Angler Travel and Targeting Report 2021: St. Lucie County

A data report for the St Lucie Beach County Tourist Development Council and Board of County Commissioners prepared by:

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Abbreviations and Definitions

NMFS: National Marine Fisheries Service.
MRIP: Marine Recreational Information Program, which is operated by NMFS to survey coastal anglers.
APAIS: Access Point Angler Intercept Survey, the survey implemented by MRIP to collect information about angling.
Treasure Coast region: refers to the areas of and marine waters adjacent to St. Lucie, Martin, and Palm Beach counties.

Overview Summary

Why this report might be important
Recreational fishing is one of the dominant recreational uses of marine ecosystems globally, and marine recreational fisheries (recreational fisheries occurring in saltwater) are particularly important to Florida. Florida has more saltwater anglers than any other state—2.4 million (USFWS 2011), with over a million saltwater fishing licenses sold annually. The total economic output (market activity) of saltwater fishing in Florida was estimated at around $8b annually (NOAA 2017), making fishing a vital part of Florida's overall economy, and especially critical for coastal counties. Because of their importance, marine recreational fisheries in Florida are carefully managed by state (Florida Fish and Wildlife Conservation Commission; FWC) and by federal (NOAA's National Marine Fisheries Service, NMFS) agencies. These two agencies partner to collect information about recreational fishing that is freely available to the public in the form of large databases. Extracting and visualizing these data can be challenging. We have queried these databases and summarized information we think may be helpful to the St Lucie Beach County Tourist Development Council and Board of County Commissioners. **Specifically this information can be used to inform advertisements of fishing-related tourism in St. Lucie County.**

What this report can be used for
This report is designed to provide information about marine recreational fishing dynamics in St. Lucie County. Fishing dynamics include information about what species of fish recreational fishers (commonly called "anglers") are most often trying to catch and where anglers come from when they fish marine waters from St. Lucie County. Angler targeting and travel information may have several uses. Understanding what fish species are commonly targeted may help inform:

- Which species are most popular with local or non-local anglers.
- How to best advertise fishing in this area–e.g. what fish species should be pictured in advertisements.
- Which rule changes local anglers will care the most about.
- How changes in fish populations (like from a habitat change or fish kill) may affect fishing effort, angler travel, and eventually, local economies.

Information on where anglers come from when they fish local waters has multiple potential uses as well, and we think it can inform:

- Locations to place advertisements for local fishing. For example, does it make more sense to advertise St. Lucie County recreational fishing in New York, or in Georgia?.
- Which people might want to be involved in local fisheries decision-making. For example, if many St. Lucie County anglers reside in other counties, these anglers should perhaps be surveyed prior to any rule changes.

Together, this information is intended to help local governance entities, like the St Lucie Beach County Tourist Development Council and Board of County Commissioners, access and use data that can help them better serve their constituents and sustain or improve the economic effects of marine recreational fishing in St. Lucie County.

Where the information from this report comes from

All of the data in this report come from the NOAA's National Marine Fisheries Program (NMFS) Marine Recreational Information Program (MRIP). These data are publicly available for download at https://www.fisheries.noaa.gov/recreational-fishing-data/data-downloads. The MRIP program contains information voluntarily provided by anglers at fishing locations surveyed according to a scientifically designed sampling program. Data are continuously collected, but data in this report are for years 2009-2019. Future reports will show updated data as they are available.

NMFS MRIP background

What is MRIP?
While commercial fishers have a separate reporting system with specific requirements for commercial fishers to report fishing locations and catches to state and federal agencies, no such requirements exist for recreational fishers The MRIP is NMFS's way of gathering information needed to sustainably manage recreational fisheries. The MRIP allows state and federal researchers and managers to understand things like:

- How many recreational fishing trips are being taken in a region and time period?
- How many of these trips target a certain species?
- What are angling catch rates and how are they changing?
- What are the sizes of fish that are harvested?

These things can be important for developing stock assessments that inform fisheries management decisions. The MRIP system includes two main surveys. One is an "access point" or "intercept" survey designed to understand aspects of fishing trips like length of trip, origin, target species, etc. The other, which this report does not use, is designed to understand what proportion of the human population in an area is engaging in these types of fishing trips. Information from the two surveys is combined to allow researchers to estimate some of the information described in the bullet points above, as well as important things like the total amount of a certain fish species that recreational fishers harvest or remove in a region and time.

What MRIP information does this report use?
It is important to understand that this report does not use the estimates from MRIP. This report only uses the actual data provided by the angler intercept survey. This means all the data here are exactly what anglers are telling surveyors when they are interviewed. This distinction is important for a couple reasons. The data used here are simply descriptive. We do not show "error" or "uncertainty" around them, because we are reporting the metrics from the database, and not extrapolating the data by any factors or subjecting them to statistical estimation processes. What this means, is that the data here will be correct as long as anglers are correctly reporting to surveyors what they did when they went fishing.

