

# GOA skates



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Plan Team November 2014

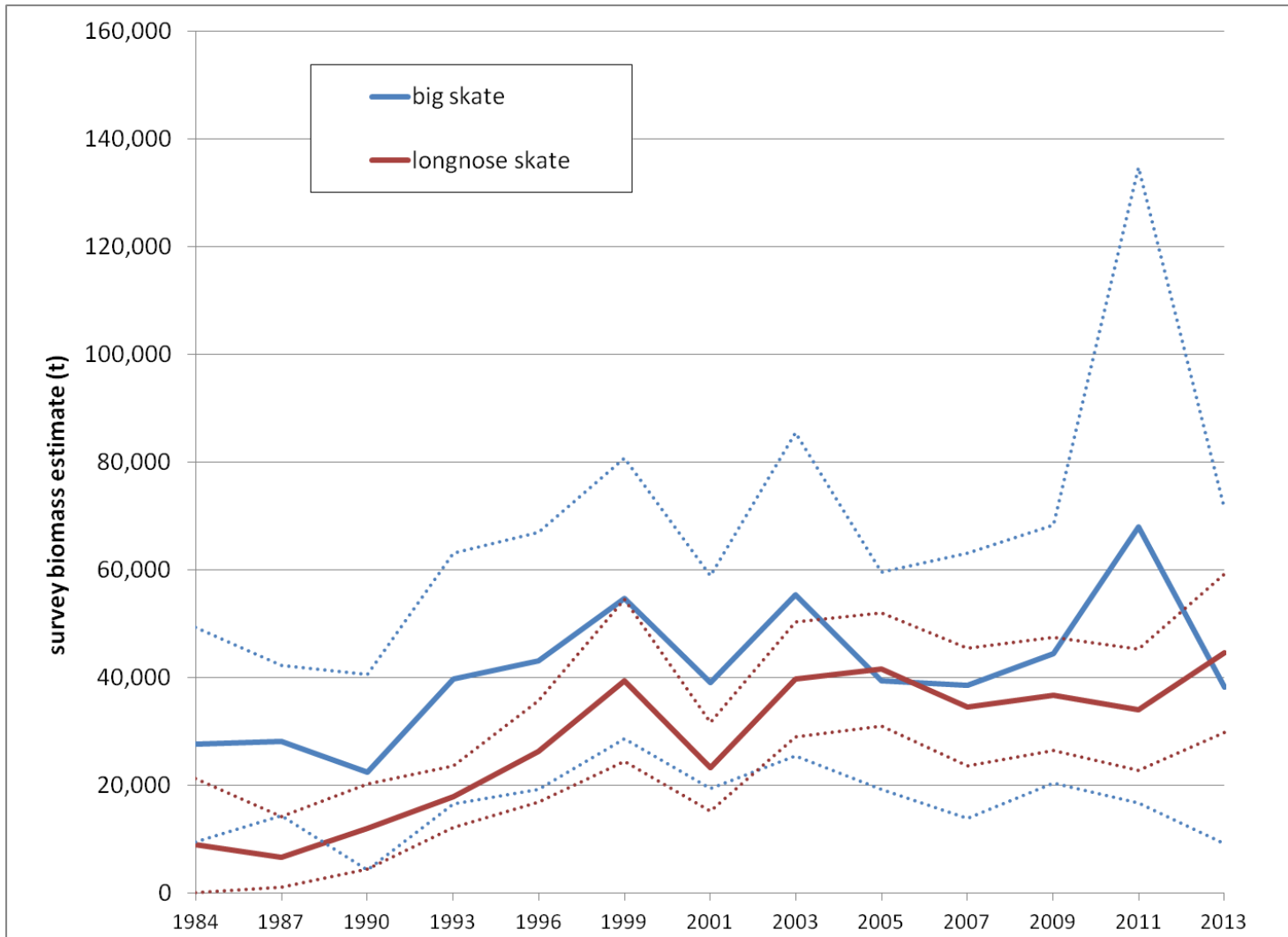
# overview

- **CIE review: overly conservative?**
- **survey biomass & size composition**
- **catch**
- **random effects model results**
- **harvest recommendations**

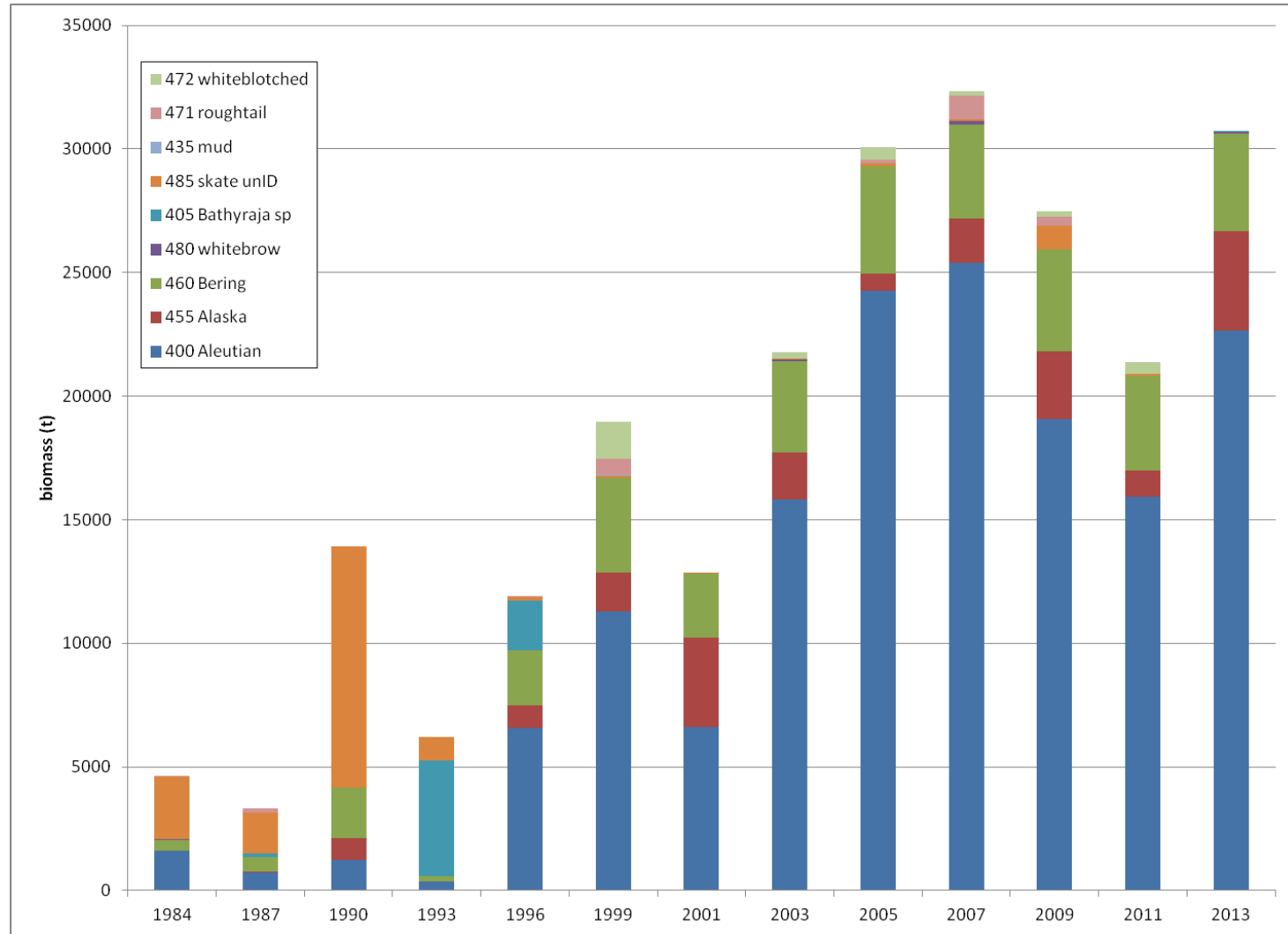
# overly conservative?

- assume catchability = 1
- conservative estimate of  $M$ 
  - *explore in 2015 full assessment*
- assume 100% discard mortality

