

Implementing Representative Biological Sampling in Florida: Successes and Challenges

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Recreational Fishing Surveys

- **At-Sea Observer Program**

- Collect discard and harvest information from anglers participating in the for-hire recreational fishery

- **Gulf Reef Fish Survey**

- Collect catch, effort and discard data from private recreational anglers targeting a subset of reef fish species along the gulf coast of Florida

- **East Coast Red Snapper Survey**

- Collect catch, effort, and discard data during short season openings for red snapper on the South Atlantic coast of Florida

- **Atlantic Biological Survey**

- Collect biological data from offshore reef fish species on the South Atlantic coast of Florida



Opportunistic Biological Sampling

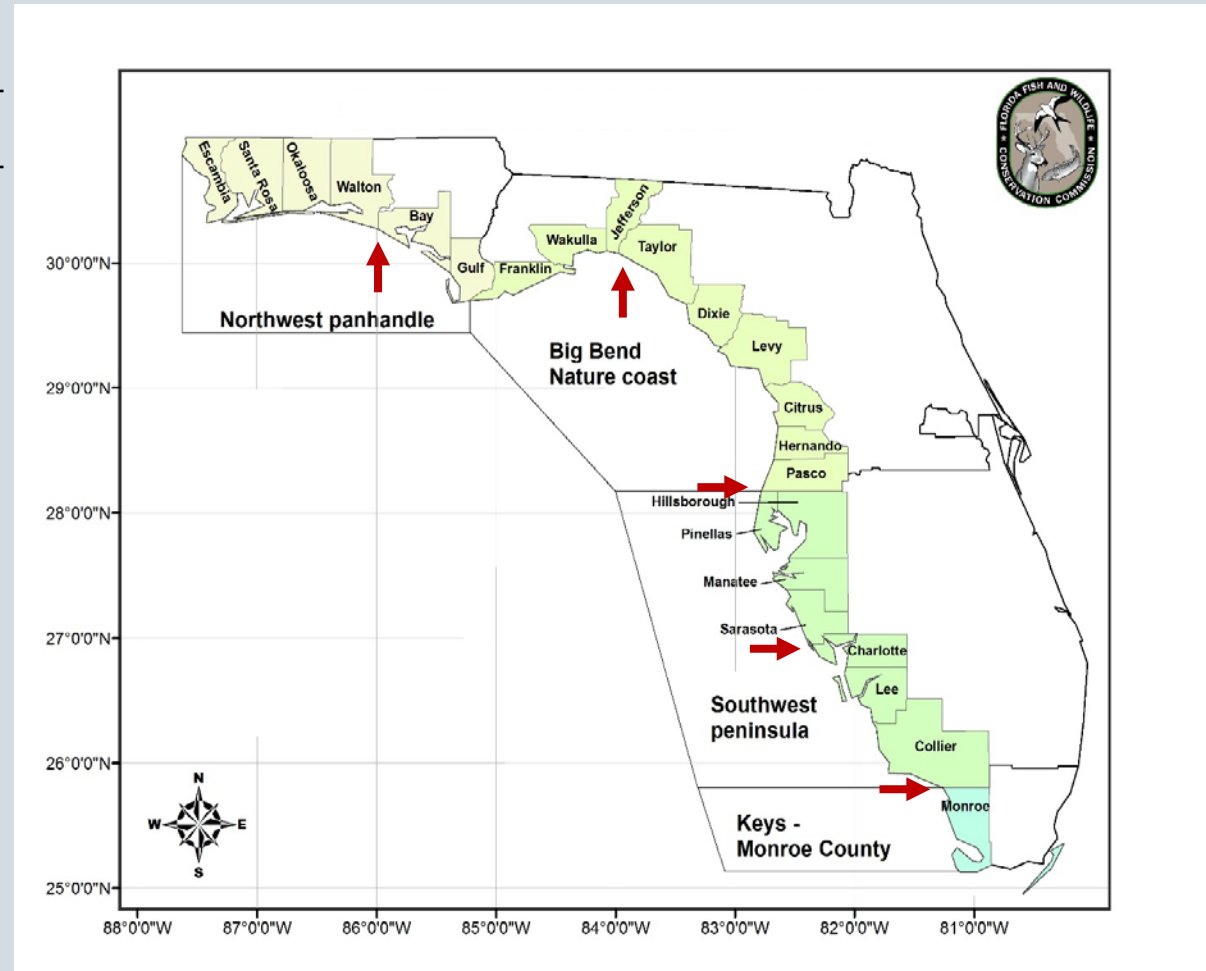
- Supplements the collection of age structure samples
- Drawbacks
 - Subjective site selection
 - Favor high productivity sites
 - Favor charter mode sites
 - Irregular sampling frequency



Regional Distribution

Sub-Region Counties

<i>Panhandle 1</i>	Escambia, Santa Rosa, Okaloosa, Walton
<i>Panhandle 2</i>	Bay, Gulf, Franklin, Wakulla, Jefferson
<i>Big Bend</i>	Taylor, Dixie, Levy, Citrus, Hernando, Pasco
<i>West Central</i>	Pinellas, Hillsborough, Manatee, Sarasota
<i>Southwest</i>	Charlotte, Lee, Collier
<i>Upper Keys</i>	North of Craig Key (inclusive)
<i>Middle Keys</i>	Sunshine Key (inclusive) to Craig Key
<i>Lower Keys</i>	Key West to Sunshine Key



