$21,591,637	\$21,663,323	\$15,515,435	\$19,590,132
SOI	\$1,599,631	\$1,855,856	\$1,834,355	\$1,763,281
Non-SOI	\$19,992,007	\$19,807,468	\$13,681,080	\$17,826,852
% SOI	7%	9%	12%	9%
Vessel Characteristics				
Length	36	36	35	36
Year Built	1989	1988	1989	1989
For-Hire Fishing Permit	27%	30%	28%	28%

Annual, Vessel-Level Economics

	2016	2017	2018	Average
Number of Observations	34	42	26	
Response Rate (%)	87%	76%	72%	
SOI Vessel				
Owner-Operated	56%	77%	84%	72%
For-Hire Active	37%	28%	4%	23%
Vessel Value	\$111,905	\$129,978	\$74,948	\$105,610
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	6.6%	8.7%	11.6%	9%
Other Supplies	10.2%	9.1%	15.3%	11.5%
Hired Crew	23.4%	25.7%	22.2%	23.8%
Vessel Repair & Maintenance	8.4%	9.8%	17.2%	11.8%
Insurance	0.9%	1.3%	1%	1.1%
Overhead	4.1%	7.2%	9.6%	7%
Loan Payment	0.6%	2.3%	2.3%	1.7%
IFQ Purchase	7.1%	6.2%	8.5%	7.3%
OC Owner-Captain Time	3.6%	6.8%	24.3%	11.6%
Net Cash Flow	38.7%	29.7%	12.3%	26.9%
Net Revenue for Operations*	39.7%	27.2%	-7.2%	19.9%
Depreciation	3%	4.2%	6%	4.4%
Vessel R&M, Insur, Overh	13.4%	18.3%	27.8%	19.8%
Labor - Hired & Owner	27%	32.5%	46.5%	35.3%
Fuel & Supplies	16.8%	17.8%	26.9%	20.5%
Economic Return* (on asset value)	65.8%	32.6%	-6%	30.8%

SOI: 2018 GOM King Mackerel Fishery: Trolling

Description: This SOI consists of all logbook trips by permitted vessels where at least one pound of king mackerel from Gulf of Mexico waters was landed in 2018 using Trolling gear type. Due to small sample sizes, the economic results are quite variable and should be used carefully. For important **disclaimer**, see page 15.

Trip-Level Summary

Effort

Trips	1,184
Vessels	93
Days at Sea	1,660
Crew Days	2,601

Landings (gutted lbs)

<u>Total</u>	1,291,875
SOI	1,265,389
Non-SOI	26,486
% SOI	98%

Percent by Gear

	Trips	SOI lbs
Vertical Line	0.1%	0%
Trolling	100%	100%
Gill Net	0%	0%
Other	0%	0%

Price (mean)

<u>Total</u>	\$2.28
SOI	\$2.28
Non-SOI	\$2.00

Revenue

<u>Total</u>	\$2,942,228
SOI	\$2,889,175
Non-SOI	\$53,054
% SOI	98%

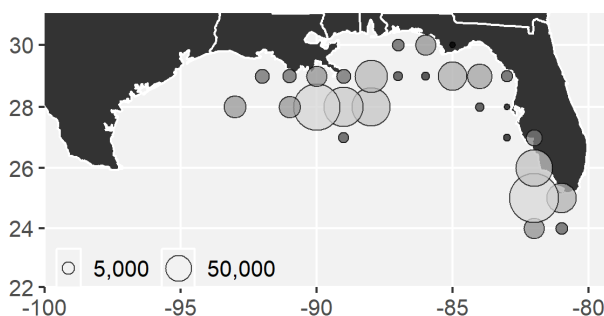
Percent of Revenue by Species Group

King and Cero Mackerel	98%
Spanish Mackerel	0.6%
Dolphinfish/Cobia/Jacks	0.5%
Shallow Water Snappers/Groupers	0.1%
Mid-Shelf Snappers	0.5%
Deep Water Groupers/Tilefish	0%
Grunt/Porgy/Sea Bass/Trigger	0%
Other Species	0.1%

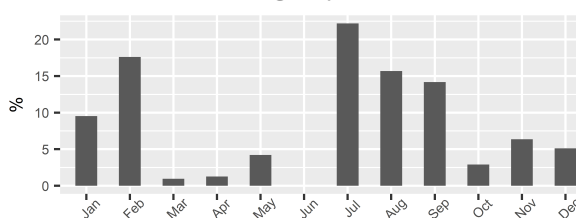
Revenue for Top 5 Species

King and Cero Mackerel	\$2,889,175
Spanish Mackerel	\$18,077
Red Snapper	\$11,515
Cobia	\$11,500
Vermilion Snapper	\$2,914

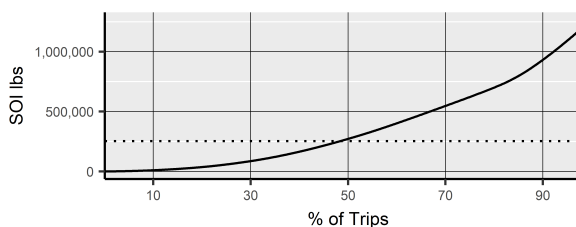
SOI Landings by Area Fished



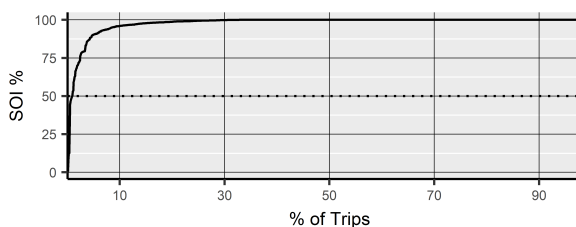
Share of SOI Landings by Month



Cumulative SOI Landings



SOI Share of Revenue Per Trip



Trip Descriptive Statistics (N=1,184)

