Ideas on how to incorporate EBFM into a pelagic longline tuna fishery

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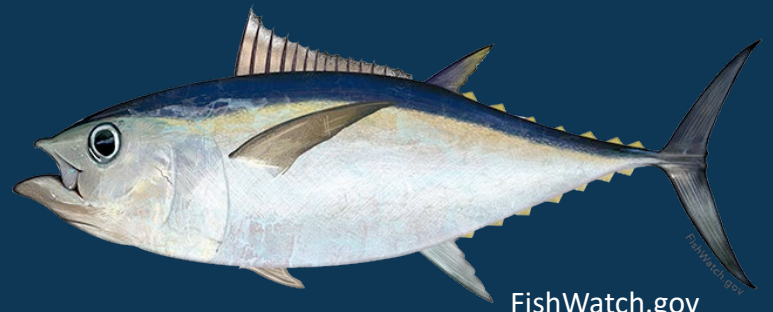
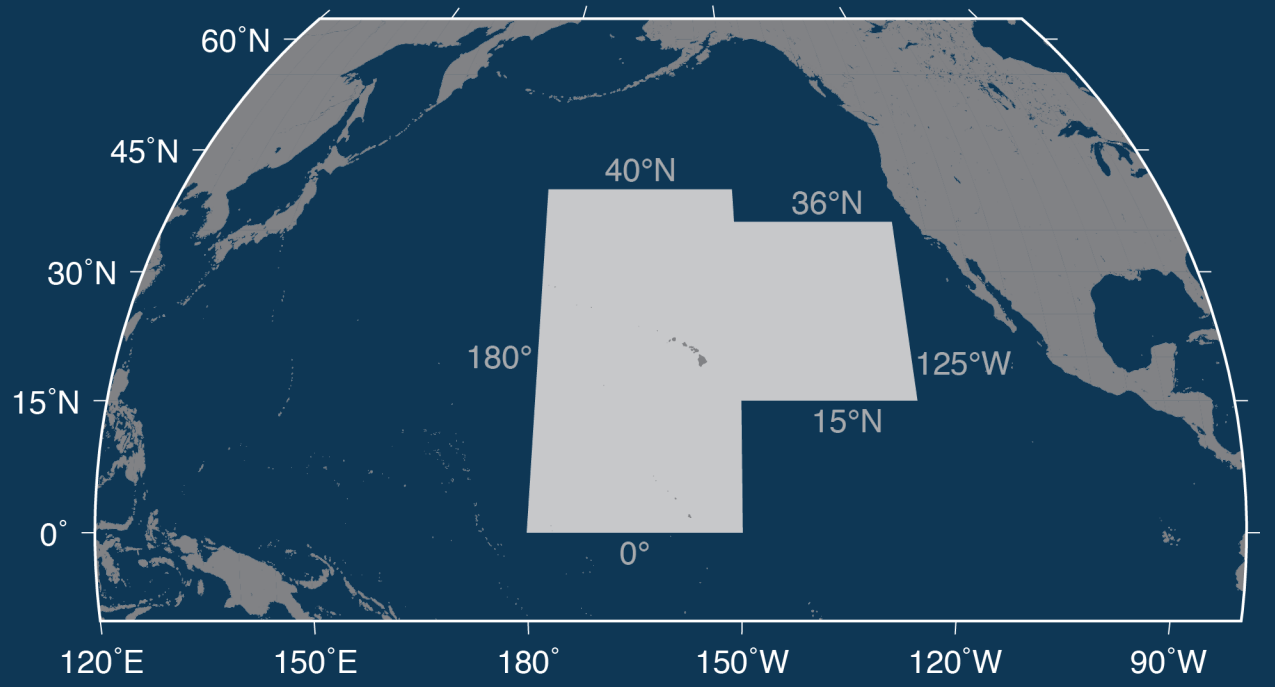
Hawaii-based longline fishery – 2016

