Social Dimensions of the Recreational Fishery for Yellowtail Snapper (*Ocyurus chrysurus*) in Florida

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Social Dimensions of the Recreational Fishery for Yellowtail Snapper (*Ocyurus chrysurus*) in Florida

July 9, 2019

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Synopsis: For the SEDAR 64 Southeast U.S. Yellowtail Snapper Assessment, Terms of Reference (TOR) item #8 aims to: "Incorporate socioeconomic information into considerations of environmental events that affect stock status and related fishing effort and catch levels as practicable". This report describes a series of survey results, which were conducted as part of a broader study on the social dimensions of saltwater recreational fisheries, comparing groups of fishers representing various levels of engagement with Yellowtail Snapper. The specific survey questions and results described here focus on:

1) *Importance of Yellowtail Snapper as a Target Species*
2) *Recreational Fishery Demographics & Fishing Characteristics*
3) *Current Satisfaction with Availability of Catch*, *Size of Catch*, and *Fishing Regulations*

Summary of Methods: The social science research described in this report was approved by Northeastern University's Institutional Review Board (IRB #13-06-16). All data in this report were collected through an online survey of licensed Florida anglers over an 8 week period in October and November 2017. Contact information including email addresses was acquired from the State of Florida's recreational fishing license database. We used an iterative sampling approach (4 waves), involving an initial email contact and two reminder emails (Dillman *et al.* 2014), until we reached a desired sample size of 1,000 complete responses. We used a three stage process to assure data quality and validity including filtering out participants who: a) completed the survey in less than one-third of the average completion time, b) failed to accurately complete attention check questions, or c) would not "thoughtfully confirm that they would give their best answers" in an initial screening question. The survey instrument was designed and administered in Qualtrics Survey Research Suite. The adjusted response rate for the survey was 14.9% after adjusting for bounced, blocked, and unopened emails. All data were analyzed using the Statistical Package for the Social Sciences (SPSS v25).

Results & Discussion:

1) *Importance of Yellowtail Snapper as a Target Species*

We used a two question series to assess the relative importance of common target species for saltwater fisheries. The first question asked participants: "What fisheries species do you consider to be the most important for your fishing? (Select One)". Of the 1000 survey respondents throughout Florida, a total of 20 (2.0%) individuals listed Yellowtail Snapper as the most important making the 8th most common after Snook (15.4%), Red Drum (13.3%), Red Snapper (10.7%), Spotted Seatrout (10.2%), Dolphinfish (6.5%), Gag Grouper (6.4%), and Red Grouper (4.1%). The second question of the series asked: "Are there any other fish that you consider important for your fishing? (Select All that Apply)". For this question, an additional 227 (22.7%) anglers selected Yellowtail Snapper. In sum, Yellowtail Snapper is considered an important target species among 24.7% of all respondents. Aside from the demographics section below, we describe most results of survey by comparing groups of individuals who *do* (22.7%) and *do not* (77.3%) consider Yellowtail Snapper important for their fishing. We refer to these groups as "YT fishers" and "non-YT fishers", respectively.

2) *Yellowtail Recreational Fishery Demographics and Fishing Characteristics*

To measure angler demographics, our survey included questions on education, income, gender, race, and birth year. These results are shown below in Table 1.

Table 1. Summary of survey respondent demographics across categories reflecting the importance of Yellowtail Snapper as a target species.

