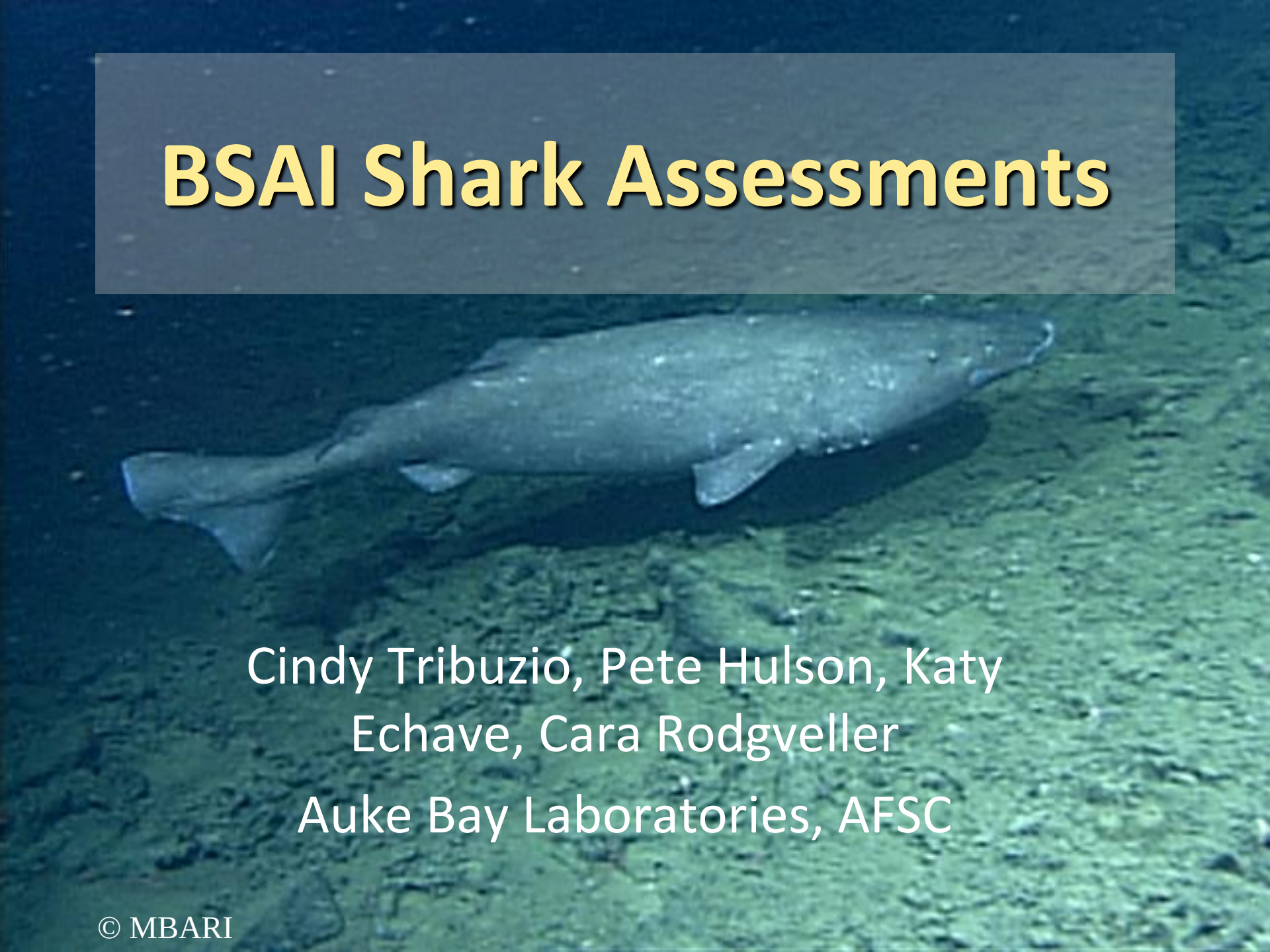
BSAI Shark Assessments



Cindy Tribuzio, Pete Hulson, Katy Echave, Cara Rodgveller

Auke Bay Laboratories, AFSC

© MBARI

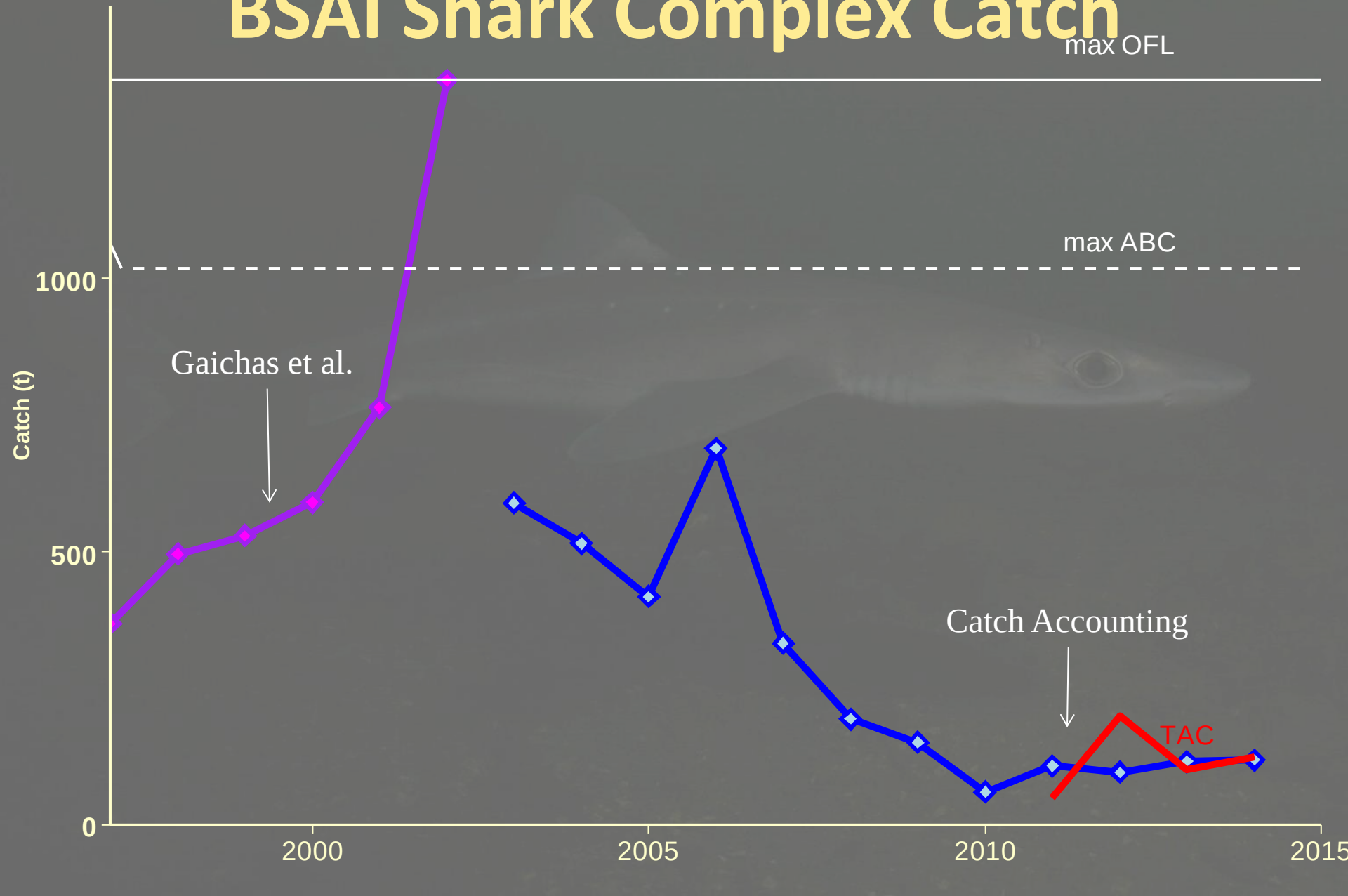
BSAI Sharks

- New for 2014:
  - Updated catch data for 2013 and 2014 (as of Oct 1, 2014)
  - Survey data updated
    - Biomass estimates from 2014 RACE surveys updated
    - RPNs for IPHC longline survey
    - Length frequency data
  - Alternative ABC/OFL calculations presented

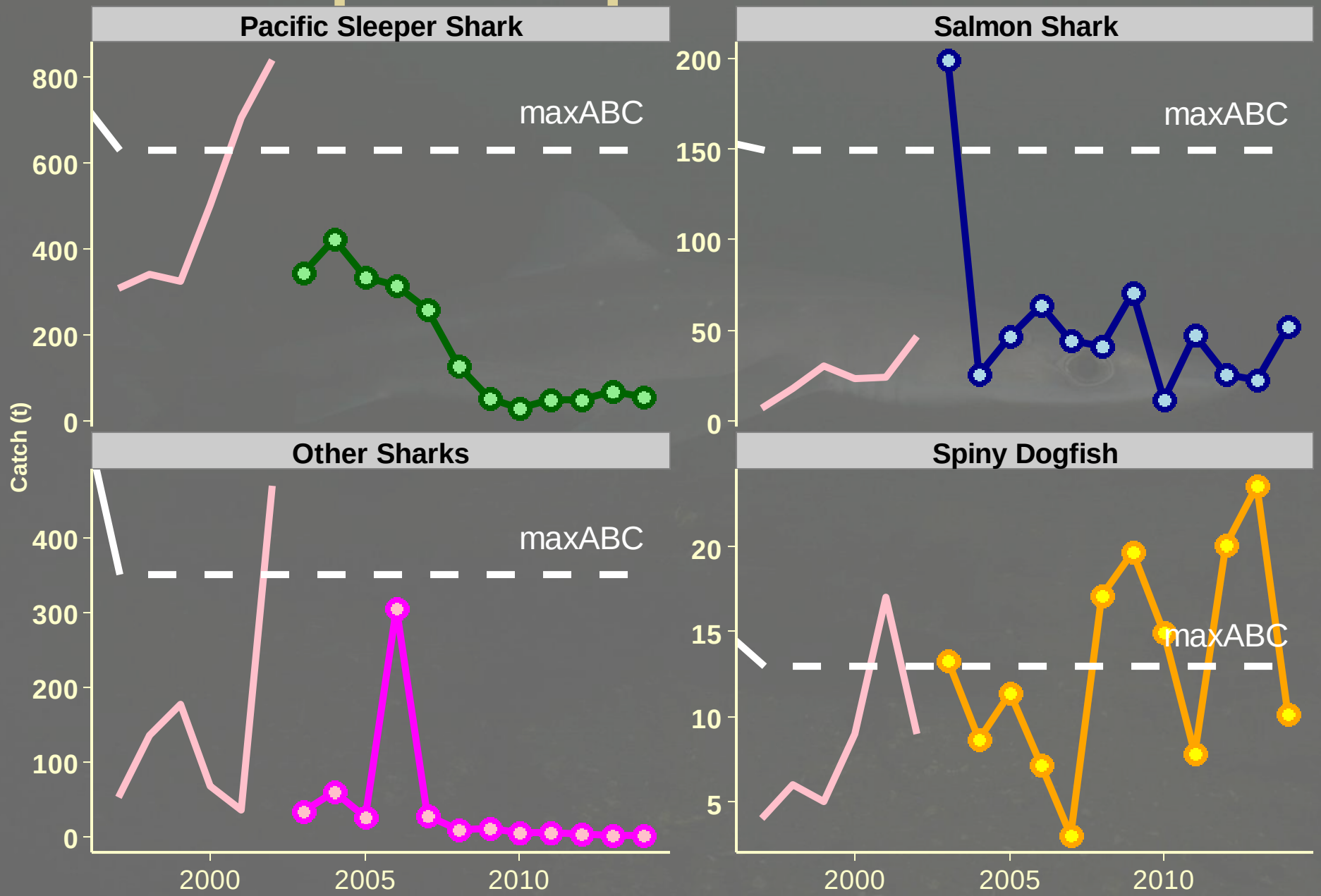
Responses to PT/SSC Comments

- Major comments (paraphrased):
  - **Complete comparison of HFICE and new catch time series**
    - *HFICE is not recommended due to issues with potential for double counting*
    - *A comparison between the two can be conducted, but more data is necessary, not available for a few years.*
    - *GOA Team recommended running HFICE in 2016*
  - **Look into feasibility of using discard mortality**
    - *Literature review is underway, but little information exists for discard mortality of sharks on LL gear*
  - **Consider issues with OBS restructuring**
    - *Discussed in appendix document presented in Sept*

