



# Shark Assessments – Pacific Sleeper Sharks

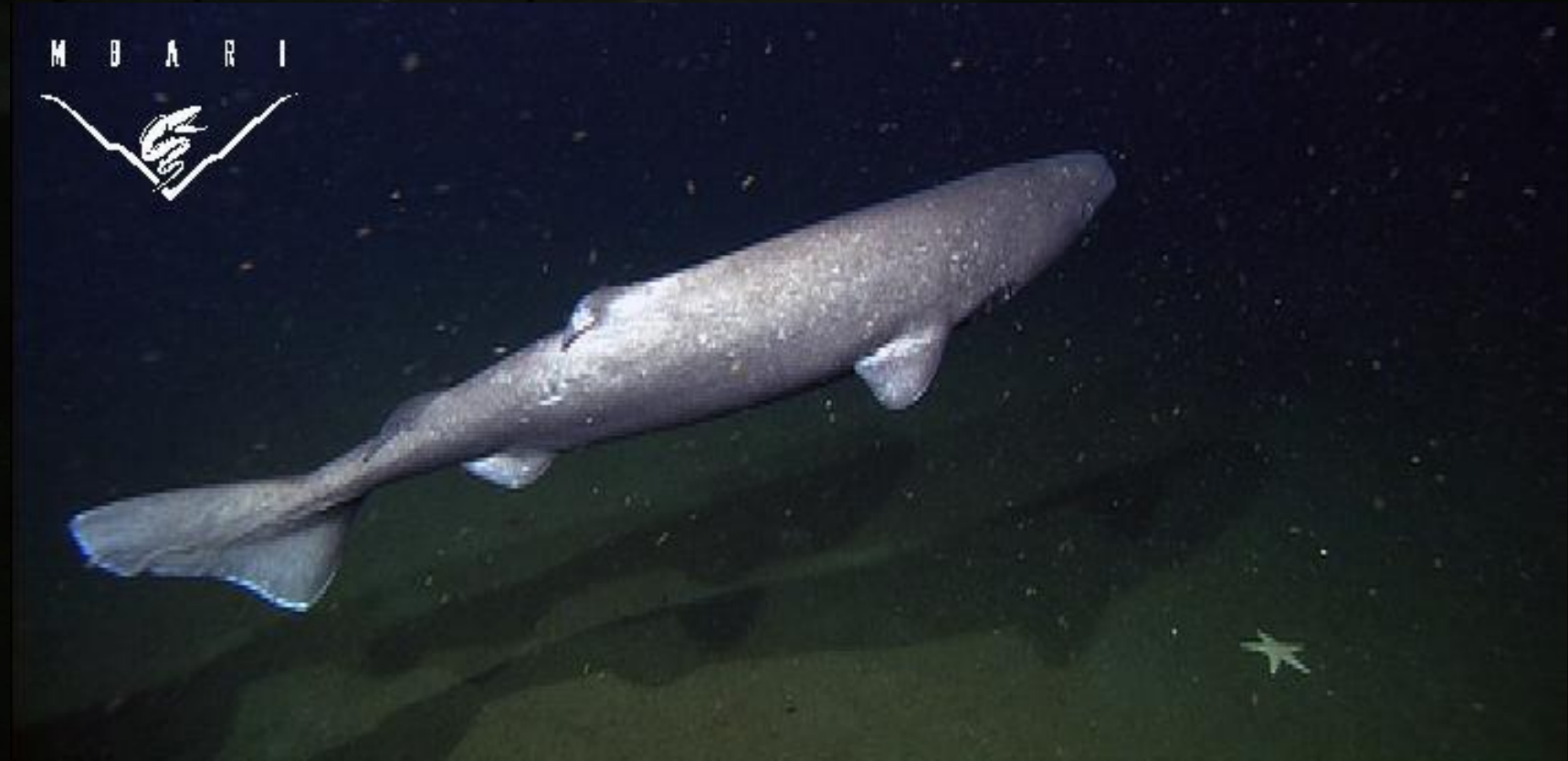
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Photo: IPHC

