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**Southeast
Region**

Smalltooth Sawfish – Current and Future Status



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American Elasmobranch Society
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Timeline of status updates

- 2000 – Initial status review in response to listing petition
- 2003 – Sawfish listed as endangered under the Endangered Species Act
- 2009 – Critical habitat designated
- 2009 – Recovery Plan published
- 2010 – Status Review
- 2018 – Status Review



Summary of 2000 Status Review

“The primary reason for the decline in smalltooth sawfish abundance has been bycatch in various fisheries, including gillnets, otter trawls, trammel nets, and seines.”

“...population decline is clearly demonstrated by its shrinking distribution and the reduction in the number of captures.”

“The decline is likely greater than indicated by numbers or frequencies of catches. During the past century, both fishing and scientific sampling effort have increased by orders of magnitude. The fact that documented smalltooth catch records have declined during this period despite these tremendous increases in fishing effort underscores the population reduction in smalltooth sawfish.”



Data Gaps/Needs

- Current population estimate
- Historical population estimate
- Number of breeding adults
- Population trend analysis
- Post release mortality estimates in fisheries
- Improved reporting from fisheries
- Fishery independent monitoring surveys
- Identification of nursery sites
- Age and growth data
- Genetic diversity
- Population response to threats



Status Updates – 2010 & 2018

- Immense gains in understanding:
 - Life history
 - Reproduction
 - Habitat use
 - Critical habitat designated
 - High-use areas identified
 - Movements
 - Genetics
- Effort spent in public outreach
 - Increased encounter reporting
- No change in threats
- No change in listing status

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Contribution to the Theme Section 'Biology and ecology of sawfishes'

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REVIEW

Biology, ecology, and status of the smalltooth sawfish *Pristis pectinata* in the USA

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ABSTRACT: The smalltooth sawfish *Pristis pectinata* is threatened with extinction throughout its range and has been designated as Critically Endangered by the IUCN. In the USA, the species historically ranged from Texas to North Carolina, but mortality in fisheries and habitat loss have reduced the range to primarily southwest Florida. The US population was listed as endangered under the US Endangered Species Act in 2003. At that time, data on the biology and ecology of the species were limited. Research and outreach efforts have since expanded, and the quality and quantity of information has increased such that the US population is now one of the most well-studied sawfish populations worldwide. Smalltooth sawfish are born in litters of 7–14 individuals at lengths of 64–81 cm stretched total length (STL), reach maturity in 7–11 yr at approximately 340 cm STL for males and 370 cm STL for females, grow to a maximum size of about 500 cm STL, and live an estimated 30 yr in the wild. Smalltooth sawfish are piscivorous and shift from shallow estuarine waters as small juveniles to a broader array of coastal habitats as large juveniles and adults. The species is physiologically resilient to anthropogenic stressors, but preserving habitat and reducing fishing effects remain priorities. Data synthesized in this review have advanced our understanding of smalltooth sawfish life history and habitat needs, as well as the threats that continue to affect the population. Cumulatively, these data support optimism for recovery of the smalltooth sawfish in the USA and potentially beyond, though recovery will still require decades.

Summary of 2018 Status Review

“...the new information provides optimism for the recovery of smalltooth sawfish in the US. Studies have shown the species is growing faster (Simpfendorfer et al. 2008, Scharer et al. 2012) and maturing earlier (Carlson and Simpfendorfer 2015) than previously thought. These changes in the context of population modeling indicate the population is capable of recovering faster than once calculated—**provided threats do not increase** (Carlson and Simpfendorfer 2015).”



