

BSAI Shark Assessments



Cindy Tribuzio, Pete Hulson, Katy
Echave, Cara Rodgveller
Auke Bay Laboratories, AFSC

BSAI Sharks

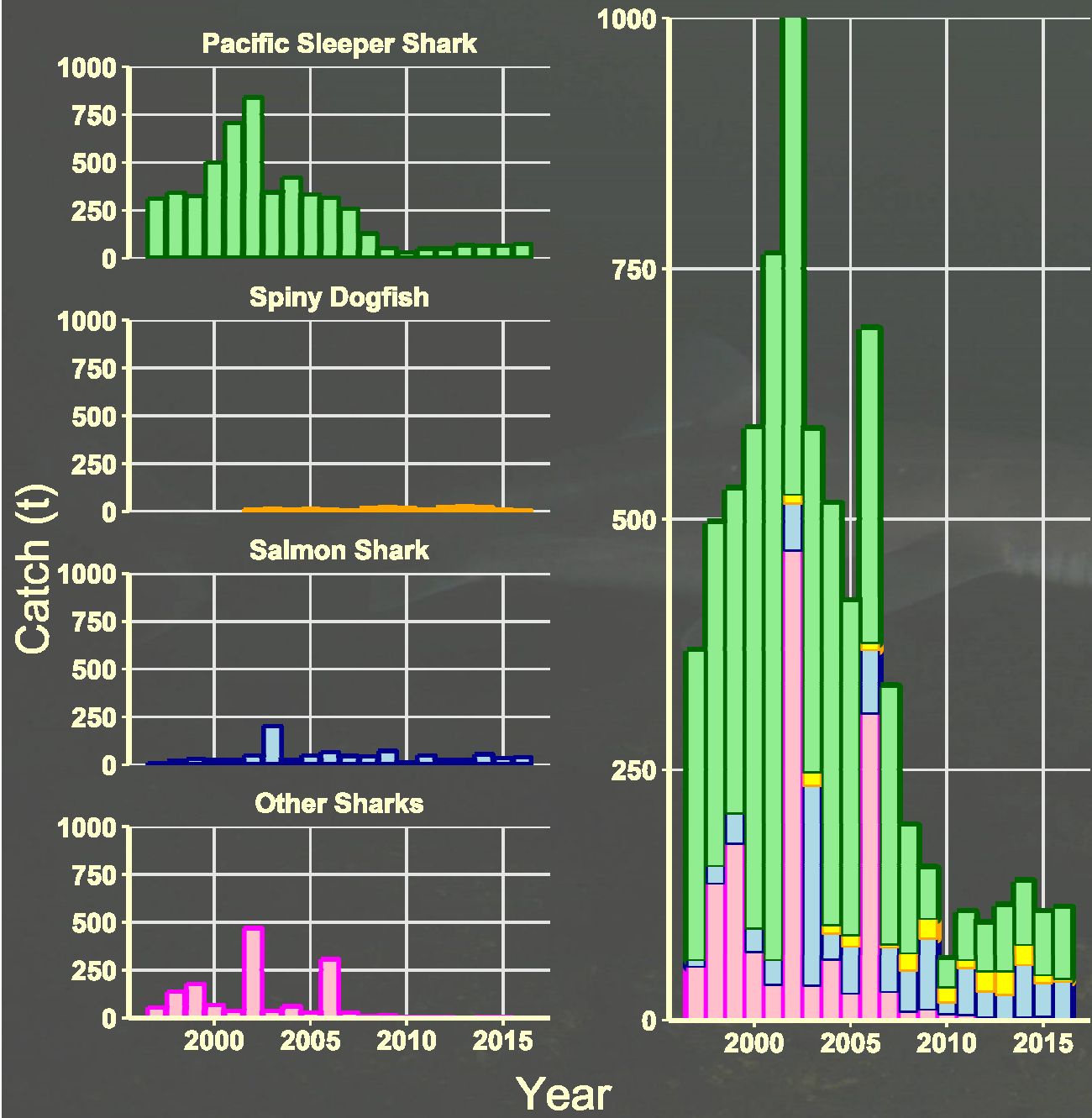


- New for 2016:
 - Updated catch data for 2015 and 2016 (as of Oct 3, 2016)
 - Survey data updated
 - Biomass estimates from 2015-2016 AI, EBS shelf and slope surveys
 - RPNs for IPHC longline survey
 - Length data
 - Alternative ABC/OFL calculations presented

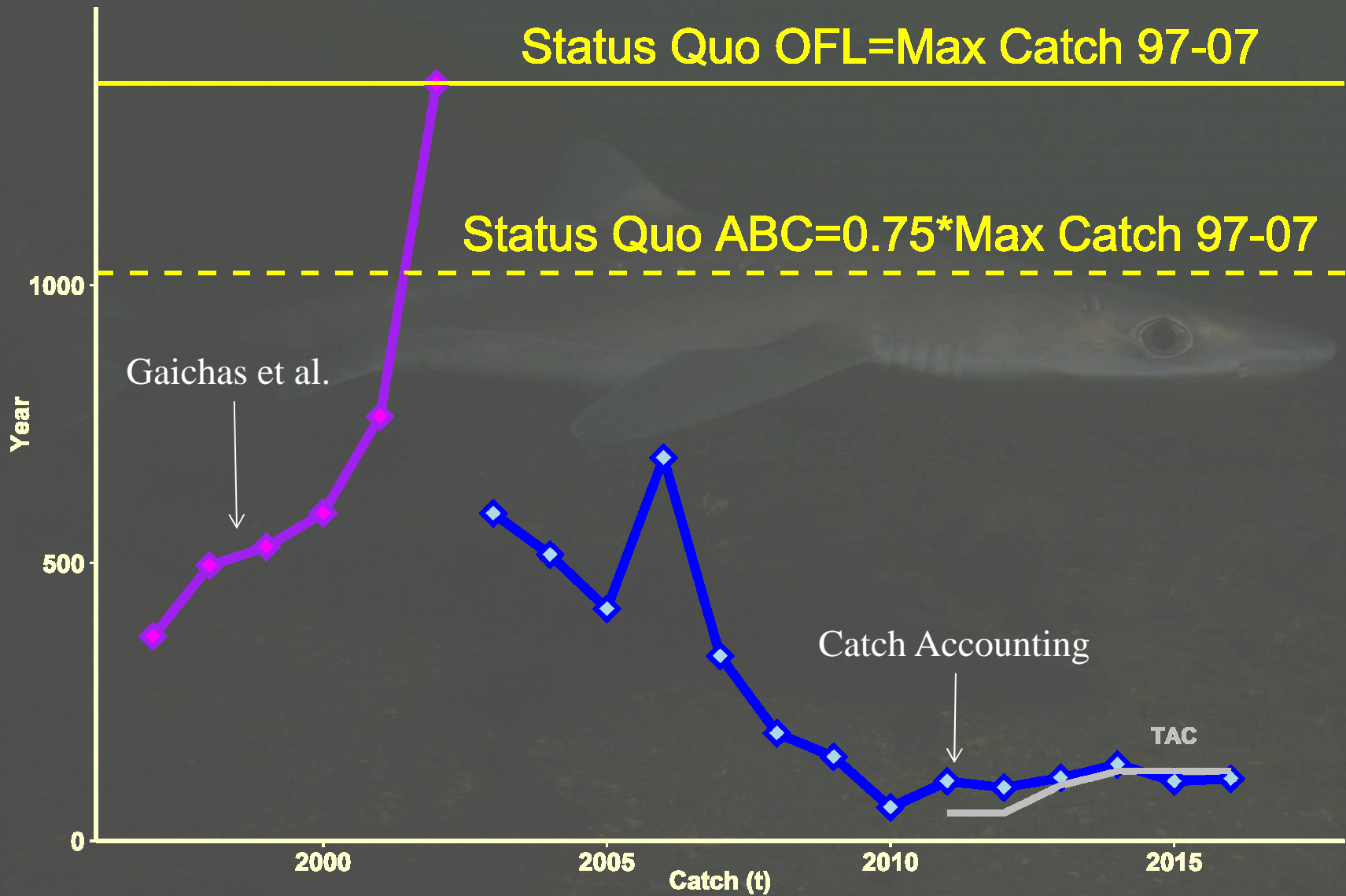
Responses to PT/SSC Comments

- Major comments (paraphrased):
 - Re-examine Tier 6 alternatives and reference time period
 - We present three time series (97-07, 03-15 and 13-15) and average and maximum catch based ABC/OFLs
 - Compare CAS to HFICE since Observer Restructuring
 - Presented in September
 - Explore adjusting catch prior to observer restructuring
 - The time series of catch after observer restructuring is short and we don't recommend using it to make adjustments to the historical catch series

