BSAI OTHER ROCKFISH

GROUNDFISH PLAN TEAM, NOV 2020

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SPECIAL THANKS TO IVONNE ORTIZ AND STEPHANI ZADOR

FULL ASSESSMENT IN EVEN YEARS

TIER 5 RANDOM EFFECTS MODEL

- No model changes

- New 2019 EBS shelf survey biomass estimate
- Recommendations for 2021:
  - Biomass 53,290 t
  - OFL 1,751 t
  - ABC 1,313 t (2% decrease from 2020)

SSC/PLAN TEAM COMMENTS

"The SSC requests that all authors fill out the risk table in 2019…" (SSC December 2018), + *other similar comments in June, October 2019*

✓ Included in this assessment for the first time (Will discuss later)

✓ Time-consuming but useful exercise

WHO ARE THE "OTHER" ROCKFISH?

- Everybody *except* POP, northern, shortraker, and rougheye rockfish

- Shortspine thornyhead, dusky, and at least 11 other *Sebastes* and *Sebastolobus* spp.



Photos courtesy of Aaron Baldwin

TIER 5 OTHER ROCKFISH METHODS

1. Split complex into shortspine thornyhead (SST) and non-SST

2. RE model fit to AI, EBS shelf, and EBS slope survey biomass

   - Split AI survey into AI and Southern Bering Sea (SBS)

3. BSAI-wide ABC and OFL for total Other Rockfish
   (SST + non-SST)

4. Other Rockfish ABC apportioned to AI and EBS using ratio of estimated biomass in each area
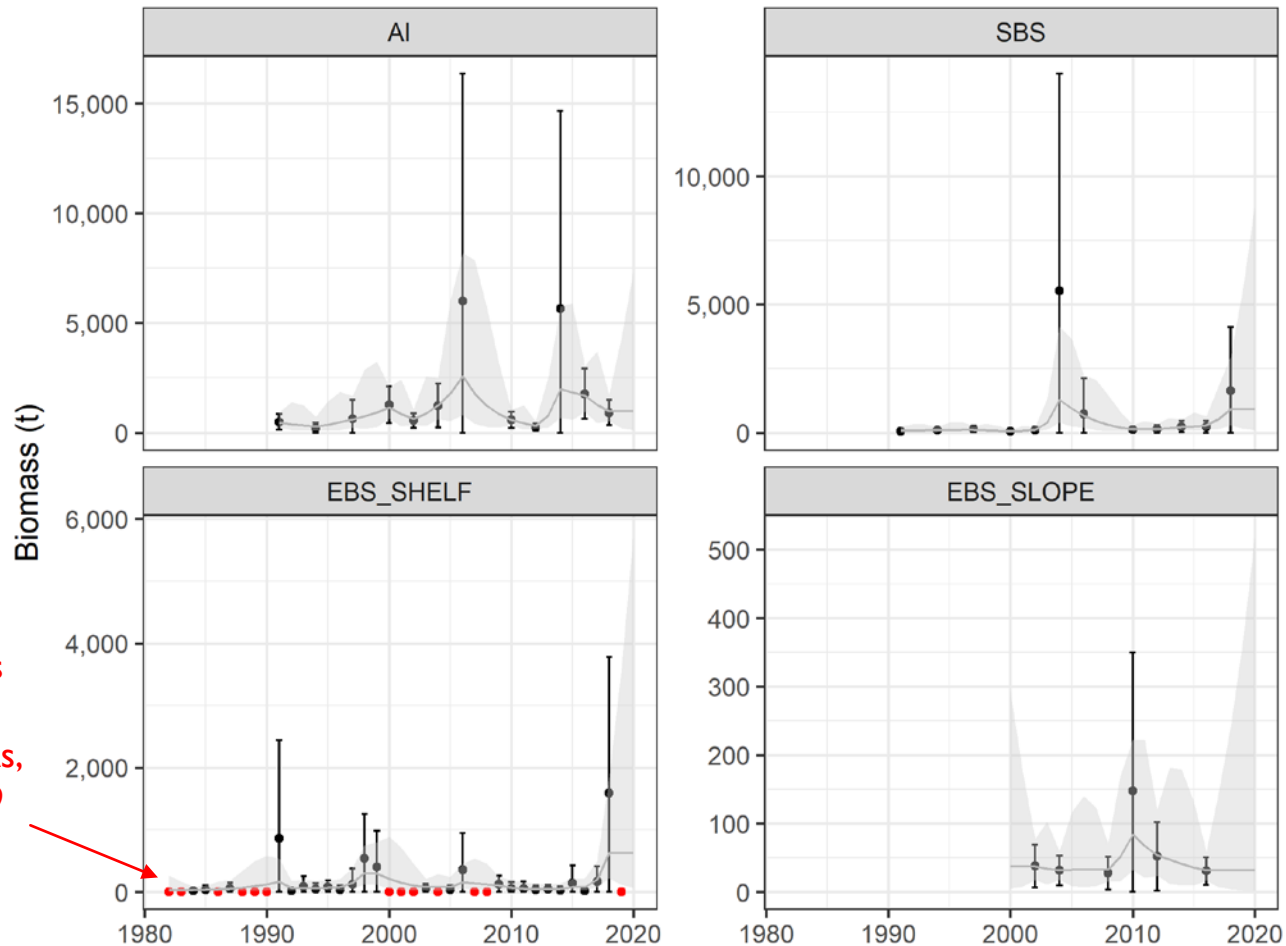
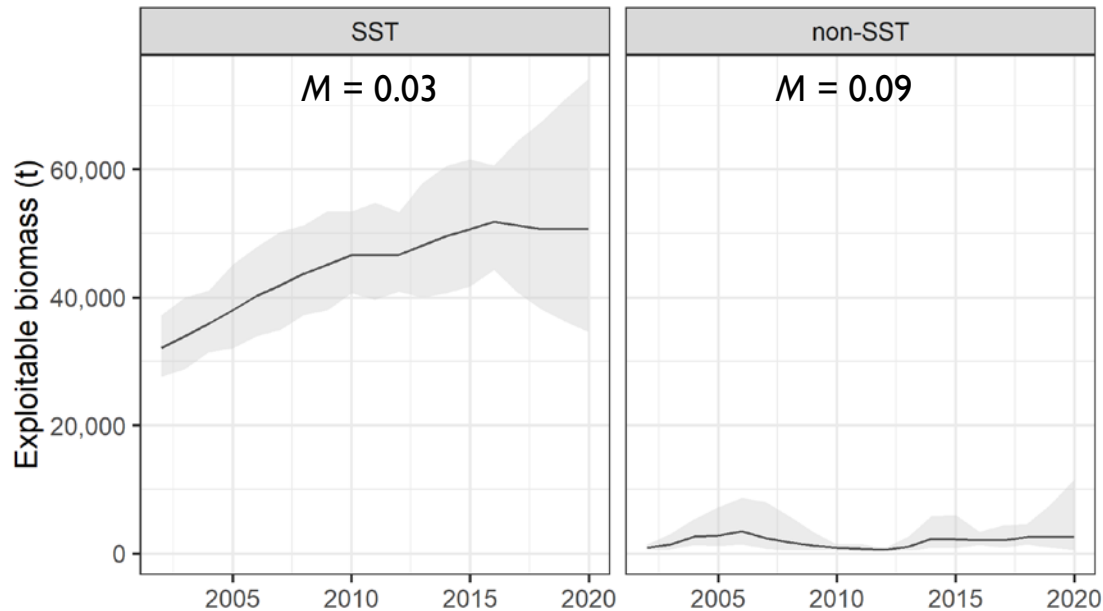|	SST	non-SST	Other Rockfish
M	0.03	0.09	-
Biomass	50,694	2,554	**53,248**
$F_{OFL}=M$	0.03	0.09	-
$F_{ABC}=0.75M$	0.0225	0.0675	-
OFL	1,521	230	**1,751**
ABC	1,141	172	**1,313**
AI ABC	329	65	**394**
EBS ABC	812	107	**919**

