Evaluating the effects of Amendment 16 and Amendment 17 on red snapper removals

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June 10, 2009

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Outline
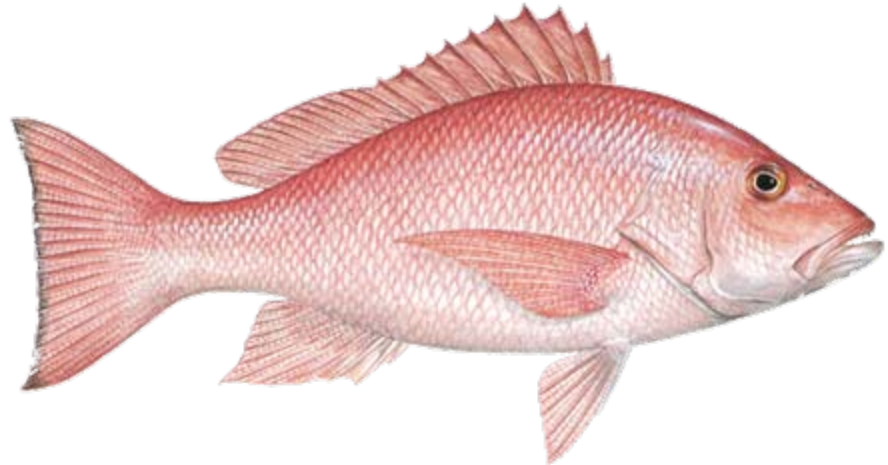
Objectives and Goals

Management Actions

Methods and Results

    - Commercial

    - Headboat

    - MRFSS

Cumulative Reductions

'Sensitivity' Runs

Objectives and Goal

Objectives
- Quantify changes in red snapper catches associated with Amendments 13C and 16
- Evaluate the cumulative effects of these regulations in conjunction with Amendment 17 proposed regulations

Goal
- To determine the extent of spatial closures needed to achieve reductions in red snapper fishing mortality

Amendment 13C and 16 Regulatory Measures

Amendment 13C (effective Oct 23, 2006)

- Commercial quotas and/or trip limits for vermilion snapper, black sea bass, golden tilefish, snowy grouper, and red porgy

Amendment 16 (partially approved; proposed rule Feb 09)

- Closed seasons, quotas, and bag limits for shallow-water grouper and vermilion snapper

Amendment 17 Alternatives

Alt 1 – No action

Alt 2 – close commercial & recreational fishery

Alt 3* – close fishery and stat areas 2880, 2980, 3080, 3180 between 98 and 240 feet