	Mean	Min	Median	Max
Days at Sea	1.4	1	1	5
Crew Size	1.6	1	1	3
Landings	1,091	3	1,004	3,983
Revenue	\$2,485	\$6	\$2,420	\$13,018
SOI	\$2,440	\$6	\$2,396	\$6,558
% SOI	98%	0.5%	100%	100%

SOI: 2018 GOM King Mackerel Fishery: Trolling

Trip-Level Economics

Response Rate for SOI Trips

	Trips	%SOI	%Selected	%Responded
SOI	1,184	-	-	-
Selected	343	29%	-	-
Responded	304	26%	89%	-
Used	303	26%	88%	100%

Economic Results (n=303)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Trip					
Owner-Operated	91%	5	83%	100%	-
Days at Sea	1.3	0.1	1.1	1.5	1
Crew Size	1.2	0.1	1.1	1.4	1
Fuel Used	60	9	45	75	50
Landings (gutted lbs)	1,062	108	878	1,246	967
Total Revenue	2,313	222	1,932	2,695	2,178
Cost					
Fuel	173	23	133	213	137
Bait	27	7	16	39	20
Ice	46	9	30	61	30
Groceries	45	9	30	59	25
Miscellaneous	67	24	27	108	30
Hired Crew	220	87	70	370	0
IFQ Purchase	0	0	0	0	0
OC Owner-Captain Time	817	93	657	976	721
Trip Net Cash Flow*	1,736	172	1,441	2,030	1,545
Trip Net Revenue*	919	105	739	1,098	813

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

Revenue 100%	Trip Net Cash Flow* 75%	Trip Net Revenue* 40%
	Labor - Hired 9%	Labor - Hired & Owner 45%
	Fuel & Supplies 15%	Fuel & Supplies 15%

Input Prices

Fuel Price (average): \$2.87 per gallon

Hired Crew Wage (implicit): \$517 per crew-day

Productivity Measures

Landings/Fuel Use: 17.6 lbs/gallon

Landings/Labor Use: 660 lbs/crew-day

* See Definitions in Methods Section or Glossary.

SOI: 2018 GOM King Mackerel Fishery: Trolling

Annual, Vessel-Level Summary

Effort

Vessels	93
<u>Trips - Total</u>	<u>2,765</u>
SOI Trips	1,184
Non-SOI Trips	1,581
Days at Sea	3,743
Crew Days	5,820

Landings (guttled lbs)

<u>Total</u>	<u>2,168,598</u>
SOI	1,265,389
Non-SOI	903,209
% SOI	58%

Percent by Gear

	Trips	Total lbs
Vertical Line	22%	25%
Trolling	77%	74%
Gill Net	0.2%	0.2%
Longline	0.7%	0.7%
Other	0.1%	0%

Price (mean)

<u>Total</u>	<u>\$2.61</u>
SOI	\$2.28
Non-SOI	\$3.06

Revenue

<u>Total</u>	<u>\$5,650,148</u>
SOI	\$2,889,175
Non-SOI	\$2,760,973
% SOI	51%

Percent of Revenue by Species Group

King and Cero Mackerel	66%
Spanish Mackerel	2%
Dolphinfish/Cobia/Jacks	2%
Shallow Water Snappers/Groupers	5%
Mid-Shelf Snappers	23%
Deep Water Groupers/Tilefish	2%
Grunt/Porgy/Sea Bass/Trigger	0.6%
Other Species	0.7%

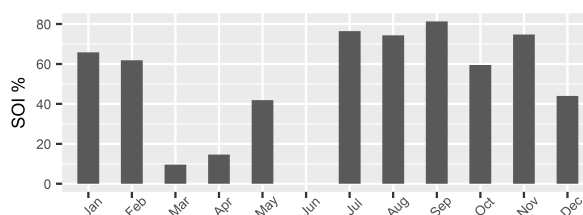
Revenue for Top 5 Species

King and Cero Mackerel	\$3,722,963
Red Snapper	\$1,157,727
Vermilion Snapper	\$150,887
Red Grouper	\$137,937
Spanish Mackerel	\$90,890

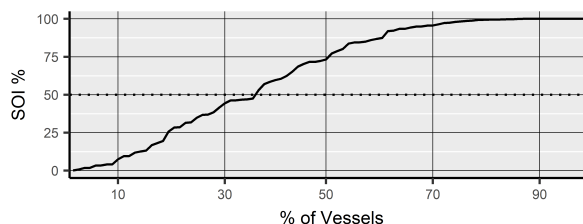
Annual, Vessel Descriptive Statistics (N=93)

	Mean	Min	Median	Max
Trips	29.7	1	18	162
Days at Sea	40.2	1	30	162
Crew Days	62.6	1	49	293
Landings	23,318	49	15,947	112,879
Revenue	\$60,754	\$111	\$36,924	\$432,369
SOI	\$31,066	\$111	\$14,887	\$175,331
% SOI	65.1%	0.1%	77.2%	100%