- 141 vessels
- 50 million hooks
- > 15 million km^2

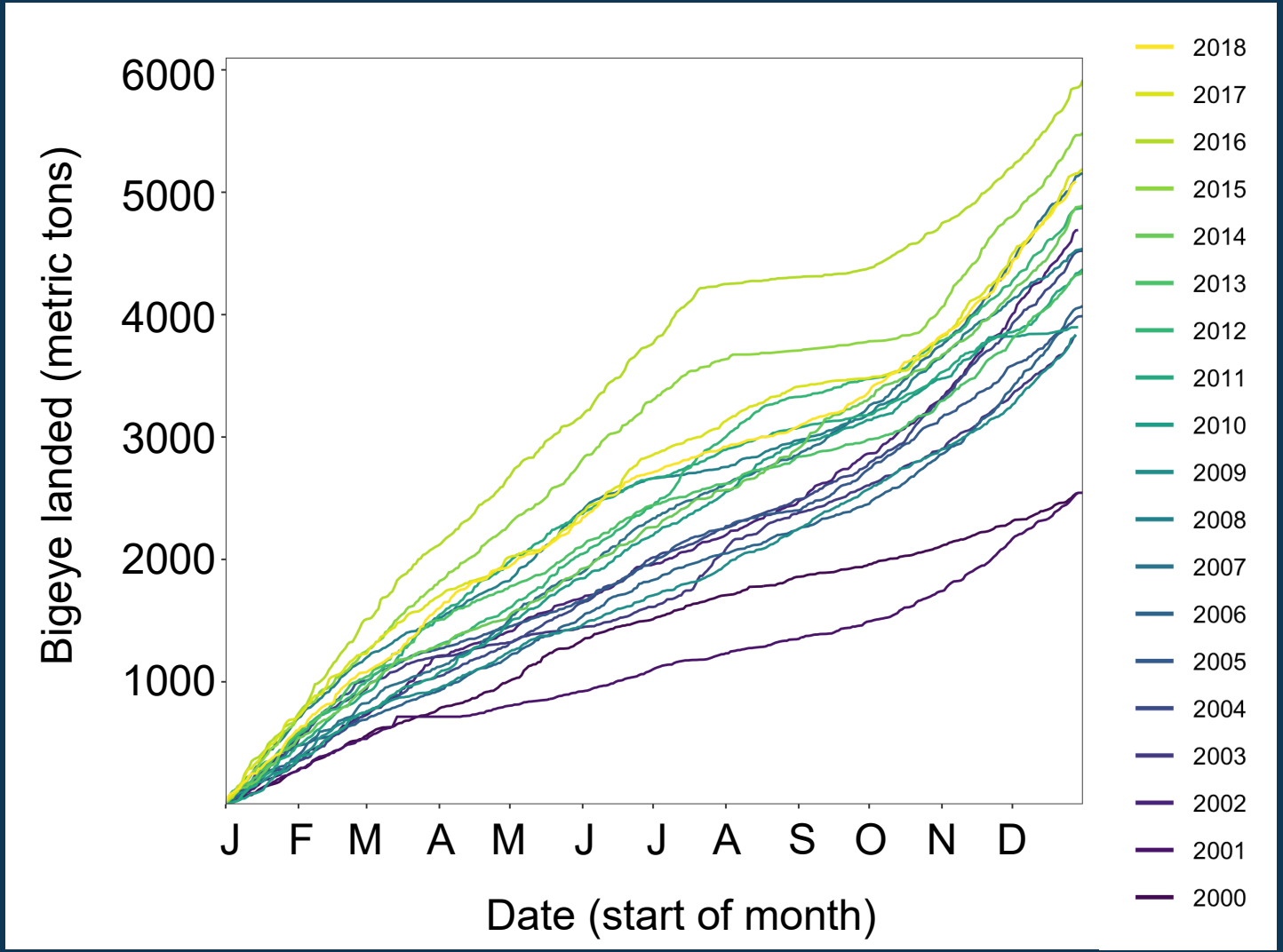


- Total landings
  - $106 million (6th in US)
  - 32 million pounds (26th in the US)
  - 40% of US tuna landings

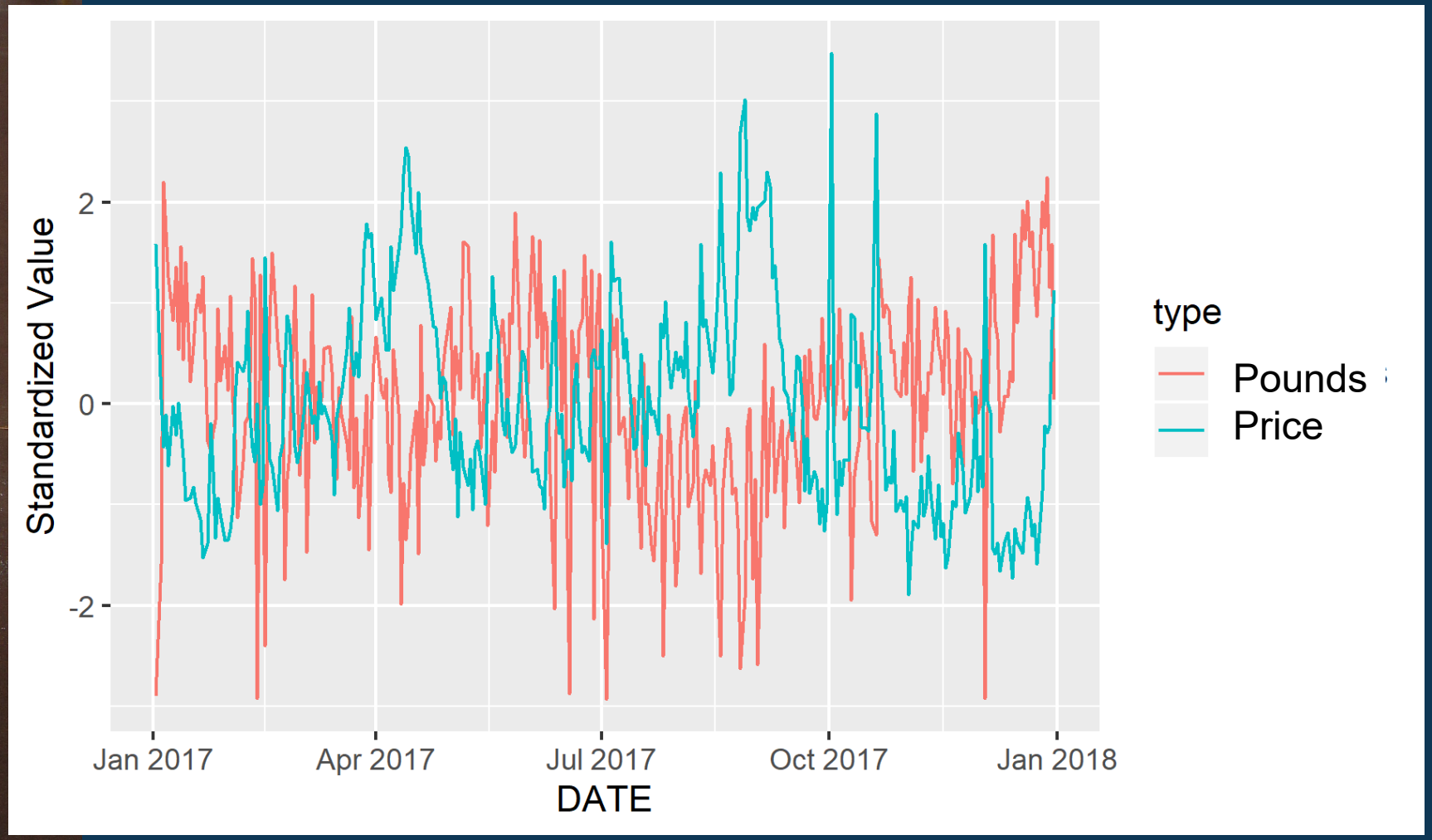
- Larger economic impact
  - 9,900 jobs
  - $867 million sales impact
  - 57% of US tuna landings revenue



