



A Case Study of Dolphinfish (*Coryphaena hippurus*) and Blue Marlin (*Makaira nigricans*)

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Abstract



Figure 1. Dolphinfish



Figure 2. Blue Marlin

Objectives

- Assess recreational catch and effort trends for dolphinfish and blue marlin using Marine Recreational Information Program (MRIP) data.
- Use fisher surveys to understand perceptions of changes in landings, size, and effort.
- Compare standardized Catch Per Unit Effort (CPUE) trends to fisher observations to support sustainable fishery management.

Have you noticed a decrease in average size of Dolphinfish landed?

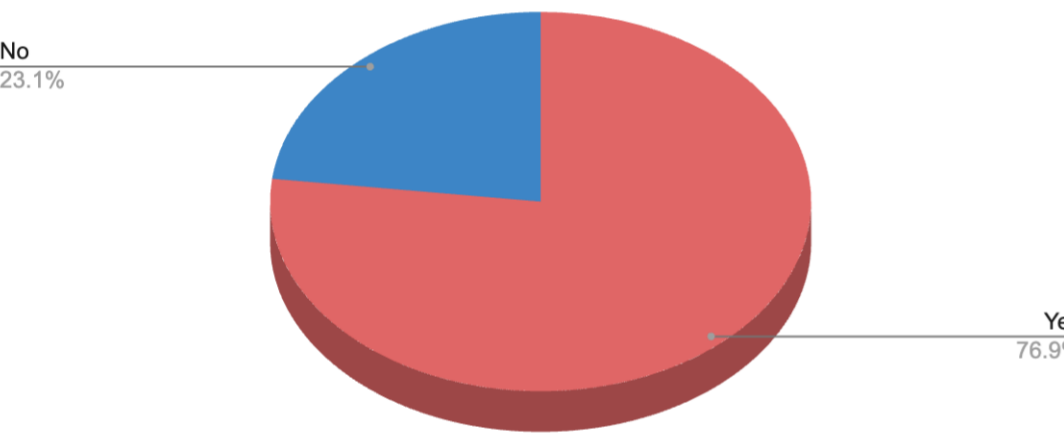


Figure 3. Percentage of anglers who noticed a decrease in size of Dolphinfish

Have you noticed a decrease in average size of Blue Marlin landed?

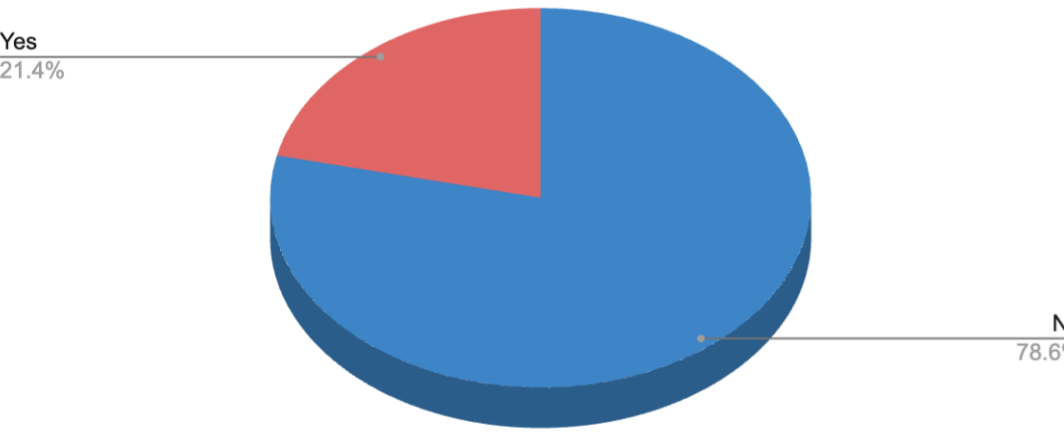


Figure 5. Percentage of anglers who noticed a decrease in size of Blue Marlin

Have you had to work harder to catch the same number of dolphinfish?