SOI Share of Monthly Landings



SOI Share of Revenue Per Vessel



Percent with Federal Permit

King Mackerel	100%
Spanish Mackerel	91%
Dolphin-Wahoo	71%
GOM Reef Fish	30%
SAT Snapper & Grouper - Unlimited	14%
SAT Snapper & Grouper - Limited	4%
Other Commercial Fishing	20%
For-Hire Fishing	12%

Vessel Characteristics (N=93)

	Mean	Min	Median	Max
Length	33	22	33	58
Year Built	1985	1956	1984	2011
Horsepower	365	125	330	715
Fiberglass Hull	97%	-	-	-
Diesel Engine	75%	-	-	-
Ice Refrigeration	97%	-	-	-

SOI: 2018 GOM King Mackerel Fishery: Trolling

Annual, Vessel-Level Economics

Response Rate for SOI Vessels

	Vessels	%SOI	%Selected	%Responded
SOI	93	-	-	-
Selected	26	28%	-	-
Responded	18	19%	69%	-
Used	17	18%	65%	94%

Economic Results (n=17)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Vessel					
Owner-Operated	89%	7.4	76%	102%	-
For-Hire Active	7%	5.9	-4%	17%	-
Days - Commercial Fishing	79	12.1	57	100	35
Days - For-Hire Fishing	15	13.7	-9	39	0
Days - Non-fishing	1	0.9	0	3	0
Vessel Value	46,574	7,489	33,445	59,702	40,000
Has Insurance	24%	10.1	6%	42%	-
Total Revenue	44,559	7,777	30,926	58,191	36,750
Commercial Fishing	42,238	7,505	29,080	55,395	26,000
For-Hire Fishing	2,321	2,124	-1,403	6,045	0
Cost					
Fuel	4,950	755	3,626	6,274	5,028
Other Supplies	6,778	2,125	3,052	10,503	2,101
Hired Crew	5,376	2,400	1,169	9,583	0
Vessel Repair & Maintenance	6,518	2,283	2,515	10,521	4,429
Insurance	481	266	15	946	0
Overhead	4,968	1,526	2,292	7,644	3,000
Loan Payment	1,363	731	81	2,644	0
IFQ Purchase	0	0	0	0	0
OC Owner-Captain Time	12,753	3,130	7,266	18,240	4,005
Depreciation	2,329	374	1,672	2,985	2,000
Net Cash Flow	14,125	5,826	3,912	24,338	8,100
Net Revenue from Operations*	406	5,080	-8,500	9,313	-1,214

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

Revenue 100%	Net Cash Flow 32%	Net Revenue - Operations 0.9%
		Depreciation 5%
	Loan Payment 3%	Vessel R&M, Insur, Overh 27%
	Vessel R&M, Insur, Overh 27%	Labor - Hired & Owner 41%
	Labor - Hired 12%	
	Fuel & Supplies 26%	Fuel & Supplies 26%

Economic Return* (on Vessel Asset Value): 0.9%

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

SOI: 2018 GOM King Mackerel Fishery: Trolling

Trip-Level Time Series

Trip-Level Summary

	2016	2017	2018	Average
Effort				
Trips	1,157	1,437	1,184	1,259
Vessels	95	121	93	103
Days at Sea	1,868	2,050	1,660	1,859
Landings (guttled lbs)				
<u>Total</u>	<u>1,210,523</u>	<u>1,345,660</u>	<u>1,291,875</u>	<u>1,282,686</u>
SOI	1,177,692	1,324,918	1,265,389	1,256,000
Non-SOI	32,831	20,742	26,486	26,686
% SOI	97%	98%	98%	98%
Price (mean)				
<u>Total</u>	<u>\$2.24</u>	<u>\$2.15</u>	<u>\$2.28</u>	<u>\$2.22</u>
SOI	\$2.23	\$2.15	\$2.28	\$2.22
Non-SOI	\$2.61	\$2.17	\$2.00	\$2.26
Revenue				
<u>Total</u>	<u>\$2,719,960</u>	<u>\$2,896,009</u>	<u>\$2,942,228</u>	<u>\$2,852,732</u>
SOI	\$2,634,228	\$2,850,982	\$2,889,175	\$2,791,462
Non-SOI	\$85,732	\$45,027	\$53,054	\$61,271
% SOI	97%	98%	98%	98%

Trip-Level Economics

	2016	2017	2018	Average
Number of Observations	254	381	303	
Response Rate (%)	97%	95%	88%	
SOI Trip				
Owner-Operated	90%	89%	91%	90%
Fuel Used per Day at Sea (gallons/day)	39	45	46	43
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	7.6%	6.5%	7.5%	7.2%
Bait	1.2%	1.3%	1.2%	1.2%
Ice	2.5%	2.5%	2%	2.3%
Groceries	2.8%	2.2%	1.9%	2.3%
Miscellaneous	4.1%	1.8%	2.9%	2.9%
Hired Crew	11.5%	15.2%	9.5%	12.1%
IFQ Purchase	0%	0.7%	0%	0.2%
OC Owner-Captain Time	29.7%	32.4%	35.3%	32.5%
Trip Net Cash Flow	70.2%	69.7%	75%	71.6%
Trip Net Revenue	40.6%	38.1%	39.7%	39.5%
Labor - Hired & Owner	41.2%	47.6%	44.8%	44.5%
Fuel & Supplies	18.2%	14.3%	15.5%	16%
Input Prices				
Fuel Price (per gallon)	\$2.31	\$2.32	\$2.87	\$2.50
Hire Crew Wage (per crew-day)	\$216	\$360	\$517	\$364
Productivity Measures				
Landings/Fuel Use (lbs/gallon)	14.1	16.5	17.6	16
Landings/Labor Use (lbs/crew-day)	357	467	660	495