BSAI Shark Complex Catch

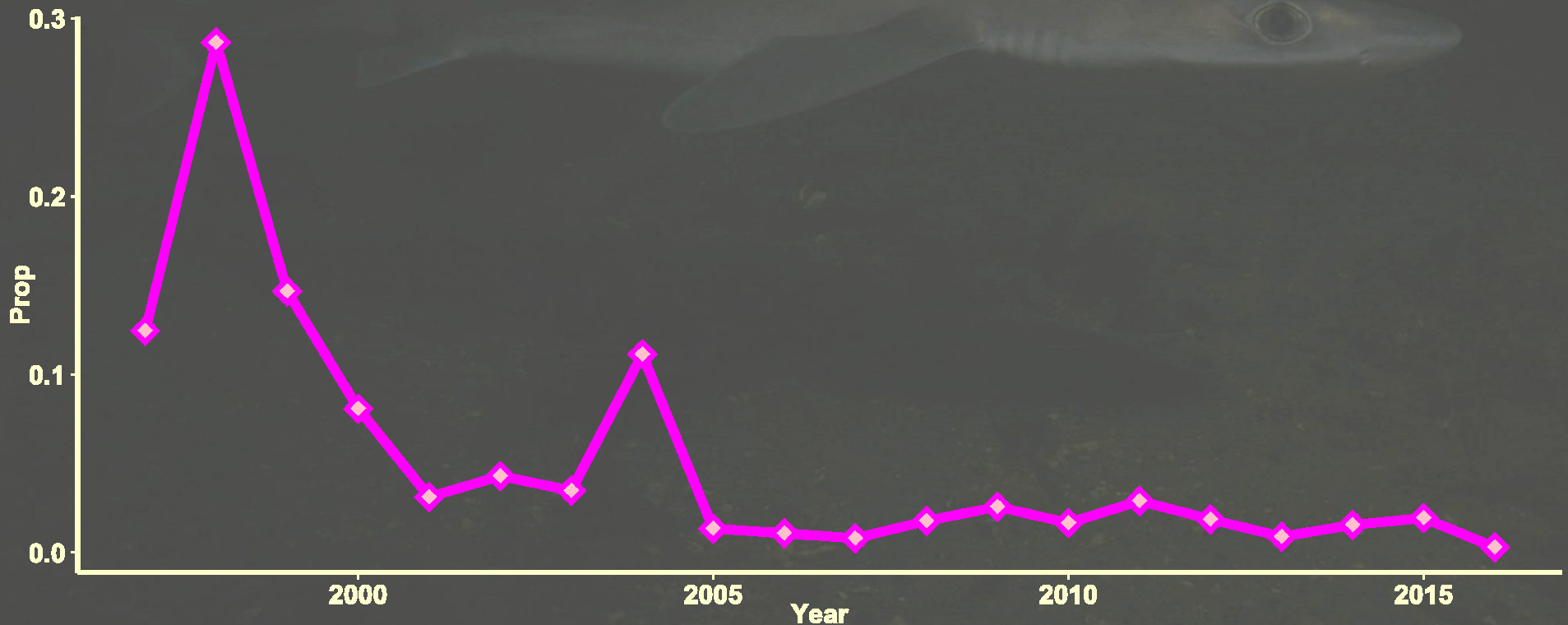


BSAI Shark Complex Catch



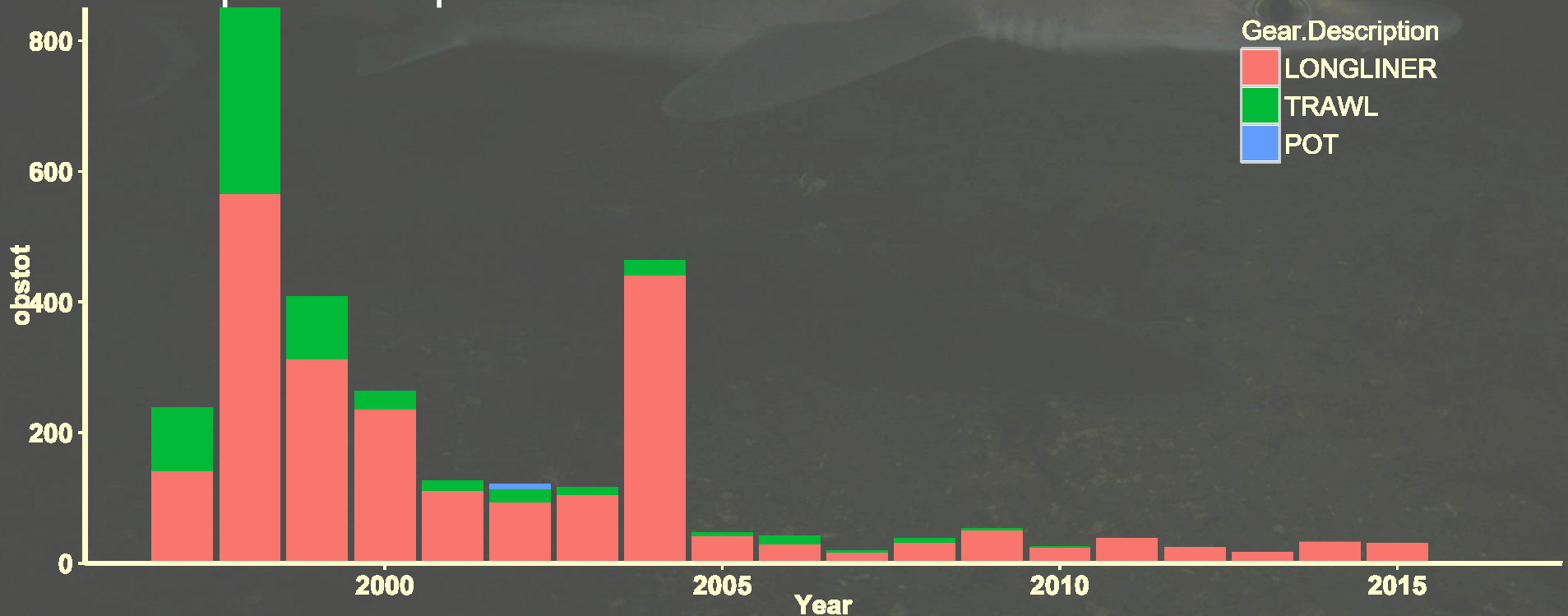
Interesting Catches

- Unidentified sharks
 - Generally drives the “other/unidentified” sharks
 - Decreasing portion of the observed sharks

