Amendment 26 Management advice: Evidence for significant King mackerel "recruitment" into the Atlantic stock fishery

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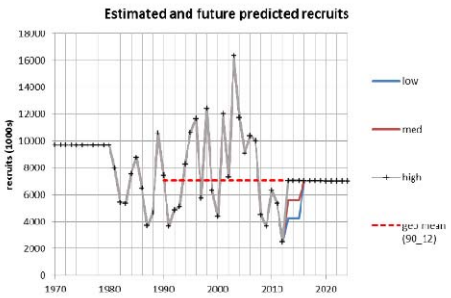
Need for scientific guidance

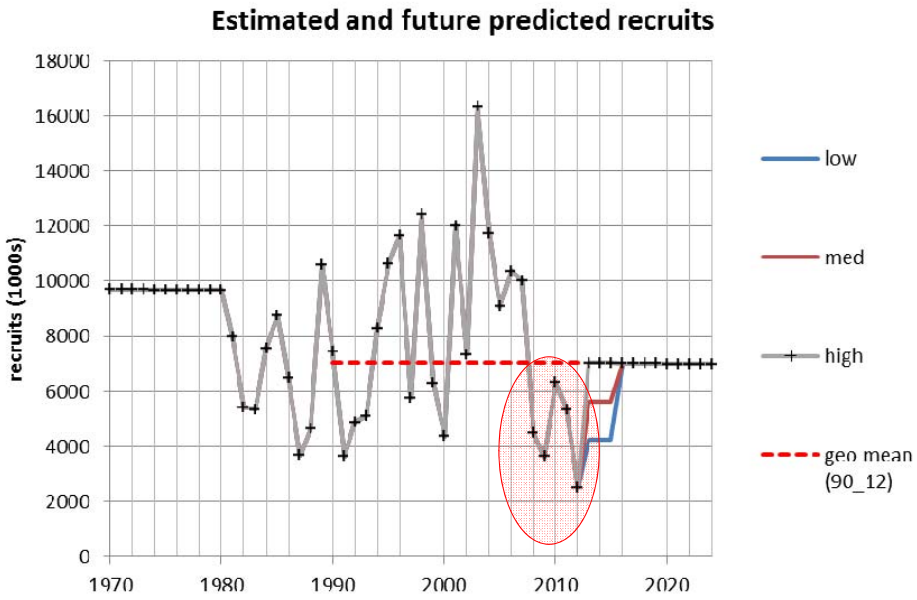
SEDAR 38 King Mack stock assessment- Atlantic stock

- terminal date- 2012, FMPs initiated for 2016-17
- incoherent stock-recruitment relationship (SSB ≠ recruits)
  - alt: environmental factors drive successful recruitment
- stochastic recruitment variability
  - problems with SEAMAMP survey
    - NEFSC: “mackerel swim out of trawls”
    - no survey south of Cape Canaveral, PB Co. spawning
- NMFS-SEFC: no SAFE reports, or “interim” stock status advice for Councils’



Key issue for ABC advice (SEDAR 38 Atl. stock)

- Last 5 years of recruitment estimated to be low → requires decision for future recruitment level