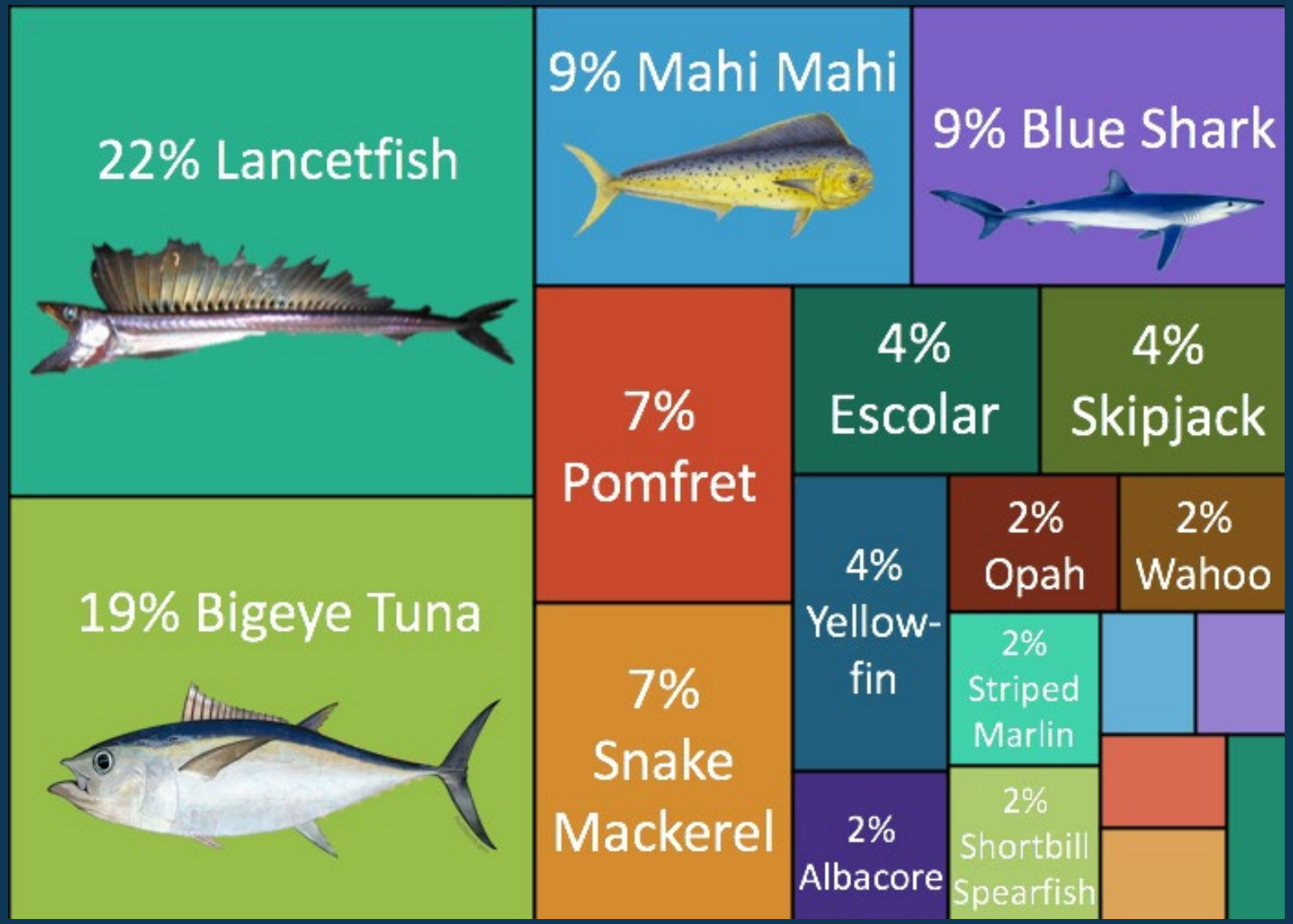
Hawaii-based longline fishery



Race to fish, wait to land



Fishing from an ecosystem perspective



Catch Composition (# of fish)

20% target species

35% non-target but retained and sold

45% no commercial value

Roughly 1% each

- Bigeye Thresher Shark
- Swordfish
- Pelagic Stingray
- Blue Marlin
- Shortfin Mako Shark

