



The Recovery of the American North Atlantic Swordfish

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Data and Graphs

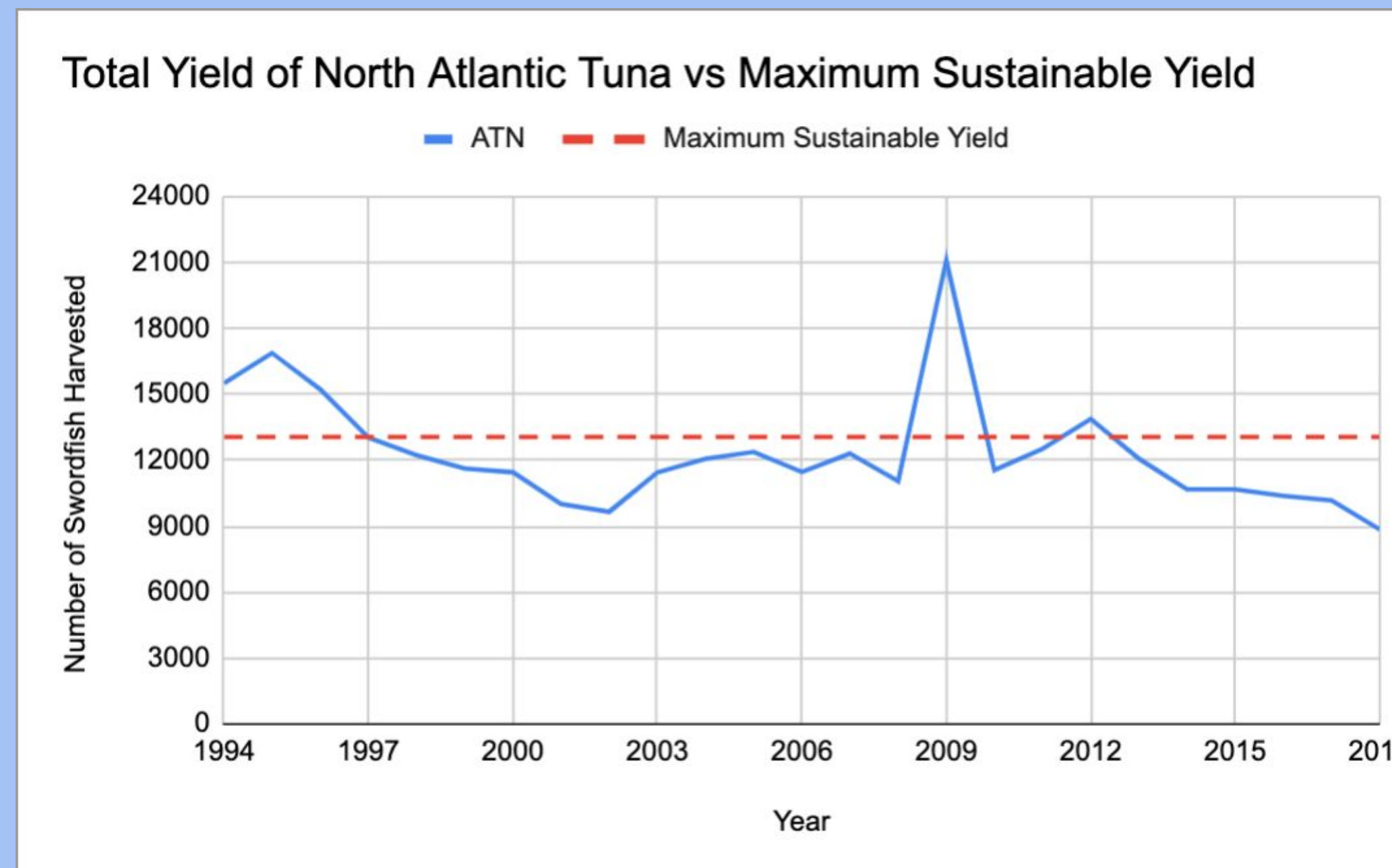


Figure 1: Graph showing the total yield of ATN compared to Maximum Sustainable Yield from 1994-2018 - Data sourced from ICCAT (2)