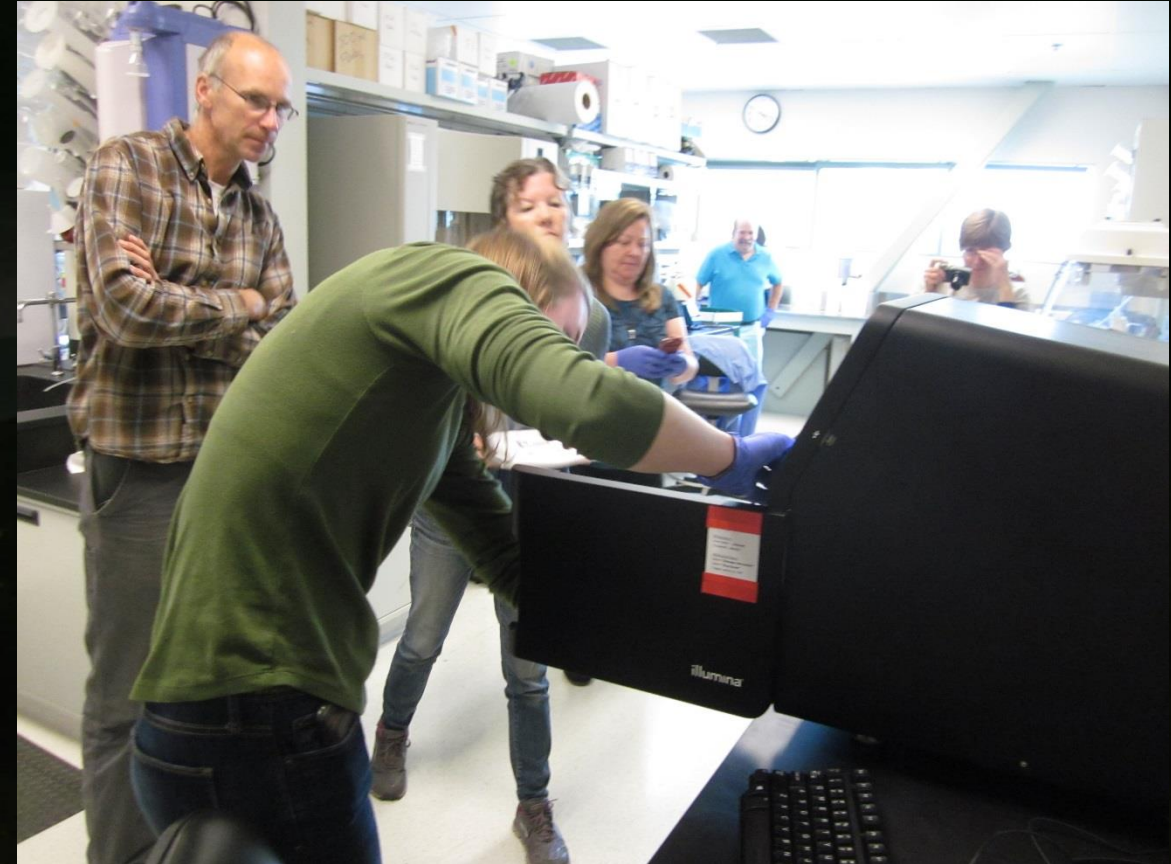
# Pacific Sleeper Shark Assessment

- Research updates
- Data-limited assessment plans for the future
- Observer special project preliminary results
- Catch estimation challenges



# Research Update

- Genetics
  - Microsatellite paper in internal review
    - 6 variable, 2 highly variable
    - Comparatively low variability
  - Close Kin Mark Recapture
    - All samples prior to summer 2018 run on NEW MiSeq!!!
    - Tons O' data that genetics folks are figuring out
  - Should have results for Stock Structure for the next assessment



