# Florida Gulf Reef Fish Survey Part 1: Monthly Mail Survey for Effort

Fish and Wildlife Research Institute Marine Fisheries Research Saint Petersburg, FL





#### Outline

#### Review:

- Survey design (brief overview from last call)
- Mail survey methods
- Survey instrument
- Sample frame
- Estimation methods
- Estimates and variance

Questions/discussion/next steps

### Survey Design (overview)

- Gulf Reef Fish Survey
  - Mail survey of registered Gulf Reef Fish Anglers
    - Monthly estimate of private boat angler trips that target reef fishes
      - Estimates state and federal waters separately
  - Supplement APAIS with specialized private boat intercept survey
  - Effort adjusted for under-coverage from supplemental intercept survey



# Survey Design (overview)

- Gulf Reef Fish Angler designation
  - Free option on saltwater fishing license
  - Free for seniors exempted from license
- Subscription required to harvest certain species from a private boat from the Gulf coast of Florida
  - Enforceable (civil penalties)
  - Valid for one year from date of subscription
- Anglers with a valid subscription included in each month's sample frame
  - Survey response is voluntary



#### Mail Survey Methods

#### Sample Frame

- Received 1<sup>st</sup> business day of new month
- Driver license number matched to boat registration database
- Assign strata based on physical address and boat registration match
- · Random sample of individual subscribers drawn from each strata

#### Surveys Mailed

Survey packets assembled and mailed between 5<sup>th</sup> and 11<sup>th</sup> day of month

#### Reminder

- Postcard reminder mailed to all selected subscribers
- Mailed between 12<sup>th</sup> and 16<sup>th</sup> day of month

#### Follow-up Survey

- Second survey packet mailed if first questionnaire is not received yet
- Mailed between 19<sup>th</sup> and 28<sup>th</sup> day of month



#### Mail Survey Methods

- Timing of survey response
  - 50% of responses received within 23 days
  - 95% of responses received within 51 days

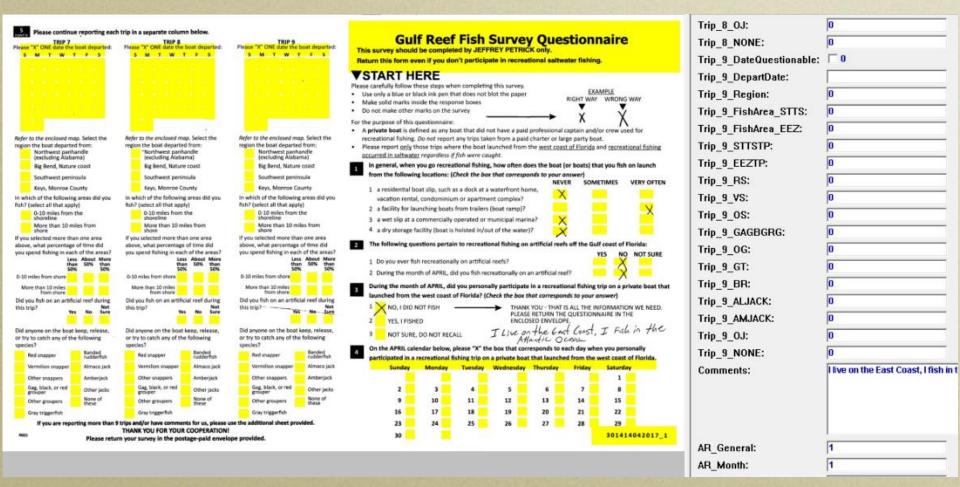
#### QA/QC

- Surveys are reviewed and scanned as they are received
- Illogical or possibly errant entries are flagged by the scanning software for review
- All records, including those flagged, are reviewed prior to export to the SQL database

