

Stock Assessment Prioritization Plan Team Recommendations

Joint Groundfish Plan Teams
Crab Plan Team



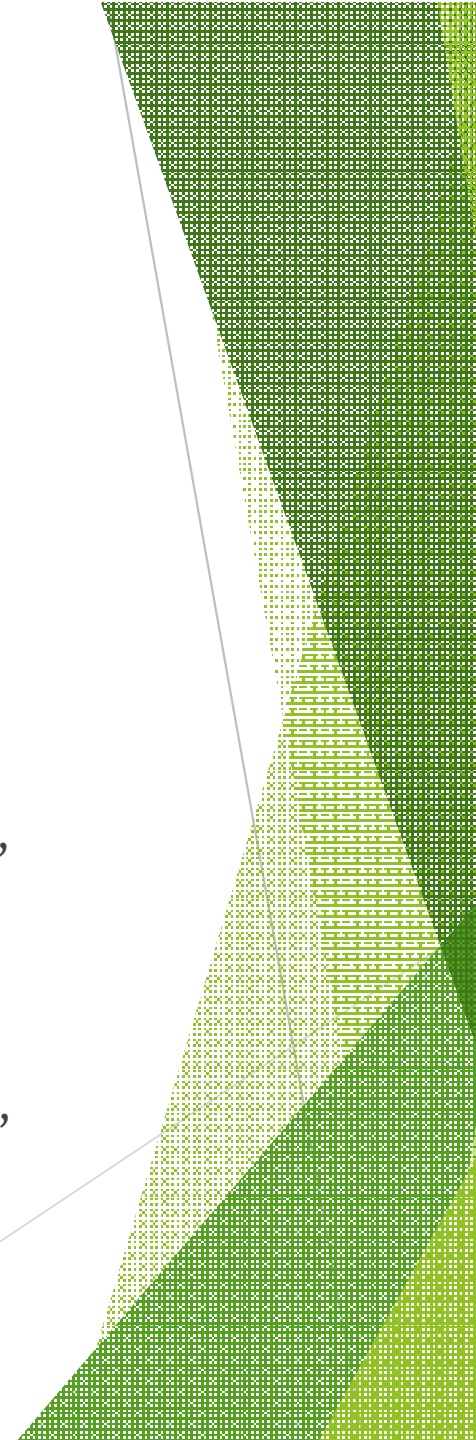
Special Meeting of the Joint Groundfish Plan Teams

Jan 11-12, 2017

AFSC, Seattle, WA

Participation

- ▶ Plan Teams: Grant Thompson, Dana Hanselman, Jon Heifetz, Patrick Lynch, Kirstin Holsman, Cindy Tribuzio, Chris Lunsford, Allan Hicks, Paul Spencer, Obren Davis, Mary Furuness, Jim Armstrong, Sandra Lowe, Diana Stram, Jim Ianneli; Via WebEx: Chris Siddon, Ben Williams, Jan Rumble
- ▶ Other: Kristan Blackhart, Steve Barbeaux, Carey McGilliard, Ron Felthoven, Anne Hollowed, Liz Connors, Olav Ormseth, Martin Dorn, Ingrid Spies; Via WebEx: Kalei Shotwell, Tom Wilderbuer



Local Application of SAPP (Hollowed et al. DP)

Multivariate weighting scheme

Five Themes

- ▶ Fishery Importance
- ▶ Stock Status
- ▶ Ecosystem Importance
- ▶ Assessment Information
- ▶ Biology

63 stocks

Five Scenarios (product of alternative weighting)



Table 1. Example of Stock Assessment Prioritization Ranking (Methot 2015).

Factor	Source	Scores	Potential Weight Range
Commercial	Calculated as in Equation 1	0-5	0-40
Recreational	Expert opinion	0-5	0-40
Subsistence	Expert opinion	0-5	0-20
Rebuilding Status	National database	0-1	0-20
Constituent Demand	Expert opinion	0-5	5-25
Non-catch Value	Expert opinion	0-5	0-20
Stock Abundance	SSB/SSB _{MSY}	1-5	5-25
Fishing Mortality	F/F _{MSY}	1-5	5-25
Role in Ecosystem	Expert opinion; maximum of bottom-up and top-down components	0-5	0-20
Unexpected Changes in Stock Indicators	Expert opinion, where indicators are available	0-5	5-25
New Type of Information	Expert opinion	0-5	5-25
Years Assessment is Overdue	Calculated based on target frequency	0-10	10-30

$$stock\ x = \frac{1}{10} \sum_{i=1}^n w_i \cdot s_i$$

$$w_i = \frac{1}{\sum_{i=1}^n w_i} \cdot h_i \cdot h_{i+1} \cdot \dots \cdot h_{i+n-1}$$

Target Frequency based on mean age and assimilation of other factors

Scenarios

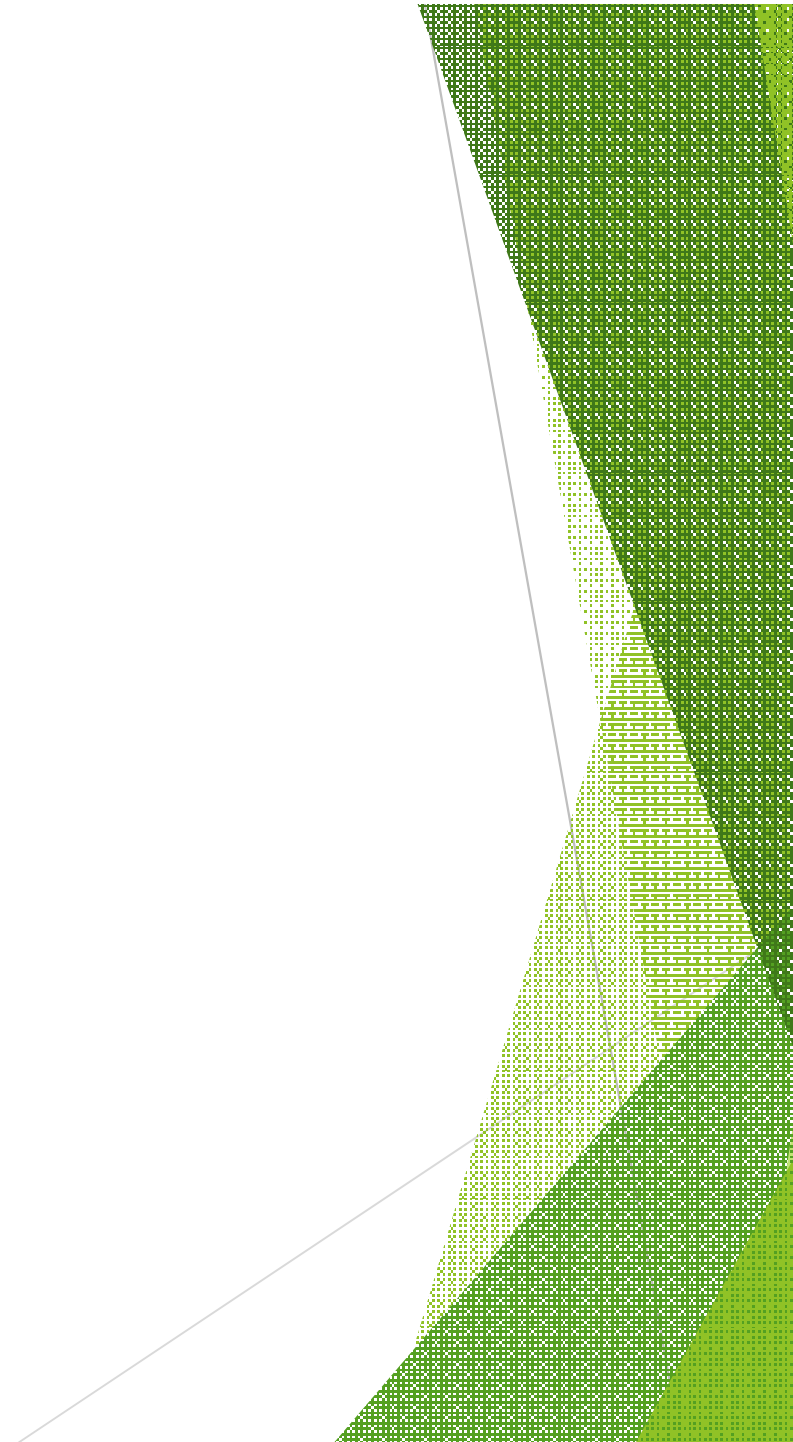
S1 - Base case application of SAPP

S2 - Constrained minimum to 5 years

S3 - S2 with increased weight on “Fishery Importance”

S4 - S2 with high value fisheries fixed at annual freq.