Additional information about MRIP
A lot of additional information is available about the NMFS MRIP data and how these data are used. We have described the parts of this information that are important to know to understand and best use the data provided in this report. Additional information directly through NOAA Fisheries at https://www.fisheries.noaa.gov/topic/recreational-fishing-data, as well as through the Marine Resource Education Program, MREP (different from MRIP), for which more information is available at: https://www.gmri.org/our-work/fisheries-convening/mrep-southeast. Finally, many Florida Sea Grant agents and county faculty, FWC personnel, and University of Florida researchers know about MRIP and may be able to answer additional questions.

Fishing Trip Origins: Where do your anglers come from?

Background on data used
Every recreational fishing trip made has an origin and a destination. In the MRIP data system, the origin is described as the angler's residence, and the destination is defined as where the angler was intercepted (e.g., boat ramp, fishing pier, etc.). For this report, the residence is considered to be the population centroid of the angler's county-of-residence. The population centroid is the spatial location in a county that "balances" the counties population. This means the centroid isn't the geographical center of the county, but it is the most likely "average" location for a person to come from, given we know they live in a certain county. The fishing site destinations that are surveyed include those in the MRIP Access Point Angler Intercept Survey (APAIS). What is important is that these destination sites are selected as part of a statistically designed survey. Further information about APAIS and the specific destinations is available at: https://www.fisheries.noaa.gov/recreational-fishing-data/public-access-fishing-site-register

Fishing Trip Origins: Background on methods used
For the recreational fishing trip origin information, we use data available in the MRIP "trips" databases that describe the results of the MRIP APAIS survey—this is the information that anglers tell surveyors when they are interviewed about their trips. We designed queries that let us look at the anglers that were interviewed in specifically St. Lucie County—i.e. the trips where anglers' fishing destination was in marine waters adjacent to St. Lucie County, regardless of where the origin was. Once we have isolated the trips occurring in St. Lucie County, we can analyze where most of these trips came from. Specifically, we can look at things like:

- The proportion of trips sampled in St. Lucie County that come from out-of-state origins.
- The proportion of trips sampled in St. Lucie County with in-state origins.
- Both the above, but for trips in a multi-county region that includes St. Lucie County.

One thing that is important to note is that we report the proportion of the sampled trips. This is not the same as reporting the total number of trips. Enumerating the total number of trips would require estimation tools that are not described here. However, because of the statistical design that the MRIP APAIS survey is implemented, the proportions we use (of sampled trips) should correspond to the total numbers of trips. What this means is that the information in this report can be very useful for things like understanding where people, on average, are coming from when then fish St. Lucie County. Additional information on angler trip analyses is provided in (Camp et al. 2018).

We provide two types of information about angler origins:

- Tables describing where anglers come from.
- Figures of maps graphically illustrating anglers travel.

Fishing Trip Origins Results: Tables

We provide two tables summarizing where anglers come from when they fish various parts of Florida and specifically the Treasure Coast region and St. Lucie County.
Table 1 compares the states that out-of-state anglers come from when they fish either anywhere in Florida, the Treasure Coast region, or specifically St. Lucie County.
Table 2 shows the county-origins of trips made by Florida residents. It compares the proportion of sampled trips coming from counties by anglers (*i*) living outside of the Treasure Coast region, (*ii*) living outside of St. Lucie County, and (*iii*) living anywhere in Florida, including St. Lucie County.

We anticipate these tables may be useful in several ways, including:

- Understanding where anglers fishing in St. Lucie County come from, which may inform placement of fishing and tourism advertisements.
- Understanding how angler origins may differ between St. Lucie County and surrounding areas. This can potentially be used to further fine tune efficient advertisement placement by identifying locations where St. Lucie County may compete more or less with nearby counties for angling visitors.
- Understanding what proportion of anglers fishing St. Lucie County are local vs. visitors, which may be useful for deciding where to have meetings about St. Lucie County fishing.