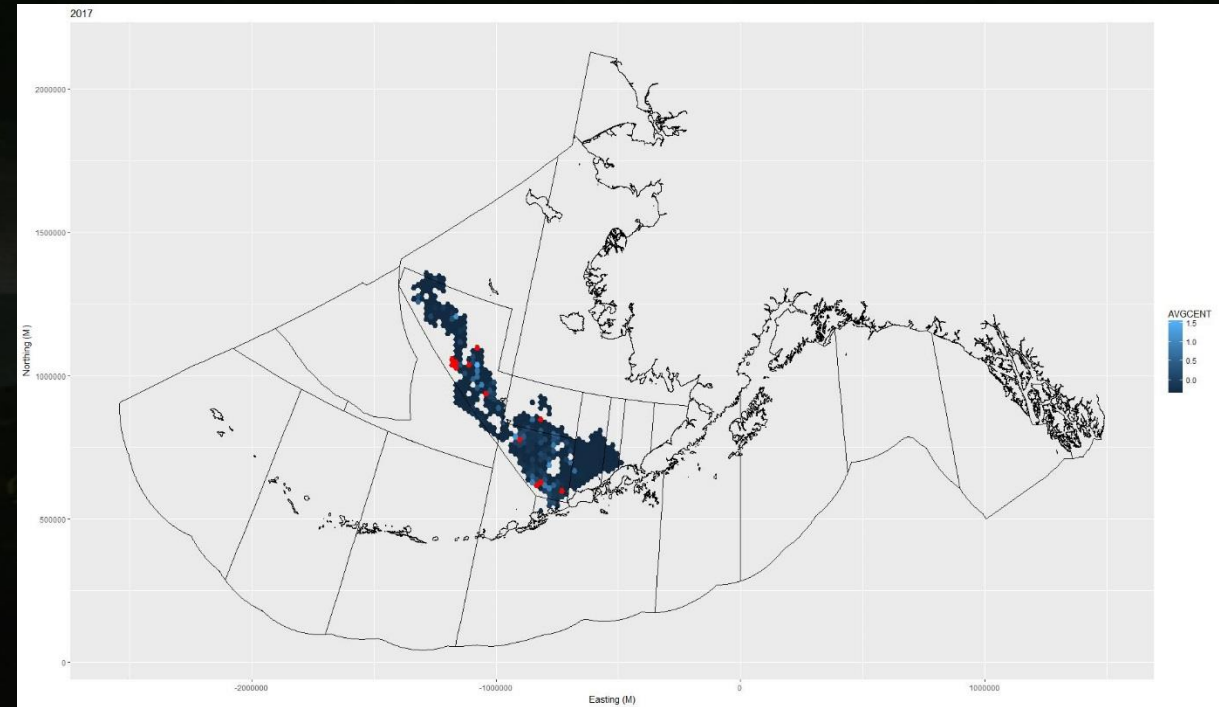
# Research Update

- Ageing
  - Greenland shark study
    - Eye lens  $^{14}\text{C}$
    - Estimated max age of 292 years
    - Numerous concerns over validity of method
  - Pilot study began
    - Samples prepared for  $\text{C}^{14}$  analysis
    - Expect results within 2 months
  - Proposals to fund graduate student to expand physiological and biochemical examination



# Research Update

- Spatial analysis
  - AKRO staff project
  - Examining space/time, depth, temperature, etc.
- Discard mortality
  - UAF leading project






# Research Update

- Data Limited Methods
  - FishPath
  - Computationally simple
  - About a dozen potential models
  - Lots of quirks and caveats to work through
  - AFSC project to look at all data-limited assessments

Pacific sleeper shark

This questionnaire is partially complete. You can review results for completed sections or continue where you left off.

		
Data Collection	Assessment	Management Measures
39 of 40 questions answered	Complete!	44 of 47 questions answered
<a href="#">CONTINUE</a>	<a href="#">VIEW RESULTS</a>	<a href="#">CONTINUE</a>