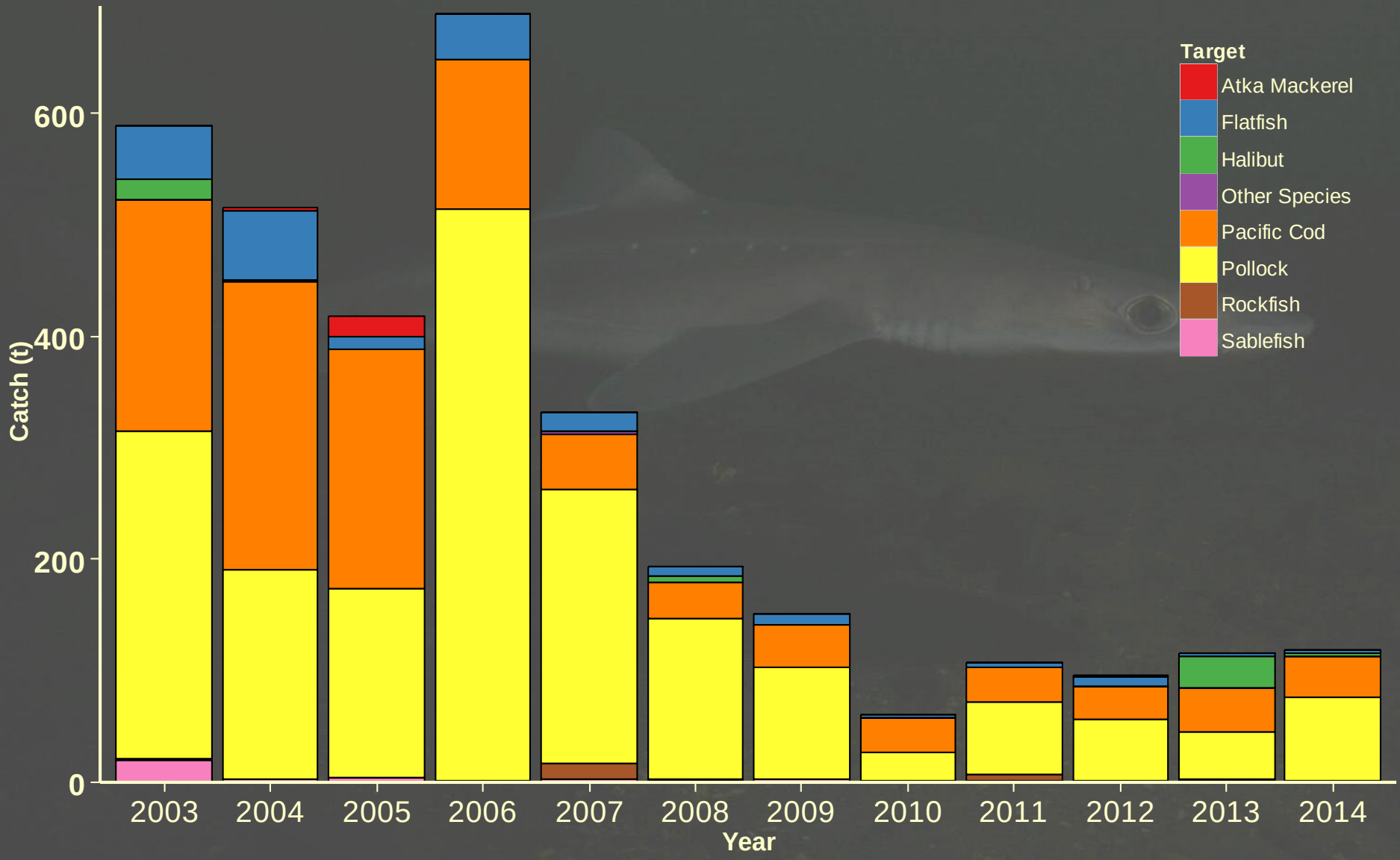
BSAI Shark Complex Catch

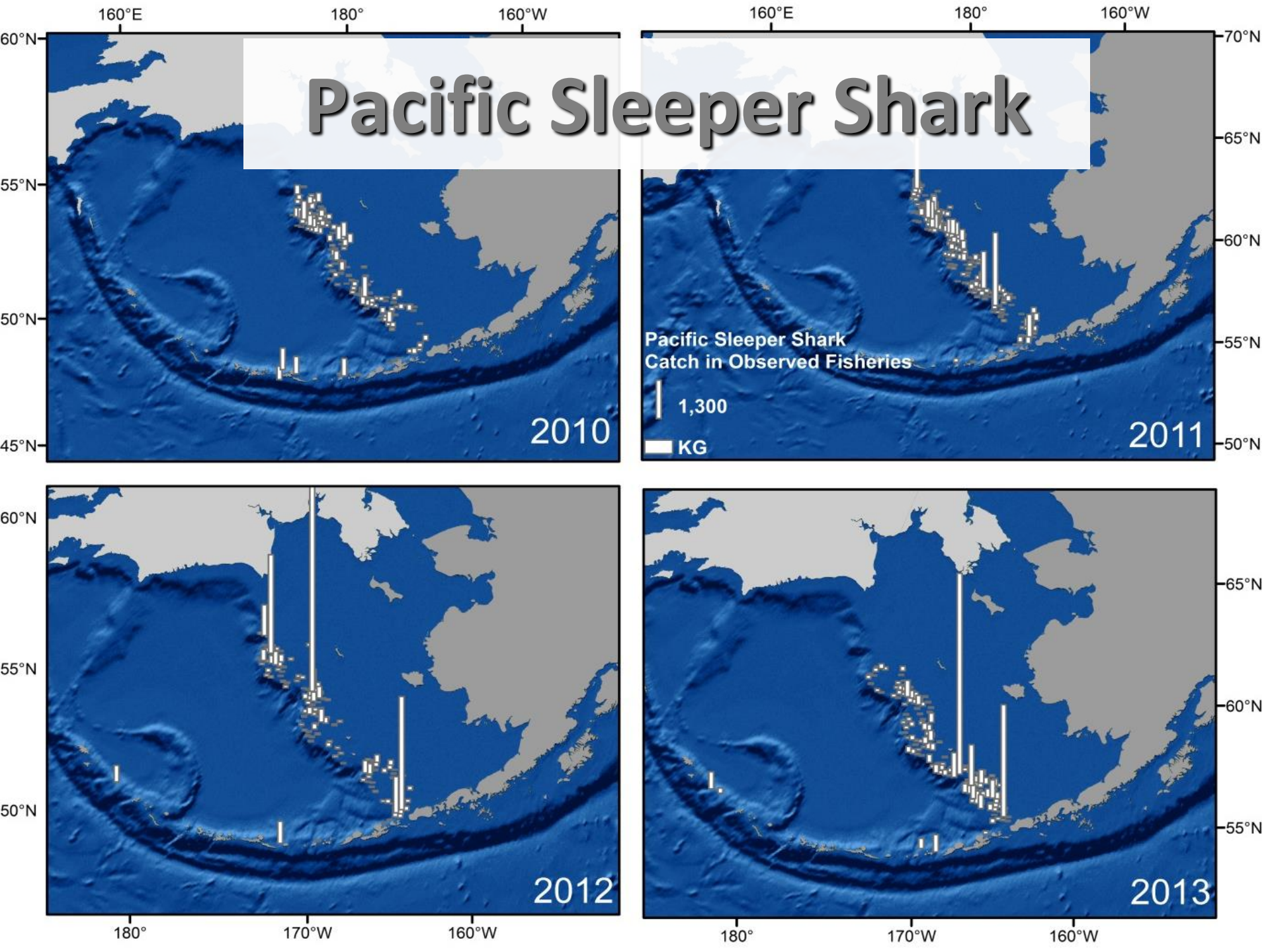


Species Specific Catch

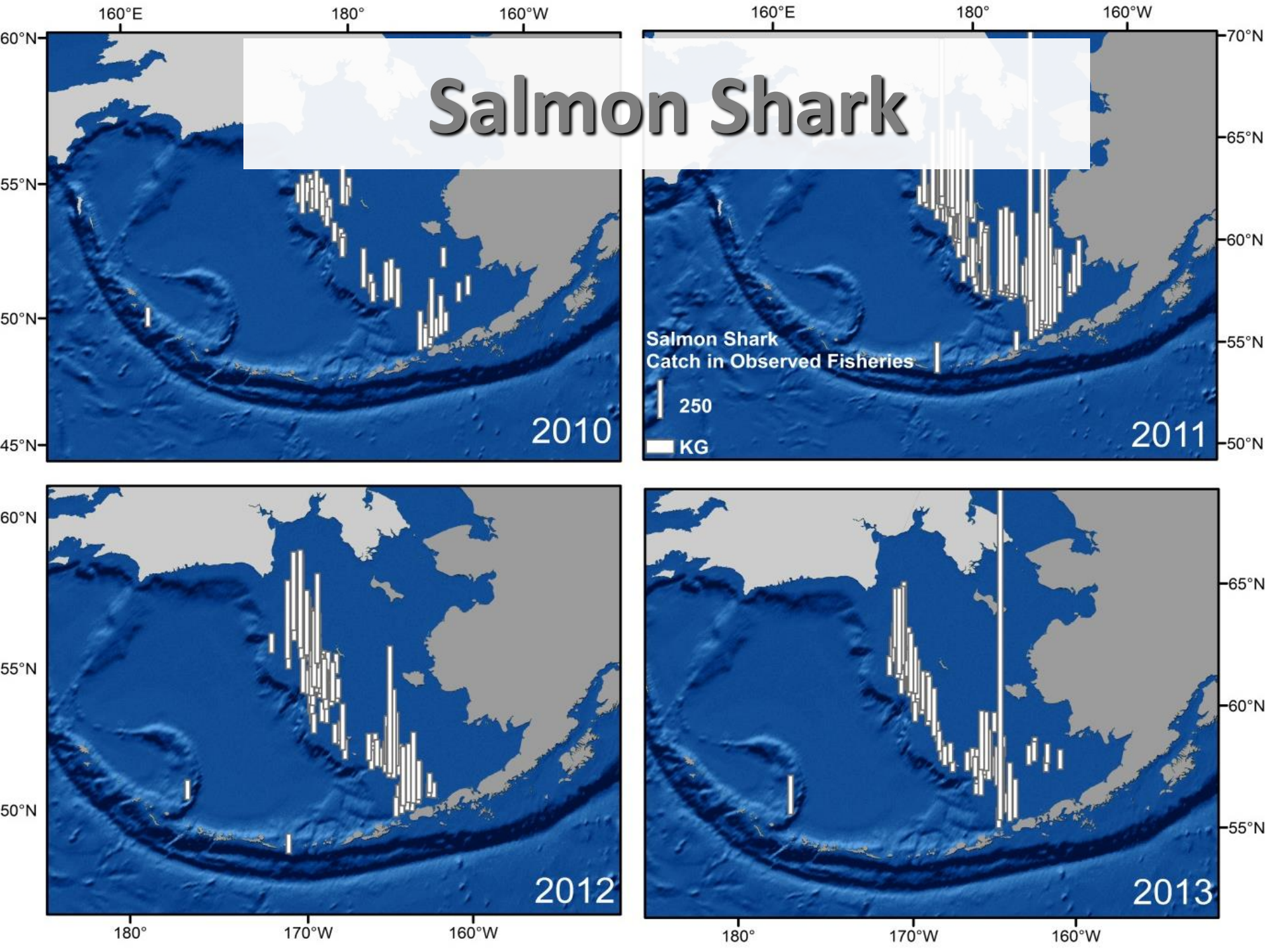


Catch by Target Group

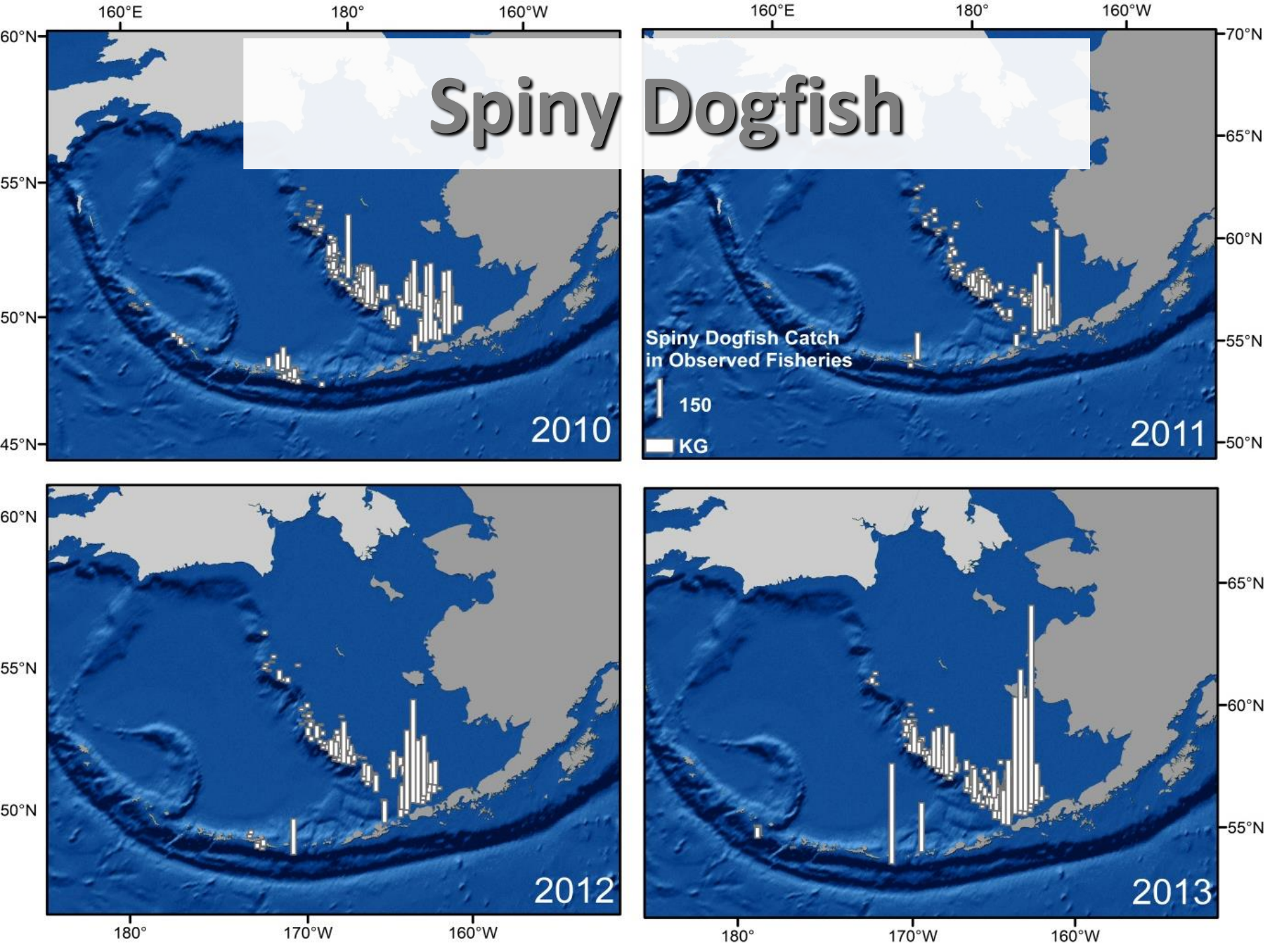



Pacific Sleeper Shark
Pacific Sleeper Shark
Catch in Observed Fisheries
1,300
KG
2010
2011
2012
2013
160°E
180°
160°W
170°W
60°N
55°N
50°N
45°N
70°N
65°N