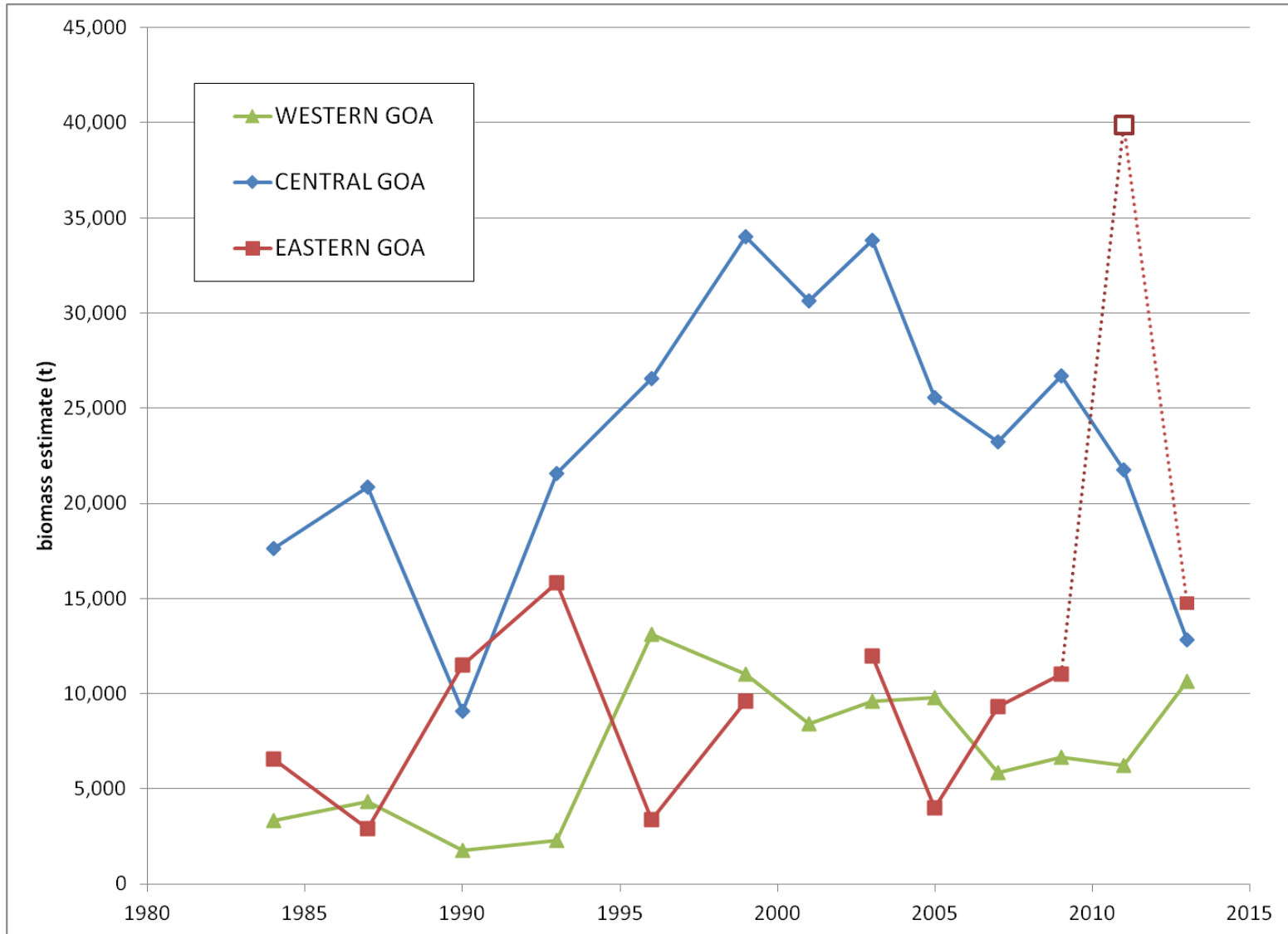
# survey biomass – big & longnose



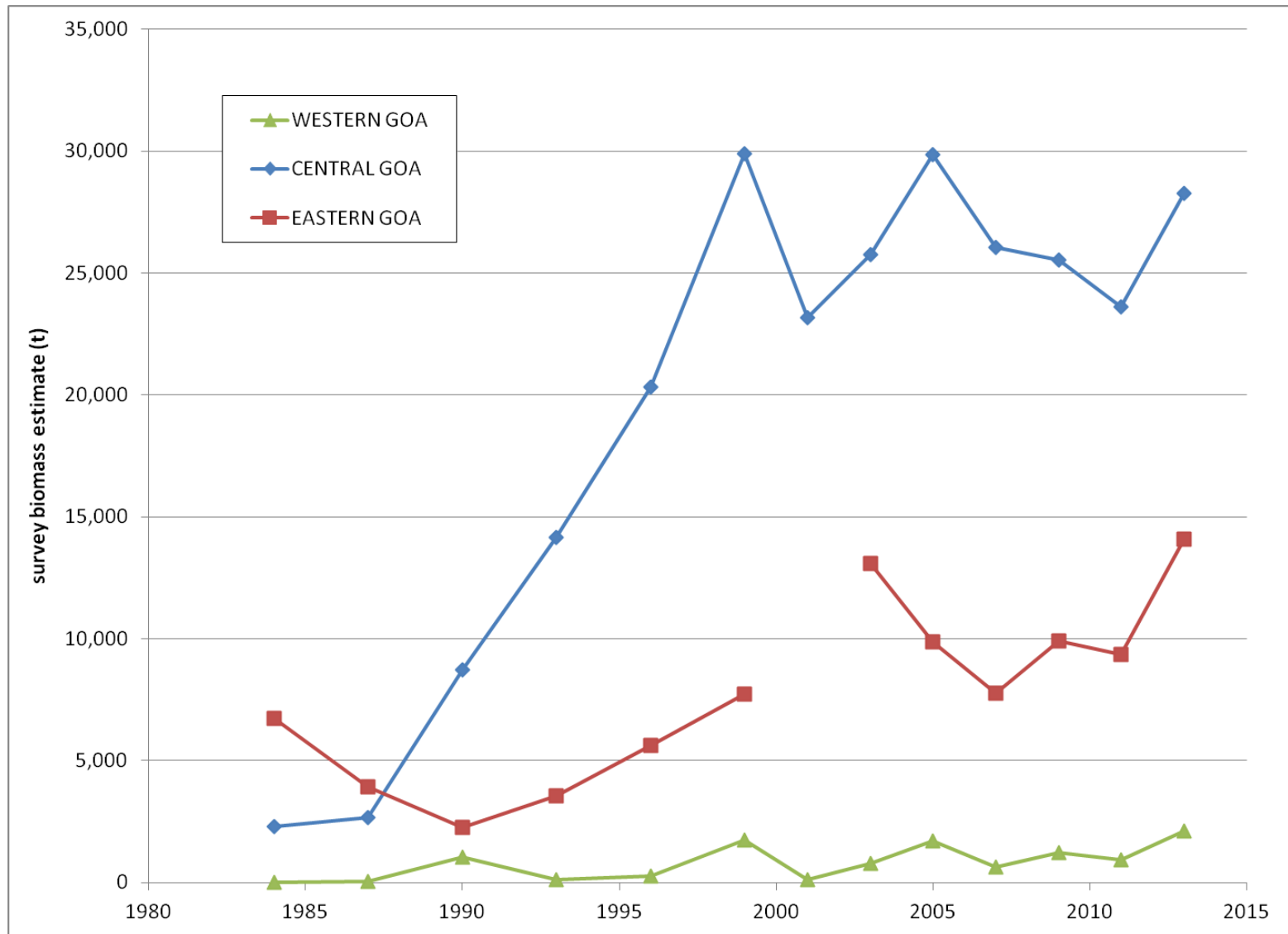
# survey biomass – other skates



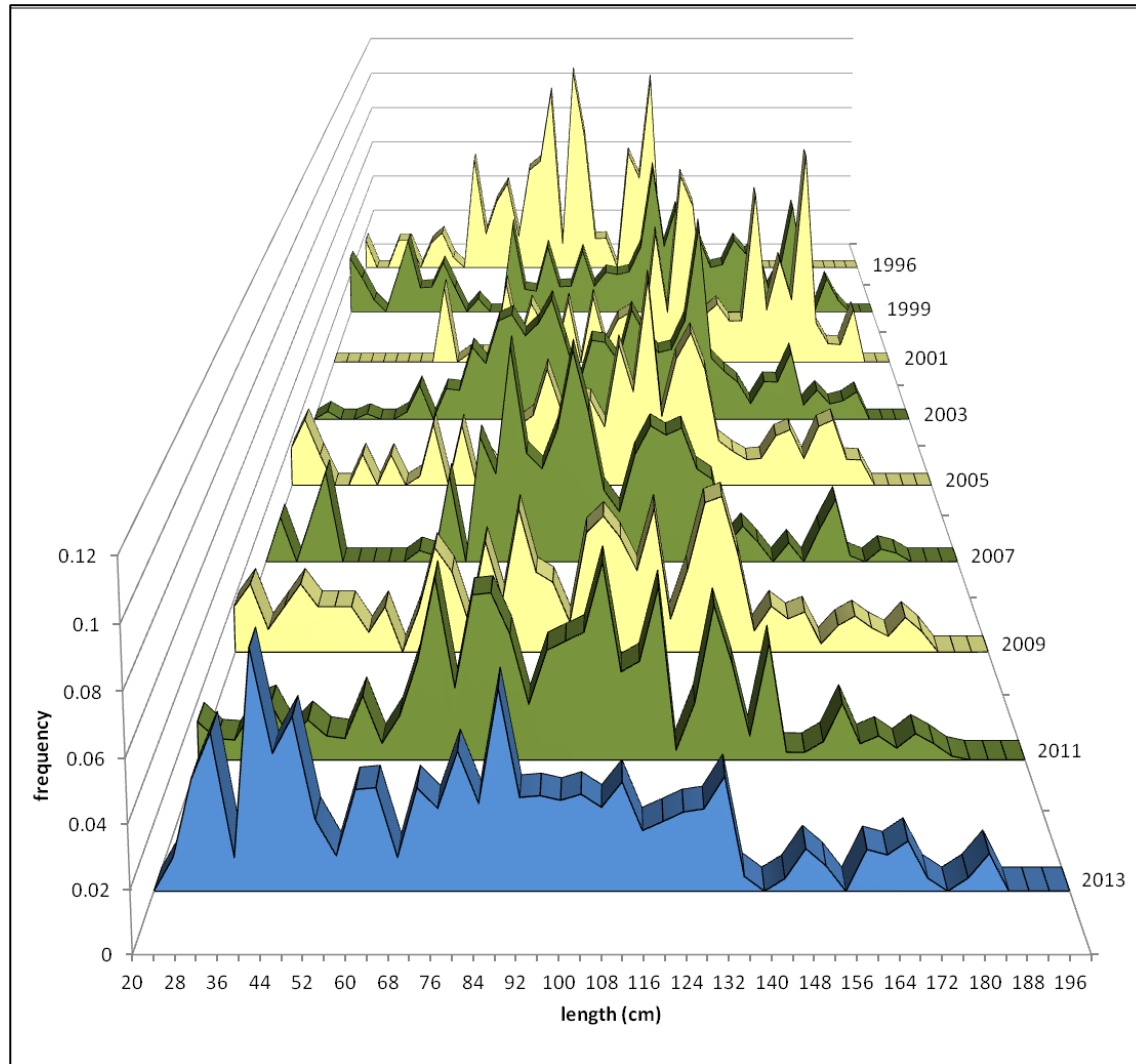
# biomass by area – big skate



# biomass by