#### Database QA

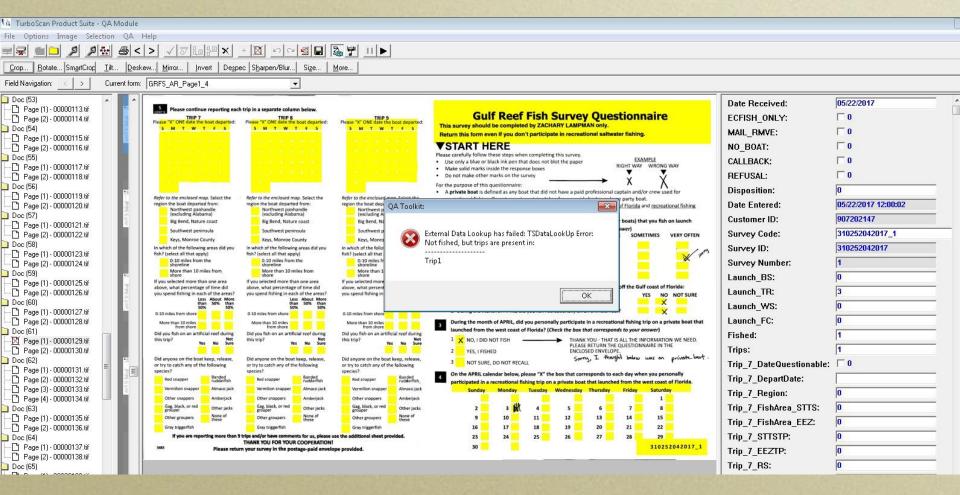
 Each month 10% of the database is audited by querying a random sample to check error rates.

### Scan Image Review





# Example of Error Warning





### Survey Instrument

- Name of selected individual printed directly on questionnaire
- Instructed to report for named person only

#### **Gulf Reef Fish Survey Questionnaire**

**EXAMPLE** 

WRONG WAY

RIGHT WAY

This survey should be completed by FIRST NAME LASTNAME only.

Return this form even if you don't participate in recreational saltwater fishing.

#### **VSTART HERE**

Please carefully follow these steps when completing this survey.

- Use only a blue or black ink pen that does not blot the paper
- Make solid marks inside the response boxes
- Do not make other marks on the survey

For the purpose of this questionnaire:

- A **private boat** is defined as any boat that did not have a paid professional captain and/or crew used for recreational fishing. *Do not* report any trips taken from a paid charter or large party boat.
- Please report <u>only</u> those trips where the boat launched from the <u>west coast of Florida</u> and <u>recreational fishing</u> occurred in <u>saltwater</u> regardless if fish were caught.

#### Question 1: Trip launch sites

 Intended use: to evaluate proportional fishing effort from private access sites.

In general, when you go recreational fishing, how often does the boat (or boats) that you fish on launch from the following locations: (Check the box that corresponds to your answer)

NEVER SOMETIMES VERY OFTEN

a residential boat slip, such as a dock at a waterfront home, vacation rental, condominium or apartment complex?

a facility for launching boats from trailers (boat ramp)?

a wet slip at a commercially operated or municipal marina?

a dry storage facility (boat is hoisted in/out of the water)?



#### Question 2: Add-On Questions

 Intended use: gauge usage of artificial reefs by Gulf reef fish anglers following investments in enhanced recreational opportunities after the Deepwater Horizon oil spill

The following questions pertain to recreational fishing on artificial reefs off the Gulf coast of Florida:

YES NO NOT SURE

Do you ever fish recreationally on artificial reefs?

2 During the month of APRIL, did you fish recreationally on an artificial reef?



### Question 3: Participation

- Used to determine if a respondent participated in a recreational fishing trip during the selected month.
- Trips = 0 when response is NO

During the month of APRIL, did you personally participate in a recreational fishing trip on a private boat that launched from the west coast of Florida? (Check the box that corresponds to your answer)



THANK YOU - THAT IS ALL THE INFORMATION WE NEED. PLEASE RETURN THE QUESTIONNAIRE IN THE ENCLOSED ENVELOPE.