Table 1

Out-of-state angler origins comparison

Orig.(FL)	Prop.	Orig.(Treasure Coast)	Prop.	Orig.(St Lucie)	Prop.
Georgia	0.157	New York	0.118	Not Available	0.108
Alabama	0.075	Not Available	0.072	New York	0.081
Not Available	0.074	New Jersey	0.065	New Jersey	0.072
Tennessee	0.053	Georgia	0.064	Georgia	0.060
Texas	0.053	Michigan	0.064	Illinois	0.058
Illinois	0.046	Illinois	0.055	Indiana	0.055
Ohio	0.044	North Carolina	0.048	Pennsylvania	0.045
New York	0.043	Pennsylvania	0.047	Ohio	0.039
Michigan	0.042	Ohio	0.046	Michigan	0.038
Pennsylvania	0.032	Indiana	0.037	North Carolina	0.038

Table 1. State origins of anglers fishing Florida, the Treasure Coast region, and St. Lucie County, for 2009-2019.

This table compares which states out-of-state anglers come from when they fish either Florida as a whole, the Treasure Coast region (here defined as including St. Lucie, Martin, and Palm Beach counties), or St. Lucie County.

- Columns 1 & 2 show the state origins of non-Florida residents when they fish in Florida.
- Columns 3 & 4 show the state origins of non-Florida residents when they fish the Treasure Coast region.
- Columns 5 & 6 show the state origins of non-Florida residents when they fish St. Lucie County.

This comparison allows understanding where (*i*) out of state anglers fishing St. Lucie County come from, and (*ii*) how that compares to the local region and broader state of Florida. This may be helpful for understanding if St. Lucie County is attracting anglers from specific origins differently than the surrounding region of the Treasure Coast, or Florida as a whole.

The "Not Available" is returned either when anglers refuse to give state of origin, or do not reside in the US-i.e. international visitors.

Table 2

In-state angler origin comparison

Out-of-region Orig.	Prop.	Out-of-county Orig.	Prop.	Any Orig.	Prop.
Palm Beach	0.327	Indian River	0.453	St Lucie	0.641
Indian River	0.267	Martin	0.114	Indian River	0.163
Okeechobee	0.092	Okeechobee	0.112	Martin	0.041
Broward	0.051	Palm Beach	0.056	Okeechobee	0.040
Orange	0.044	Brevard	0.048	Palm Beach	0.020
Brevard	0.038	Orange	0.043	Brevard	0.017
Polk	0.029	Polk	0.030	Orange	0.015
Miami-Dade	0.024	Broward	0.018	Polk	0.011
Highlands	0.015	Highlands	0.016	Broward	0.007
Hillsborough	0.015	Hillsborough	0.013	Highlands	0.006

Table 2. County origins of Florida anglers fishing the Treasure Coast region and St. Lucie county, for 2009-2019.

This table compares which counties Florida resident anglers come from when they fish the Treasure Coast region (St. Lucie, Martin, and Palm Beach counties) or specifically St. Lucie County.

- Columns 1 & 2 show origins of Florida residents fishing the Treasure Coast region who live outside of the Treasure Coast region.
- Columns 3 & 4 show origins of Florida residents fishing St. Lucie County but living outside of St. Lucie County.
- Columns 5 & 6 show origins of Florida residents fishing St. Lucie County, regardless of where in Florida they live.

This comparison allows understanding (*i*) where Florida resident anglers fishing the Treasure Coast region and St. Lucie County come from, and (*ii*) the Florida counties from which the greatest proportion of out-of-county trips come from.

Fishing Trip Origin Results: Maps

We provide several maps to graphically illustrate where sampled anglers come from when they fish the Treasure Coast region and St. Lucie County. The maps show the "direct line" paths between the population centroids of anglers' county of residence and the location where they were sampled by the MRIP APAIS survey-i.e. their fishing destinations. For all maps, thicker and warmer colored lines indicate more trips from a given county to a given destination, and thinner and cooler colors suggests fewer trips. Here, different maps are created for different species, including the top five species targeted in the Treasure Coast region.

Figure 1 maps trips to St. Lucie County regardless of species targeted.
Figure 2 maps trips to the Treasure Coast region when anglers targeted Dolphin.
Figure 3 maps trips to the Treasure Coast region when anglers targeted Common snook.
Figure 4 maps trips to the Treasure Coast region when anglers targeted Florida pompano.
Figure 5 maps trips to the Treasure Coast region when anglers targeted Snapper family.
Figure 6 maps trips to the Treasure Coast region when anglers targeted Spotted seatrout.

The primary purpose of these figures is to serve as a visual aid to augment the use of the previous tables.

Figure 1.

