

DRAFT

Science, Service, Stewardship



Preliminary Data Analyses to Support SAFMC Snapper-Grouper Regulatory Amendment 11

Dr. Nick Farmer

Southeast Regional Office

March 9, 2011

**NOAA
FISHERIES
SERVICE**

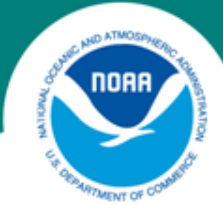


Amendment 17B

Establishes $ACL = 0$ for speckled hind and warsaw grouper

Prohibits harvest beyond 240 feet for:

1. Snowy grouper
2. Blueline tilefish
3. Yellowedge grouper
4. Misty grouper
5. Queen snapper
6. Silk snapper



Regulatory Amendment 11

May adjust regulations implemented by Amendment 17B to alleviate social and economic impacts while still reducing bycatch of speckled hind (SH) and warsaw grouper (WG).

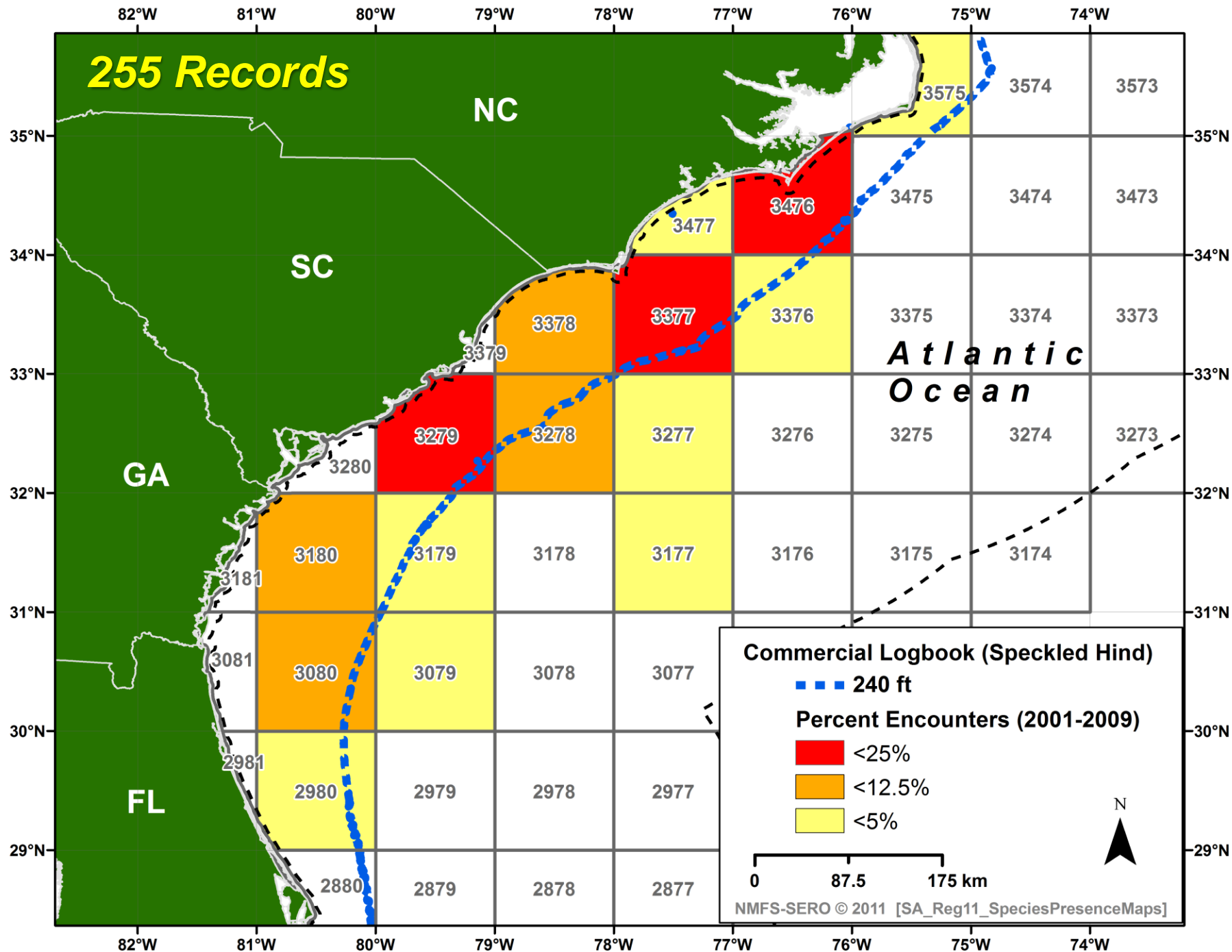
Questions:

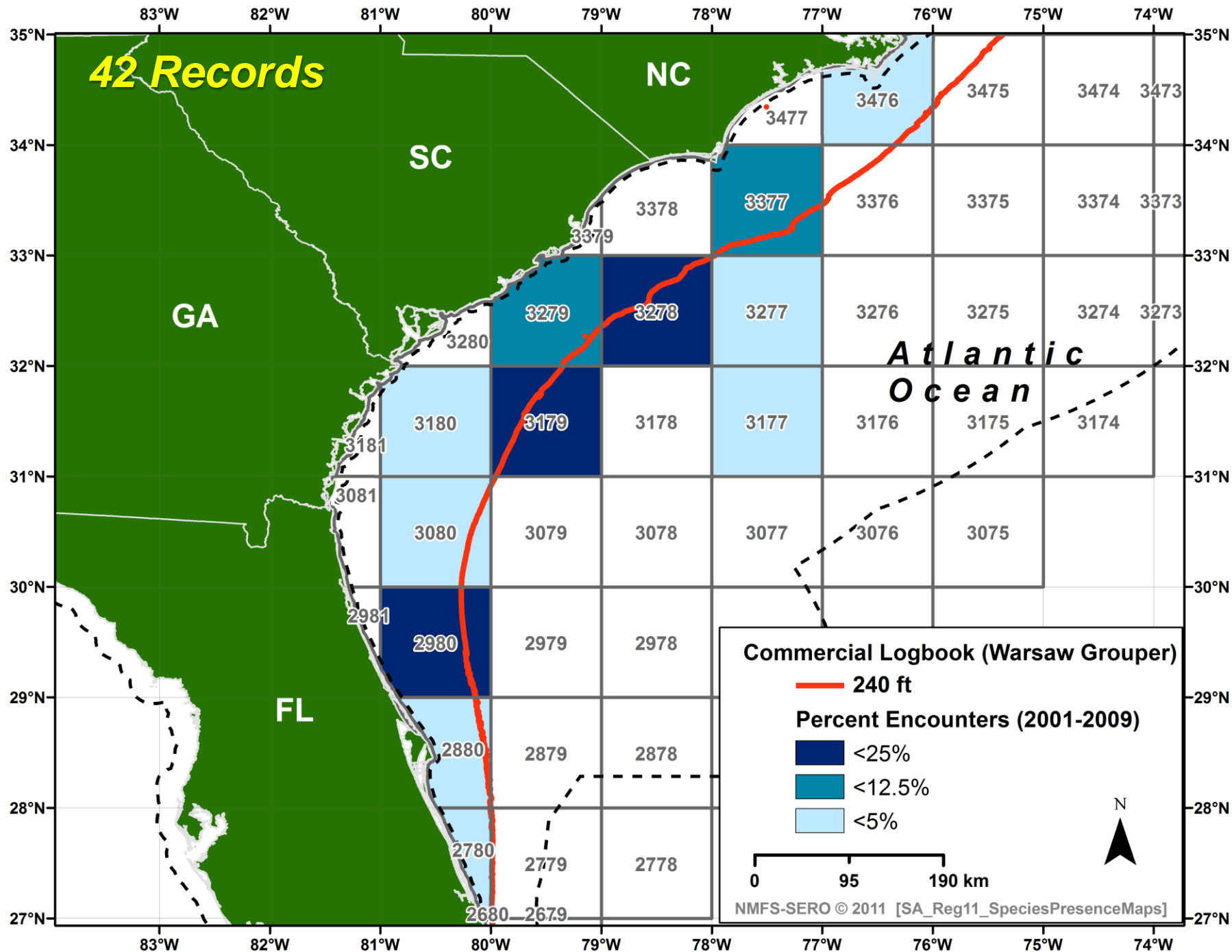
- 1. What is the spatial distribution of SH and WG?**
- 2. To what extent are SH and WG caught together with other 'deep-water' stocks?**