YES, I FISHED





### Question 4: Trip Recall

- Calendar prompts respondents to recall their fishing activity during the past month prior to reporting details for individual trips.
- Used to check the number of individual trips reported

On the APRIL calendar below, please "X" the box that corresponds to each day when you personally participated in a recreational fishing trip on a private boat that launched from the west coast of Florida.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						Survey ID Number

### Question 5: Trip Reports

Provides space for respondents to report details for up to 12 trips.

#### Instructions:

- For each trip marked on the calendar on the previous page, please provide information about the trip in a separate column below, regardless if fish were caught.
- Each trip should be a recreational fishing trip you personally participated in on a private boat that
   launched from the west coast of Florida.

# Question 5: Trip 1 date

Respondent marks box that corresponds to departure date for first trip:





# Question 5: Trip 1 region

Respondent uses map provided to indicate which region the trip took place in.

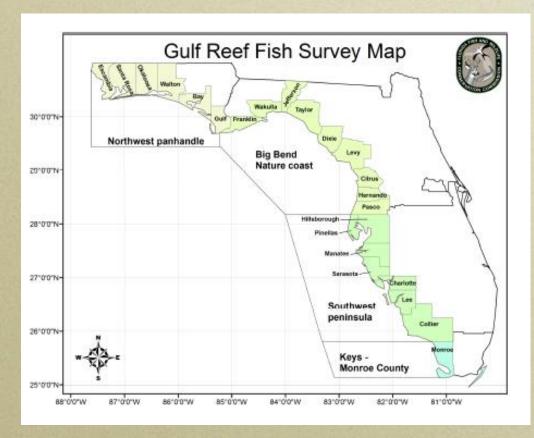
Refer to the enclosed map. Select the region the boat departed from:

Northwest panhandle (excluding Alabama)

Big Bend, Nature coast

Southwest peninsula

Keys, Monroe County





# Question 5: Trip 1 area fished

Respondents report percent of time spent fishing in the EEZ versus state waters.

In which of the following areas did you					
fish? (select all that apply)					
0-10 miles from the shoreline					
More than 10 miles from shore					
If you selected more than one area					
above, what percentage of time did					
you spend fishing in each of the areas?					
Less About More					
than 50% than 50% 50%					
0-10 miles from shore					
More than 10 miles from shore					



# Question 5: Trip 1 artificial reef

Did you fish on an artificial reef during this trip?

Not
Yes
No
Sure



### Question 5: Trip 1 species

Used to classify a trip as a Gulf reef fish trip versus some other type of trip.

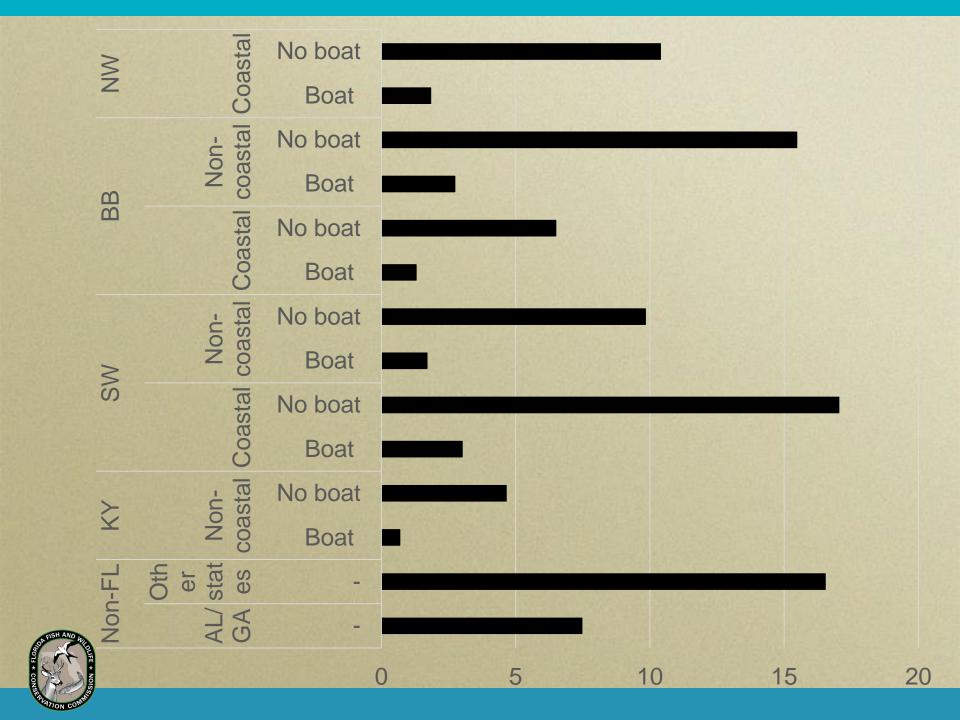
Color species identification guide included in survey packet.