Data Gaps/Needs

- Current population estimate
- Historical population estimate
- Number of breeding adults ★
- Population trend analysis
- Post release mortality estimates in fisheries
- Improved reporting from fisheries
- Fishery independent monitoring surveys ★
- Identification of nursery sites ★
- Age and growth data ★
- Genetic diversity ★
- Population response to threats

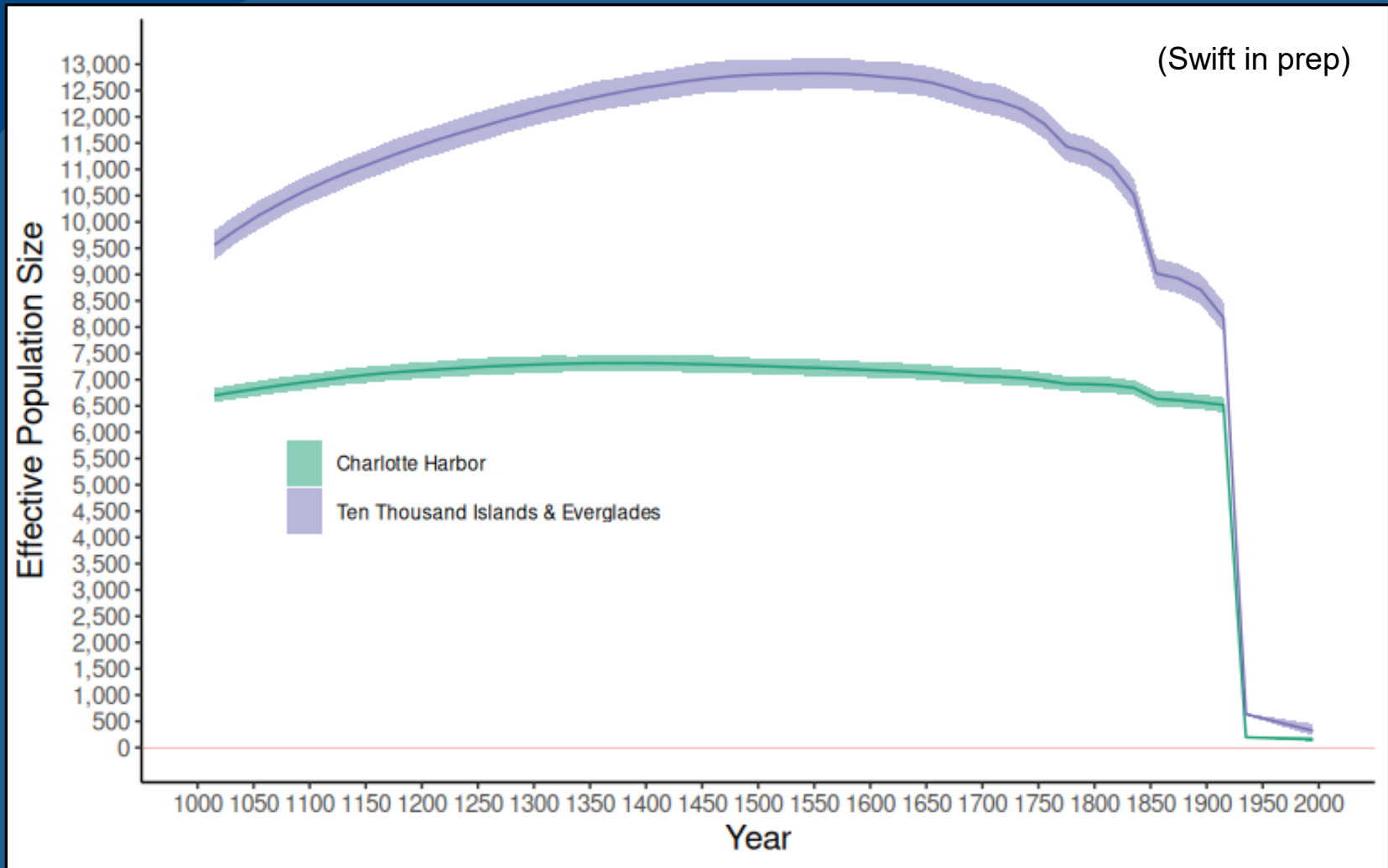


2026 Status Update

- As part of a Recovery Plan update
- Data updates
 - Genetics (CKMR [Swift], N_e [Smith 2021], Parental reconstructions [Feldheim et al. 2017, Smith et al. 2021])
 - Life history (Kroetz et al. 2025)
 - Abundance and trend (Farmer et al. 2026)
 - Commercial fishing threats (Graham et al. 2022)
 - Fishery effort and bycatch (Babcock et al. 2025)
- New threat
 - Spinning fish events (2024 and 2025)
- Population viability analyses (Carlson 2023, Carlson and Farmer 2025)