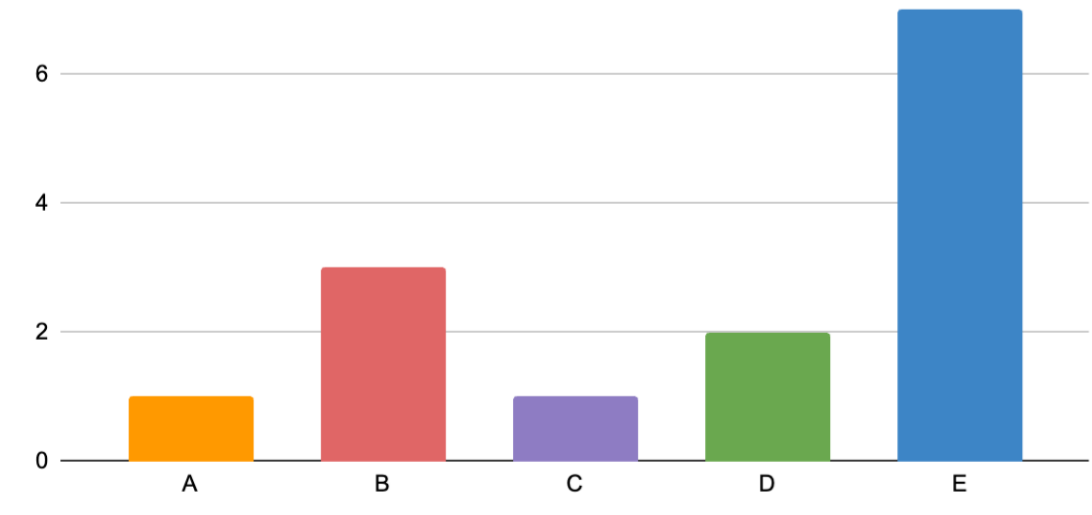


Figure 7. Efforts made to catch the same number of Dolphinfish

A - Yes, I set more hooks to catch the same number of fish

B- Yes, I go further offshore or to new fishing areas to catch the same number of fish

C- I set my hooks deeper in the water to catch more fish

D- Both A & B

E- No

Introduction

Recreational dolphinfish and blue marlin fisheries in the Atlantic provide significant ecological and economic value. In recent years, concerns about overfishing, increasing fishing effort, and environmental change have raised questions about the long-term sustainability of these species. While standardized fishery-dependent datasets such as the Marine Recreational Information Program (MRIP) provide essential trend information, they do not always reflect what anglers observe directly on the water. Differences between data-driven assessments and fisher experiences can create uncertainty for managers and stakeholders. To better understand these gaps, this study examines how recreational anglers perceive trends in dolphinfish and blue marlin abundance, effort, and size, and explores how these perceptions relate to long-term standardized indices. Integrating fisher knowledge with existing datasets may help improve stock assessments and support more adaptive and inclusive management strategies.

Methodology

Fisher Surveys:

- Location: Blue Marlin Grand Championship in Orange Beach, AL
- Two questionnaires: Blue Marlin (n=14) and Dolphinfish (n=13)
- Total of 27 respondents

Catch Per Unit Effort (CPUE) Standardization:

- Data source: Marine Recreational Information Program (MRIP), 1981-2024
- Sub-regions: South Atlantic (NC, SC, GA, EFL) and Gulf of Mexico (WFL, AL, MS, LA)
- Area: Ocean >3 miles (all but WFL); Ocean >10 miles (WFL only).
- Fishing modes analyzed: Headboat, charter, private/rental.
- A Generalized Linear Model (GLM) was run using R.