Alt 4* – close fishery and stat areas 2880, 2980, 3080, 3179, 3180, 3278, and 3279 between 98 and 240 feet
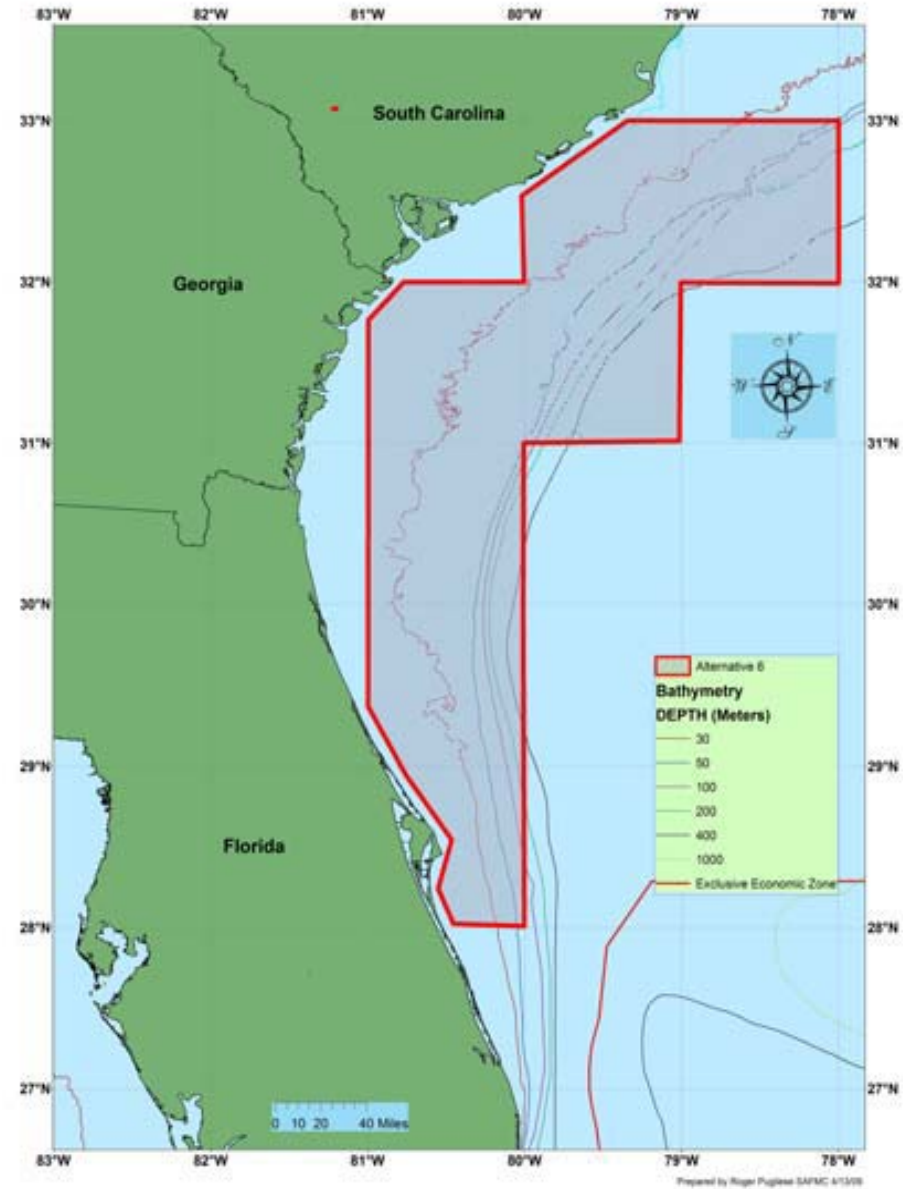
Alt 5* – same as Alt 3, except close all depths within stat areas

Alt 6* – same as Alt 4, except close all depths within stat areas

* Some exceptions for allowable harvest of golden tilefish, black sea bass, and snapper-grouper species in closed areas