Fishing Modes



- Use the MRIP site register to designate a dominant fishing mode for each intercept site
- Group the private and shore sites into a single mode (PS)
- Provide EACH sub-region with a 8 site assignment list for each week of the month



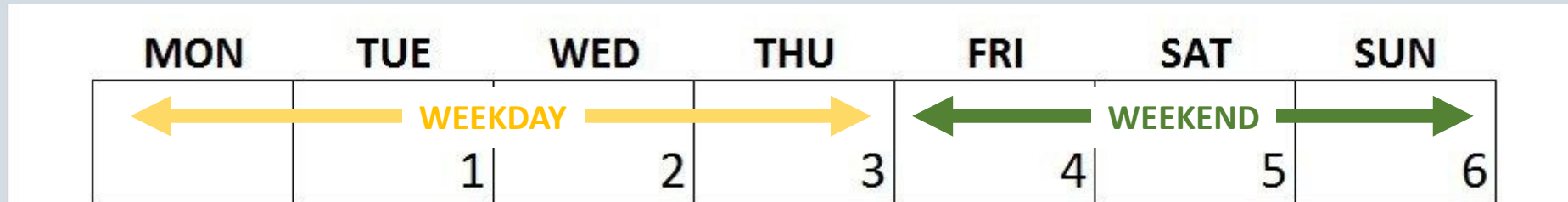
Site Pressures

MRIP Pressure	Number of Anglers	Adjusted Pressure
0	1 - 4 Anglers	2.5
1	5 - 8 Anglers	6.5
2	9 - 12 Anglers	10.5
3	13 - 19 Anglers	17
4	20 - 29 Anglers	24.5
5	30 - 49 Anglers	39.5
6	50 - 79 Anglers	64.5
7	80+ Anglers	110
9	0 Anglers / Mode Not Present	-REMOVED-

- Create an adjusted pressure value, based on the number of anglers associated with each MRIP pressure, to weight site selection proportional to site popularity



Assignments – Day of the Week



- Private / Shore Mode
 - Aim for 50/50 split between Weekday / Weekend assignments
 - Imbalance between Weekday and Weekend assignments should favor **Weekday** assignments
- Charter Mode
 - Can be assigned on any day of the week



Assignments – Time of Day

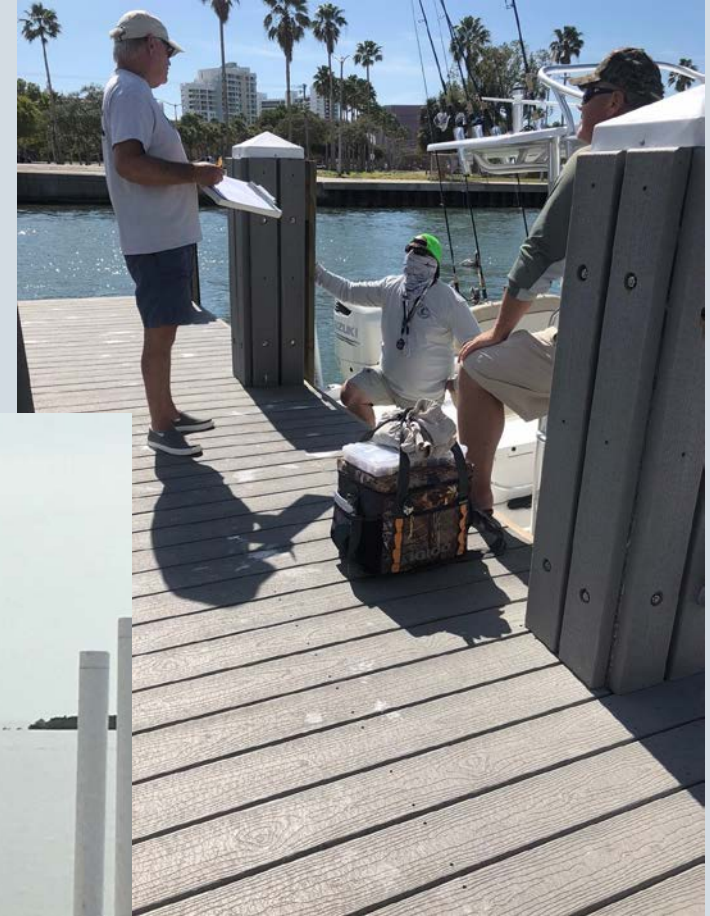


- **Private / Shore Mode**
 - Randomly assigned time periods
 - 10:00-14:00
 - 14:00-18:00
- **Charter Mode**
 - Assignment starts before the first charter vessel is due to return until the last charter vessel has returned or sunset (which ever occurs first)
 - Used 6 hour time periods in the Panhandle during summer months
 - 10:00-16:00
 - 1400-20:00
- **Caveats**
 - Early termination after 2 hours of sustained no pressure
 - Assignments can be extended up to 2 hours with sustained fishing pressure