S5 - S3 and S4 combined



Scenarios

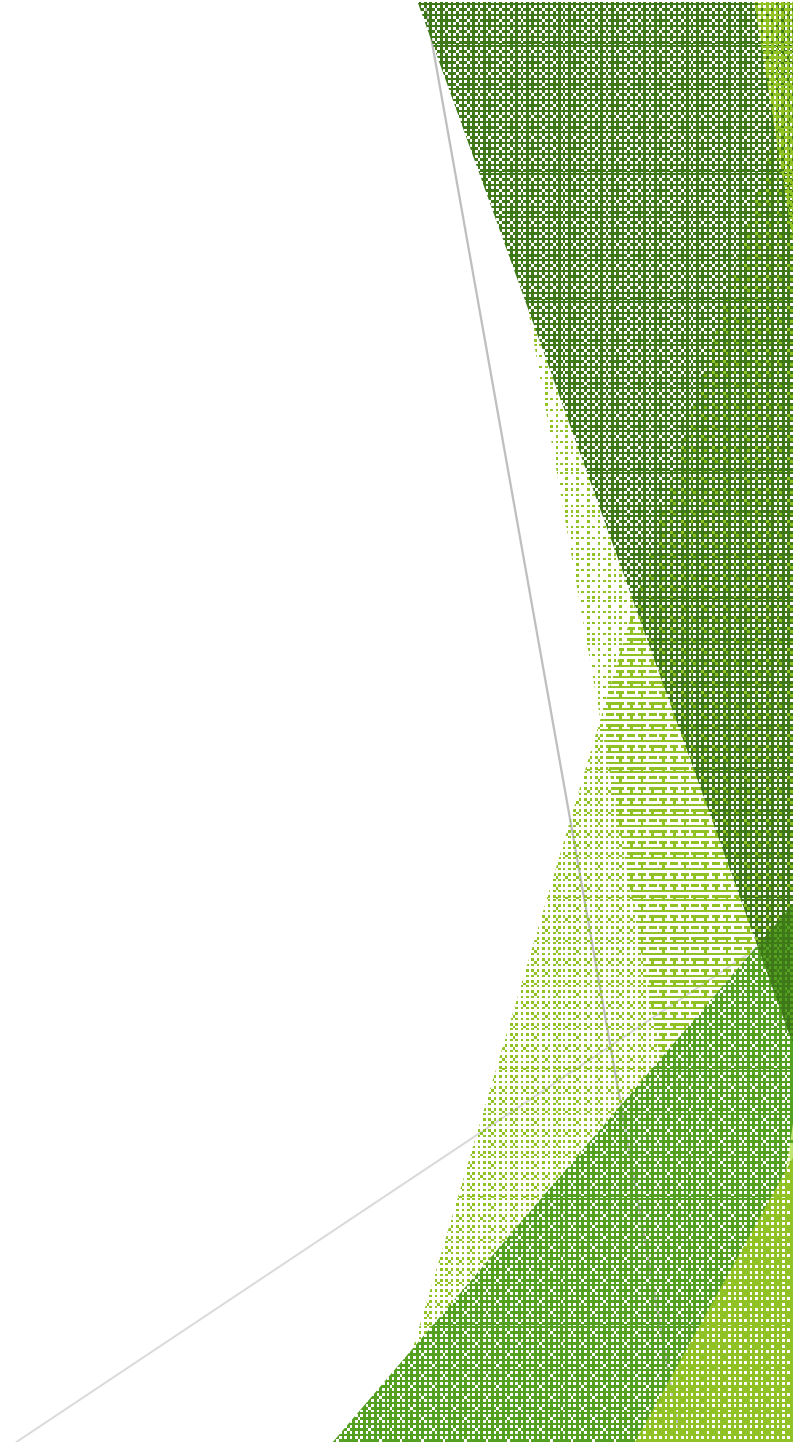
S1 - Base case application of SAPP

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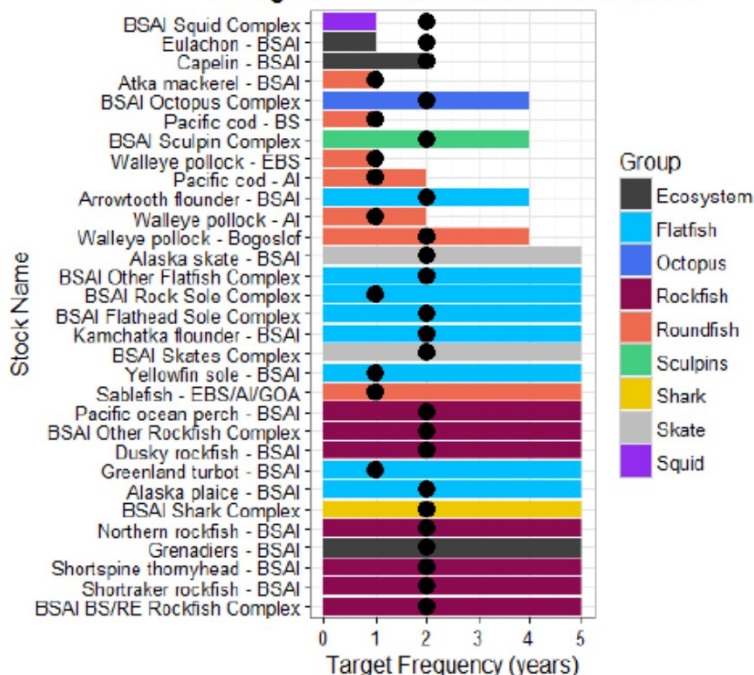
S3 - S2 with increased weight on “Fishery Importance”

S4 - S2 with high value fisheries fixed at annual freq.

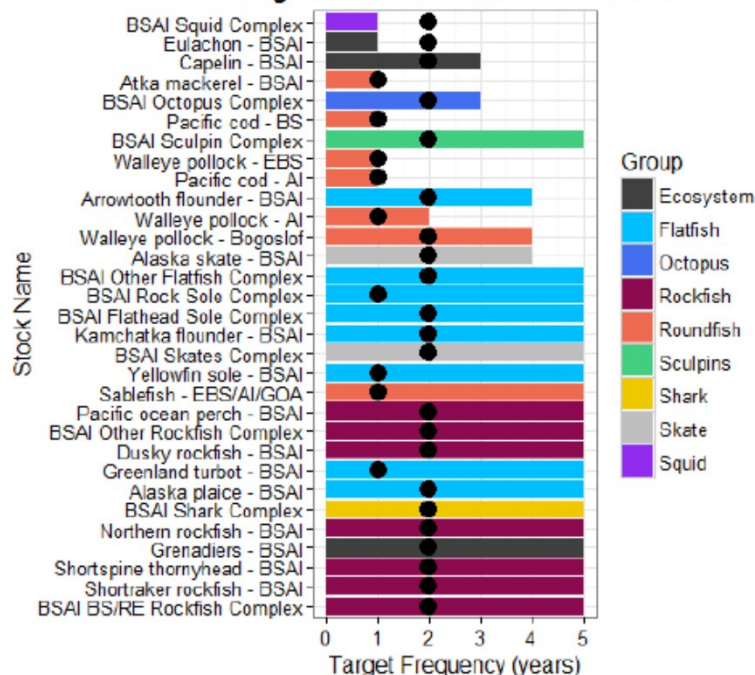
S5 - S3 and S4 combined



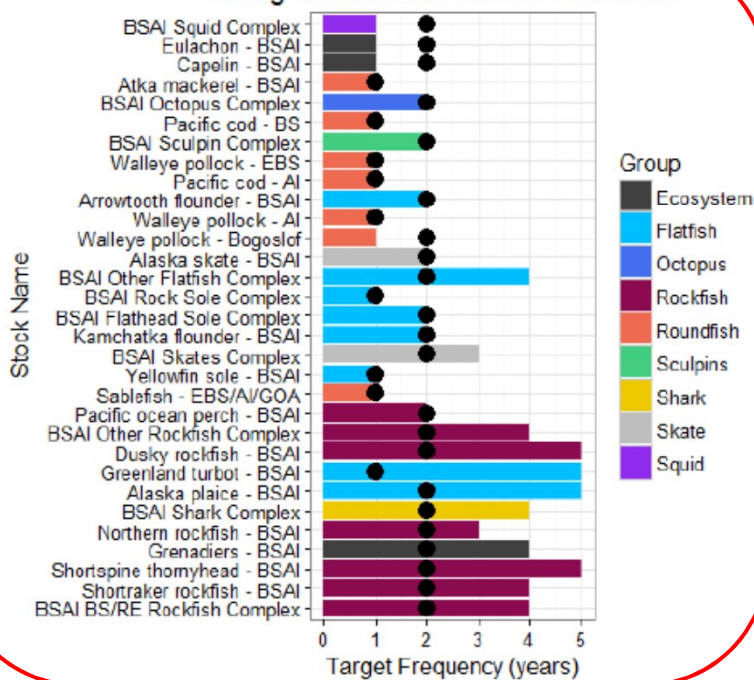
Bering Sea/Aleutian Islands - Scenario 2



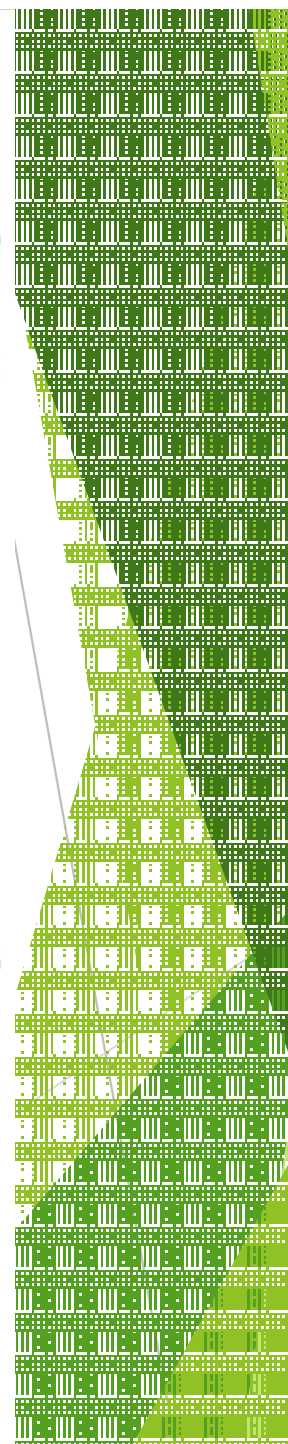
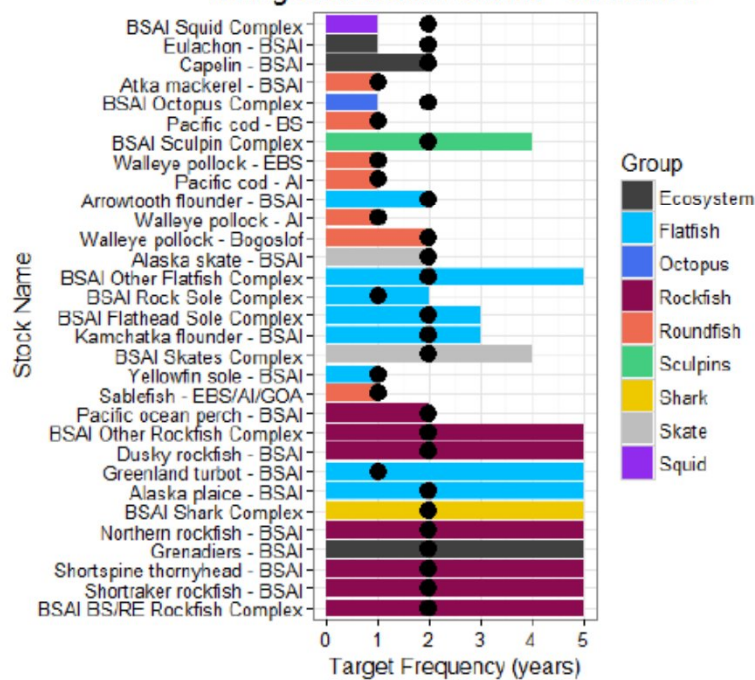
Bering Sea/Aleutian Islands - Scenario 3