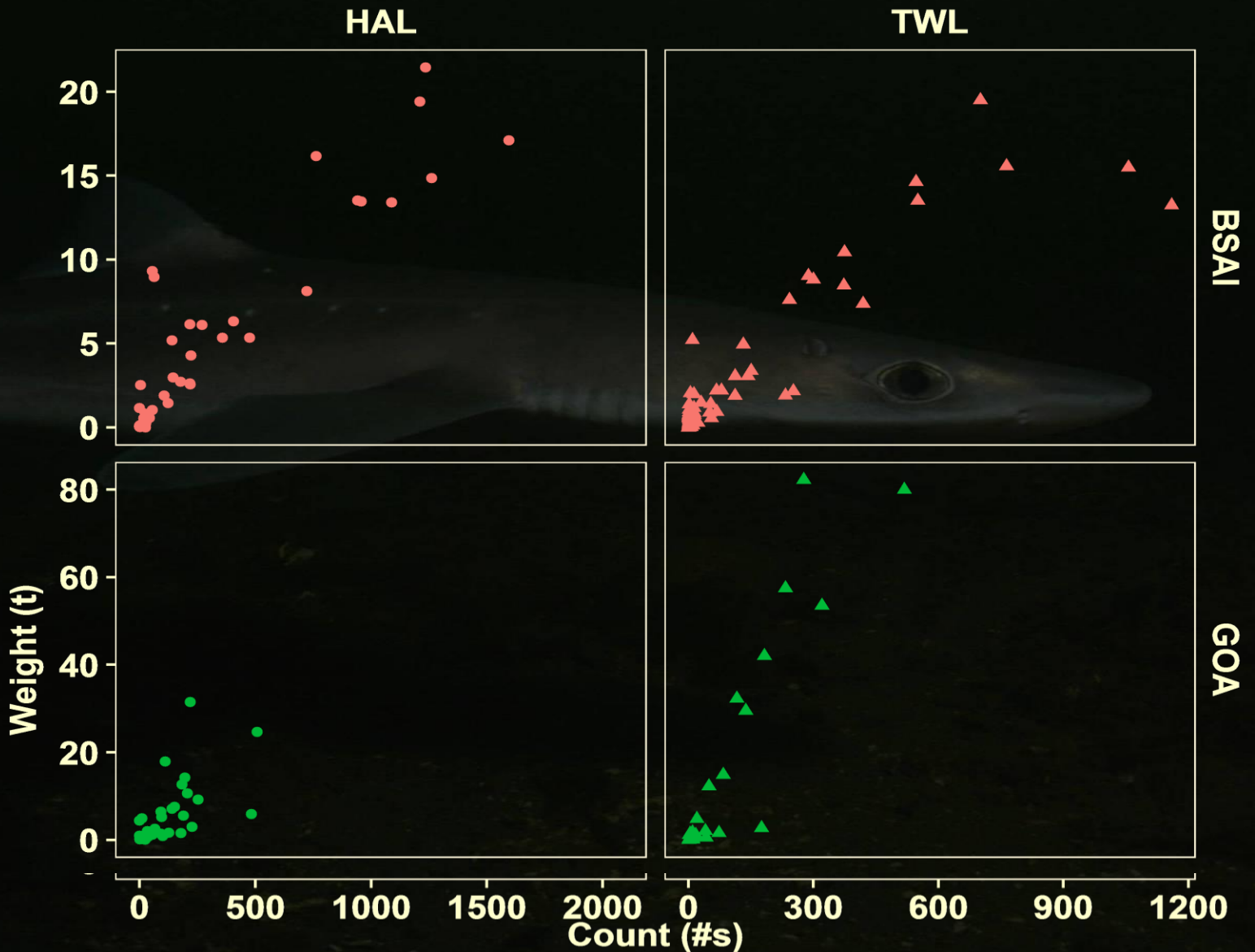
# 2018 Observer Special Project

- Observers on LL vessels were instructed to classify observed PSS as small, medium or large
- Data from 28 PSS have been returned
- Most medium and large sharks are being underestimated

Shark_ID	Obs_size	Obs_wt	NORPAC_meanwt
1	L	>287	101.586667
2	L	>287	12.52
3	L	>287	13.35
4	L	>287	7.7
5	M	50-287	12.781429
6	M	50-287	12.355
7	M	50-287	15.783333
8	M	50-287	12.782
9	M	50-287	7.21
10	M	50-287	15.783333
11	M	50-287	6.274
12	M	50-287	6.274
13	M	50-287	6.274
14	M	50-287	7.5
15	S	<50	15.636667
16	S	<50	9.776667
17	S	<50	12.78
18	S	<50	9.663333
19	S	<50	15.635556
20	S	<50	14.1675
21	S	<50	16.876667
22	S	<50	15.883333
23	S	<50	5.95
24	S	<50	15.635
25	S	<50	15.783333
26	S	<50	15.636667
27	S	<50	16.083333
28	S	<50	15.635556