SST TOTAL BIOMASS = 50,694 t
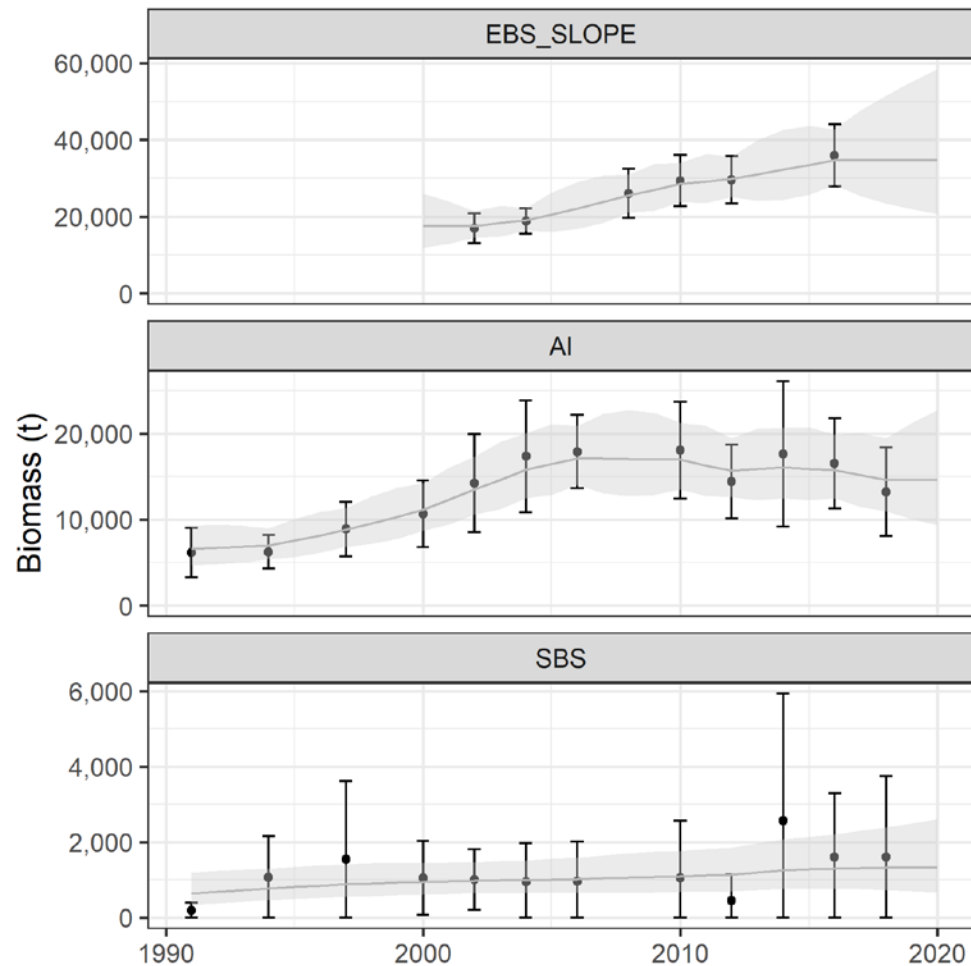
NON-SST TOTAL BIOMASS = 2,554 t

Zero biomass observations treated as N/As, Including 2019

SUM RE MODEL RESULTS AND CALCULATE REFERENCE POINTS

	SST		**non-SST**		**Other Rockfish**
Biomass (t)	50,694	➕	2,554	➖	53,248
OFL (t)	1,521		230		1,751
ABC (t)	1,141		172		1,313

Quantity	As estimated or *specified last* year for:		As estimated or *recommended this* year for:	
	2020	2021	2021	2022
M (natural mortality rate) for SST	0.03	0.03	0.03	0.03
M for non-SST	0.09	0.09	0.09	0.09
Tier	5	5	5	5
RE Model Combined Biomass (t)	53,290	53,290	53,248	53,248
F_{OFL} ($F=M$) for SST	0.03	0.03	0.03	0.03
F_{OFL} ($F=M$) for non-SST	0.09	0.09	0.09	0.09
$maxF_{ABC}$ for SST	0.0225	0.0225	0.0225	0.0225
$maxF_{ABC}$ for non-SST	0.0675	0.0675	0.0675	0.0675
F_{ABC} for SST	0.0225	0.0225	0.0225	0.0225
F_{ABC} for non-SST	0.0675	0.0675	0.0675	0.0675
OFL (t)	1,793	1,793	**1,751**	**1,751**
maxABC (t)	1,345	1,345	**1,313**	**1,313**
ABC (t)	1,345	1,345	**1,313**	**1,313**
Status	As determined *last* year for:		As determined *this* year for:	
	2018	2019	2019	2020
Overfishing	No	No	No	n/a

BSAI Other Rockfish
Comparison of catch to ABC/OFL (t)
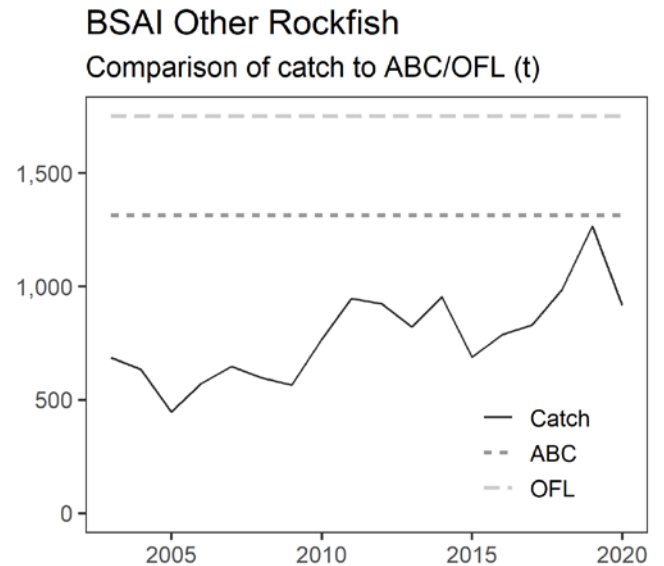
RISK TABLE – NEW THIS YEAR