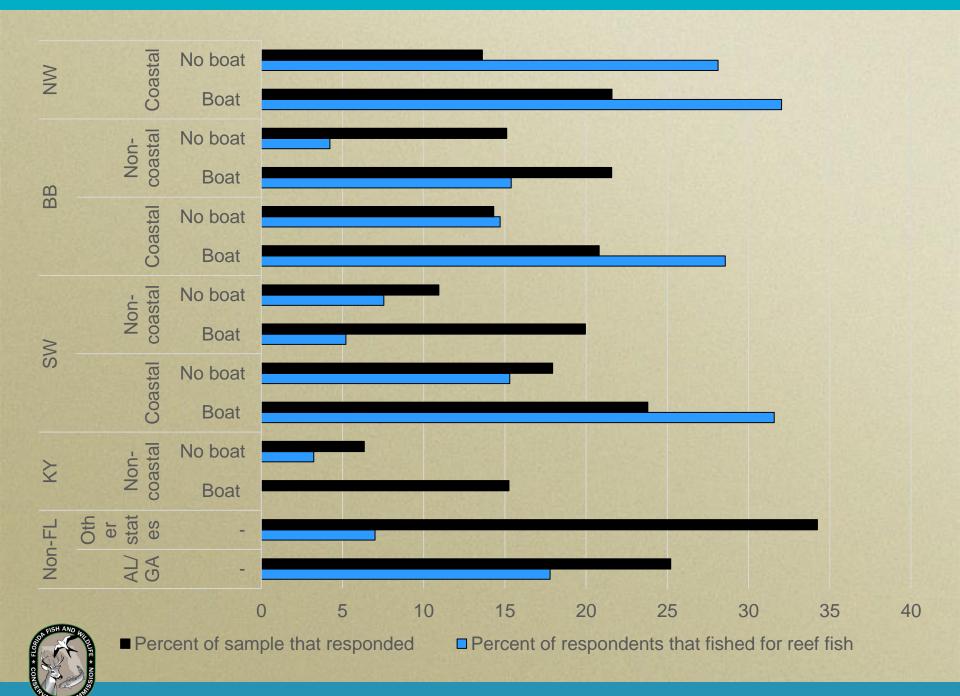
	Did anyone on the boat keep, release, or try to catch any of the following					
1	species?					
		Red snapper		Banded rudderfish		
		Vermilion snapper		Almaco jack		
		Other snappers		Amberjack		
		Gag, black, or red grouper		Other jacks		
		Other groupers		None of these		
		Gray triggerfish				