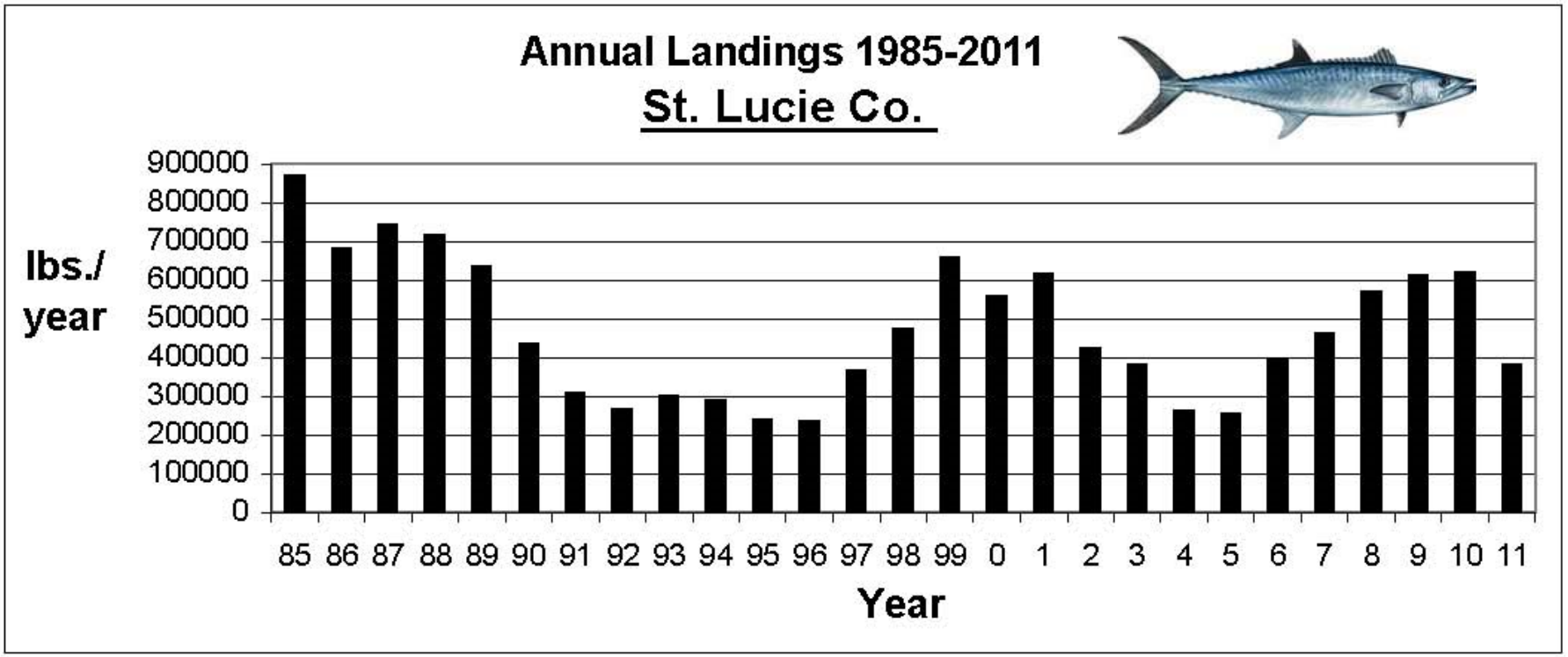


three hypotheses regarding recruitment in the next 3 years, afterwards recruitment assumed to revert long-term average

High3	0	Long term avg 1990-2012
Med3	-0.27	50% of avg deviation 2008-2012
Low3	-0.55	Avg deviation 2008-2012

Future recruitment assumed to be geometric mean of 1990-2012 (~7 million recruits) under the assumption that recruitment is likely to be similar to recent levels during the time period of the SEAMAP survey in Atlantic

Historically cyclic KM fishery/ population availability along east coast Florida



Use of interim advice or stock trigger (i.e. “rumble strip”) approach for mgmt. guidance between stock assessments

Mid-Atlantic Fishery Management Council- has used age or length-frequency analysis to gauge stock structure in between stock assessments

South Atlantic Fisheries Management Council- has recognized that NMFS stock assessments can be too infrequent, and has consulted it’s SSC to provide interim advice on King Mackerel ABC projections

Length-frequency analyses from fishery-dependent sources

1. NMFS- Trip Interview Program

strengths: randomly stratified sampling of landings FL to GA

weaknesses: NMFS confidentiality rules limit data access (NC)

2. Independent assessment of fishery landing data- E. FL

strengths: significant data on Atl. stock in "winter mixing zone"

weaknesses: weight and inferred length and ~age frequency of aggregate trip landings from wholesale buyer