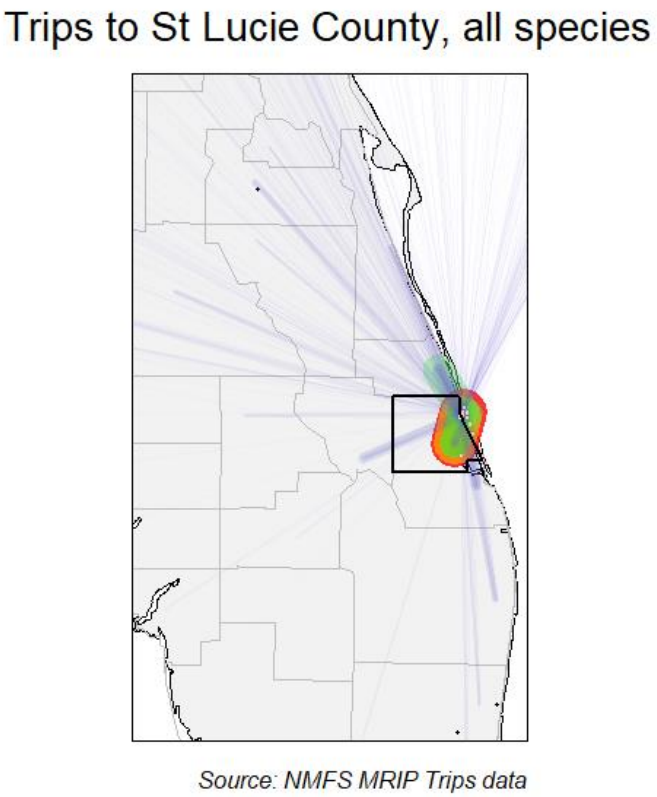

Figure 1. Map showing where trips fishing St. Lucie County originated in, regardless of species targeted, for 2009-2019. Thicker and warmer colored lines show relatively more trips taken, and thinner, cooler colored lines show that relatively fewer trips were taken.

Figure 2.

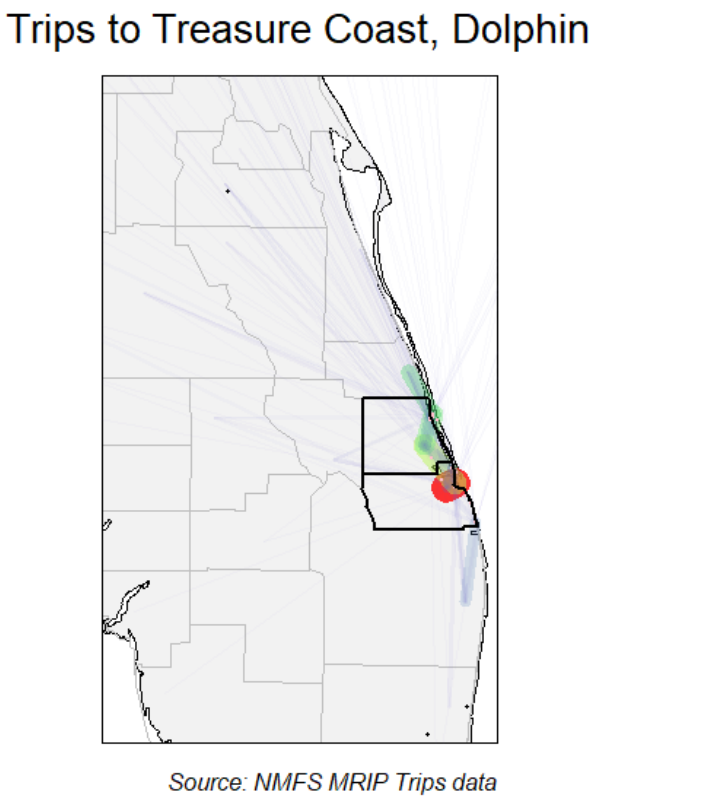

Figure 2. Map showing where trips fishing the Treasure Coast region originated in, when targeted Dolphin, for 2009-2019. Thicker and warmer colored lines show relatively more trips taken, and thinner, cooler colored lines show that relatively fewer trips were taken.

Figure 3.