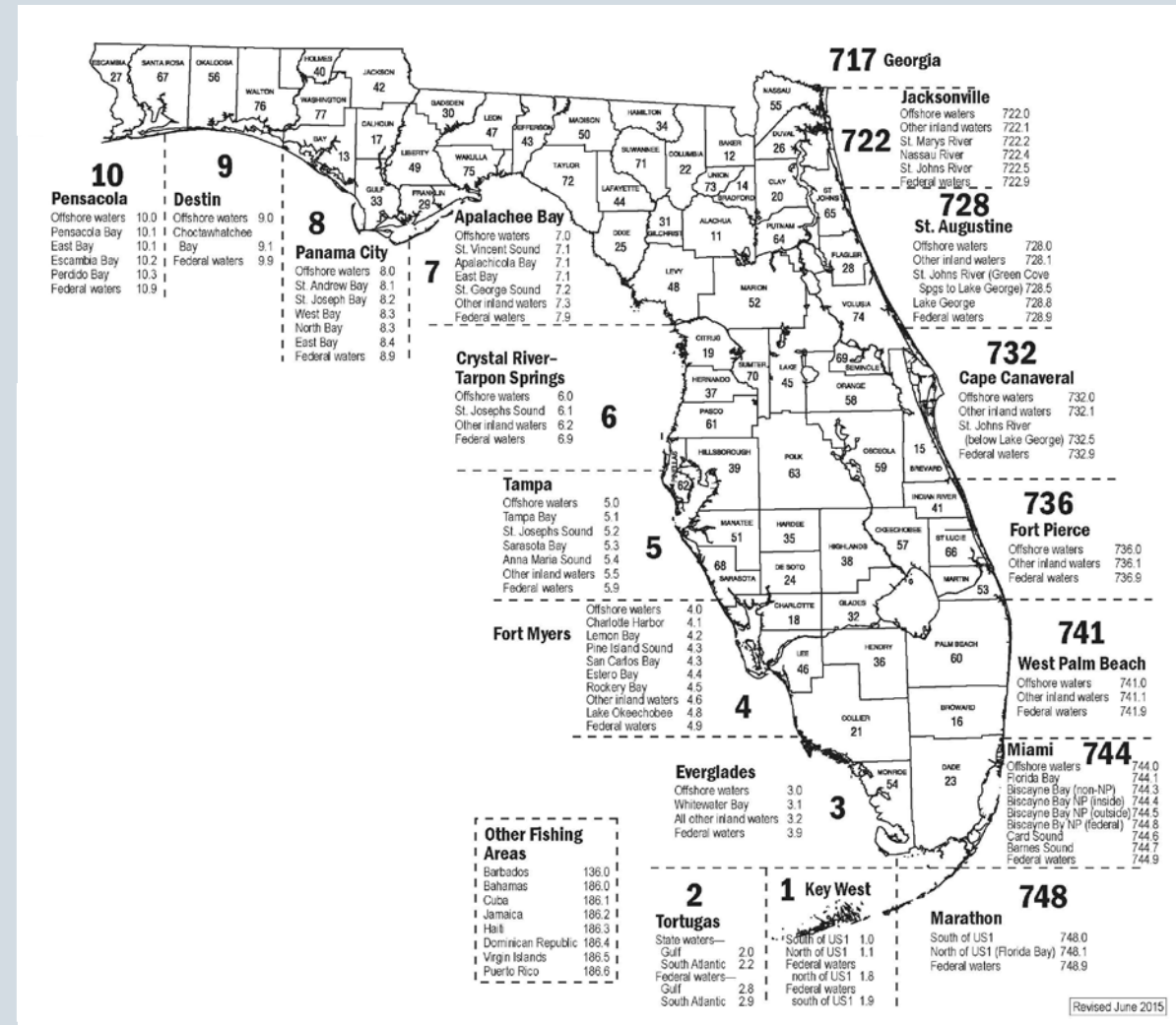
Interview Screener Questions

- Did you fish recreationally (in saltwater) for finfish?
- May I ask for more details about your trip AND collect samples from any fish that you harvested today?



Trip Data

- Interview time
- Mode
- Number of Anglers
- Zone /Subzone of fishing
- Depth
- Distance from Shore
- Hours fished
- Gear types



Catch Data

- Species
- Gear
- Length
- Weight
- Age Structure
- Sex
- Gonadal Condition



Discard Data

- Species
- Live Releases
 - Total Number Released Alive
 - Number of Undersized Fish
 - Number of Over-sized Fish
 - Slot species
 - Number never submerged
 - Some info on discard mortality
- Dead Releases
 - Total Number
 - Number Used for Bait

Name (optional): _____ County Fished: _____
 Date (mm/dd/yyyy): _____ Hours fished: _____ No. of anglers: _____
 Mode of fishing (circle one): Party/Charter Boat Private/Rental Boat Shore
 Launch Location (circle one): Boat Ramp Private dock Marina
 Name of Ramp/Marina: _____
 Area Fished (circle one): Ocean/Gulf Bay Sound River Other: _____

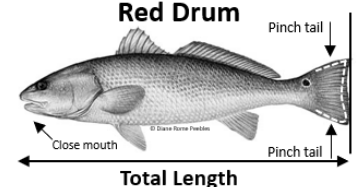
Species	Lengths of RELEASED Fish (Up to first 12 fish, to the nearest ¼ inch)				
<i>Red Drum (Redfish)</i>					
<i>Snook</i>					
<i>Spotted Seatrout</i>					
<i>Sheepshead</i>					

<i>Other Species or Comments</i>					

The state of Florida is conducting a study to determine the lengths of fish **RELEASED** by recreational anglers. Please record the lengths of fish **RELEASED** during **ONE** upcoming fishing trip. After completing the card, drop the card in the mail, no postage required.