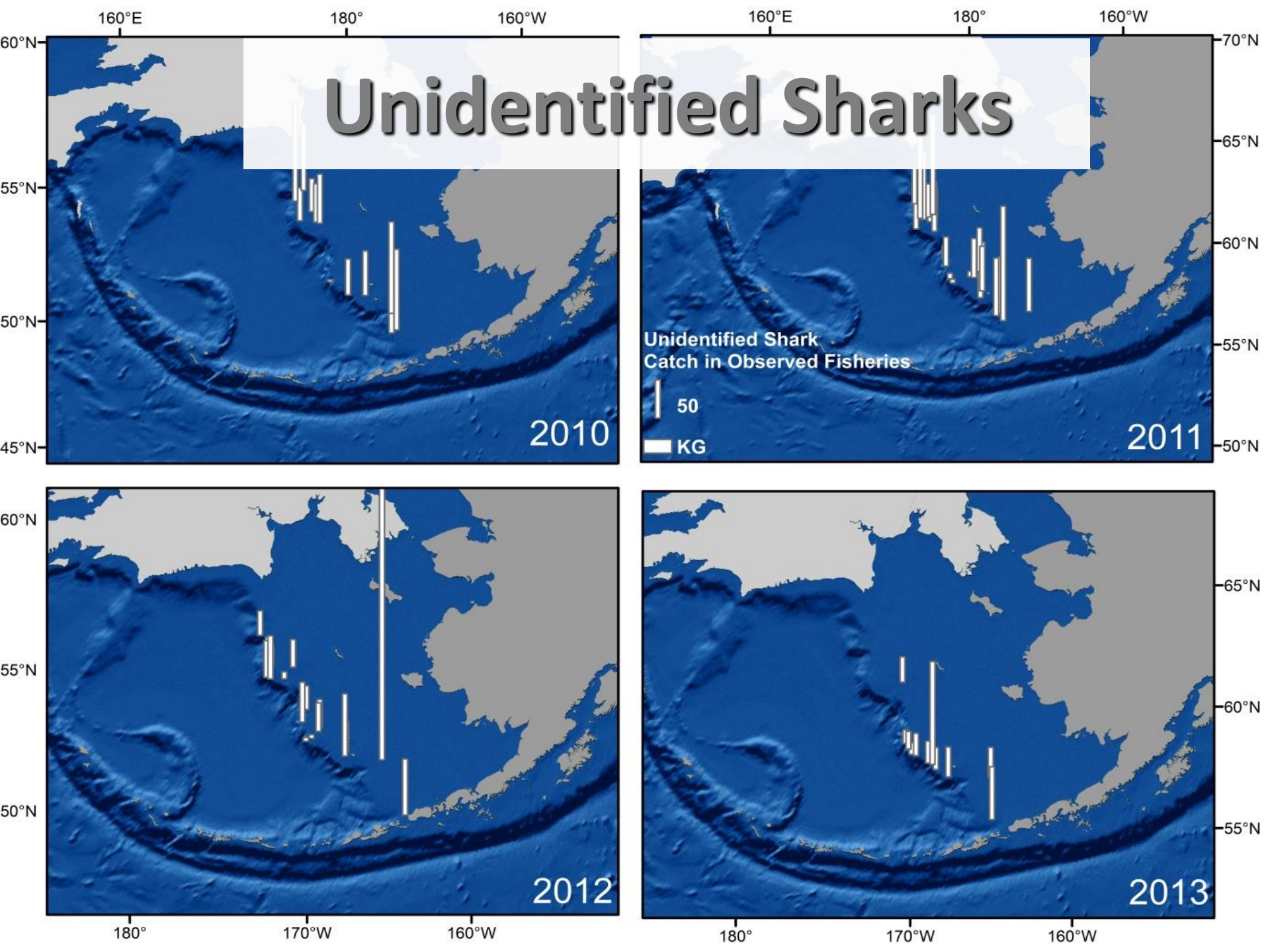
Salmon Shark



Spiny Dogfish



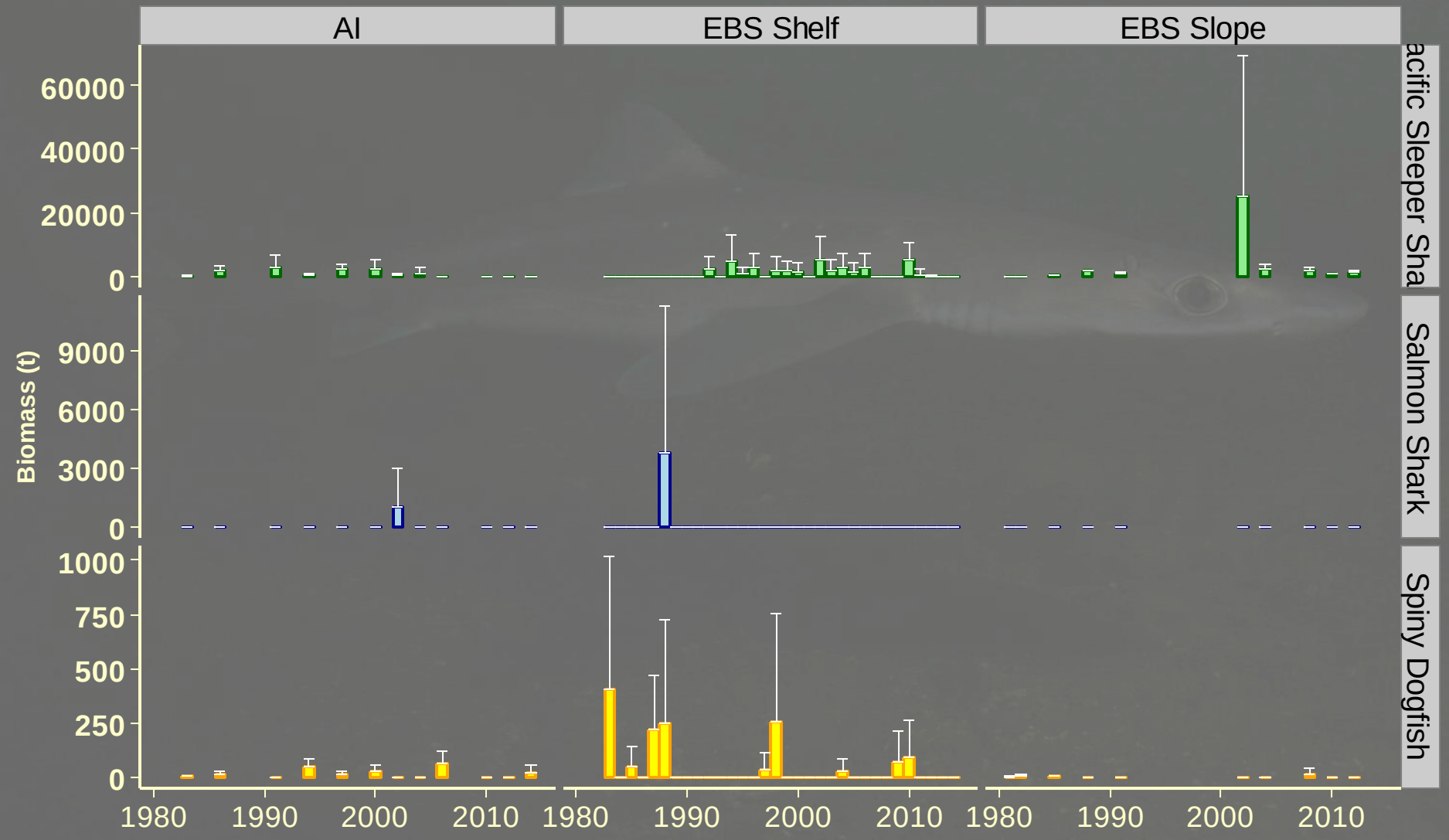
Unidentified Sharks



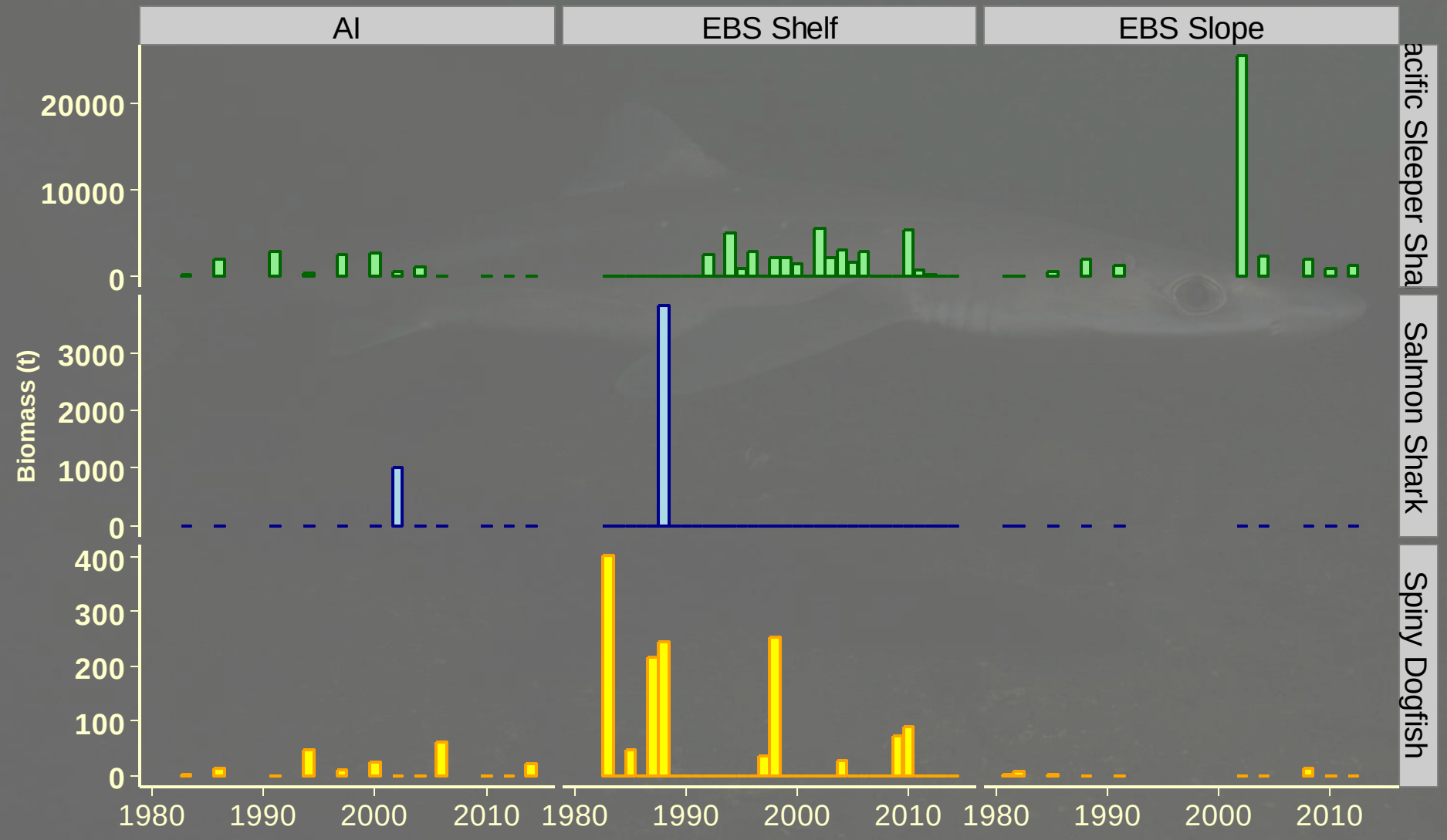
Other Data Sources

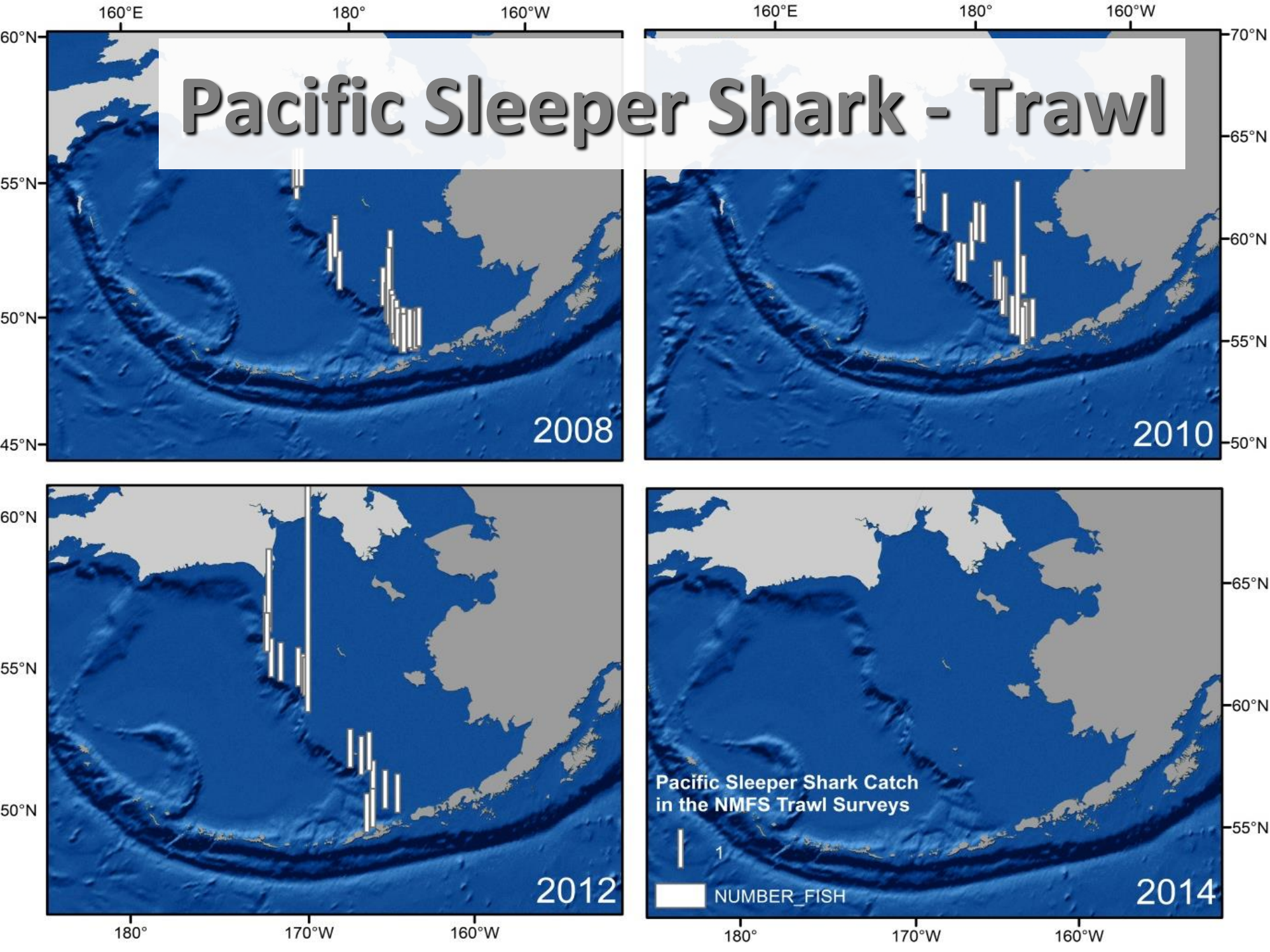
- AFSC trawl survey biomass
  - EBS Shelf – annual, zero shark catch since 2012
  - EBS Slope – no 2014 survey, regularly catches PSS
  - AI – two spiny dogfish caught in 2014 survey
- RPNs (IPHC) – annual relative population index
- Length frequency – from trawl surveys and some directed longline surveys and OBS special projects

