



Tab P, No. 4

**Habitat Protection and Restoration Committee
Meeting April 14, 2021:
Development of Generic Essential Fish
Habitat (EFH) Amendment**

Background: What is EFH?

- Sustainable Fisheries Act 1996
- What is essential fish habitat (EFH)
 - *“those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity”*
- Generic EFH Amendment completed 2004
- 5-year review 2010-2016
- Defining EFH is one of several considerations
 - See ‘Background’ material



SERO Recommendations from 2016

5-year review

- Update habitat protection policy
- Habitat areas of particular concern only for coral species
 - Consider ‘heat maps’ that overlay greatest number of species/life stage
- Identify and prioritize research needs
- Amend Council’s FMPs with updated habitat information as soon as possible

Committee's upcoming tasks

- Council must have definitions of EFH for all managed species
- Required to complete 5 year review (2016)
- 5-year review needs development as does an updated generic EFH amendment
- Combine two efforts
 - Goal of completion by 2022



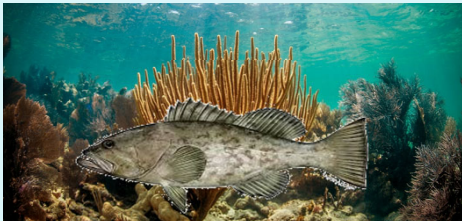
Method and Policy Considerations



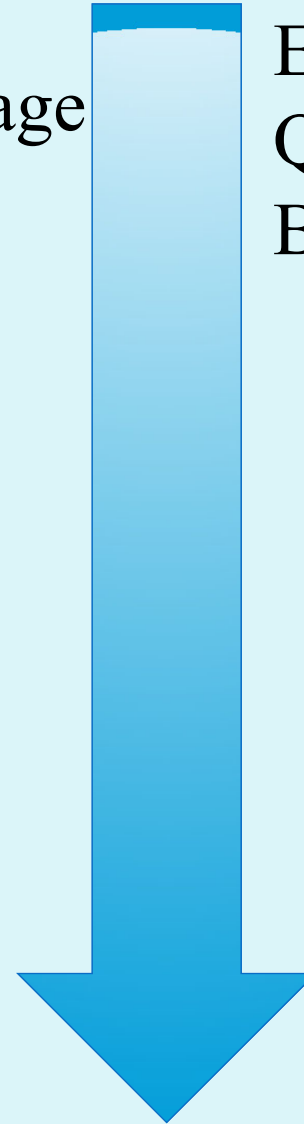
Habitat and life stage
tables
(current method)



Species
presence



Species presence
and habitat model



Established method
Quick progress
Broad

Limited species
Longer timeline
More refined

How is EFH currently defined for Gulf managed species?

- Habitat use as reported in scientific literature
- Benthic habitat characteristics as mapped in the NOAA GOM Data Atlas
 - Twelve categories
- Gulf divided into 5 ecoregions and 3 habitat zones