Please check box if you would like to receive more cards.

Catch Card Instructions:
 Please complete as many fields as possible.
Hours fished: Record the total number of hours you actively fished (to the nearest 1/2 hour).
Mode of Fishing:
Party/Charter Boat includes a boat you paid to fish on with a private guide/captain.
Private/Rental Boat includes your own boat or a boat that you rented.
Shore includes fishing from a beach, bank or manmade structures (pier, bridge, jetty, etc.).
Area Fished: Circle the area where the majority of your fishing activity occurred.
Length of Fish Released : Record the length of EACH fish released (up to 12 fish). Measure the total length in inches, to the nearest ¼ inch.
 Any questions? Please email us at Fishstats@MyFWC.com



Red Drum

Office Use: Date Sampler ID Site



Data Entry

- Data sheets and samples are sent to the Fish and Wildlife Research Institute at the end of each month
- Data sheets are scanned and saved by assignment
- Data entry program used to store data in SQL tables
 - Various validations to prevent data entry errors
 - Additional automated checks are completed to identify biased length / weight values



Validation Examples

- Most fields are Required
 - Less missing values, and easier to identify true missing information
- Use of drop down menus
 - Prevents typing errors
- Dates and times must be logical
 - Dates from sampling trips must occur before date of data entry
 - Break times must fall within assignment times
- Catch / Discard data with only species identified are recorded as comments with trip data only
 - Prevents null records for length of fish or frequency of discards in catch / discard tables
- Length / weight information must be logical
 - FL must be less than TL
 - Filleted / Gutted weights are flagged



Results



Results

Region	Year	Assignments		Interviews		Measured		Otoliths	
		Total	Per Month	Total	Per Month	Total	Per Month	Total	Per Month
Panhandle	2016	319	26.6	830	69.2	5121	426.8	4139	344.9
	2017	45	3.8	129	10.8	683	56.9	518	43.2
	2018	123	10.3	359	29.9	2302	191.8	1824	152.0
	2019	91	11.4	298	37.3	1508	188.5	1320	165.0
Peninsula	2016	31	2.6	78	6.5	221	18.4	221	18.4
	2017	13	1.1	51	4.3	195	16.3	192	16.0
	2018	17	1.4	64	5.3	160	13.3	160	13.3
	2019	138	17.3	472	59.0	776	97.0	653	81.6
Florida Keys	2016	73	6.1	84	7.0	469	39.1	469	39.1
	2017	54	4.5	72	6.0	465	38.8	464	38.7
	2018	62	5.2	85	7.1	635	52.9	637	53.1
	2019	17	4.3	47	11.8	139	34.8	98	24.5

- Increased sampling in the Peninsula is resulting in higher numbers of fish measured and age structures collected



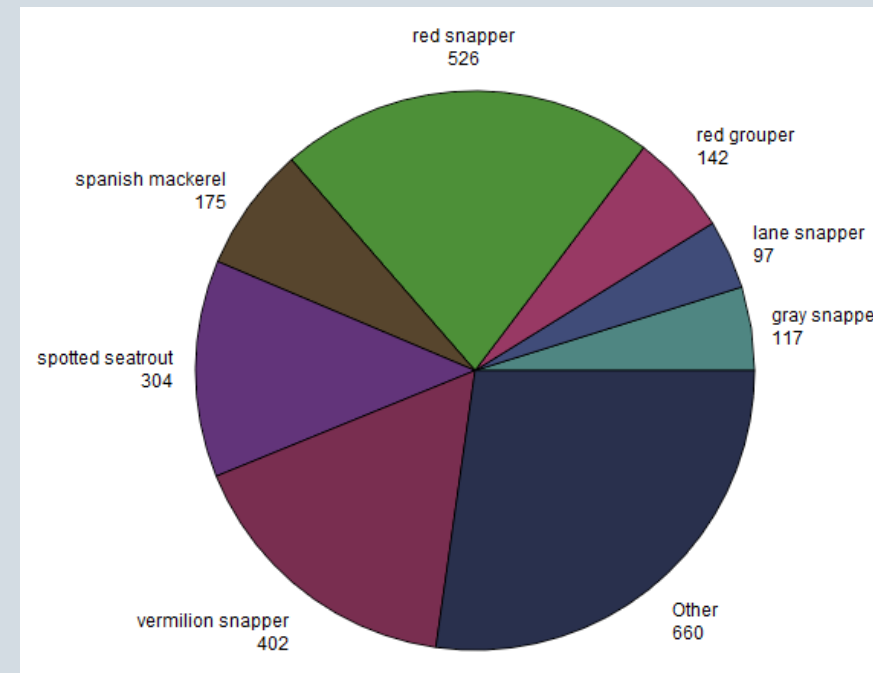
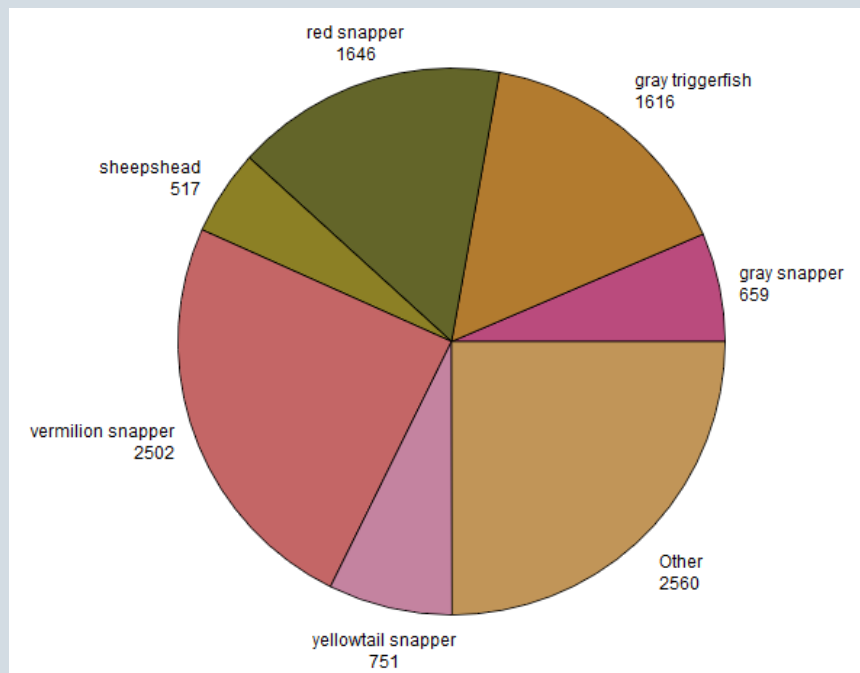
Results – Fishing Modes