Assessment-related considerations	Population dynamics considerations	Environmental/ ecosystem considerations	Fishery Performance considerations
Level 2: Substantially increased concerns	Level 1: No apparent concern	Level 1: No apparent concern	Level 1: No apparent concern

No recommended reduction from max ABC

Assessment – different considerations for SST and non-SST (will cover next)

Pop dy and Fishery – any concerns addressed in Assessment considerations

Environment (Ortiz and Zador) – focus on SST and dusky

- Warm temperatures in mid-water column

- Limited diet data suggests SST and non-SST have different feeding strategies

SST ASSESSMENT CONSIDERATIONS LEVEL 2

1. Highest SST biomass on EBS slope, survey time series end in 2016

2. RE model performance outside the data

3. AI survey doesn't sample below 500 m, likely missing SST biomass
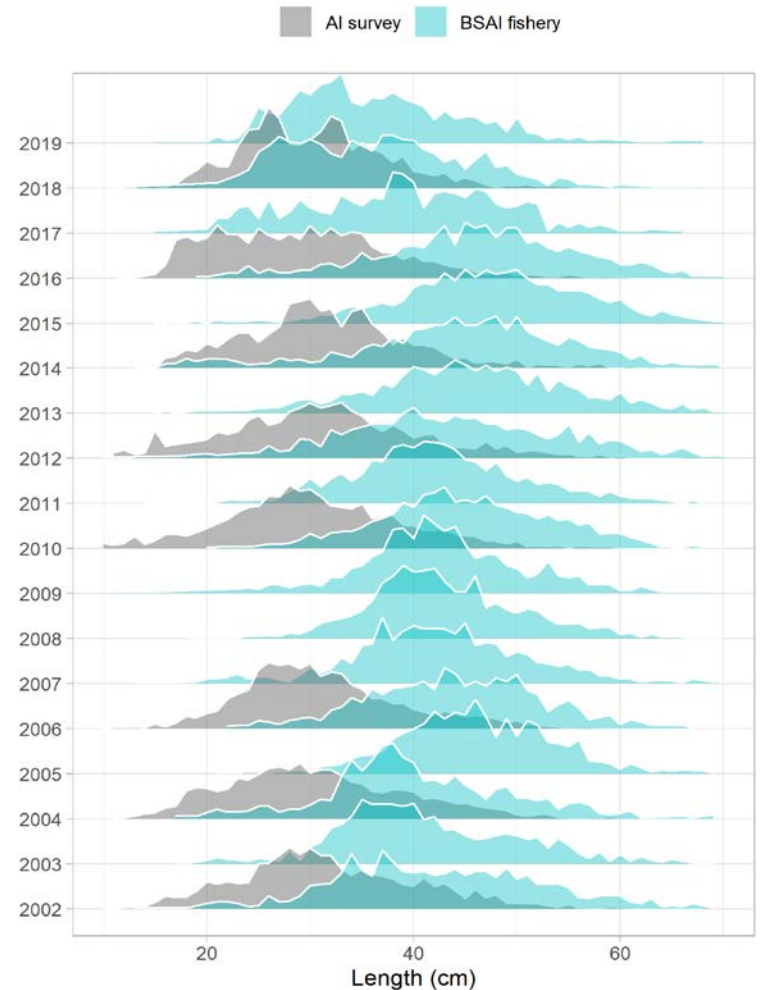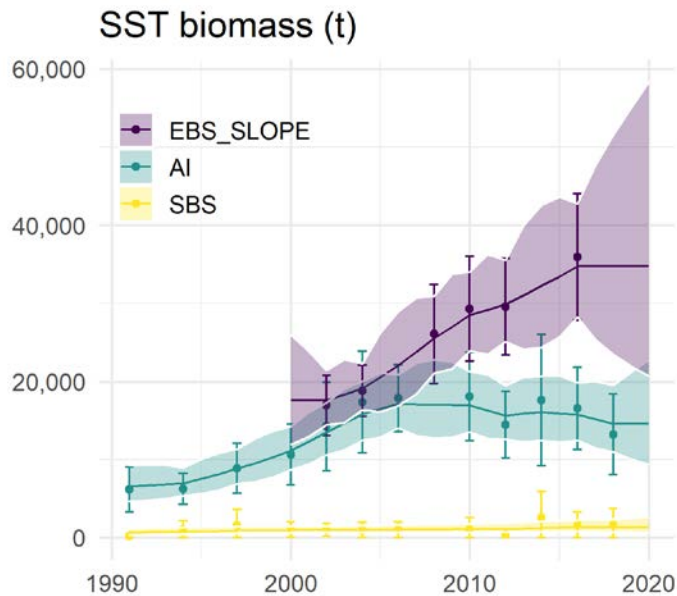
# NON-SST ASSESSMENT CONSIDERATIONS LEVEL 2

