DRAFT – Under SEFSC Review

Science, Service, Stewardship

Species groupings for management of the SAFMC Snapper-Grouper FMU

Southeast Regional Office

St. Petersburg, Florida

September 3, 2010

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Caveats

- **These results and conclusions are preliminary and subject to revision.**
- **Report is currently under review at SERO.**
- **Will be reviewed by SEFSC and SAFMC SSC.**
- **Final report should be available for Dec 2010 meeting.**

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Why Group Species?

- Under June 2010 Preferred Alternative, Council will need to establish ACLs for 24 unassessed species.
- Assigning species to assemblages may:
  1. Mitigate uncertainty in species identification
  2. Reduce regulatory impacts of fluctuations in landings for incidentally-caught species
  3. Simplify management
  4. Address some ecosystem dynamics

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What's a Stock Complex?

"Stock complexes may be comprised of:

1) One or more indicator stocks, each of which has SDC and ACLs, and several other stocks;

2) Several stocks without an indicator stock, with SDC and an ACL for the complex as a whole; or

3) One of more indicator stocks, each of which has SDC and management objectives, with an ACL for the complex as a whole…"

ACL Final Rule

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Goals & Objectives

GOALS: Provide guidance to SAFMC for setting ACLs within Snapper-Grouper FMU.

OBJECTIVES:

1. **Identify species assemblages**
2. **Evaluate consistency across sectors**
3. **To develop species complexes that are "sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks is similar." (*NS1*)**

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Data Sources

1. SEFSC Coastal Logbook [vertical line] (2005-2009)
2. SEFSC Coastal Logbook [longline] (2005-2009)
3. Reef Fish Observer Program (2006-2009)
3. SEFSC Headboat Survey (2004-2009)
4. Marine Recreational Fisheries Statistics Survey (2000-2009)
5. Marine Resources Monitoring, Assessment and Prediction Survey (1978-2009)