	Not Important		Important		Most Important	
	N	%	N	%	N	%
Education						
Less than HS	7	0.9%	1	0.4%	0	0.0%
HS or GED	90	12.0%	24	10.6%	2	10.0%
Some College or 2-yr Degree	229	30.4%	83	36.6%	4	20.0%
Bachelor's degree	267	35.5%	69	30.4%	12	60.0%
Master's degree	99	13.1%	33	14.5%	1	5.0%
Law or MD	36	4.8%	10	4.4%	1	5.0%
Doctorate (PhD)	25	3.3%	7	3.1%	0	0.0%
Income						
$25k or less	24	3.2%	7	3.1%	0	0.0%
$25,001 to $35k	32	4.2%	3	1.3%	3	15.0%
$35,001 to $50k	42	5.6%	9	4.0%	2	10.0%
$50,001 to $75k	84	11.2%	20	8.8%	2	10.0%
$75,001 to $100k	117	15.5%	44	19.4%	2	10.0%
$100,001 to $150k	145	19.3%	43	18.9%	3	15.0%
$150,000 to $250k	119	15.8%	35	15.4%	3	15.0%
More than $250k	73	9.7%	31	13.7%	2	10.0%
NA	117	15.5%	35	15.4%	3	15.0%
Gender						
Male	647	85.9%	199	87.7%	15	75.0%
Female	97	12.9%	22	9.7%	5	25.0%
Other	0	0.0%	1	0.4%	0	0.0%
Prefer not to answer	9	1.2%	5	2.2%	0	0.0%
Race						
White	663	88.2%	196	86.3%	17	85.0%
Black or African American	2	0.3%	3	1.3%	0	0.0%
American Indian or Alaska Native	7	0.9%	0	0.0%	0	0.0%
Asian	8	1.1%	1	0.4%	0	0.0%
Native Hawaiian or other Pacific Islander	1	0.1%	0	0.0%	1	5.0%
Hispanic or Latino	20	5.9%	12	5.3%	1	5.0%
Multi-Racial	7	2.7%	1	0.4%	0	0.0%
Prefer not to answer	44	0.9%	14	6.2%	1	5.0%
Birth Year						
Mean	1964		1964		1960	
SD	12.3		12.2		9.3	
Min	1932		1933		1943	
Max	1999		1995		1983	

Another set of questions was designed to measure fishing characteristics including: a) fishing location of bay/river, nearshore, offshore; b) boat, shore, pier, c) average distance traveled by boat, and d) boat length. These results indicate that 36% of YT anglers fish in both offshore waters (3 or more miles from shore) and nearshore waters (Figure 1). As a note on interpretation, these results do not infer that anglers are targeting YT in all of these domains (e.g., Bays and Rivers); instead, it indicates that among anglers who predominately fish in bay

and river ecosystems, 28% also consider Yellowtail Snapper as an important target while 39% do not.

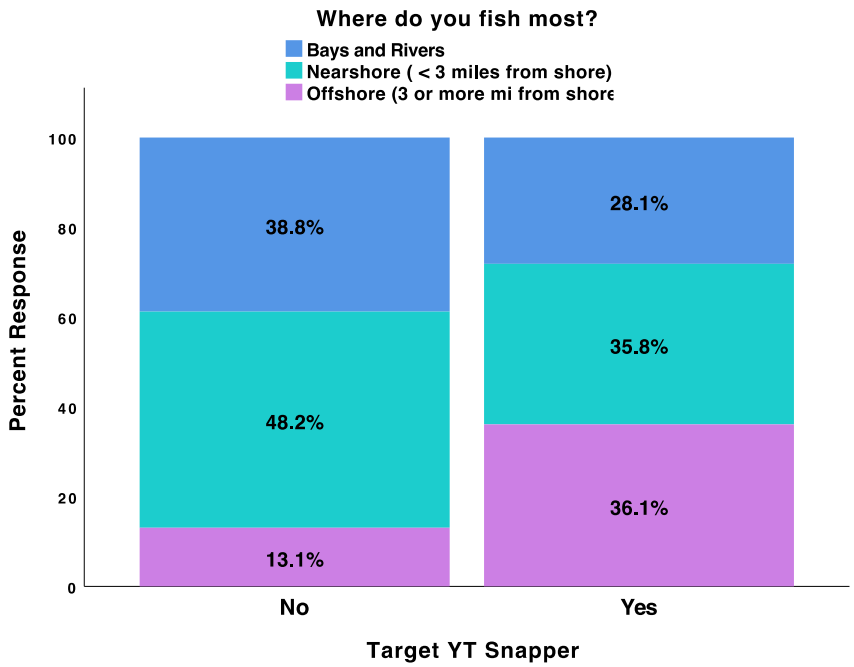

Figure 1. Percent response to a survey question asking recreational anglers where they fish most

Another series of questions assessed the average percentage of fishing effort conducted by boat, on shore, or on a pier. Our results indicate that YT anglers more commonly fish by boat and less commonly fish from shore or pier than non-YT anglers in Florida (Figure 2).