Population Decline



Juvenile Decline in Charlotte Harbor

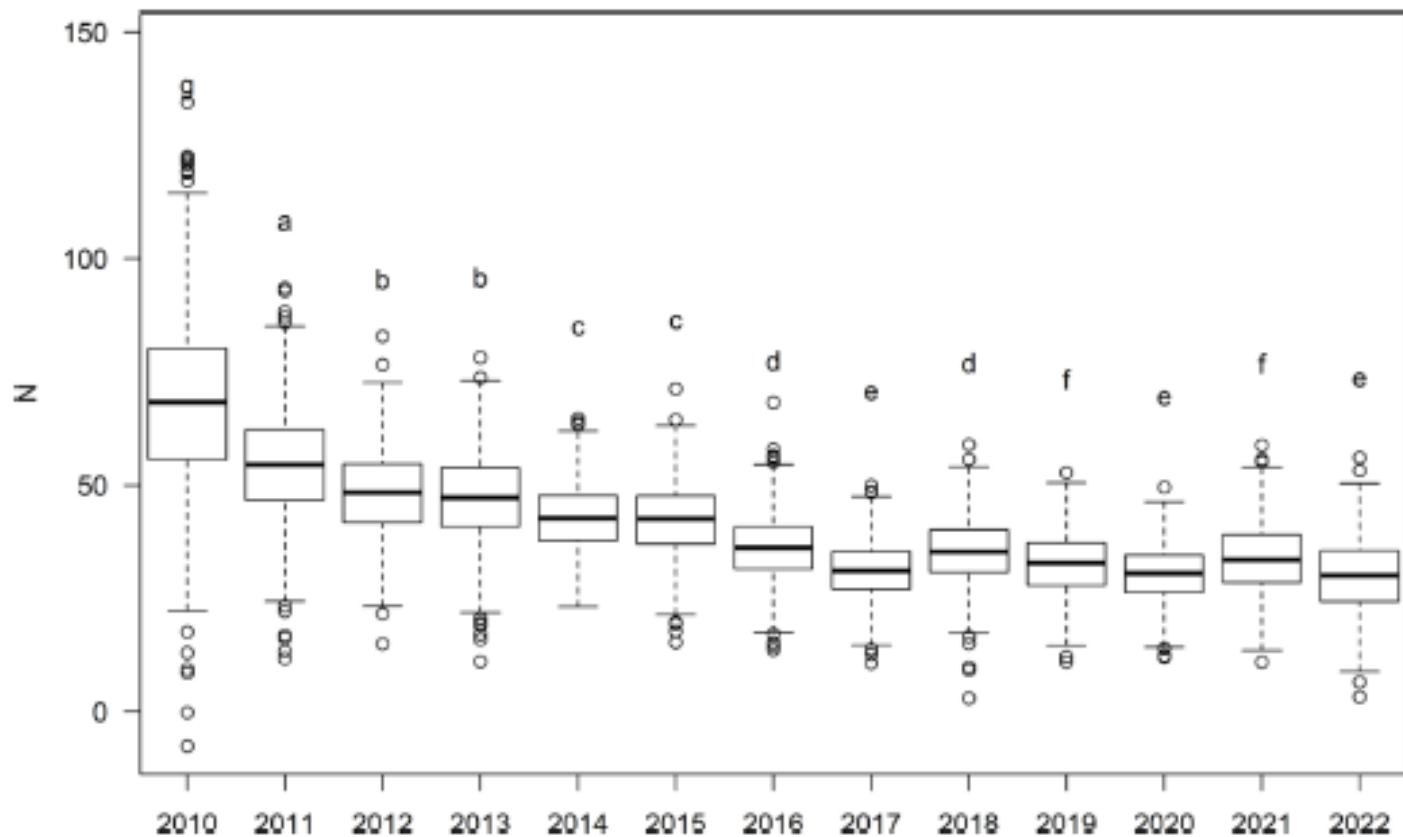
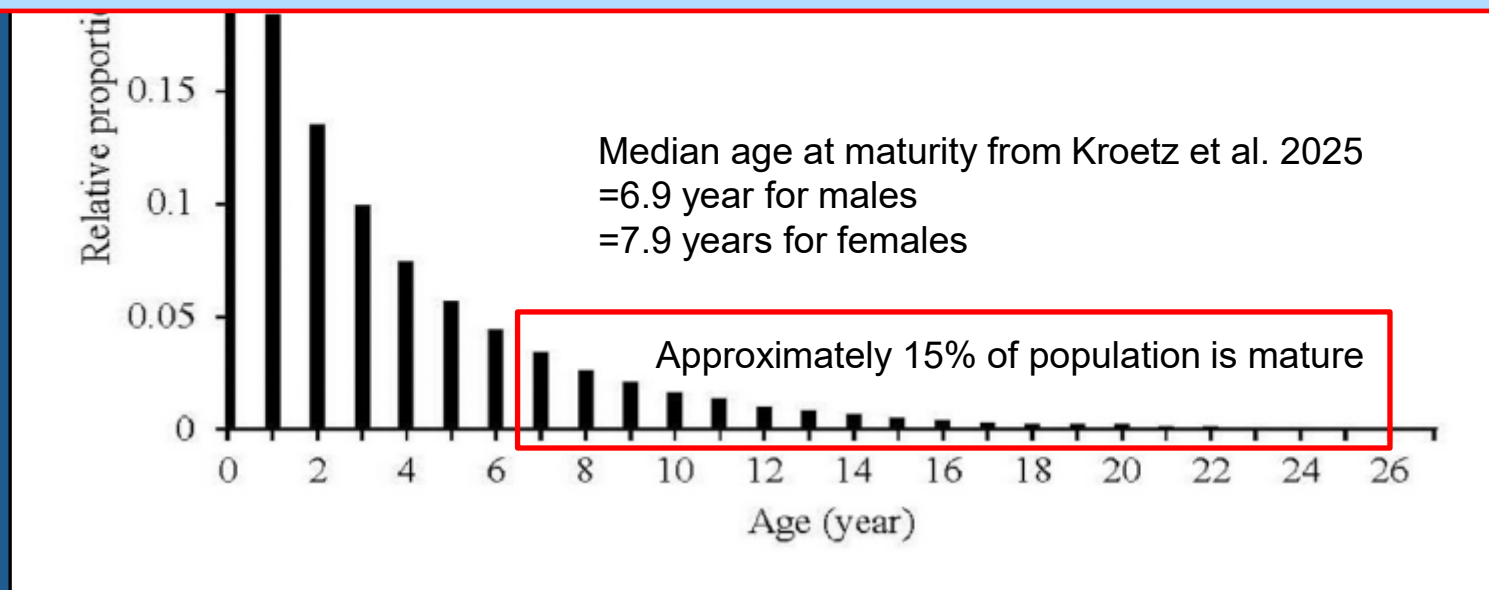