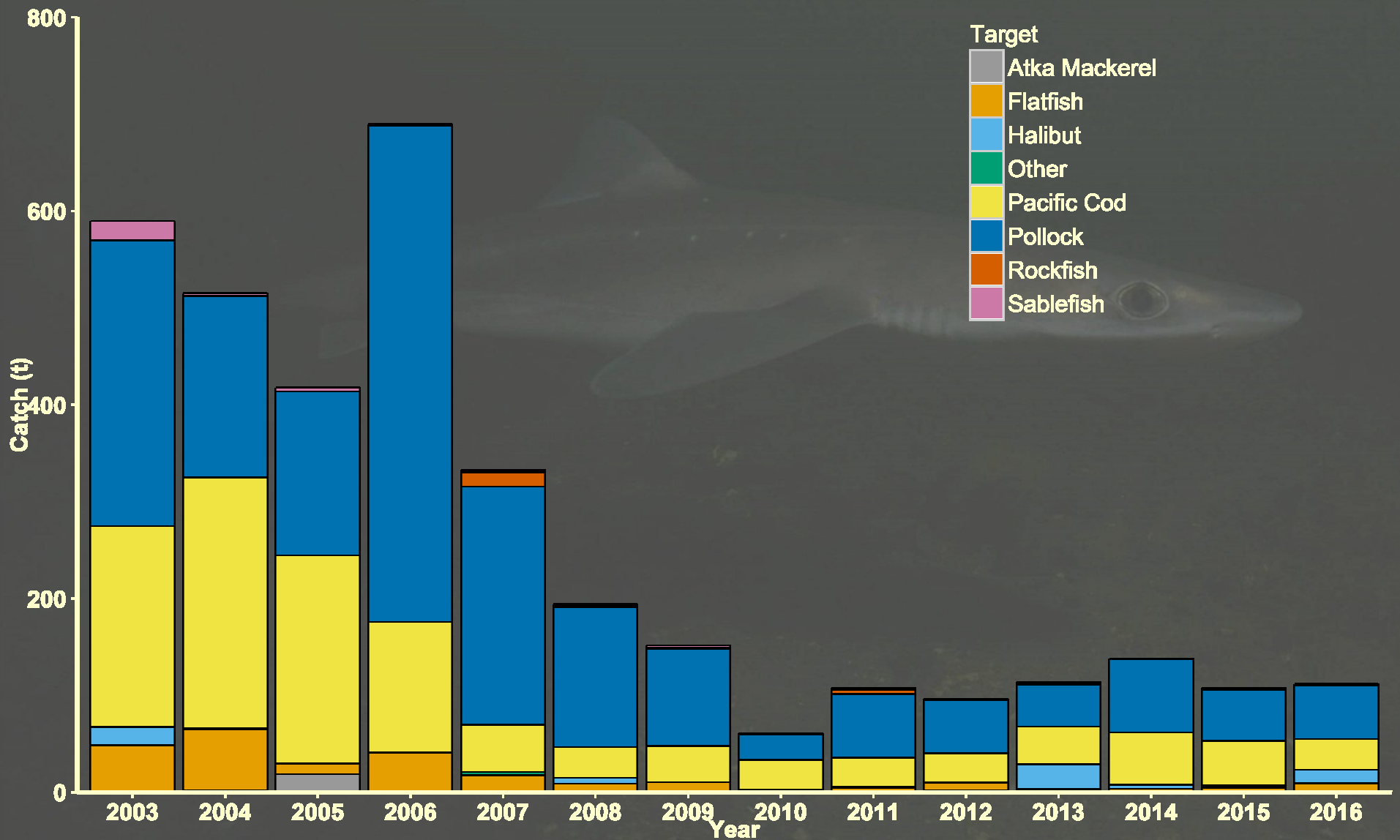


Interesting Catches

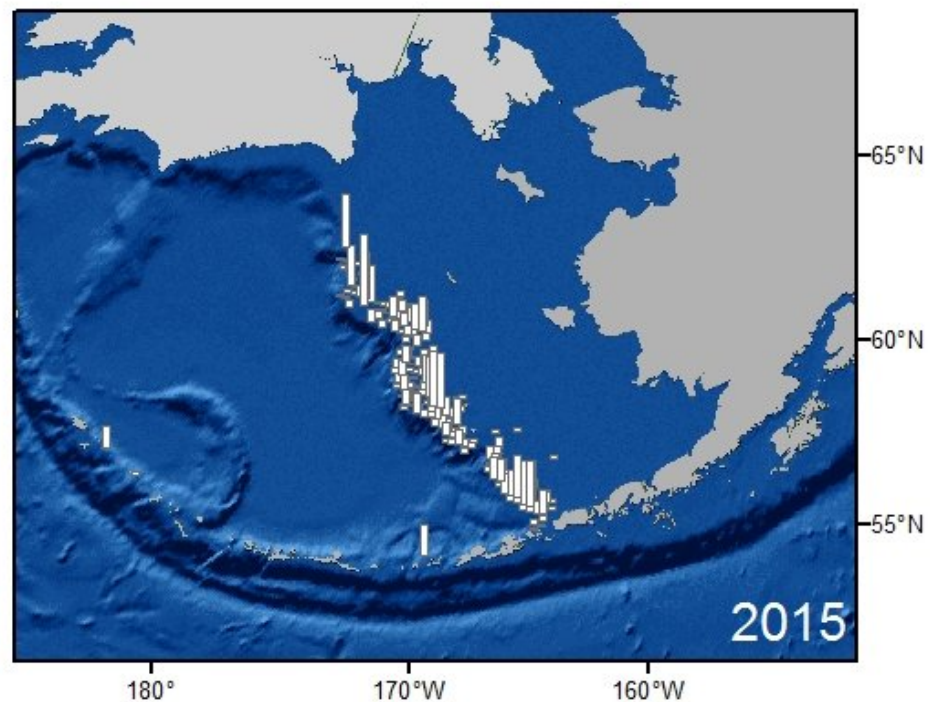
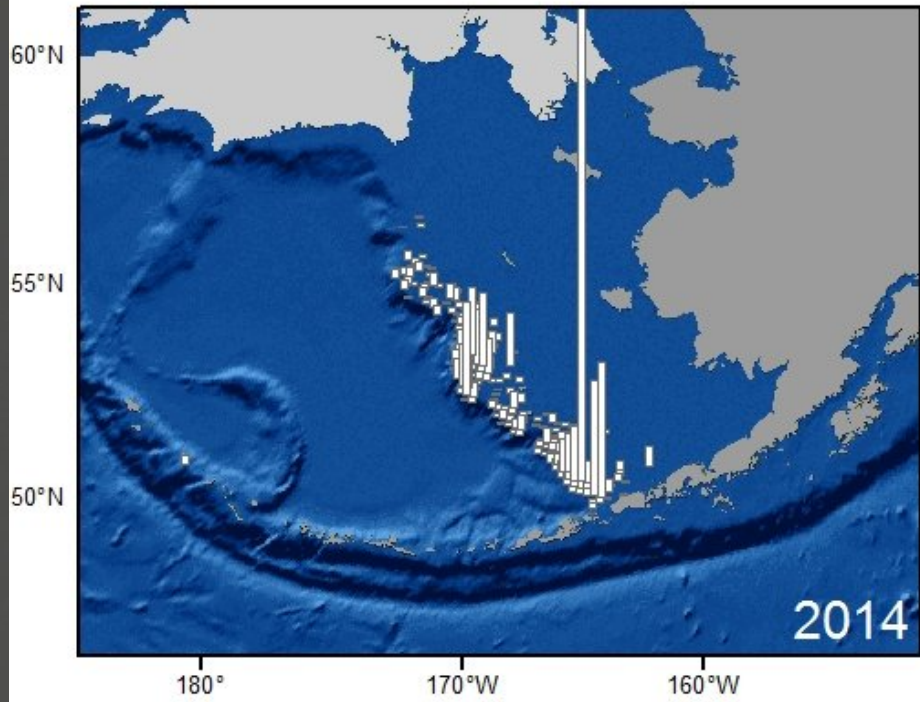
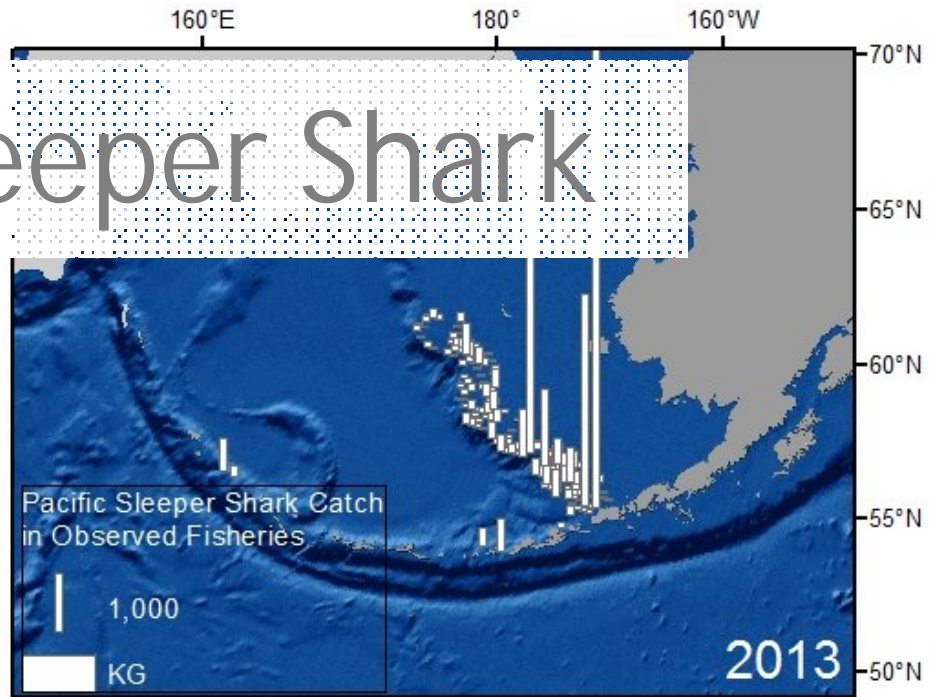
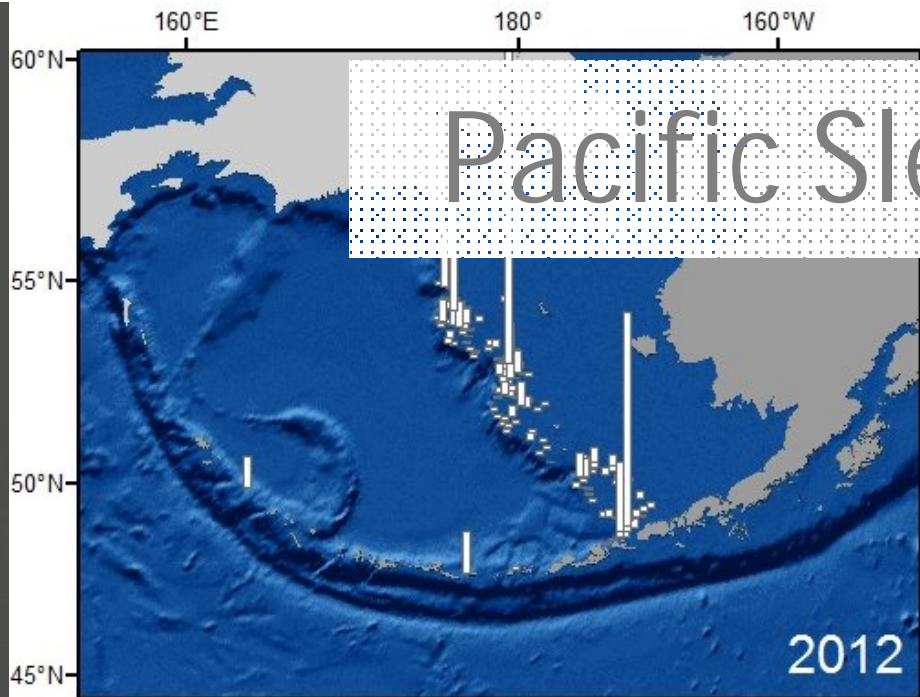
- Unidentified sharks
 - Generally drives the “other/unidentified” sharks
 - Decreasing portion of the observed sharks
 - Improved species identification?