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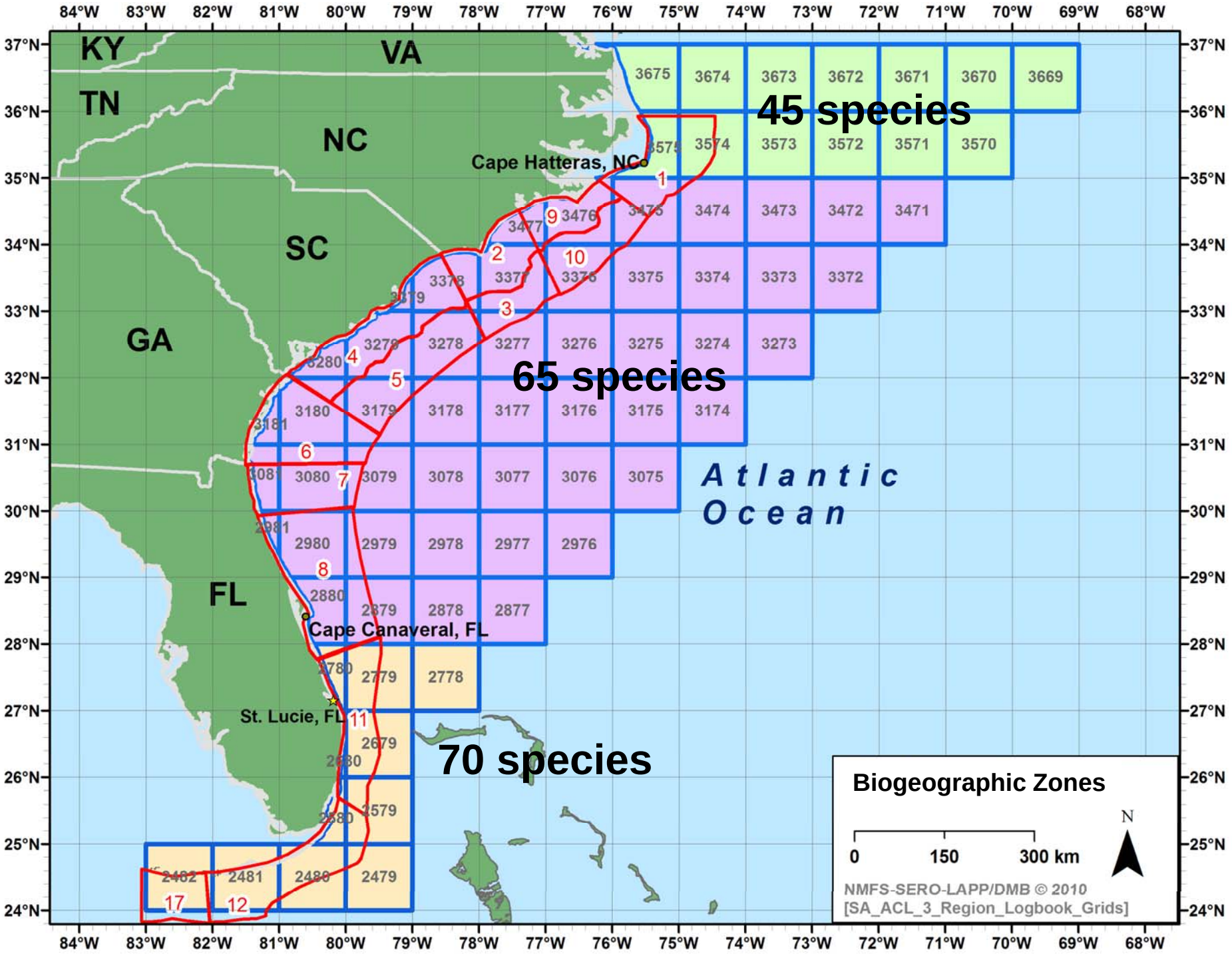
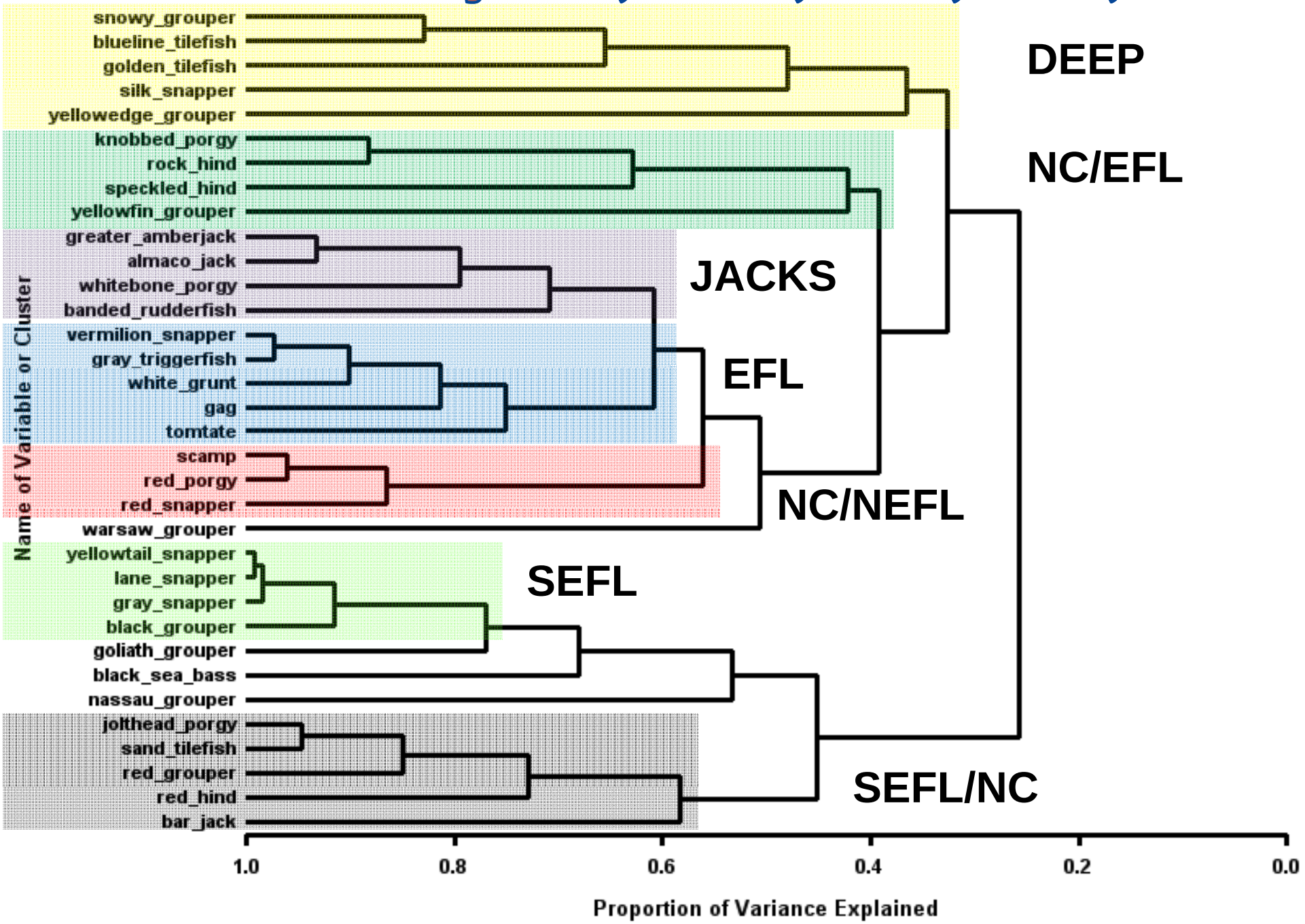
Methods