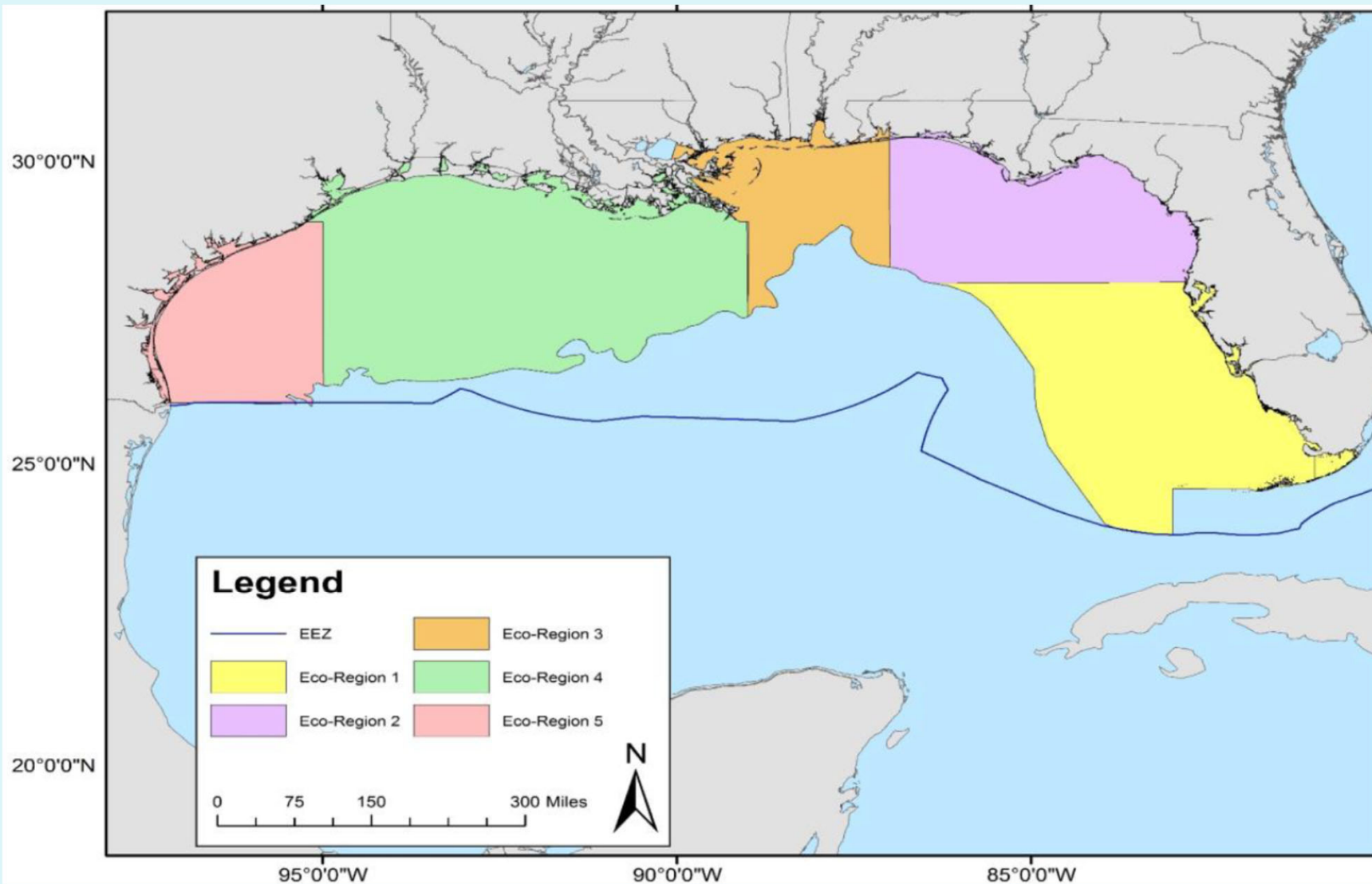


Habitat and life history tables



Eco-region Name	Bounds	NOAA Stat Grids
1. South Florida	Florida Keys to Tarpon Springs	1-5
2. North Florida	Tarpon Springs to Pensacola Bay	6-9
3. East Louisiana, Mississippi and Alabama	Pensacola Bay to the Mississippi Delta	10-12
4. East Texas and West Louisiana	Mississippi Delta to Freeport, Texas	13-18
5. West Texas	Freeport, Texas to the Mexican border	19-21