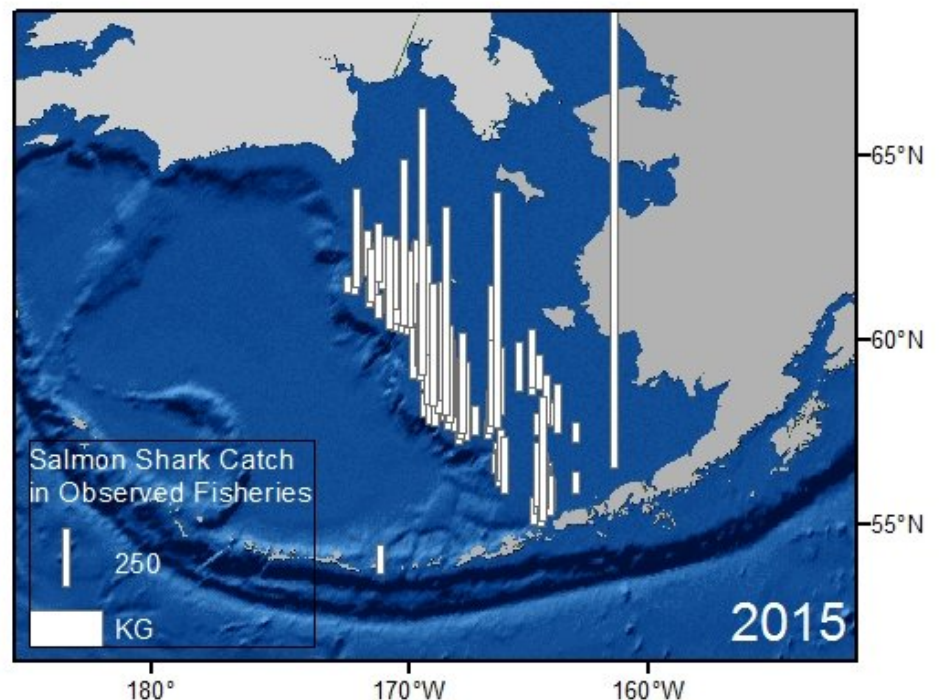
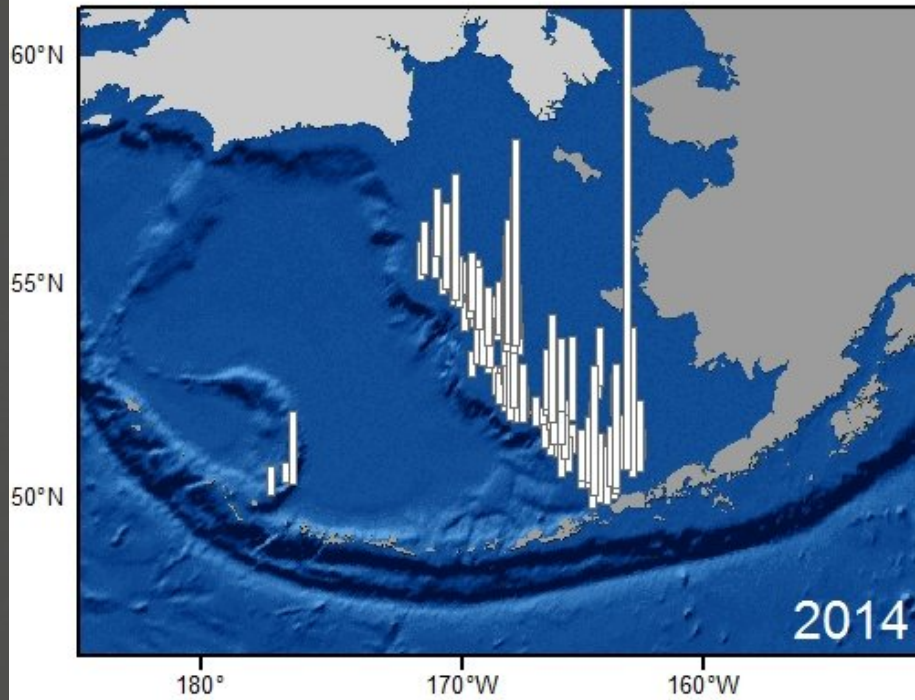
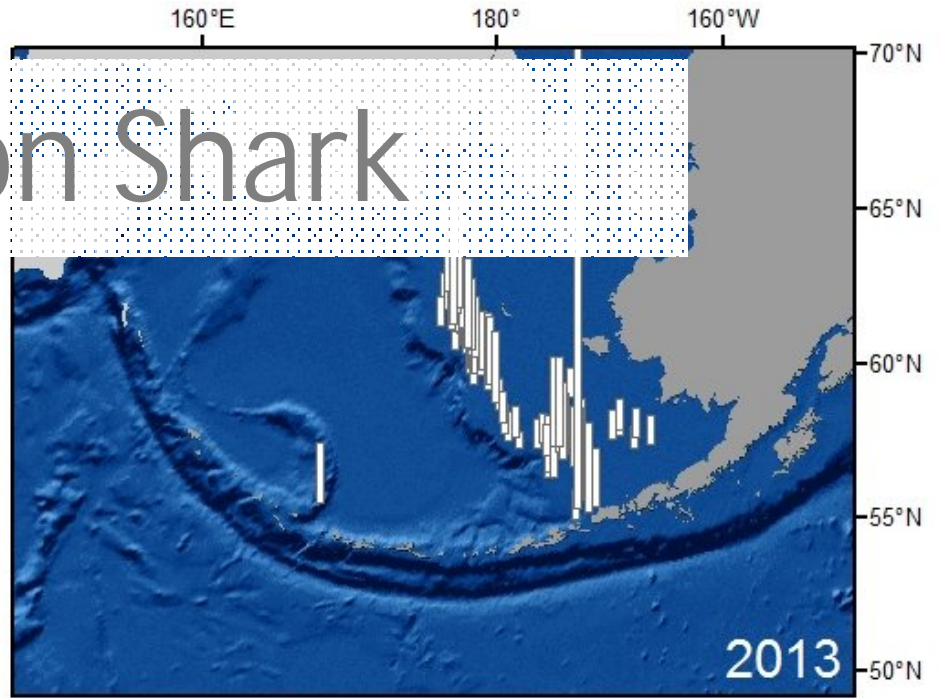
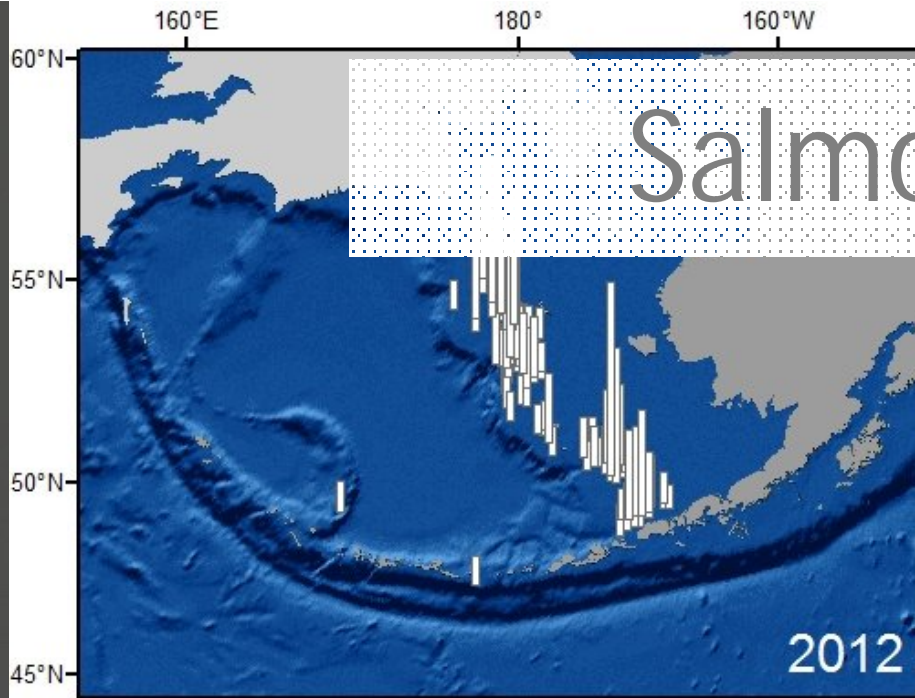
Catch by Target Group

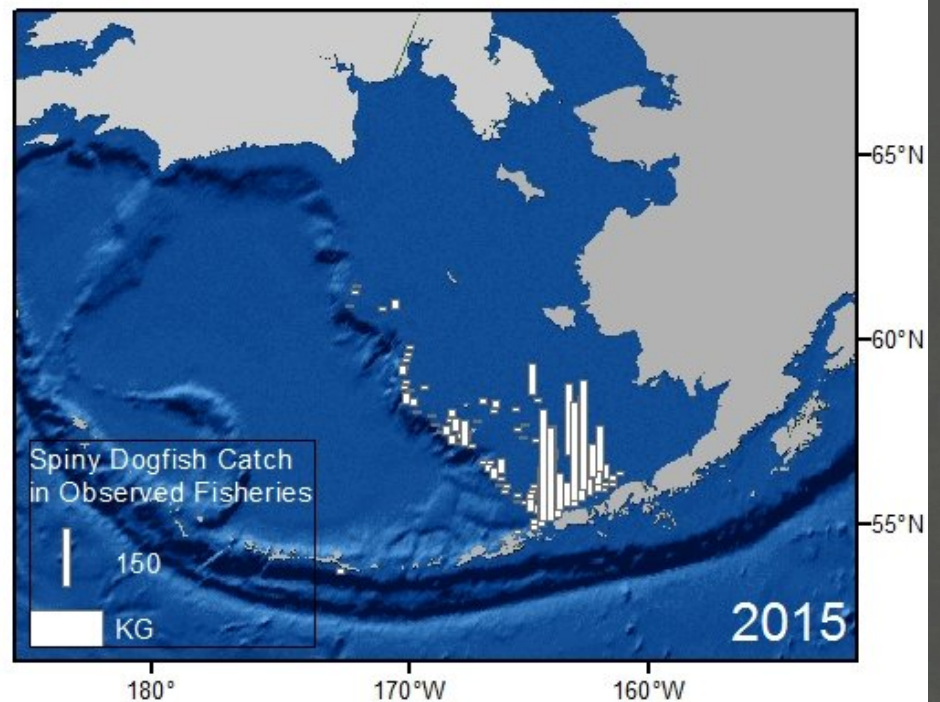
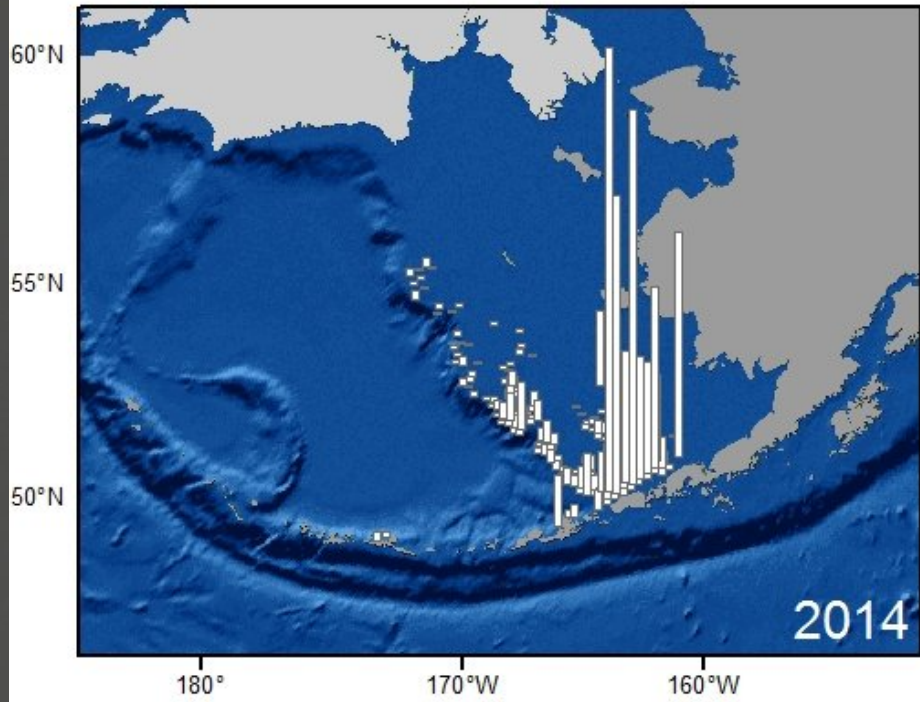
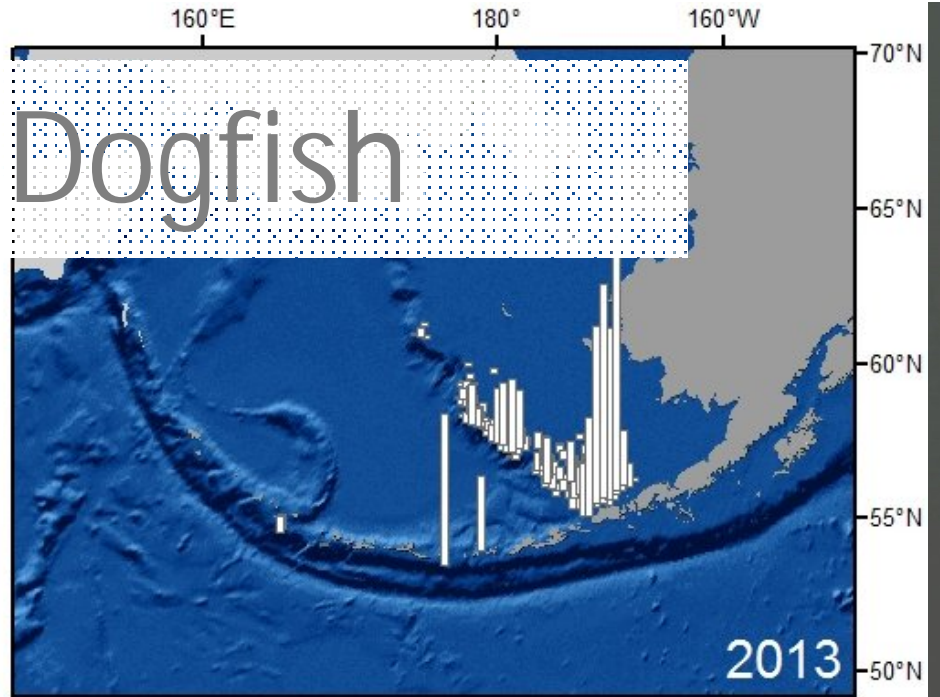
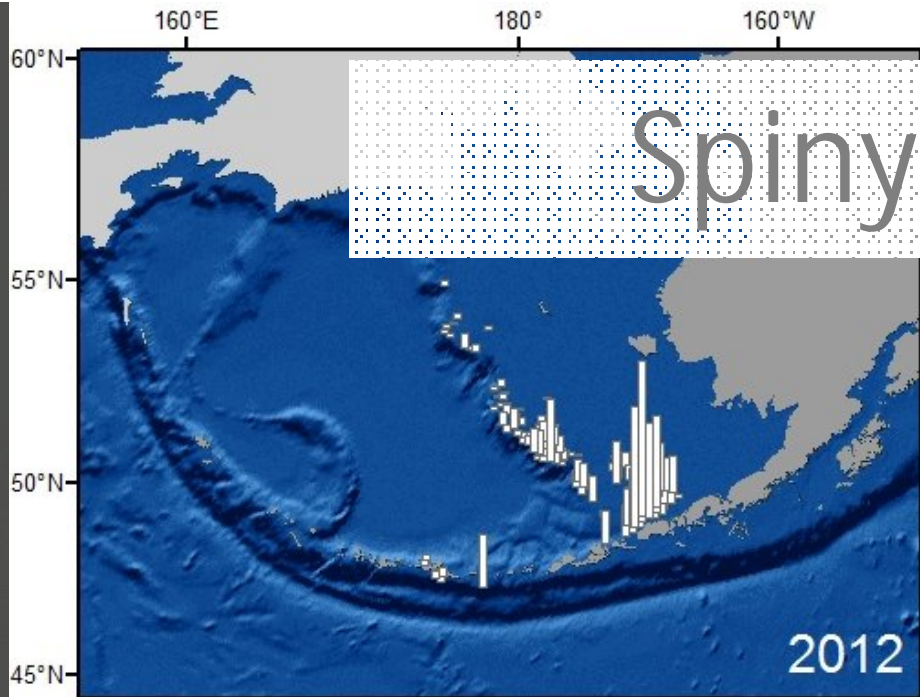