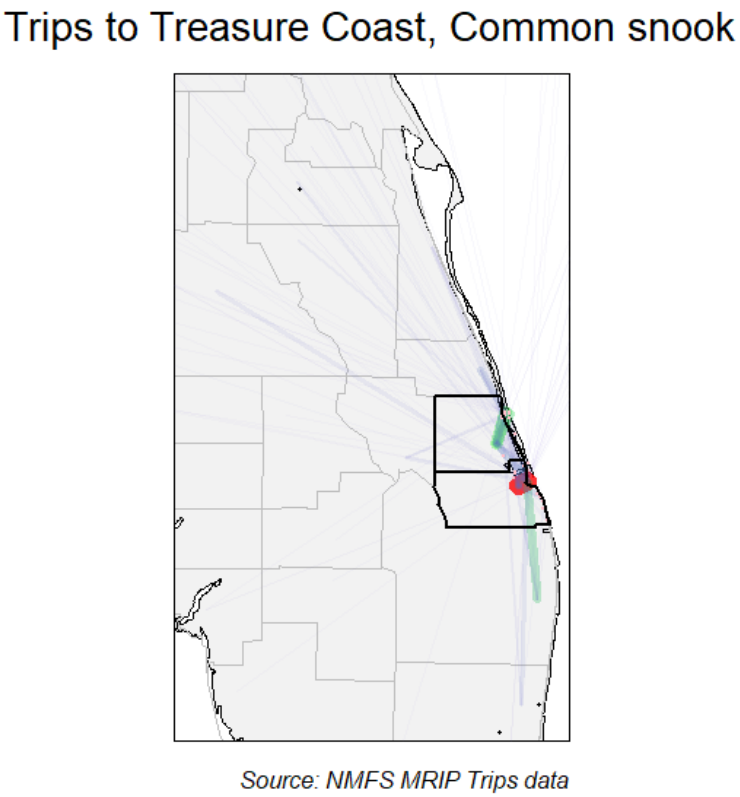

Figure 3. Map showing where trips fishing the Treasure Coast region originated in, when targeted Common snook, for 2009-2019. Thicker and warmer colored lines show relatively more trips taken, and thinner, cooler colored lines show that relatively fewer trips were taken.

Figure 4.

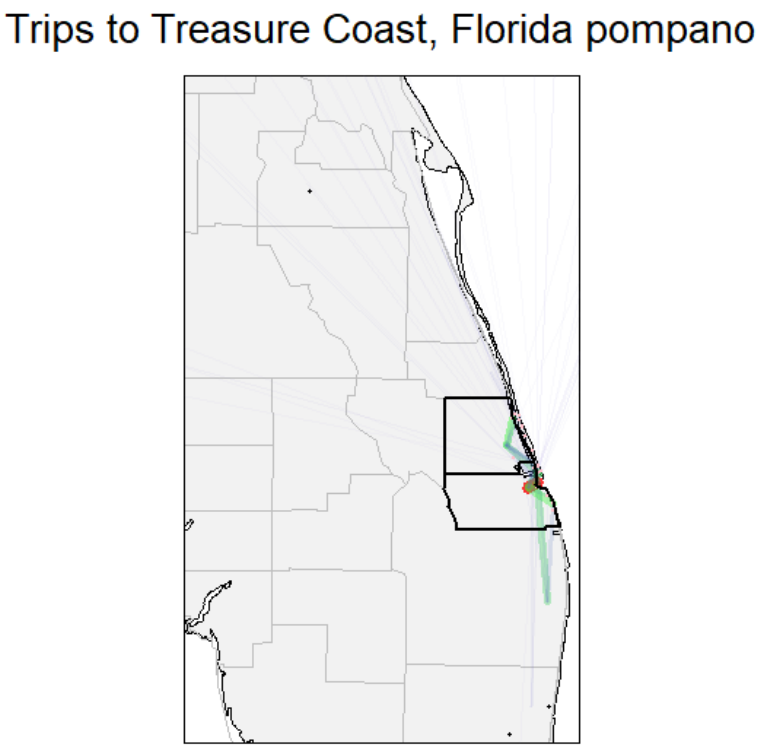

Figure 4. Map showing where trips fishing the Treasure Coast region originated in, when targeted Florida pompano, for 2009-2019. Thicker and warmer colored lines show relatively more trips taken, and thinner, cooler colored lines show that relatively fewer trips were taken.

Figure 5.