#### SAMPLE FRAME







# **Avidity Survey**

TAXPAYER FUNDS WERE NOT USED TO PRODUCE OR MAIL THIS SURVEY



#### Help Us Improve Our Survey...

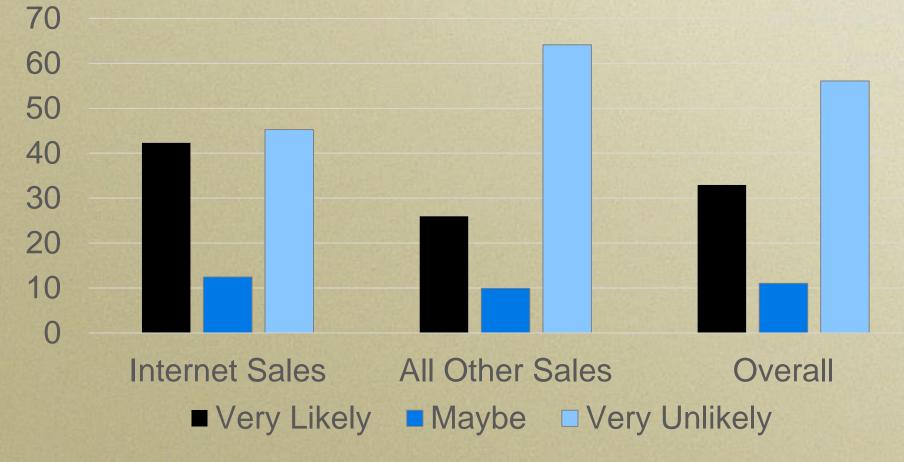
In an effort to better serve Florida's recreational anglers, please answer a few questions for us. Once complete, please tear off this portion of the mailer and return to our office to help streamline our survey efforts.

In the past 12 months, did you recreationally fish at least once from a private boat that departed from the western (Gulf) coast of Florida (excluding Monroe County)?  Yes No Not Sure/Do Not Recall					
In the next 12 months, how likely are you to recreationally fish on a private boat off the western (Gulf) coast of Florida (excluding Monroe County)?					
Very likely	Maybe/ Not Sure	_ , ,	I never fish on the west coast of Florida		
Whenever you recreationally fish from a private boat, do you attempt to harvest any of the following types of reef fish?					
☐ Red snapper       ☐ Gag grouper, red grouper, black grouper         ☐ Vermilion snapper       ☐ Amberjack, almaco jack, banded rudderfish         ☐ Gray triggerfish       ☐ I never attempt to harvest any of these species					



Survey ID

# Likelihood of new subscribers to participate in Gulf reef fishery by license sales type





# Eligibility

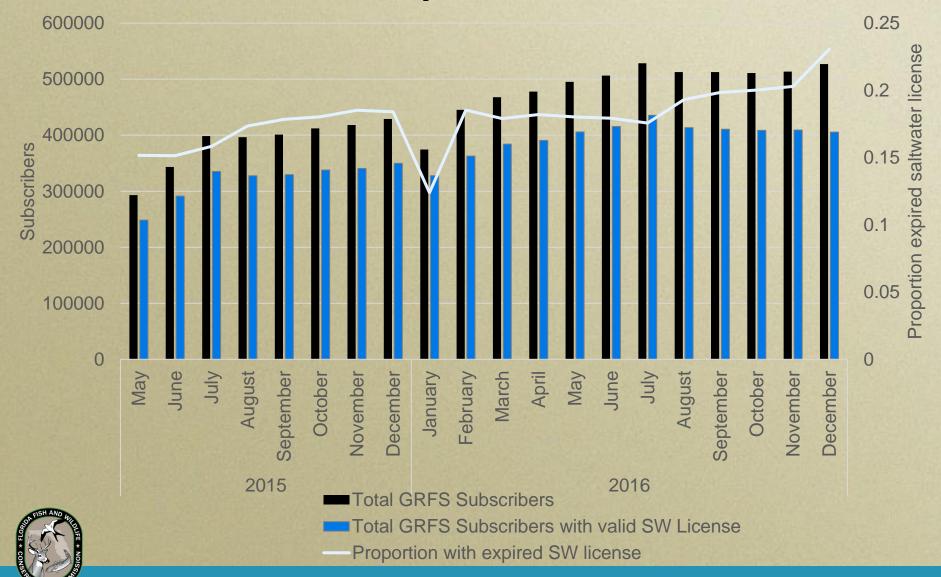
 Individuals were included in the sample frame if they had a valid GRFS subscription

#### Issue:

- Recently discovered a large number of valid subscribers had expired saltwater fishing privileges
- Number was cumulative over time
  - Very low during initial months
  - Increased over course of 2015 and 2016
  - Approximately 23% of frame by December 2016