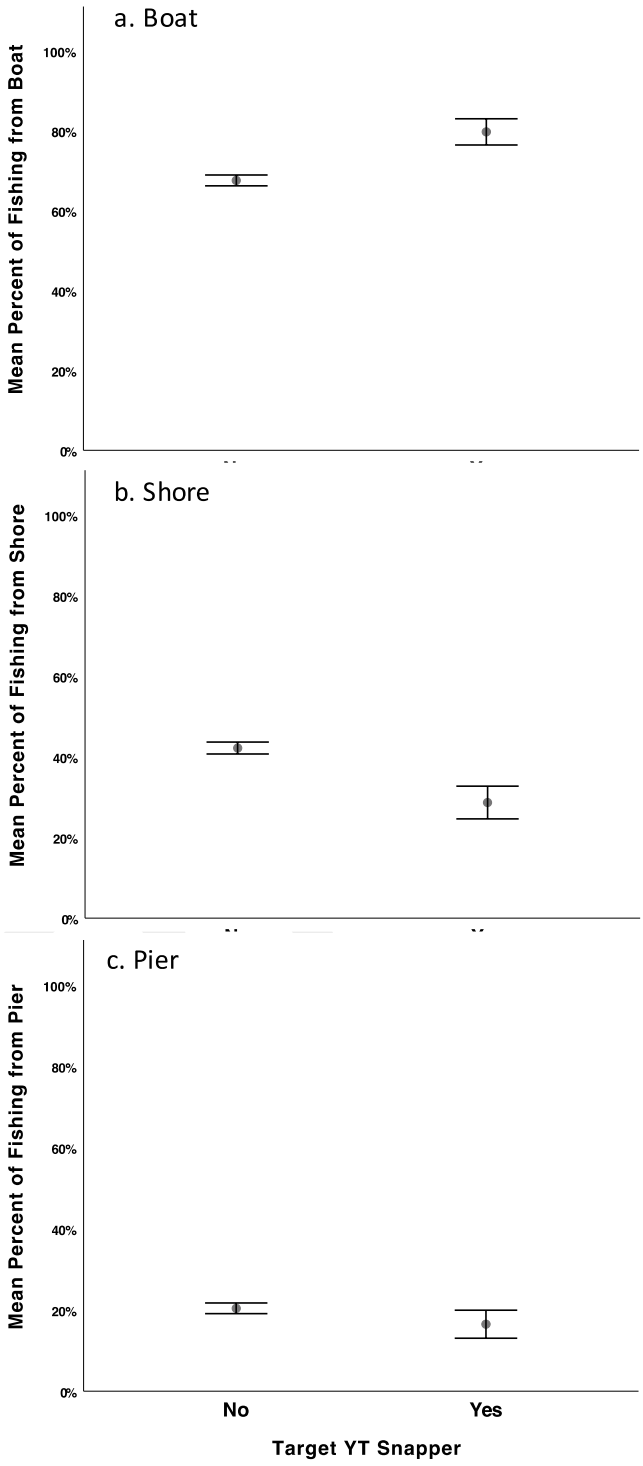

Figure 2. Mean percent response (+/- CI) for a series of questions focused on measuring the distribution of fishing effort across boat, shore, and pier modes.

Among anglers who fish by boat, we asked about vessel length, which was longer among YT anglers than non-YT anglers (Figure 3).