Atlantic stock KM Length-age relationship from SEDAR 38

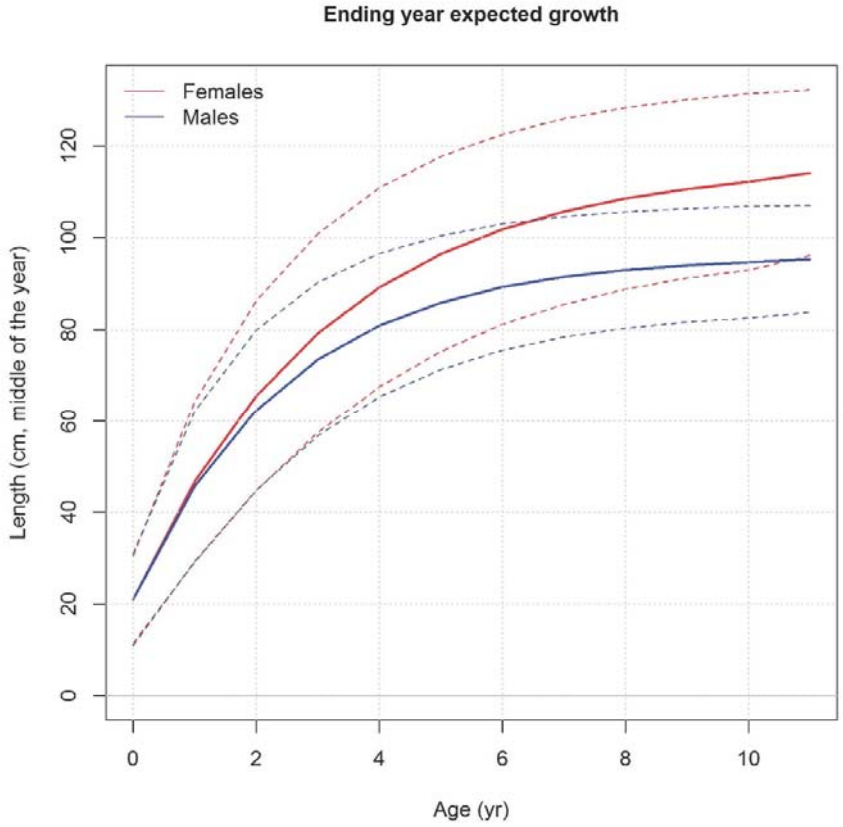
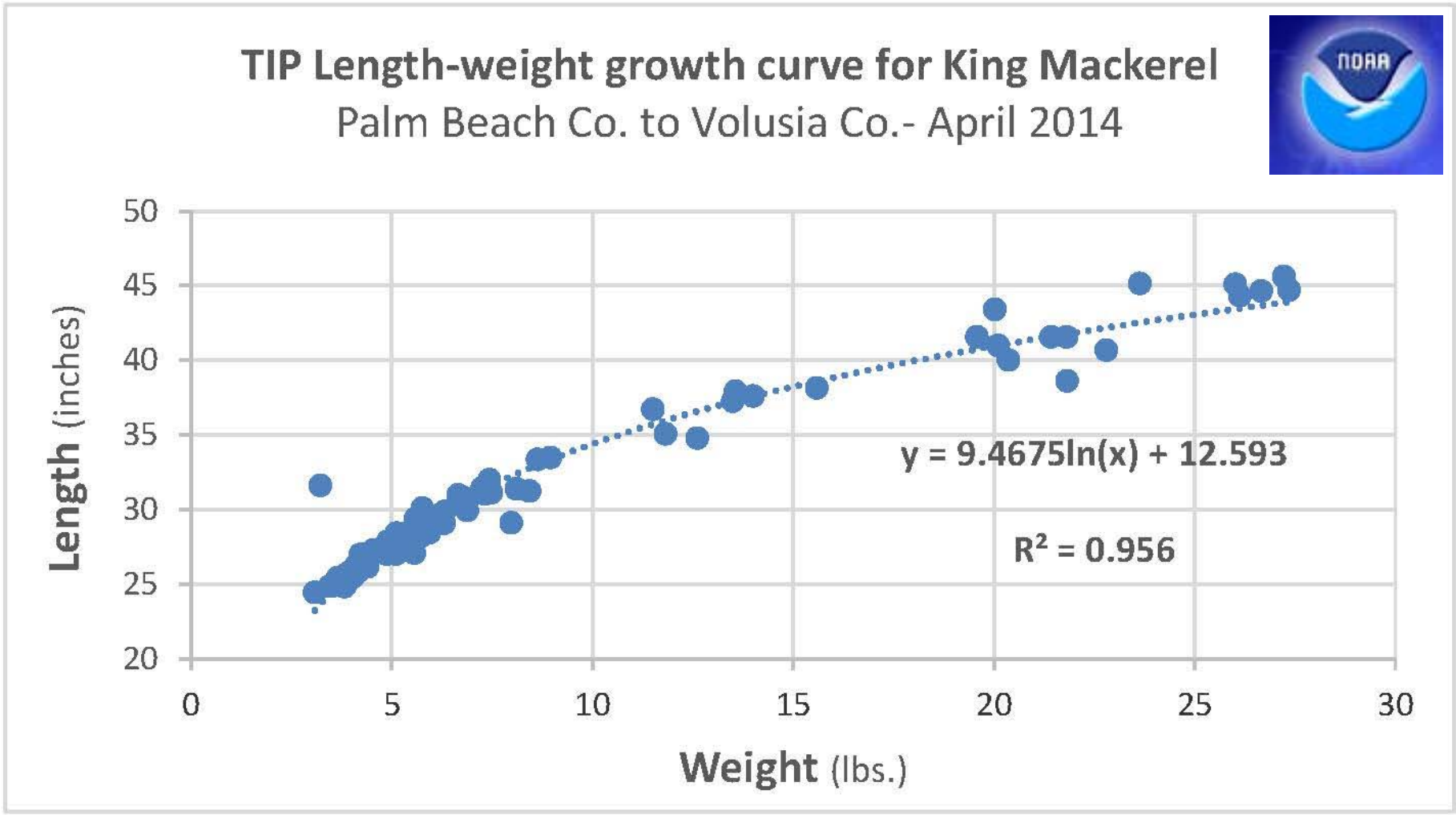