Survey Biomass – AFSC Trawl

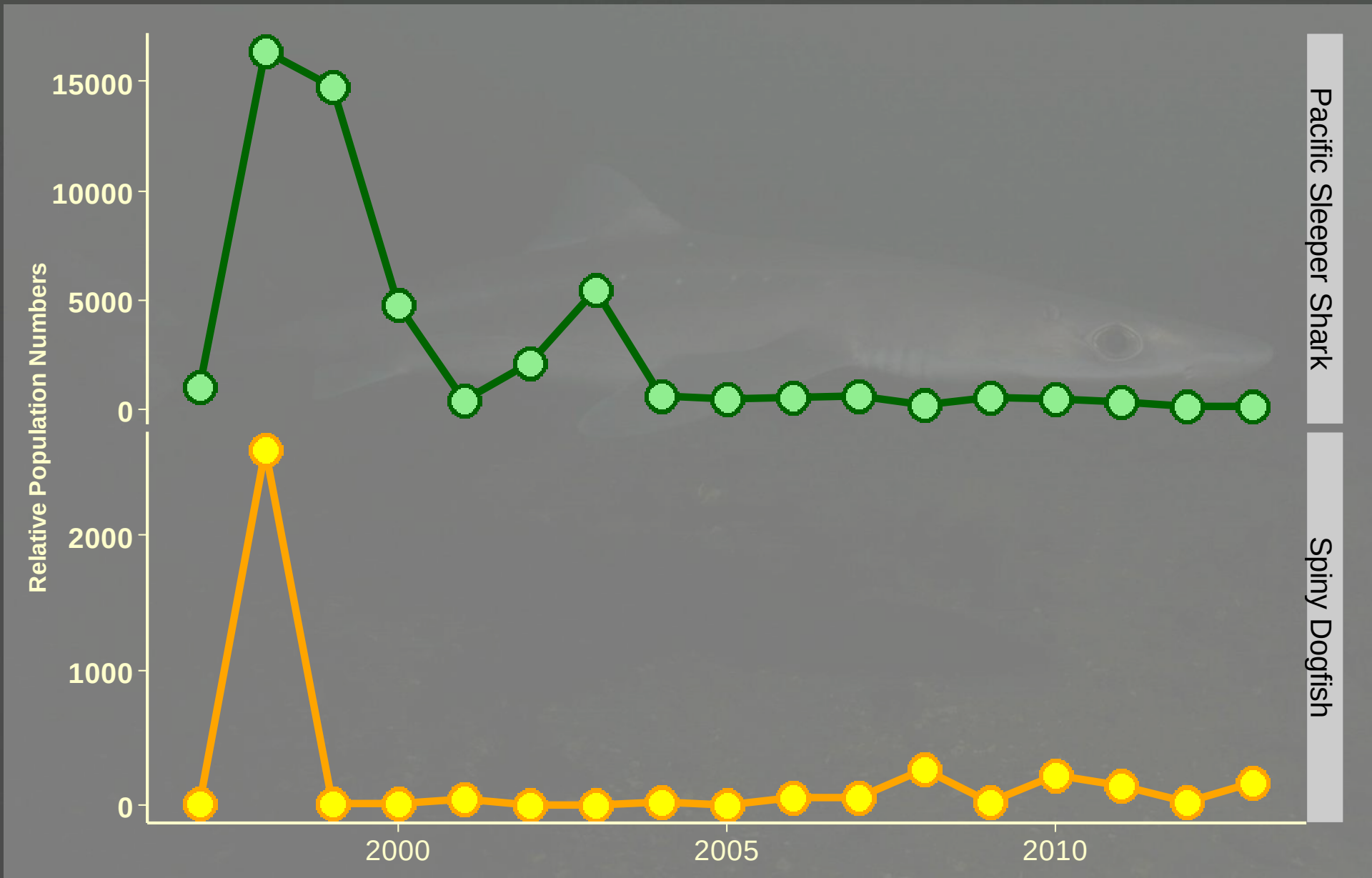


Survey Biomass – AFSC Trawl

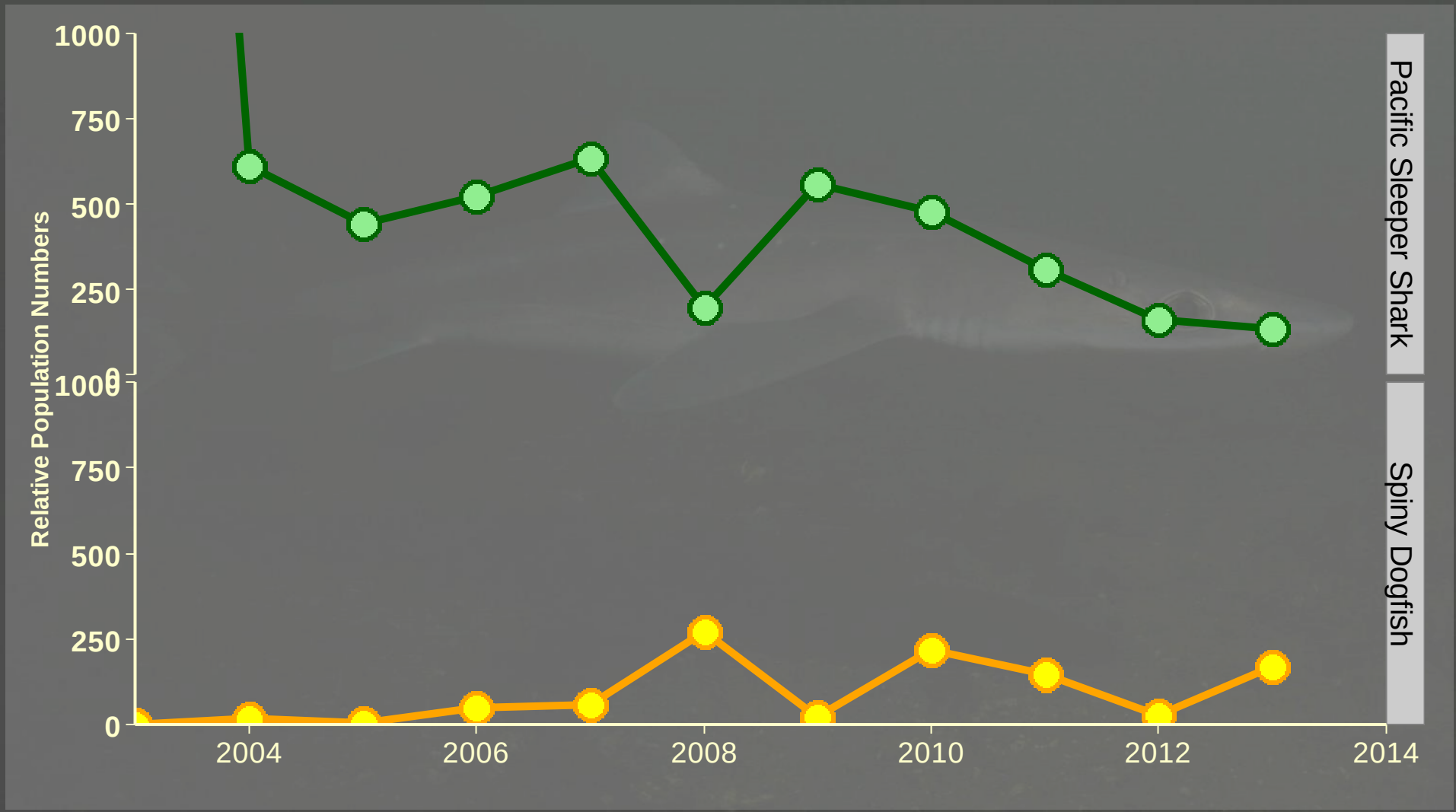


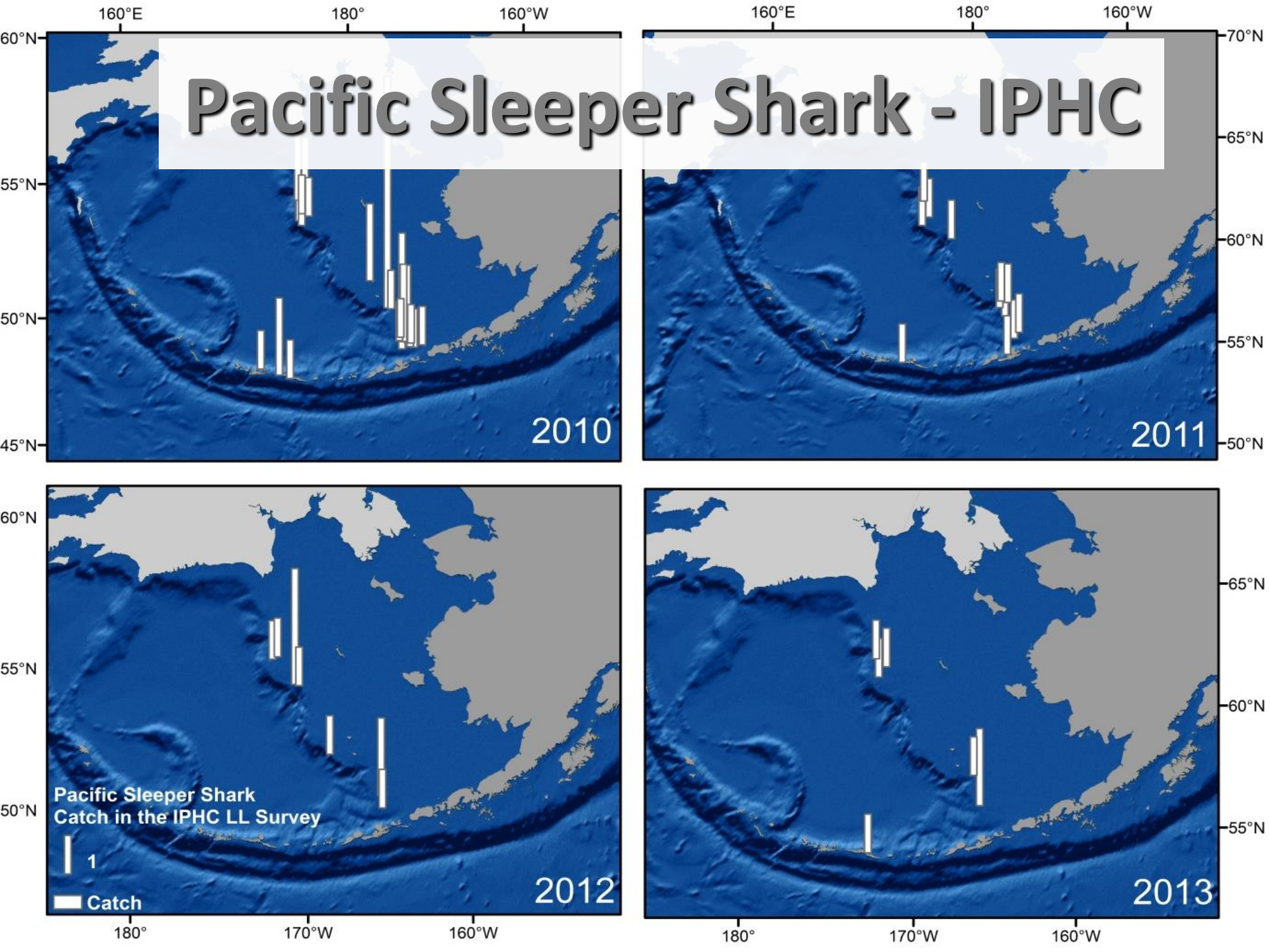

Pacific Sleeper Shark - Trawl
160°E
180°
160°W
60°N
55°N
50°N
45°N
70°N
65°N
60°N
55°N
50°N
2008
2010
2012
2014
170°W
Pacific Sleeper Shark Catch
in the NMFS Trawl Surveys
1
NUMBER_FISH