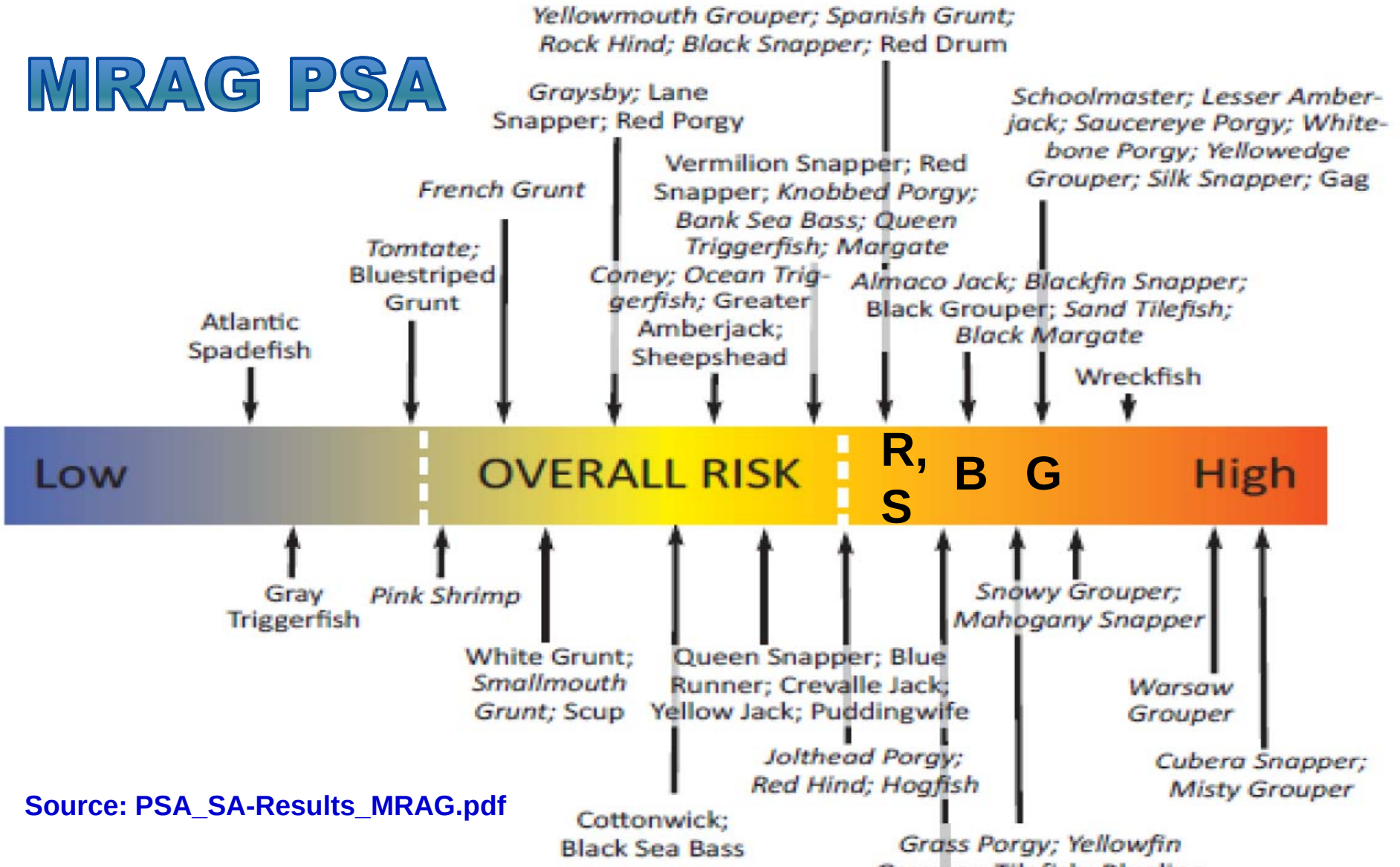
1. Life history
2. Vulnerability
3. Percent encounters
4. Dimension reduction
5. Hierarchical clustering
6. WMCA Index
7. Biogeographic distribution