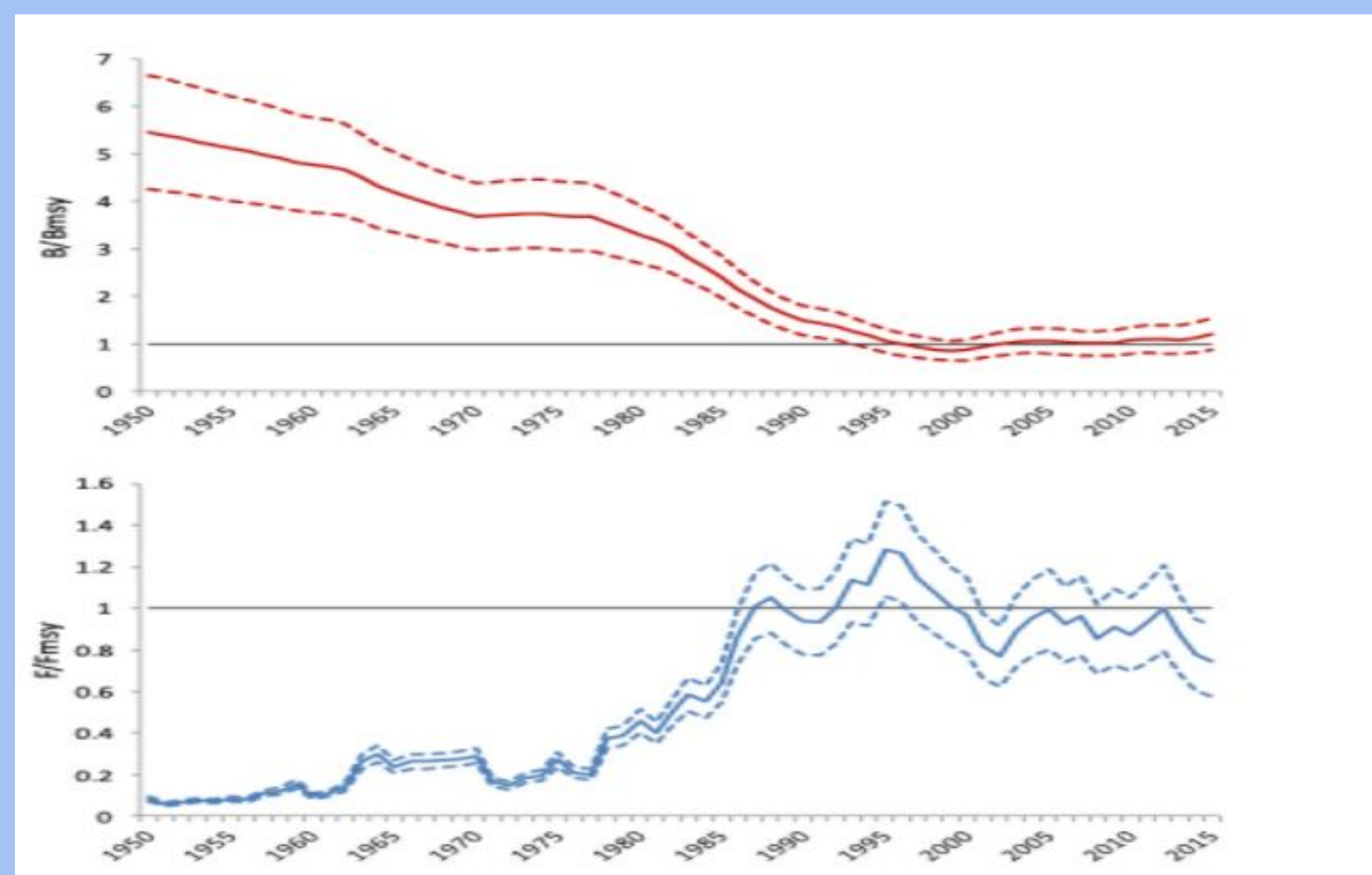


Figure 2: Trends in Relative Biomass of ATN (top) and in Fishing Mortality over time (bottom) - Graph Sourced From ICCAT (4)