### **GRFS** Subscriptions



#### Response Rate





#### **ESTIMATION METHODS**



### Unadjusted Effort

- Weight = selection weight x nonresponse weight
- 2. Calculate weighted mean number of trips per response in each stratum
- 3. Calculate overall weighted mean
- 4. Multiply by the total number of subscribers to obtain total unadjusted effort



### Adjustment

- Supplemental intercept survey
  - Subscription verified if anglers say they are not signed up for GRFS or are not sure
  - Ratio = total verified reef fish anglers / number subscribed to GRFS
    - Strata = year|month|day type|time interval
    - Cluster = assignment
    - Domain = year|month|area\_fished
- Total effort = unadjusted effort \* ratio



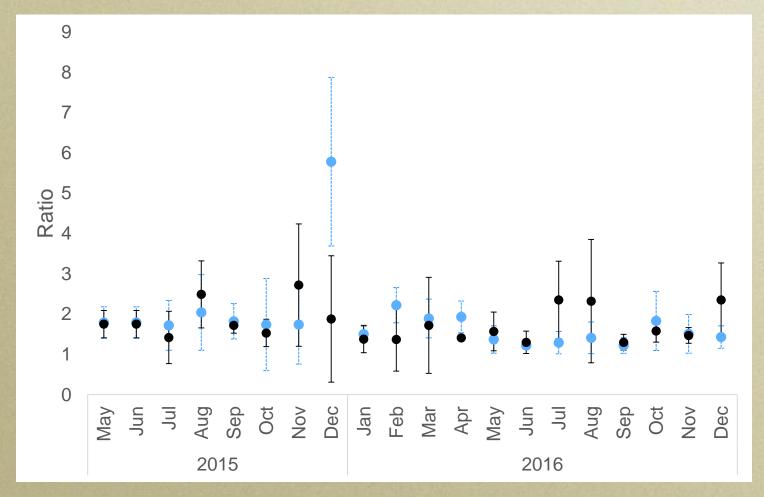
#### **ESTIMATED EFFORT**



# Unadjusted Angler Trips

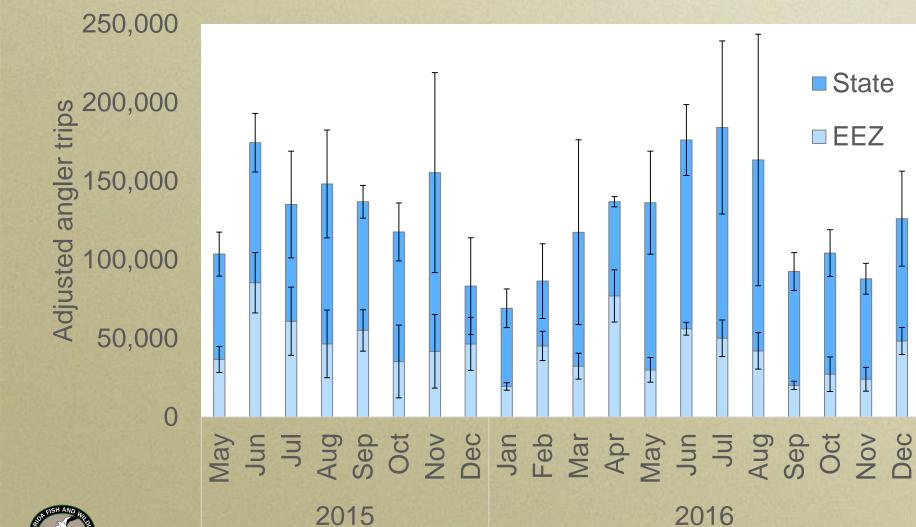


# Under-coverage





#### Adjusted Angler Trips





#### Questions and Follow Up

- Adjust sample size and re-allocate sample among strata
- Include question(s) on questionnaire to address avidity
- Increase response rates
- Evaluate timing of mailings
- Eliminate (address) oversubscription on the license sales side
- Address mis-match between Gulf Reef Angler designation and Saltwater Fishing License
   expiration dates