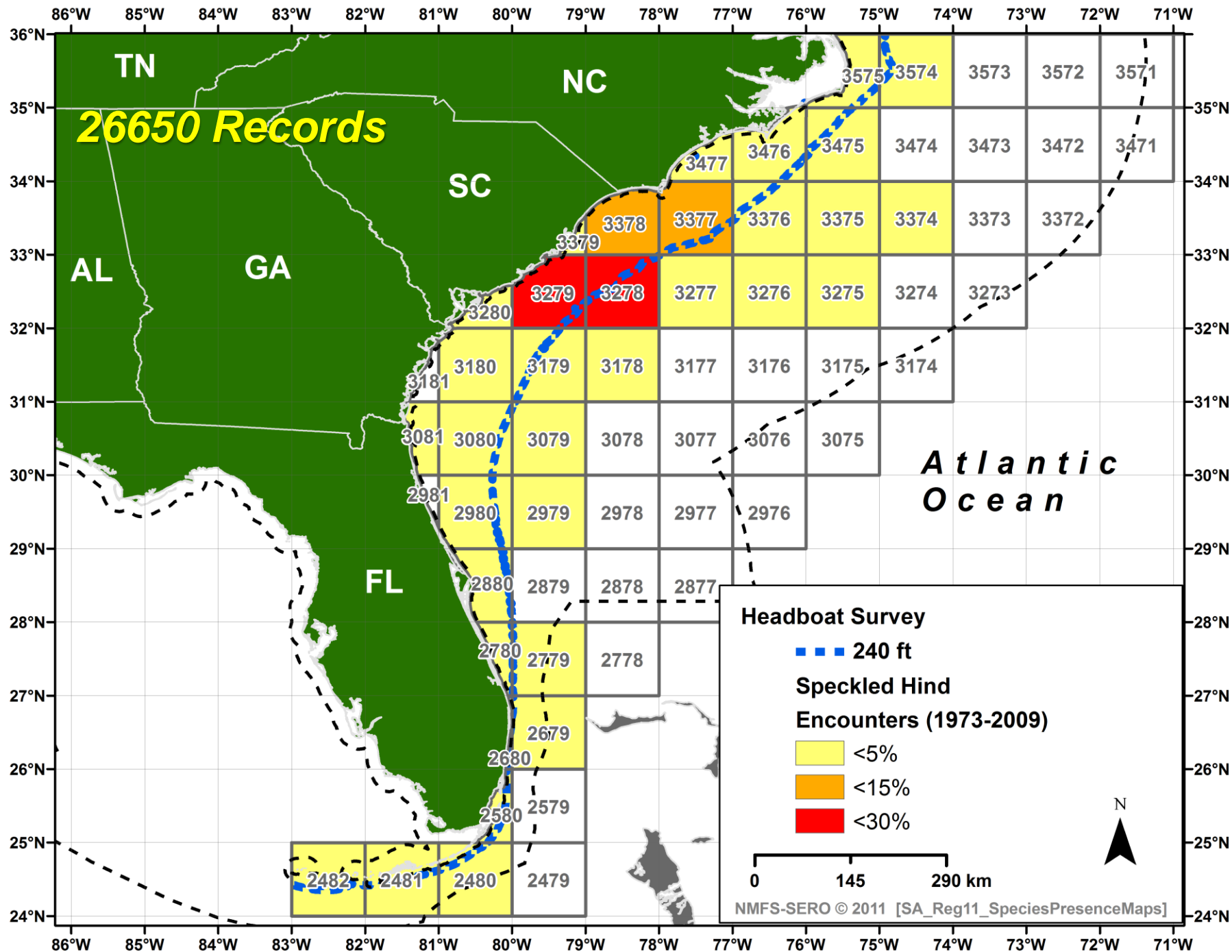


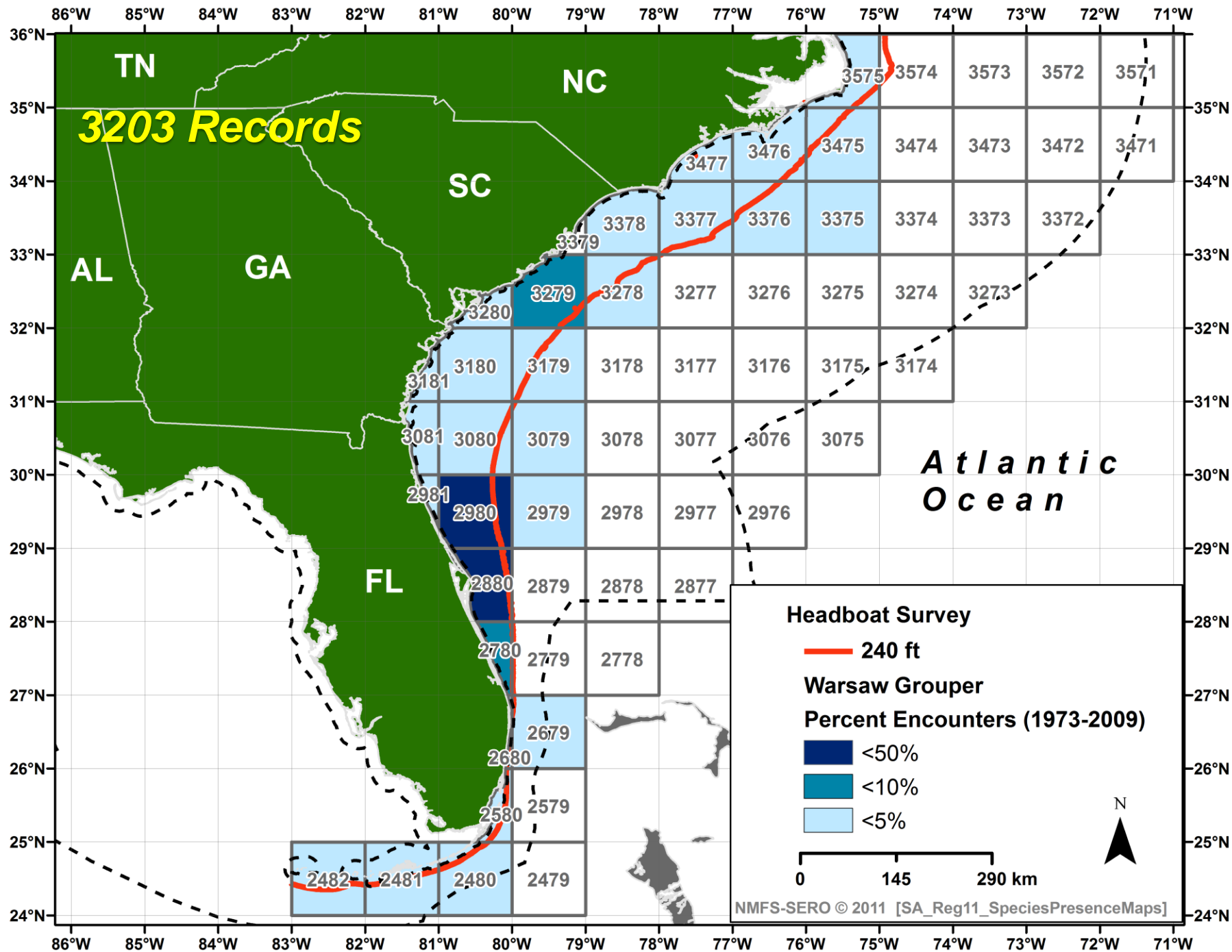
Data Sources

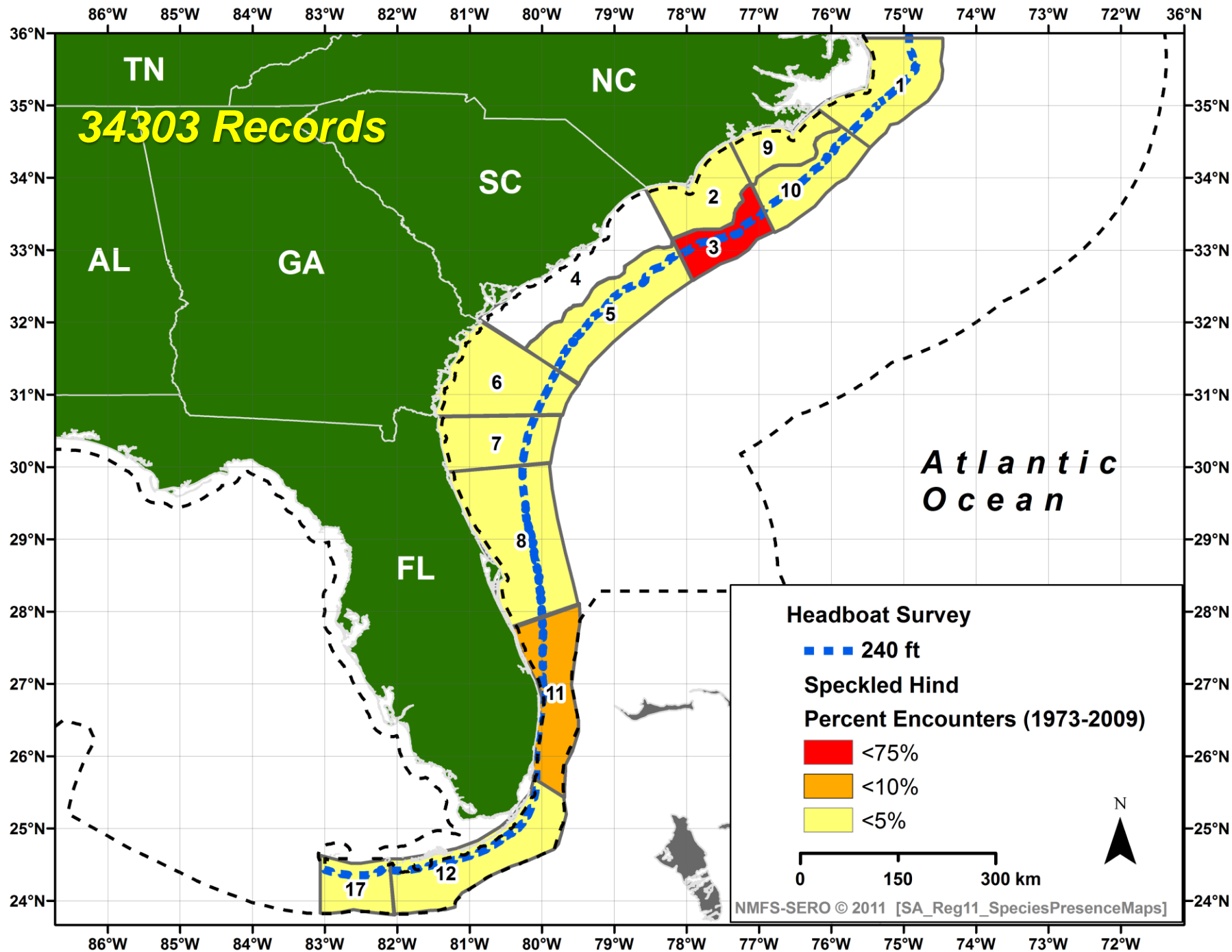
Data Source	Years	Spatial Resolution	Discard Info	Depth Info
Commercial Logbooks	2001-2009	1° X 1° area	20% of records	2005-present
Headboat Logbook	1973-2009	Variable; broad area to 0.17° X 0.17°	2004-present	None
Reef Fish Observer Program	2006-2009	Lat/Long (<i>limited samples</i>)	Yes	Yes
MARMAP	1977-2009	Lat/Long (<i>limited samples</i>)	Yes	Yes
Trip Ticket	1986-1992	Variable; very coarse to 1° X 1°	No	No
ALS	1992-2009	State Sub-Regions	No	No