45 species
65 species
70 species
KY
VA
TN
NC
SC
GA
FL
Cape Hatteras, NC
Cape Canaveral, FL
St. Lucie, FL
Atlantic Ocean
Biogeographic Zones
0 150 300 km
N
NMFS-SERO-LAPP/DMB © 2010
[SA_ACL_3_Region_Logbook_Grids]

HCA of MRFSS by Year, Month, State, Mode, Wave



MRAG PSA



Source: PSA_SA-Results_MRAG.pdf

COMMON NAME	1	2	3	4	5	ASSESSED?	PSA
wreckfish	warsaw grouper	yellowedge grouper	silk snapper	tilefish	snowy grouper	Vaughan et al. 2001	3.64
warsaw grouper	yellowedge grouper	silk snapper	snowy grouper	tilefish	speckled hind		3.83
yellowedge grouper	warsaw grouper	snowy grouper	tilefish	blueline tilefish	silk snapper		3.52
snowy grouper	blueline tilefish	warsaw grouper	yellowedge grouper	tilefish	silk snapper	SEDAR 4 (2004)	3.45
blueline tilefish	snowy grouper	sand tilefish	scamp	yellowedge grouper	tilefish		3.4
sand tilefish	blueline tilefish	jolthead porgy	bar jack	knobbed porgy	nassau grouper		3.37
tilefish	silk snapper	gag	snowy grouper	yellowedge grouper	blueline tilefish	SEDAR 4 (2004)	3.4
silk snapper	tilefish	snowy grouper	yellowfin grouper	wreckfish	warsaw grouper		3.52
goliath grouper	yellowedge grouper	warsaw grouper	wreckfish	silk snapper	snowy grouper	SEDAR 23 (2010)	3.42*
nassau grouper	yellowfin grouper	speckled hind	bar jack	jolthead porgy	knobbed porgy		3.3
speckled hind	yellowfin grouper	nassau grouper	scamp	knobbed porgy	rock hind		3.42
yellowfin grouper	speckled hind	nassau grouper	bar jack	sand tilefish	knobbed porgy		3.39
gag	red grouper	red snapper	gray triggerfish	white grunt	red porgy	SEDAR 10 (2006)	3.52
red grouper	gag	scamp	white grunt	gray snapper	lane snapper	SEDAR 19 (2010)	3.28
scamp	red porgy	red grouper	greater amberjack	blueline tilefish	speckled hind		3.25
black grouper	almaco jack	yellowtail snapper	gray snapper	black sea bass	lane snapper	SEDAR 19 (2010)	3.36
banded rudderfish	almaco jack	red porgy	greater amberjack	gray snapper	yellowtail snapper		3.26
greater amberjack	scamp	red snapper	almaco jack	vermilion snapper	banded rudderfish	SEDAR 15 (2008)	3.07
almaco jack	black grouper	banded rudderfish	greater amberjack	vermilion snapper	gray triggerfish		3.35
red porgy	gray triggerfish	scamp	vermilion snapper	gray snapper	yellowtail snapper	SEDAR 1 Update (2006)	2.93
gray triggerfish	vermilion snapper	gag	lane snapper	red porgy	white grunt		2.46
vermilion snapper	gray triggerfish	tomtate	red porgy	lane snapper	gag	SEDAR 17 (2008)	3.14
red snapper	gag	greater amberjack	vermilion snapper	red porgy	scamp	SEDAR 24 (2010)	3.14
black sea bass	tomtate	knobbed porgy	whitebone porgy	black grouper	vermilion snapper	SEDAR 2 Update (2005)	3.02
red hind	whitebone porgy	tomtate	rock hind	jolthead porgy	red grouper	Potts & Manooch (1995)	3.18
rock hind	knobbed porgy	jolthead porgy	red hind	bar jack	yellowfin grouper	Potts & Manooch (1995)	3.23
knobbed porgy	jolthead porgy	bar jack	rock hind	white grunt	nassau grouper		3.14
whitebone porgy	tomtate	red hind	almaco jack	greater amberjack	banded rudderfish		3.51
jolthead porgy	knobbed porgy	bar jack	sand tilefish	white grunt	rock hind		3.18
tomtate	whitebone porgy	vermilion snapper	red hind	black sea bass	gray triggerfish		2.63
white grunt	jolthead porgy	red grouper	red hind	gray triggerfish	knobbed porgy		2.78
bar jack	jolthead porgy	knobbed porgy	sand tilefish	nassau grouper	red hind		3.33
gray snapper	lane snapper	yellowtail snapper	red porgy	warsaw grouper	silk snapper		3.24
lane snapper	gray snapper	gray triggerfish	vermilion snapper	yellowtail snapper	whitebone porgy		2.92
yellowtail snapper	gray snapper	black grouper	lane snapper	red porgy	sand tilefish	SEDAR 3 (2003)	2.84*

DRAFT: Table of SAFMC Snapper-Grouper FMU species, indicating species with completed or pending assessments and top five most associated species, by species, per weighted mean cluster association index. Productivity-Susceptibility Analysis (PSA) scores of overall risk from MRAG Americas South Atlantic Final Report provided when available (MRAG 2009a,b). Color-coding denotes associations; dashed lines denote distinct life histories between associated species.

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DEEP-WATER COMPLEX

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WARSAW GROUPER$_2$
YELLOWEDGE GROUPER
SNOWY GROUPER$_1$
BLUELINE TILEFISH
SAND TILEFISH
GOLDEN TILEFISH$_1$
SILK SNAPPER

→ WARSAW GROUPER$_2$, YELLOWEDGE GROUPER, SNOWY GROUPER$_1$ — 1A

→ BLUELINE TILEFISH, SAND TILEFISH, GOLDEN TILEFISH$_1$ — 1B

→ SILK SNAPPER (?) — 1C

Assessed Species$_1$
Most Vulnerable Species$_2$

ADDITIONAL COMPLEX → WRECKFISH$_1$

PRELIMINARY RESULTS – PENDING SEFSC & SSC REVIEW

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SHALLOW-WATER GROUPER COMPLEX