# Catch by the Numbers

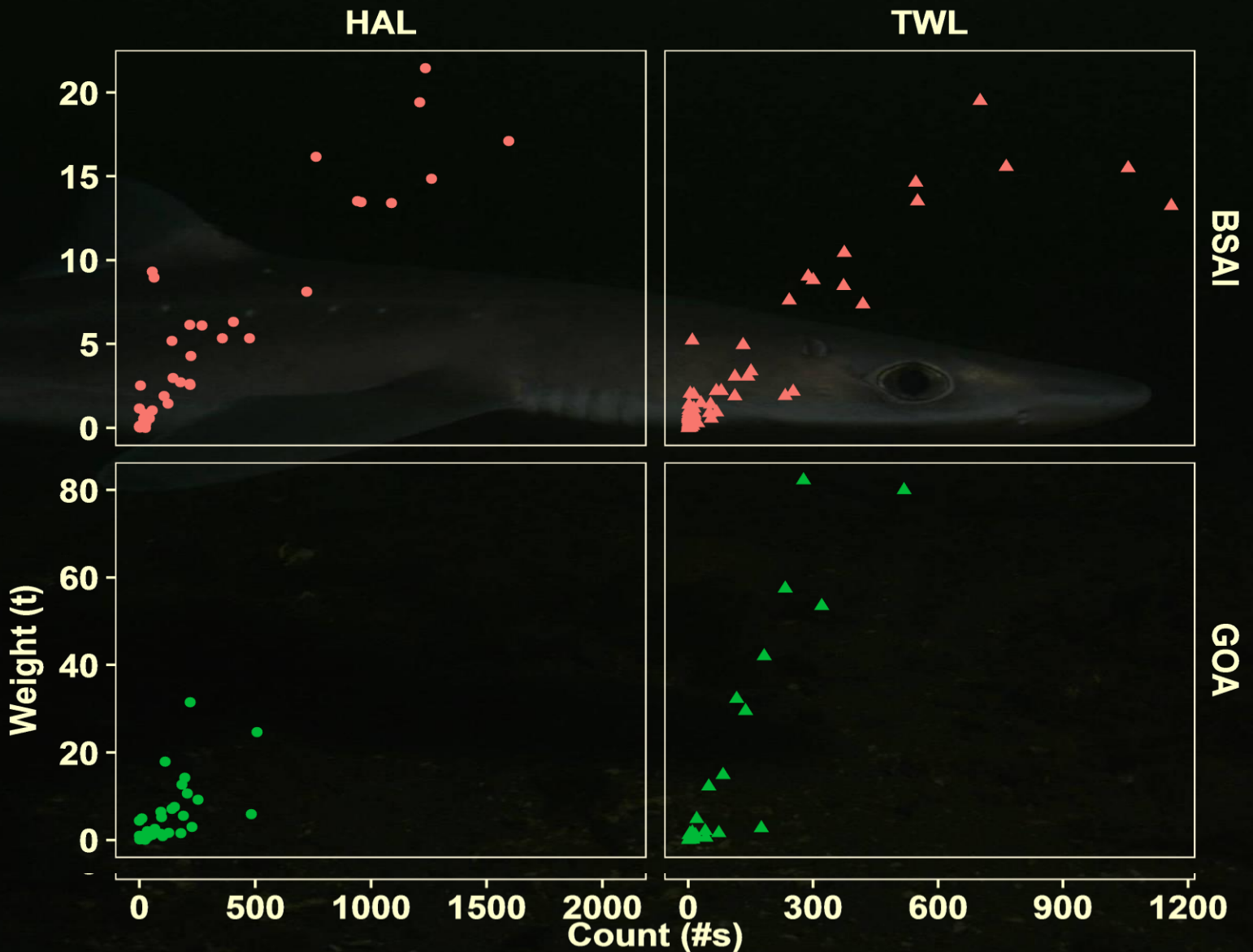
- Total catch: estimated numbers vs. estimated weight
- Large numbers of small sharks in BSAI
  - Trawl and LL
- Catch by weight can mask large numbers
- Concern for megafauna