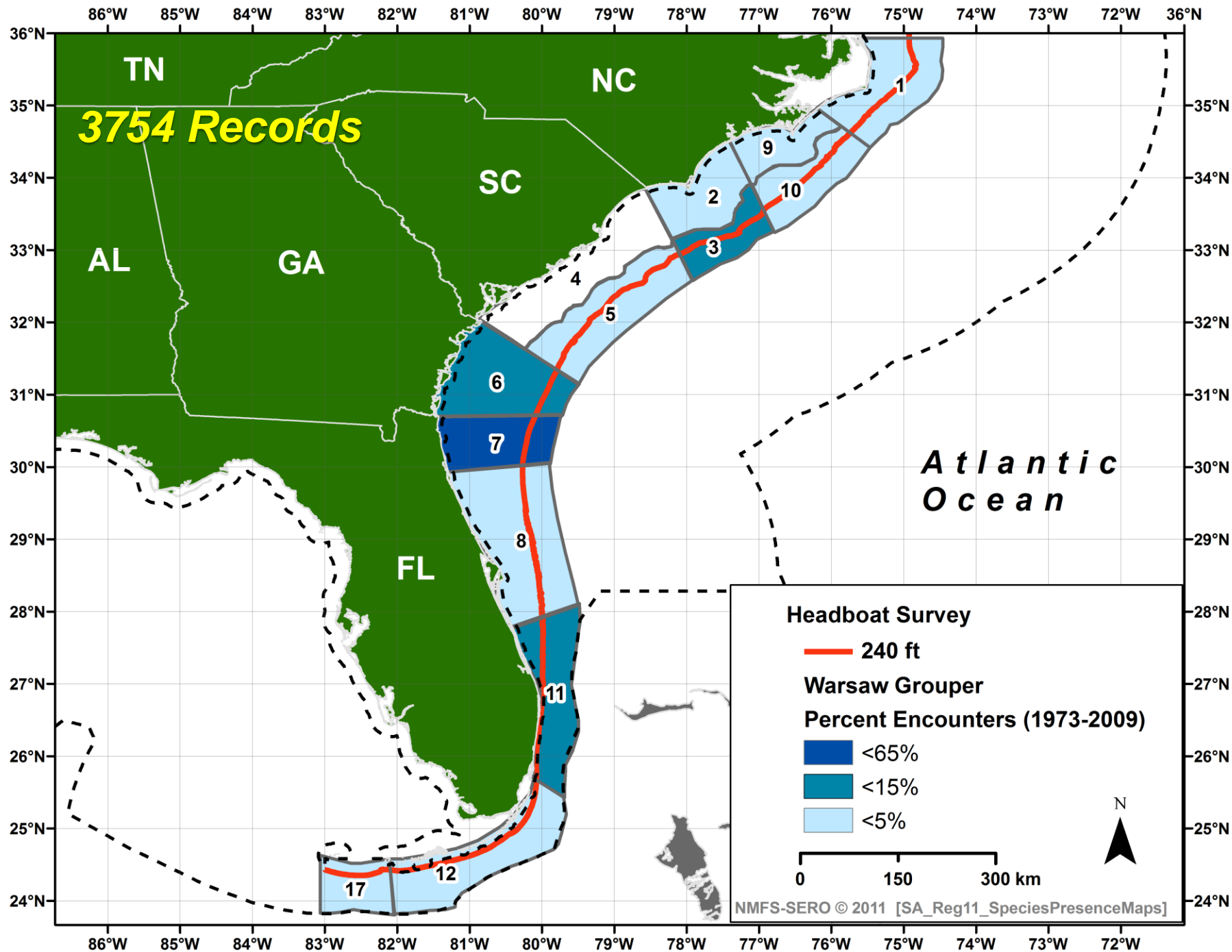


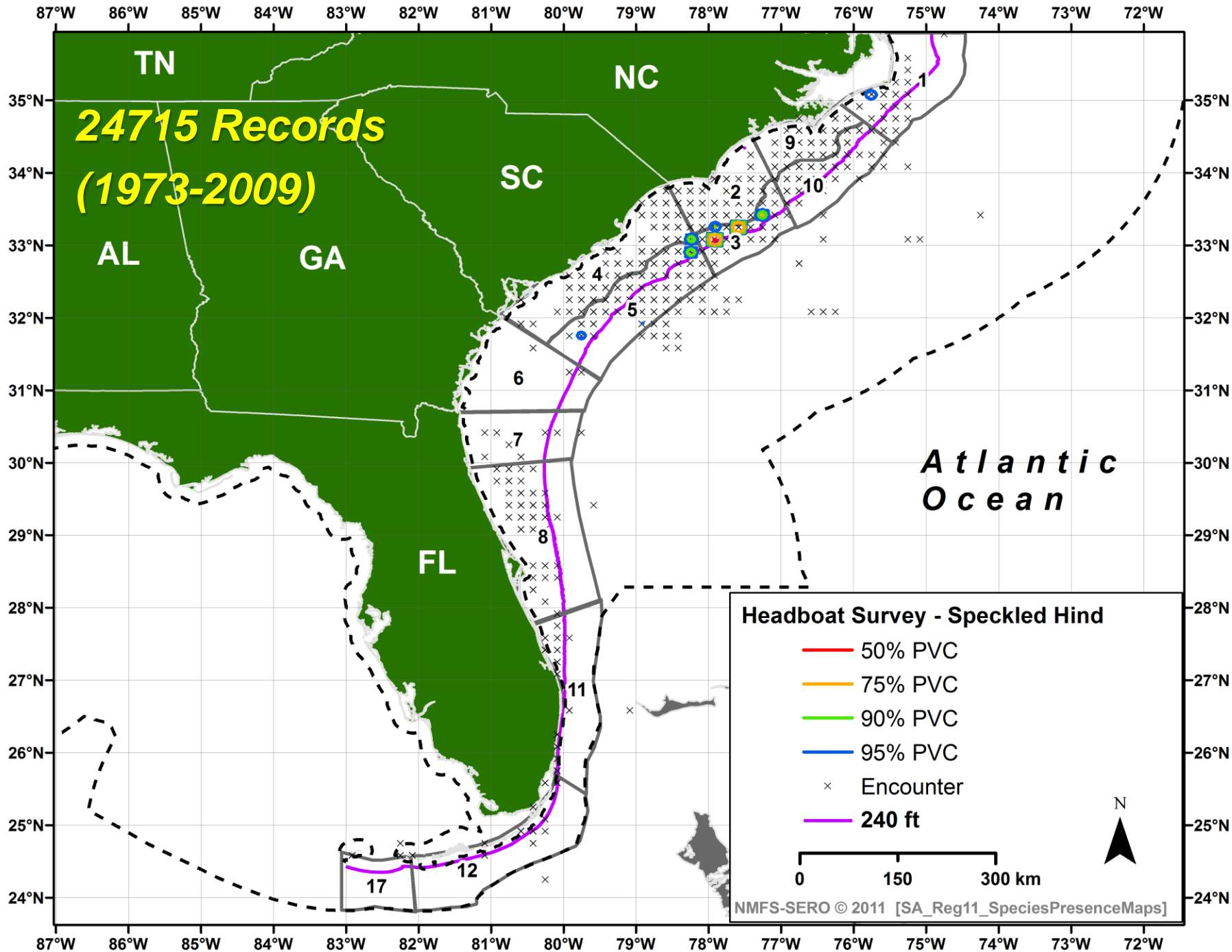


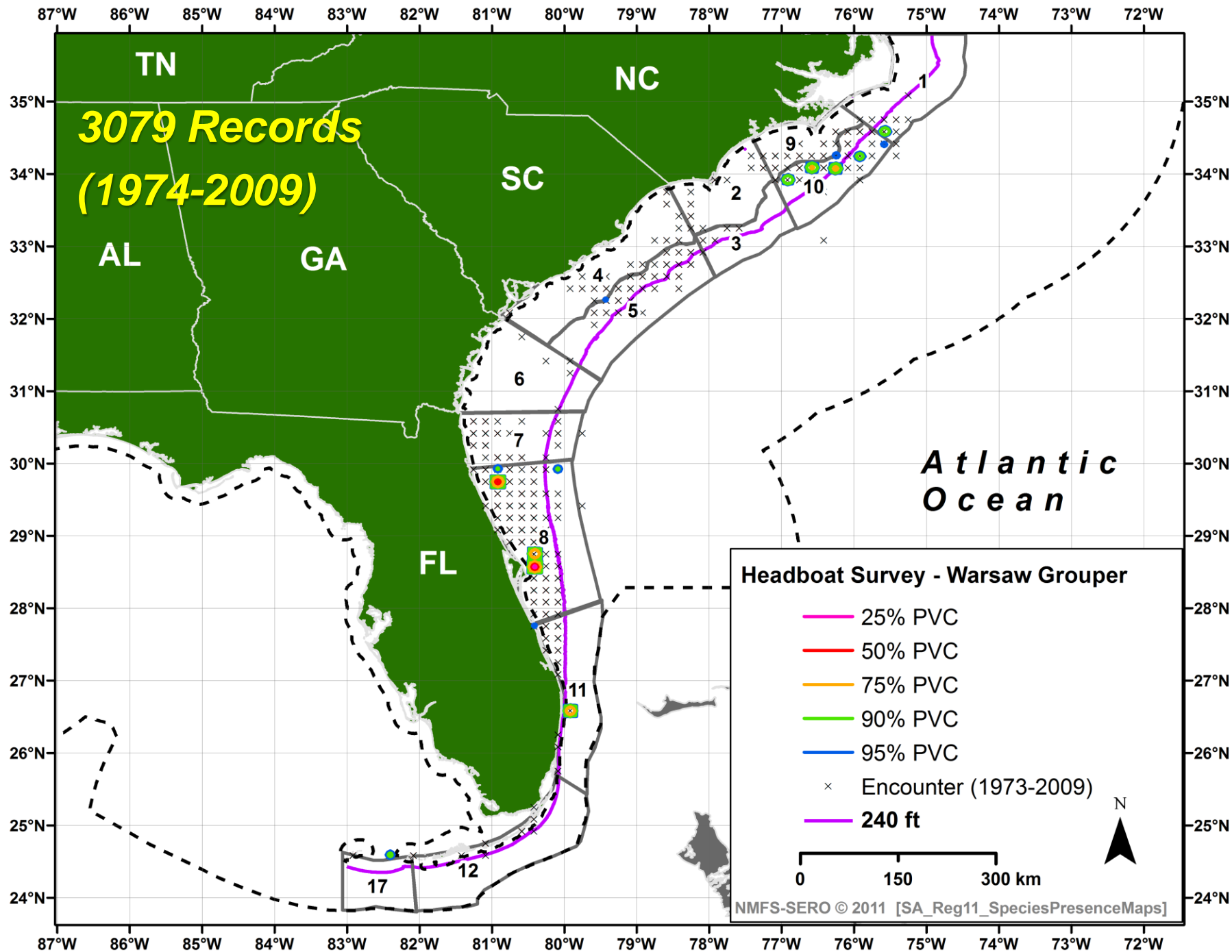


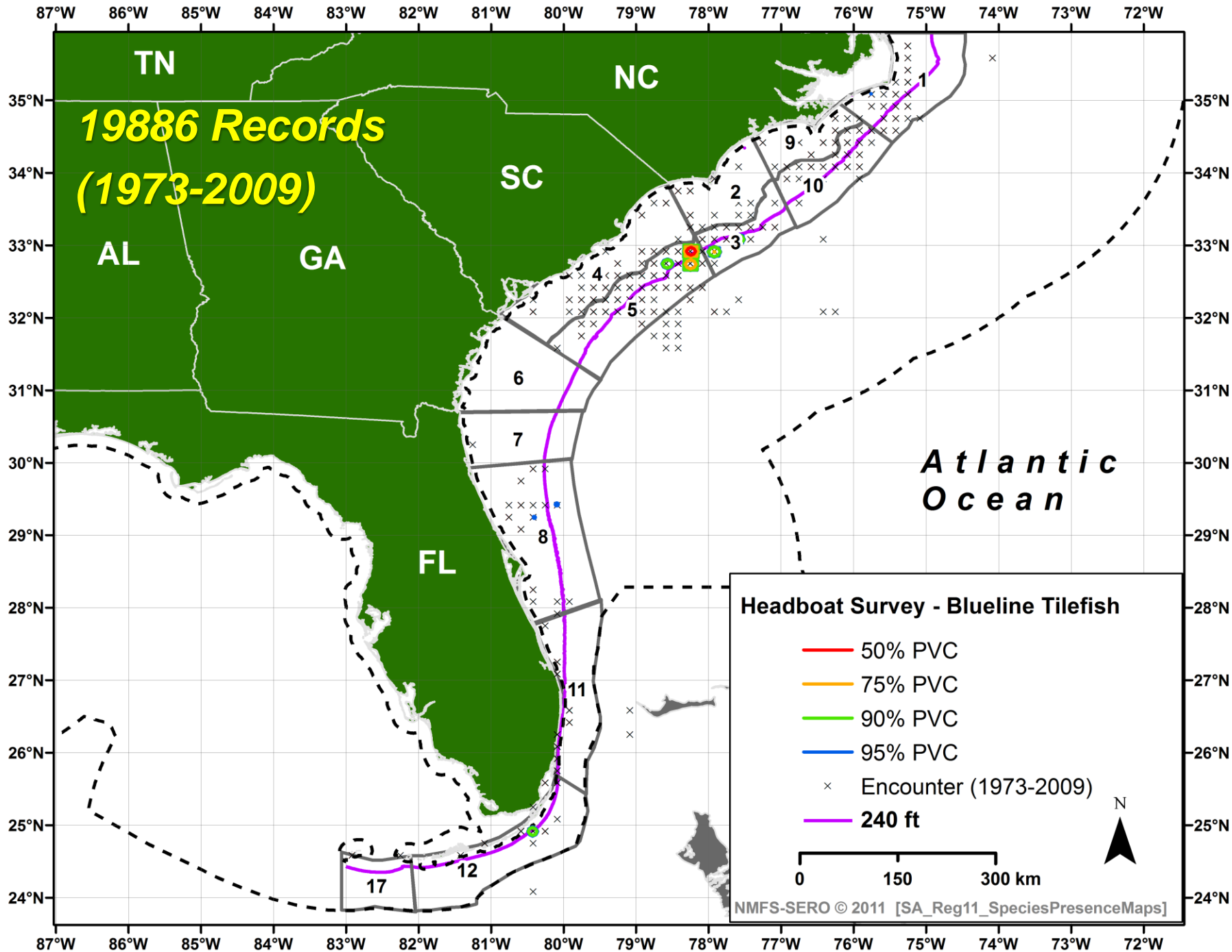


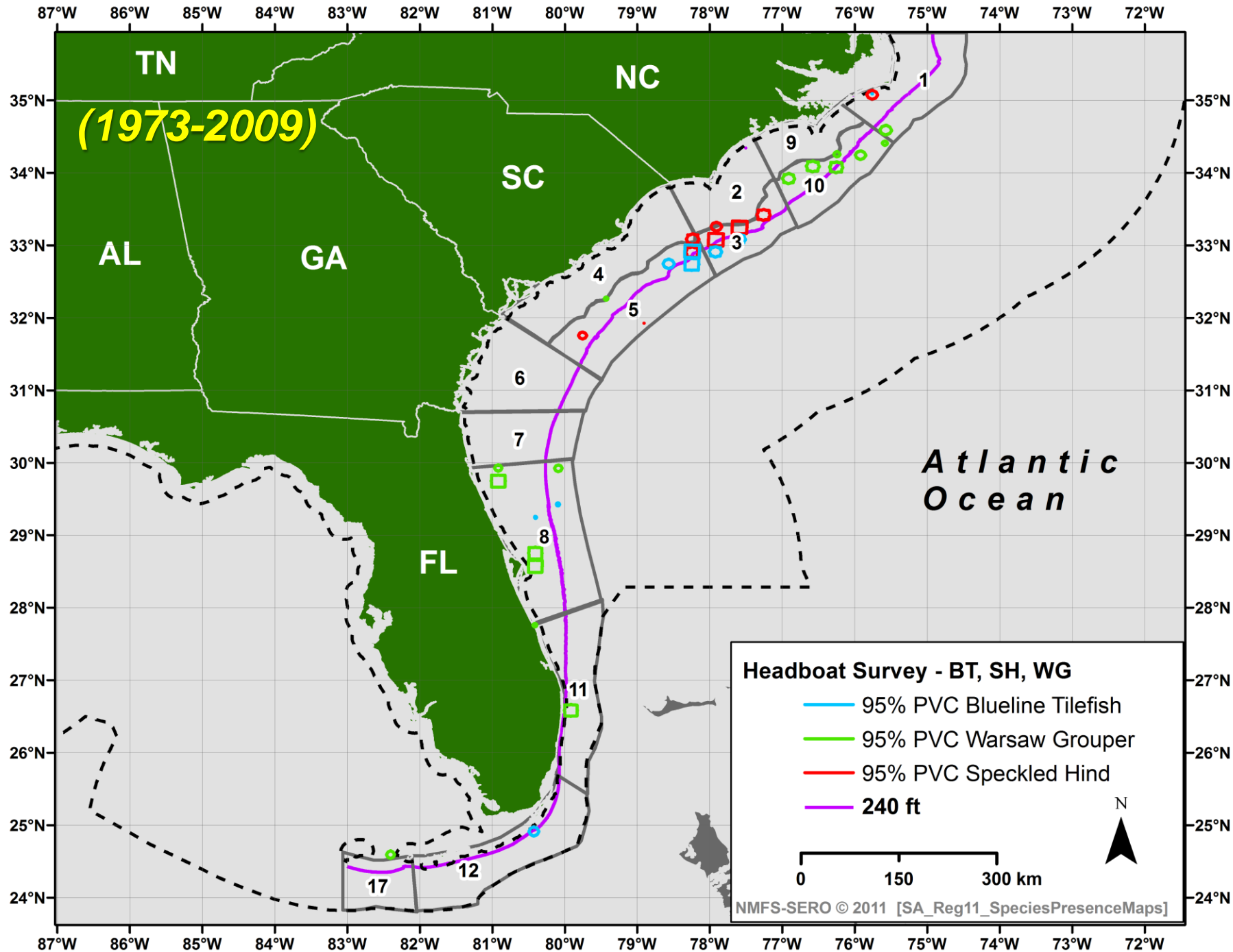


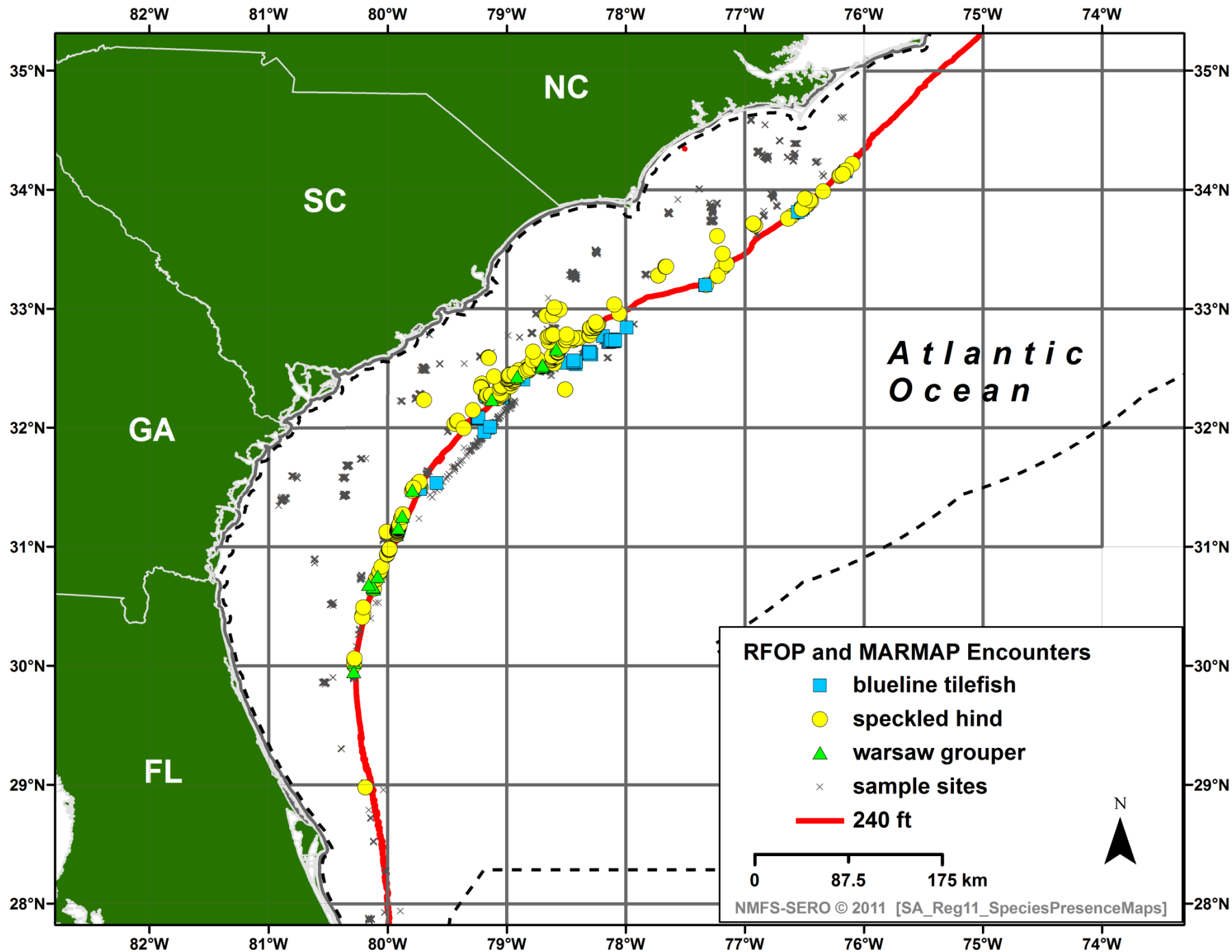


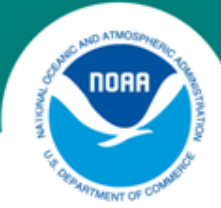












Spatial Distribution: Florida Trip Ticket (1986- 1992) and ALS (1993-2009)

SPECKLED HIND	Unknown	Jacksonville	Canaveral	West Palm	Miami	Keys
Trip Ticket	79.4	18.2		0.5	1.9	
ALS		3.8	11.9	4.9	7.8	71.7