SWG COMPLEX

- GAG$_{1,2}$
- RED GROUPER$_1$
- SCAMP
- BLACK GROUPER$_1$
- YELLOWFIN GROUPER
- SPECKLED HIND

GAG$_{1,2}$	1A
RED GROUPER$_1$ SCAMP	1B
BLACK GROUPER$_1$	1C
YELLOWFIN GROUPER SPECKLED HIND	1D

Assessed Species$_1$
Most Vulnerable Species$_2$

ADDITIONAL COMPLEXES

- GOLIATH GROUPER$_1$
- NASSAU GROUPER
- BLACK SEA BASS$_1$

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JACKS COMPLEX

JACKS COMPLEX
GREATER AMBERJACK$_1$
ALMACO JACK$_2$
BANDED RUDDERFISH

Assessed Species$_1$
Most Vulnerable Species$_2$

→ **GREATER AMBERJACK$_1$** **1A**

→ **ALMACO JACK$_2$**
BANDED RUDDERFISH **1B**

ADDITIONAL COMPLEX → **BAR JACK**

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SHALLOW-WATER SNAPPER COMPLEX

SWS COMPLEX
YELLOWTAIL SNAPPER$_1$
GRAY SNAPPER$_2$
LANE SNAPPER

→ **YELLOWTAIL SNAPPER$_1$** **1A**

→ **GRAY SNAPPER$_2$**
LANE SNAPPER **1B**

Assessed Species$_1$
Most Vulnerable Species$_2$

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PORGIES, GRUNTS, & HINDS COMPLEX

PGH COMPLEX

WHITEBONE PORGY$_2$
KNOBBED PORGY
JOLTHEAD PORGY
RED HIND
ROCK HIND
TOMTATE
WHITE GRUNT

→ **WHITEBONE PORGY$_2$**, **KNOBBED PORGY**, **JOLTHEAD PORGY** — **1A**

→ **RED HIND**, **ROCK HIND** — **1B**

→ **TOMTATE**, **WHITE GRUNT** — **1C**

Assessed Species$_1$
Most Vulnerable Species$_2$

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INDIVIDUAL ACLs

RED SNAPPER$_1$	GOLIATH GROUPER$_1$
VERMILION SNAPPER$_1$	NASSAU GROUPER
GRAY TRIGGERFISH	BLACK SEA BASS$_1$
RED PORGY$_1$	WRECKFISH$_1$
BAR JACK	