area – longnose skate



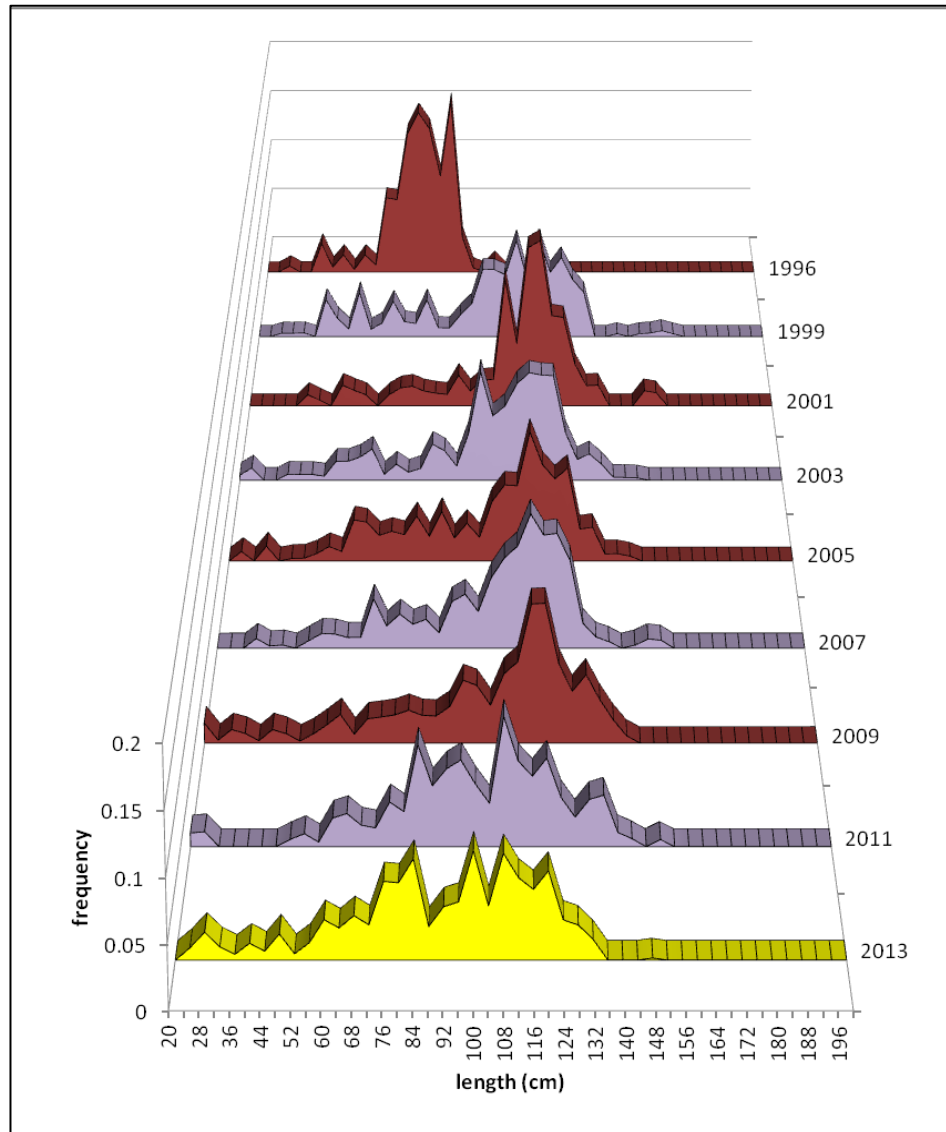
# survey size composition – big skate



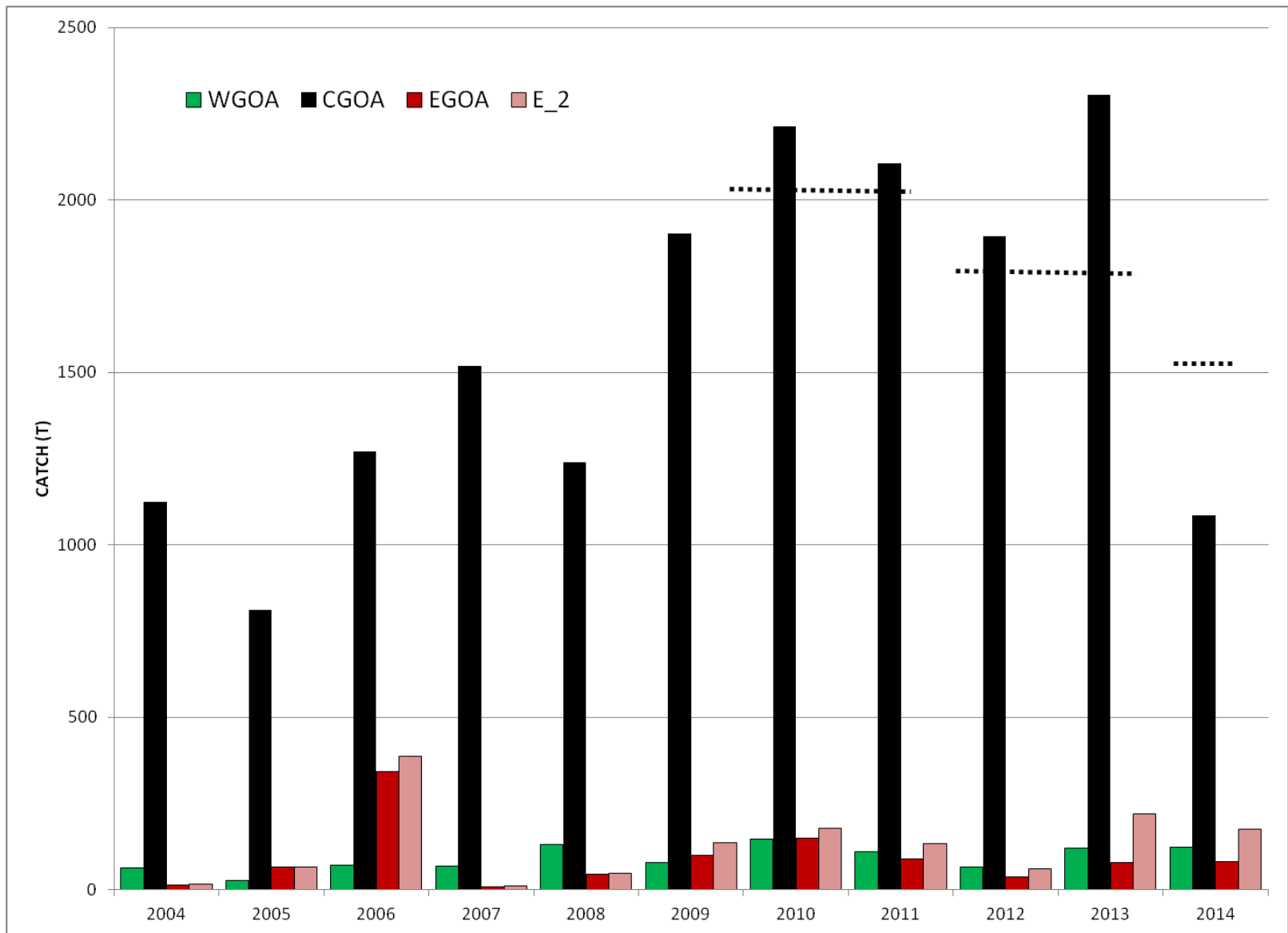




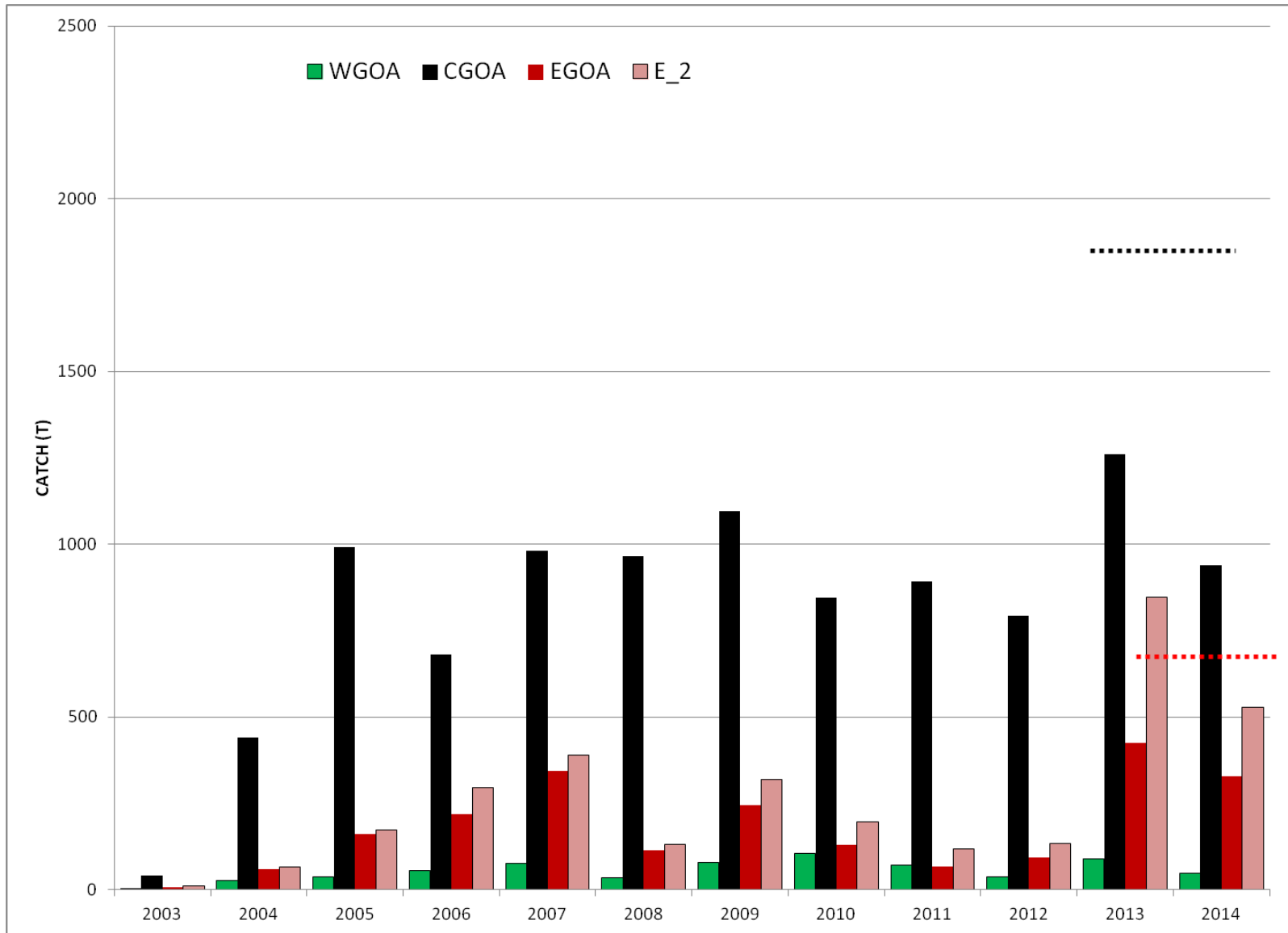
# survey size composition – longnose skate