WARSAW GROUPE	Unknown	Jacksonville	Canaveral	West Palm	Miami	Keys
Trip Ticket	20.1	28.7	32.1	8.9	3.2	7.1
ALS		2.6	7.9	1.9	23.6	64.1

What is Caught Together? (Species Groupings Report)

Common Name	#1	#2	#3	#4	#5
wreckfish	warsaw grouper	yellowedge	silk snapper	tilefish	snowy grouper
warsaw grouper	yellowedge	silk snapper	snowy grouper	tilefish	speckled hind
yellowedge	warsaw grouper	snowy grouper	tilefish	blueline tilefish	silk snapper
snowy grouper	blueline tilefish	warsaw grouper	yellowedge	tilefish	silk snapper
silk snapper	tilefish	snowy grouper	yellowfin grouper	wreckfish	warsaw grouper
blueline tilefish	snowy grouper	sand tilefish	scamp	yellowedge	tilefish
sand tilefish	blueline tilefish	jolthead porgy	bar jack	knobbed porgy	nassau grouper
tilefish	silk snapper	gag	snowy grouper	yellowedge	blueline tilefish
speckled hind	yellowfin grouper	nassau grouper	scamp	knobbed porgy	rock hind
yellowfin grouper	speckled hind	nassau grouper	bar jack	sand tilefish	knobbed porgy



What is Caught Together? (Reg-11)

Sale of SH and WG prohibited since 1992.