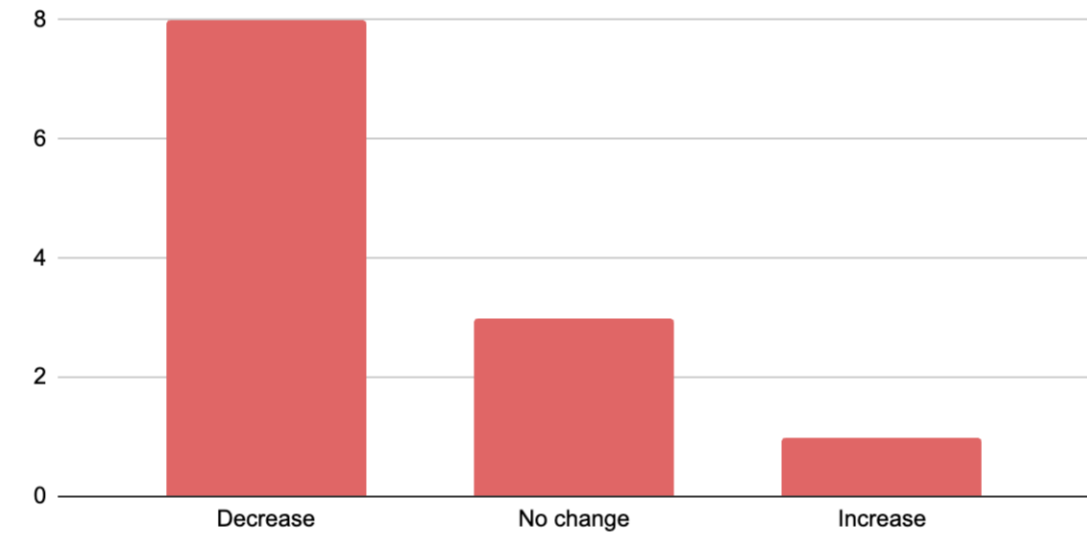
Dolphinfish:

- Fishers average 19 years of fishing experience
- Main ports fished by surveyed fishers: Orange Beach, AL (6), Destin, FL (3), Biloxi, MS (2), Venice, LA (2), Grand Isle, LA (2), Pensacola, FL (1), Miami, FL (1).
- Fishermen reported decreases in both landings and average size
- Half reported increasing effort (fishing further offshore, setting more hooks, or both)
- Marine Recreational Information Program (MRIP) data shows high variability in Catch Per Unit Effort (CPUE)

Blue Marlin:

- Fishers average 14 years of fishing experience
- Main ports reported: Orange Beach, AL (8), Destin, FL (3), Grand Isle, LA (2), Clearwater, FL (1), Panama City Beach, FL (1), Pensacola, FL (1), Venice, LA (1).
- Fishermen reported an increase in landings, but average size has not changed over time
- International Commission for the Conservation of Atlantic Tunas (ICCAT) 2024 Atlantic Blue Marlin Stock Assessment shows trends of fishing biomass and mortality, with projections suggesting an upward trend; this aligns with fisher surveys reporting stable or increasing landings.

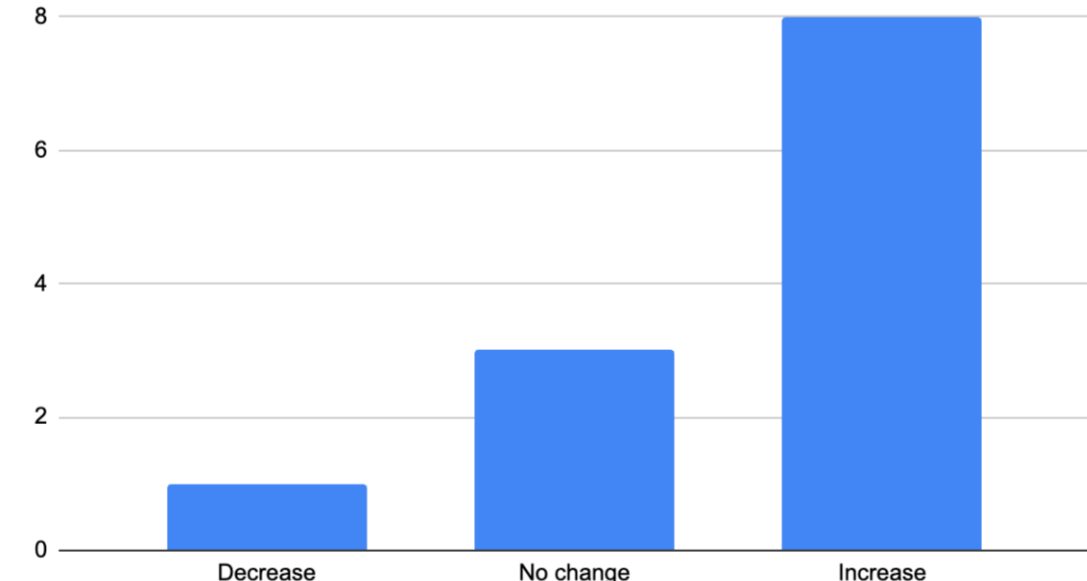
What trend have you noticed in Dolphinfish landings?