Fish images from FishWatch.gov, NOAA Fisheries, and SeafoodWatch.org

Key challenges for this fishery

- Effects of quotas
- Bycatch
- Long-term climate change

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- Effects of quotas
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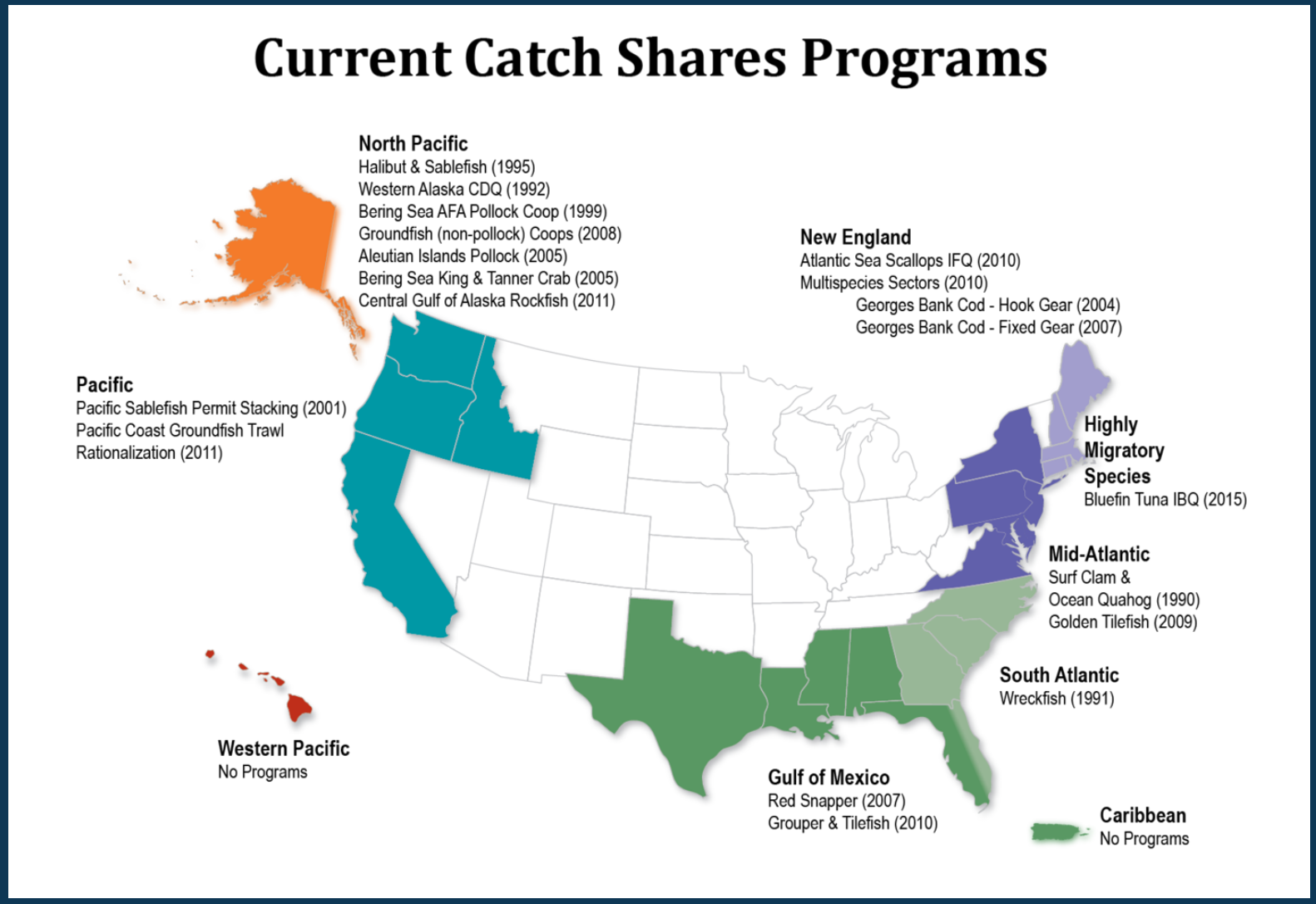
How to address these challenges?
What science can we bring to bear?