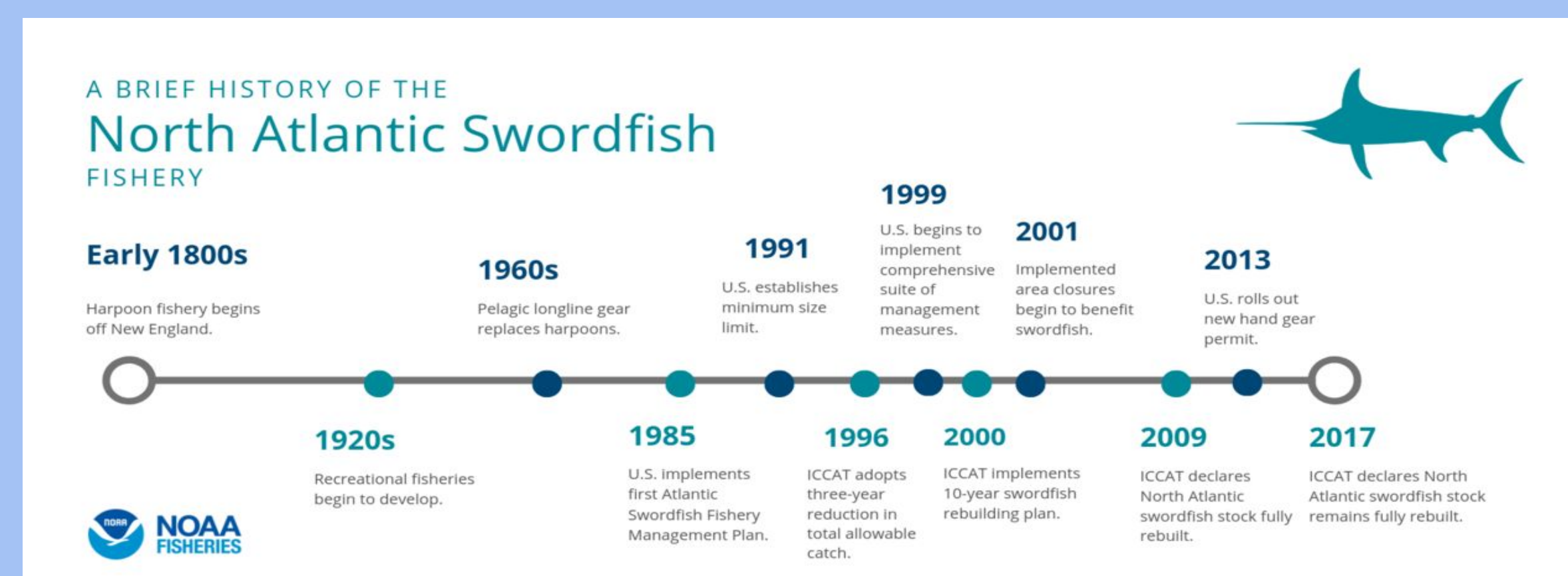


Figure 3: Timeline of ATN and relevant management techniques - Timeline taken from NOAA Fisheries (4)

North Atlantic Swordfish (1)

Abstract

This case study focuses on the recovery of the North Atlantic Swordfish (ATN) over the latter decades of the 20th century and the early decades of the 21st. It will discuss the conservation methods that allowed for the preservation of the species by analyzing the various techniques used to restore the species and evaluate the varying successes of each. Techniques analyzed include limited number of longlining vessels, minimum size limits, retention limits, closures in regions of high bycatch, tracking systems, use of specific hook, classroom settings and observation programs. This case study provides the opportunity to establish a roadmap for other overexploited species to recover. Based on the timing of recovery and relative impact of each external effect, the findings of the study were that the limiting of longlining vessels, reduction in total allowable catch, and minimum size limits were the most effective methods of allowing the fishery achieve its recovery. Should these methods be applied to other threatened fisheries under similar ecological and anthropological stresses, they may experience a similar recovery.

Introduction

The North Atlantic Swordfish fishery is a commercially important fishery in the Northeast United States and across coastal communities along the entire North Atlantic. The fish are harvested for both their food resources and recreation, industries supported by local and commercial businesses. Recreational fisheries began as far back as the early 20th century, while large scale, commercial longlining industries arose in the middle of the same century. Following a steep decline in population due to overfishing and harmful harvesting techniques, the North Atlantic Swordfish fishery extremely unhealthy by the 1990s, yet has since remarkably recovered. How did this recovery occur? Through the usage of varying restoration techniques, the success of each being evaluated through detailed data from the recovery of the fishery.

Conclusions

Based on the data collected and relative success of efforts in different communities, it has been determined that the limiting of longlining vessels, reductions in total allowable catch, and minimum size limits were the most effective methods of recovery. This was determined by comparing the timing of implementation with differences in total yield and trends in mortality and biomass. Though all of the strategies were important in protecting the fishery and helping it grow to its current, healthy level, the aforementioned techniques were most successful due to the level at which they prevented the overharvest of reproductive and developmental age fish. This information can be applied to other overexploited fisheries to establish which techniques to use in order to foster the restoration of wild stocks.

Teaching the Case

Read this [link](#) prior to class and answer these questions:

- What, if anything, do you know about North Atlantic Swordfish?
- What do you perceive about the risks of overfishing?
- Are you aware of any conservation techniques currently in use to protect healthy fisheries?
- What do you think would be effective remediation efforts for endangered fish species?

In-Class:

- Students will break into three groups based on the conservation method they found most important from the conclusion. They will then answer the three questions below
 - What do you think were the most successful conservation techniques?
 - Why do you think the United States Government acted to address this specific fishery?
 - What other fisheries across the world do you think are most in need of conservation methods?

References

- (1)Image courtesy of NOAA fisheries - <https://www.fisheries.noaa.gov/species/north-atlantic-swordfish#:~:text=Atlantic%20swordfish%20are%20one%20of,Swordfish%20live%20about%209%20years>.
- (2)Data courtesy of ICCAT - https://www.iccat.int/documents/scrs/execsum/swo_atl_eng.pdf
- (3)Data courtesy of ICCAT - https://www.iccat.int/documents/scrs/execsum/swo_atl_eng.pdf
- (4)Timeline courtesy NOAA Fisheries - <https://www.fisheries.noaa.gov/feature-story/surprising-story-swordfish-you-may-not-know>