# catch – big skate



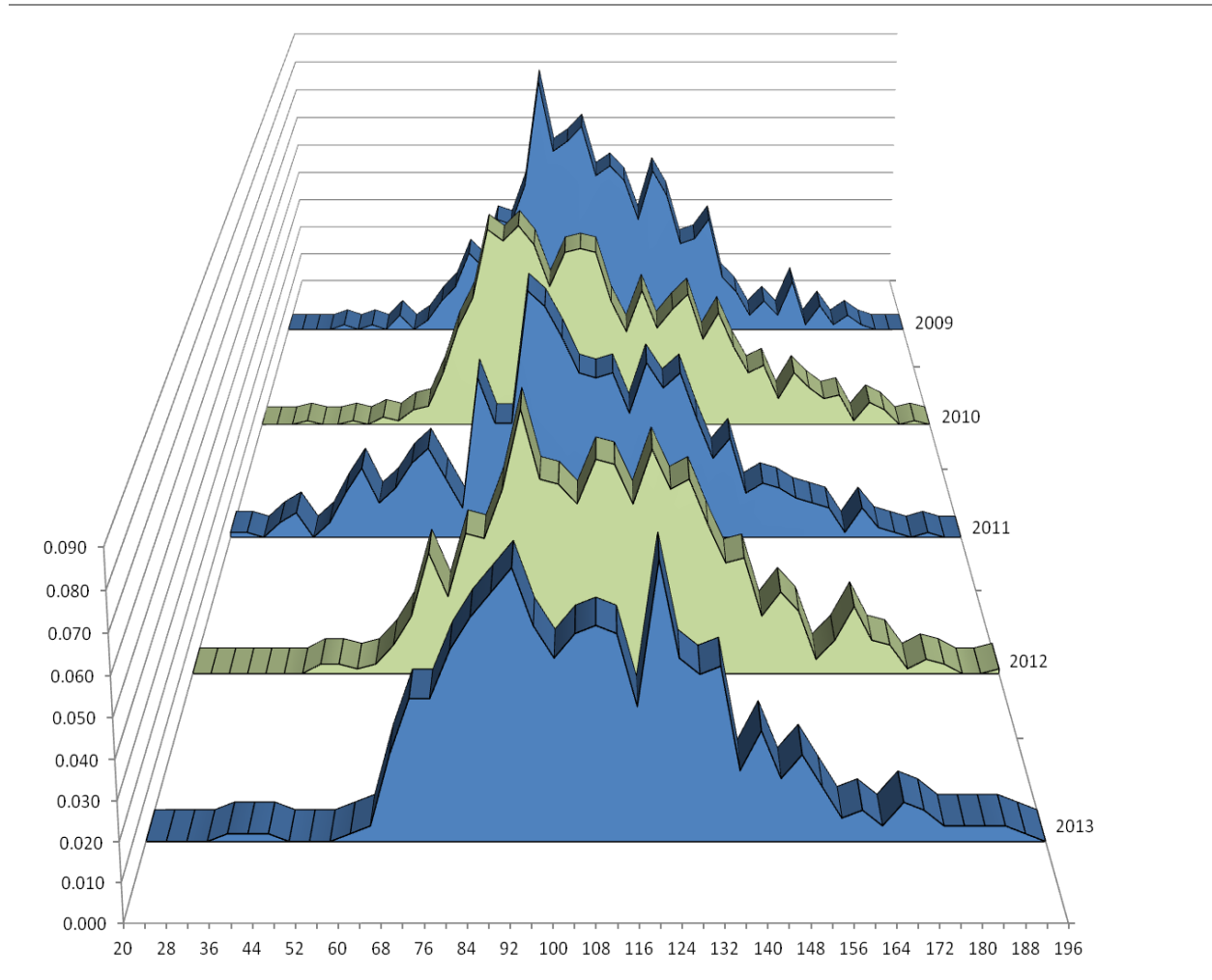
# catch – longnose skate



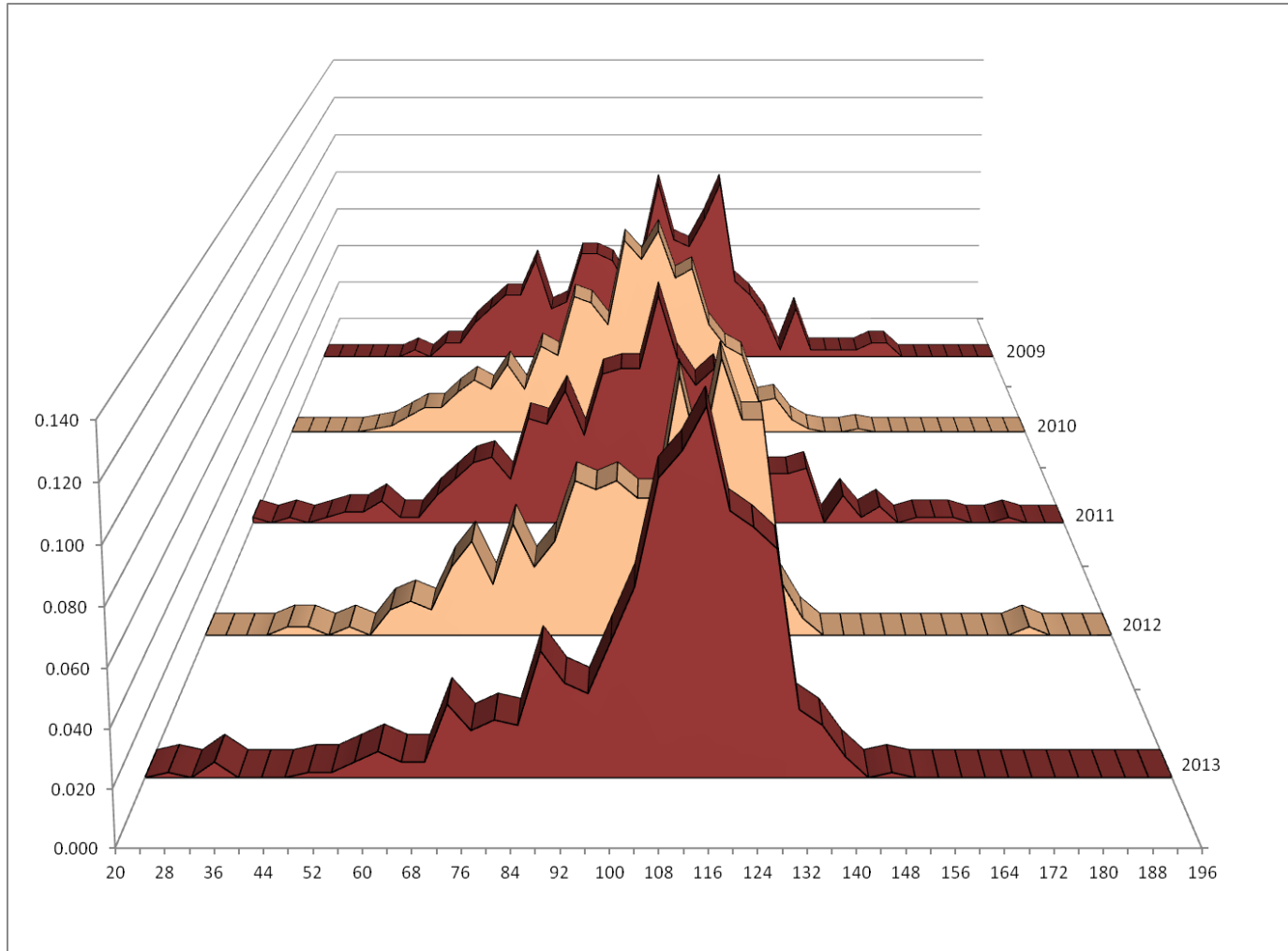
# catch 2004 - 2014

	species/ group	ABC			OFL	estimated skate catch			
		W	C	E		W	C	E	E 2
<b>2005</b>	big	727	2,463	809	5,332	26	811	65	67
	longnose	66	1,972	780	3,757	37	993	162	173
	other		1,327		1,769		711		719
<b>2006</b>	big	695	2,250	599	4,726	72	1,272	344	388
	longnose	65	1,969	861	3,860	57	682	219	296
	other		1,617		2,156		1393		1,414
<b>2007</b>	big	695	2,250	599	4,726	69	1,518	8	11
	longnose	65	1,969	861	3,860	<b>76</b>	982	343	389
	other		1,617		2,156		1,259		1,279
<b>2008</b>	big	632	2,065	633	4,439	132	1,241	45	49
	longnose	78	2,041	768	3,849	34	966	114	131
	other		2,104		2,806		1,379		1,413
<b>2009</b>	big	632	2,065	633	4,439	79	1,903	100	137
	longnose	78	2,041	768	3,849	<b>79</b>	1,096	244	319
	other		2,104		2,806		1,548		1,595
<b>2010</b>	big	598	2,049	681	4,438	148	<b>2,214</b>	149	179