SOI: 2018 GOM King Mackerel Fishery: Trolling
Annual, Vessel-Level Time Series

Annual, Vessel-Level Summary

	2016	2017	2018	Average
Effort				
Vessels	95	121	93	103
Trips - Total	3,224	3,522	2,765	3,170
SOI Trips	1,157	1,437	1,184	1,259
Non-SOI Trips	2,067	2,085	1,581	1,911
Days at Sea	4,768	5,181	3,743	4,564
Landings (guttled lbs)				
Total	2,680,515	2,805,550	2,168,598	2,551,554
SOI	1,177,692	1,324,918	1,265,389	1,256,000
Non-SOI	1,502,823	1,480,633	903,209	1,295,555
% SOI	44%	47%	58%	50%
Revenue				
Total	\$7,174,724	\$7,032,739	\$5,650,148	\$6,619,204
SOI	\$2,634,228	\$2,850,982	\$2,889,175	\$2,791,462
Non-SOI	\$4,540,495	\$4,181,757	\$2,760,973	\$3,827,742
% SOI	37%	41%	51%	43%
Vessel Characteristics				
Length	33	33	33	33
Year Built	1985	1985	1985	1985
For-Hire Fishing Permit	18%	27%	12%	19%

Annual, Vessel-Level Economics

	2016	2017	2018	Average
Number of Observations	16	31	17	
Response Rate (%)	62%	82%	65%	
SOI Vessel				
Owner-Operated	90%	79%	89%	86%
For-Hire Active	10%	24%	7%	14%
Vessel Value	\$99,588	\$108,046	\$46,574	\$84,736
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	16.3%	10.5%	11.1%	12.6%
Other Supplies	13.9%	12.5%	15.2%	13.9%
Hired Crew	6.1%	19.2%	12.1%	12.5%
Vessel Repair & Maintenance	14%	10.5%	14.6%	13%
Insurance	1.4%	1.7%	1.1%	1.4%
Overhead	9.5%	6.1%	11.1%	8.9%
Loan Payment	2%	1.4%	3.1%	2.2%
IFQ Purchase	1.5%	4.5%	0%	2%
OC Owner-Captain Time	20.1%	13.1%	28.6%	20.6%
Net Cash Flow	35.4%	33.5%	31.7%	33.5%
Net Revenue for Operations*	8.1%	21.9%	0.9%	10.3%
Depreciation	10.7%	4.4%	5.2%	6.8%
Vessel R&M, Insur, Overh	24.8%	18.4%	26.9%	23.4%
Labor - Hired & Owner	26.2%	32.4%	40.7%	33.1%
Fuel & Supplies	30.2%	23%	26.3%	26.5%
Economic Return* (on asset value)	3.8%	25.2%	0.9%	10%

SOI: 2018 SAT Spanish Mackerel Fishery: All Gears

Description: This SOI consists of all logbook trips by permitted vessels where at least one pound of Spanish mackerel from U.S. South Atlantic waters was landed in 2018 using any type of gear. For important **disclaimer**, see page 15.

Trip-Level Summary

Effort

Trips	3,898
Vessels	377
Days at Sea	4,041
Crew Days	6,467

Landings (gutted lbs)

<u>Total</u>	2,363,524
SOI	1,763,987
Non-SOI	599,537
% SOI	75%

Percent by Gear

	Trips	SOI lbs
Vertical Line	46%	49%
Trolling	18%	2%
Gill Net	31%	40%
Other	5%	9%

Price (mean)

<u>Total</u>	\$1.29
SOI	\$1.23
Non-SOI	\$1.45

Revenue

<u>Total</u>	\$3,041,000
SOI	\$2,170,369
Non-SOI	\$870,631
% SOI	71%

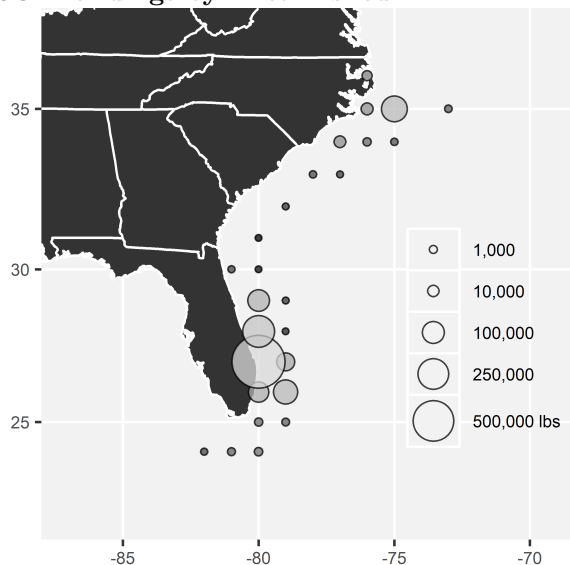
Percent of Revenue by Species Group

King and Cero Mackerel	12%
Spanish Mackerel	71%
Dolphinfish/Cobia/Jacks	3%
Shallow Water Snappers/Groupers	2%
Mid-Shelf Snappers	0.5%
Deep Water Groupers/Tilefish	0.1%
Grunt/Porgy/Sea Bass/Trigger	0.3%
Other Species	11%

