TRENDS IN JUVENILE SPORTFISH RECRUITMENT IN FLORIDA BAY

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• Why sportfish are important?

Methodology

• Long-Term Trends

• Short-Term Variability and the Role of Hurricanes

• Future Directions





- Generates ~US \$880 Million per annum and >6,000 jobs (Fedler et al. 2009)
- Spotted Seatrout (*C. nebulosus*) 2nd most commonly caught fish in Florida Bay
- *C. nebulosus* spend entire life history in natal Bay





Methodology



- May-Oct
- Monthly
- Otter trawls
- Seagrass, T, S
- Stratified Random Sampling
- Optimized with power analysis



Sampling: 2004-present, 1994-2001, 1984-1985

Long-Term Trends



Why was recruitment so low from 2008 to 2015?

Why did it pick backup in 2016?



Population Controls



Environmental Conditions 1. Physiology

2. Recruitment

3. Prey

4. Predators (and the ability to hide from them)



Salinity Effect







Salinity Effect







Seagrass Effect

dP



Seagrass Effect





Seagrass explain the bay-wide distribution of juvenile spotted seatrout, but not within region changes.



Hurricane Effects

dP



Hurricane Effects





Hurricane Effects

50	
	dP

C. nebulosus Frequency of Occurrence				
	Crocodile Dragover	Whipray	Rankin	West
2004	0.050	0.095	0.100	0.078
2005	(1) 0.200	(2) 0.261	(1) 0.650	(5) 0.094
2006	0.050	(1) 0.45	(2) 0.321	(1) 0.327
2007	(2) 0.100	0.100	0.036	(4) 0.135
2008	0.000	0.050	0.000	0.058
2009	0.050	0.158	0.000	0.000
2010	0.000	0.000	0.000	(3) 0.200
2011	0.000	0.026	0.023	0.050
2012	0.000	0.000	0.000	0.075
2013	0.000	0.053	0.000	0.050
2014	0.000	0.053	0.000	0.000
2015	0.000	0.053	0.000	0.050
2016	0.025	(3) 0.211	0.116	0.028
2017	(3) 0.073	(4) 0.143	(3) 0.244	(2) 0.238
L. griseus Frequency of Occurrence				
	Crocodile Dragover	Whipray	Rankin	West
2004	0.000	0.000	0.100	(4) 0.471
2005	0.000	(3) 0.217	(3) 0.150	0.281
2006	0.000	0.150	0.071	0.250
2007	(2T) 0.050	0.100	0.143	0.346
2008	(2T) 0.050	0.150	0.000	(3) 0.481
2009	(2T) 0.050	(2) 0.342	(2) 0.239	(2) 0.500
2010	0.025	0.000	0.000	(5) 0.400
2011	0.000	0.026	0.045	0.275
2012	0.021	0.000	0.068	0.150
2013	0.000	0.105	0.136	0.350
2014	0.000	0.000	0.045	0.150
2015	0.000	0.000	0.045	0.300
2016	(2T) 0.050	0.026	0.047	(1) 0.583
2017	(1) 0 171	(1) 0 381	(1) 0 293	0 381

Similar increases were seen in snook, red drum, and black drum.

Increases were also seen across multiple gear types.

Spotted Seatrout spawn throughout Hurricanes





- There are long-term trends with a noticeable lack of recruitment from 2008-2015
 - We are investigating the potential cause of this decline

- In the sort-term hurricanes provide a significant increase in recruitment for both C. nebulosus and L. griseus
 - However, all hurricanes are not equal and we need to disentangle the salinity effect from the hurricane effect

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