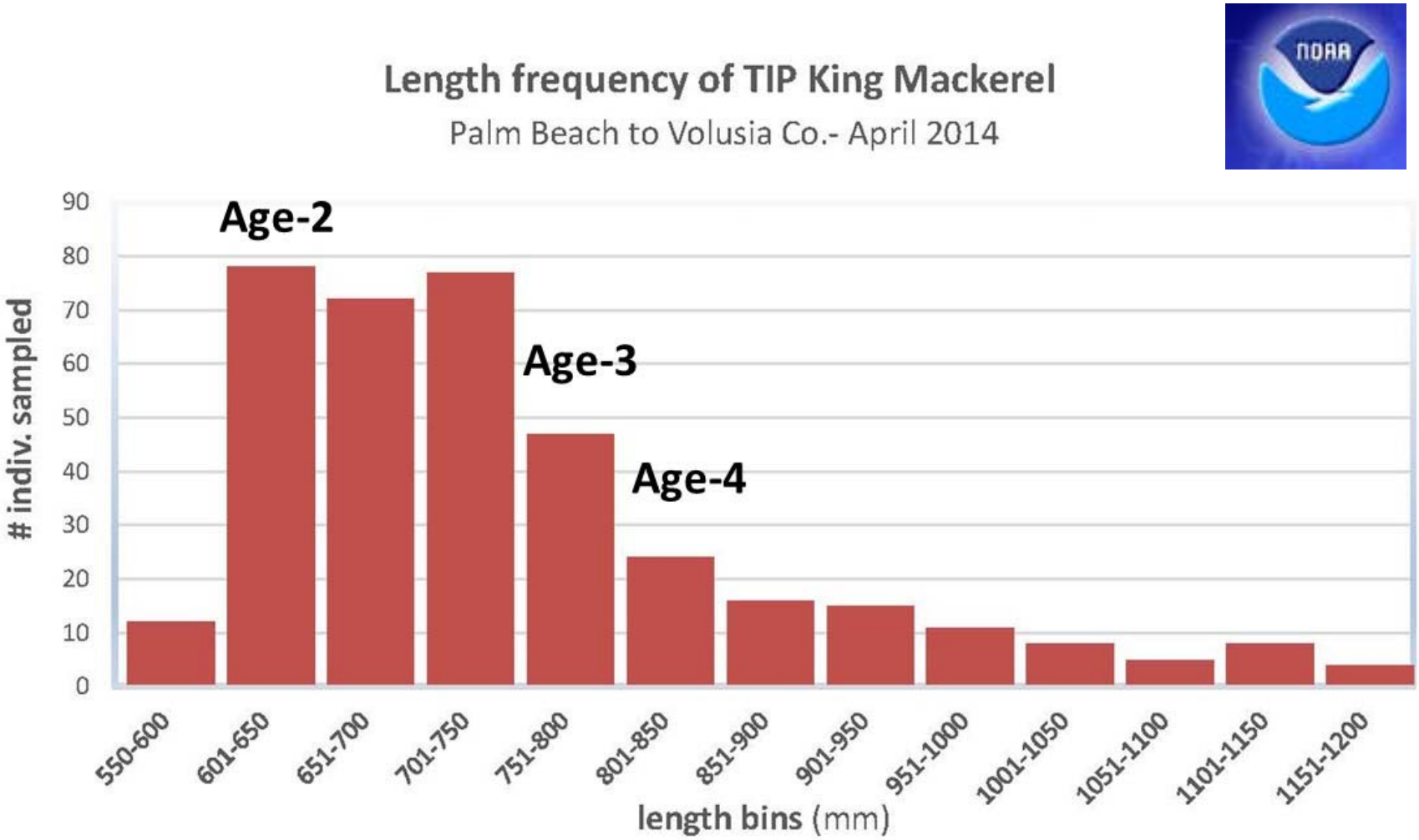
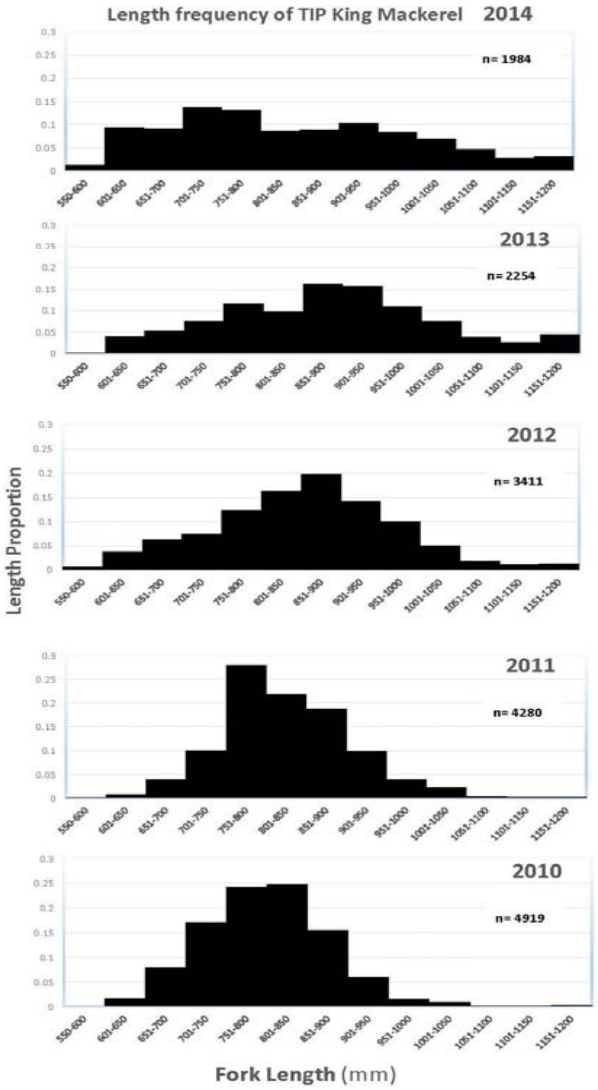