Ideas to smooth supply

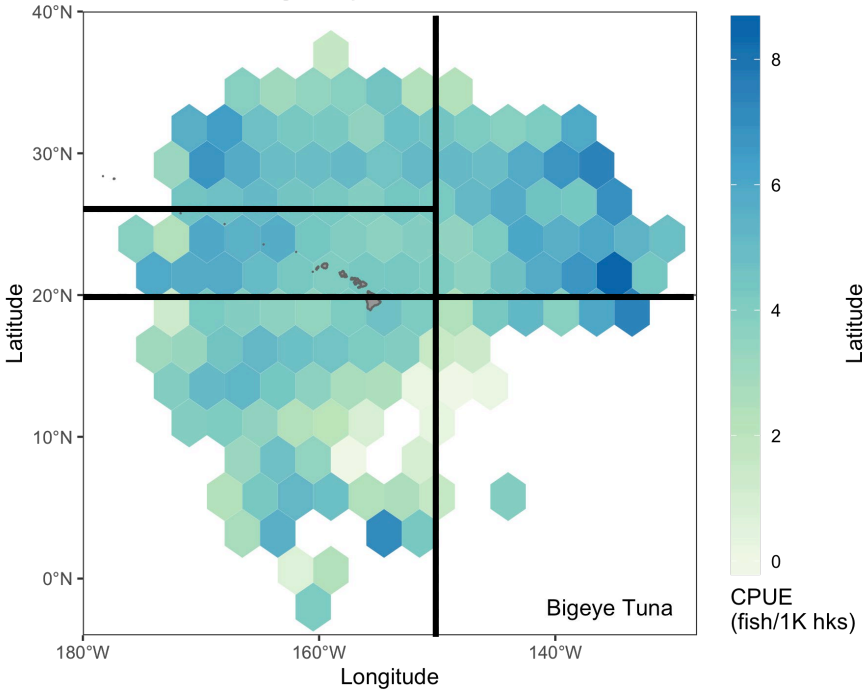


- Capacity cap
- Collective action
- Rights-based management

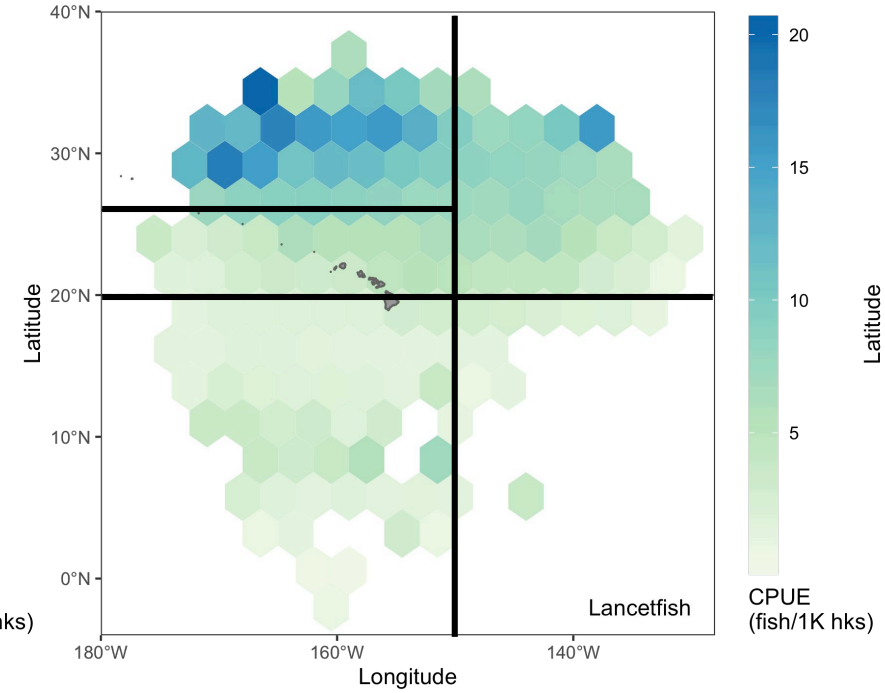
Ideas to address catch composition

Catch rates (# fish / 1000 hooks) vary across the fishing grounds

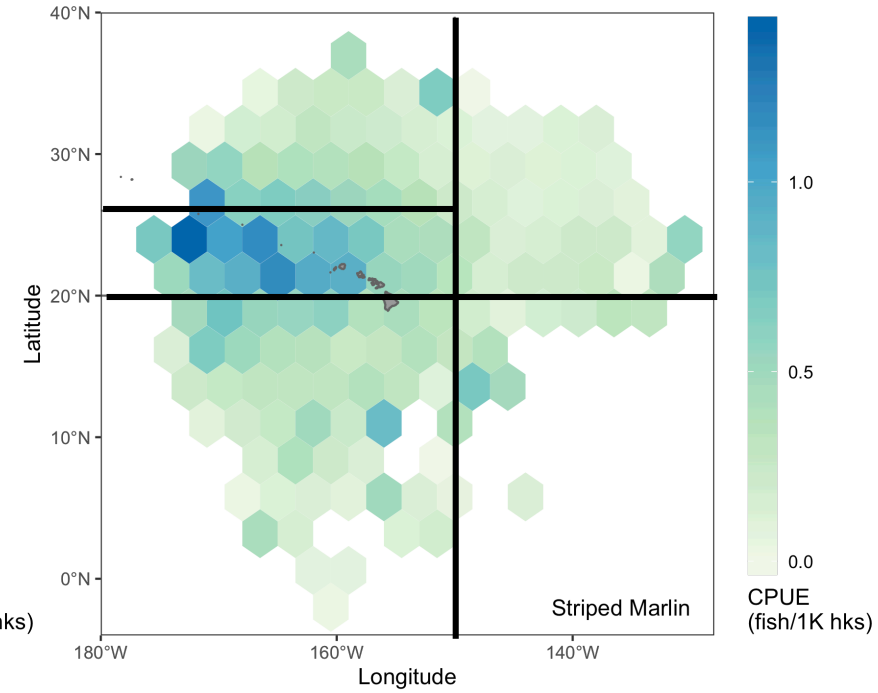
Bigeye Tuna



Lancetfish

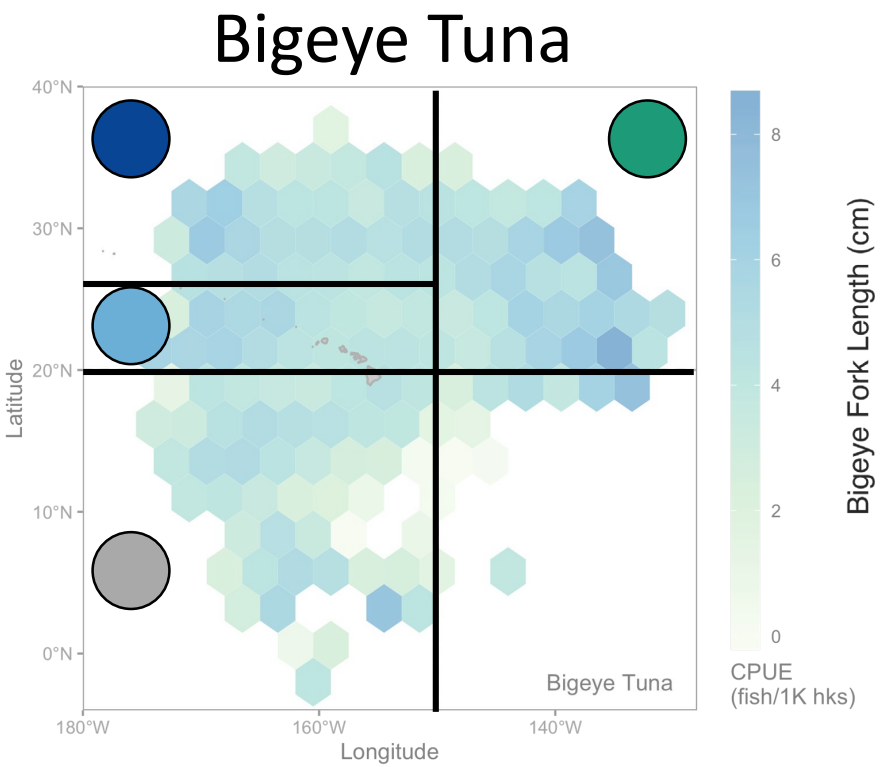


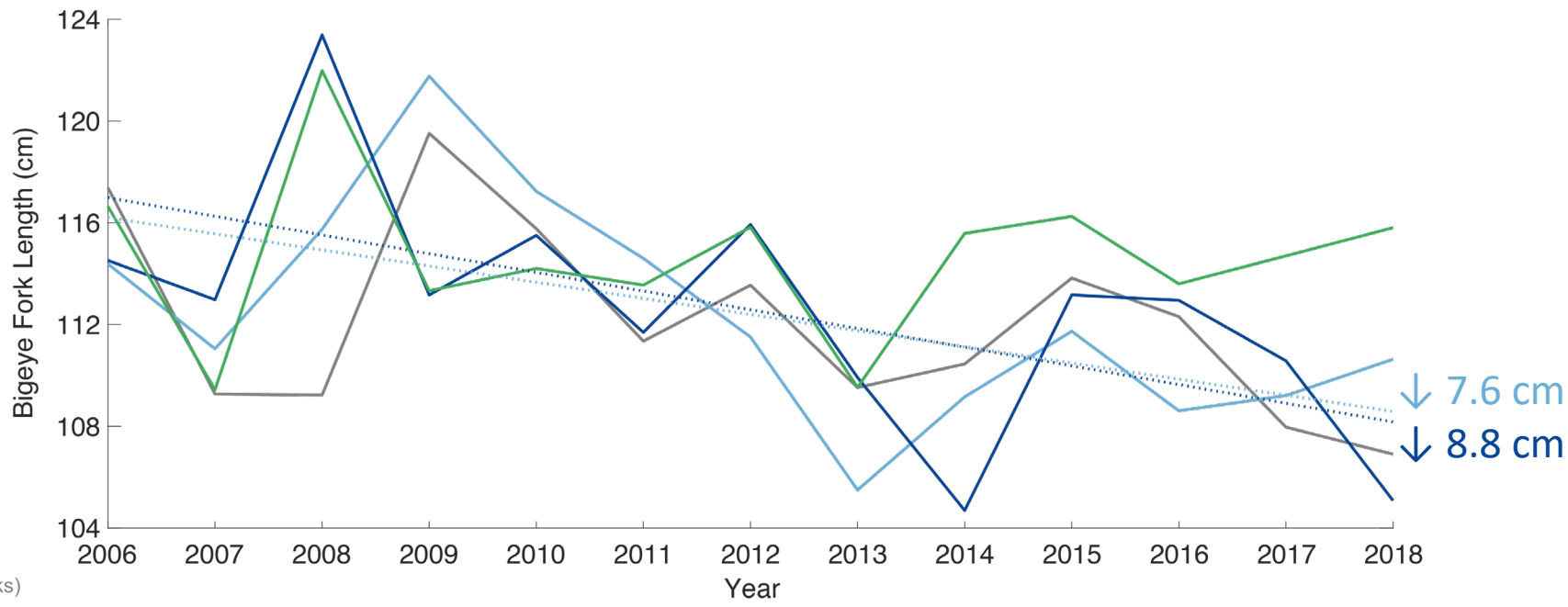
Striped Marlin



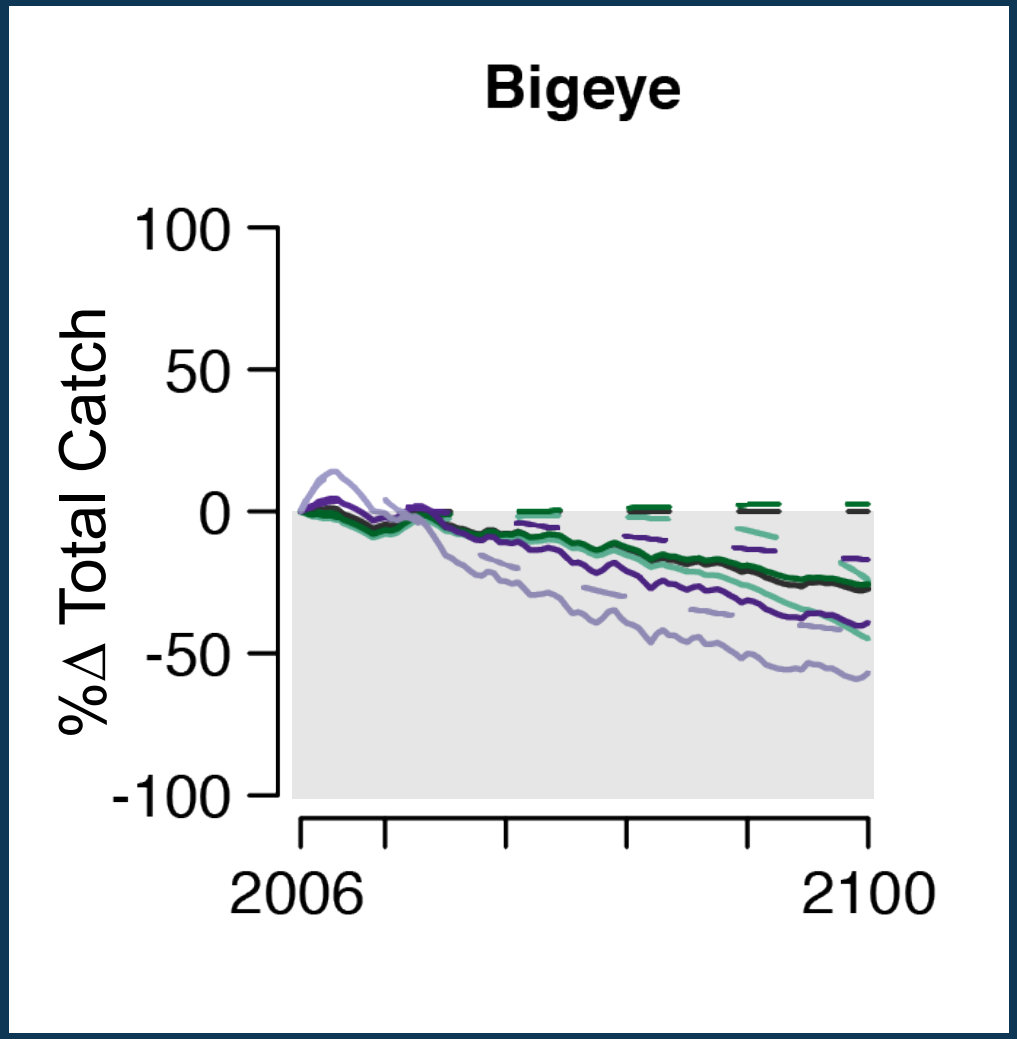