1. Spasmodic trends in survey biomass in all survey areas, high uncertainty

2. Zero biomass observations treated as N/As

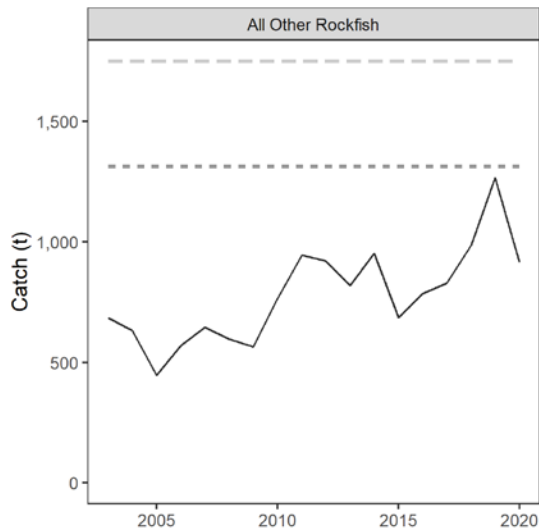3. Untrawlable habitat
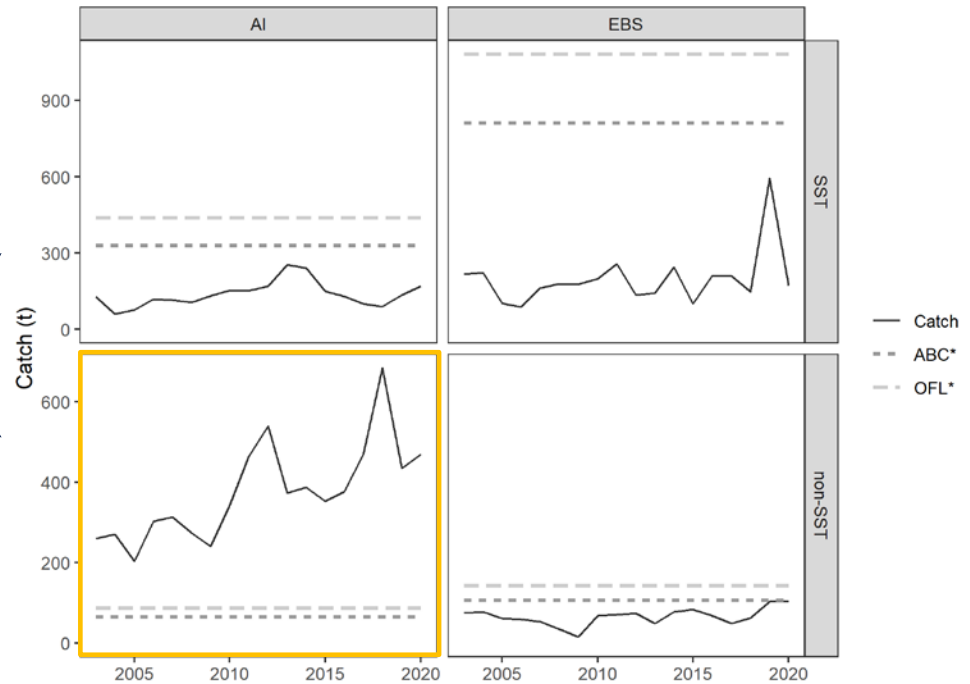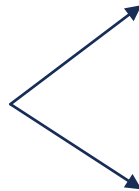

Zero biomass
(13/38 observations)
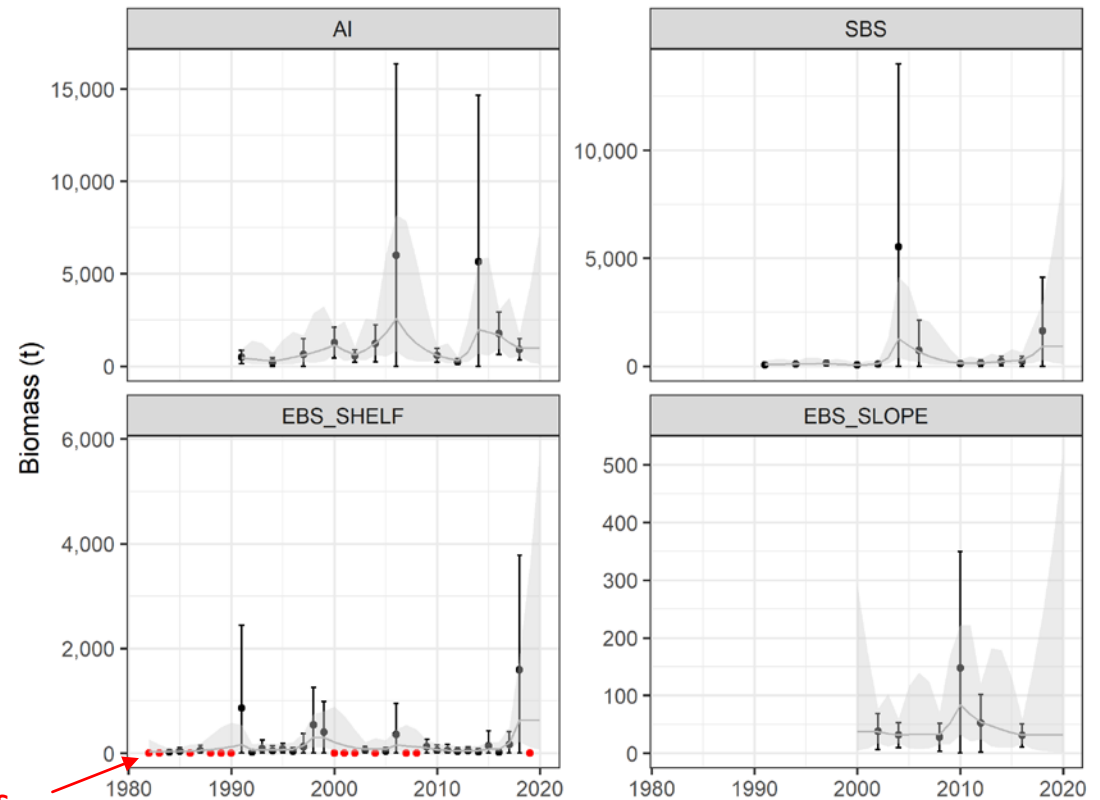
NON-SST ASSESSMENT CONSIDERATIONS LEVEL 2