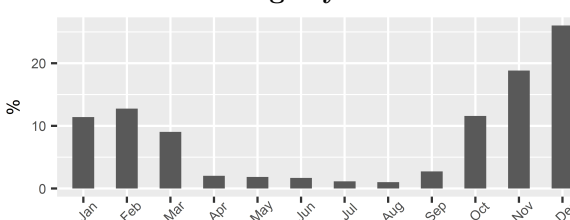
Revenue for Top 5 Species

Spanish Mackerel	\$2,170,369
King and Cero Mackerel	\$368,870
Bluefish	\$193,742
Blue Runner	\$43,394
Yellowtail Snapper	\$31,703

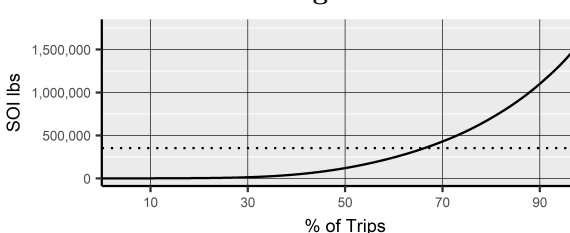
SOI Landings by Area Fished



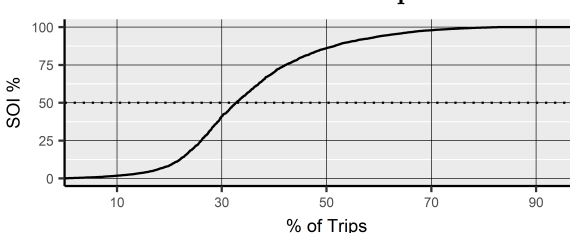
Share of SOI Landings by Month



Cumulative SOI Landings



SOI Share of Revenue Per Trip



Trip Descriptive Statistics (N=3,898)

	Mean	Min	Median	Max
Days at Sea	1	1	1	9
Crew Size	1.6	1	2	4
Landings	606	2	400	5,053
Revenue	\$780	\$2	\$552	\$12,259
SOI	\$557	\$1	\$318	\$5,802
% SOI	65%	0%	86.2%	100%

SOI: 2018 SAT Spanish Mackerel Fishery: All Gears

Trip-Level Economics

Response Rate for SOI Trips

	Trips	%SOI	%Selected	%Responded
SOI	3,898	-	-	-
Selected	803	21%	-	-
Responded	802	21%	100%	-
Used	780	20%	97%	97%

Economic Results (n=780)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Trip					
Owner-Operated	94%	3	89%	99%	-
Days at Sea	1	0.1	0.9	1.1	1
Crew Size	1.6	0.1	1.5	1.8	2
Fuel Used	29	3	23	34	25
Landings (gutted lbs)	603	44	530	677	433
Total Revenue	823	84	683	963	650
Cost					
Fuel	87	11	69	106	67
Bait	23	14	0	46	0
Ice	15	4	9	21	10
Groceries	21	9	6	36	15
Miscellaneous	39	4	33	46	19
Hired Crew	213	25	171	255	29
IFQ Purchase	0	0	0	0	0
OC Owner-Captain Time	248	19	217	280	167
Trip Net Cash Flow*	425	47	346	504	305
Trip Net Revenue*	177	43	105	248	121

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

Revenue 100%	Trip Net Cash Flow* 52%	Trip Net Revenue* 21%
	Labor - Hired 26%	Labor - Hired & Owner 56%
	Fuel & Supplies 23%	Fuel & Supplies 23%

Input Prices

Fuel Price (average): \$3.01 per gallon

Hired Crew Wage (implicit): \$300 per crew-day

Productivity Measures

Landings/Fuel Use: 20.8 lbs/gallon

Landings/Labor Use: 364 lbs/crew-day

* See Definitions in Methods Section or Glossary.

SOI: 2018 SAT Spanish Mackerel Fishery: All Gears

Annual, Vessel-Level Summary

Effort

Vessels	377
<u>Trips - Total</u>	<u>14,796</u>
SOI Trips	3,898
Non-SOI Trips	10,898
Days at Sea	16,054
Crew Days	24,864

Landings (guttled lbs)

<u>Total</u>	<u>6,337,702</u>
SOI	1,763,987
Non-SOI	4,573,715
% SOI	28%

Percent by Gear

	Trips	Total lbs
Vertical Line	54%	45%
Trolling	32%	24%
Gill Net	11%	26%
Longline	0.8%	2%
Other	3%	4%

Price (mean)

<u>Total</u>	<u>\$1.94</u>
SOI	\$1.23
Non-SOI	\$2.21

Revenue

<u>Total</u>	<u>\$12,297,873</u>
SOI	\$2,170,369
Non-SOI	\$10,127,503
% SOI	18%

Percent of Revenue by Species Group

King and Cero Mackerel	44%
Spanish Mackerel	18%
Dolphinfish/Cobia/Jacks	6%
Shallow Water Snappers/Groupers	14%
Mid-Shelf Snappers	5%
Deep Water Groupers/Tilefish	4%
Grunt/Porgy/Sea Bass/Trigger	2%
Other Species	8%