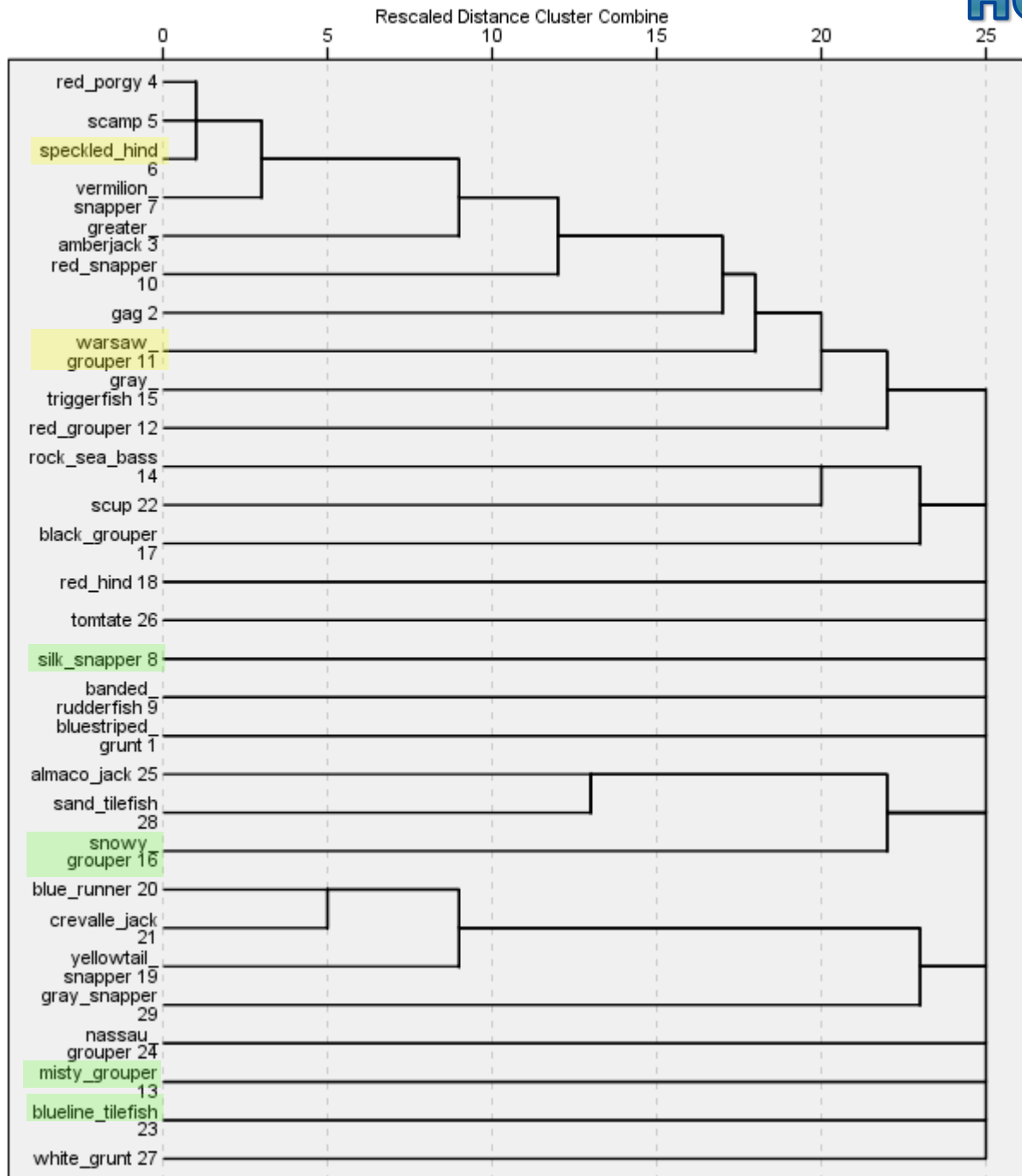
Species groupings report approaches focused on highly resolved bins of data for encounters of all S-G species.

Reg-11 analyses use longer, less-resolved time series of data and cluster only **positive trips** (e.g., trips with encounter of SH or WG)

Clustering using HCA and Dimension Reduction

Dendrogram using Average Linkage (Between Groups)

HCA: Commercial Logbooks (2001-2009)



HCA: Positive Trips

Aggregation:
Year, Month, Trip,
Area

Linkage Method:
Average

Similarity Measure:
Sorenson

Transformation:
Binary

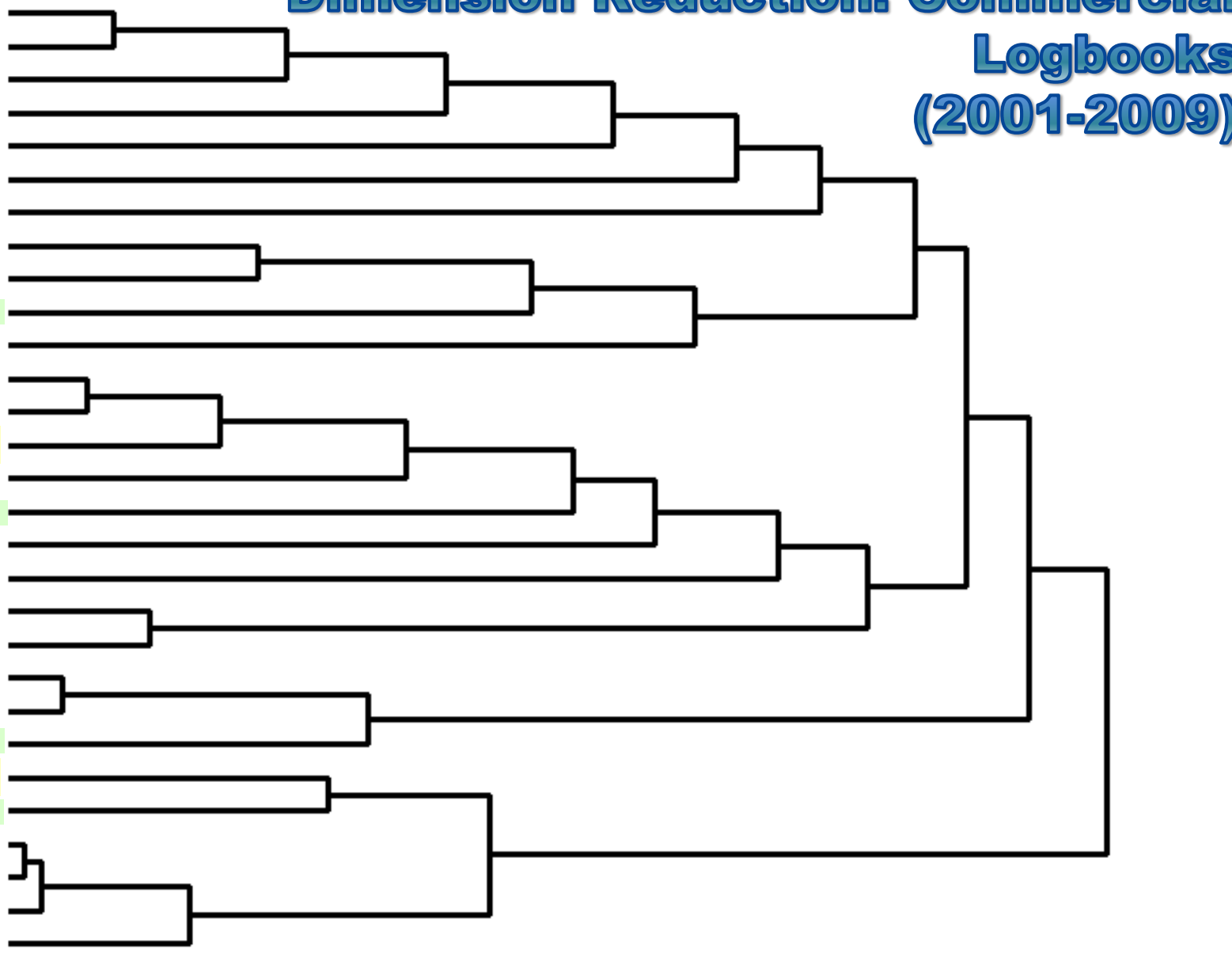
Dimension Reduction: Commercial Logbooks (2001-2009)