	longnose	81	2,009	762	3,803	<b>105</b>	846	131	197
	other		2,093		2,791		1,491		1,526
<b>2011</b>	big	598	2,049	681	4,438	110	<b>2,105</b>	90	134
	longnose	81	2,009	762	3,803	71	892	68	118
	other		2,093		2,791		1,351		1,388
<b>2012</b>	big	469	1,793	1,505	5,023	66	<b>1,894</b>	38	62
	longnose	70	1,879	676	3,500	39	793	93	134
	other		2,030		2,706		1,200		1,237
<b>2013</b>	big	469	1,793	1,505	5,023	121	<b>2,304</b>	79	221
	longnose	70	1,879	676	3,500	<b>90</b>	1,260	426	<b>846</b>
	other		2,030		2,706		1,879		<b>2,075</b>
<b>2014*</b>	big	589	1,532	1,641	5,016	124	1,086	81	176
	longnose	107	1,935	834	3,835	47	939	328	530
	other		1,989		2,652		1,467		1,672

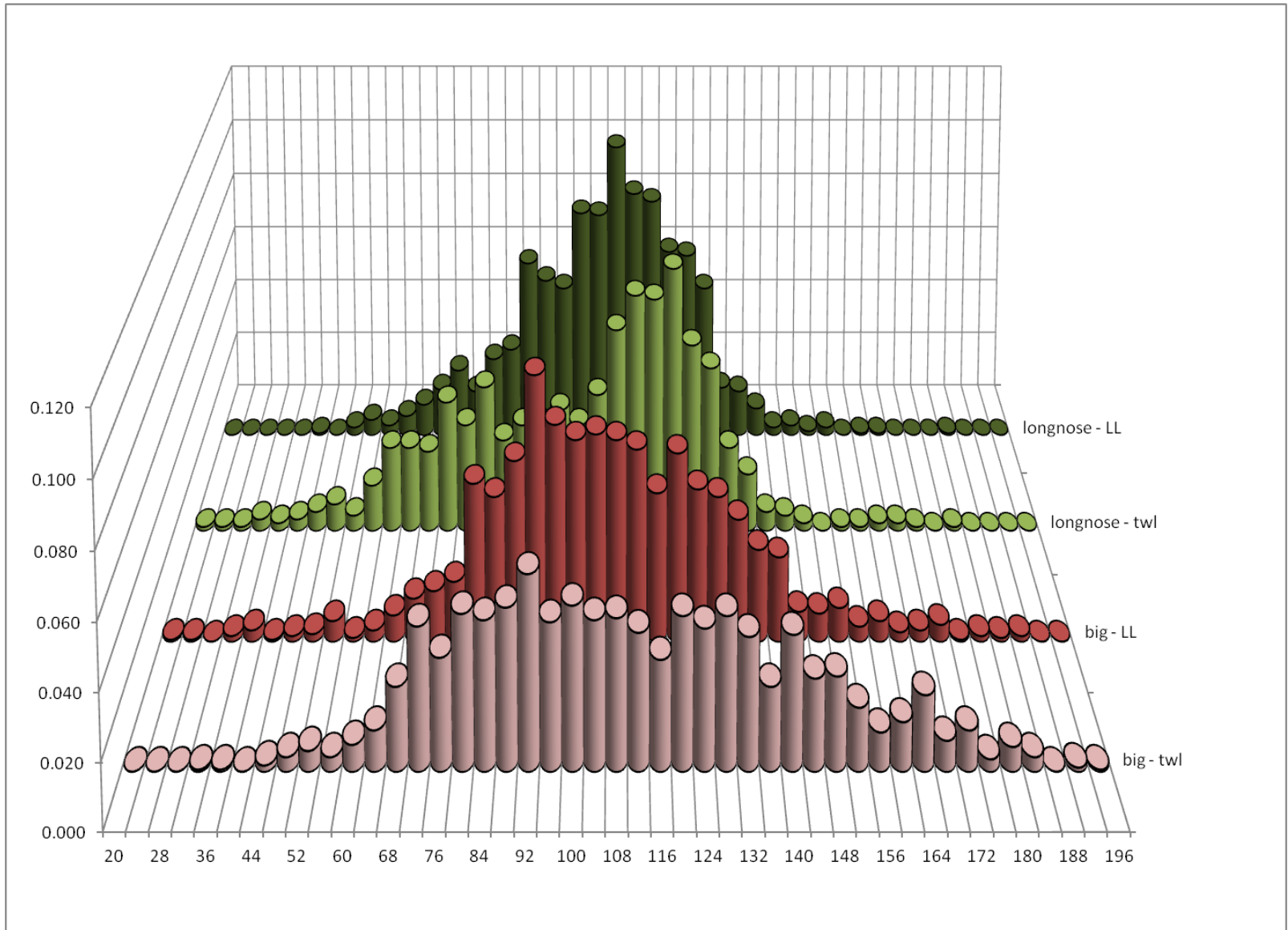
# fishery size comp – big skate



# fishery size comp – longnose skate



# size comp by gear





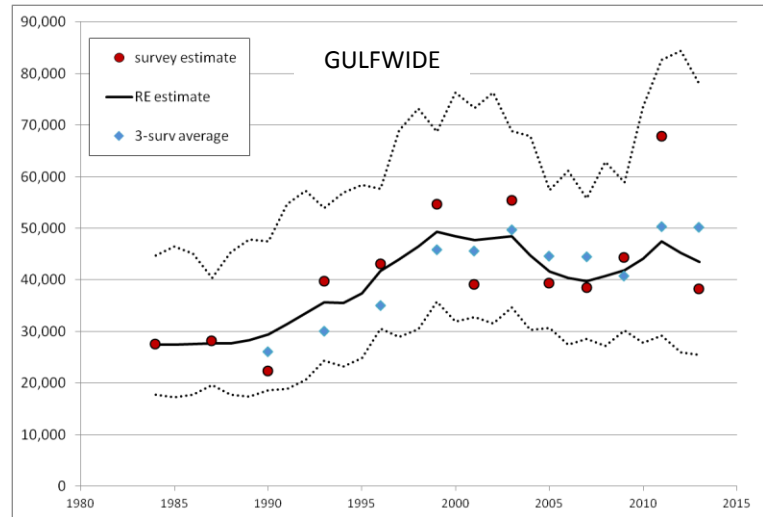
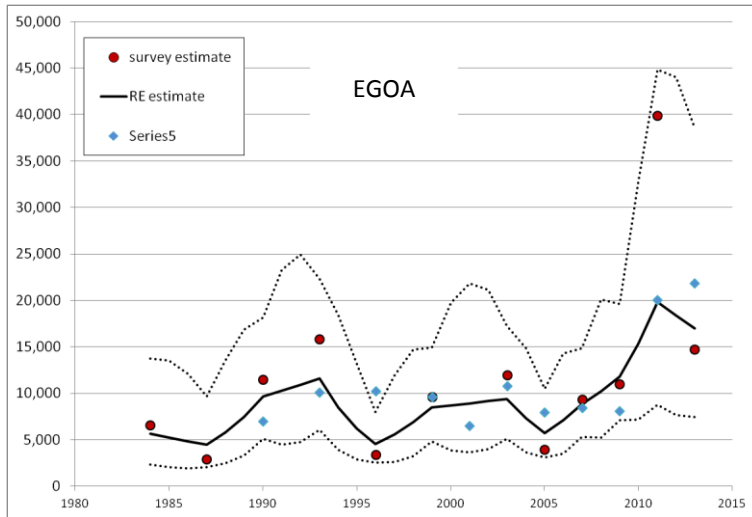
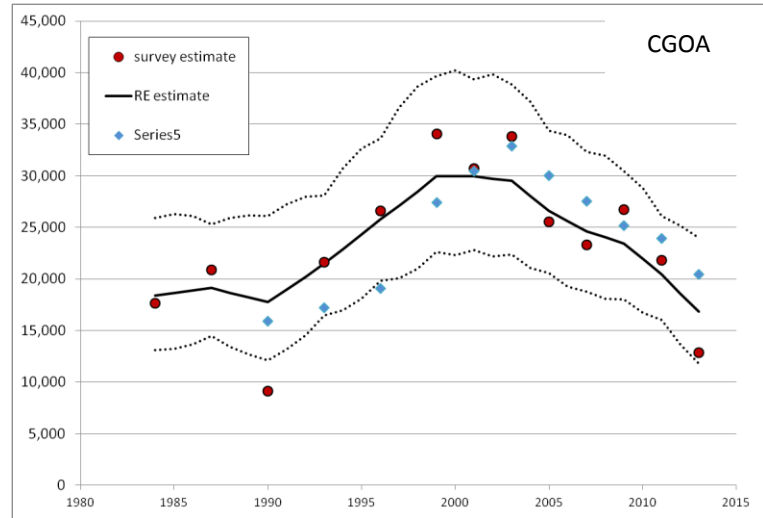
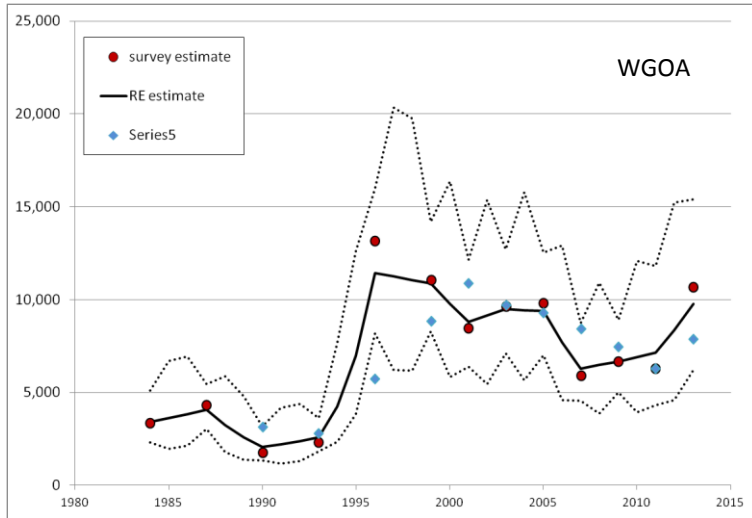
# skate retention rates