Alternative 3
Alternative 4
Alternative 5
Alternative 6

Source: Draft Amendment 17, May 2009

Commercial

- Data sources:
  - o 2005-2007 coastal logbook and supplemental discard logbook
- Methods
  - o Trip reduction model (Waters 2008) used to calculate impacts of regulations on catches, revenues, and costs;
  - o If trip revenue < opportunity costs, trip was eliminated;
  - o Red snapper landings converted to discards; r = 0.9
  - o Spearfishing discards = zero;
  - o GLM approach used to derive discards
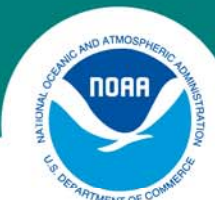
Commercial Removals by Statistical Grid
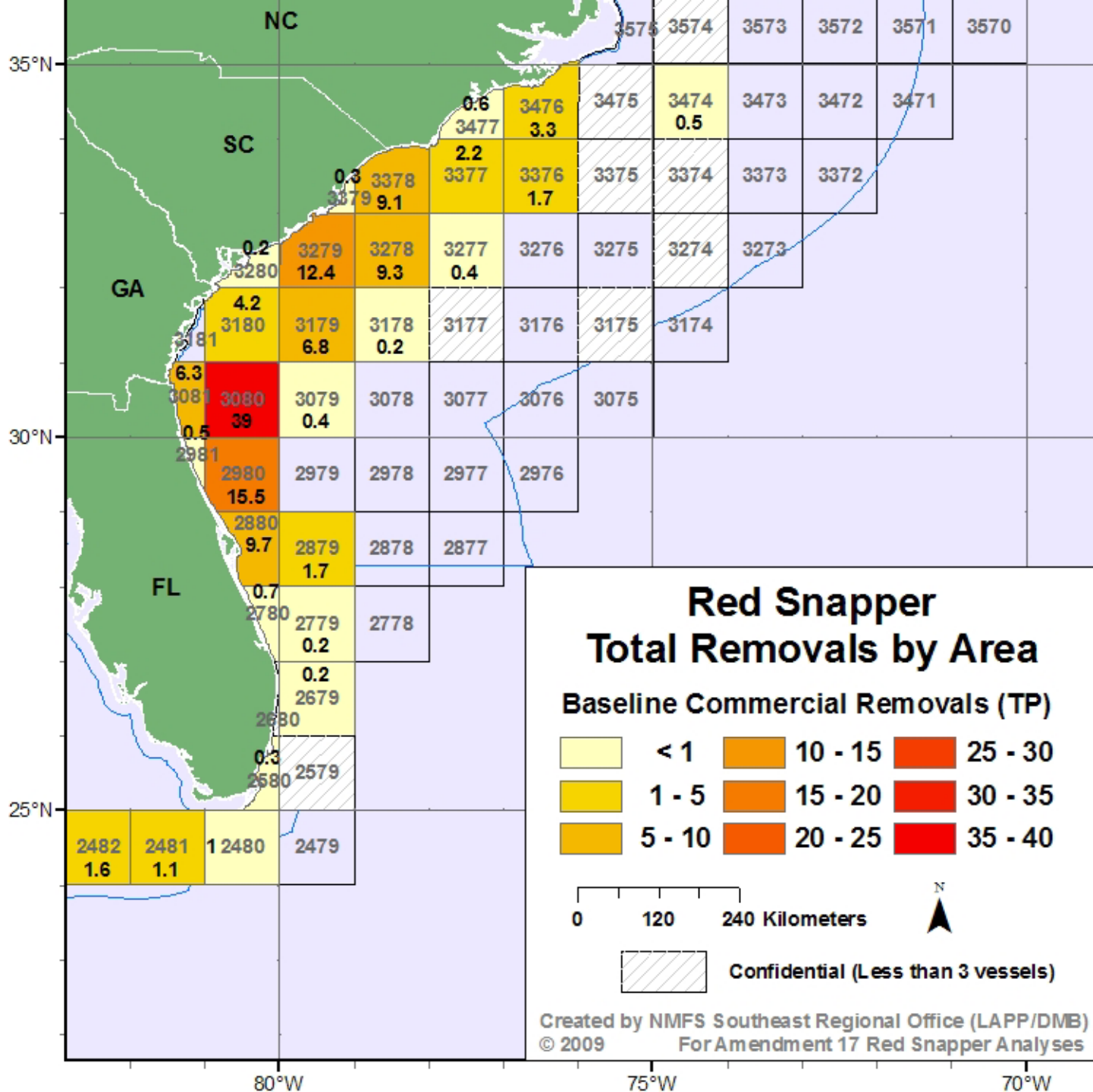
Results: Total Removals

Scenario	Removals (lbs X1000)	% reduction
Baseline	130.8	0%
Baseline w/ A13C effect	129.2	1%
Baseline w/ A13C & 16 effects	109.2	17%
A17 Alternative 2	59.0	55%
A17 Alternative 3	44.7	66%
A17 Alternative 4	34.6	74%
A17 Alternative 5	40.2	69%
A17 Alternative 6	24.5	81%

Commercial Summary

- **A13C: Minimal reductions (1%)**
- **A16: Slight reductions (16%)**
- **A17: Substantial reductions (55 – 81%)**