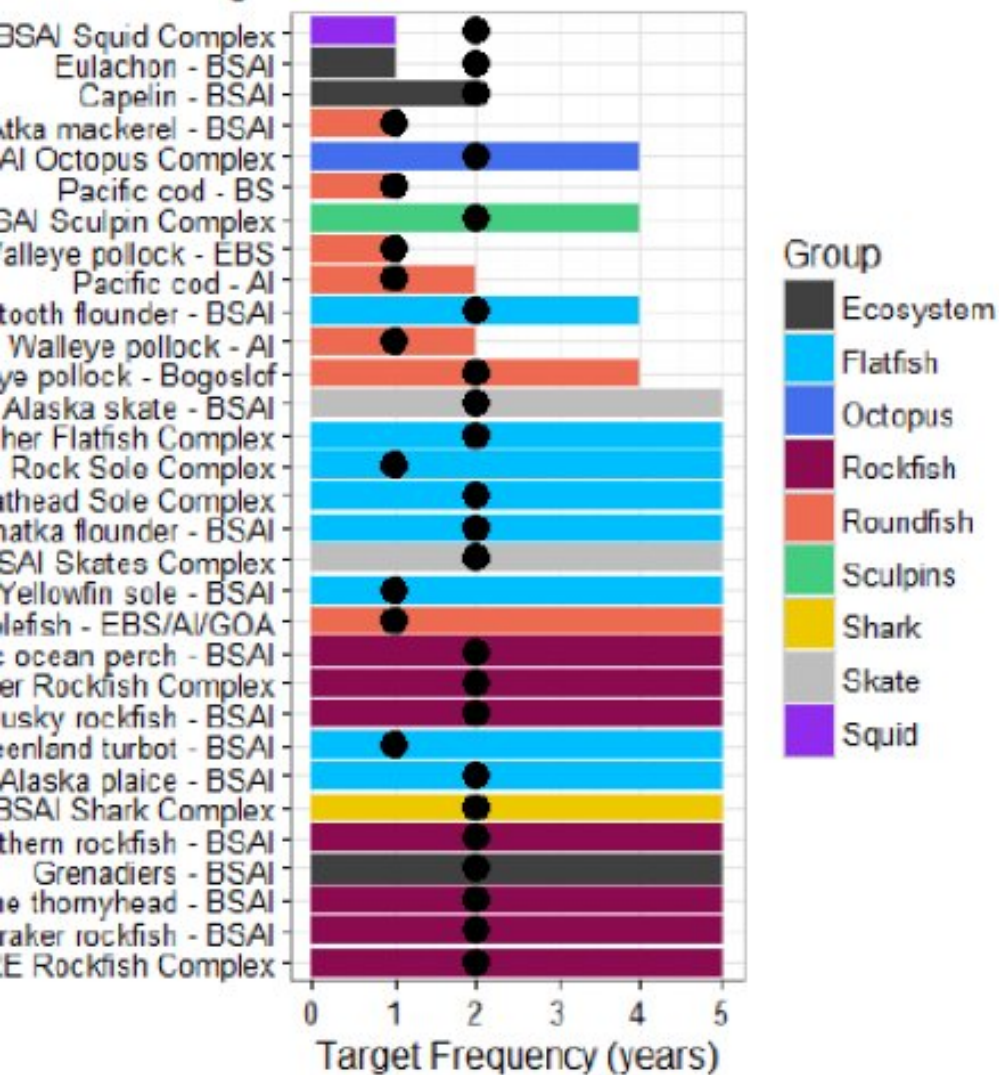
Bering Sea/Aleutian Islands - Scenario 4



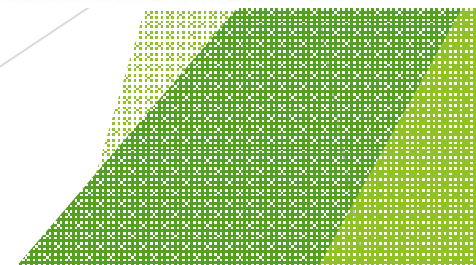
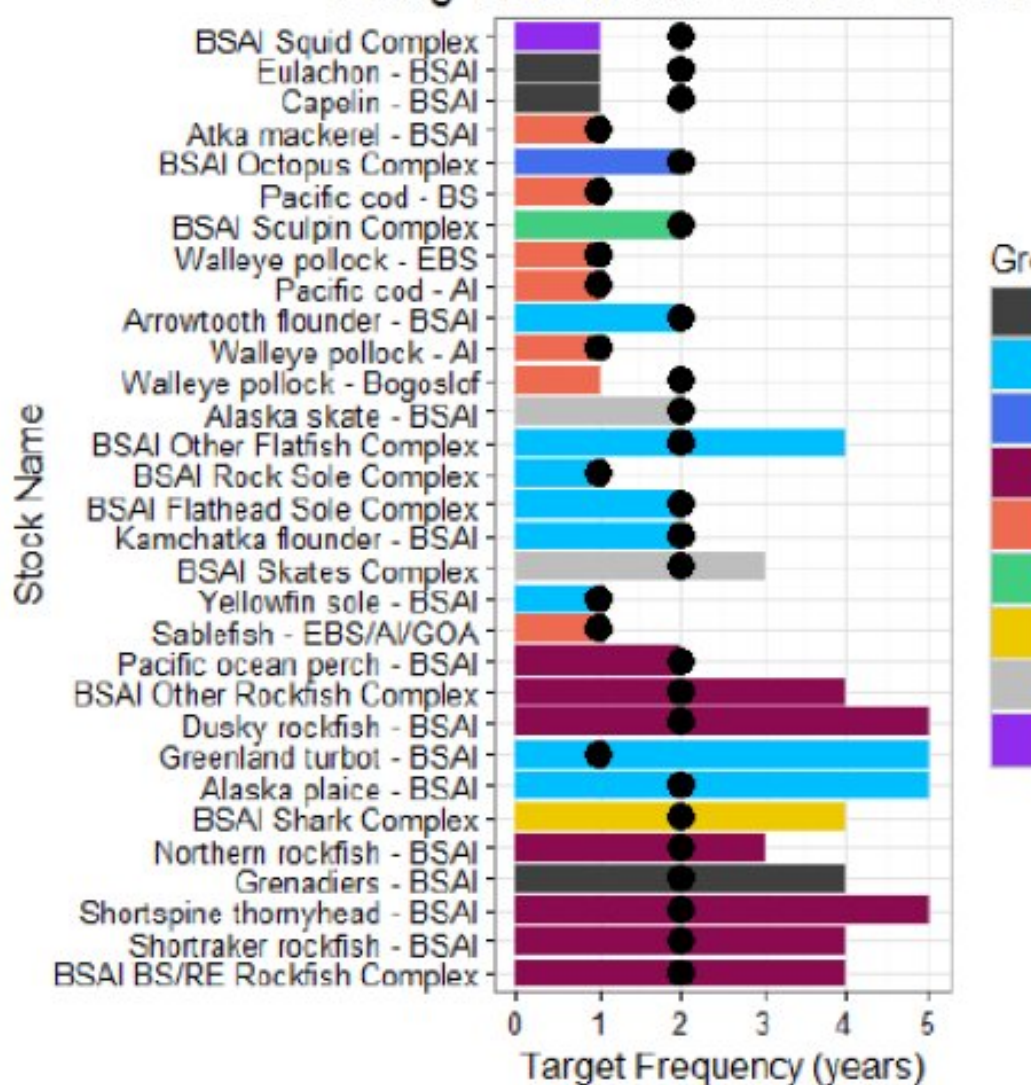
Bering Sea/Aleutian Islands - Scenario 5



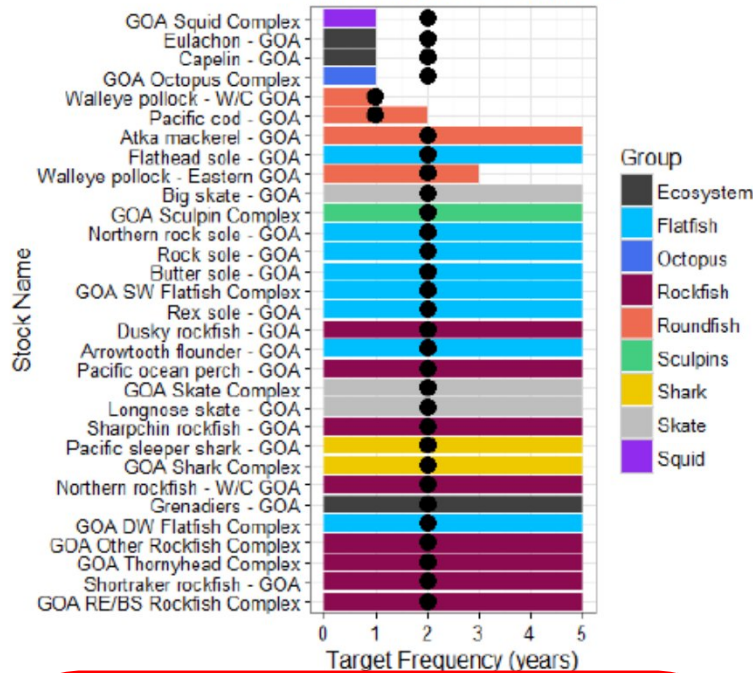
Bering Sea/Aleutian Islands - Scenario 2



