


September GOA Groundfish Plan Team Report

Report of the
Gulf of Alaska Groundfish
Plan Team meeting
September 2015

GOA Plan Team Members

James Ianelli (co-chair)	AFSC
Jon Heifetz (co-chair)	AFSC
Jim Armstrong	NPFMC
Kristen Green	ADFG
Mark Stichert	ADFG
Jan Rumble	ADFG
Ian Stewart	IPHC
Leslie Slater	USFWS (joint)
Nancy Friday	NMML
Mike Dalton	AFSC
Chris Lunsford	AFSC
Sandra Lowe	AFSC
Paul Spencer	AFSC
Craig Faunce	AFSC
Obren Davis	AKR

This information is distributed solely for the purpose of pre-dissemination peer review under applicable information quality guidelines. It has not been formally disseminated by the National Marine Fisheries Service and should not be construed to represent any agency determination or policy.



- Ecosystem Considerations
- Northern and southern rock sole
- Rex sole
- