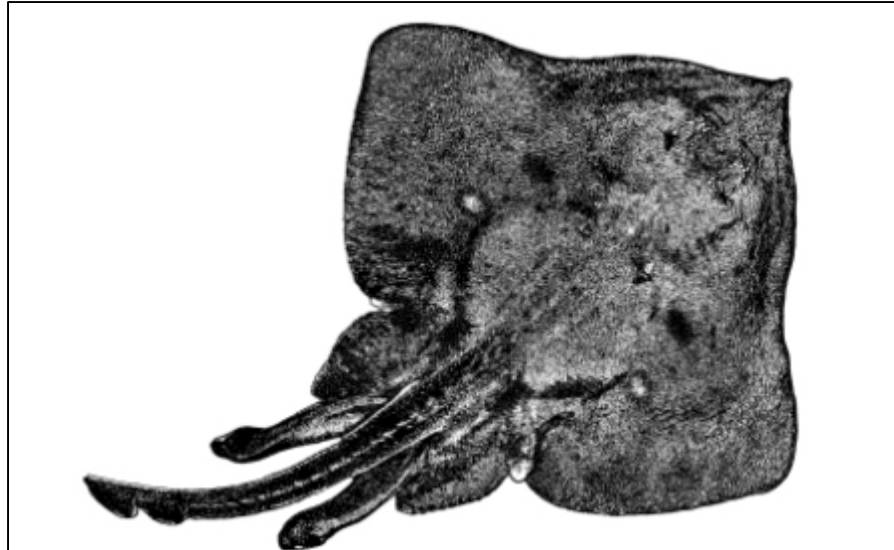


BSAI skate complex (partial assessment)

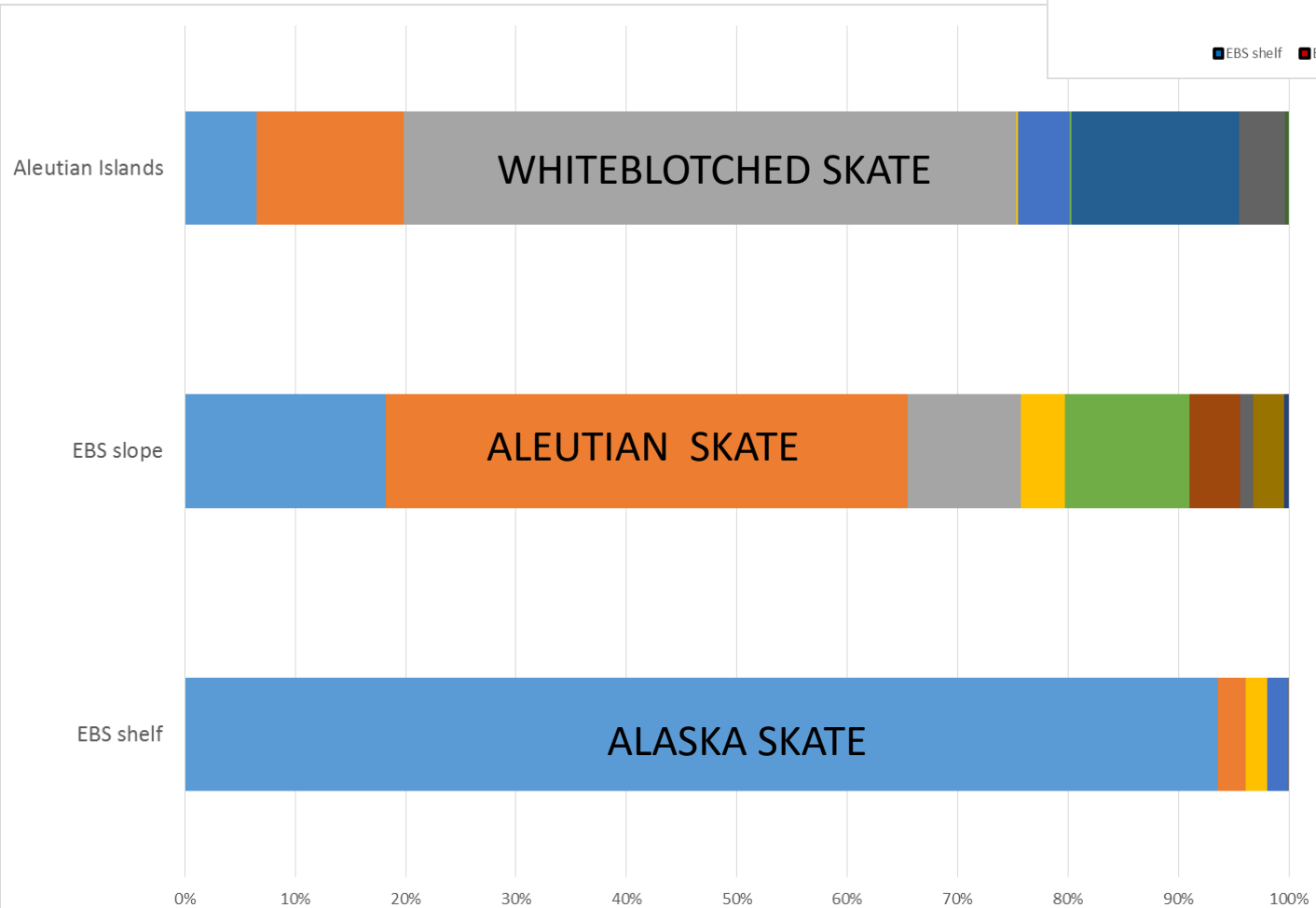
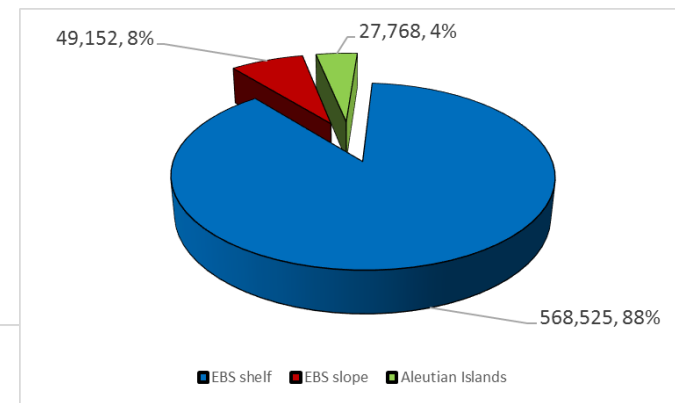


**Olav A. Ormseth
Alaska Fisheries Science Center
NPFMC Groundfish Plan Team meeting, November 2017**

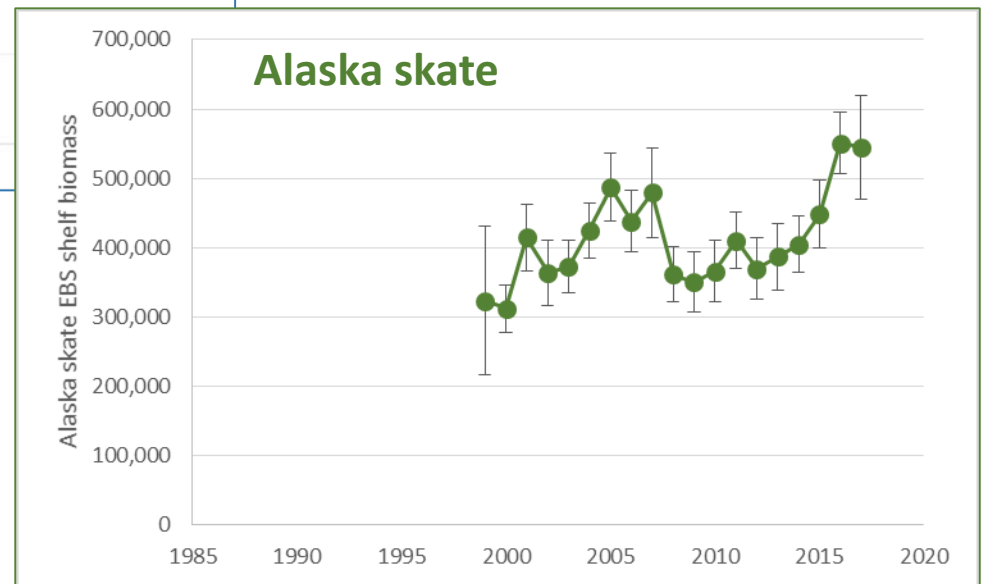
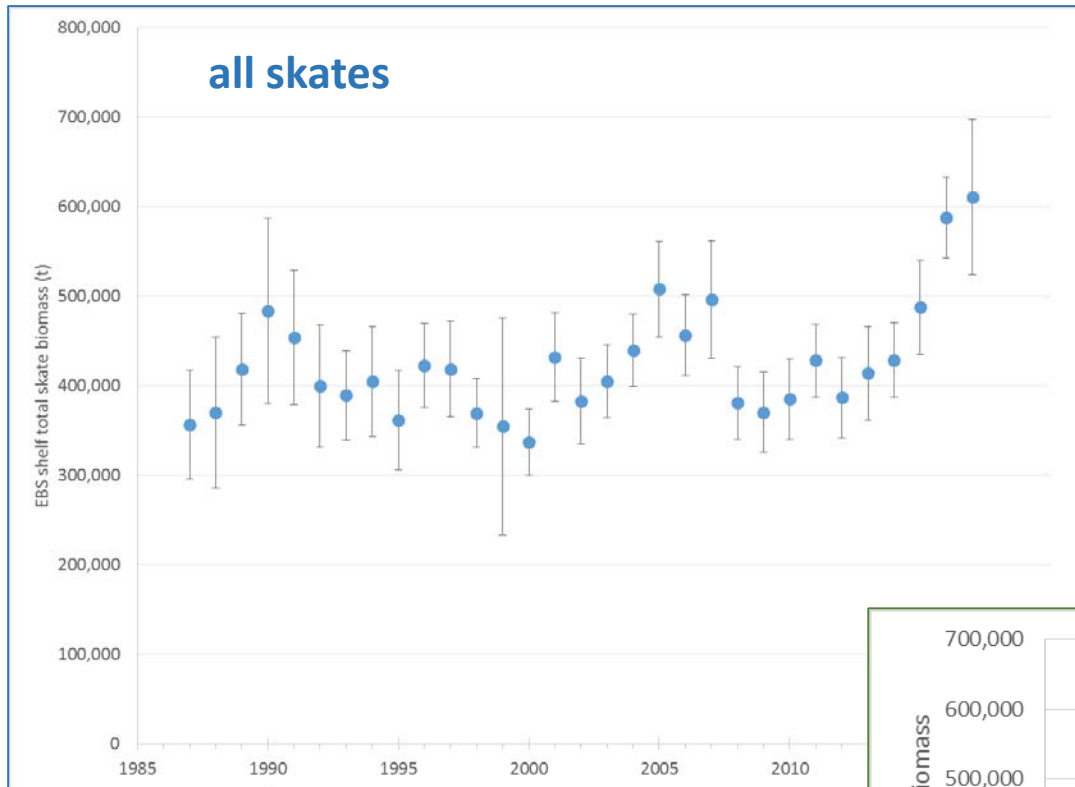
overview