- Fishing mode was not always identified during opportunistic interviews
- Interviews no longer heavily favor charter mode in the Panhandle and Florida Keys
- No shore interviews identified in Florida Keys assignments to date

Region	Year	Private	Shore	Charter
Panhandle	2016	316	42	443
	2017	42	17	69
	2018	102	19	218
	2019	147	14	137
Peninsula	2016	35	.	15
	2017	10	1	6
	2018	18	.	8
	2019	312	24	136
Florida Keys	2016	5	.	64
	2017	10	1	59
	2018	10	.	75
	2019	23	.	24



Results – Species Composition



Region	Opportunistic	Representative
Panhandle	51	31
Peninsula	22	36
Florida Keys	33	22
<i>All Combined</i>	<i>68</i>	<i>53</i>



Results – Inshore Species

Common Name	Opportunistic	Representative
Florida pompano	14	13
Red drum	119	67
Sand seatrout	23	4
Sheepshead	517	68
Snook	8	.
Spotted seatrout	327	304

- Popular inshore fish species are being encountered regularly with the new protocol



Successes

- Randomized draw process implemented to prevent subjective site selection
- Better geographic distribution of sampling
- Less bias of interviews towards a single fishing mode
- More detailed data collection
 - Gear / depth information
 - Additional discard information
- Flexible design
 - Maximize the time spent on site



Challenges

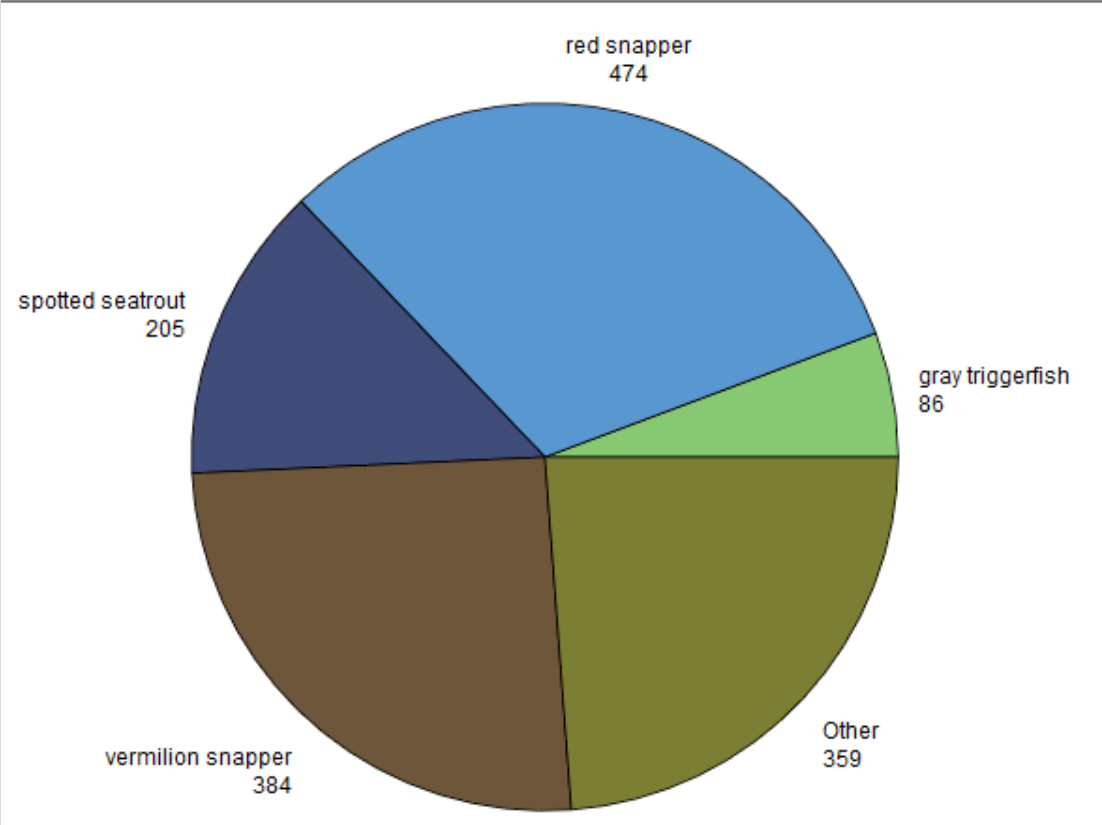
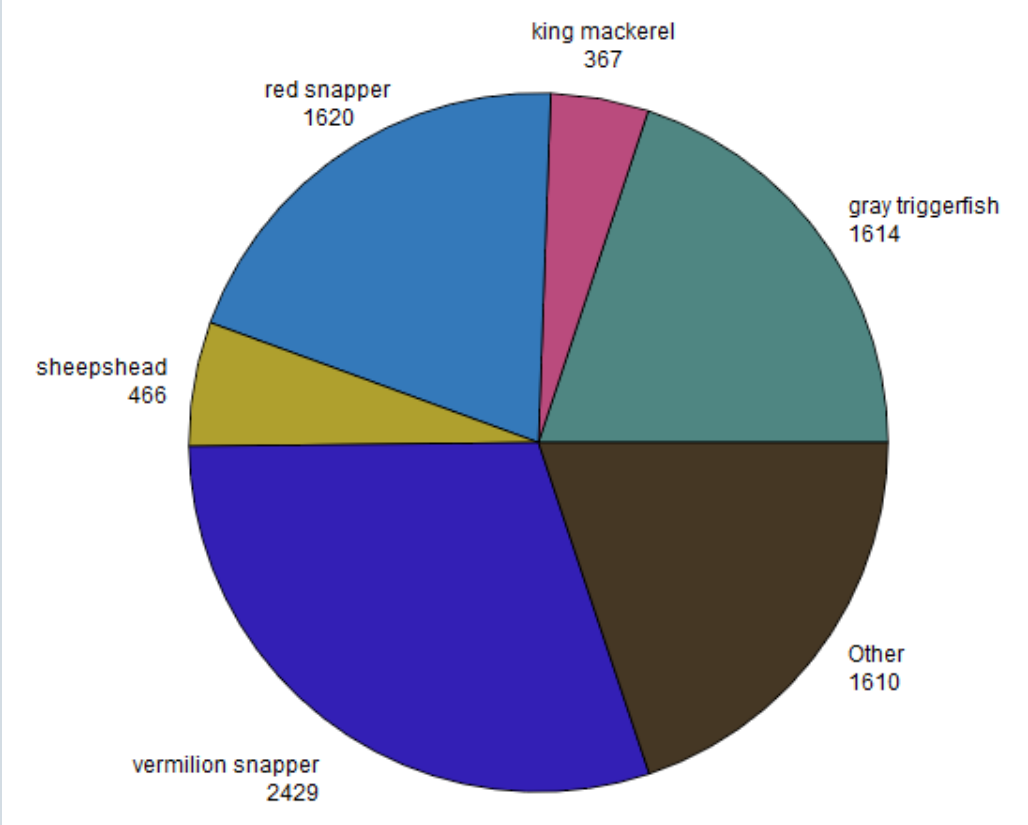
- Low Pressure Sites
 - High proportion of assignments in Florida Keys are terminated early (58%)
- Delay between data collection and data entry
 - Field staff not entering data directly
- Time on Site – Charter Mode
 - CST zone and summer led to 10 hour on-site time
 - Restricts access to specialized fishing practices
 - Night fishing (Shore mode)
 - Limited seasonal openings