1. High catch/biomass, especially in AI

2. Mismatch between catch and biomass

Exploitation rate (catch/biomass)
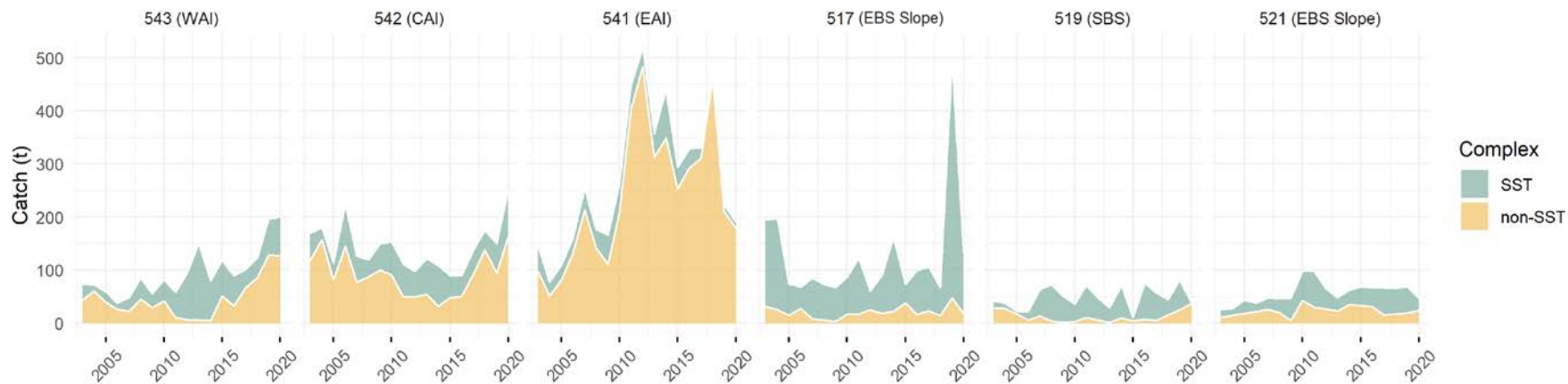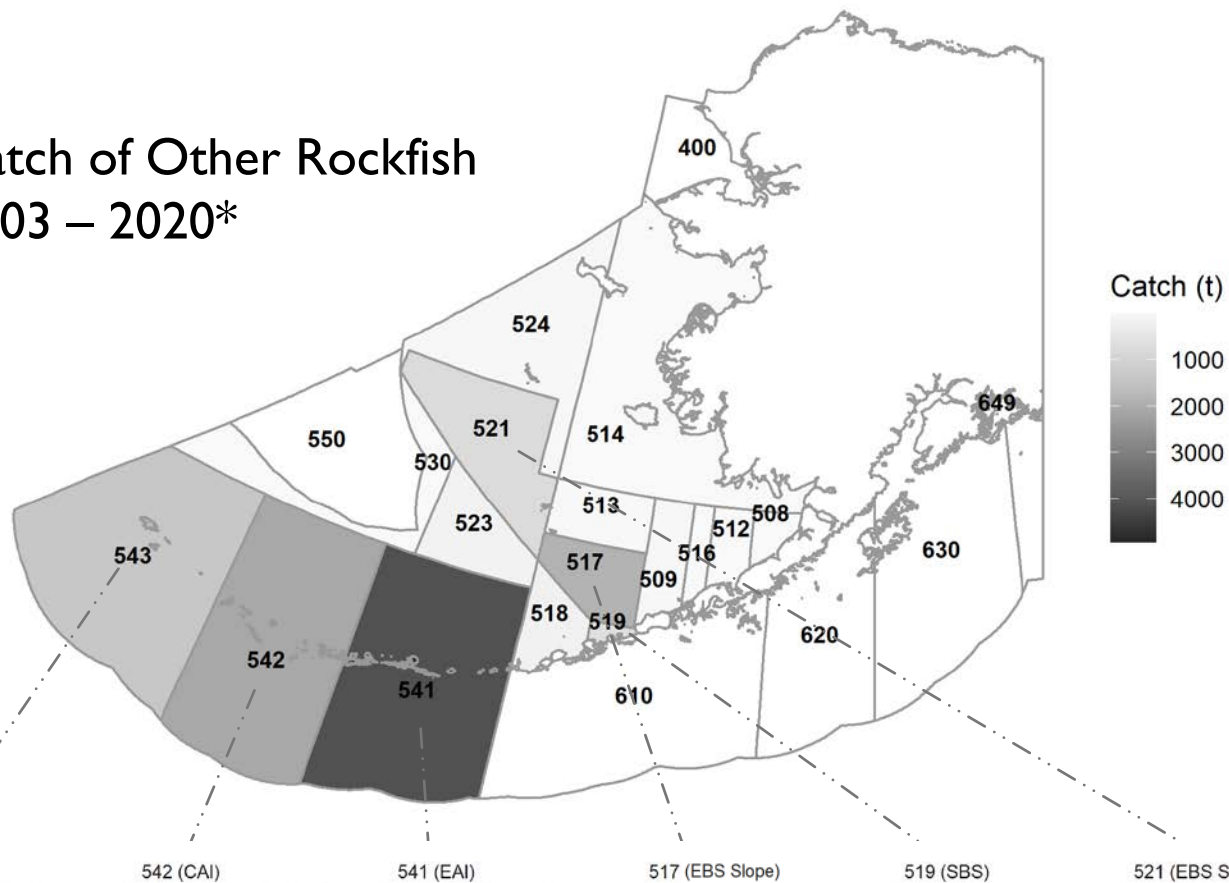
SST = 0.02

Catch (t)