- **biomass trends (focus on big skates)**
- **catch data**
- **harvest recommendations**

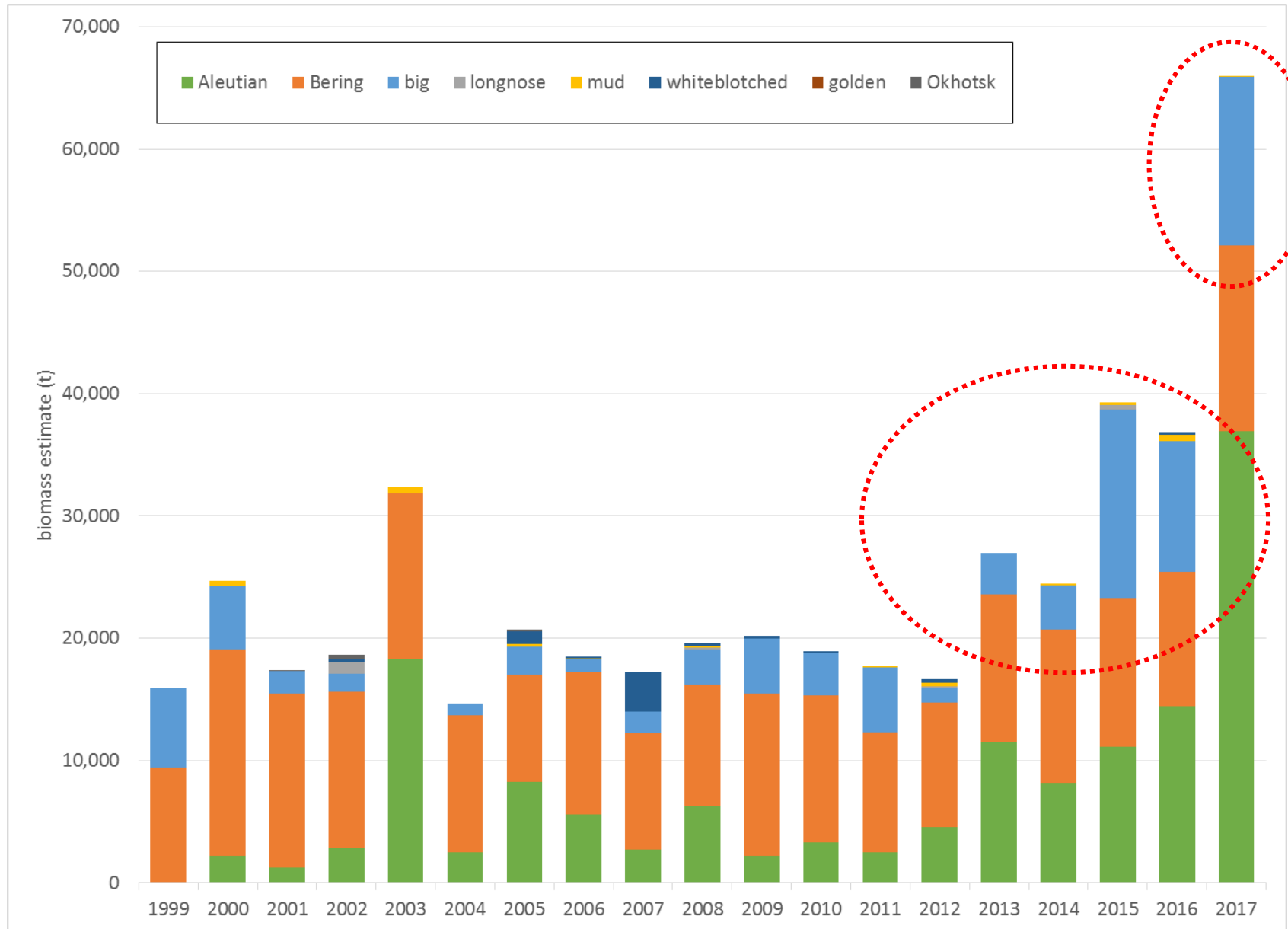