Name of Variable or Cluster

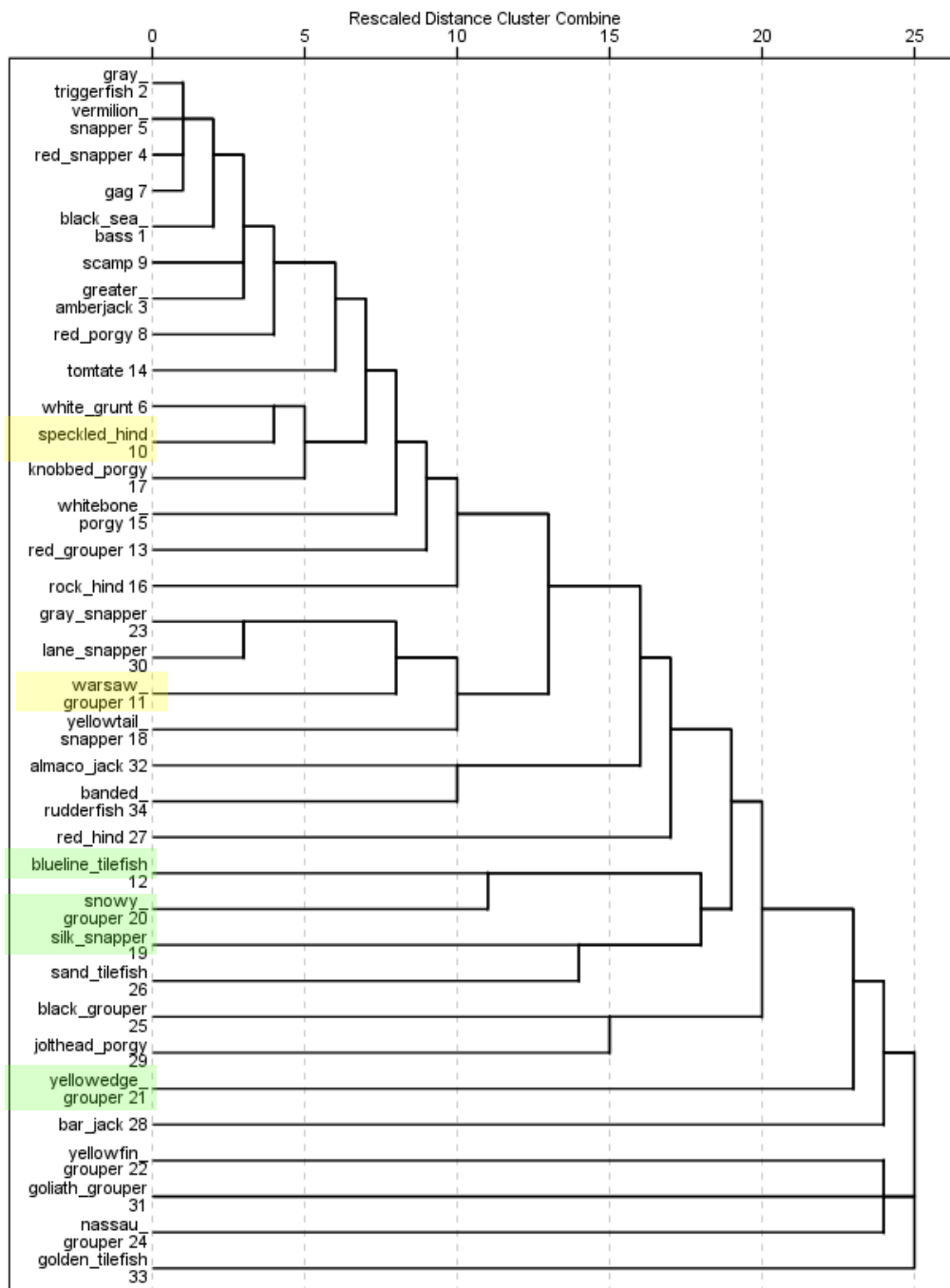
vermillion_snapper
red_snapper
greater_amberjack
gray_triggerfish
red_hind
scup
tomtate
bluestriped_grunt
gag
silk_snapper
banded_rudderfish
red_porgy
scamp
speckled_hind
red_grouper
blueline_tilefish
white_grunt
nassau_grouper
rock_sea_bass
black_grouper
almaco_jack
sand_tilefish
snowy_grouper
warsaw_grouper
misty_grouper
blue_runner
crevalle_jack
yellowtail_snapper
gray_snapper

1.0 0.8 0.6 0.4 0.2 0.0

Proportion of Variance Explained



Dendrogram using Average Linkage (Between Groups)



HCA: Headboat Logbooks (1973-2009)

Positive Trips Only

Aggregation:
 Year, Month, Trip,
 Area

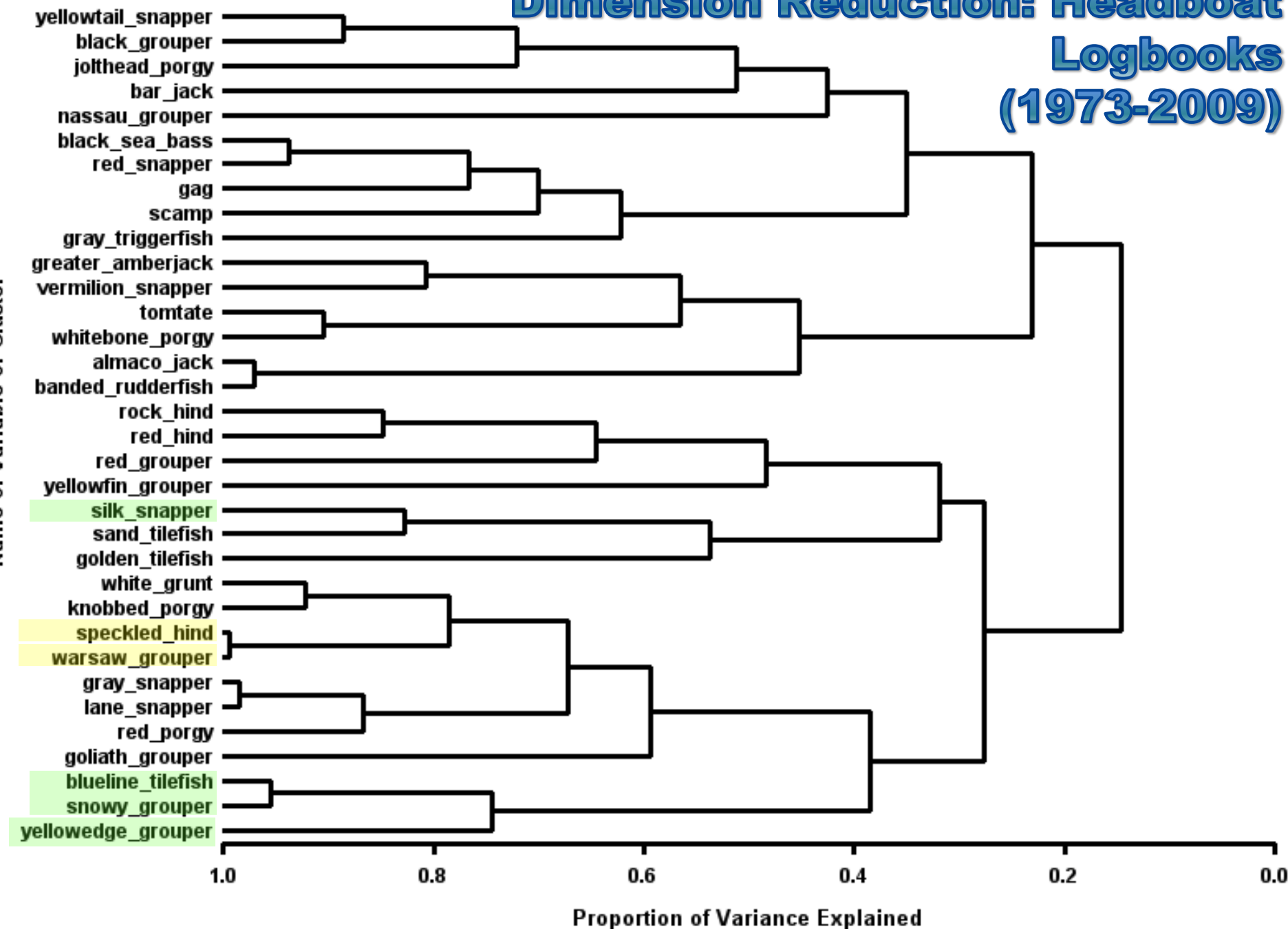
Linkage Method:
 Average

Similarity Measure:
 Sorenson

Transformation:
 Binary

Dimension Reduction: Headboat Logbooks (1973-2009)