# Catch by the Numbers

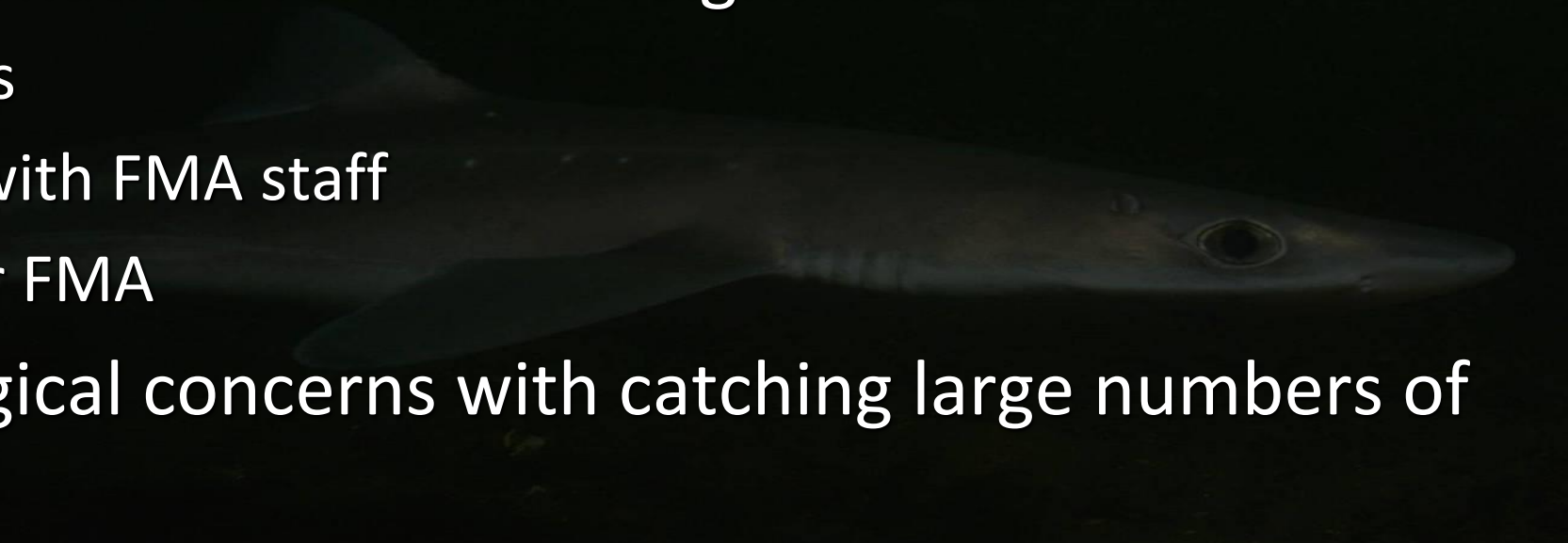
- Current issues
  - Time series is short
  - CAS was different prior to 2011
  - Labor/time intensive



# How do we improve catch estimates?

- Data are suggesting that LL catch estimates are biased low
- Can not fully evaluate catch by numbers without more years
- Need to work with AKRO staff to evaluate utility and extend time series
- Low priority for AKRO

# How do we improve catch estimates?

- Investigate alternatives for mean weight in NORPAC
    - Maybe size bins
    - Need to work with FMA staff
    - Low priority for FMA
  - Are there biological concerns with catching large numbers of small sharks?
    - Compare to how HMS assesses/manages large, highly vulnerable sharks
    - Is managing catch by numbers a viable option?
- 

# How do we improve catch estimates?

- Need to prioritize improving data-limited assessments!!!!!!!
- NEED dedicated time with AKRO and FMA
  - How do I get that help?
  - Both groups are busy, and we've put this in PT minutes in the past

Questions???



Photo: IPHC