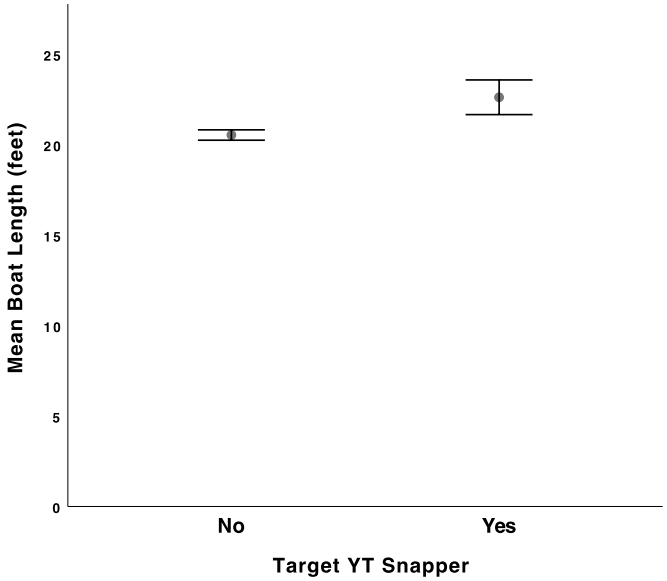

Figure 3. Mean boat length (+/- CI) among YT and non-YT anglers

3) *Current Satisfaction with Availability of Catch, Size of Catch, and Fishing Regulations*
We used a three question series to assess current satisfaction with key fisheries characteristics. Specifically, we asked: "How would you describe your level of satisfaction with the following: Availability of Catch, Size of Catch, and Current Regulations". For all three, respondents were offered the following 3-point Likert-type scale: "Not at all Satisfied", "Somewhat Satisfied", and "Very Satisfied", as well as "Not Applicable or Not Interested".

For availability of catch, perceptions among YT and non-YT fishers were very similar (Figure 4). The majority of respondents (50-52%) across groups were reflected by the Somewhat Satisfied category. 34-35% of respondents were Very Satisfied; whereas, 11-14% were Not at all Satisfied.

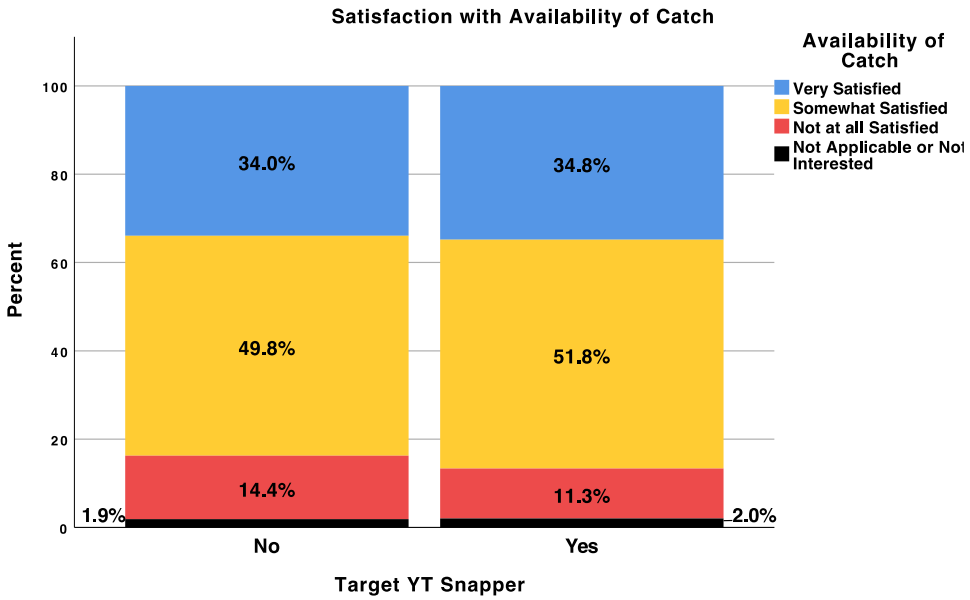

Figure 4. Percent of anglers who were Very, Somewhat, or Not at All Satisfied with the availability of catch among YT and non-YT anglers.

For size of catch, perceptions among YT and non-YT fishers were again similar (Figure 5). The majority of respondents (55-56%) across both groups were Somewhat Satisfied. 30-31% of respondents reported being Very Satisfied, while only 12-13% were Not at All Satisfied.