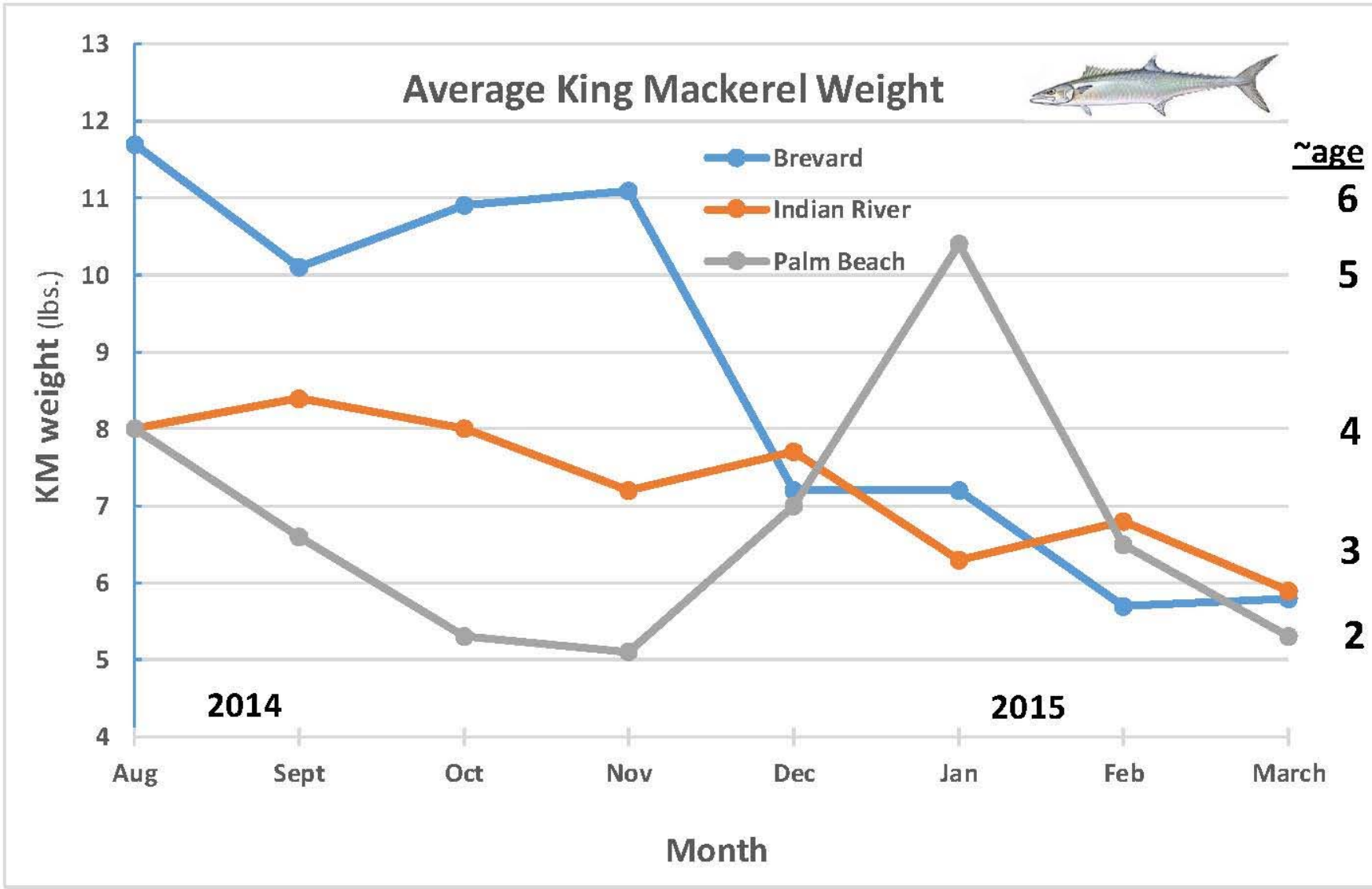
Figure 4.16.3. Growth relationship and 95% intervals for males (blue line) and females (red line) estimated in model.