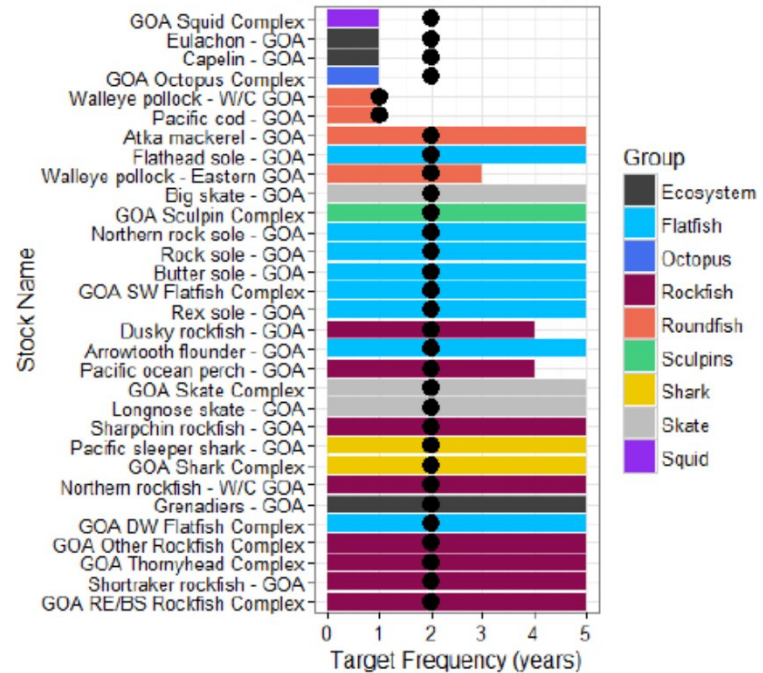
Bering Sea/Aleutian Islands - Scenario 1



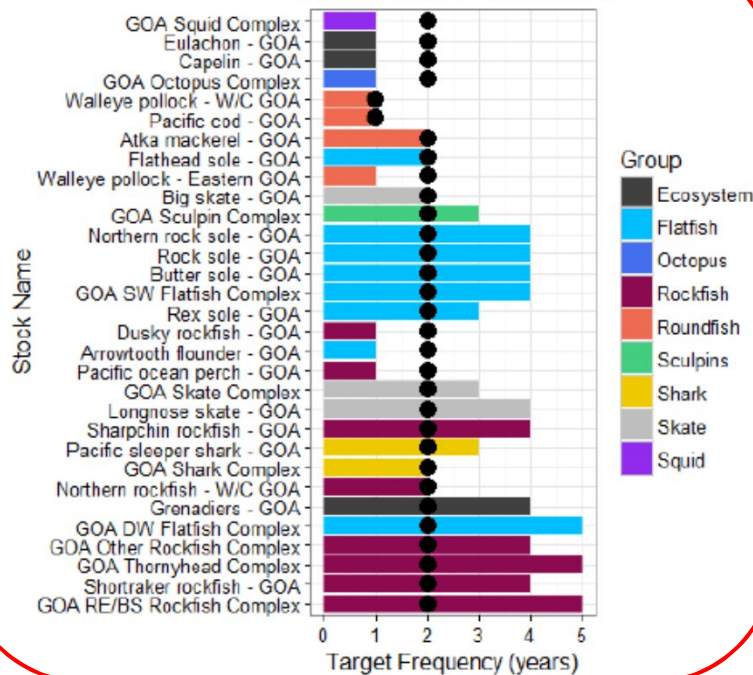
Gulf of Alaska - Scenario 2



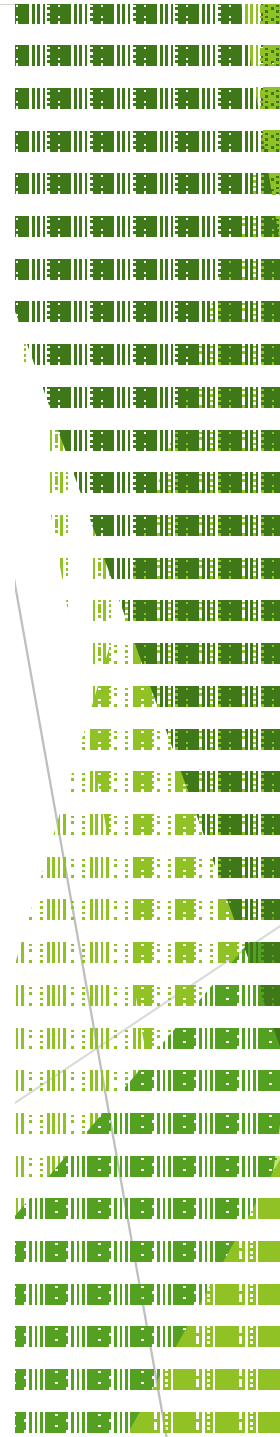
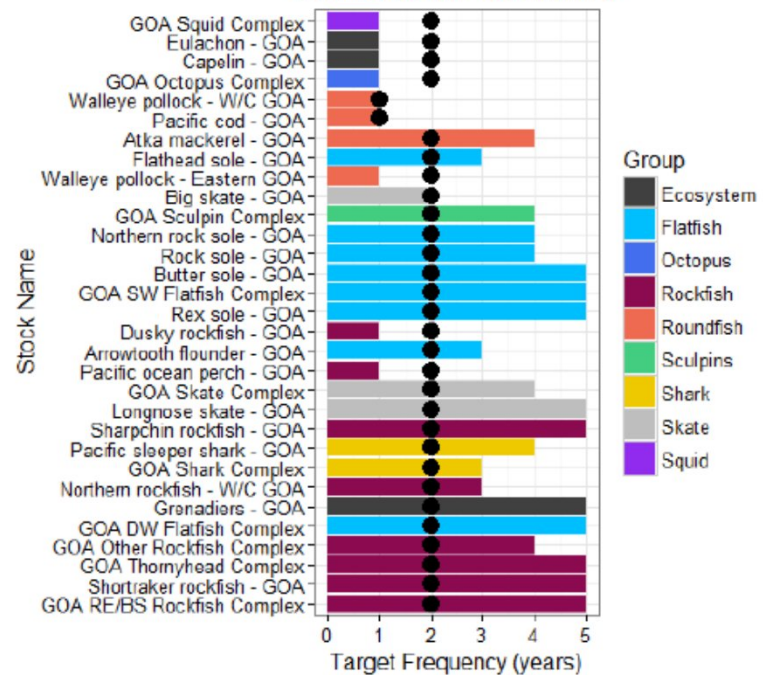
Gulf of Alaska - Scenario 3



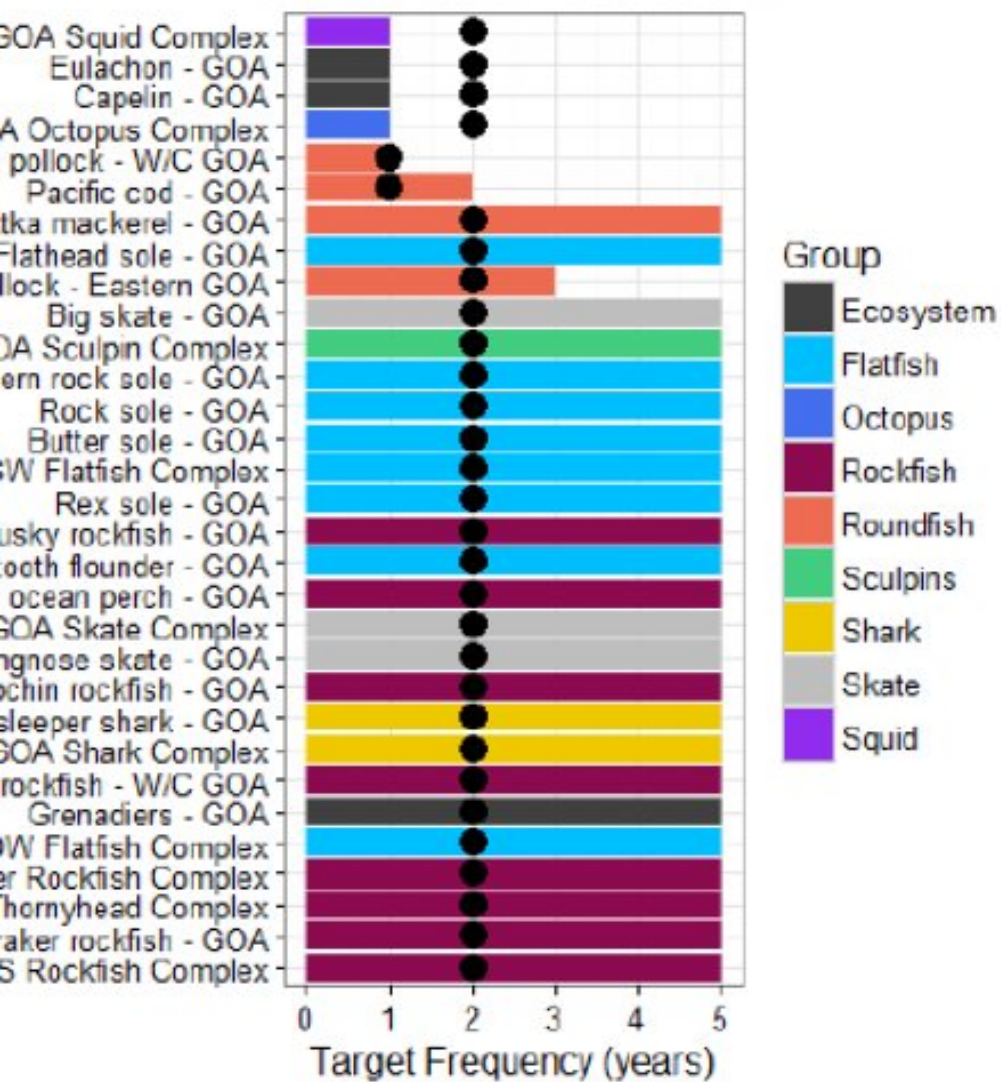
Gulf of Alaska - Scenario 4



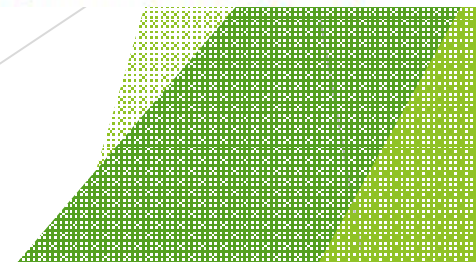
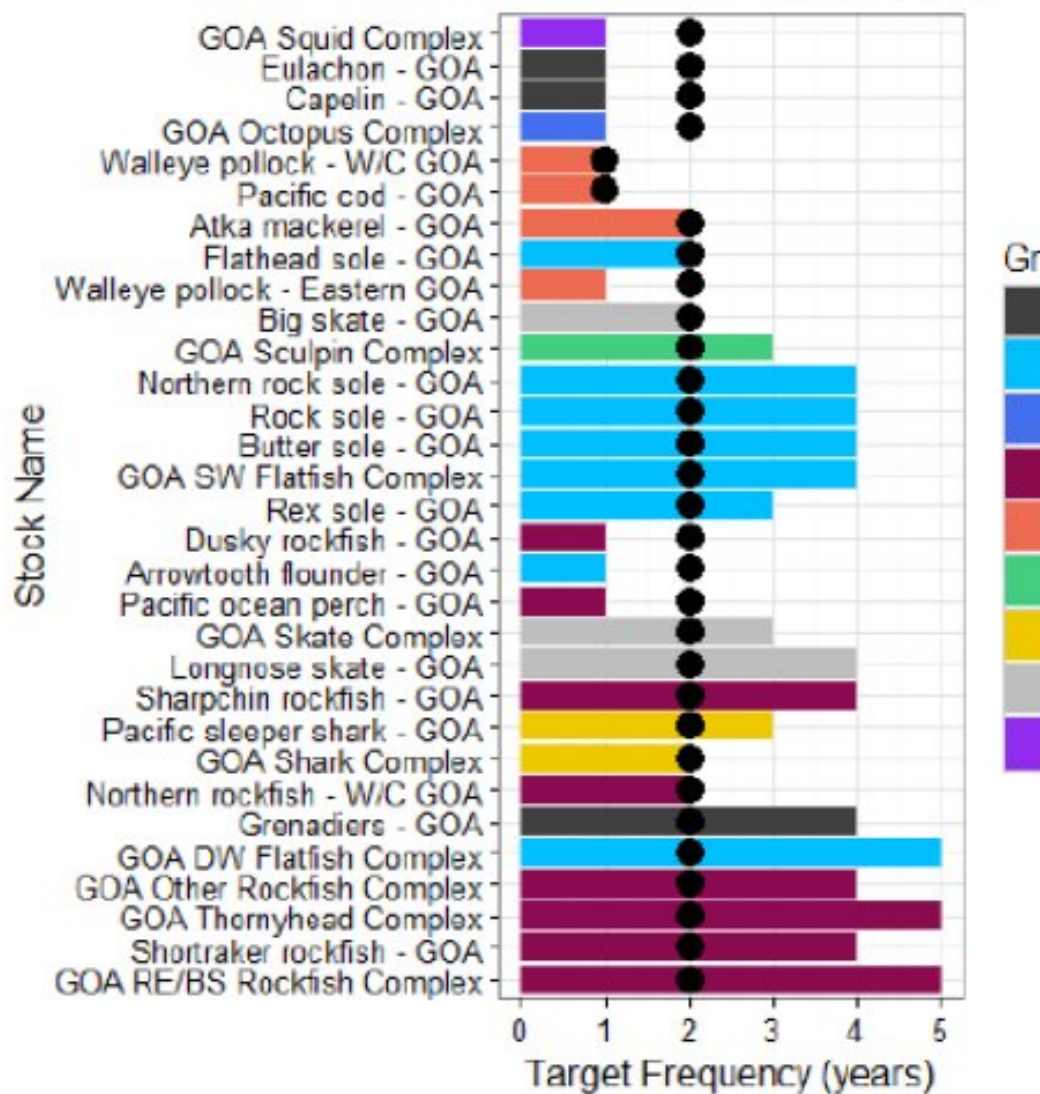
Gulf of Alaska - Scenario 5



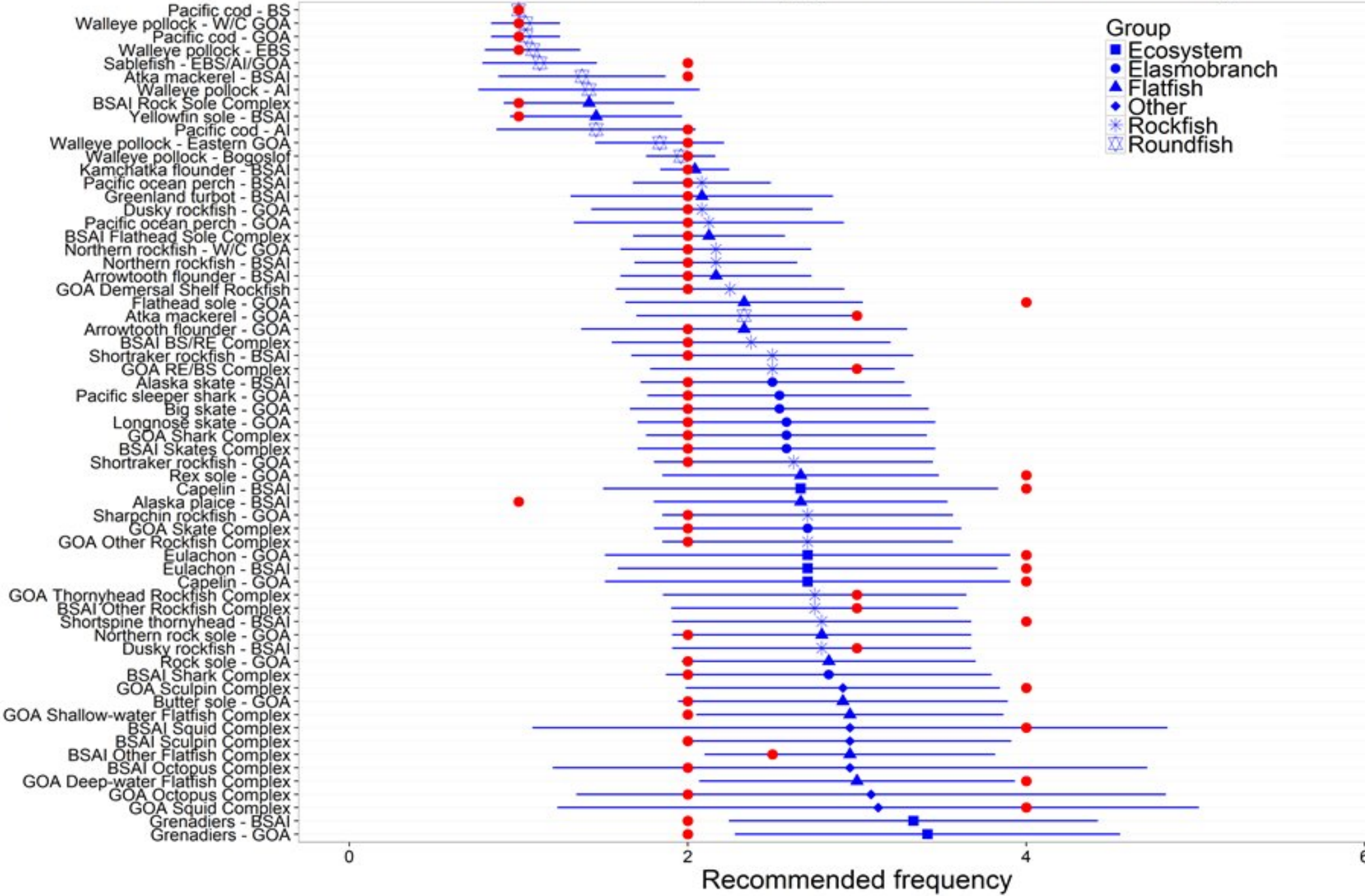
Gulf of Alaska - Scenario 2



Gulf of Alaska - Scenario 4



Absolute frequency (Authors and Plan Teams)

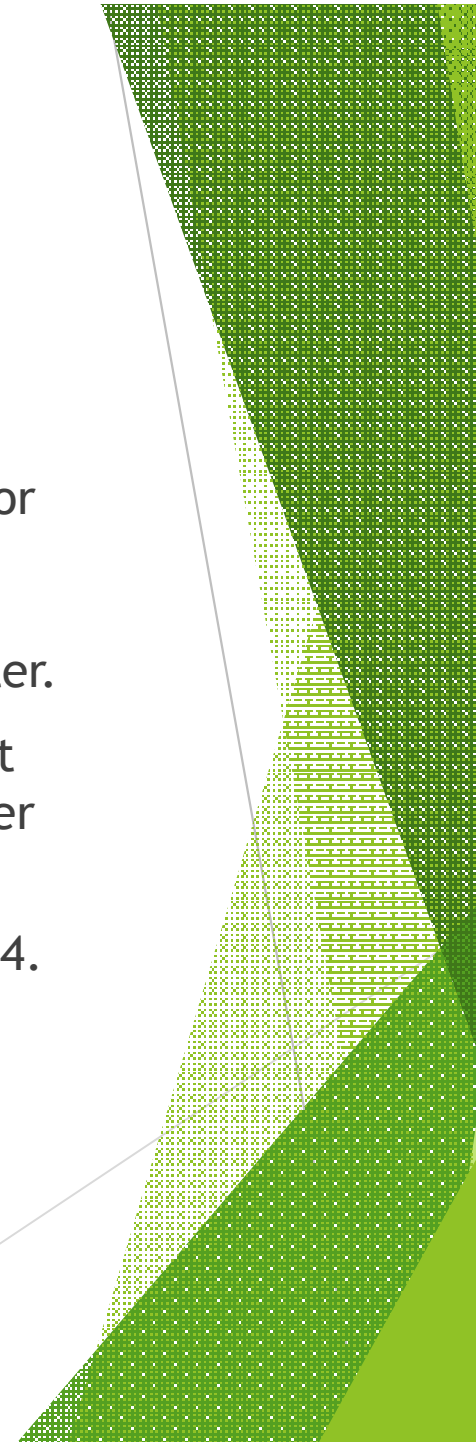


Supplemental Metrics

Root-mean-squared-change (RMSC) in relative biomass (spawning biomass for Tiers 1-3, survey biomass for Tiers 4-5, not used for Tier 6). Changes were measured as proportions. Grant used the time series from 1977-present or the longest time series available from the assessment, whichever was shorter.