Fig. 7. Declining trend in smalltooth sawfish (*Pristis pectinata*) relative abundance. Model-estimated Spring/Summer abundance (N) of age-0 and age-1 individuals in Charlotte Harbor from random gillnet sampling, accounting for parameter uncertainty and environmental variability. Lettering denotes significant differences revealed by post-hoc pairwise comparisons using Tukey tests.

Estimating Population Size

From Swift presentation, number of breeders = ~1000
Total population = $1000 / .15 = 6,667$ individuals



From Figure 1 of Carlson 2023 – Modeled stable age distribution

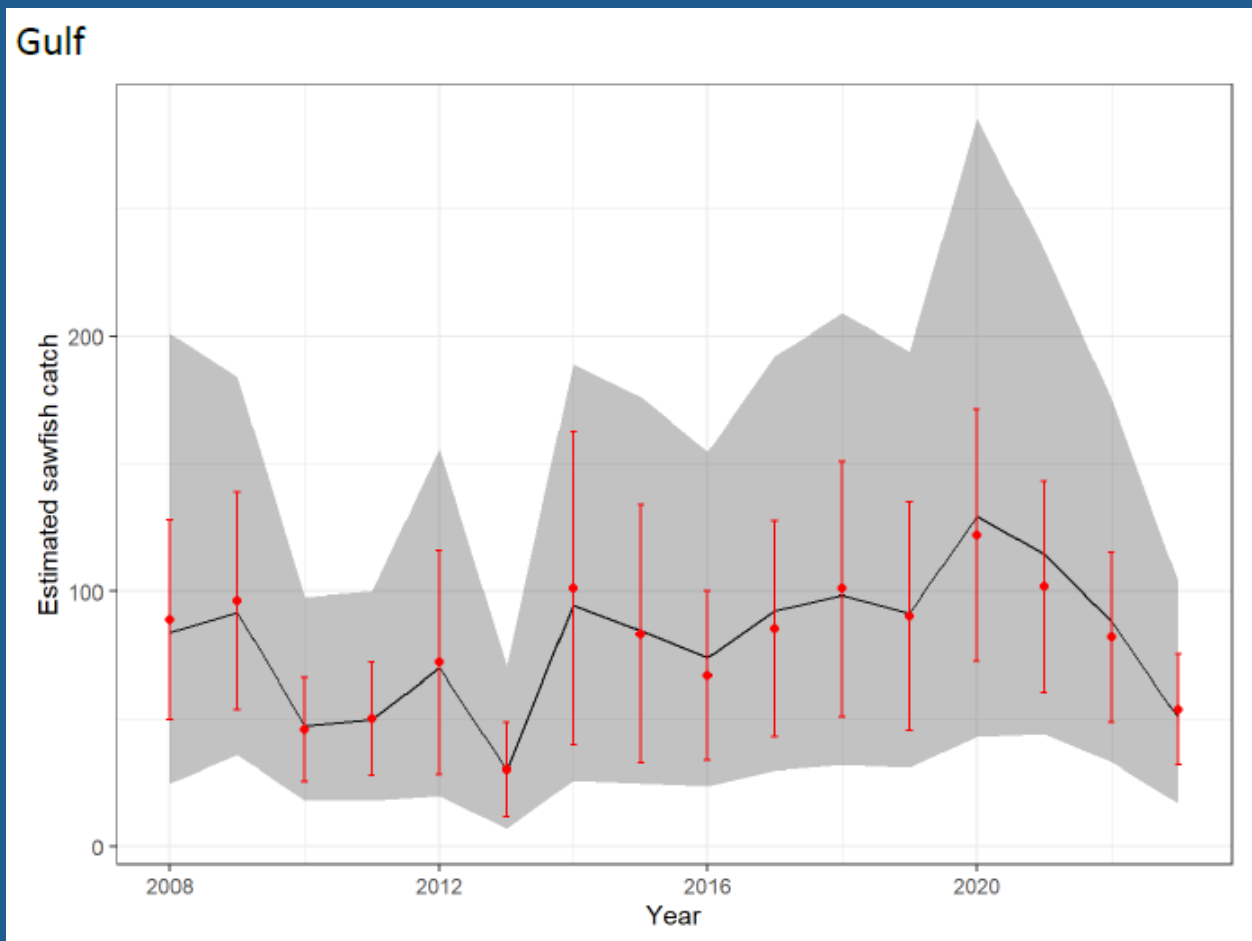


2024 Spinning Sawfish – Pop. Effect

- Approximately 10% of the adult population died in 2024 event
 - 92 of the 228 reported were assumed to be adult
 - Estimate of 1000 adults in the population (Swift in prep.)
 - Assumes all 92 died
- Impact is not just instantaneous
 - A portion of the 127 subadults reported would have matured in 2025, 2026, or 2027
 - Expect a decline in juvenile recruitment



Shrimp bycatch (Babcock et al. 2025)



Data Gaps/Needs

- Current population estimate ★
- Historical population estimate ★
- Number of breeding adults ★ ★
- Population trend analysis ★
- Post release mortality estimates in fisheries
- Improved reporting from fisheries
- Fishery independent monitoring surveys ★ ★
- Identification of nursery sites ★ ★
- Age and growth data ★ ★
- Genetic diversity ★ ★
- Population response to threats ★ ★