BSAI species composition



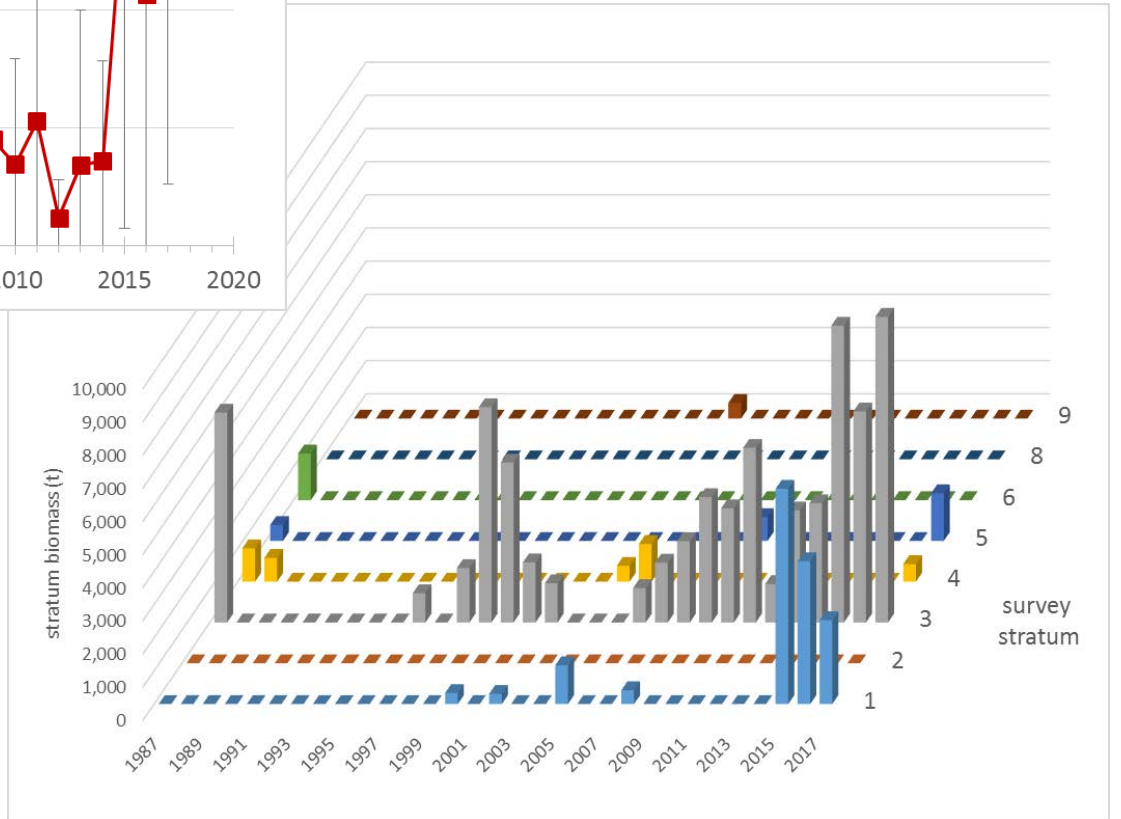
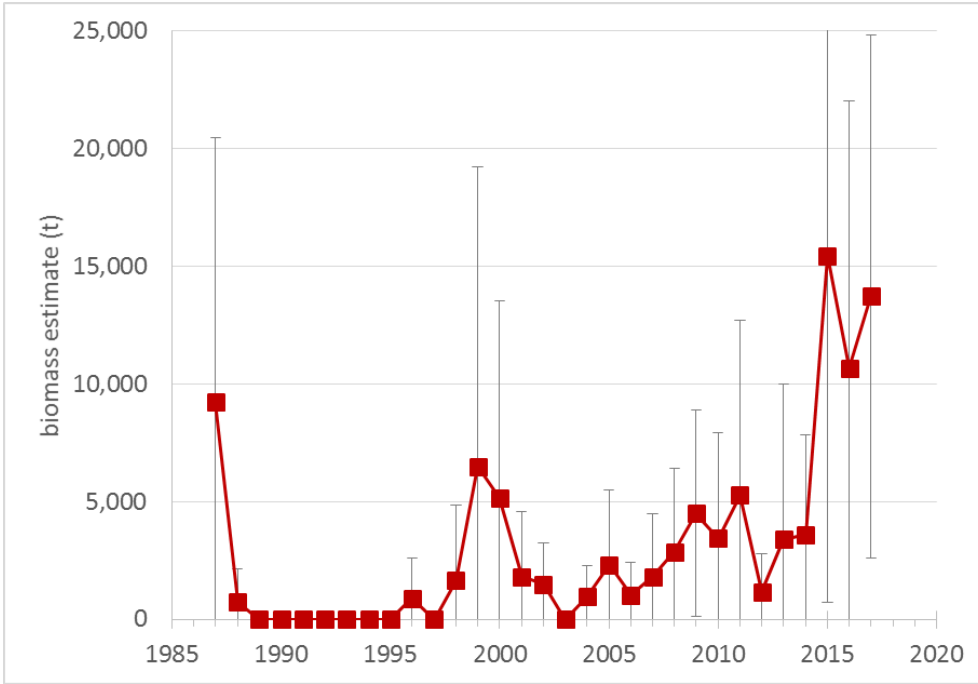
skate biomass – EBS shelf trawl survey