Survey RPNs – IPHC LL

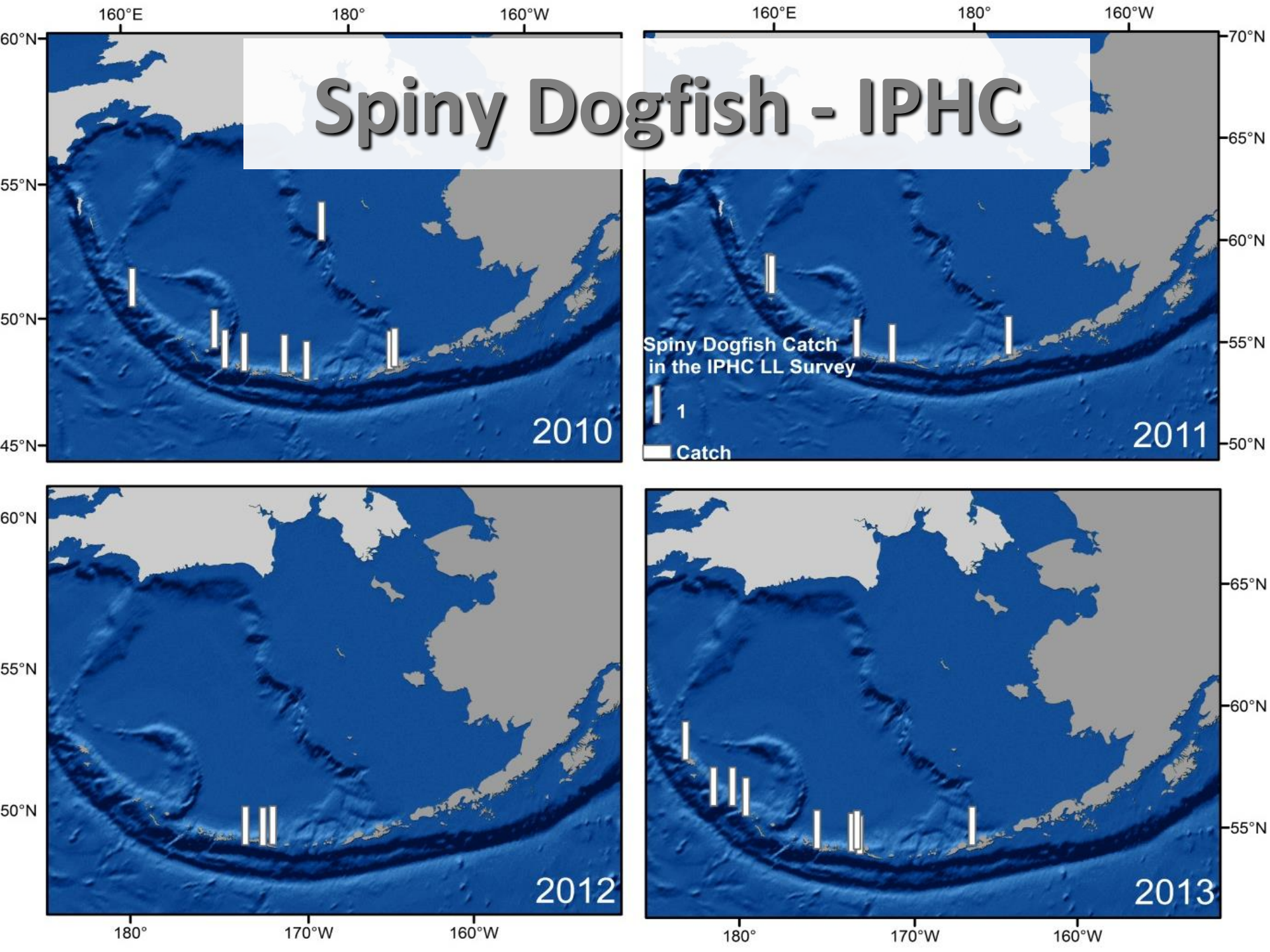


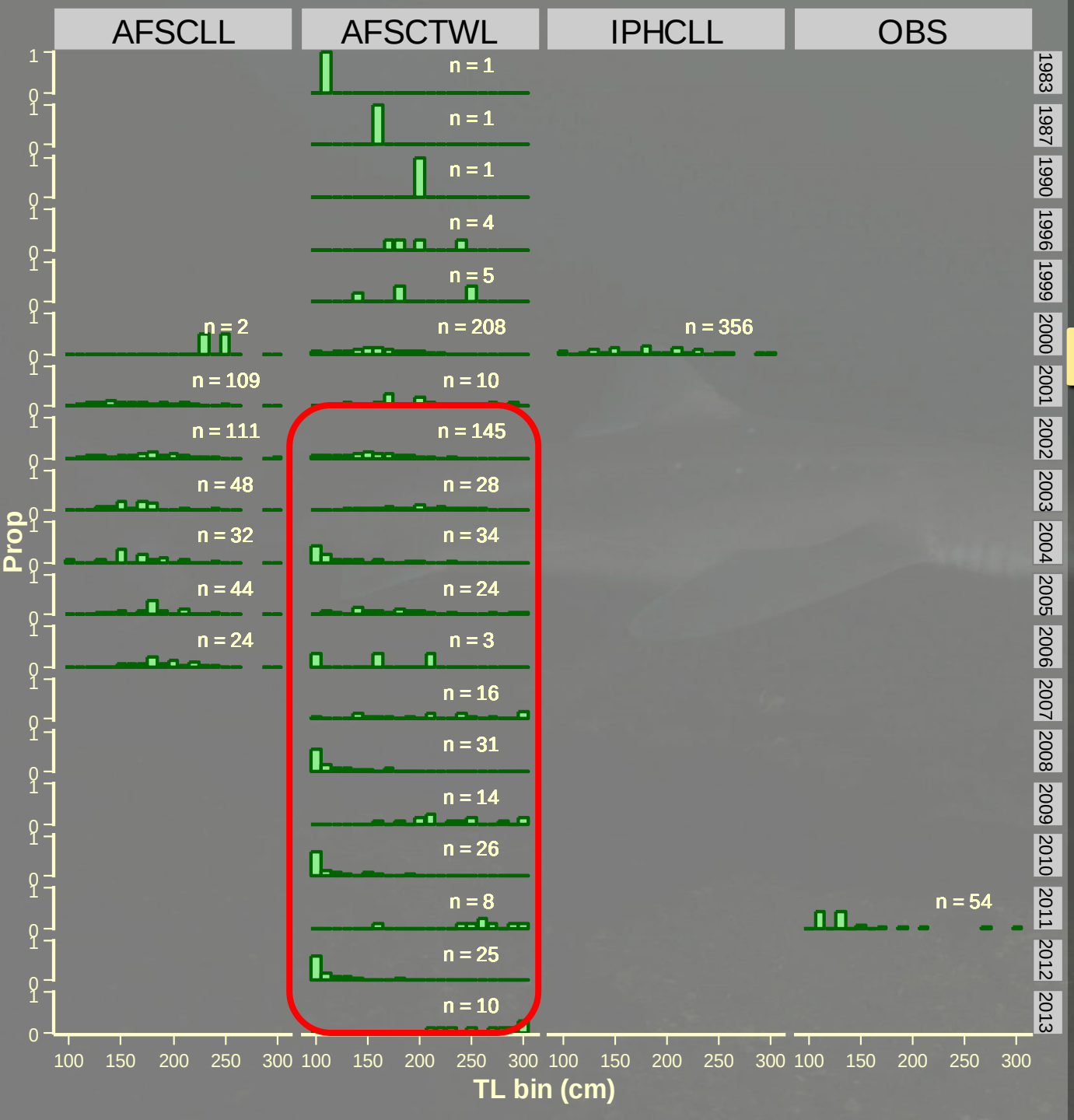
Survey RPNs – IPHC LL




Pacific Sleeper Shark - IPHC
160°E
180°
160°W
60°N
55°N
50°N
45°N
70°N
65°N
60°N
55°N
50°N
2010
2011
2012
2013
Pacific Sleeper Shark
Catch in the IPHC LL Survey
1
Catch
180°
170°W
160°W

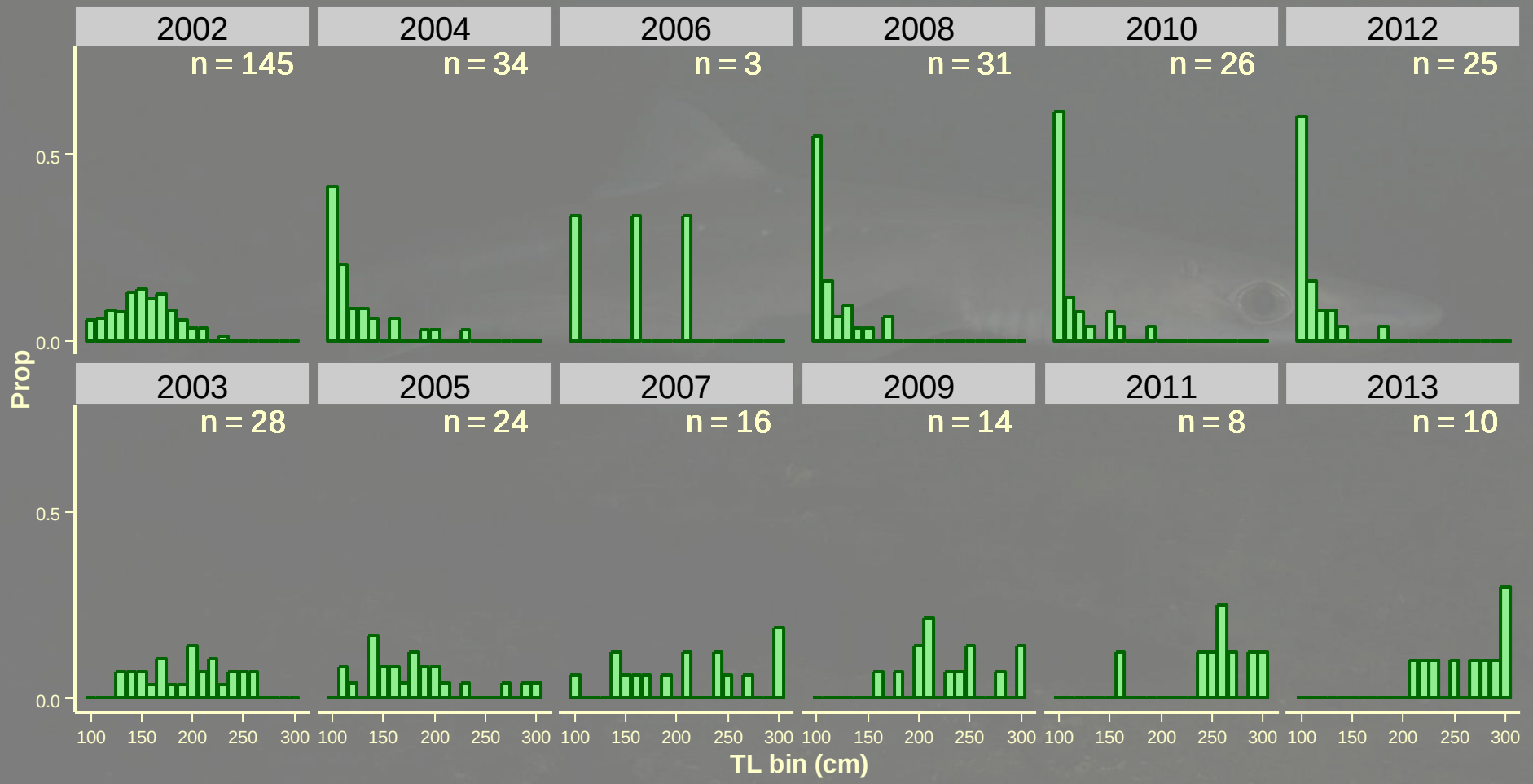
Spiny Dogfish - IPHC





Length Frequency – Pacific Sleeper Sharks

Length Frequency – Pacific Sleeper Shark



ABC and OFL Recommendations

- ABC/OFL set for complex as a whole
- Sum of individual species recommendations
- All species are currently Tier 6 (max catch history)

ABC and OFL Recommendations

- CIE strongly recommended against using maximum catch history:
- *"That all shark stocks in the BSAI/GOA area are split to have separate OFL/ABC by species and region, and that **the OFL be based on the Tier 6 approach as the average catch of each species individually**."*
- *"Using the **maximum or average catch for Tier 6 may not be appropriate**; alternatives could be to use an upper bound of a one-sided 95% or 99% confidence interval."*

- *"Pacific sleeper shark: What data are available is disturbing. ……..fishery dependent and independent data suggests a declining trend. As such, while* ***average catch is probably the only measure available for informing an OFL……***
- *"Salmon shark: ……In the interim,* ***average catch can serve as a good proxy****, but that suggestion is made grudgingly given how little is known about this stock."*
- *"Dogfish: ……..In the interim,* ***average catch in the 1997-2007 should be feasible*** *for both components (i.e. GOA and BSAI) . It is recognized that the GOA dogfish uses a biomass*M approach. However, in keeping with conclusion 1 the* ***average catch is probably a more robust measure****."*