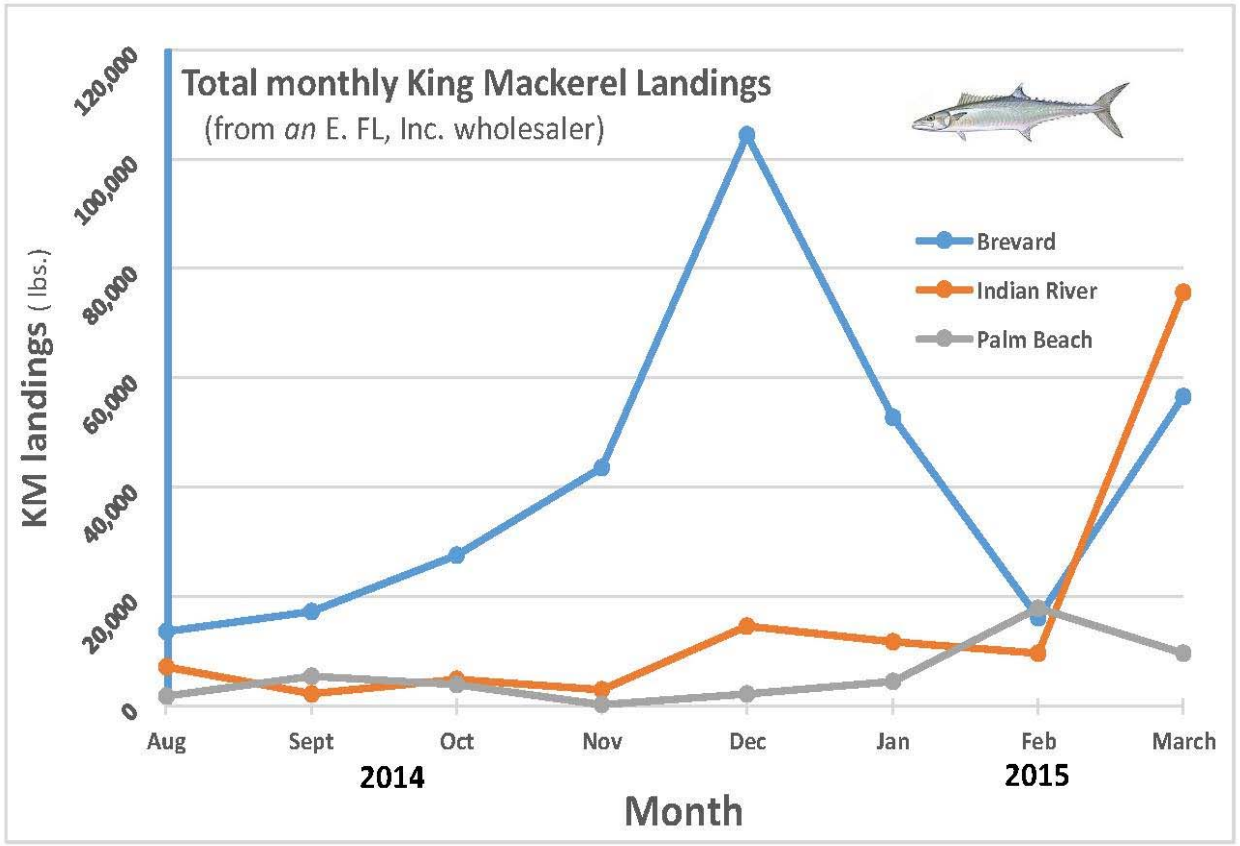

TIP Length-weight growth curve for King Mackerel
Palm Beach Co. to Volusia Co.- April 2014
Length (inches)
50
45
40
35
30
25
20
0
5
10
15
20
25
30
Weight (lbs.)
y = 9.4675ln(x) + 12.593
R² = 0.956


Length frequency of TIP King Mackerel
Palm Beach to Volusia Co.- April 2014
indiv. sampled
90
80
70
60
50
40
30
20
10
0
Age-2
Age-3
Age-4
550-600
601-650
651-700
701-750
751-800
801-850
851-900
901-950
951-1000
1001-1050
1051-1100
1101-1150
1151-1200
length bins (mm)



NMFS- TIP Annual KM Length-frequency analyses (2010-2014)


Average King Mackerel Weight
Brevard
Indian River
Palm Beach
~age
6
5
4
3
2
KM weight (lbs.)
13
12
11
10
9
8
7
6
5
4
2014
2015
Aug
Sept
Oct
Nov
Dec
Jan
Feb
March
Month



Indiv wholesale Data		KM wt.	(# KM)			
Month	County	mean	n	~ age*	trips	total wt
August	Brevard	11.7	1168	6	148	13,703
	IR	8	900	4	58	7167
	PBC	8	243	4	56	1945
Sept	Brevard	10.1	1727	5	118	17438
	IR	8.4	279	4	28	2330
	PBC	6.6	1027	3	73	5584
Oct	Brevard	10.9	2520	5	145	27706
	IR	8	609	4	38	4882
	PBC	5.3	765	2	52	4087
Nov	Brevard	11.1	3925	6	144	43612
	IR	7.2	437	3	23	3143
	PBC	5.1	62	2	9	315
Dec	Brevard	7.2	14368	3	429	104480
	IR	7.7	1928	3	55	14770
	PBC	7	319	3	28	2240
Jan	Brevard	7.2	7343	3	207	52750
	IR	6.3	1871	3	42	11825
	PBC	10.4	445	5	44	4661
Feb	Brevard	5.7	2838	2	89	16166
	IR	6.8	1451	3	49	9809
	PBC	6.5	2784	3	104	17998
March	Brevard	5.8	9696	2	198	56543
	IR	5.9	12749	2	218	75771
	PBC	5.3	1837	2	84	9704

* using SEDAR 38/ E. FL NMFS-TIP growth curves

Recommendations:

1) Utilize time series of annual length-frequency analyses to provide "interim guidance" on stock status, and stock "recruitment" trends

2) Encourage NMFS-SEFC to provide Councils annual SAFE reports on stock status, including length/age-frequency curves using TIP data

3) Utilize length-frequency analyses, provided here, to support CMP Amendment 26 "high recruitment" scenario for setting Atlantic King mackerel ACLs