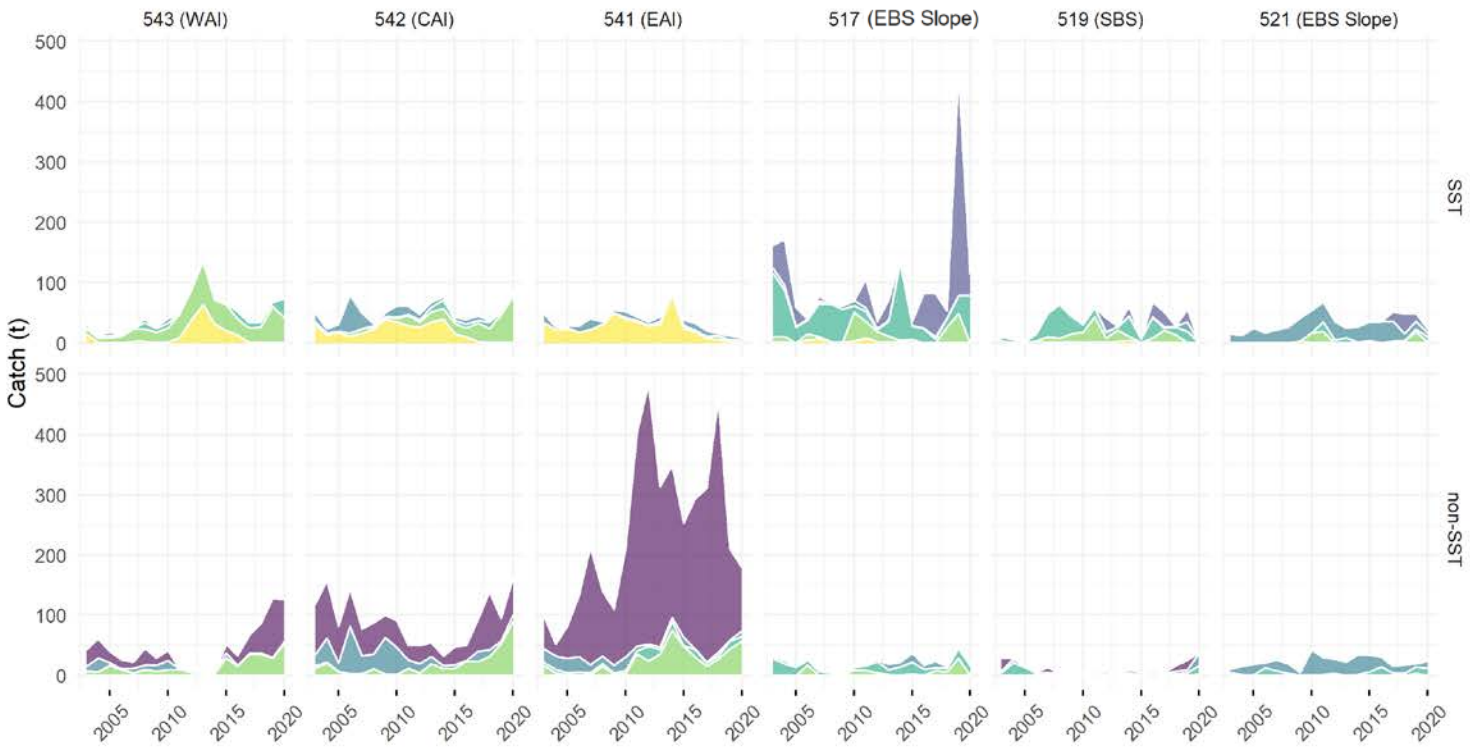Exploitable biomass (t)
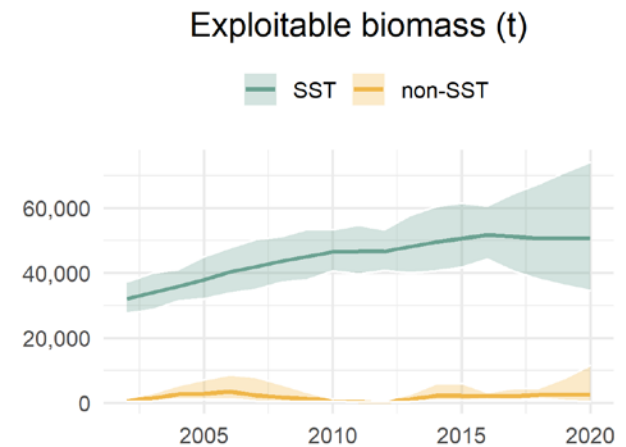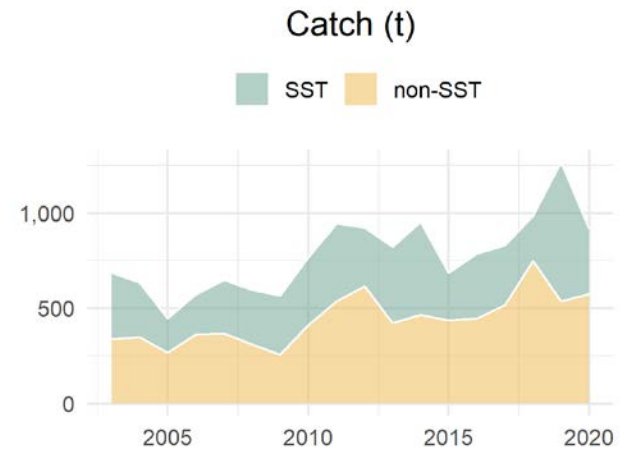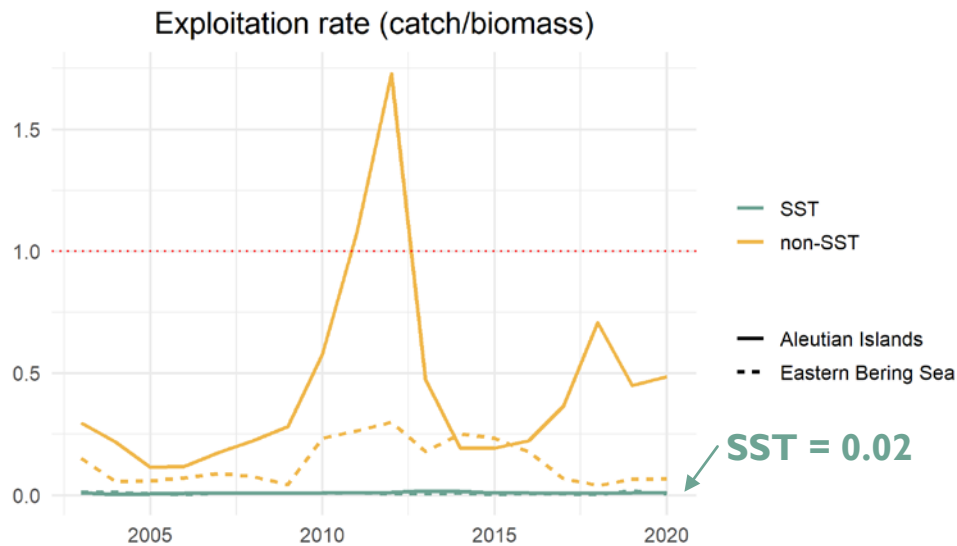
REFERENCE POINTS
SPLIT BY SPECIES GROUPS AND AREA
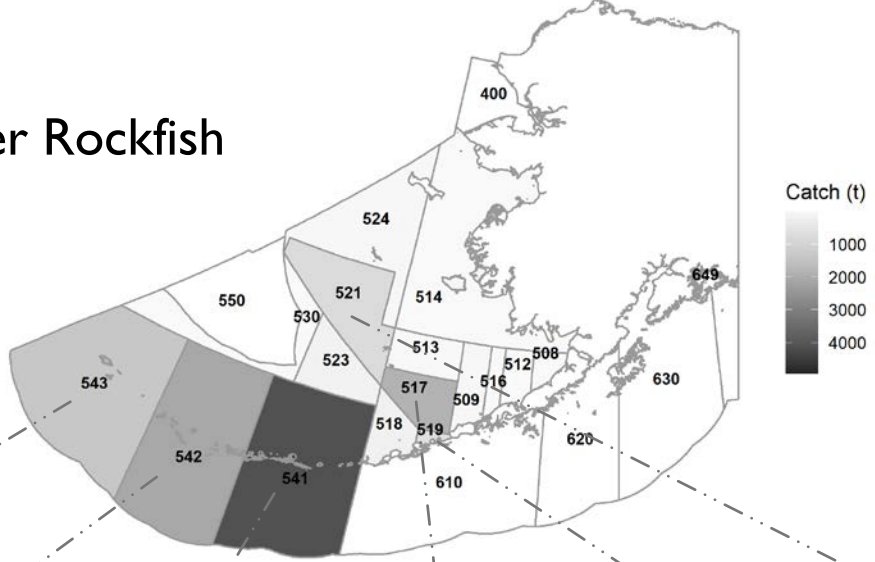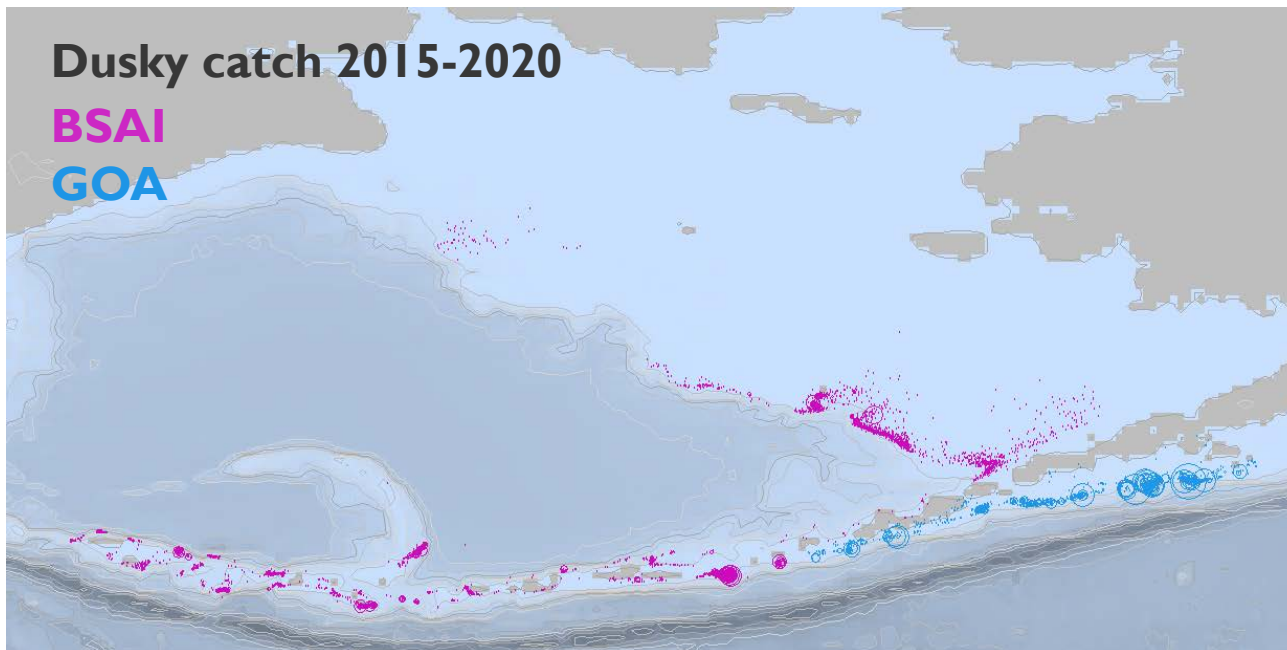
Catch of Other Rockfish
2003 – 2020*