Ongoing Threats



Fishing Mortality



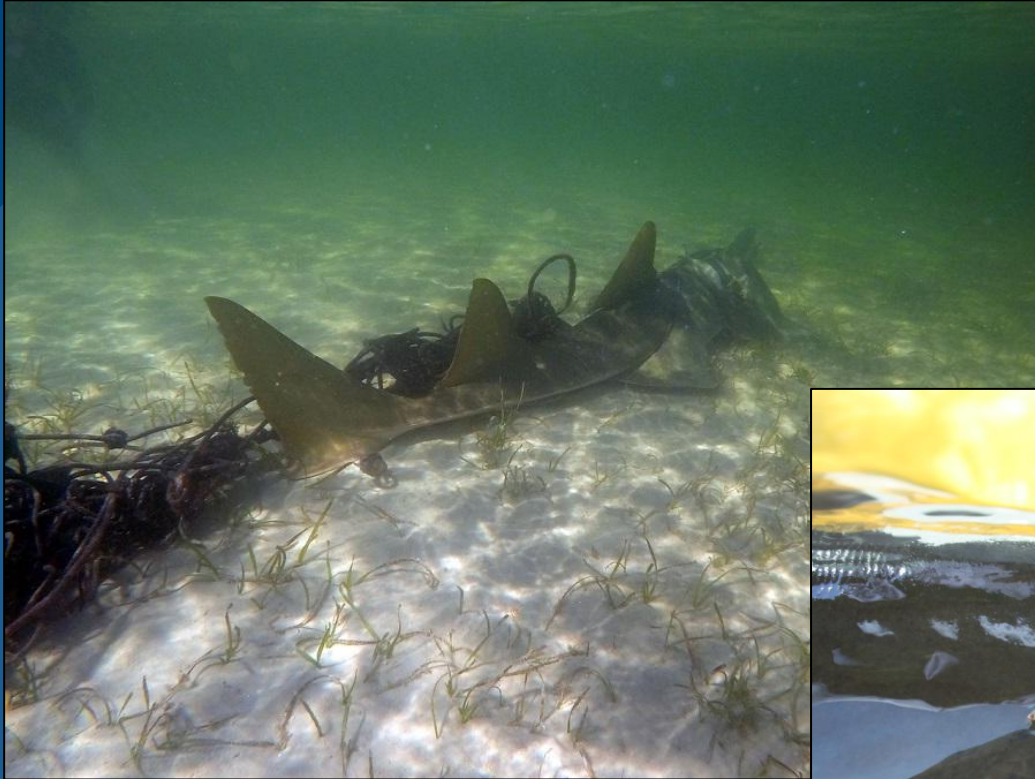
Improper Handling and Release



Habitat Loss – Coastal Development



Entanglement – Marine Debris



Stochastic Mortality Events



Photo credit: Alvin Barron



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Current Status Summary

- A lot of new information since last update
- Trend is uncertain
 - Sampling (random vs directed), location (ENP vs CH), & size class
 - Need to assess more recent data
- We have a current population estimate
- We have an idea of historical population size and the decline
- Recovery potential remains provided threats are limited
 - New major threat identified – Stochastic HAB events
- Previous optimism tempered
 - Stochastic events (frequency and magnitude)
 - Bycatch (frequency and mortality rate)



Future Status



- Must reduce the effects of the primary threats
 - Spinning fish mortality
 - Shrimp bycatch
 - Habitat loss
- No new threats
- Consider additional management actions



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 - Dominic Swift
 - University of Southern Mississippi
 - Lower Keys Fishing Guides Association
 - Florida Guides Association
 - Mote Marine Lab
 - US Army Corps of Engineers
 - Florida Museum of Natural History
 - Dauphin Island Sea Lab
 - Bonefish and Tarpon Trust
 - Dynasty Marine
 - FGCU



Questions?

- If another spinning event occurs, what are priority research needs? And why?
- What should on-the-ground efforts include if another event were to occur in South Florida?
- Based on all of the new data provided what management options could be considered to support population increase or threat reduction?
- Are there options for reducing the likelihood of harmful algal events?