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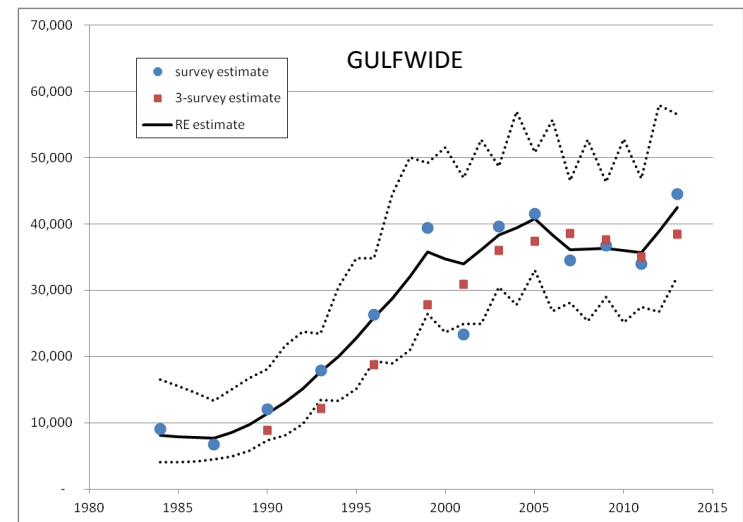
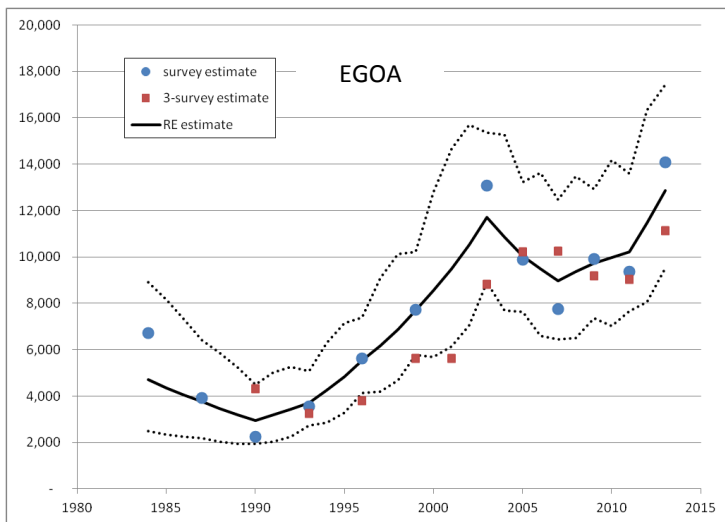
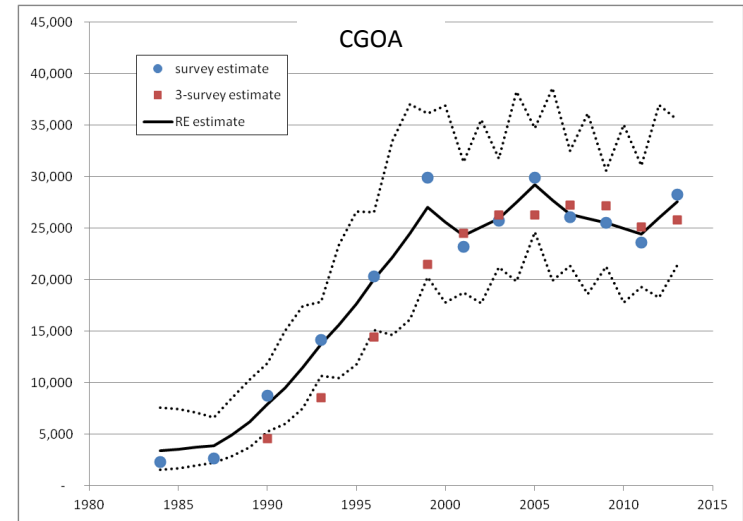
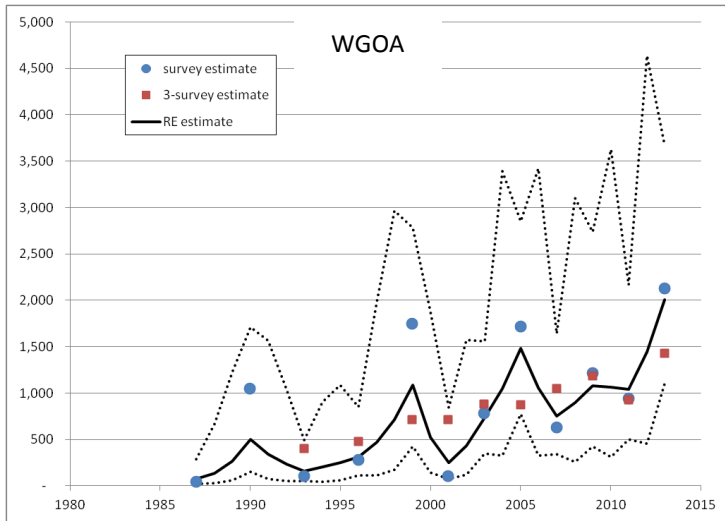
	<b>other skates</b>	<b>big skate</b>	<b>longnose skate</b>
2007	27%	46%	28%
2008	17%	70%	64%
2009	18%	76%	51%
2010	15%	72%	64%
2011	19%	81%	65%
2012	13%	93%	74%
2013	1%	63%	36%
2014*	6%	32%	49%