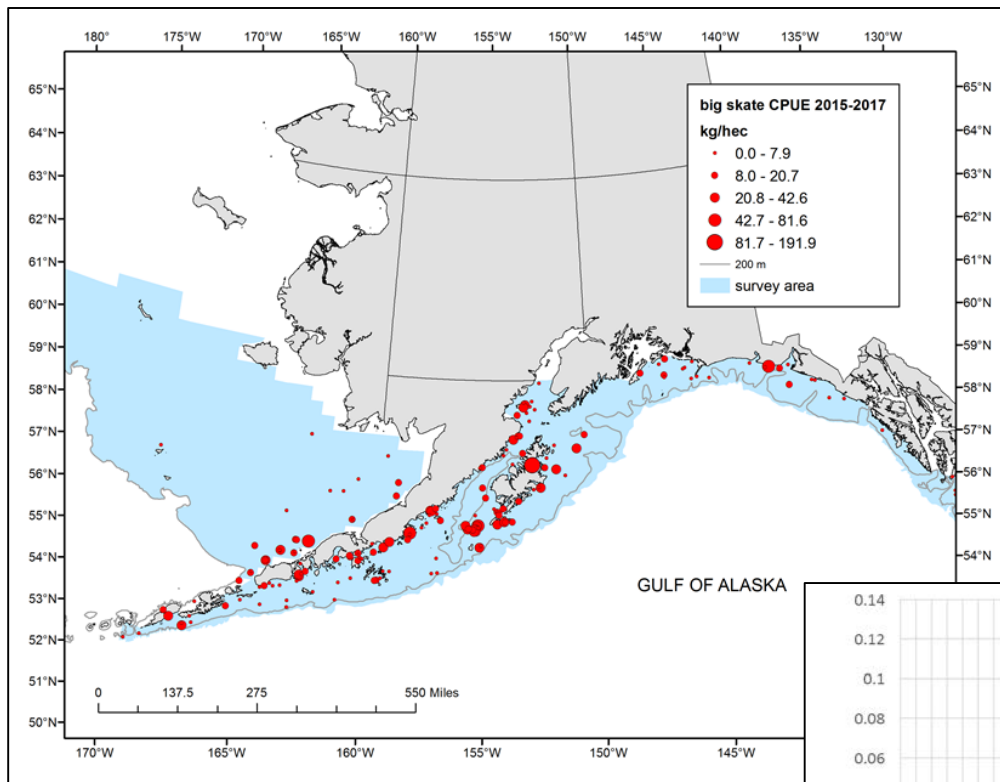


Other Skates biomass – EBS shelf trawl survey

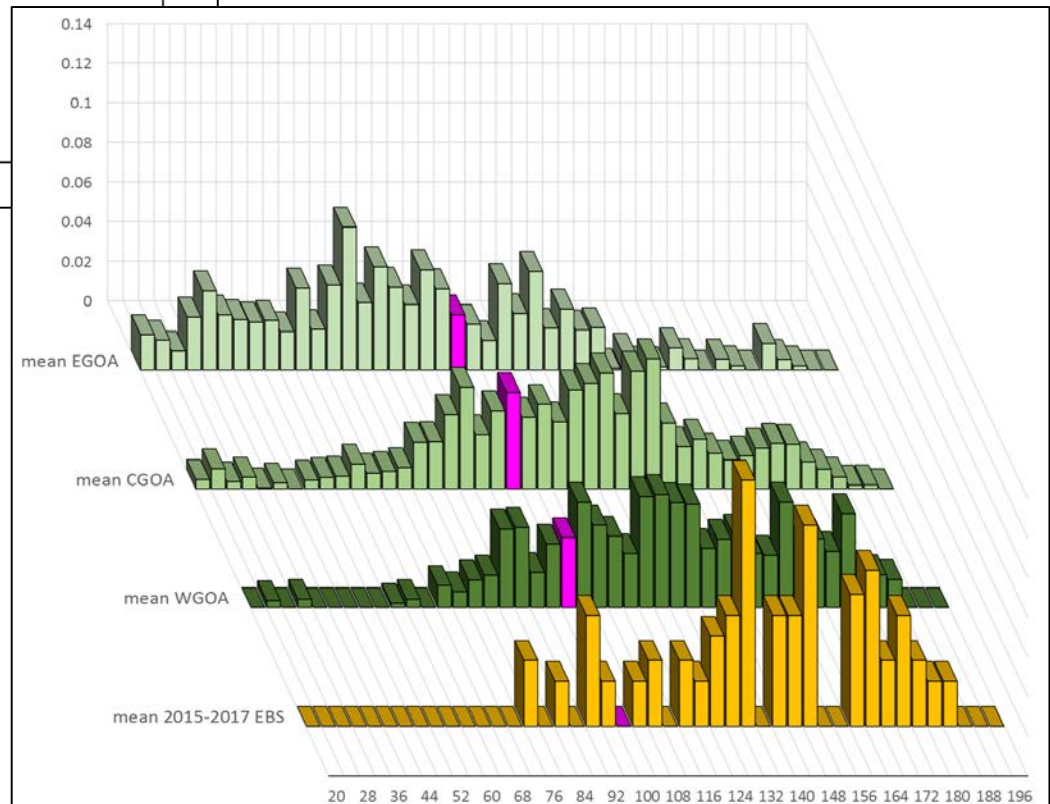