Mean catch-to-ABC ratio. Grant used the average of the ratios over the last 20 years or the longest time series available from the assessment, whichever was shorter.

Fishery importance. Grant used the same values used to produce Scenario 4.



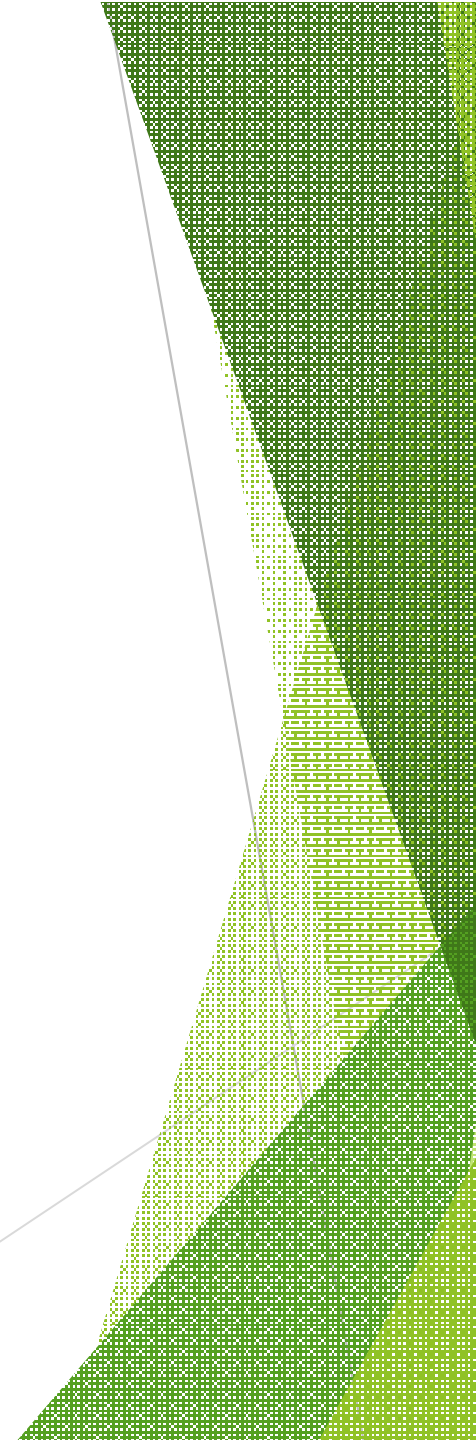
Definitions

New Never assessed before

Benchmark Substantially different than previous

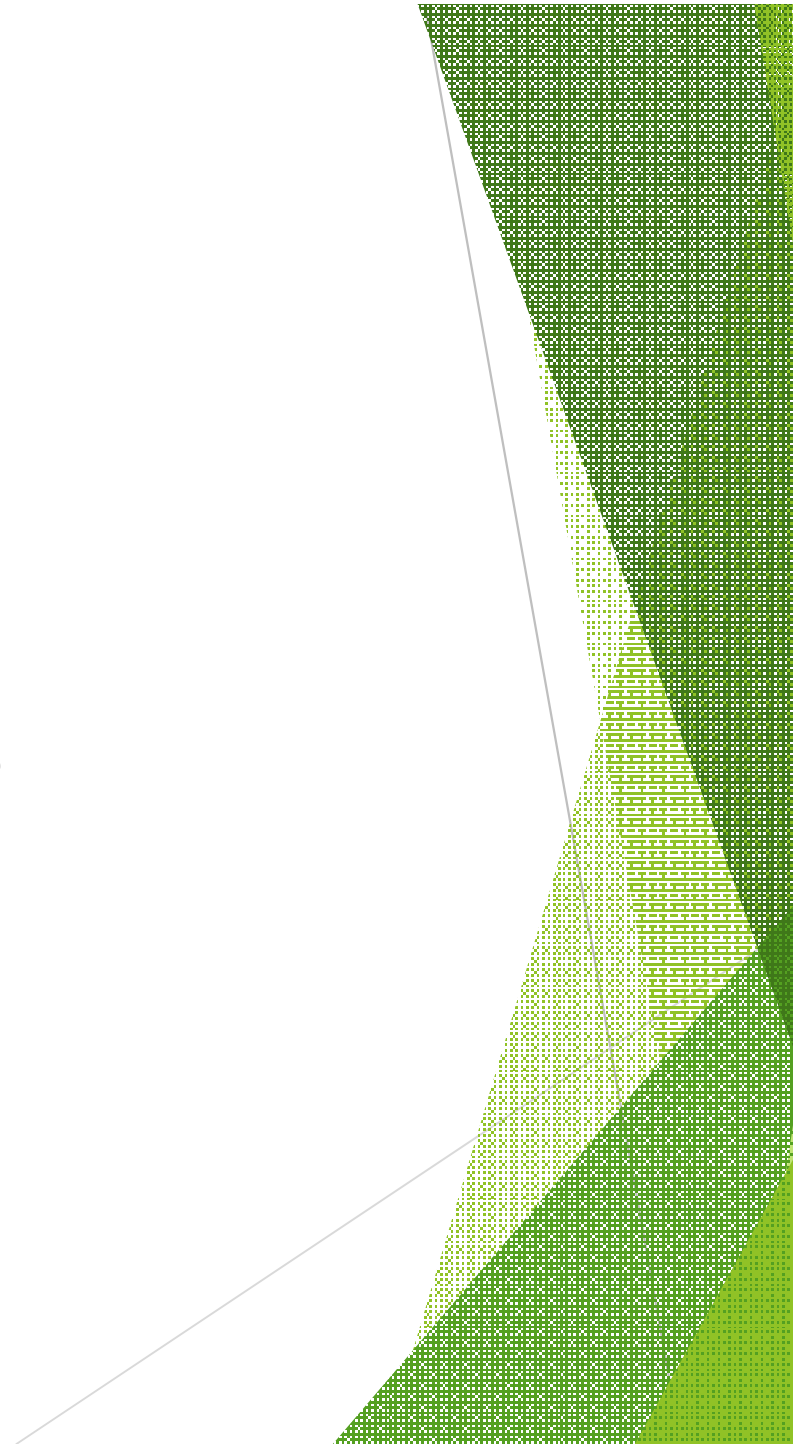
Full Update No substantial changes to methods or interpretation

Partial Update Executive summaries, updating catch data only



What we actually did

- Poll results not considered sufficient
- Stock-by-stock
- Poll results and author recommendations used as reference
- No change where $S4 = SQ = \text{Author}$
- Even years to align assessment frequencies with surveys



Complex	SQ	S4	JPT	Diff from S4	Diff from SQ	Rationale
Rock - AI	1	1	4	3	3	<ul style="list-style-type: none"> No directed fishery since 1998, stable population, no plans for a fishery. If fishery - e more frequent assessments. Catch/TAC = 10% S4 result of the ecosystem importance and short life span SSL issues Harvest limit fixed in regulation No conservation concern. RPAs do not require annual assessments of SSL prey.
er Flatfish complex	2	4	4	0	2	<ul style="list-style-type: none"> Complex could be broken out in the future. Lightly exploited. Change in SSB very low Catch/ABC 15%.
er rockfish - SAI	2	4	4	0	2	<ul style="list-style-type: none"> Catch/ABC ~58% Average change in biomass is low ~2%.
er Rockfish complex	2	4	4	0	2	<ul style="list-style-type: none"> Many species Some could be over-exploited by longer lapses in assessments. Thornyheads bulk of the complex. Difficult to assess trend in minor components of complex (especially dusky rockfish) thus a with additional data points is also desirable.
id Complex	2	1	4	3	2	<ul style="list-style-type: none"> Specs based on average catch and no additional information
ers - BSAI	2	4	4	0	2	<ul style="list-style-type: none"> Low exploitation Tier 5 assessment, so workload for author not significantly affected.
nd turbot - SAI	1	5	2	-3	1	<ul style="list-style-type: none"> Shelf survey, slope survey alternate. Shelf survey captures juvenile fish Slope survey captures adults. Better results doing the assessment biennially. S4 driven by the long-life of the species
n Complex	2	3	4	1	2	<ul style="list-style-type: none"> Catch/ABC low. Consistency with the other 4 year recommendations

Complex	SQ	S4	JPT	Diff from S4	Diff from SQ	Rationale
northern rockfish - BSAI	2	3	2	-1	0	<ul style="list-style-type: none"> Catch/ABC 46% SSB changes moderate. Targeting requires additional monitoring Evidence of spatially segregated populations and potential for localized depletion Some sub-areas have higher exploitation rates
Chinook Complex	2	3	2	-1	0	<ul style="list-style-type: none"> No compelling reason to move away from current frequency. Catch/ABC 74%.
BSAI Flathead/Roughnose fish Complex	2	4	2	-2	0	<ul style="list-style-type: none"> Management issues - catch by area, low ABCs, MSSCs by area Could be reconsidered in the future. Uncertainty in estimates of year-class strength Two species in an assessment.
Shark Complex	2	4	2	-2	0	<ul style="list-style-type: none"> Decline in sleeper shark CPUE - potential for conservation concern. Investigating use of catch by numbers Evolving assessment model Longer frequency in the future as appropriate.
Plaice - BSAI	2	5	2	-3	0	<ul style="list-style-type: none"> Concern - change in the distribution of the stock (moving to northern Bering Sea) Candidate for a reduced frequency in the future
Dusky Rockfish	2	5	2	-3	0	<ul style="list-style-type: none"> Primarily in AI, 2 yr survey freq Rest of complex could be 4 yr if dusky is split out.