Pacific Sleeper Shark

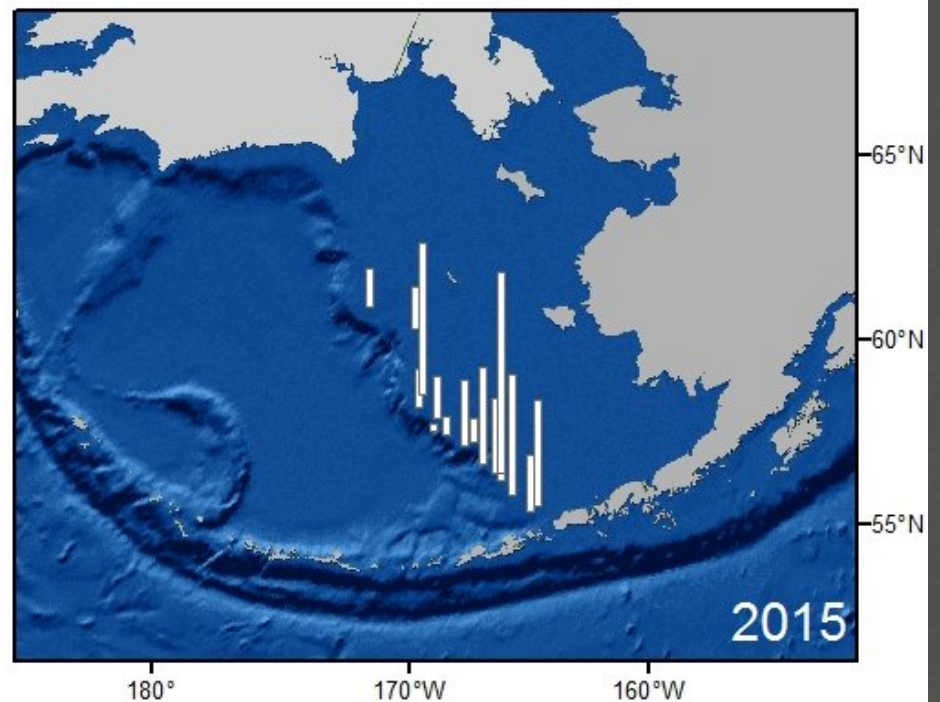
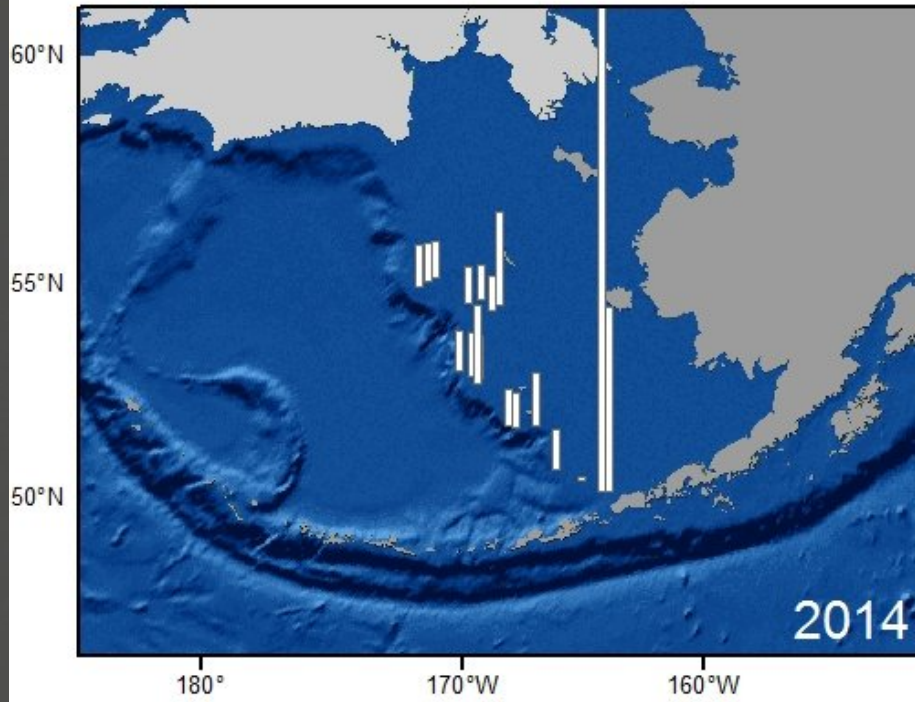
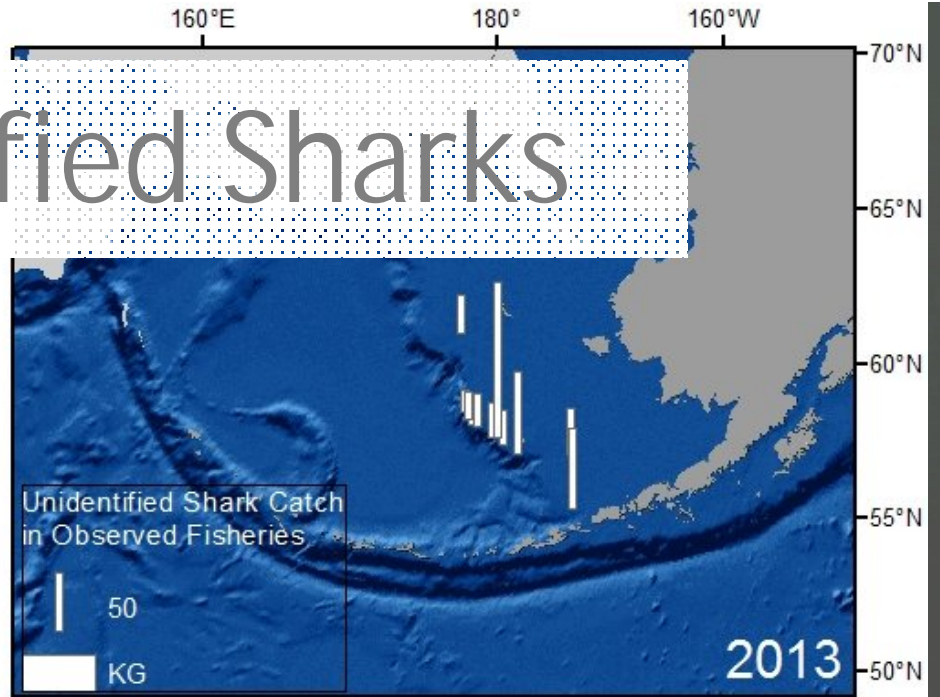
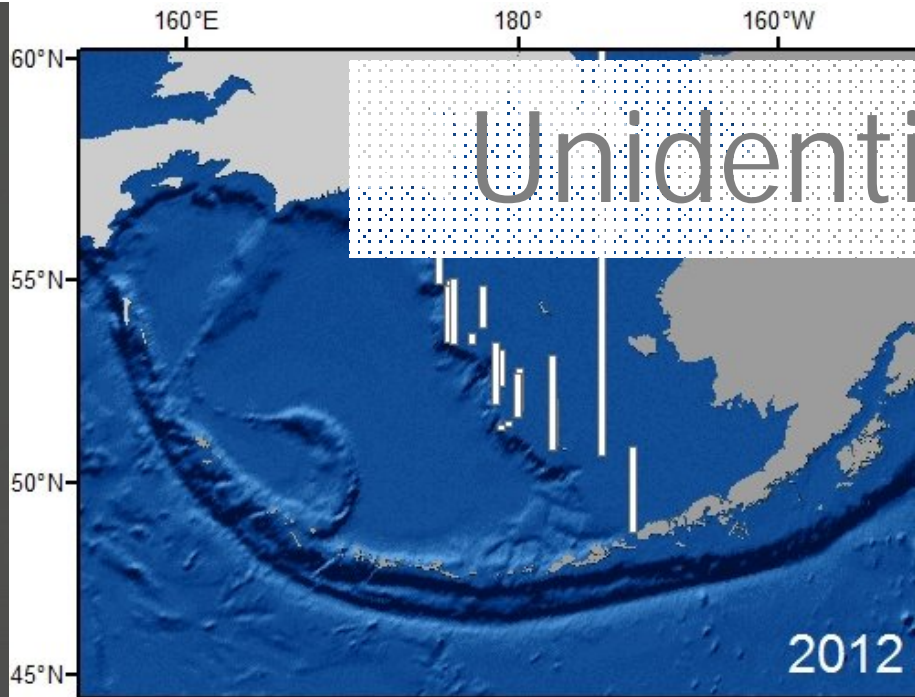