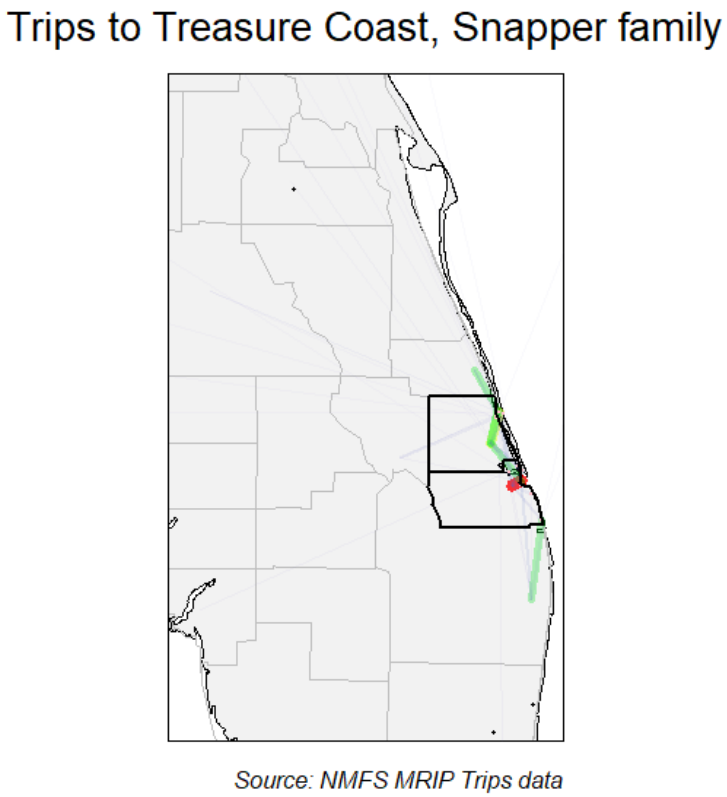

Figure 5. Map showing where trips fishing the Treasure Coast region originated in, when targeted Snapper family, for 2009-2019. Thicker and warmer colored lines show relatively more trips taken, and thinner, cooler colored lines show that relatively fewer trips were taken.

Figure 6.

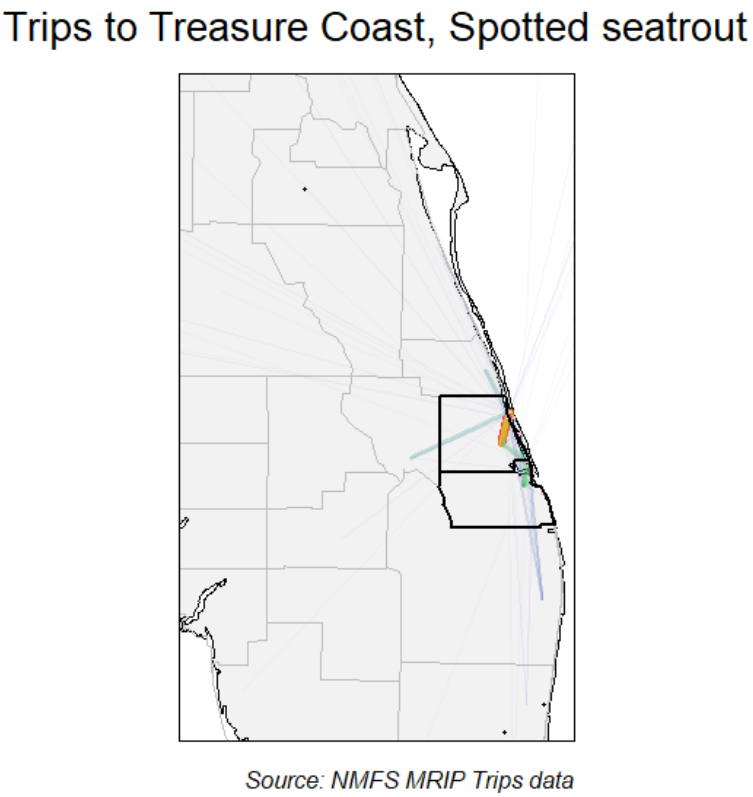

Figure 6. Map showing where trips fishing the Treasure Coast region originated in, when targeted Spotted seatrout, for 2009-2019. Thicker and warmer colored lines show relatively more trips taken, and thinner, cooler colored lines show that relatively fewer trips were taken.

Species targeted: What do your anglers fish for?

Background on data used
The MRIP APIAS includes questions about the species that interviewed anglers were targeting on their recently completed fishing trips. Specifically, anglers are asked what their "primary" and "secondary" targeted species were. Not all anglers provide a specific species. Statewide, nearly 50% of trips do not have a listed target, though certain regions have much greater proportions trips targeting specific fish. The species targeted information is used by MRIP to estimate fishing effort, but can be used here to understand what species are most commonly fished for. Further information about APAIS and the specific destinations is available at: https://www.fisheries.noaa.gov/recreational-fishing-data/public-access-fishing-site-register.

Species targeted: Background on methods used
To understand what fish species anglers most commonly fished for, we use data available in the MRIP "trips" databases that describe the results of the MRIP APAIS survey. The "trips" database contains the information that anglers tell surveyors when they are interviewed about their recreational fishing trips. We designed a series of queries to calculate the proportions of trips targeting specific fish species. Queries represented different scenarios regarding where anglers were intercepted (their destinations) and where they listed their home residence (their origin). This information was summarized by pooling trips over time—i.e. looking at the last 10 years (2009-2019) together. To assess potential changes in the fish that anglers target, we also analyzed time series for some of the most commonly targeted species. Time series were constructed by assessing the proportions of trips intercepted in the Treasure Coast region that targeted a specific species for each of the last 10 years.