Stock Complex	SQ	S4	JPT	Diff from S4	Diff from SQ	Rationale
Low-water complex	2	4	4	0	2	<ul style="list-style-type: none"> Catch/ABC low Complex with rocksole
Rock sole -	2	4	4	0	2	<ul style="list-style-type: none"> Catch/ABC 12% SSB does not change much.
Low-water complex	2	5	4	-1	2	<ul style="list-style-type: none"> Necessary age-data provided year after GOA survey Catch/ABC 2-3% ABC for the other species in complex very low.
Rock sole - GOA	2	2	4	2	2	<ul style="list-style-type: none"> Author recommended longer time frame Catch/ABC 6% Catch limited by halibut bycatch SSB changes very low S4 driven by market value, ecosystem importance.
Blackspotted Complex	2	5	4	-1	2	<ul style="list-style-type: none"> Catch/ABC 50% LL and BTS used Abundance stable. Catch share program argues for SQ. S4 driven by long-lifespan Reconsider at a 4 year interval or if/when species are broken out of complex
Sculpin Complex	2	3	4	1	2	<ul style="list-style-type: none"> Issues with bigmouth sculpin decline Need for assessment and monitoring Catch/ABC low. Consistency with the other 4 recommendations
GOA	2	1	4	3	2	<ul style="list-style-type: none"> Rationale = no specifications for this stock

Complex	SQ	S4	JPT	Diff from S4	Diff from SQ	Rationale
Complex	2	3	2	-1	0	<ul style="list-style-type: none"> Subarea ABC being exceeded MRA issues Catch/ABC 55%. If species assessed separately could consider other at 4 years and longnose and Big
Sleeper shark -	2	3	2	-1	0	<ul style="list-style-type: none"> Same issues with sleeper sharks in BSAI. Sufficient evidence of sleeper shark decline.
Rockfish -	2	4	2	-2	0	<ul style="list-style-type: none"> Catch/ABC >1 in some areas Catch share plan, Overall Catch/ABC 62%.
Rockfish	2	4	2	-2	0	<ul style="list-style-type: none"> Catch/ABC high Exploitation of individual species variable, Yelloweye contribution in the CGOA, Evolving assessment to break additional species out of the complex.
Skate - GOA	2	4	2	-2	0	<ul style="list-style-type: none"> Area-specific ABC exceeded in recent years in WGOA. Managed through MRAs. Consistency with skate complex
Head complex	2	5	2	-3	0	<ul style="list-style-type: none"> ABC exceeded in the past in the WGOA Catch share program.

Assessment products

Tiers 1-3

5-year cycle

Year 1: full

Years 2-4: partial

Year 5: full

2-year cycle

▶ Year 1: full

▶ Year 2: partial

▶ Year 3: full

Full assessments for Tiers 1-3 should be an expanded version of the current off-year executive summaries, including catch/biomass ratios for all species in addition to re-running the projection model with updated catch information, and also including updated survey biomass trends when available (not applicable to partial assessments). Partial assessments for Tiers 1-3 do not involve re-running the assessment model; only the projection model is updated. Authors would be expected to respond to Team/SSC comments during full assessments only, unless otherwise noted. Comments pertain to features that are normally included in partial assessments.

Assessment products

Tiers 4-5

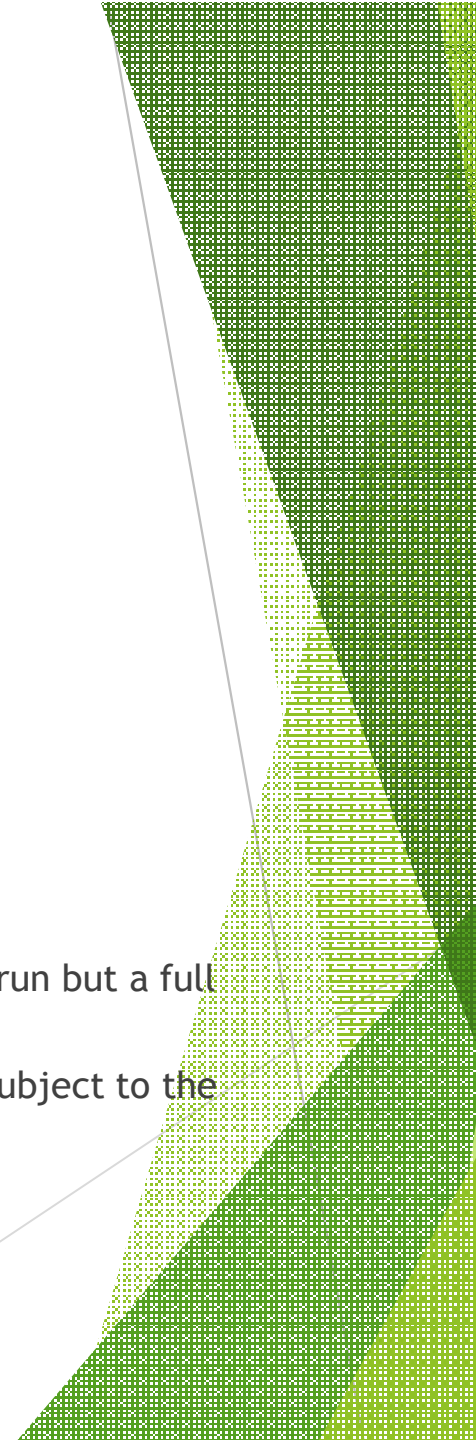
5-year cycle

Year 1: full

Years 2-4: partial

- ▶ ABC and OFL would be left unchanged unless:
 - ▶ a mistake in the ABC or OFL computed in the previous full assessment is found
 - ▶ new survey data are available, in which case the random effects model would be re-run but a full assessment would not be produced
 - ▶ new information (other than new survey data) suggests that ABC should be revised, subject to the maximum permissible ABC computed in the previous full assessment

Year 5: full assessment

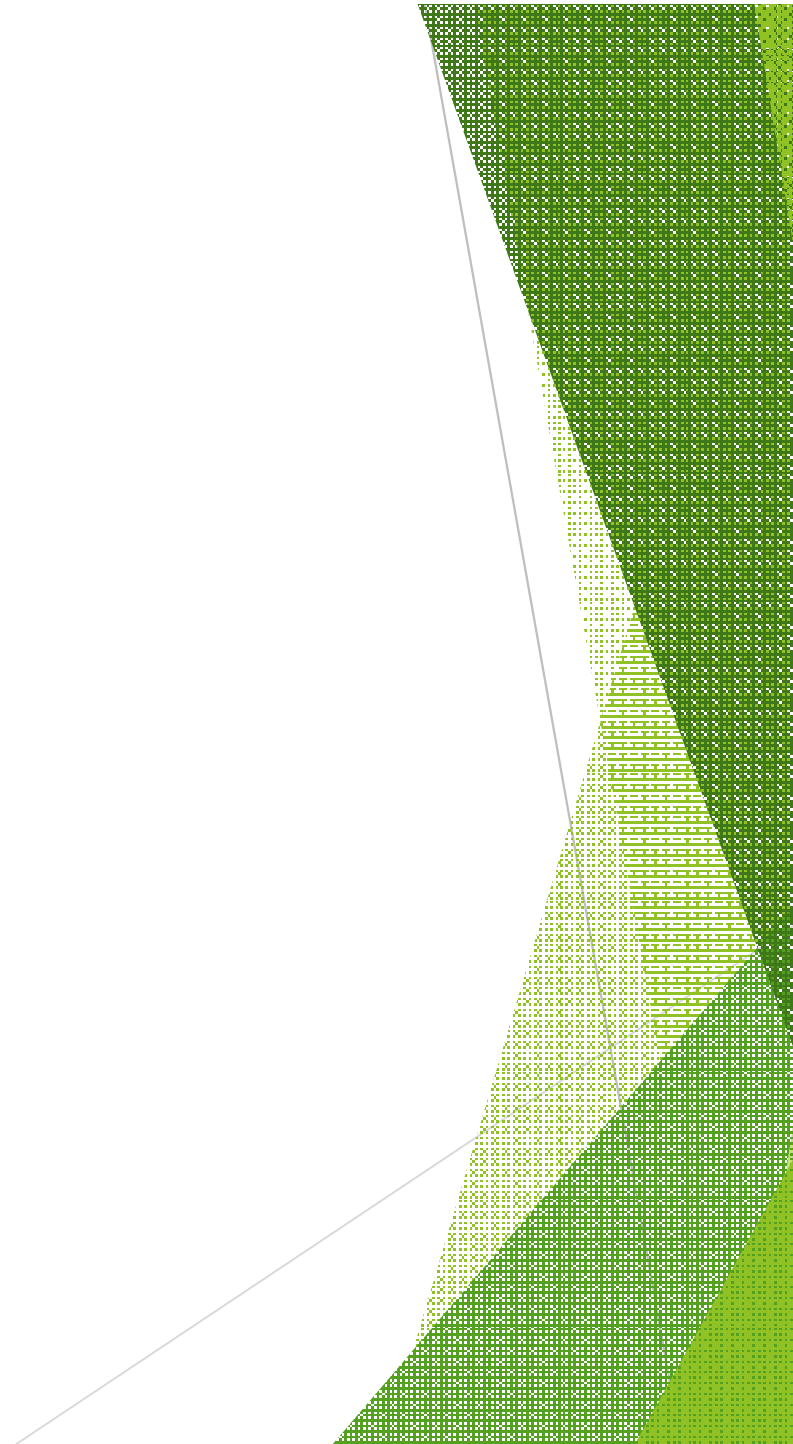


Assessment products

Tiers 4-5

5-year cycle Option 1

- Year 1: full assessment
- Year 2: none
- Year 3: partial assessment
- Year 4: none
- Year 5: full assessment