Assessed Species$_1$

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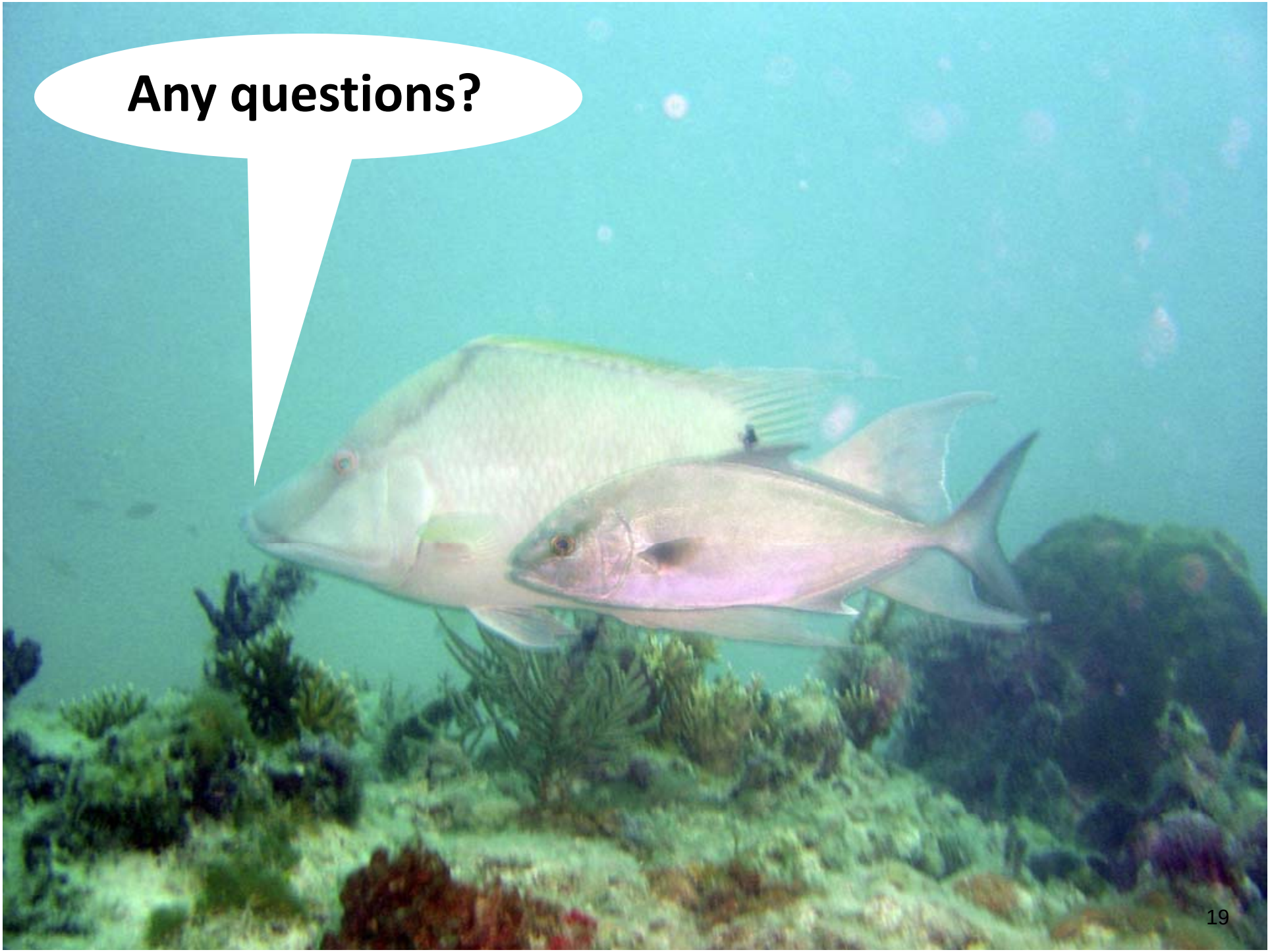
SAFMC vs. GULF

- **SAFMC jurisdiction covers broad range of latitudes with 2-3 biogeographic regions.**

- **Extreme bathymetric slope on continental shelf results in:**
  1. **broad depth range available to fishers on a single trip**
  2. **less distinct depth separation by sector vs. Gulf**


Any questions?

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ADVANTAGES OF STOCK COMPLEXES

Stock complexes achieve management goals:

1. Avoids AMs associated with exceeding ACL for species whose landings fluctuate widely due to rarity / ID issues
2. Allow primary data collection and enforcement focus on economically-important species
3. Promotes regulations considering multispecies context; prelude to ecosystem-based management

Ideally, stock complexes would:

1. Be adaptive management, modified by new data/assessment
2. Use indicator species to trigger AMs

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DISADVANTAGES OF STOCK COMPLEXES

- Main goal of a stock complex is to place rarely caught species with some indicator, but these species are the most difficult to cluster.
- Use of assessed species as indicator species may be only practical way to set ACL, but assessed species may not be the most vulnerable species in the complex.
- Most vulnerable species in complex may still be prone to overfishing, although no SDC exists to determine this.
- Current assemblages may not be natural, as overexploitation may alter community structure.