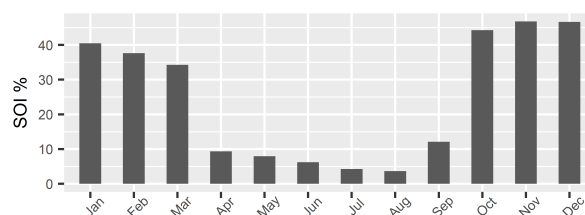
Revenue for Top 5 Species

King and Cero Mackerel	\$5,429,097
Spanish Mackerel	\$2,218,537
Yellowtail Snapper	\$1,056,520
Vermilion Snapper	\$348,493
Gag Grouper	\$258,732

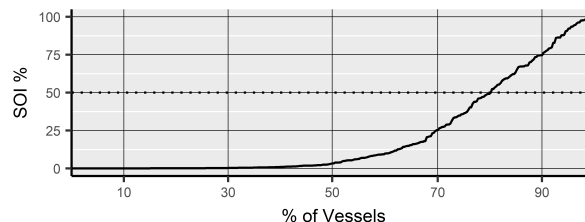
Annual, Vessel Descriptive Statistics (N=377)

	Mean	Min	Median	Max
Trips	39.2	1	27	205
Days at Sea	42.6	1	29	205
Crew Days	66	1	44	366
Landings	16,811	9	8,204	163,037
Revenue	\$32,620	\$16	\$16,093	\$220,294
SOI	\$5,757	\$1	\$237	\$83,927
% SOI	21.8%	0%	3.3%	100%

SOI Share of Monthly Landings



SOI Share of Revenue Per Vessel



Percent with Federal Permit

King Mackerel	84%
Spanish Mackerel	100%
Dolphin-Wahoo	95%
GOM Reef Fish	3%
SAT Snapper & Grouper - Unlimited	23%
SAT Snapper & Grouper - Limited	3%
Other Commercial Fishing	24%
For-Hire Fishing	28%

Vessel Characteristics (N=377)

	Mean	Min	Median	Max
Length	29	16	28	48
Year Built	1989	1956	1988	2018
Horsepower	320	25	300	1,200
Fiberglass Hull	97%	-	-	-
Diesel Engine	45%	-	-	-
Ice Refrigeration	93%	-	-	-

SOI: 2018 SAT Spanish Mackerel Fishery: All Gears

Annual, Vessel-Level Economics

Response Rate for SOI Vessels

	Vessels	%SOI	%Selected	%Responded
SOI	377	-	-	-
Selected	86	23%	-	-
Responded	71	19%	83%	-
Used	71	19%	83%	100%

Economic Results (n=71)

	Mean	SE	90% L.B.	90% U.B.	Median
SOI Vessel					
Owner-Operated	93%	3.4	87%	99%	-
For-Hire Active	4%	2.5	0%	8%	-
Days - Commercial Fishing	71	6.1	61	81	43
Days - For-Hire Fishing	1	0.7	0	2	0
Days - Non-fishing	2	0.7	1	3	0
Vessel Value	68,724	6,508	57,871	79,577	50,000
Has Insurance	40%	6.4	30%	51%	-
Total Revenue	48,312	5,202	39,636	56,987	26,000
Commercial Fishing	47,493	5,158	38,892	56,094	26,000
For-Hire Fishing	819	631	-233	1,871	0
Cost					
Fuel	5,488	531	4,602	6,374	3,000
Other Supplies	6,429	970	4,812	8,046	3,100
Hired Crew	8,283	1,341	6,046	10,520	0
Vessel Repair & Maintenance	9,971	1,737	7,076	12,867	5,000
Insurance	863	200	529	1,198	0
Overhead	2,760	376	2,133	3,386	1,650
Loan Payment	693	192	373	1,013	0
IFQ Purchase	0	0	0	0	0
OC Owner-Captain Time	9,870	1,237	7,808	11,932	5,170
Depreciation	3,436	325	2,894	3,979	2,500
Net Cash Flow	13,824	3,483	8,015	19,633	7,430
Net Revenue from Operations	1,210	3,319	-4,324	6,745	-2,070

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

Revenue 100%	Net Cash Flow 29%	Net Revenue - Operations 3%
		Depreciation 7%
	Loan Payment 1%	Vessel R&M, Insur, Overh 28%
	Vessel R&M, Insur, Overh 28%	Labor - Hired & Owner 38%
	Labor - Hired 17%	
	Fuel & Supplies 25%	Fuel & Supplies 25%

Economic Return (on Vessel Asset Value): 1.8%

SOI: 2018 SAT Spanish Mackerel Fishery: All Gears

Trip-Level Time Series

Trip-Level Summary

	2016	2017	2018	Average
Effort				
Trips	3,714	3,311	3,898	3,641
Vessels	393	351	377	374
Days at Sea	3,885	3,509	4,041	3,812
Landings (guttled lbs)				
Total	1,988,937	1,968,418	2,363,524	2,106,960
SOI	1,438,920	1,478,248	1,763,987	1,560,385
Non-SOI	550,016	490,169	599,537	546,574
% SOI	72%	75%	75%	74%
Price (mean)				
Total	\$1.37	\$1.37	\$1.29	\$1.34
SOI	\$1.36	\$1.35	\$1.23	\$1.31
Non-SOI	\$1.41	\$1.43	\$1.45	\$1.43
Revenue				
Total	\$2,723,647	\$2,704,052	\$3,041,000	\$2,822,900
SOI	\$1,946,541	\$2,001,693	\$2,170,369	\$2,039,534
Non-SOI	\$777,106	\$702,359	\$870,631	\$783,365
% SOI	71%	74%	71%	72%