increases in big skate biomass

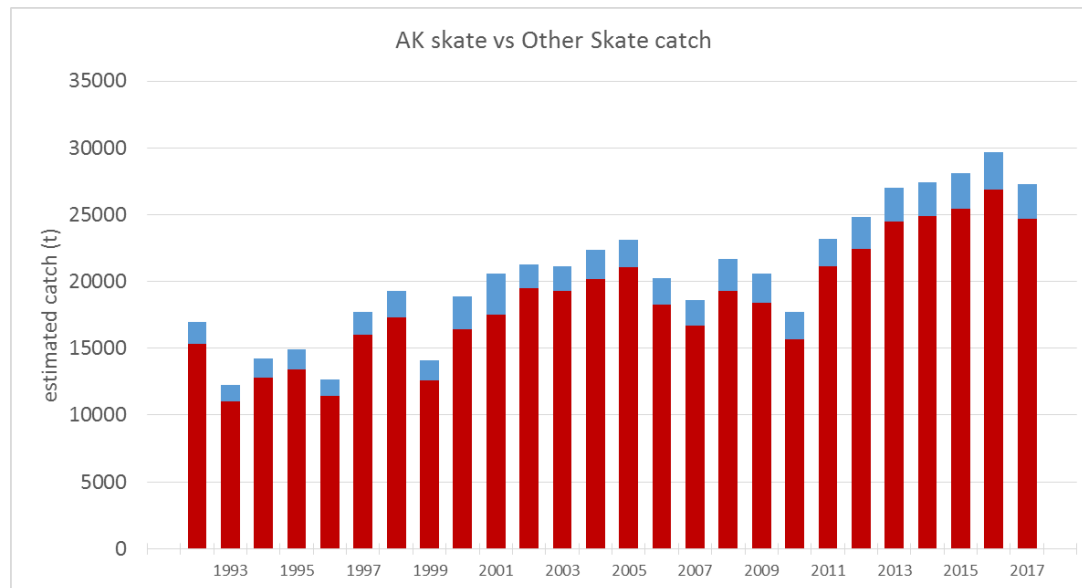
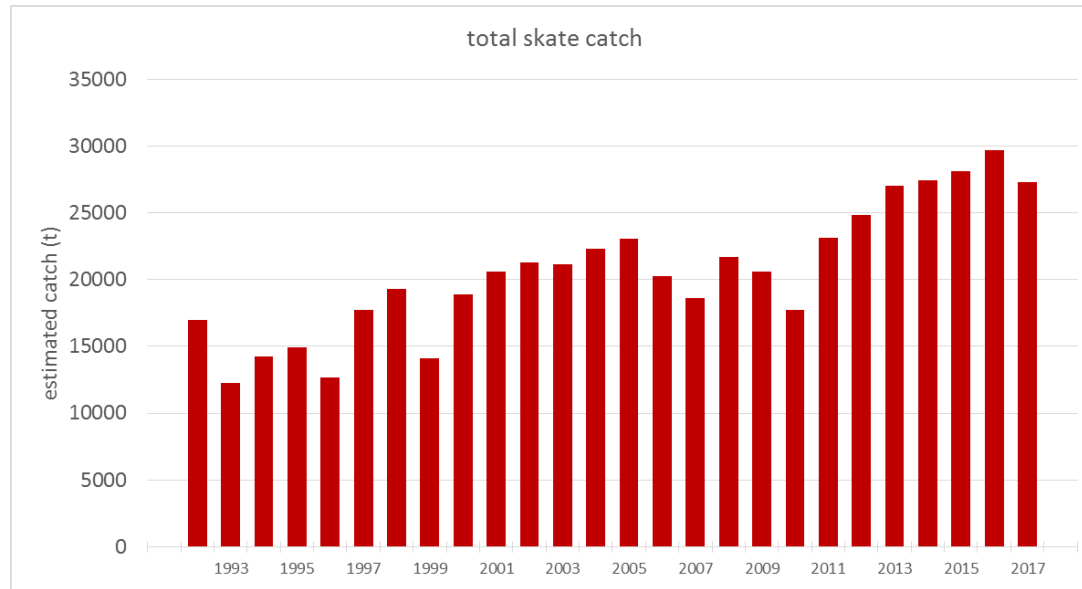