Salmon Shark





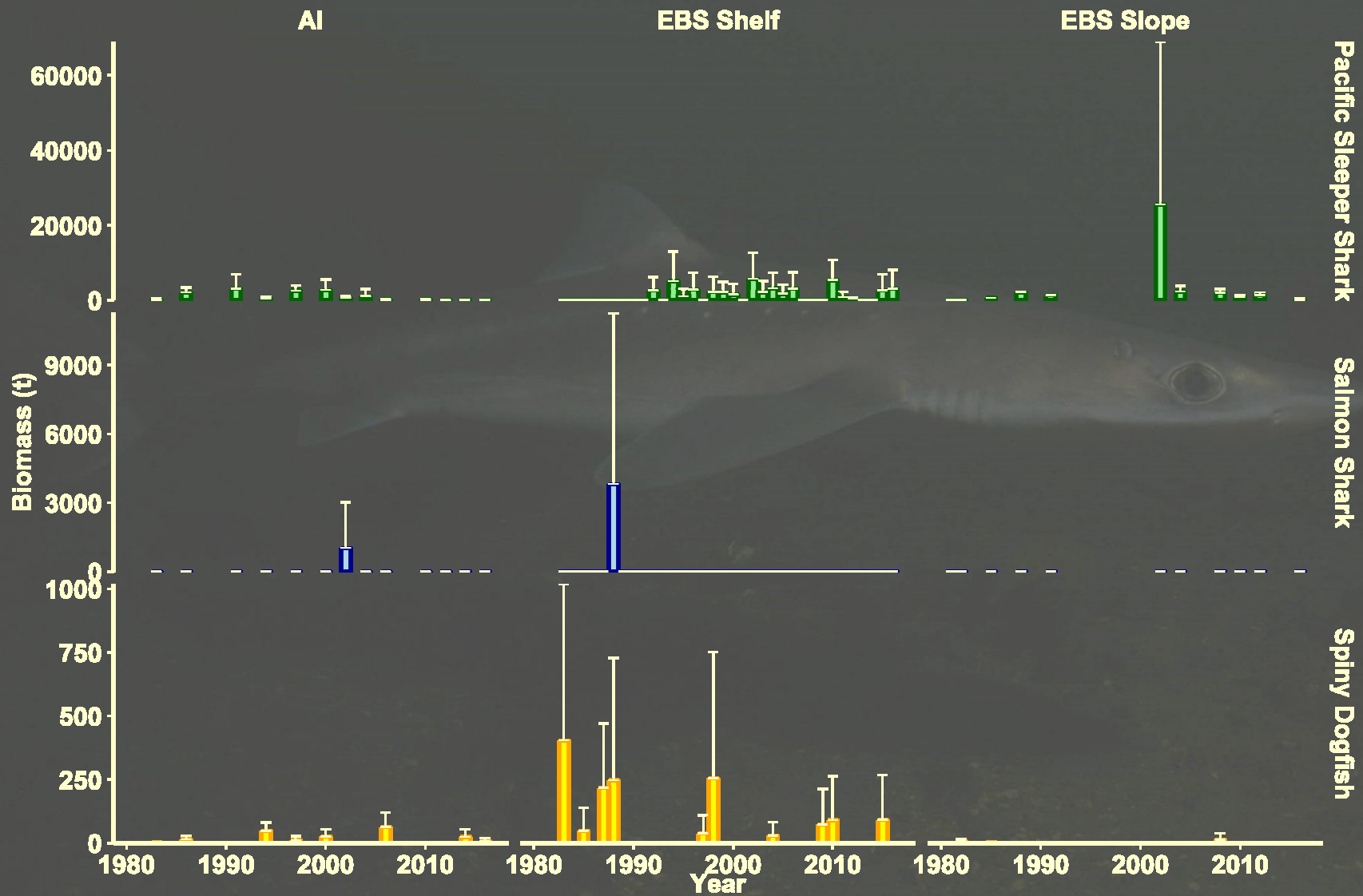
Unidentified Sharks



Other Data Sources

- AFSC trawl survey biomass
 - EBS Shelf – caught sleepers in 15/16, dogfish in 15
 - EBS Slope – few hauls with sleepers this year
 - AI – no sleepers last two surveys, dogfish both

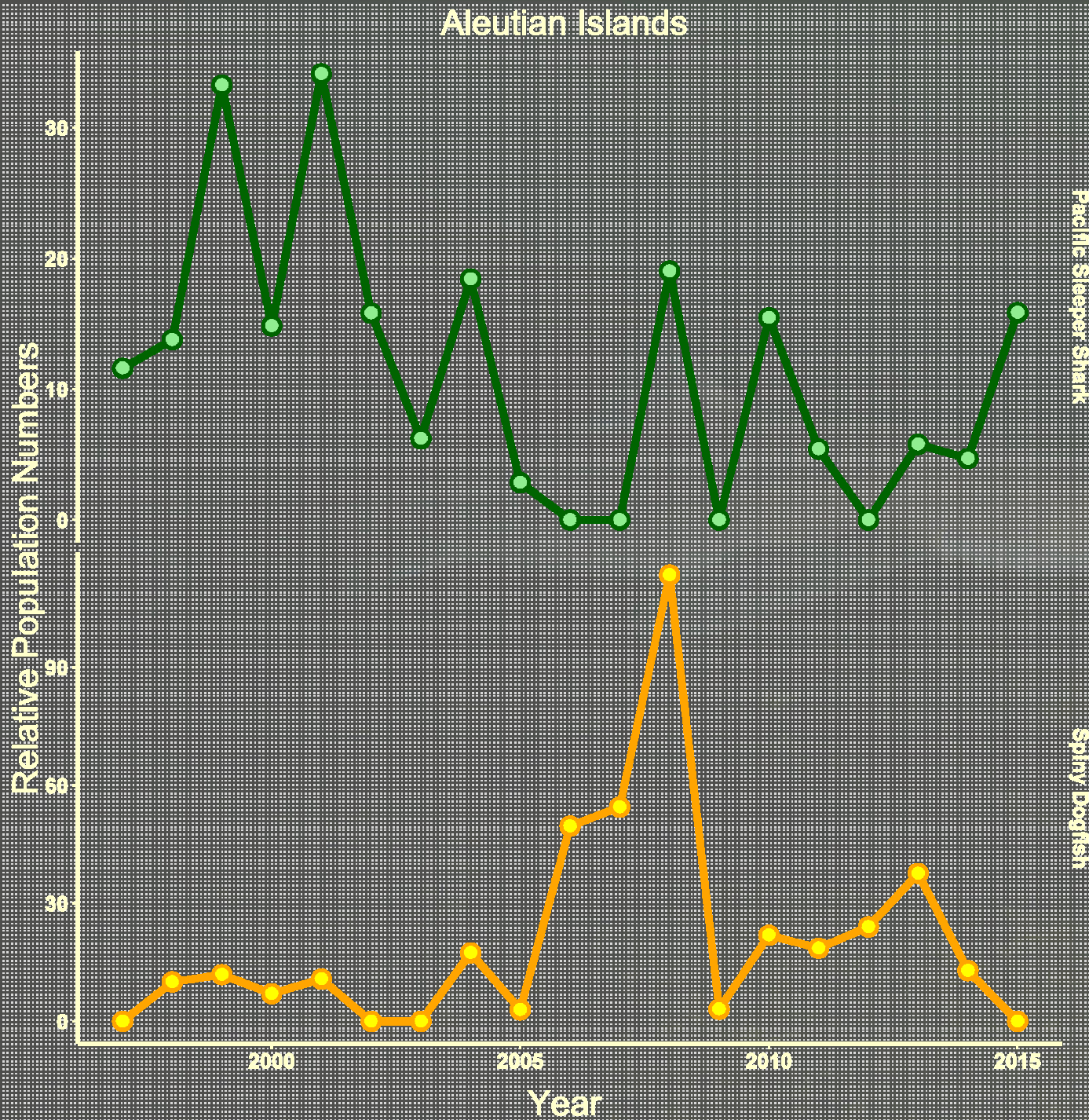
Survey Biomass – AFSC Trawl



Other Data Sources

- AFSC trawl survey biomass
 - EBS Shelf – caught sleepers in 15/16, dogfish in 15
 - EBS Slope – few hauls with sleepers this year
 - AI – no sleepers last two surveys, dogfish both
- RPNs (IPHC) – annual relative population index