Habitat and life history tables



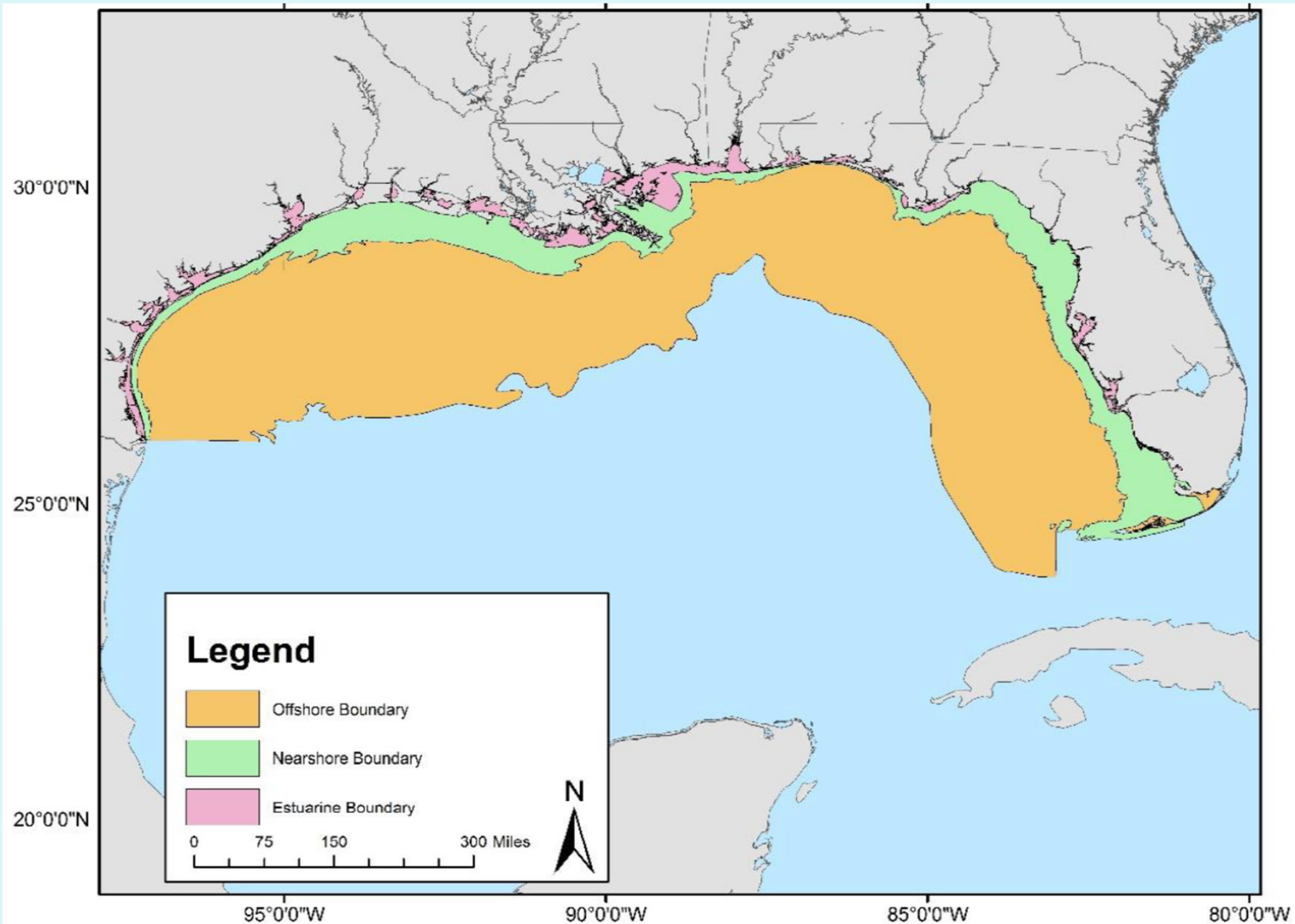
Habitat and life history tables



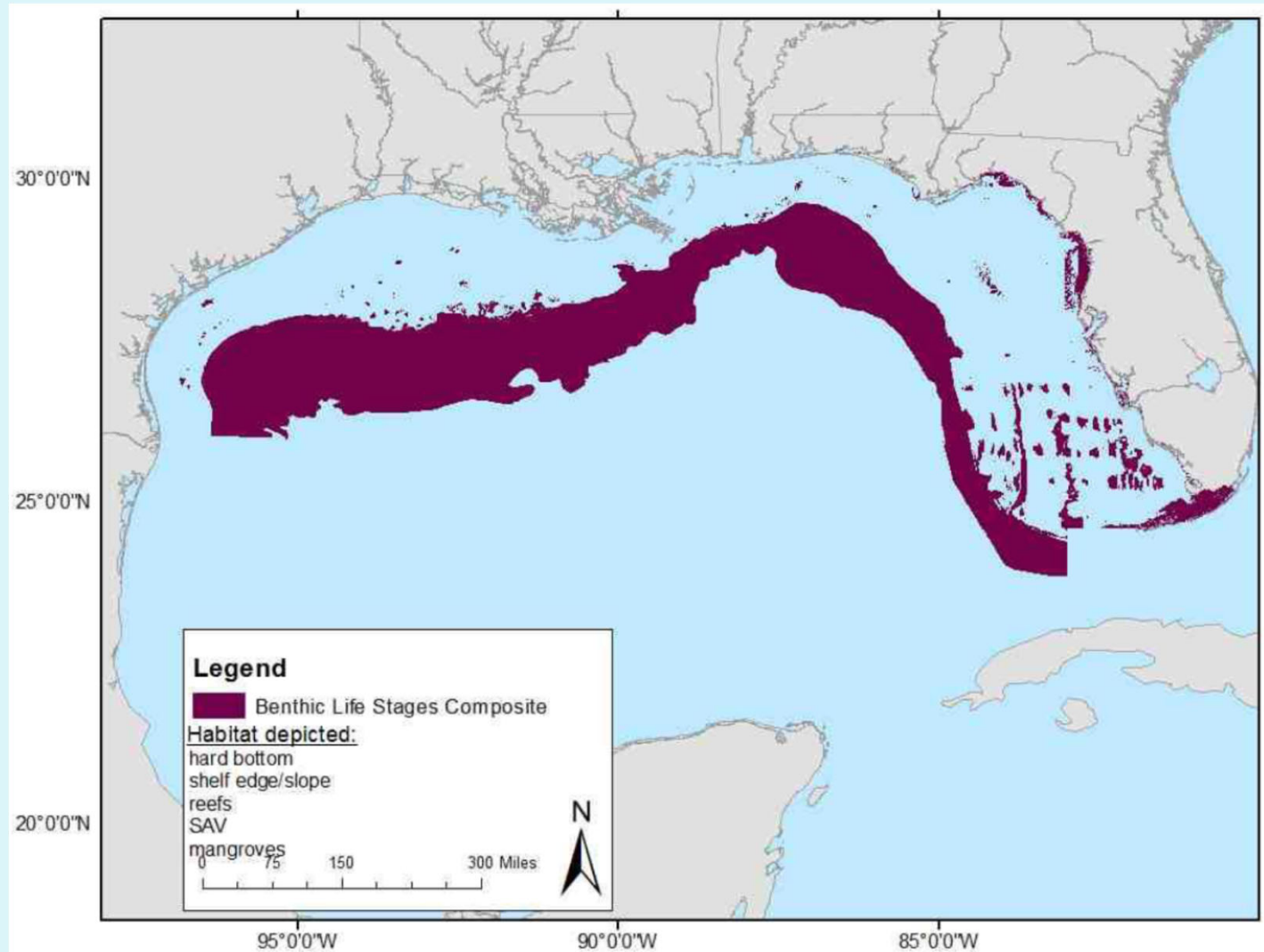
Habitat Type	Related Terms
Submerged Aquatic Vegetation (SAV)	Seagrasses, benthic algae
Mangroves	
Drifting algae	<i>Sargassum</i>
Emergent marshes	Tidal wetlands, salt marshes, tidal creeks, rives/streams
Sand/shell bottoms	Sand
Soft bottoms	Mud, clay, silt
Hard bottoms	Hard bottoms, live hard bottoms, low-relief irregular bottoms, high-relief irregular bottoms
Oyster reefs	
Banks/shoals	
Reefs	Reefs, reef halos, patch reefs, deep reefs
Shelf edge/slope	Shelf edge, shelf slope
Water Column Associated (WCA)	Pelagic, planktonic, coastal pelagic