Species targeted: Information provided
Two types of information products were developed:

- Tables describing the proportions of trips targeting different fish species at various combinations of fishing locations and residences.
- Figures showing the time series of proportion of trips taken in the Treasure Coast region targeting the most popular fish species.

One thing that is important to note is that we report the proportion of the sampled trips targeting a certain species. This is not the same as reporting the total number of trips. Enumerating the total number of trips would require estimation tools that are not described here. However, because of the statistical design used to implement the MRIP APAIS survey, the proportions we use (of sampled trips) should correspond to the total numbers of trips. What this means is that the information in this report can be very useful for things like understanding where people, on average, are coming from when then fish St. Lucie County.

Species Targeted Results: Tables

Tables describing the proportions of trips targeting different fish species at various combinations of fishing locations and residences, including:

- Trips in all of Florida, regardless of origin.
- Trips in Florida's 6 coast, regardless of origin.
- Trips in the Treasure Coast region, regardless of origin.
- Trips taken in St. Lucie County, regardless of origin.
- Trips taken in St. Lucie County by St. Lucie County residents.
- Trips taken in St. Lucie County by non-residents of St. Lucie County.
- Trips taken in St. Lucie County by out-of-state anglers.

These results are summarized in two separate tables that promote comparison of St. Lucie County to surrounding areas. All results represent data pooled over the last 10 years (2009-2019).

We anticipate these tables may be useful in several ways, including:

- Understanding what species anglers are targeting when they fish in St. Lucie County, which may help inform local government interest in state and regional fisheries management issues.
- Understanding what species visiting (non St. Lucie-County residents) anglers target, which may inform the media outlets and visuals (e.g., fish photos) of future advertisements).

Table 3

Proportion of species targeted, comparing county to state

FL trips	Prop.	FL 6 trips	Prop.	Treasure Coast trips	Prop.	St Lucie trips	Prop.
No Target	0.491	No Target	0.511	No Target	0.509	No Target	0.527
Red drum	0.098	Red drum	0.097	Dolphin	0.138	Dolphin	0.119
Spotted seatrout	0.076	Dolphin	0.080	Common snook	0.074	Common snook	0.072
Dolphin	0.035	Spotted seatrout	0.034	Florida pompano	0.039	Snapper family	0.045
Common snook	0.031	Common snook	0.031	Snapper family	0.036	Spotted seatrout	0.041
King mackerel	0.026	King mackerel	0.029	Spotted seatrout	0.025	Red drum	0.034
Spanish mackerel	0.024	Snapper family	0.024	King mackerel	0.021	King mackerel	0.027
Red snapper	0.021	Sheepshead	0.018	Spanish mackerel	0.020	Florida pompano	0.016
Sheepshead	0.018	Lefteye flounder genus	0.016	Red drum	0.017	Sheepshead	0.016
Gag	0.016	Cobia	0.014	Cobia	0.016	Gray snapper	0.012

Table 3. Comparison of species targeted in St. Lucie county to other regions of Florida, for 2009-2019.

- Columns 1 & 2 show species targeted for trips made throughout Florida.
- Columns 3 & 4 show species targeted for trips made to the 6 coast of Florida.
- Columns 5 & 6 show species targeted for trips made in the Treasure Coast region.
- Columns 7 & 8 show species targeted for trips made in St. Lucie County.

Table 4

Proportion of species targeted, comparing county to state

All St Lucie trips	Prop.	In county trips	Prop.	Out of county trips	Prop.	Out of state trips	Prop.
No Target	0.527	No Target	0.532	No Target	0.519	No Target	0.614
Dolphin	0.119	Dolphin	0.109	Dolphin	0.132	Dolphin	0.069
Common snook	0.072	Common snook	0.079	Common snook	0.063	Sheepshead	0.055
Snapper family	0.045	Snapper family	0.050	Spotted seatrout	0.047	Common snook	0.046
Spotted seatrout	0.041	Spotted seatrout	0.037	Red drum	0.040	Spotted seatrout	0.041
Red drum	0.034	Red drum	0.030	Snapper family	0.039	Florida pompano	0.019
King mackerel	0.027	King mackerel	0.024	King mackerel	0.031	King mackerel	0.019
Florida pompano	0.016	Florida pompano	0.019	Sheepshead	0.018	Red drum	0.017
Sheepshead	0.016	Sheepshead	0.015	Gray snapper	0.014	Sailfish	0.014
Gray snapper	0.012	Gray snapper	0.010	Florida pompano	0.012	Black drum	0.012

Table 4. Proportions of species targeted by fishing trips made in St. Lucie county by anglers from various origins, for 2009-2019.