Assessment products

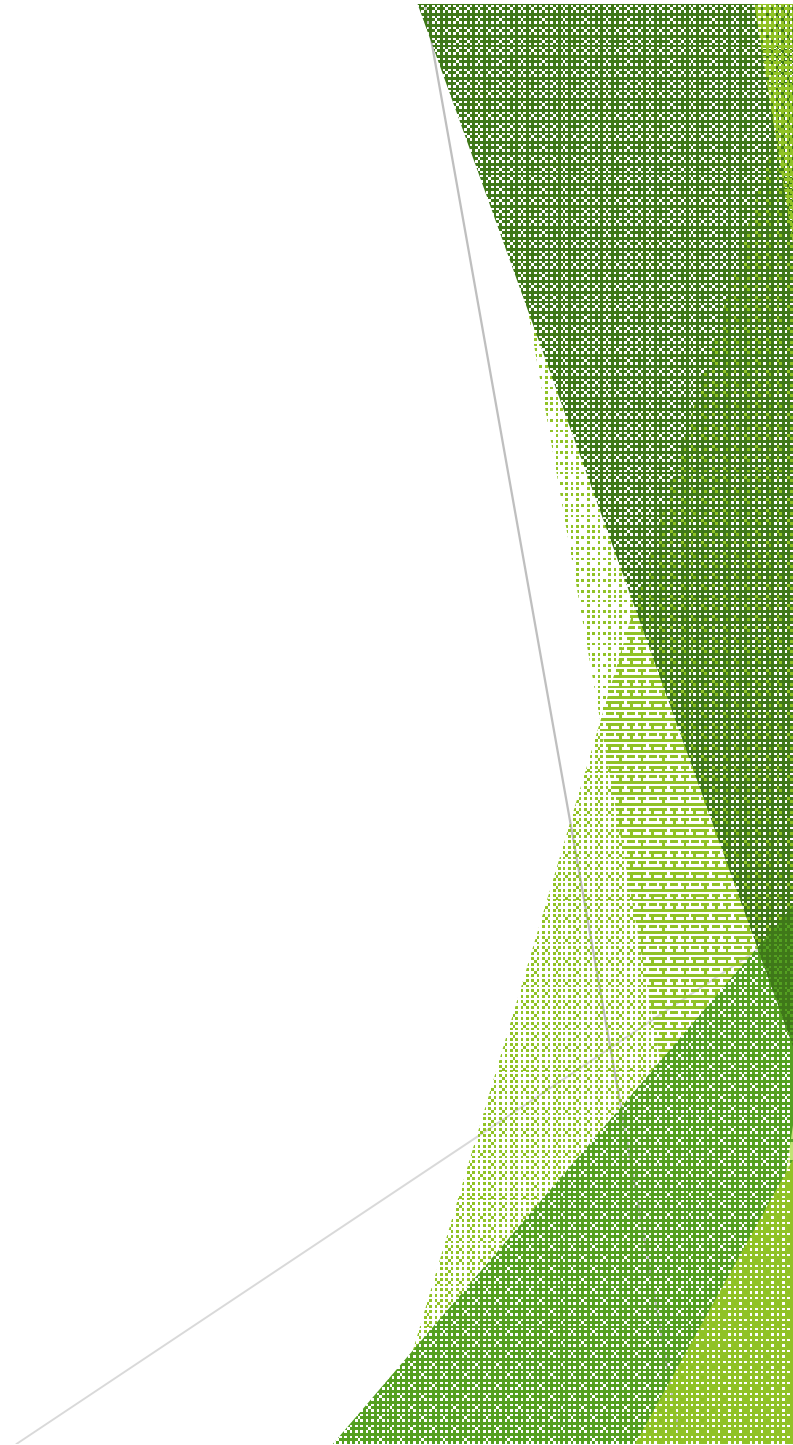
Tiers 4-5

3-year cycle

Year 1: full

Year 2: none

Year 3: full



Assessment products

Tier 6

5-year cycle

- Year 1: full
- Year 2: none
- Year 3: partial
- Year 4: none
- Year 5: full

2-year cycle

- ▶ Year 1: full
- ▶ Year 2: none
- ▶ Year 3: full



Other Issues

Fewer data for ecosystem models and other external analyses

Reduction in frequency \neq stock not important

Reduction in frequency \neq reduction in survey frequency!!

Re-visit after one complete cycle (4 yrs)



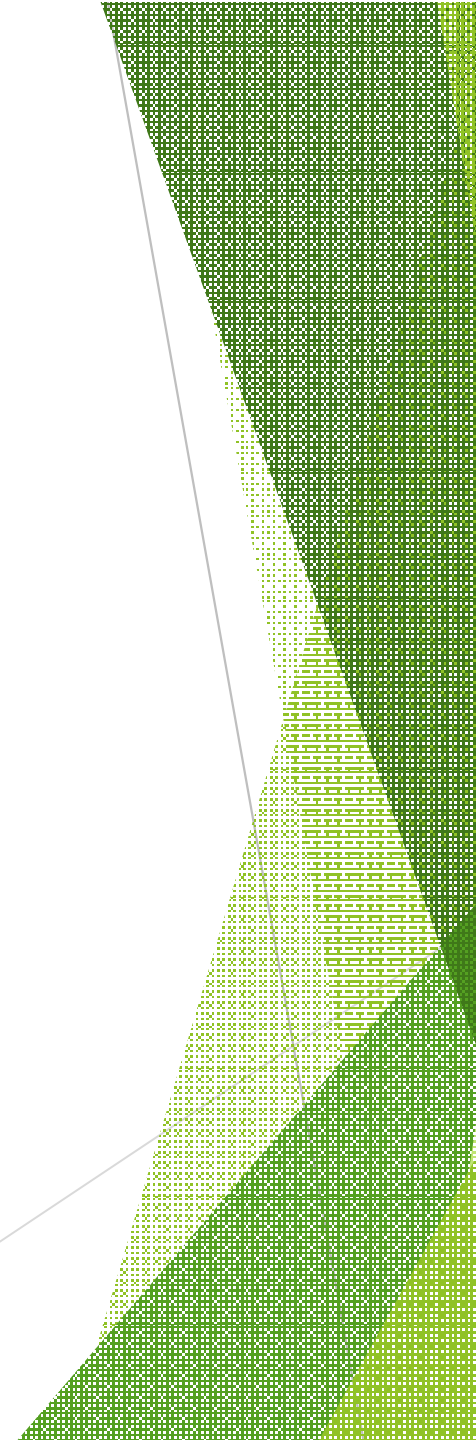
Other Issues - CIE reviews

Major model changes prior to a CIE review?

Stock prioritization inform which stocks for CIE review purposes?

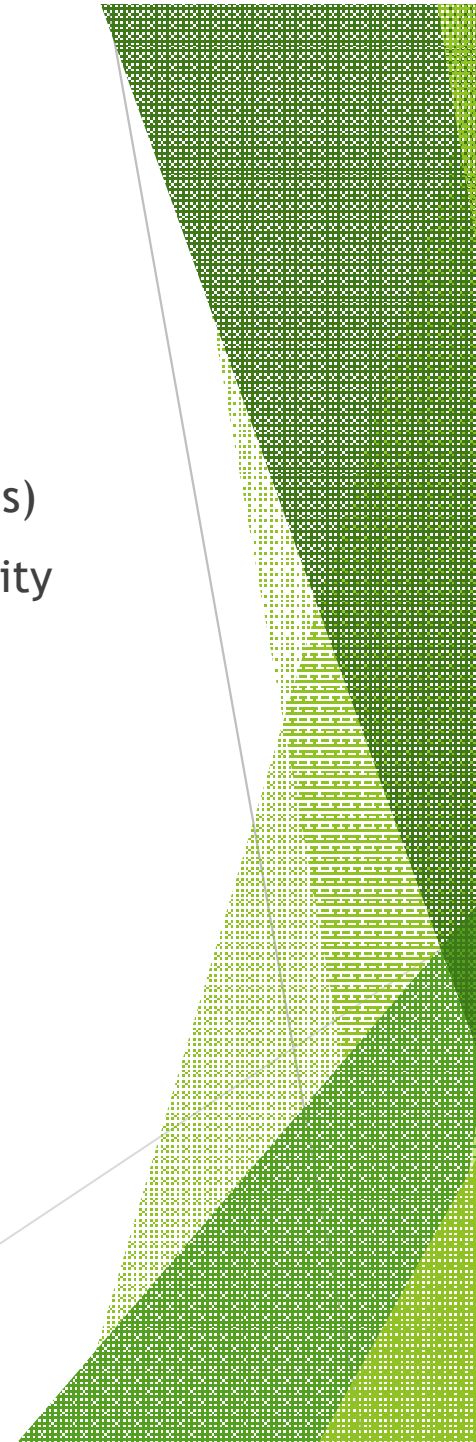
Alternate external review of a new model from September - November?

Modeling workshops?



Other Issues - Triggers

- Change in spawning biomass (perhaps standardized by \pm xx standard deviations)
- Evidence of new environmental link to trends in growth, recruitment, or mortality
- Evidence of a marked change in retrospective bias or residuals
- Availability of new information on vital rates (M, maturity, growth)
- Availability of new information on survey performance (selectivity, Q)
- Change in catch suggesting targeting a member of a complex
- Evidence of stock structure and possibility of overharvest of a sub-population
- Change in catch to ABC ratio
- Change in halibut bycatch
- Distributional shifts



Stock prioritization

- Which stocks to assess

- Preliminary attempts demonstrated

- Different weighting scenarios (socio-econ, conservation/ecosystem, change in biomass or data)

- Not directly applicable, but could be useful

- Continued refinement



et change

BSAI - 8 Stocks

GOA - 7 Stocks



rab Plan Team Meeting

Jan 17-19, 2017