- **Under all scenarios, area closures in addition to those currently proposed in A17 would be necessary to achieve the 87% reduction in commercial removals**

Headboat

- Data sources:
  - o 2005-07 headboat catch effort records
  - o Discards estimated using MRFSS discard to landing ratio

- Methods
  - o A16 effects –
    - ➢ 'Target' trips defined based on amount of vermilion snapper/SWG caught on trips during A16 closures and % of S-G landings accounted for on a trip by those species
    - ➢ 'Target' trips then eliminated or modified
    - ➢ Red snapper landings recomputed to account for eliminated or modified trips

Headboat A17 Methods

- A17 Methods
  - A17 effects –
    - Hierarchal approach used to assign landings to statistical grid
    - Evaluated effect of eliminating 'target' trips with average landings per angler >1;
    - removals set = 0 in closed areas;
    - r = 0.4 applied to prior landings in areas not closed

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Headboat Landings by Statistical Grid*
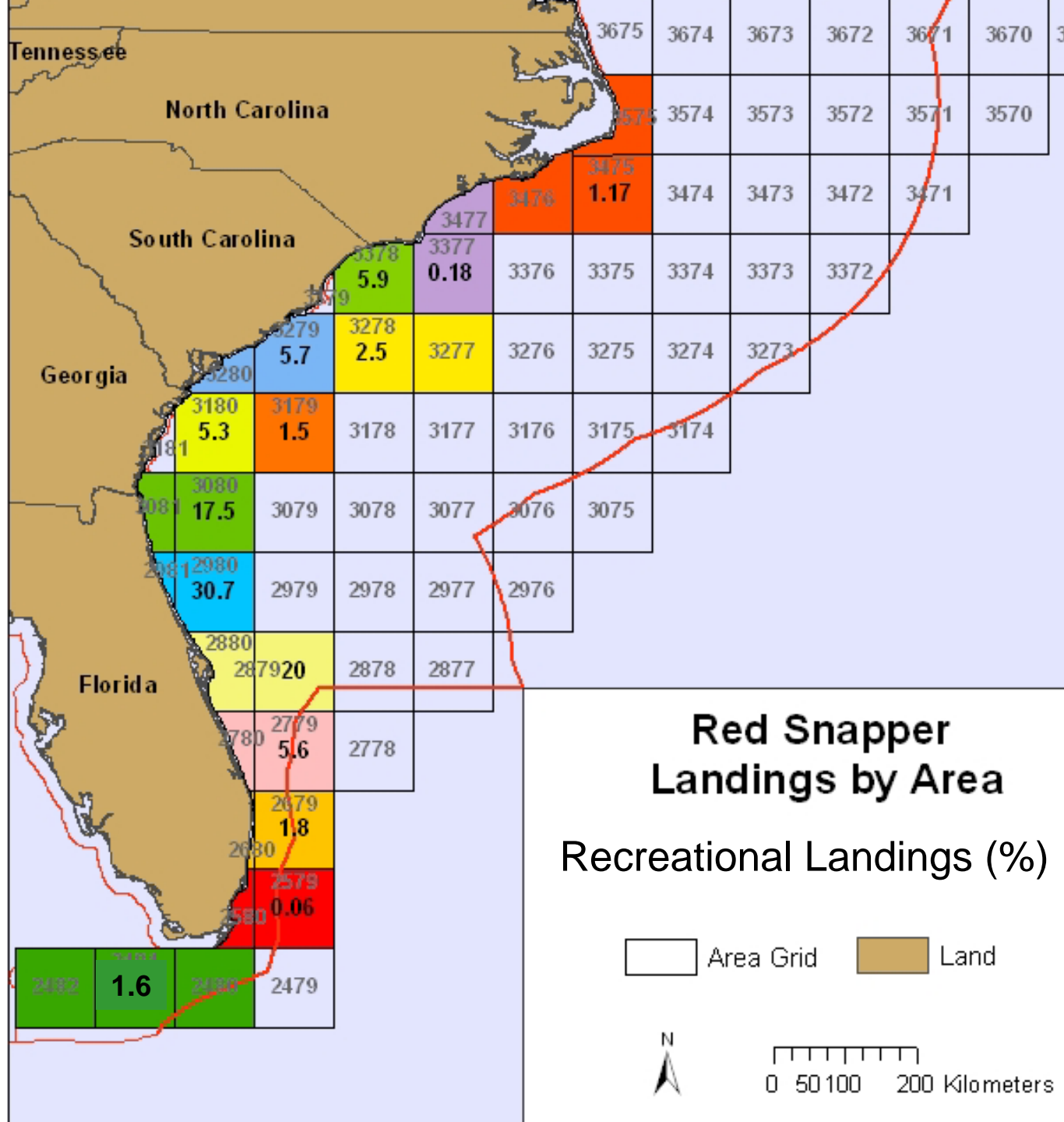
* Landings aggregrated across statistical grids to maintain confidentiality