Ideas to address catch composition

Fish size varies across the fishing grounds





Projected effects of reducing fishing mortality



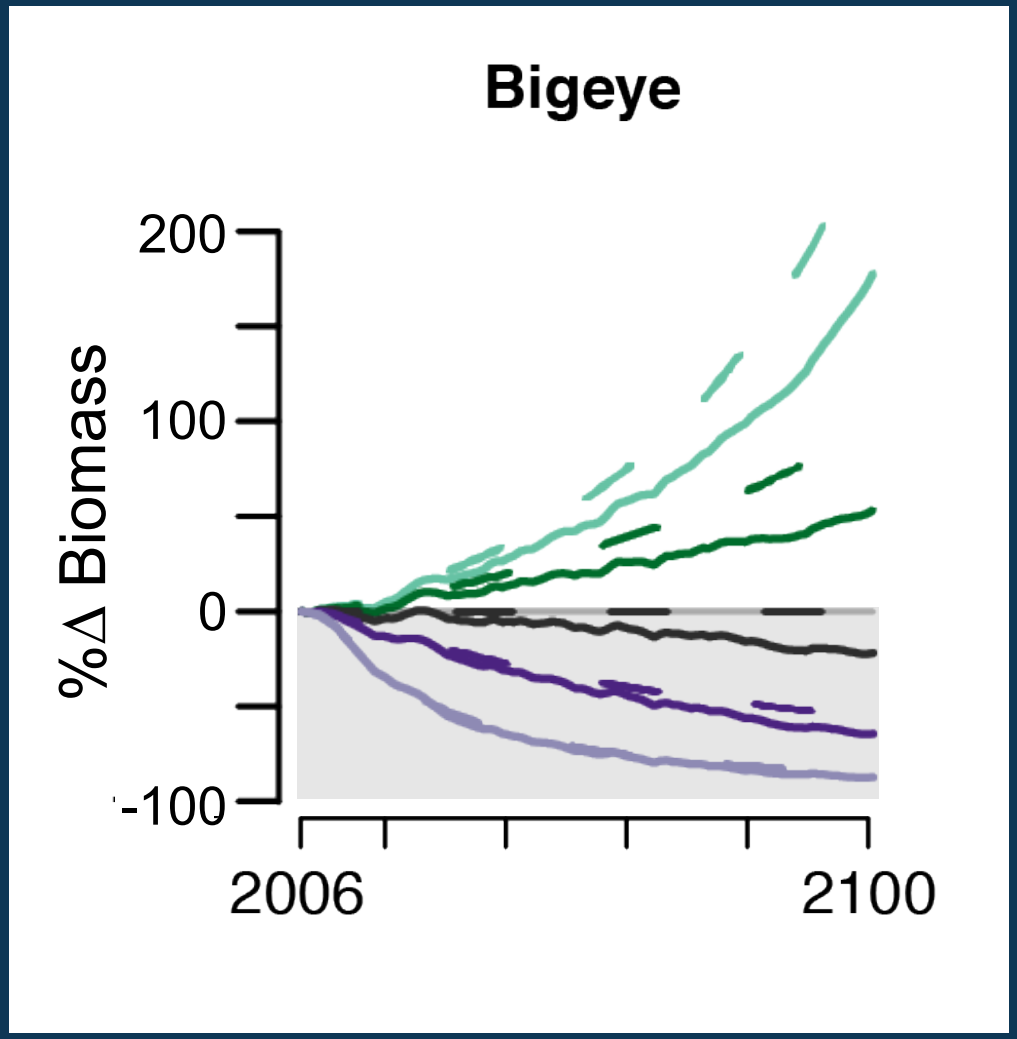
Δ Mortality	Δ Catch
Constant	25% decline
Half	23% decline
One-Fifth	35% decline
Double	37% decline
5-Fold	55% decline

Static Climate

Climate Change

Woodworth-Jefcoats et al. 2019 Frontiers in Marine Science

Projected effects of reducing fishing mortality



Δ Mortality	Δ Catch
Constant	20% decline
Half	44% increase
One-Fifth	136% increase
Double	61% decline
5-Fold	86% decline

Static Climate

Climate Change

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Potential benefits of ideas discussed

- Higher prices for landed fish
  - Increased $/trip by smoothing supply, potentially catching larger bigeye
  - Increased # fish/trip by increasing bigeye catch rates while reducing bycatch
- RFMO management objectives
  - Reducing waste and bycatch
  - Maintaining a productive and biologically diverse ecosystem
  - Implementing flexible and adaptive management
- Climate-ready
  - Limiting declines in yield while enabling ecosystem resilience

Ideas on how to incorporate EBFM into a pelagic longline tuna fishery

Focusing on the fishery's target species could have broader ecosystem benefits

Rights-based management could address multiple fishery challenges

Addressing current challenges could help the fishery prepare for climate change

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