Catch of Other Rockfish 2003 – 2020*

PT DISCUSSION

- Non-SST as Tier 6?

    - Dusky stock structure

    - Trawlable vs. untrawlable habitat

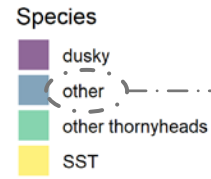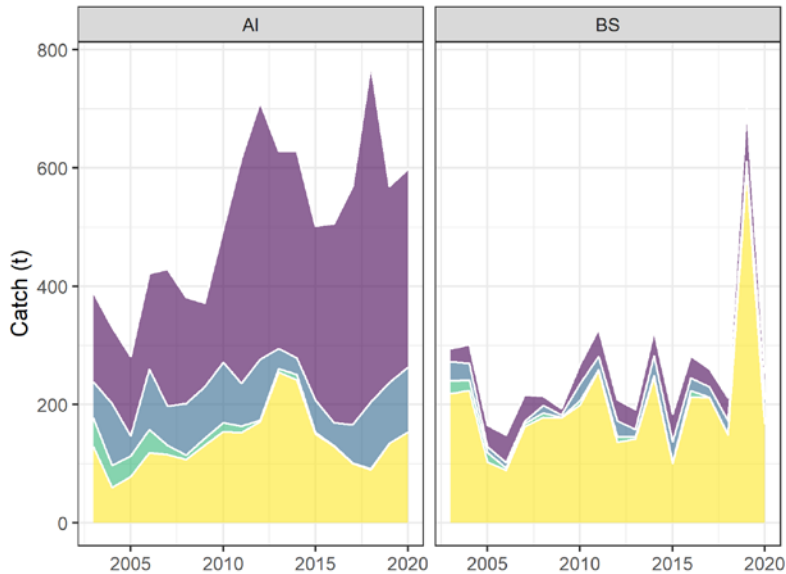- Natural mortality for non-SST: GOA Dusky $M = 0.07$ (Fenske et al. 2020)