Red Snapper Landings by Area

Recreational Landings (%)

Area Grid — Land

Headboat Results – A16

Scenario	Criteria		2005-2007 avg. landings (lbs)	% change
	# Caught	% S-G Landings		
Status quo (no A16 effect)	n/a	n/a	45,862	0.0%
Target --> non-target trips	25	50%	45,358	1.1%
Target --> eliminated	25	50%	44,394	3.2%
Target --> non-target trips	25	25%	44,389	3.2%
Target --> eliminated	25	25%	42,312	7.7%

- A16 closures estimated to have a small effect (1-8%) on headboat red snapper landings

Headboat Results – A16&A17

Alternative	% Reduction		
	A16 - no effect	A16 target elim	A16/A17 target elim
Alt 1	0.0%	0.0%	0.0%
Alt 2	40.0%	54.1%	72.4%
Alt 5	79.4%	84.1%	87.4%
Alt 6	85.0%	88.2%	90.2%

r = 0.4; VS/SWG target eliminated (25 fish/25%); RS target eliminated (> 1 fish/angler)

Headboat Summary

- **A16: Slight reductions (1-8%)**
- **A17: Substantial reductions (40-90%)**

- **Alternative 2 does not achieve necessary reductions in fishing mortality; other proposed alternatives may achieve necessary reductions**

MRFSS

- Data sources:
  - o 2005-07 post-stratified MRFSS landings and discards

- A16 Methods
  - o Target trips defined based on:
    1. Angler indicated target species
    2. Amount of vermilion snapper/SWG caught per angler per trip during A16 closure and % of S-G landings accounted for on a trip by those species
  - o Target trips then eliminated
  - o Red snapper landings recomputed to account for eliminated trips

MRFSS

- A17 Methods
  - o Used spatial distribution of HB landings as proxy
  - o Statistical areas with HB landings assigned MRFSS region (majority rule)