Trip-Level Economics

	2016	2017	2018	Average
Number of Observations	649	1,165	780	
Response Rate (%)	92%	94%	97%	
SOI Trip				
Owner-Operated	91%	97%	94%	94%
Fuel Used per Day at Sea (gallons/day)	26	27	29	27
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	9.9%	9%	10.6%	9.8%
Bait	3.3%	1.9%	2.8%	2.7%
Ice	1.2%	1.2%	1.9%	1.4%
Groceries	2.2%	1.7%	2.5%	2.1%
Miscellaneous	2.2%	3.3%	4.8%	3.4%
Hired Crew	20.9%	20.1%	25.9%	22.3%
IFQ Purchase	0%	0%	0%	0%
OC Owner-Captain Time	31.9%	33.1%	30.1%	31.7%
Trip Net Cash Flow	60.3%	62.9%	51.6%	58.3%
Trip Net Revenue	28.4%	29.9%	21.5%	26.6%
Labor - Hired & Owner	52.8%	53.1%	56%	54%
Fuel & Supplies	18.8%	17%	22.5%	19.4%
Input Prices				
Fuel Price (per gallon)	\$2.45	\$2.72	\$3.01	\$2.73
Hire Crew Wage (per crew-day)	\$186	\$276	\$300	\$254
Productivity Measures				
Landings/Fuel Use (lbs/gallon)	15.7	22	20.8	20
Landings/Labor Use (lbs/crew-day)	248	377	364	330

SOI: 2018 SAT Spanish Mackerel Fishery: All Gears
Annual, Vessel-Level Time Series

Annual, Vessel-Level Summary

	2016	2017	2018	Average
Effort				
Vessels	393	351	377	374
Trips - Total	15,906	14,723	14,796	15,142
SOI Trips	3,714	3,311	3,898	3,641
Non-SOI Trips	12,192	11,412	10,898	11,501
Days at Sea	17,796	16,399	16,054	16,750
Landings (guttled lbs)				
Total	7,036,684	6,255,890	6,337,702	6,543,425
SOI	1,438,920	1,478,248	1,763,987	1,560,385
Non-SOI	5,597,764	4,777,641	4,573,715	4,983,040
% SOI	20%	24%	28%	24%
Revenue				
Total	\$14,256,402	\$12,680,443	\$12,297,873	\$13,078,239
SOI	\$1,946,541	\$2,001,693	\$2,170,369	\$2,039,534
Non-SOI	\$12,309,860	\$10,678,749	\$10,127,503	\$11,038,704
% SOI	14%	16%	18%	16%
Vessel Characteristics				
Length	29	29	29	29
Year Built	1989	1989	1989	1989
For-Hire Fishing Permit	26%	26%	28%	27%

Annual, Vessel-Level Economics

	2016	2017	2018	Average
Number of Observations	67	91	71	
Response Rate (%)	71%	79%	83%	
SOI Vessel				
Owner-Operated	97%	96%	93%	95%
For-Hire Active	13%	15%	4%	11%
Vessel Value	\$58,163	\$51,660	\$68,724	\$59,516
Total Revenue	100%	100%	100%	100%
Costs (% of Revenue)				
Fuel	13.9%	12.6%	11.4%	12.6%
Other Supplies	14.3%	11.9%	13.3%	13.2%
Hired Crew	17.3%	16.3%	17.1%	16.9%
Vessel Repair & Maintenance	21.8%	19%	20.6%	20.5%
Insurance	1.3%	1.9%	1.8%	1.7%
Overhead	10.3%	9.1%	5.7%	8.4%
Loan Payment	3.5%	1.9%	1.4%	2.3%
IFQ Purchase	0%	0.5%	0%	0.2%
OC Owner-Captain Time	26.1%	24.7%	20.4%	23.7%
Net Cash Flow	17.7%	26.9%	28.6%	24.4%
Net Revenue for Operations	-12.7%	-1.4%	2.5%	-3.9%
Depreciation	7.9%	6%	7.1%	7%
Vessel R&M, Insur, Overh	33.4%	29.9%	28.1%	30.5%
Labor - Hired & Owner	43.4%	41.1%	37.6%	40.7%
Fuel & Supplies	28.1%	24.5%	24.7%	25.8%
Economic Return (on asset value)	-8.1%	-1.2%	1.8%	-2.5%

Appendices

Appendix 1 - Groups for the "Percent of Revenue by Species Group" Tables

NOTE: These groups are used in the "Percent of Revenue by Species Group" table in both the Trip-Level Summary and the Annual, Vessel-Level Summary sections.