are EBS big skates
from the GOA?



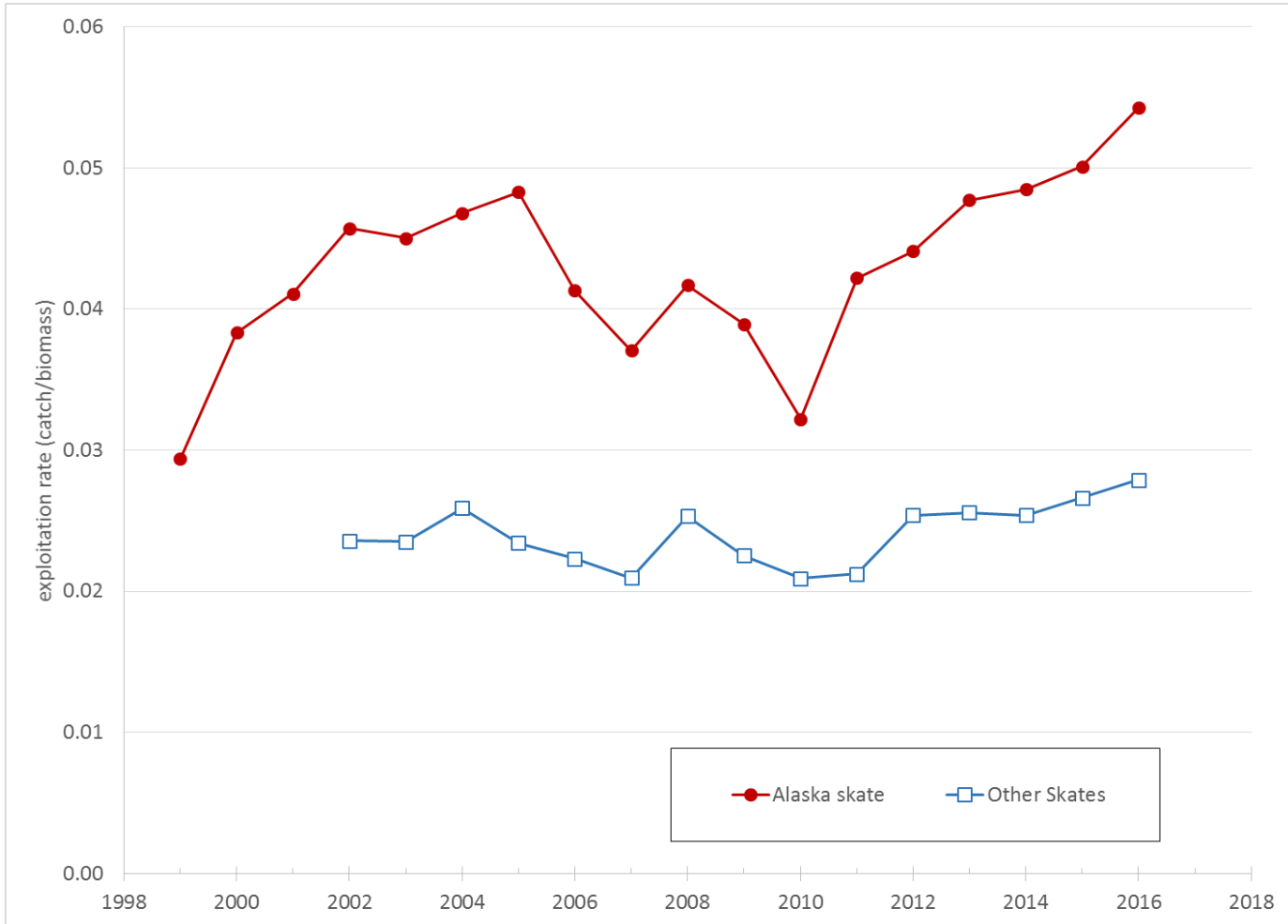
BSAI skate catch



ID of skates in the longline fishery

	2015	2016	2017	all years
SOFT SNOUT SKATE (<i>Bathyraja</i> spp)	84%	84%	87%	85%
ALASKA SKATE	12%	11%	9%	11%
BERING SKATE	2%	1%	1%	2%
BIG SKATE	1%	1%	1%	1%
SKATE EGG CASE UNIDENTIFIED	1%	1%	1%	1%
ALEUTIAN SKATE	1%	1%	0%	1%
STIFF SNOUT SKATE	0%	0%	0%	0%
WHITEBLOTCHED SKATE	0%	0%	0%	0%
COMMANDER SKATE	0%	0%	0%	0%
SKATE UNIDENTIFIED	0%	0%	0%	0%
MUD SKATE	0%	0%	0%	0%
LONGNOSE SKATE	0%	0%	0%	0%
WHITEBROW SKATE	0%	0%	0%	0%
ROUGHTAIL SKATE	0%	0%	0%	0%
DEEPSEA SKATE	0%	0%	0%	0%

exploitation rates



harvest recommendations

Alaska skate harvest recommendations				
Quantity	As estimated or <i>specified last year for:</i>		As estimated or <i>recommended this year for:</i>	
	2017	2018	2018*	2019*
M (natural mortality rate)	0.13	0.13	0.13	0.13
Tier	3a	3a	3a	3a
Projected total (age 0+) biomass (t)	506,921	487,035	478,306	452,245
Female spawning biomass (t)				
Projected	110,180	110,159	107,136	103,953
$B_{100\%}$	180,556	180,556	180,556	180,556
$B_{40\%}$	72,222	72,222	72,222	72,222
$B_{35\%}$	63,195	63,195	63,195	63,195
F_{OFL}	0.092	0.092	0.092	0.092
$maxF_{ABC}$	0.079	0.079	0.079	0.079
F_{ABC}	0.079	0.079	0.079	0.079