Note: low-relief irregular bottoms include low ledges, caves, crevices, and burrows; high-relief irregular bottoms include high ledges & cliffs, boulders, and pinnacles.

Habitat and life history tables



Habitat and life history tables: Gag grouper (all life stages)



Habitat and life history tables



Pros		Cons
Method	<ul style="list-style-type: none">• Established in Gulf• Data updated in 2016 review	<ul style="list-style-type: none">• Data Atlas outdated• More refined methods available
Policy	<ul style="list-style-type: none">• SAFMC, CFMC, WPFMC• Quickly updated• Works for most species	<ul style="list-style-type: none">• Very broad• Indirect linkages for species and habitat

What might the amendment look like?



- Actions for each FMP or species complex
- Alternative structure: Do not or do update EFH

What might draft options look like?

Action: Define EFH for (insert life stage) gag grouper

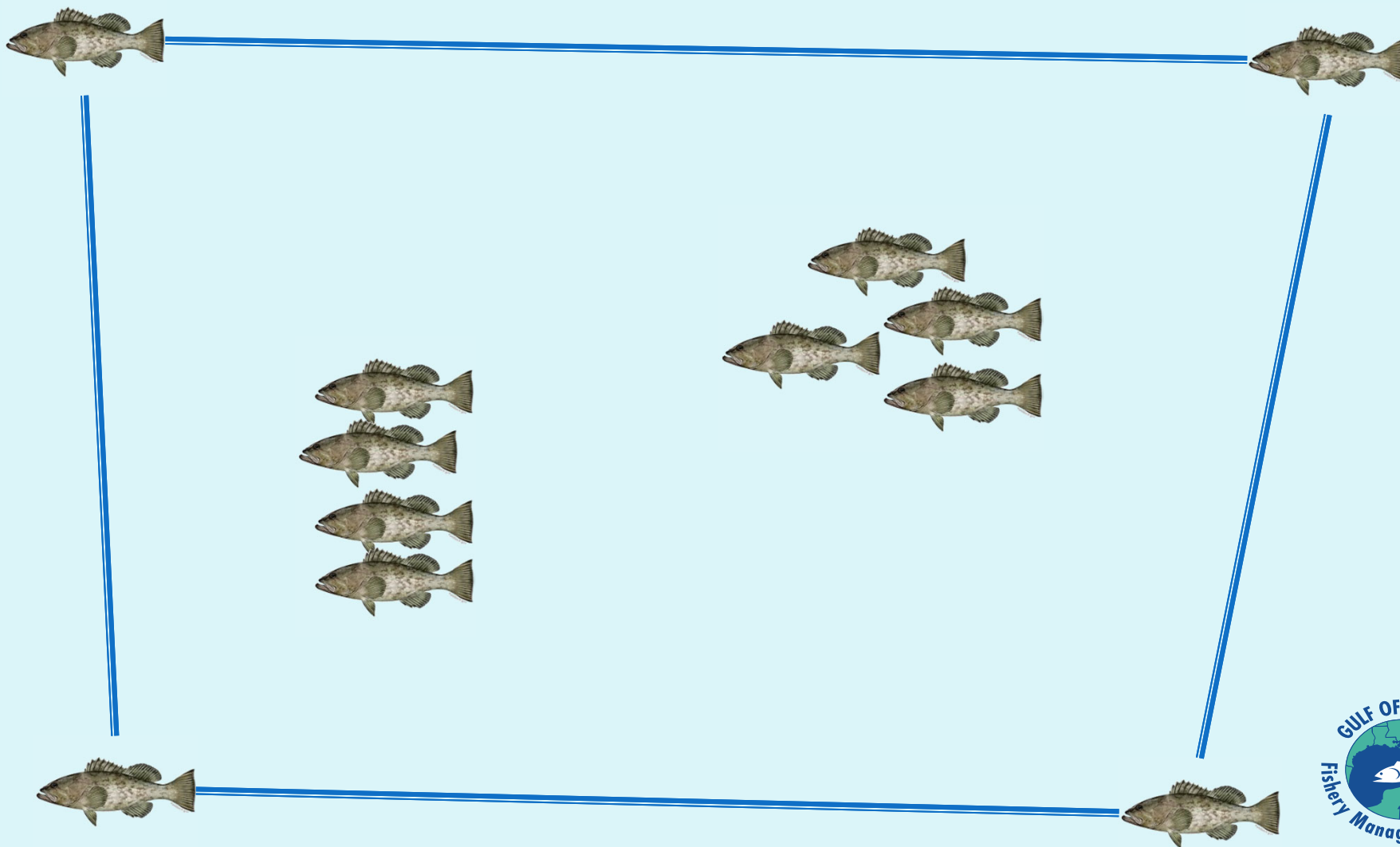
- Alternative 1: No action. Do not update EFH
- Alternative 2: Update EFH definition using current method



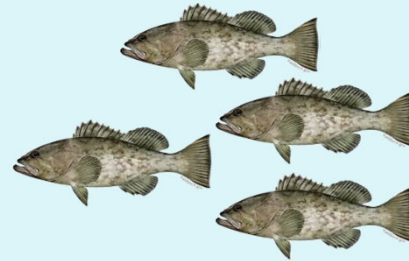
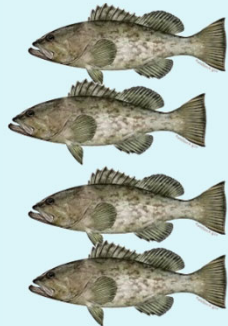
FI data available by species for other modeling methods: Grüss *et al.* 2018

FMP	Aggregated data	Have life stage data
Reef fish	<ul style="list-style-type: none"> • Black grouper • Goliath grouper • Vermillion snapper • Yellowedge grouper • Deepwater grouper • Shallow water grouper • Tilefish 	<ul style="list-style-type: none"> • Gag grouper • Red grouper • Red snapper
Shrimp		<ul style="list-style-type: none"> • White • Brown • Pink
CMP	<ul style="list-style-type: none"> • King mackerel • Cobia 	<ul style="list-style-type: none"> • Spanish mackerel