King and Cero Mackerel

Cero Mackerel

King Mackerel

Spanish Mackerel

Spanish Mackerel

Dolphinfish/Cobia/Jacks

Almaco Jack

Banded Rudderfish

Bar Jack

Black Jack

Blue Runner

Cobia

Crevalle Jack

Dolphinfish

Greater Amberjack

Horse-Eye Jack

Lesser Amberjack

Wahoo

Yellow Jack

Shallow Water Snapper/Grouper

Black Grouper

Broomtail Grouper

Coney

Creole-Fish

Cubera Snapper

Dog Snapper

Gag Grouper

Goliath Grouper

Gray Snapper

Graysby

Lane Snapper

Mahogany Snapper

Marbled Grouper

Mutton Snapper

Nassau Grouper

Red Grouper

Red Hind

Rock Hind

Scamp

Schoolmaster Snapper

Tiger Grouper

Wenchman

Yellowfin Grouper

Yellowmouth Grouper

Yellowtail Snapper

Mid-Shelf Snappers

Black Snapper

Blackfin Snapper

Queen Snapper

Red Snapper

Silk Snapper

Vermilion Snapper

Deep Water Groupers/Tilefish

Anchor Tilefish

Blackline Tilefish

Blueline Tilefish

Golden Tilefish

Goldface Tilefish

Misty Grouper

Snowy Grouper

Speckled Hind

Warsaw Grouper

Yellowedge Grouper

Grunt/Porgy/Sea Bass/Triggerfish

Atlantic Spadefish

Black Margate

Black Sea Bass

Bluestriped Grunt

Cottonwick Grunt

French Grunt

Grass Porgy

Gray Triggerfish

Hogfish

Jolthead Porgy

Knobbed Porgy

Littlehead Porgy

Longspine Porgy

Margate

Ocean Triggerfish

Porkfish

Puddingwife

Queen Triggerfish

Red Porgy

Sailors Choice Grunt

Saucereye Porgy

Scup

Sheepshead

Smallmouth Grunt

Spanish Grunt

Tomtate Grunt

White Grunt

Whitebone Porgy

Other Species

All other species not listed above

Appendix 2 - Glossary/Abbreviations

- **ACL** - Annual Catch Limit
- **AM** - Accountability Measures
- **CMP** - Coastal Migratory Pelagic Species including King Mackerel, Spanish Mackerel, and Cobia.
- **Deep Water Groupers/Tilefish** - See Appendix 1 for particular species included.
- **Economic Return (on Asset Value)** - The economic return is calculated by dividing the mean Net Revenue from Operations by the mean Vessel Value. For Gulf of Mexico reef fish fisheries, it is critical to note that, practically, this return is shared between owners of vessel capital AND IFQ shares. By purposefully ignoring the IFQ shareholder distribution, the focus is on the real productive capacity of the commercial fishery. All IFQ transactions are zero-sum in that they transfer wealth. The catch share management structure of the fishery allows for the realization of resource rents that will, in all likelihood, accrue to the IFQ shareholders.
- **FMP** - Fishery Management Plan
- **GOM** - Gulf of Mexico
- **Grunt/Porgy/Sea Bass/Triggerfish** - See Appendix 1 for particular species included.
- **IFQ** - Individual fishing quota
- **Dolphinfish/Cobia/Jacks** - See Appendix 1 for particular species included.
- **Mid-Shelf Snappers** - See Appendix 1 for particular species included.
- **Net Cash Flow** - Revenue minus the costs for fuel, other supplies, hired crew, vessel repair and maintenance, insurance, overhead, loan payments, and IFQ purchase. The focus is on actual cash transactions, i.e. money flows. In-kind contributions to the production process, i.e., the opportunity cost of owner-captain time and depreciation, are ignored. The sale of IFQ allocation or shares is also not accounted for, as these transactions cannot be associated with a vessel.
- **Net Revenue from Operations** - Revenue minus the costs for fuel, other supplies, hired crew, vessel repair and maintenance, insurance, overhead, and the opportunity cost of an owner's time as captain as well as the vessel's depreciation. By including in-kind contributions to the production process (opportunity cost of an owner's time and depreciation) and excluding transfer payments (loan payments and IFQ purchase), net revenue from operations is a measure of the inherent productivity, i.e., economic performance, of the commercial fishery. Note that IFQ share ownership is ignored here.
- **NMFS** - National Marine Fisheries Service
- **OC** - Opportunity Cost - An economic term referring to the value of a good or service in its next best productive use.
- **OC Owner-Captain Time** - Estimated opportunity cost (OC) of an owner's labor used on the trip.
- **RF** - Reef Fish
- **SAT** - South Atlantic
- **SEFSC** - Southeast Fisheries Science Center
- **SERO** - Southeast Regional Office
- **SG** - Snapper-Grouper
- **Shallow Water Snappers/Groupers** - See Appendix 1 for particular species included.
- **SOI** - Segment of Interest - A subset of commercial fishing trips we provide results for. A particular SOI consists of all trips where at least one pound of fish, which matches the criteria of the SOI, was landed.
- **Trip Net Cash Flow** - Revenue minus the costs for fuel, bait, ice, groceries, miscellaneous, hired crew, and IFQ purchase. Cash Flow represents an estimate of the money (cash) generated by the typical SOI trip over and above the cash cost of taking the trip (marginal or variable costs of trip). This implies a short term perspective.
- **Trip Net Revenue** - Revenue minus the costs for fuel, bait, ice, groceries, miscellaneous, hired crew, and the opportunity cost of owner's time as captain. By including opportunity cost of owner's time (an in-kind, variable factor to production) and excluding IFQ purchase payments, trip net revenue is a measure of the inherent short-term productivity of the commercial fishing process.
- **Vertical Line** - A gear type which includes hand lines, rod and reels, electrical reels and bandit gear.