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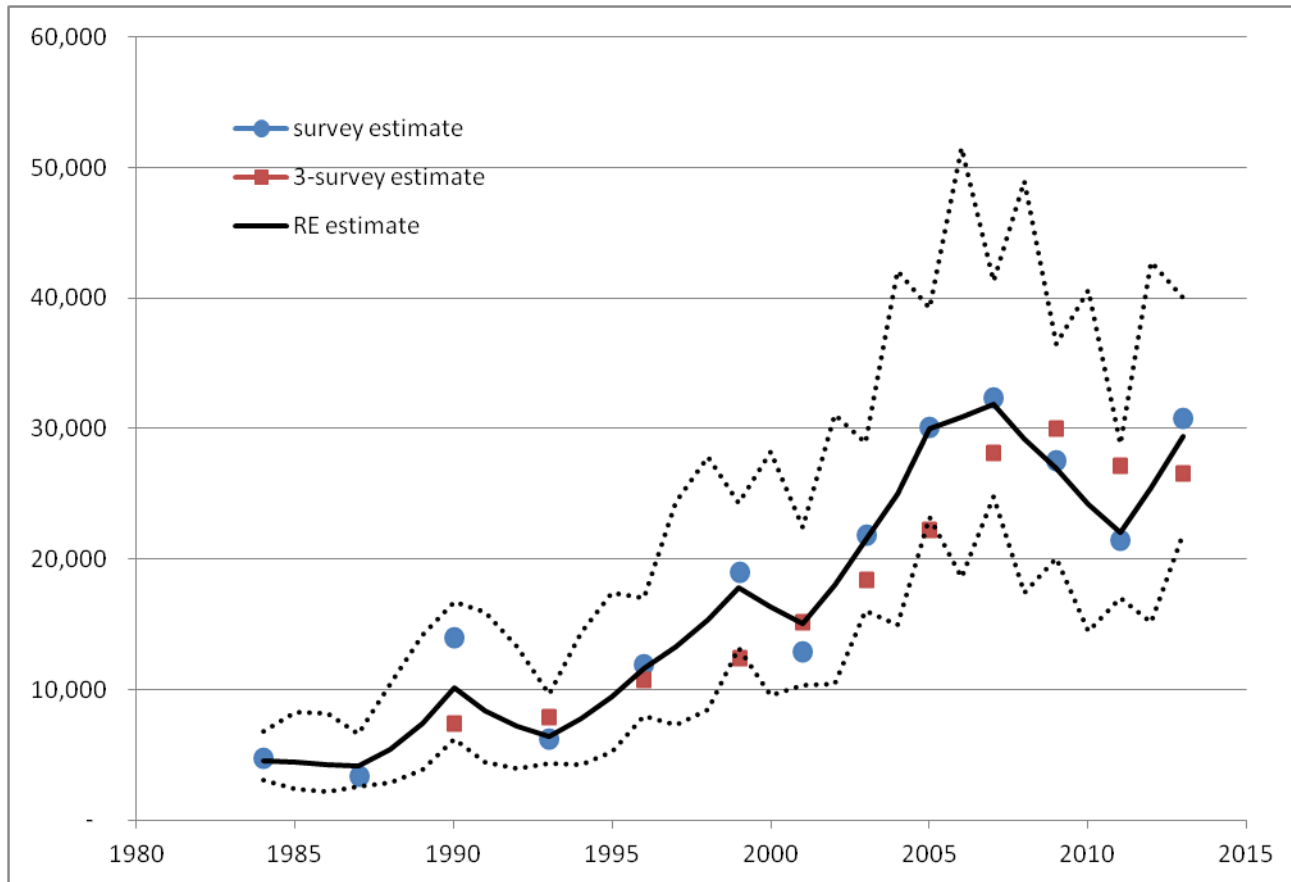
# big skate RE results



# longnose skate RE results



# other skate RE results



# big skate harvest recs

big skate ( <i>Beringraja binoculata</i> )					
Quantity		As estimated or <i>specified</i> <i>last year for</i>		As estimated or <i>recommended this year for:</i>	
		2014	2015	2015	2016
<i>M</i> (natural mortality)		0.1	0.1	<b>0.1</b>	0.1
Specified/recommended Tier		5	5	<b>5</b>	5
Biomass (t) 2015/2016 <i>recommendations are made using the random effects model; 2014/2015 recommendations used the 3-survey average</i>	W	7,857	7,857	<b>9,775</b>	9,775
	C	20,421	20,421	<b>16,810</b>	16,810
	E	21,877	21,877	<b>16,954</b>	16,954
	GOA-wide	50,155	50,155	<b>43,540</b>	43,540
<i>F</i> <sub>OFL</sub> ( <i>F</i> = <i>M</i> )		0.1	0.1	<b>0.1</b>	0.1
<i>maxF</i> <sub>ABC</sub>		0.075	0.075	<b>0.075</b>	0.075
<i>F</i> <sub>ABC</sub>		0.075	0.075	<b>0.075</b>	0.075
OFL (t)	GOA-wide	5,016	5,016	<b>4,354</b>	4,354
ABC (t; equal to maximum ABC)	W	589	589	<b>733</b>	733
	C	1,532	1,532	<b>1,261</b>	1,261
	E	1,641	1,641	<b>1,272</b>	1,272
<b>Status</b>		As determined <i>last year for:</i>		As determined <i>this year for:</i>	
		2012	2013	<b>2013</b>	2014
Overfishing?		<i>no</i>	<i>na</i>	<b>no</b>	na
<b>(for Tier 5 stocks, data are not available to determine whether the stock is in an overfished condition)</b>					

# longnose skate harvest recs

longnose skate ( <i>Raja rhina</i> )					
Quantity		As estimated or <i>specified last</i>		As estimated or	
		year for		<i>recommended this</i> year for:	
		2014	2015	2015	2016
$M$ (natural mortality)		0.1	0.1	<b>0.1</b>	0.1
Specified/recommended Tier		5	5	<b>5</b>	5
Biomass (t) 2015/2016 <i>recommendations are made using the random effects model; 2014/2015 recommendations used the 3-survey average</i>	W	1,427	1,427	<b>2,009</b>	2,009
	C	25,806	25,806	<b>27,575</b>	27,575
	E	11,116	11,116	<b>12,873</b>	12,873
	GOA-wide	38,349	38,349	<b>42,457</b>	42,457
$F_{OFL}$ ( $F=M$ )		0.1	0.1	0.1	0.1
$maxF_{ABC}$		0.075	0.075	0.075	0.075
$F_{ABC}$		0.075	0.075	0.075	0.075
OFL (t)	GOA-wide	3,835	3,835	<b>4,426</b>	4,426
ABC (t; equal to maximum ABC)	W	107	107	<b>151</b>	151
	C	1,935	1,935	<b>2,068</b>	2,068
	E	834	834	<b>965</b>	965
Status		As determined <i>last</i> year for:		As determined <i>this</i> year for:	
		2012	2013	<b>2013</b>	2014
Overfishing?		<i>no</i>	<i>n/a</i>	<b>no</b>	<i>n/a</i>
<b>(for Tier 5 stocks, data are not available to determine whether the stock is in an overfished condition)</b>					

# other skate harvest recs

other skates ( <i>Bathyraja</i> sp.)					
Quantity		As estimated or <i>specified last</i>		As estimated or	
		year for		<i>recommended this</i> year for:	
		2014	2015	2015	2016
$M$ (natural mortality)		0.1	0.1	<b>0.1</b>	0.1
Specified/recommended Tier		5	5	<b>5</b>	5
Biomass (t)	GOA-wide	26,518	26,518	<b>29,418</b>	29,418
$F_{OFL}$ ( $F=M$ )		0.1	0.1	<b>0.1</b>	0.1
$maxF_{ABC}$		0.075	0.075	<b>0.075</b>	0.075
$F_{ABC}$		0.075	0.075	<b>0.075</b>	0.075
OFL (t)	GOA-wide	2,652	2,652	<b>2,942</b>	2,942
ABC (t; equal to maximum ABC)	GOA-wide	1,989	1,989	<b>2,206</b>	2,206
Status		As determined <i>last</i> year for:		As determined <i>this</i> year for:	
		2012	2013	2013	2014
Overfishing?		<i>no</i>	<i>na</i>	<b>no</b>	na
<b>(for Tier 5 stocks, data are not available to determine whether the stock is in an overfished condition)</b>					

# GOA skate research

- **Gburski/Matta: collecting age & maturity in IPHC survey, comparing WC, BC, AK**
- **UAF student still working on big skate model**
- **vertebra collections on 2015 GOA survey, available for 2017 assessment**
- **opportunities for cooperative research, particularly seasonal aspects**