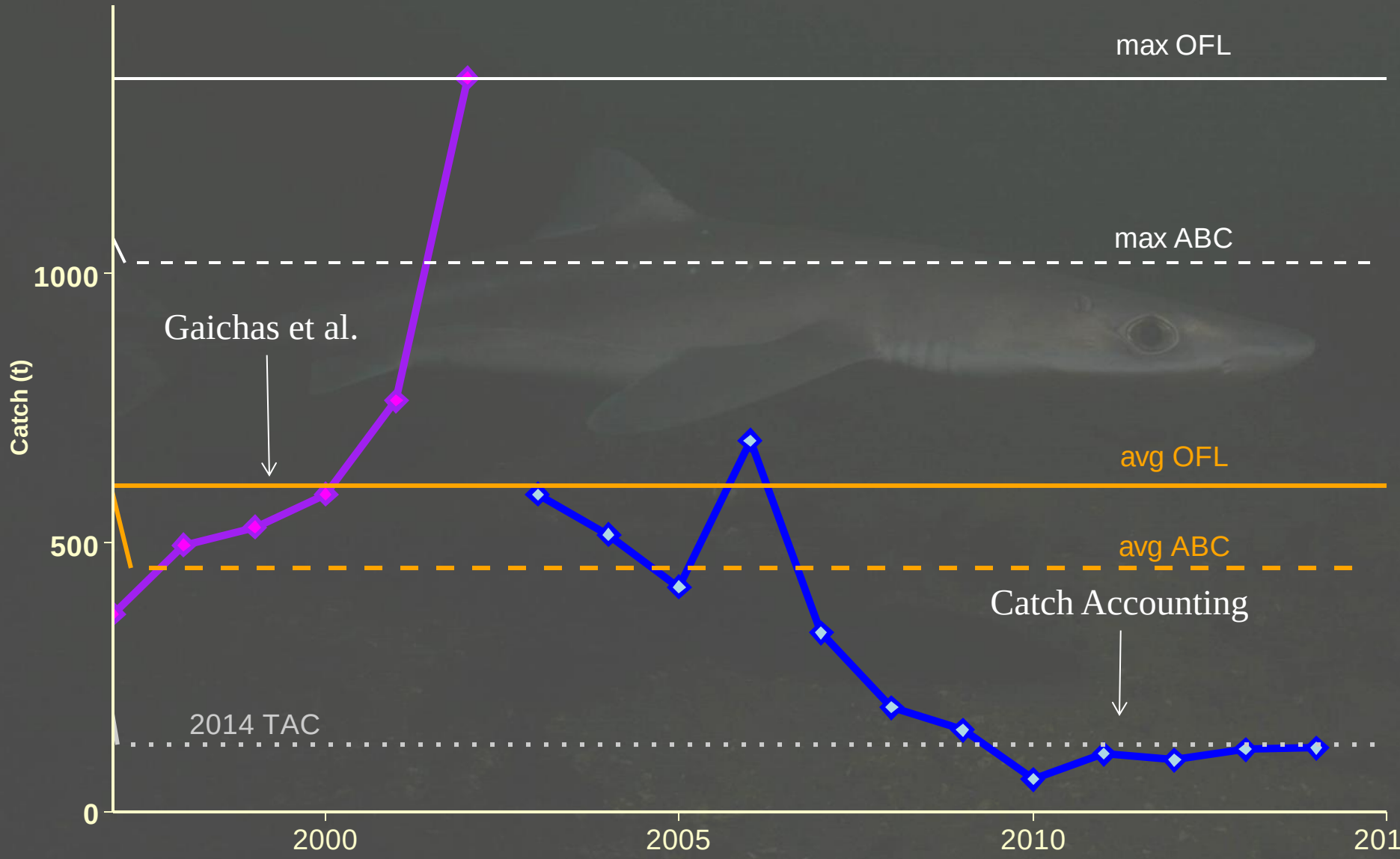
ABC and OFL Recommendations

- CIE recommended using average historical catch or one sided 95% upper confidence interval of average
- Authors recommend average catch
  - Current catch levels are well below the historical average and not likely to restrict other fisheries
  - TAC has been set well below ABC

ABC and OFL Recommendations

	Spiny dogfish	Pacific sleeper shark	Salmon shark	Other/Uniden shark	Total shark Complex
Maximum Catch					
ABC	13	629	149	351	1,022
OFL	17	839	199	468	1,363
Upper 95% CI of AVG					
ABC	13	585	113	303	1,014
OFL	17	780	151	404	1,352
Average Catch					
ABC	**6**	**317**	**36**	**95**	**454**
OFL	**8**	**422**	**48**	**126**	**605**

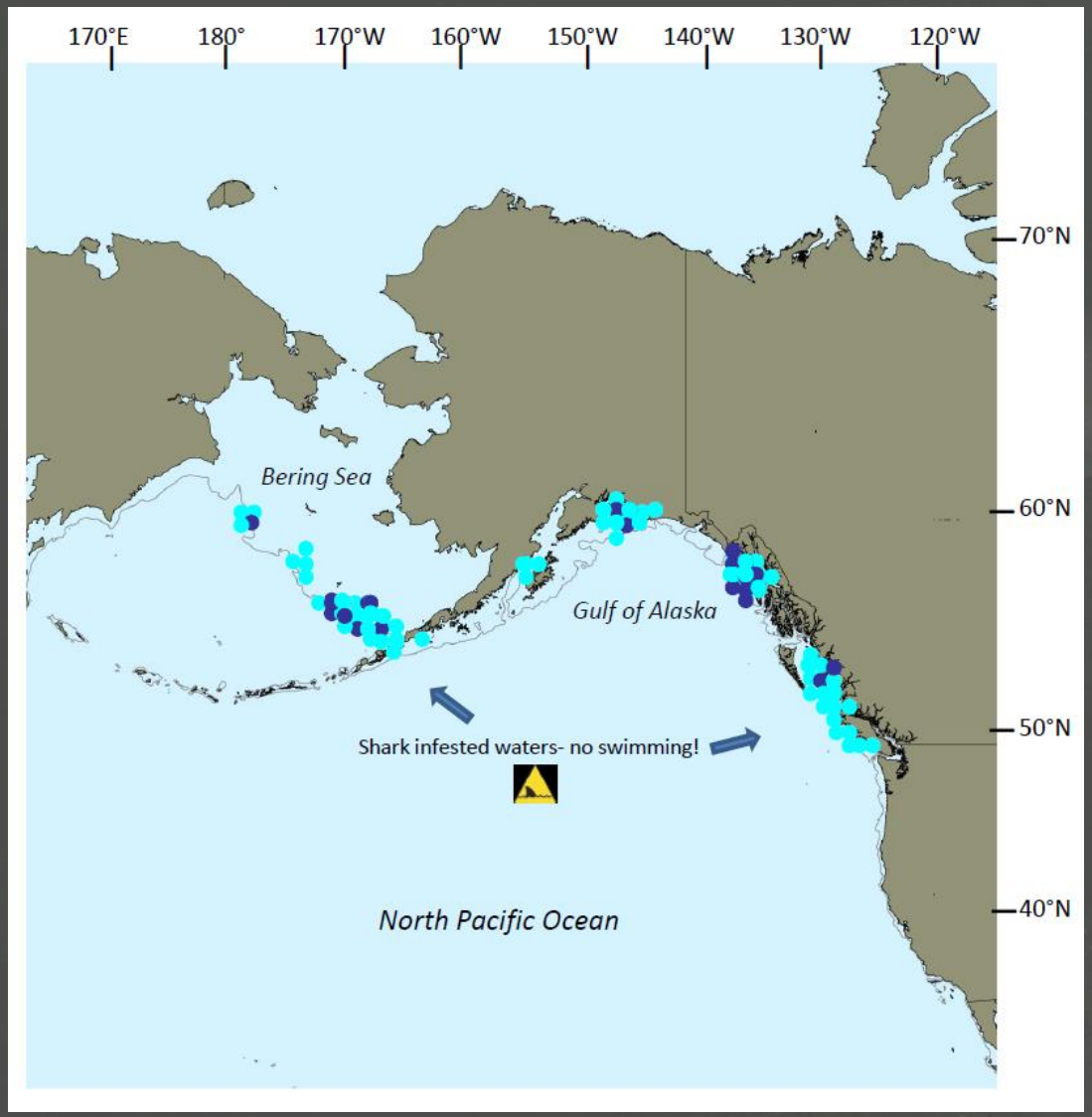
BSAI Shark Complex Catch

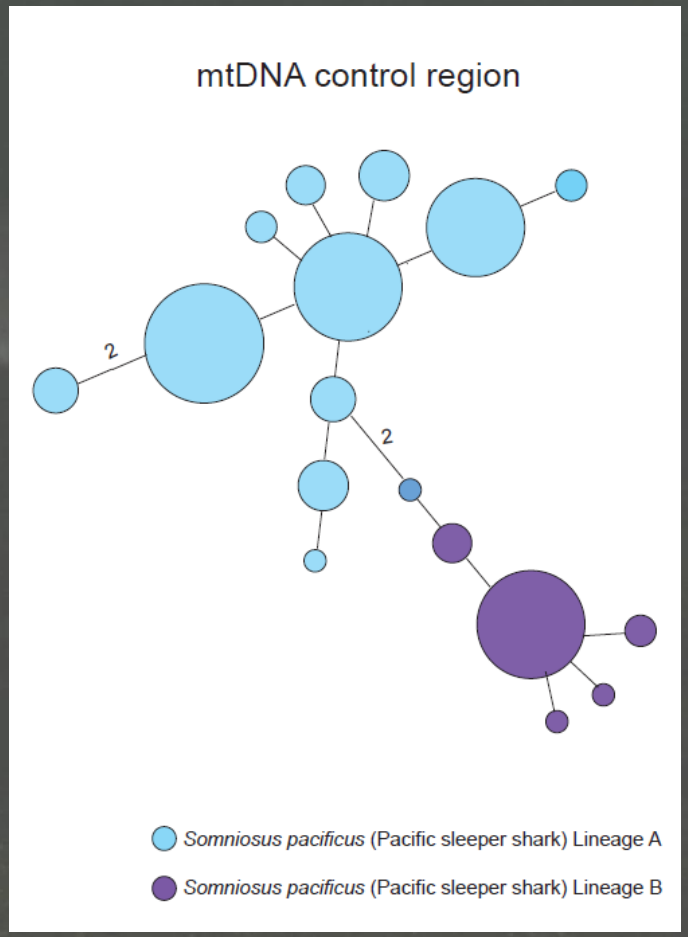


Research and Future Directions

- Pacific Sleeper Shark
  - Ageing, Maturity, genetics, survey trends
  - NWFSC survey data
- Spiny dogfish
  - Migration, Ageing

Genetics – Pacific Sleeper Sharks





Questions???