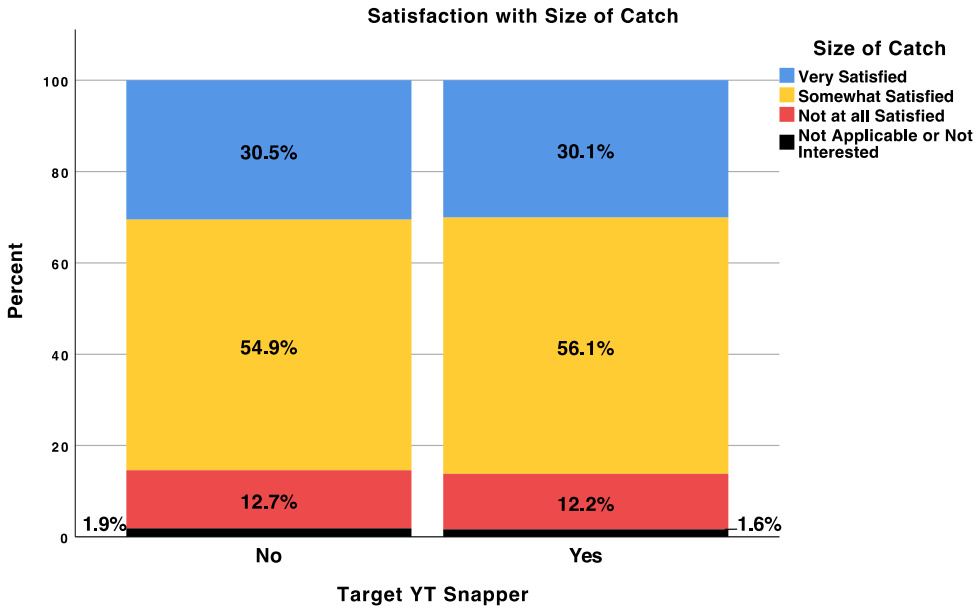

Figure 5. Percent of anglers who were Very, Somewhat, or Not at All Satisfied with the size of fish catches.

For current regulations, perceptions among YT and non-YT fishers were once again overall similar (Figure 6). Compared to the above catch-related attributes, fewer respondents were Very

Satisfied with current regulations (18-23%), and more respondents (29-31%) were Not at All Satisfied.

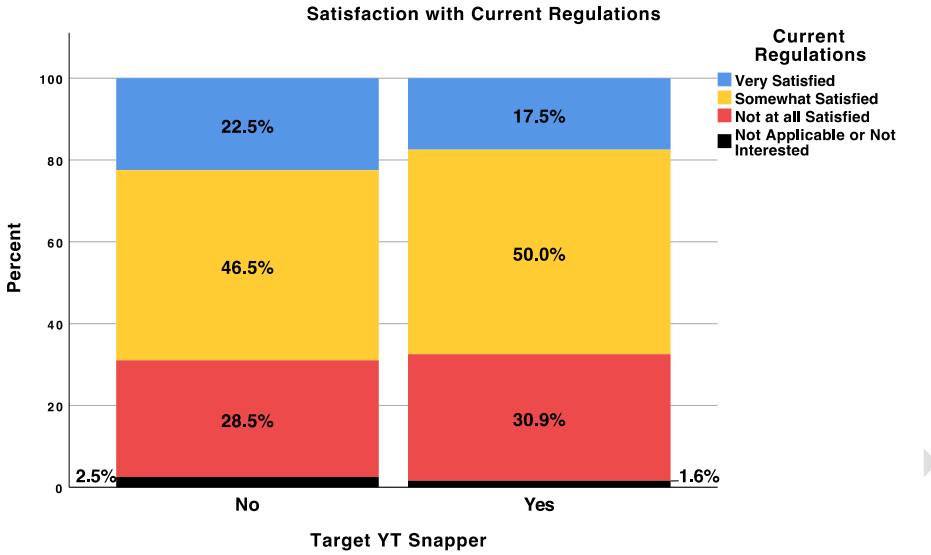

Figure 6. Percent of anglers who were Very, Somewhat, or Not at All Satisfied with current fisheries regulations.

Data Limitations: Below are a few considerations and known limitations of our study or data in the context of this report.

- The survey sample represents the entire geography of Florida. As the geographic center of Yellowtail Snapper fishing is concentrated in South Florida and the Keys, the overall importance in these regions is likely underestimated.
- The survey data represent a sample of licensed recreational anglers and do not include any individuals or groups exempt from purchasing a Florida saltwater fishing license. We also excluded any respondents who stated being under 18 years old.
- Online surveys are known to under-sample certain groups including lower income, minority, and non-native English speakers.
- The data presented represent raw responses and have not been weighted to the population.

Acknowledgments: This survey was initially designed as part of a NOAA Climate Program funded project to study climate change in fishing communities in the northeast United States (North Carolina to Maine). Northeastern University provided additional funding to support the Florida survey described in this report. We thank J Grabowksi, L McClenachan, S Gray, L Akins, P Schofield who were Co-Investigators on the NOAA Climate Program project, as well as L Colburn and J Hare who provided feedback on our survey instrument. We thank E Conley for assistance with data processing.

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