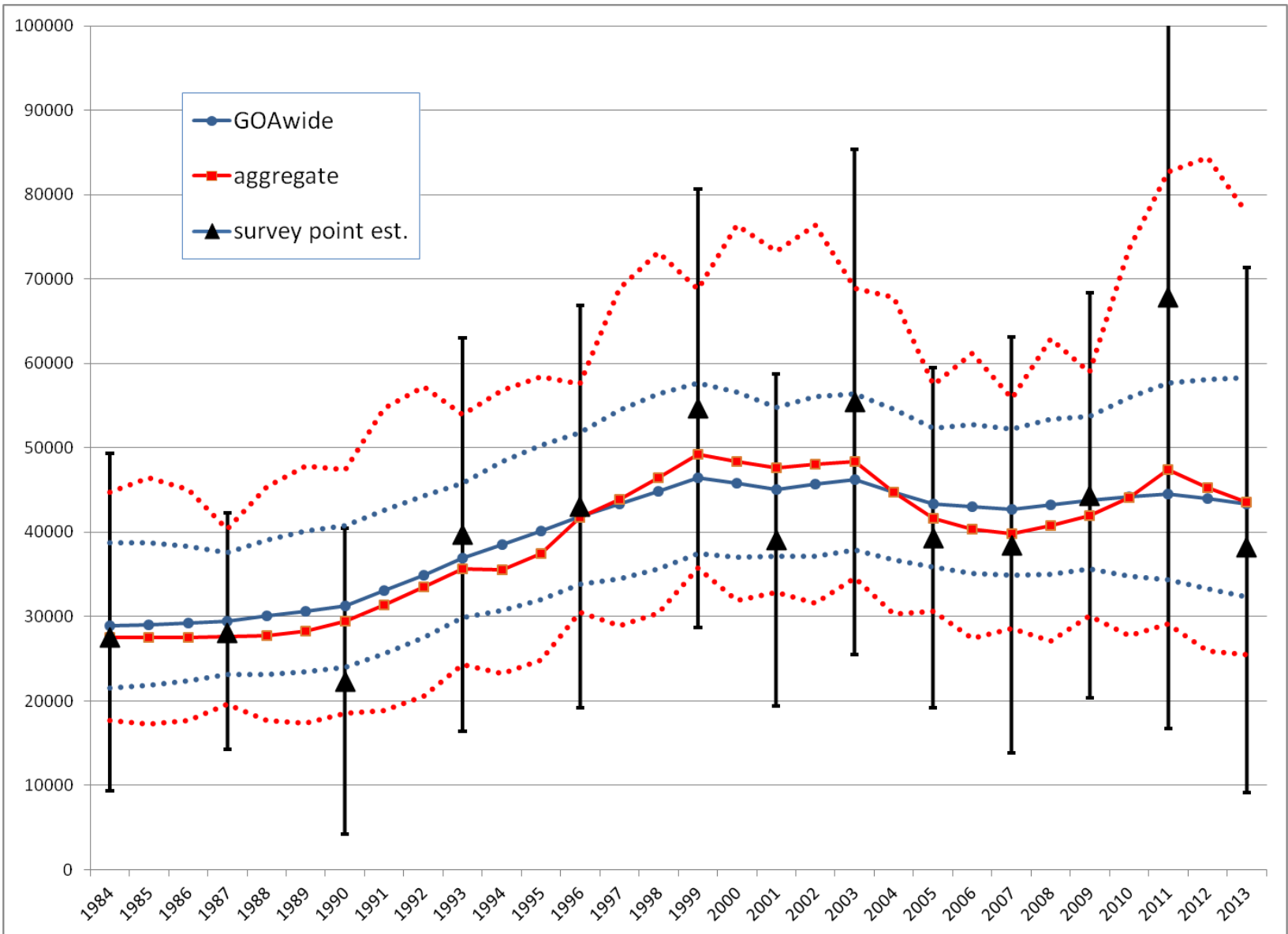


# oops...more on GOA skates

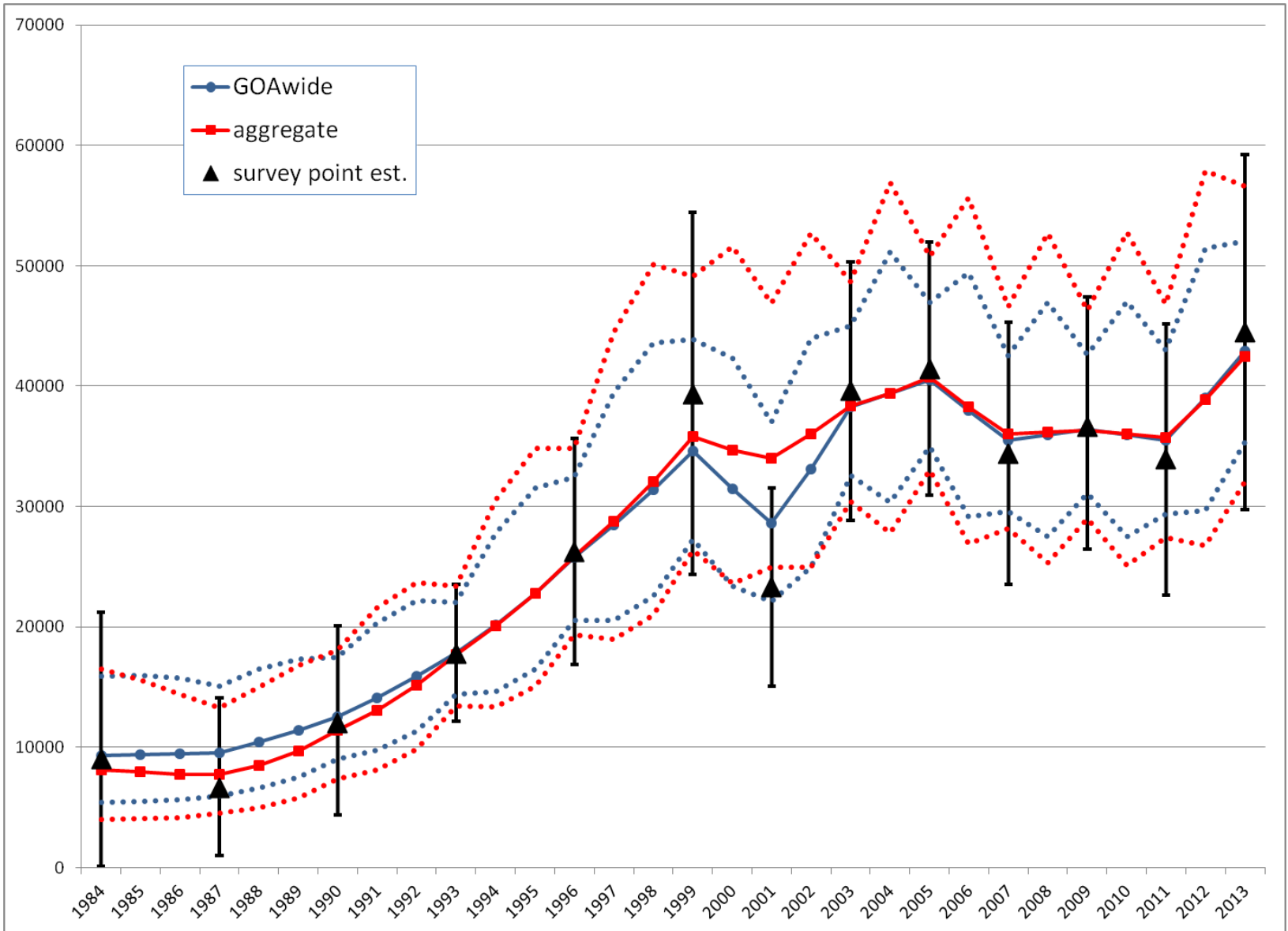


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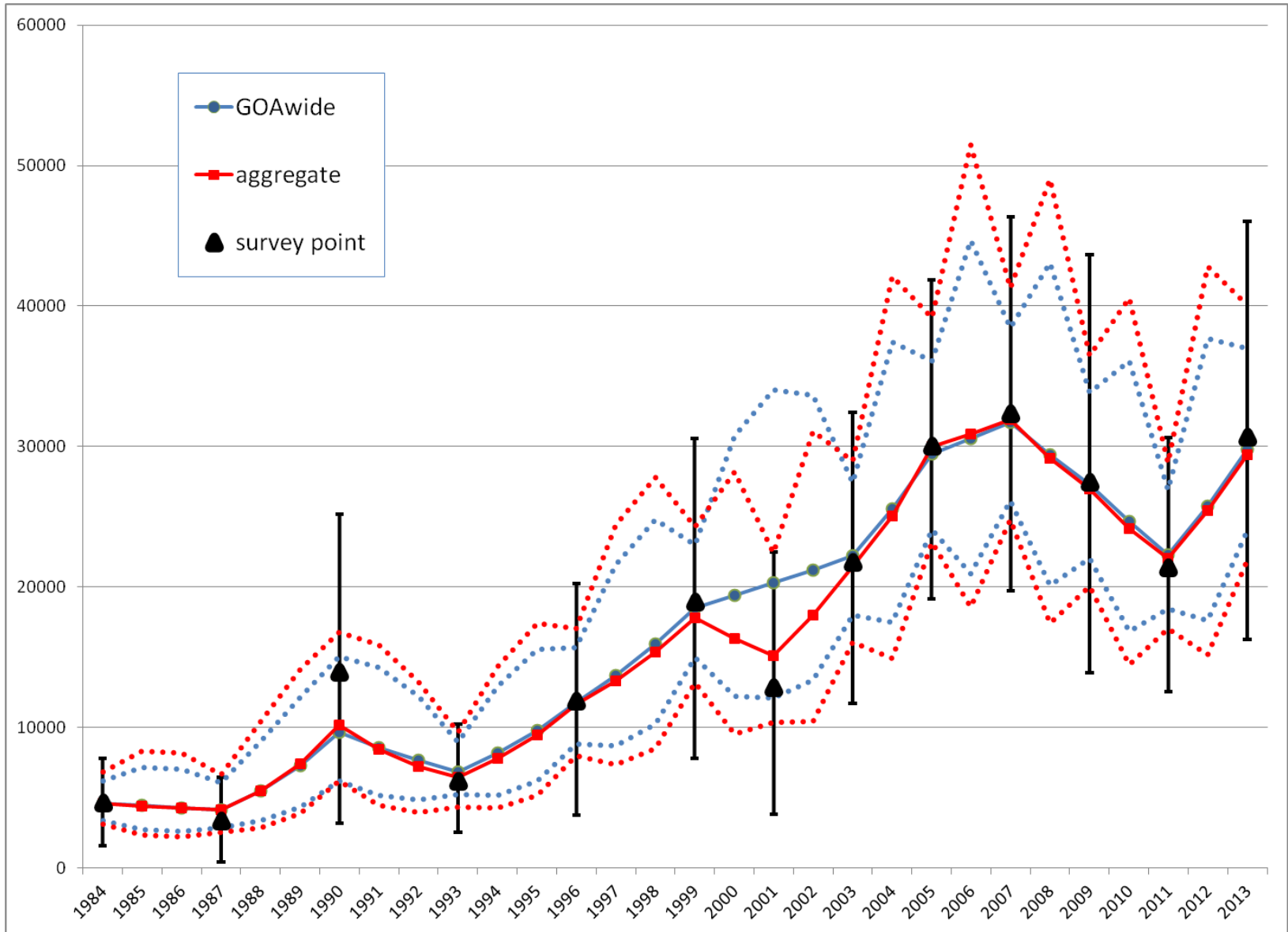
# big skate survey & RE results



# longnose skate survey & RE results



# other skate survey & RE results



# GOA-wide RE estimates comparison

	3-survey ave	aggregate	GOAwide	
big	50,155	43,540	43,398	-0.33%
longnose	38,349	42,457	42,911	1.07%
other	26,518	29,418	29,797	1.29%