Name of Variable or Cluster



Co-Occurring Species

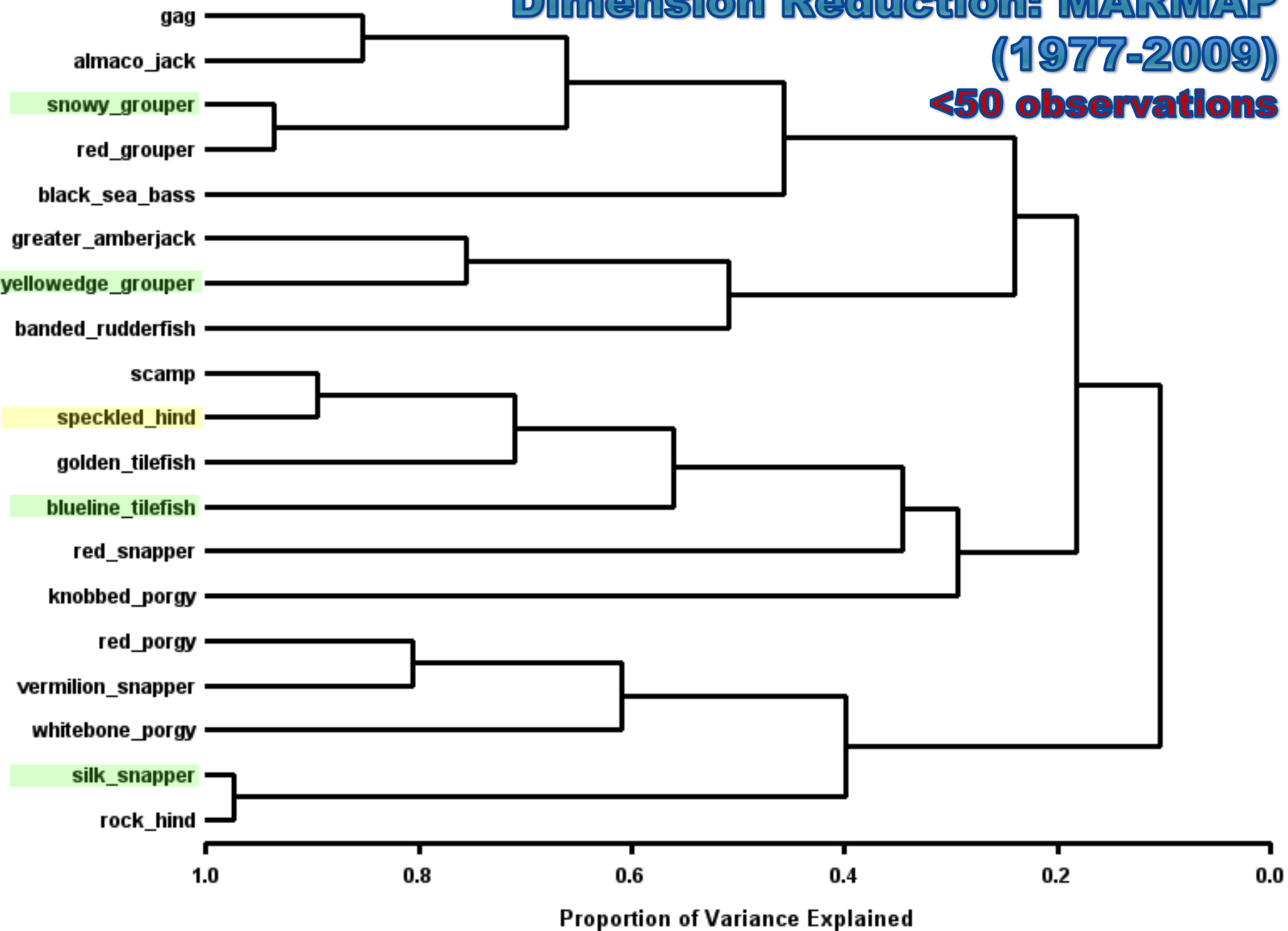
Rank	Commercial (with SH)	Headboat (with SH)	Commercial (with WG)	Headboat (with WG)
1	red porgy	vermilion snapper	red porgy	gray triggerfish
2	scamp	gray triggerfish	scamp	black sea bass
3	vermilion snapper	scamp	vermilion snapper	red snapper
4	greater amberjack	red porgy	greater amberjack	gag
5	red snapper	tomtate	speckled hind	gray snapper
6	gag	white grunt	red snapper	lane snapper
7	red grouper	knobbed porgy	gag	vermilion snapper
8	gray triggerfish	greater amberjack	gray triggerfish	tomtate
9	warsaw grouper	gag	red grouper	scamp
10	rock sea bass	red snapper	red hind	whitebone porgy
11	snowy grouper	black sea bass		greater amberjack
12	yellowtail snapper	whitebone porgy		red porgy
13	black grouper	almaco jack		red grouper
14	blue runner	bank sea bass		white grunt
15	crevalle jack	graysby		almaco jack
16	almaco jack	queen triggerfish		knobbed porgy
...
	blueline tilefish (#22)	blueline tilefish (#32)	no blueline tilefish	blueline tilefish (#39)

Principle Components Clustering of SAFMC MARMAP Landings by Set (VERTICAL LINE)

Dimension Reduction: MARMAP
(1977-2009)

<50 observations

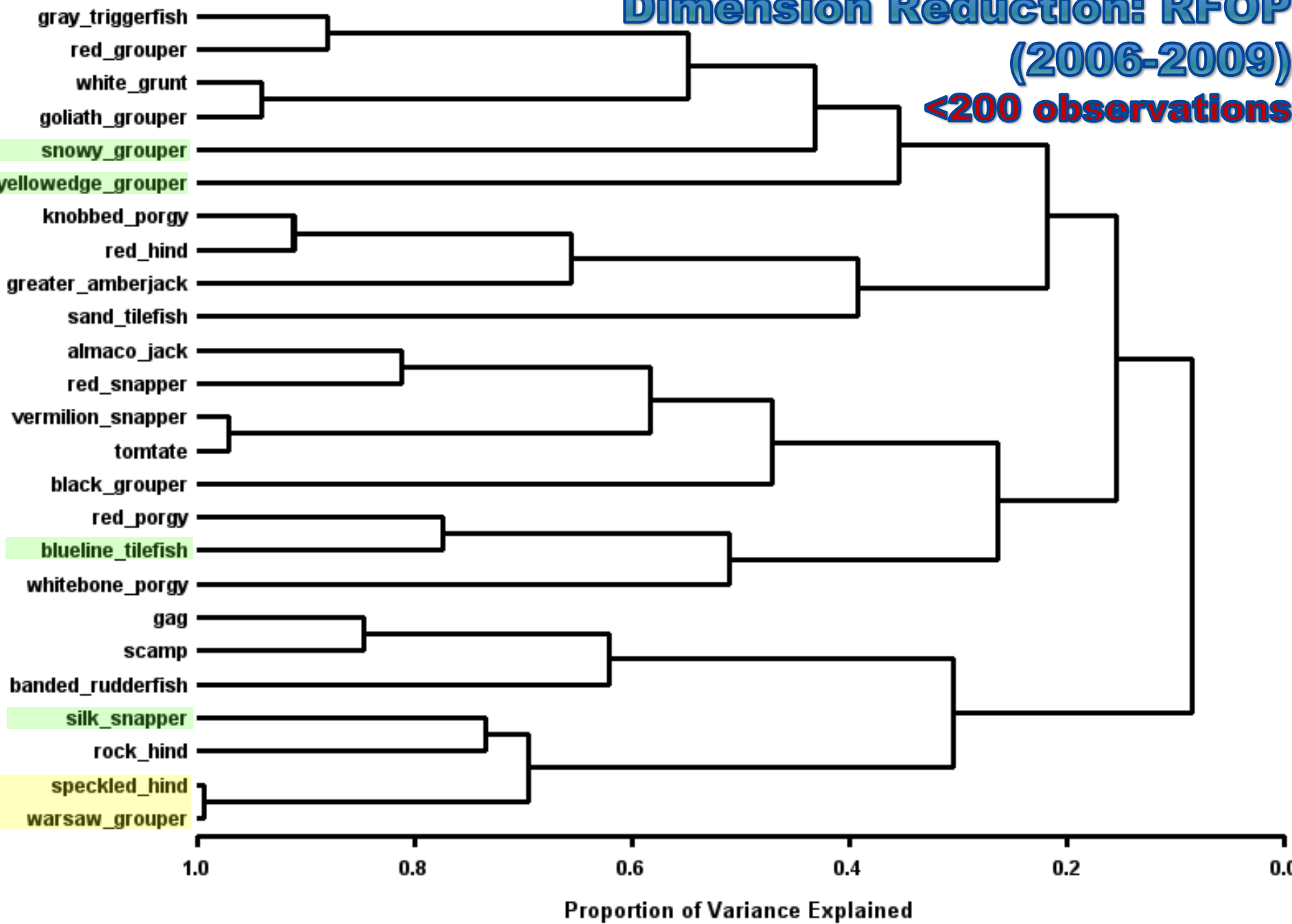
Name of Variable or Cluster



Principle Components Clustering of BINARY SAFMC Reef Fish Observer Landings by Set

Dimension Reduction: RFOP
(2006-2009)

<200 observations





Preliminary Conclusions

High uncertainty due to 1992 prohibition of sale, rarity, and lack of depth-specific, spatially-resolved data.

- 1. *What is the spatial distribution of SH and WG?***
 - Both occur from Keys to south of Hatteras**
 - SH predominantly SC to south of Hatteras**
 - WG mostly off FL and NC**
- 2. *To what extent are SH and WG caught together with other 'deep-water' stocks?***
 - Low associations with blueline tilefish**



Further Analyses

Will examine spatial distribution and co-occurrence using Trip Ticket data from:

- **Florida (1986-2010)**
- **Georgia (1989-2010)**
- **North Carolina (1994-2010)**
- **South Carolina (2004-2010)**

Landings 1986-2009