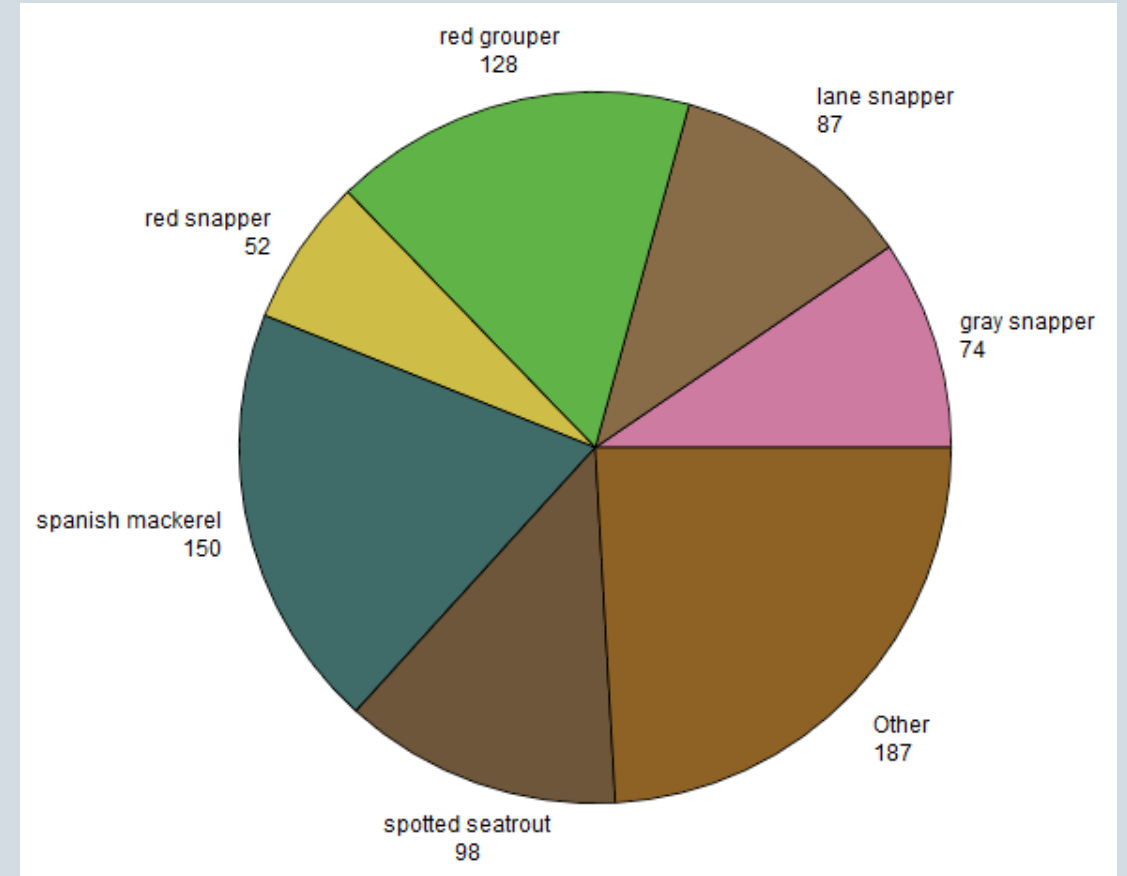
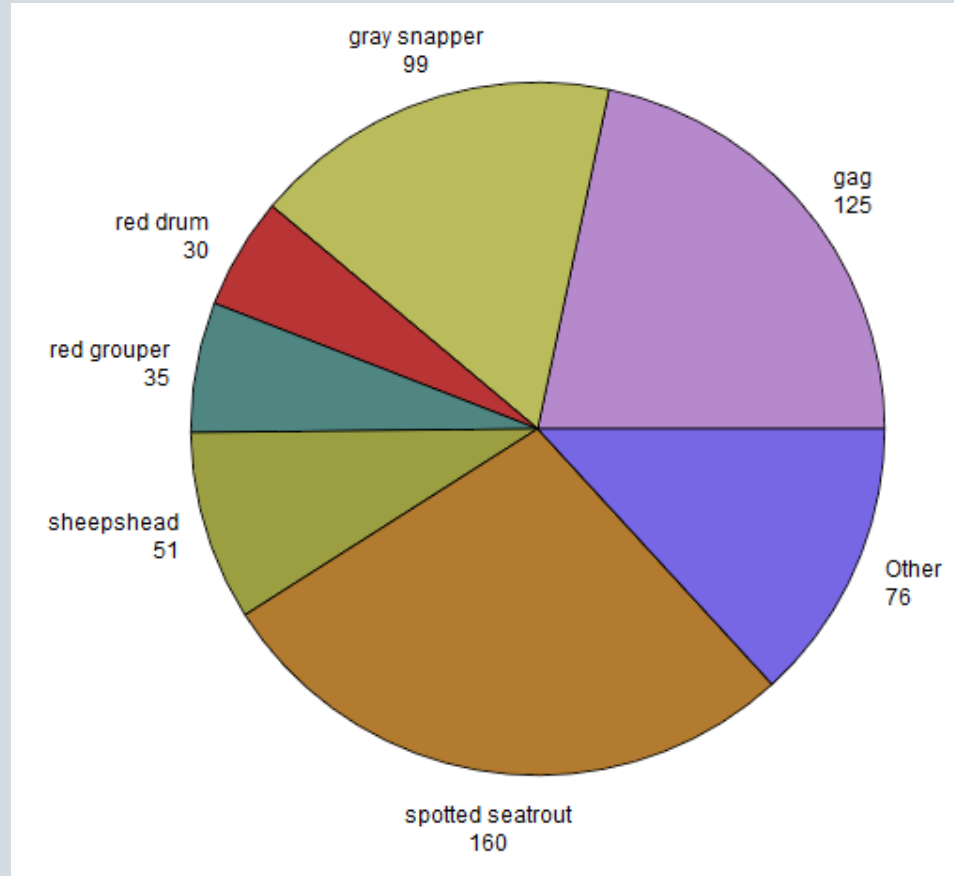
Any Questions?



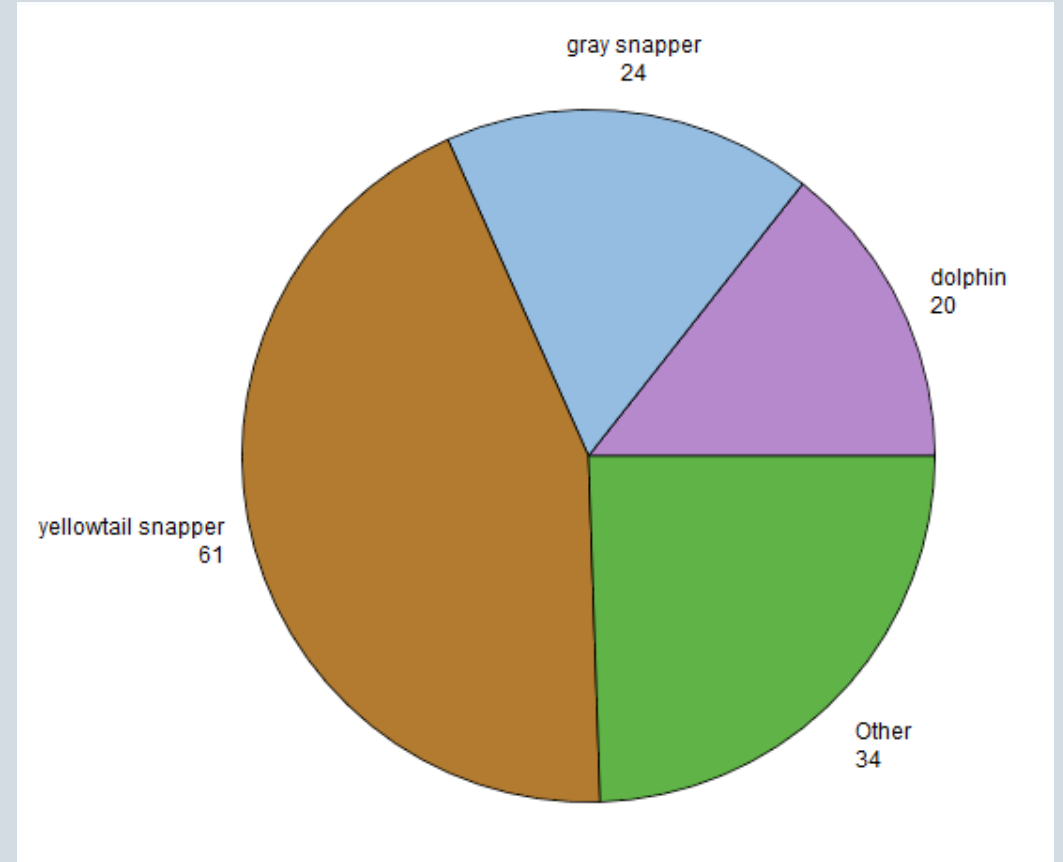
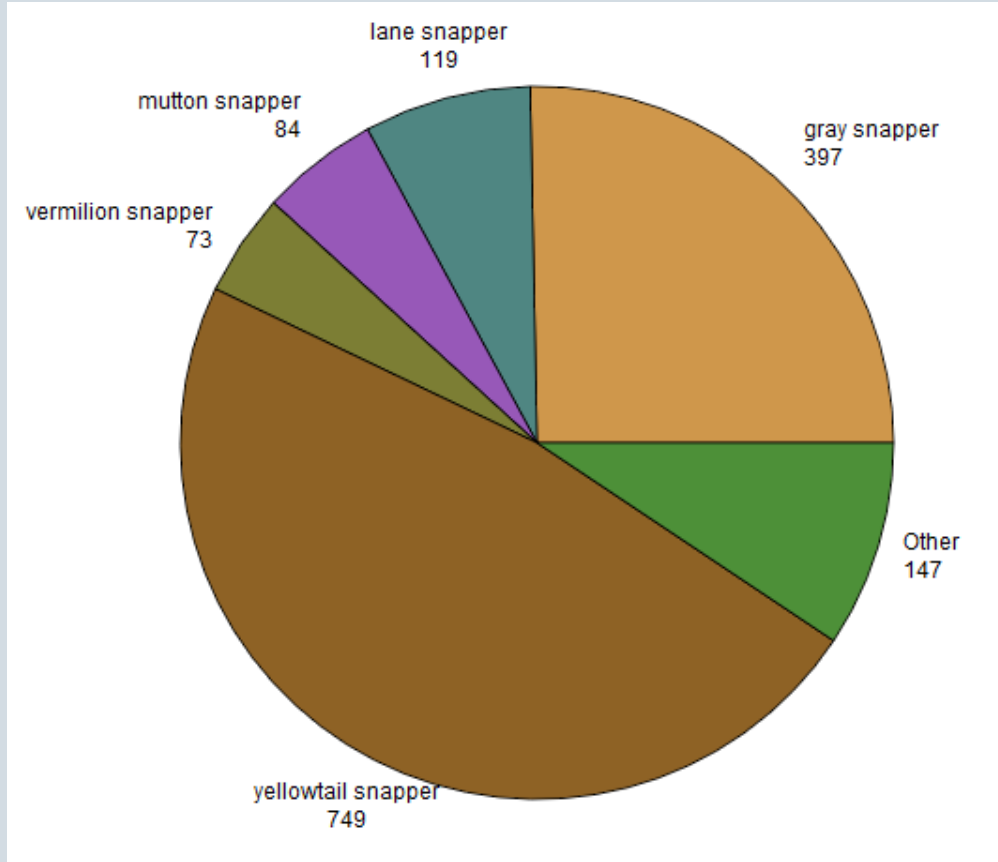
Results - Panhandle



Results - Peninsula



Results - Keys



Data Sources

- Data Collection
- Data Entry Programs
 - Validation Constraints
- Data QC
 - Automated SAS Procedures
- Data Storage
 - SQL Table
 - SAS Dataset