*One response is missing due to being left blank

Figure 4. Trends noticed in Dolphinfish landings

What trend have you noticed in Blue Marlin landings?



*Two responses are missing due to being left blank

Figure 6. Trends noticed in Blue Marlin landings

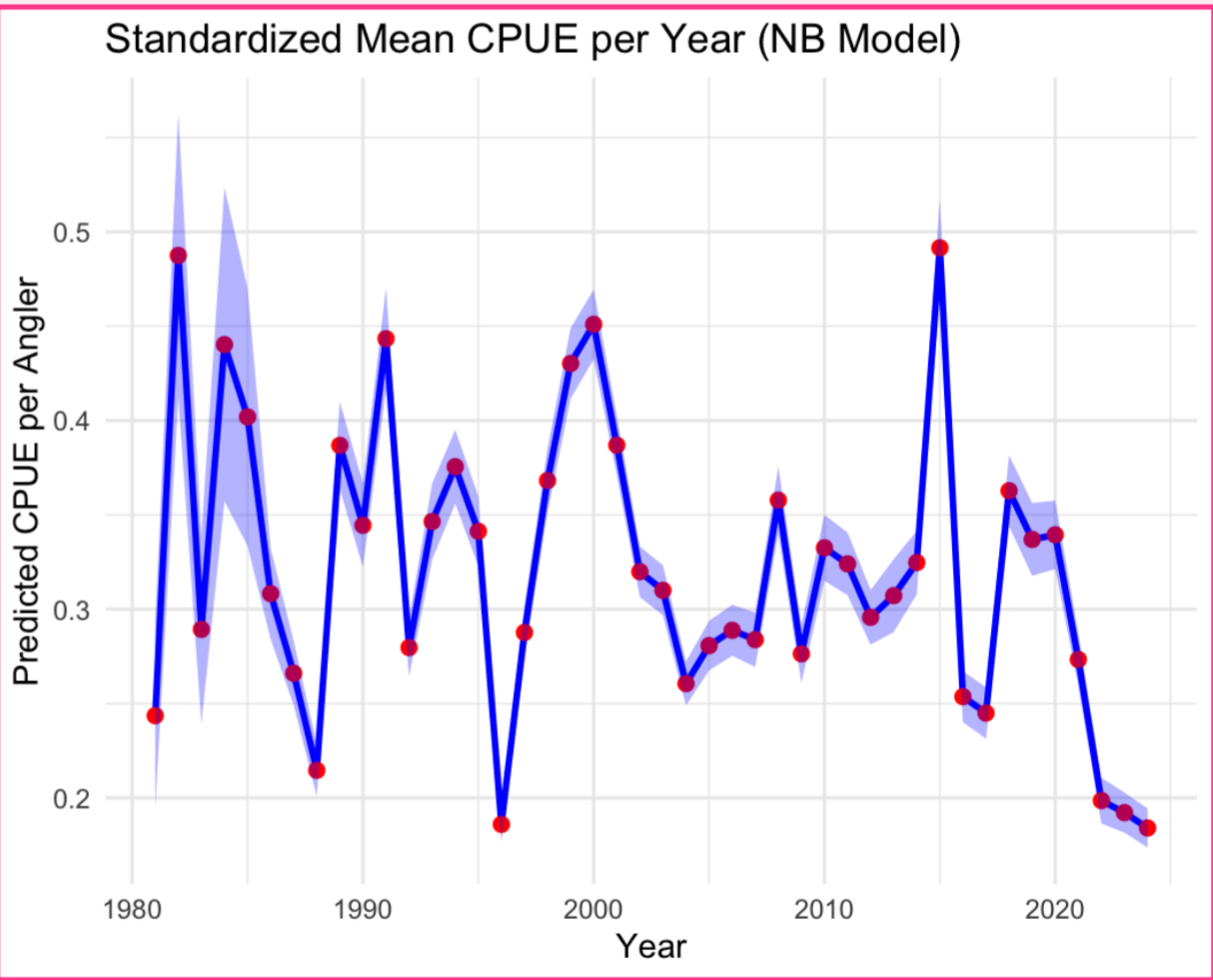
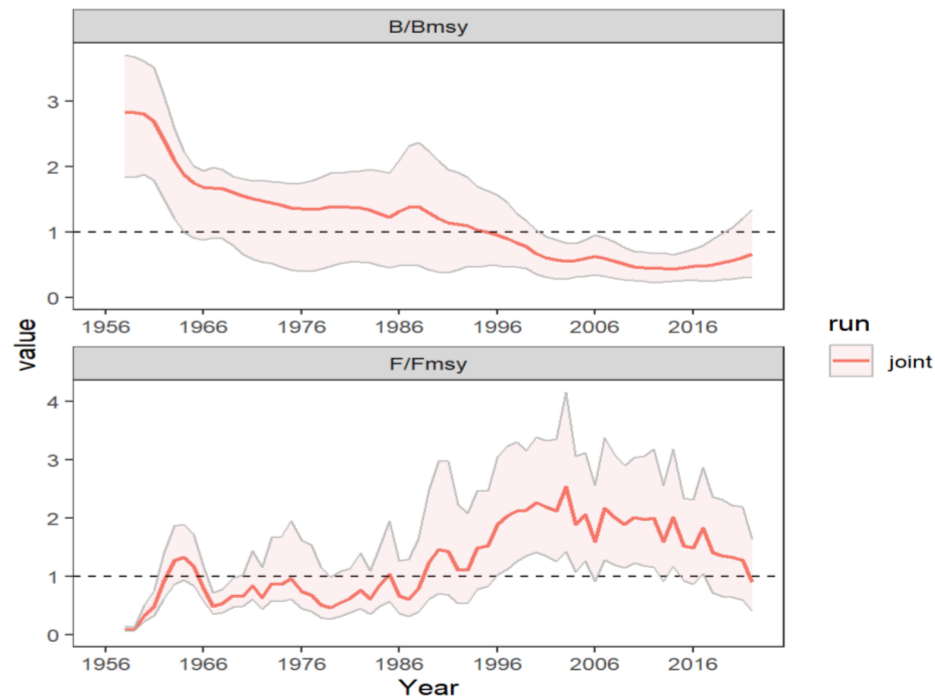


Figure 8. Dolphinfish CPUE Standardization



BUM-Figure 4. Annual trends of relative biomass (B/B_{msy}) and fishing mortality (F/F_{msy}) from the final combined grid model scenarios for Atlantic blue marlin. The dark line indicates the mean of all scenarios, and the shaded area the overall 95% confidence bounds of the results.

Figure 9. 2024 ICCAT Blue Marlin Stock Assessment

Discussion

Dolphinfish:

- Fishermen perceive decreases in both landings and size, but Marine Recreational Information Program (MRIP) data is highly variable. Future studies should explore new data sources that better align with fisher perceptions of stock status/health.

Blue Marlin:

- Fisher perceptions of stability/increase correlate with International Commission for the Conservation of Atlantic Tunas (ICCAT) stock assessments, showing stabilization of relative biomass.
- Highlights the importance of integrating fisher knowledge with Catch Per Unit Effort (CPUE) trends and formal stock assessments to improve conservation and management.

References

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Acknowledgements

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