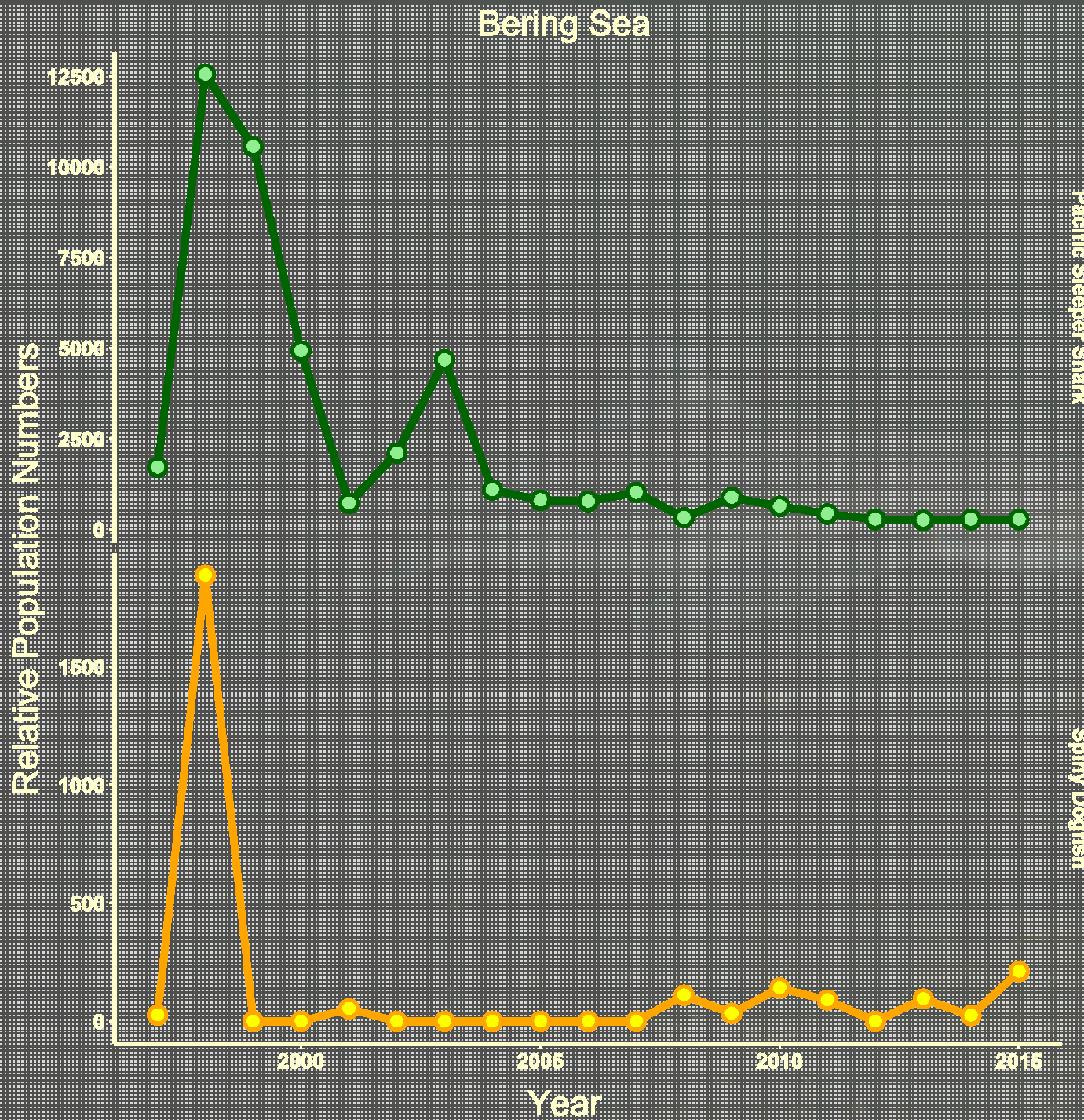
Survey RPNs – IPHC LL



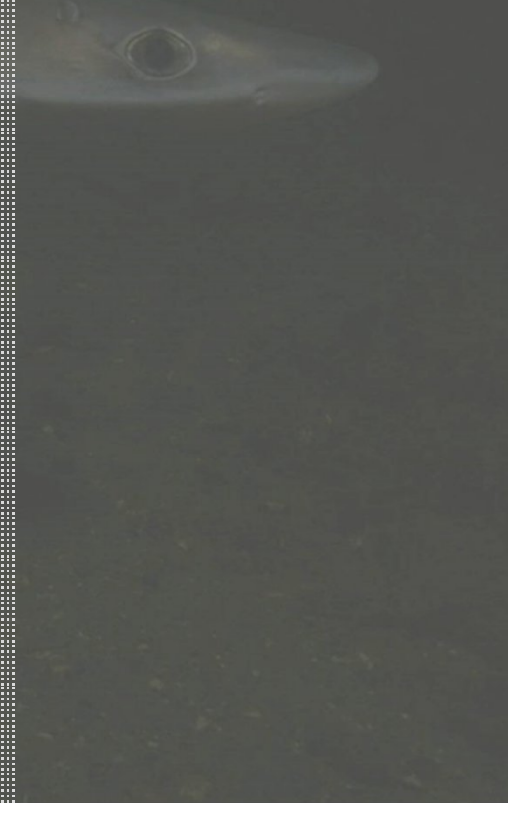
Pacific Sleeper Shark

Spiny Dogfish

Survey RPNs – IPHC LL



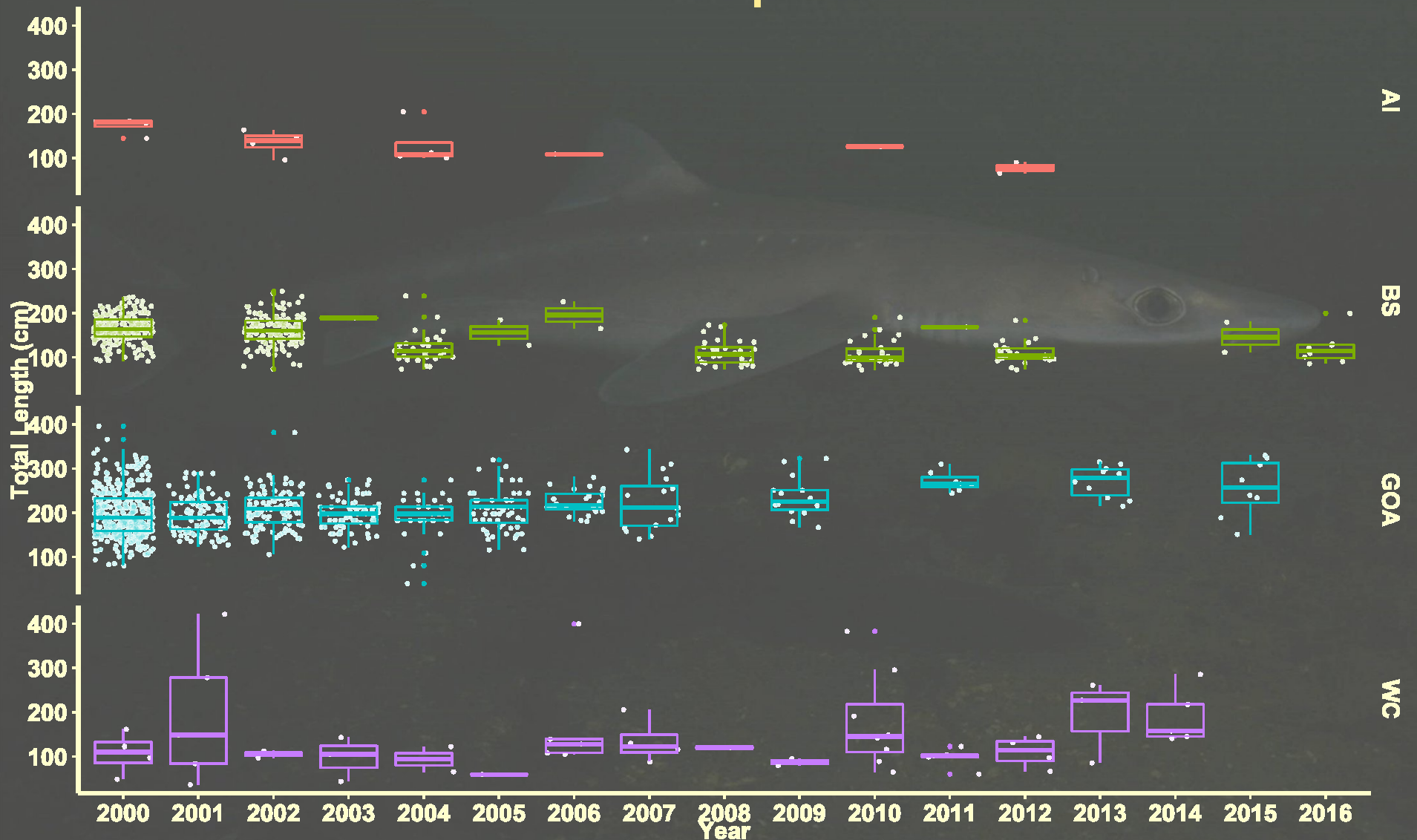
Survey RPNs – IPHC LL



Other Data Sources

- AFSC trawl survey biomass
 - EBS Shelf – caught sleepers in 15/16, dogfish in 15
 - EBS Slope – few hauls with sleepers this year
 - AI – no sleepers last two surveys, dogfish both
- RPNs (IPHC) – annual relative population index
- Pacific sleeper shark length data – AFSC, NWFSC, IPHC surveys, other opportunistic samples

Available Length Data— Pacific Sleeper Shark



ABC and OFL Recommendations

A large shark, possibly a tiger shark, is shown swimming in the ocean. The shark is viewed from above, showing its dorsal fin and the pattern of dark stripes along its back. The water is a deep blue-green color, and the seabed is visible at the bottom of the frame.

- ABC/OFL set for complex as a whole
- All species are currently Tier 6 (max catch history)
- SSC requested an examination of alternatives

Tier 6 Alternatives

- Three time series:
 - Status Quo: 1997 – 2007
 - Catch Accounting: 2003 – 2015
 - Observer Restructuring: 2013 – 2015
- Two methods:
 - Maximum Catch
 - Average Catch

Status Quo: 1997-2007

- Catch is broken into two time series:
 - Psuedo-blend: 1997 – 2002
 - Catch Accounting: 2003 – 2007
- Psuedo-blend mimics blend used at that time for target fisheries
 - One off
 - Difficult to recreate, examine

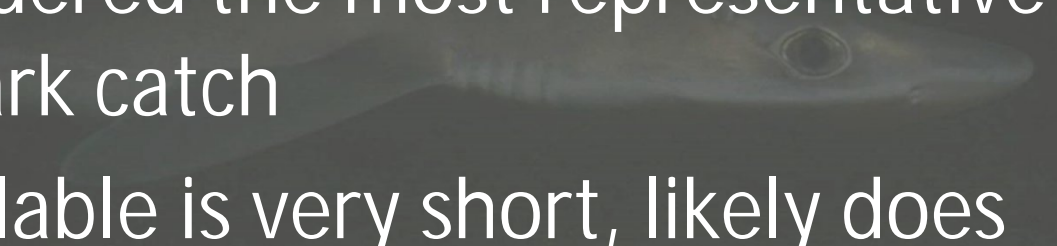
Status Quo: 1997-2007

- 2002 catch estimate is very large, potentially an over-estimate
 - One basking shark caught on longliner in the Aleutians
 - Extrapolated to very large catch for that haul
 - Estimate of “other/unidentified sharks” was very large, probably due to the one basking shark
 - Most likely, catch estimate is over-estimated due to small sample sizes and an incident with a rare, large species

Catch Accounting: 2003-2015

- “live” system
 - Data is constantly being error checked
 - Improvements to program can be made
 - Any changes are retroactive back to 2003
- Shark species identification began to improve in early 2000s, with fewer “unidentified” sharks (now <1% of sharks)
- Overlaps with observer restructuring