$$R_a = \frac{\% L_a}{\sum\limits_{a=1}^{\Omega} \% L_a} * R_\Omega$$
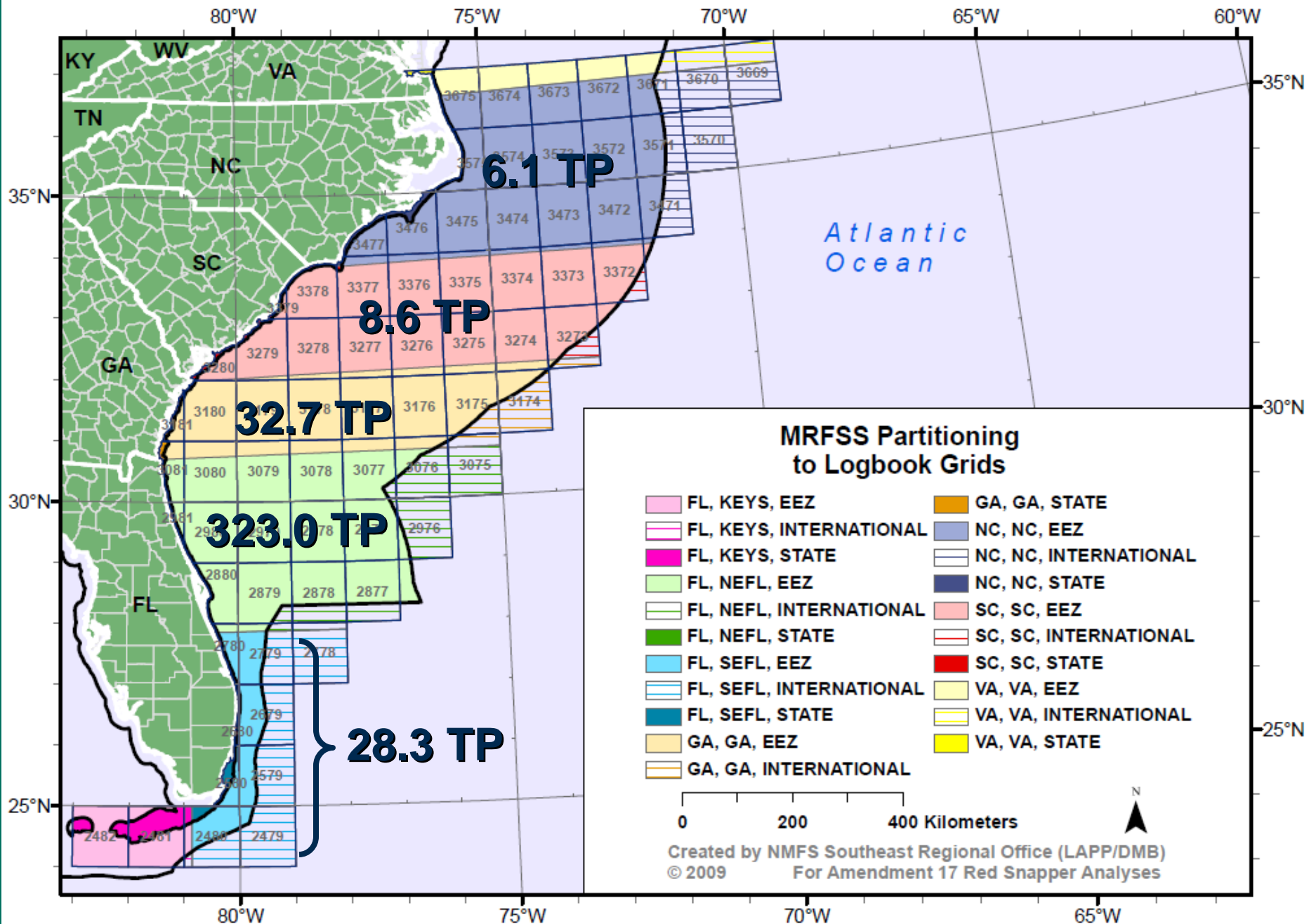
R = MRFSS removals

a = Statistical area

%L = Percent HB landings

Ω = MRFSS post-stratified region

  - o Removals set = 0 in closed areas
  - o r = 0.4 applied to prior landings in areas not closed

BASELINE RED SNAPPER REMOVALS

6.1 TP

8.6 TP

32.7 TP

323.0 TP

28.3 TP

Atlantic Ocean

MRFSS Partitioning to Logbook Grids

FL, KEYS, EEZ	GA, GA, STATE
FL, KEYS, INTERNATIONAL	NC, NC, EEZ
FL, KEYS, STATE	NC, NC, INTERNATIONAL
FL, NEFL, EEZ	NC, NC, STATE
FL, NEFL, INTERNATIONAL	SC, SC, EEZ
FL, NEFL, STATE	SC, SC, INTERNATIONAL
FL, SEFL, EEZ	SC, SC, STATE
FL, SEFL, INTERNATIONAL	VA, VA, EEZ
FL, SEFL, STATE	VA, VA, INTERNATIONAL
GA, GA, EEZ	VA, VA, STATE
GA, GA, INTERNATIONAL	