Presence only



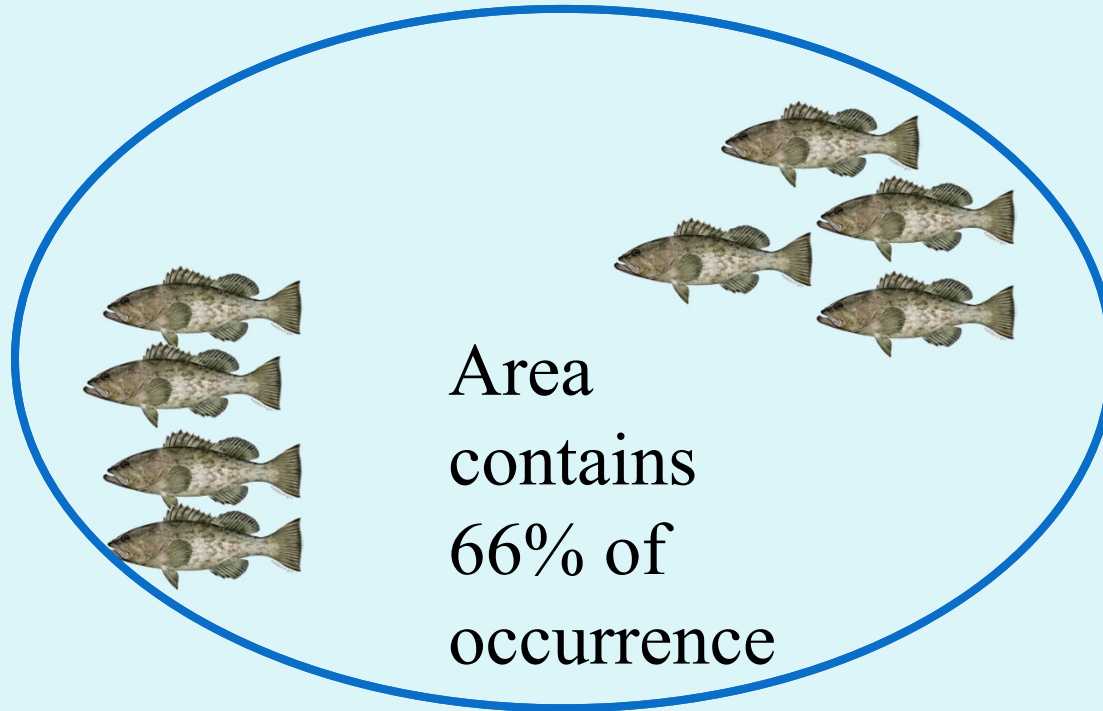
Presence only



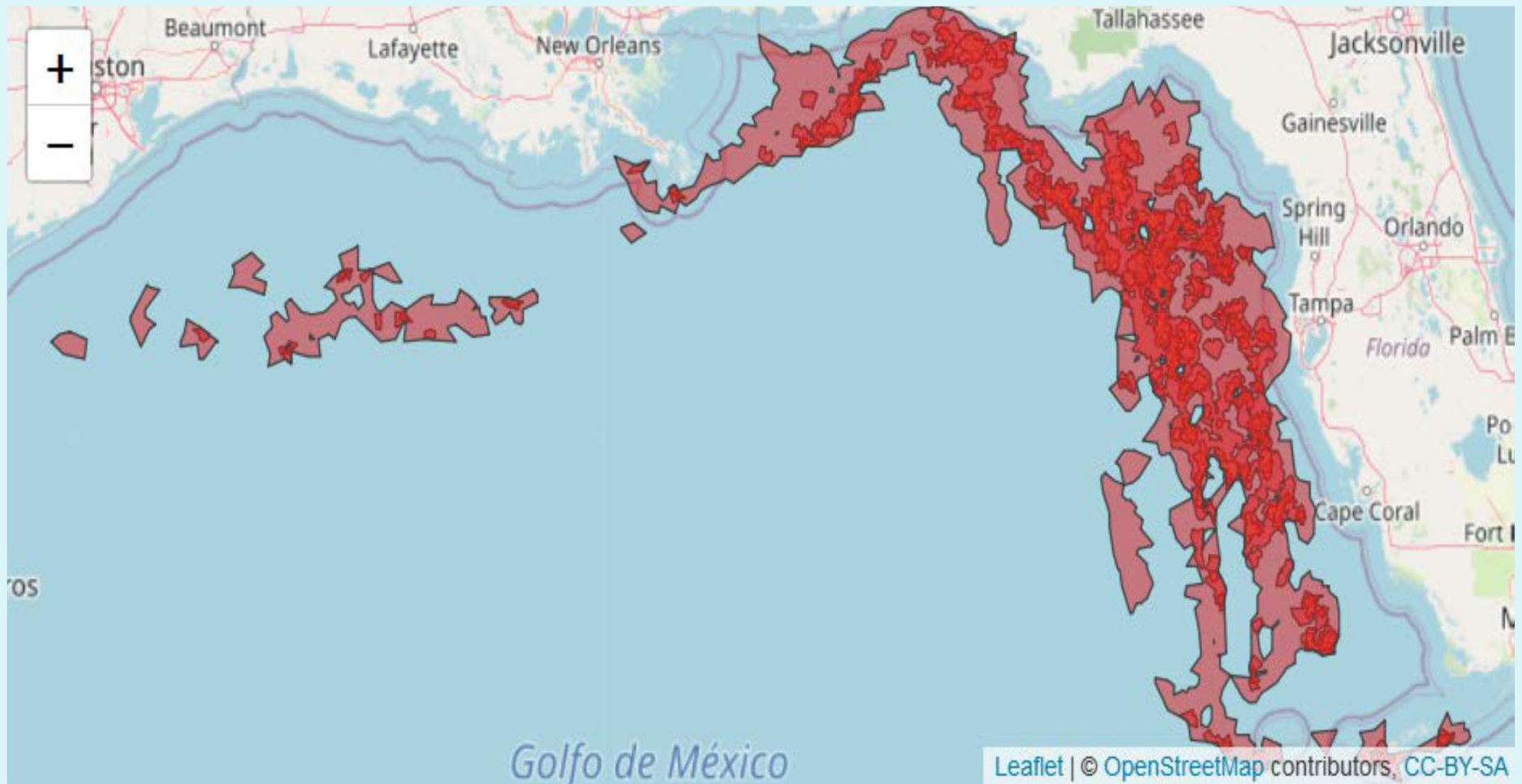
Area
contains
100% of
occurrence



Presence only



Presence only: Adult Gag grouper



Presence only



Pros		Cons
Method	<ul style="list-style-type: none">• Simple model• Data: fishery independent	<ul style="list-style-type: none">• Data not available for all species/ life stages
Policy	<ul style="list-style-type: none">• NEFMC, MAFMC, HMS• Better refine EFH• Used to inform HAPCs	<ul style="list-style-type: none">• More actions• Species:habitat linkage tradeoff• Review by SSC

What might the amendment look like?



- Actions for each FMP or species complex
- Alternative structure: Do not or do update EFH



- Actions for each FMP
- Sub actions for species without more data
- Alternative structure: Do not or do update EFH
- Sub actions for species with data available
- Alternative structure: Do not or do update EFH
- Sub alternatives for magnitude of area or probability

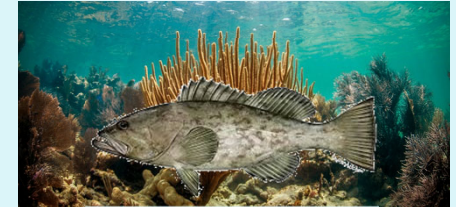
What might draft options look like?

Action: Define EFH for (insert life stage) gag grouper

- Alternative 1: No action. Do not update EFH
- Alternative 2: Update EFH definition using current method
- Alternative 3: Update EFH definition using presence only method (Options for % area)



Presence and habitat model



Location of fish

Habitat type/temperature/depth....