OFL (t)	39,162	37,365	36,655	34,189
maxABC (t)	33,731	32,183	31,572	29,447
ABC (t)	33,731	32,183	31,572	29,447
Status	As determined <i>last</i> year for:		As determined <i>this</i> year for:	
	2015	2016	2016	2017
Overfishing	No	n/a	No	n/a
Overfished	n/a	No	n/a	No
Approaching overfished	n/a	No	n/a	No

harvest recommendations

other skate harvest recommendations				
Quantity	As estimated or <i>specified last year for:</i>		As estimated or <i>recommended this year for:</i>	
	2017	2018	2018	2019
M (natural mortality rate)	0.1	0.1	0.1	0.1
Tier	5	5	5	5
Biomass (t)	100,130	100,130	100,130	100,130
F_{OFL}	0.10	0.10	0.10	0.10
$maxF_{ABC}$	0.075	0.075	0.075	0.075
F_{ABC}	0.075	0.075	0.075	0.075
OFL (t)	10,013	10,013	10,013	10,013
maxABC (t)	7,510	7,510	7,510	7,510
ABC (t)	7,510	7,510	7,510	7,510
Status	As determined <i>last</i> year for:		As determined <i>this</i> year for:	
	2015	2016	2016	2017
Overfishing	No	n/a	No	n/a

aggregate harvest recommendations for the BSAI skate complex				
Quantity	As estimated or <i>specified last year for:</i>		As estimated or <i>recommended this year for:</i>	
	2017	2018	2018	2019
OFL (t)	49,063	46,583	46,668	44,202
maxABC (t)	41,144	39,008	39,082	36,957
ABC (t)	41,144	39,008	39,082	36,957