Dusky catch 2015-2020
BSAI
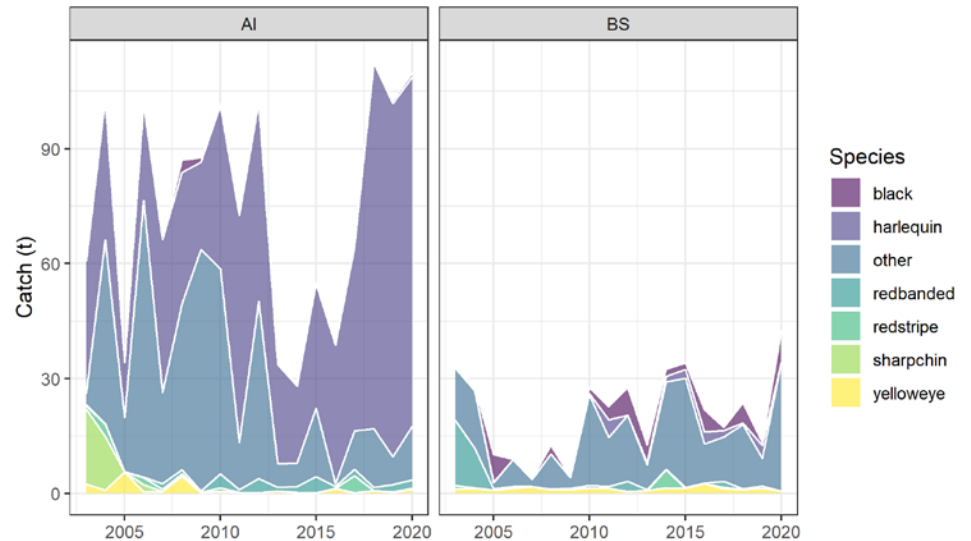**GOA**

QUESTIONS
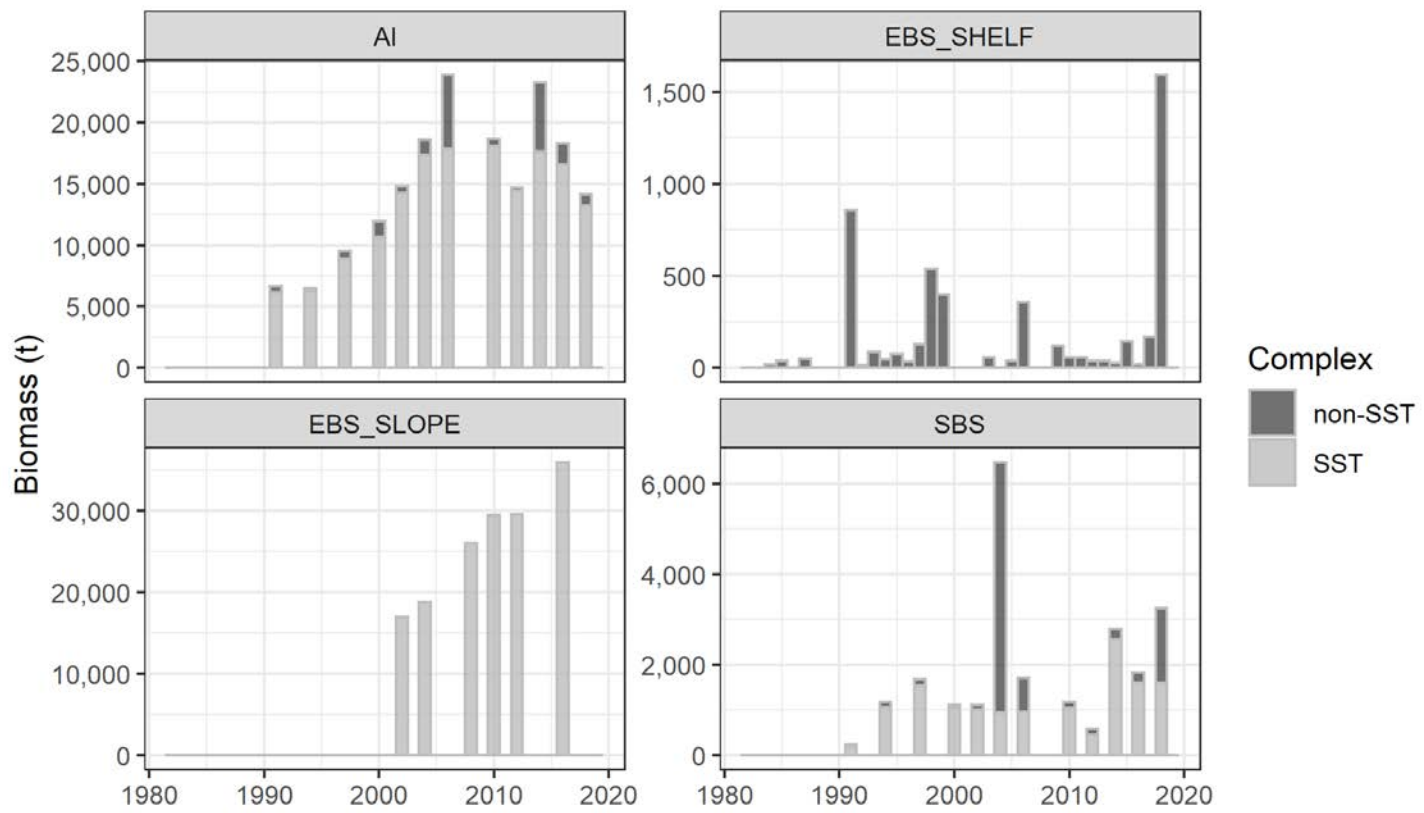## JANE.SULLIVAN@NOAA.GOV

SUPPLEMENTARY SLIDES

DETAILED CATCH

The other, other rockfish
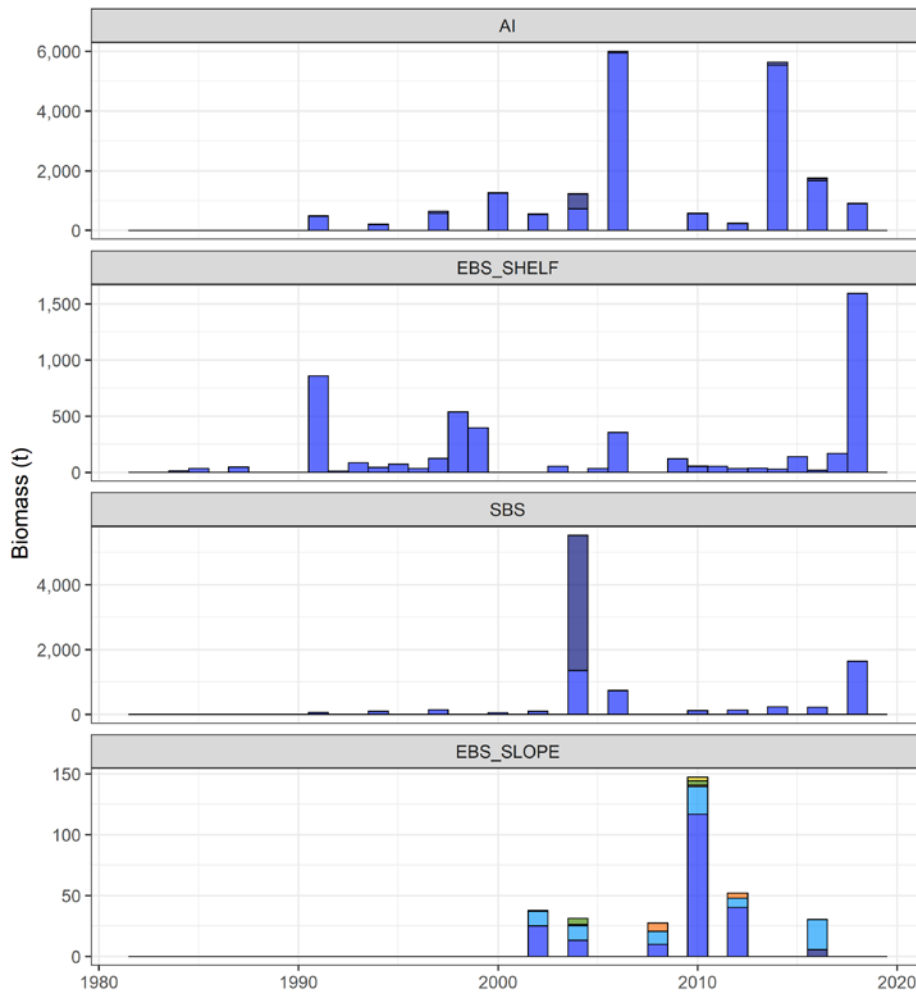
SURVEY BIOMASS BY SST AND NON-SST

ENVIRONMENTAL CONSIDERATIONS
(ORTIZ AND ZADOR)

- Focus on SST and dusky rockfish

- Warm temperatures since 2016 in AI 100-250 m (GODAS)

- Diets differ between SST (generalists) and dusky (generalist planktivores)

- Diet data limited, most recent samples from 2012

- Diet data shows variation in SST diets in AI

Area 543 Shortspine Thornyheads > 20 cm fork length

Fish > 20 cm
- Sculpin
- Atka
- Pandalidae
- Octopus
- Squid
- Bairdi
- NP Shrimp
- King Crab
- Other

Area 542 Shortspine Thornyheads > 20 cm fork length

DETAILED NON-SST SURVEY BIOMASS

ASSESSMENT AND APPORTIONMENT:
SPLIT-SPLIT-SPLIT-LUMP-LUMP-LUMP-SPLIT