Photo courtesy of Ken Goldman, ADF&G

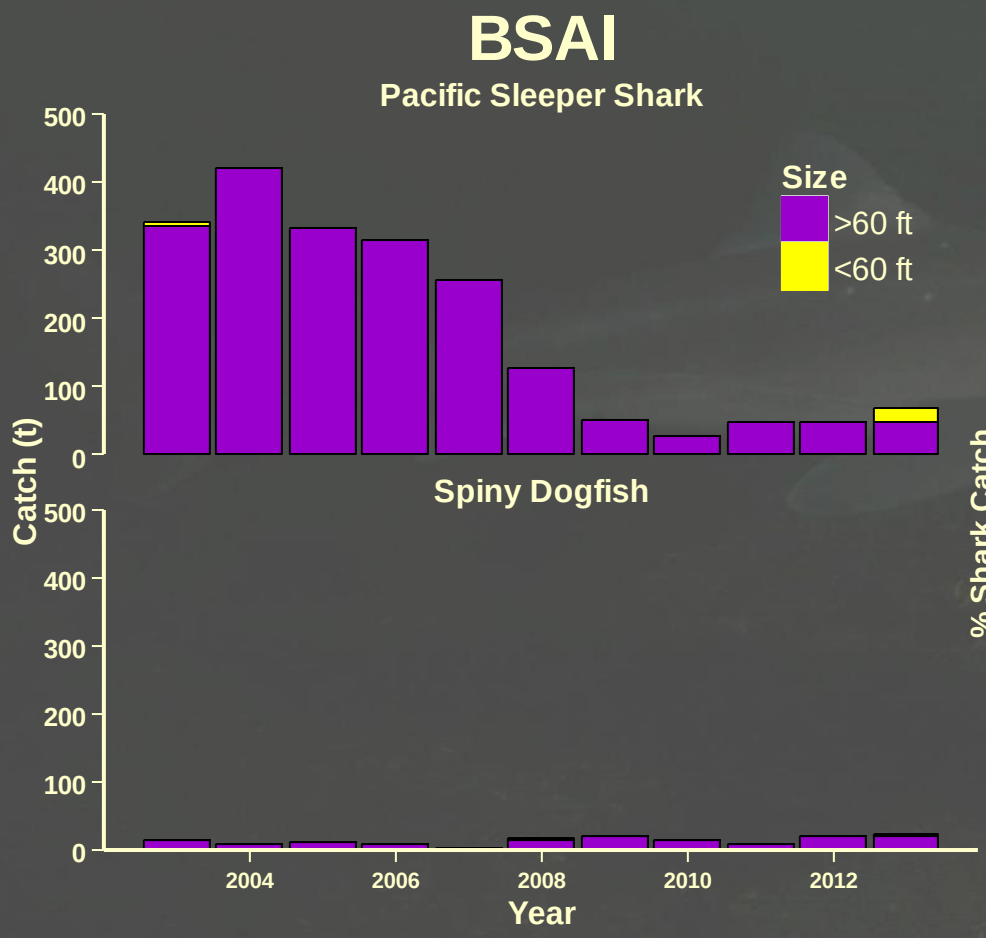
GOA IPHC PSS RPN

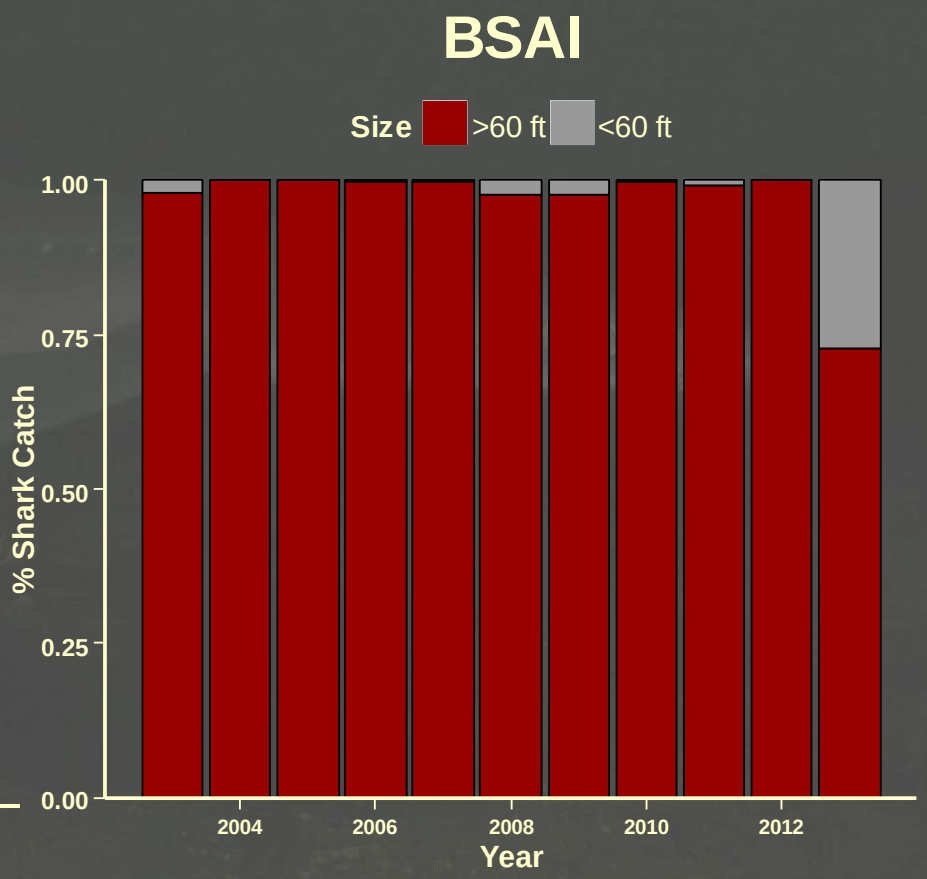
Shark Complex 2014 and 2015 recommendations

	Spiny Dogfish	Pacific Sleeper Shark	Salmon Shark	Other/Unid Sharks	Total Sharks
Tier	6	6	6	6	
M	0.097	UNK	0.18	UNK	
Average Catch	8	422	48	126	
ABC	6	317	36	95	**454**
OFL	8	422	48	126	**605**

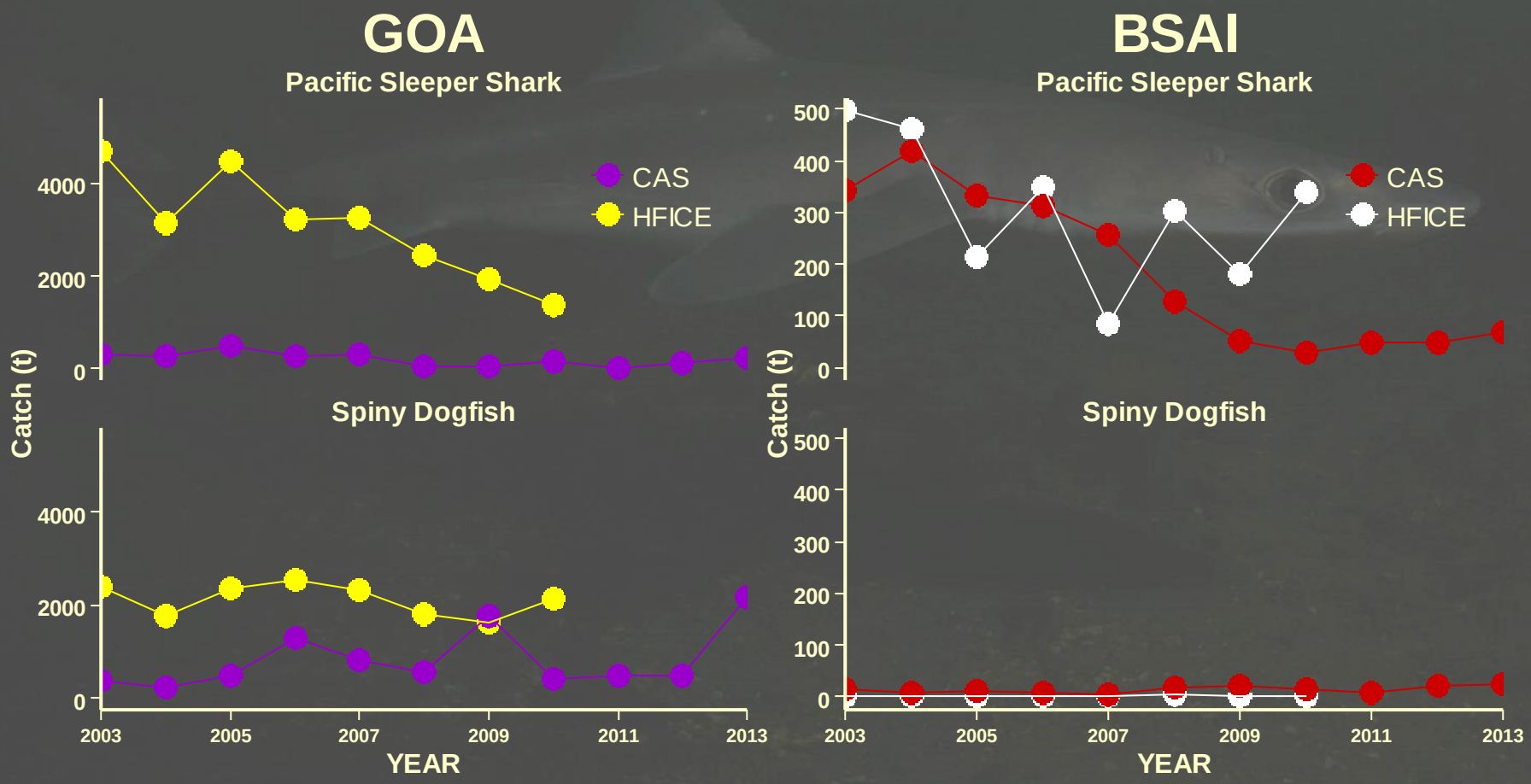
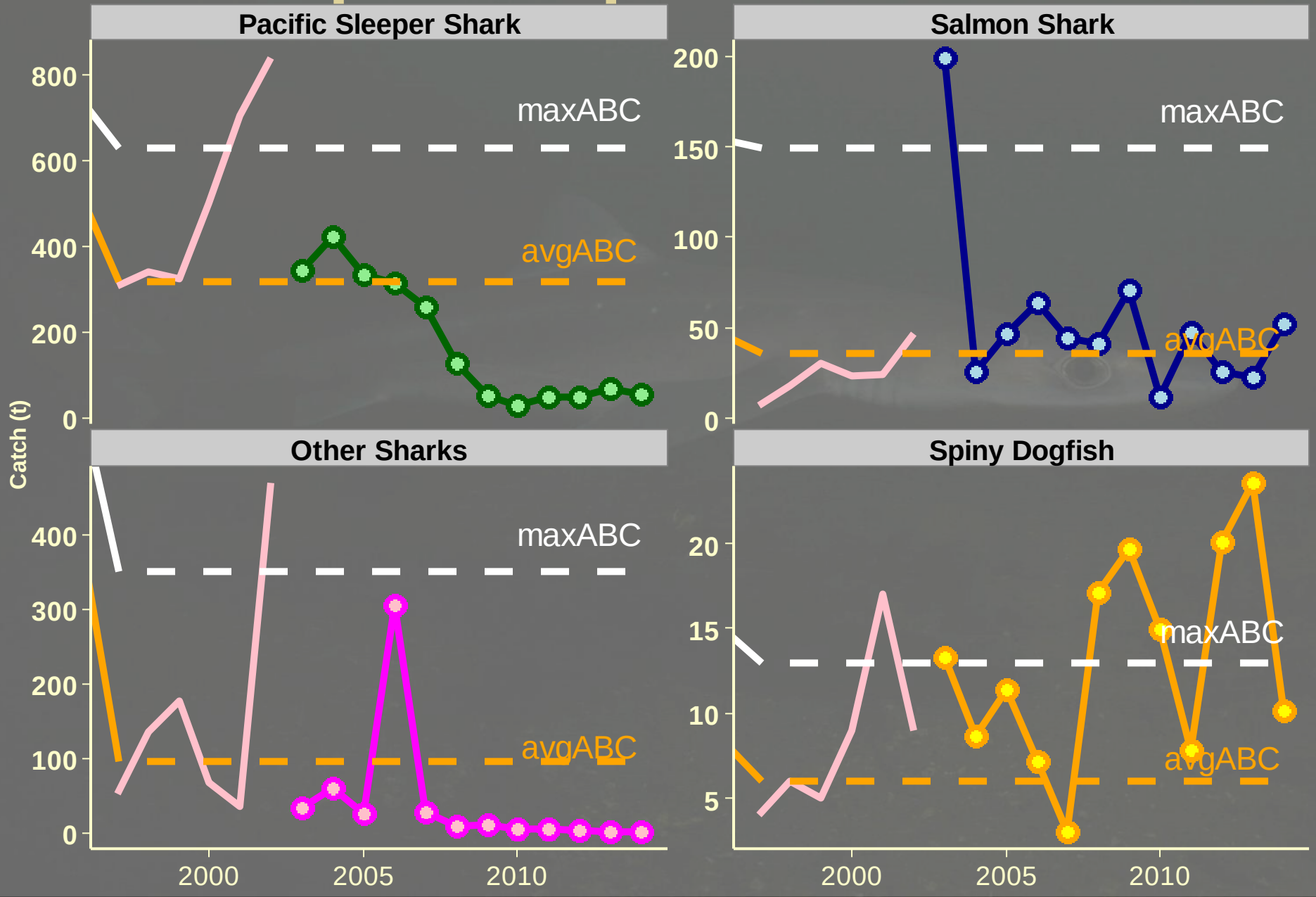
Photo courtesy of Ken Goldman, ADF&G

Vessels <60ft





HFICE compared to CAS



Species Specific Catch