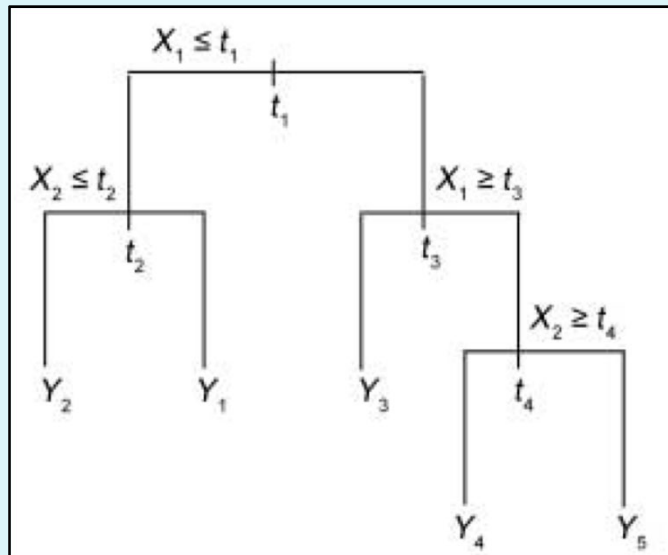
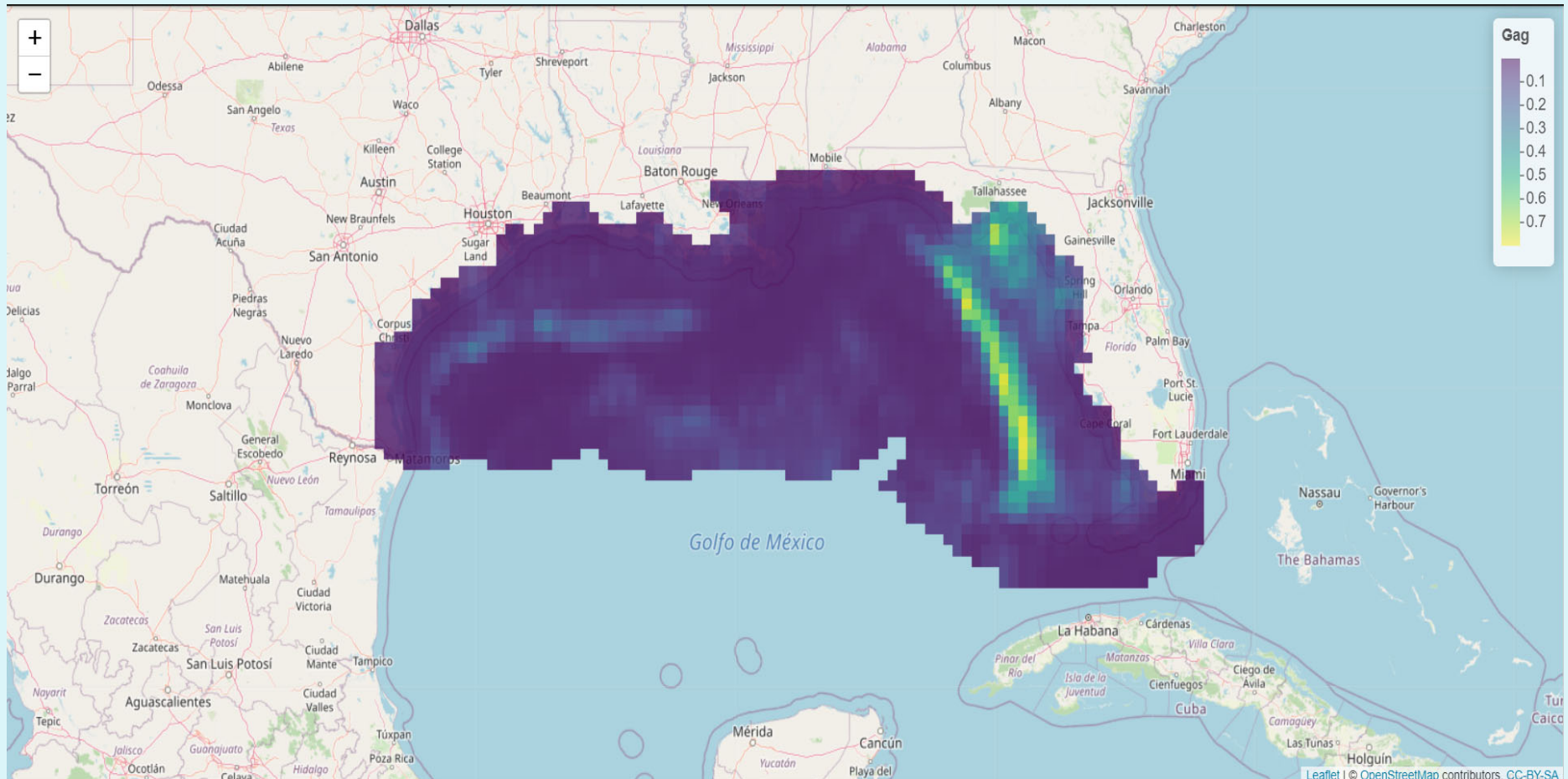


Figure 1 from Elith *et al.* 2008

- **Model can handle complex interactions**
- **Construct probability maps**
- **Directly links species presence and habitat conditions**

Presence and habitat model: Adult gag grouper



Leaflet | © OpenStreetMap contributors, CC-BY-SA

Presence and habitat model



Pros		Cons
Method	<ul style="list-style-type: none">• Very refined• Data: fishery independent	<ul style="list-style-type: none">• Data not available for all species/ life stages• Complex model
Policy	<ul style="list-style-type: none">• NPFMC, PFMC• Directly links species and habitat• Used to inform HAPCs	<ul style="list-style-type: none">• Few species• Complex document• Review by SSC

What might the amendment look like?



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- Alternative structure: Do not or do update EFH
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- Alternative 3: Update EFH definition using presence only method (Options for % area)
- Alternative 4: Update EFH definition using presence and habitat method (Options for % probability)



Potential timeline

2021

April: Presentation on EFH 5-year review requirements and progress update

June: Presentation of draft options for EFH Amendment

July: SSC Review

August/October: Revised draft

2022

Jan: Pre-public hearing draft

April: Public hearing draft

May/June: Public hearings

Aug: SSC final review

Oct: Final Action



Some things to consider

- Not all managed species have the same data available
- Methodology presented to SSC
- Timeline of completion by 2022
- Should HAPCs be incorporated?



Questions?