0   200   400 Kilometers

N

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BASELINE

MRFSS Red Snapper Removals (TP)
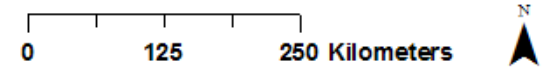
Color	%	Color	%	Color	%
Dark red	38%	Yellow	3.3%	Teal	1%
Red	24.8%	Pale yellow	2.1%	Blue	0.5%
Bright red	21.6%	Light green	1.8%	Purple	0.4%
Orange	5.6%	Green	1%	Magenta	0.2%

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MRFSS Results – A16

Scenario	Criteria		% S-G Landings	Total Removals (lbs)	% change
	catch per angler				
	VS	SWG			
Status quo (A16 no effect)	n/a	n/a	n/a	398658	0%
Target trips --> eliminated	5	1	50%	389615	2.3%
Target trips --> eliminated	1	0.5	25%	389461	2.3%

- A16 closures estimated to have a small effect (2.3%) on MRFSS red snapper landings

MRFSS Results – A16&A17

Scenario	% Reduction	
	A16 - no effect	A16/A17 target elim
A17 Alternative 1	0.0%	0.0%
A17 Alternative 2	38.8%	53.1%
A17 Alternative 5	87.2%	89.6%
A17 Alternative 6	88.9%	90.9%

r = 0.4; VS/SWG target eliminated (25 fish/25%); RS target eliminated (> 1 fish/angler)

MRFSS Summary

- **A16: Slight reductions (2.3%)**
- **A17: Substantial reductions (39-91%)**

- **Alternative 2 does not achieve necessary reductions in fishing mortality; other proposed alternatives may achieve necessary reductions**

Cumulative Reductions

Scenario	Alternative	Total Removals (lbs)				% reduction
		Commercial	Headboat	MRFSS	All modes	
	Status quo	130,810	55,038	398,658	584,506	0%
	Alt 2	58,978	15,191	187,063	261,232	55%
Best	Alt 3*	44,694	6,958	41,536	93,188	84%
Case	Alt 4**	34,560	5,378	36,472	76,410	87%
	Alt 5	40,168	6,958	41,536	88,662	85%
	Alt 6	24,500	5,378	36,472	66,350	89%
	Status quo	130,810	55,038	398,658	584,506	0%
	Alt 2	120,031	27,520	202,129	349,680	40%
Worst	Alt 3*	65,294	9,465	44,287	119,047	80%
Case	Alt 4**	44,861	6,900	38,999	90,760	84%
	Alt 5	60,453	9,465	44,287	114,206	80%
	Alt 6	34,798	6,900	38,999	80,697	86%

* MRFSS and headboat data same as Alt 5

** MRFSS and headboat data same as Alt 6

'Sensitivity' Runs

Alternative	r = 0.9 comm 0.4 rec		r = 0.65 comm 0.3 rec		r = 0.4 comm 0.4 rec	
	Worst	Best	Worst	Best	Worst	Best
Status Quo	0%	0%	0%	0%	0%	0%
Alt 2	40%	55%	52%	64%	50%	60%
Alt 3	80%	84%	84%	87%	86%	88%
Alt 4	84%	87%	88%	90%	88%	90%
Alt 5	80%	85%	84%	88%	86%	88%
Alt 6	86%	89%	89%	91%	89%	91%

* MRFSS and headboat data same as Alt 5 or Alt 6

Assumptions

- Discards occur in same proportional distribution as landings

- No effort shifting from closed areas

- Release mortality rate constant through time regardless of regulations

- 100% compliance with closures

- Headboat landings are reasonable spatial proxies for private and charter angler landings

Questions?