- Columns 1 & 2 show the species targeted by all trips made in St. Lucie County.
- Columns 3 & 4 show the species targeted in St. Lucie County by St. Lucie residents.
- Columns 5 & 6 show the species targeted in St. Lucie County by Florida residents not living in St. Lucie County.
- Columns 7 & 8 shows the species targeted in St. Lucie County by non-residents of Florida.

Species Targeted Results: Time series figures

We provide time series of the proportion of intercepted trips that targeted each of the top nine species fished for in the Treasure Coast region. Data are available for each year from 2009-2019, and represent the raw proportions of surveyed trips, which means that no uncertainty estimates (e.g. “error” bars) are relevant to these data.

The multi-panel figure below should primarily be useful for understanding how the species of fish anglers target when they fish has changed in recent years. These changes may be related to changes in angler’s preferences, but can have other causes as well, such as:

- Changes in costs of fishing (e.g., fuel), since some species require larger boats or longer travel times to target.
- Changes in fishing regulations for specific species.
- Changes in knowledge of how to successfully target specific species.
- Changes in fish populations, which can be the result of changing fishing, fisheries management, or habitat, as well as perturbations like red tide or cold kills.

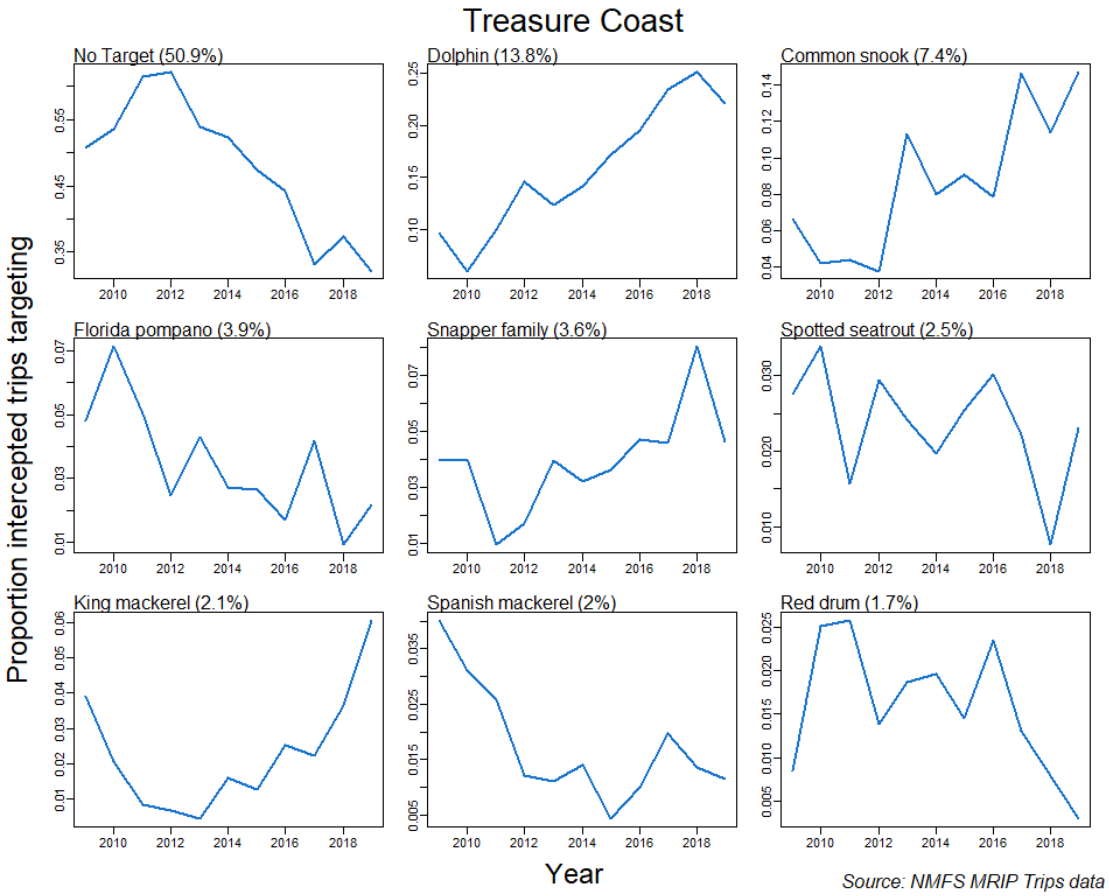

Figure 6. Time series of the proportion of intercepted trips targeting each of the top 9 fish species targets in the Treasure Coast region, for 2009-2019.
Each panel describes the time series for one of the top-targeted fish species (including no species targeted, "No Target"). Proportion of total trips targeting each species over the entire span of years (2009-2019) shown is provided in parentheses following each species' name.

References

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