Observer Restructuring: 2013-2015

- Includes vessels <60 ft, which catch a large portion of the sharks
 - Should be considered the most representative estimates of shark catch
 - Time series available is very short, likely does not include full range of possible shark catches
- 

ABC and OFL Recommendations

Species		Spiny dogfish	Pacific sleeper shark	Salmon shark	Other/Unidentified shark	Total shark Complex
1997-2007						
Max Catch	ABC	13	629	149	351	1,022
	OFL	17	839	199	468	1,363*
Avg Catch	ABC	6	316	36	95	454
	OFL	8	422	48	126	605
2003-2015						
Max Catch	ABC	18	315	149	229	517
	OFL	24	421	199	305	689*
Avg Catch	ABC	10	125	40	28	203
	OFL	14	166	53	38	270
2013-2015						
Max Catch	ABC	18	49	39	2	103
	OFL	24	65	52	3	138
Avg Catch	ABC	13	48	27	2	90
	OFL	17	64	36	2	120*

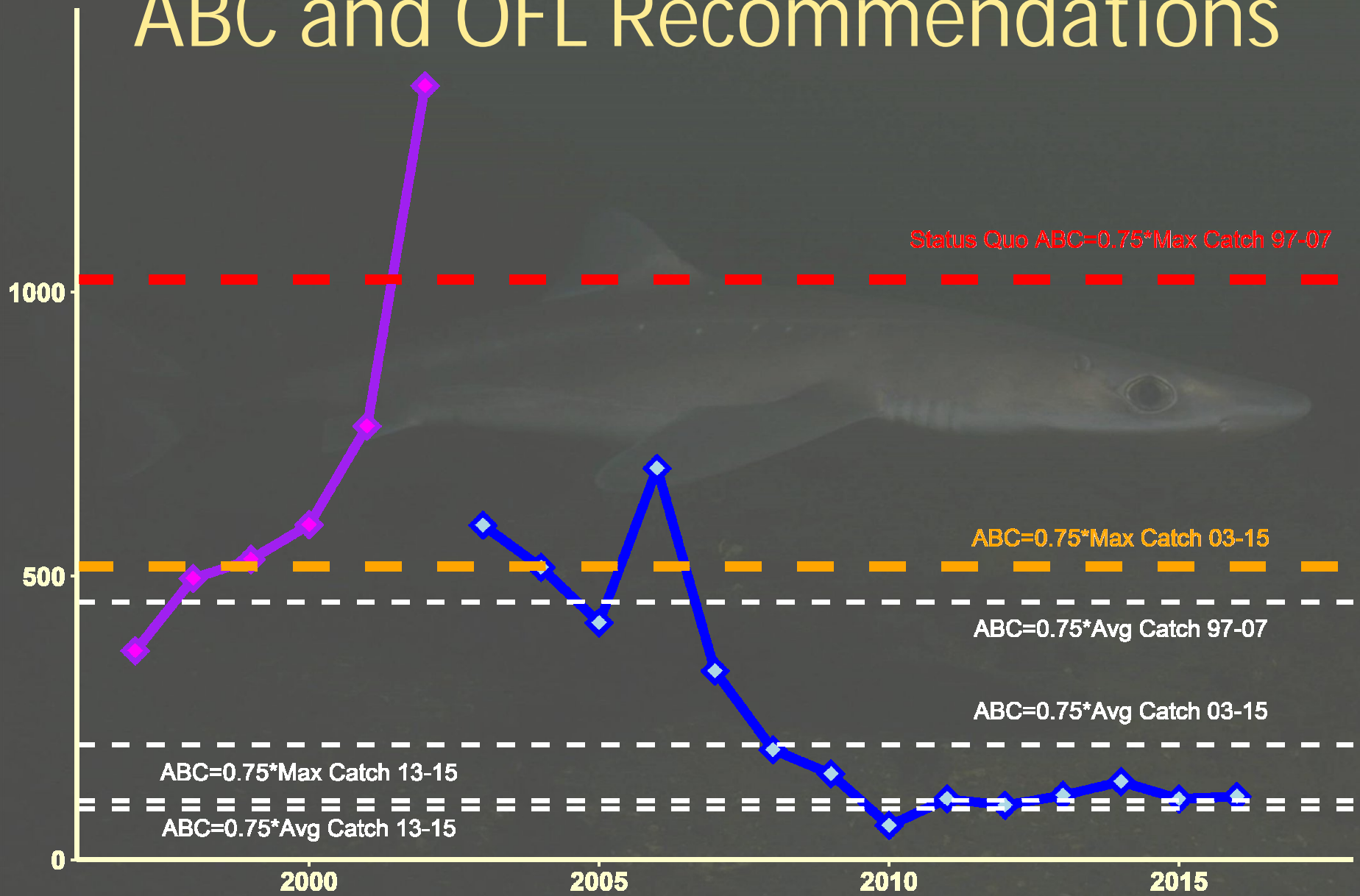
*The complex total is based on the maximum catch of the whole complex, not the sum of the individual species maximums.

ABC and OFL Recommendations

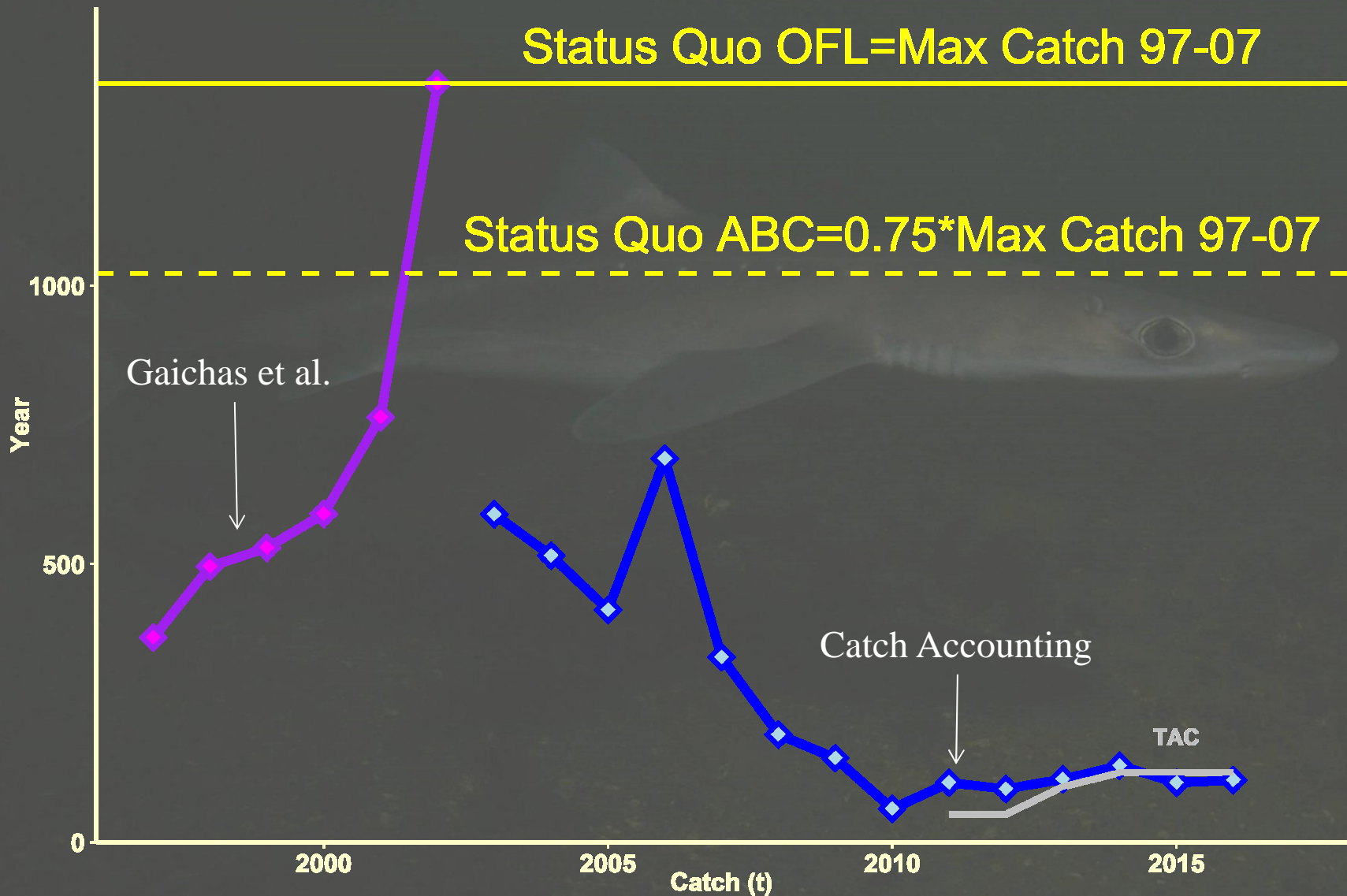
Species		Spiny dogfish	Pacific sleeper shark	Salmon shark	Other/Unidentified shark	Total shark Complex
1997-2007						
Max Catch	ABC	13	629	149	351	1,022
	OFL	17	839	199	468	1,363*
Avg Catch	ABC	6	316	36	95	454
	OFL	8	422	48	126	605
2003-2015						
Max Catch	ABC	18	315	149	229	517
	OFL	24	421	199	305	689*
Avg Catch	ABC	10	125	40	28	203
	OFL	14	166	53	38	270
2013-2015						
Max Catch	ABC	18	49	39	2	103
	OFL	24	65	52	3	138
Avg Catch	ABC	13	48	27	2	90
	OFL	17	64	36	2	120*

*The complex total is based on the maximum catch of the whole complex, not the sum of the individual species maximums.

ABC and OFL Recommendations



BSAI Shark Complex Catch



Research and Future Directions

- Catch by numbers
 - Avg wt concerns
 - Hard/impossible to weigh
 - Drop offs
 - Unidentified or rare species....no weight data
 - Observations with numbers but not weight
 - Not in CAS!!!



Research and Future Directions

- Catch by numbers
 - AKRO has programmers working on it
 - Estimating catch by numbers for all sharks
 - Only back to 2010
 - Should be available for 2017 assessment cycle



Research and Future Directions

- Catch by numbers
- Request to PT:
 - “The Team recommends the analyst continue with efforts to estimate catch by numbers and examine the impact of potentially incorrect average weights”



Research and Future Directions

- Catch by numbers
- Pacific Sleeper Shark
 - Ageing, genetics
 - West coast data?
- Spiny dogfish
 - Migration, Ageing



Questions???



Photo courtesy of Ken Goldman, ADF&G

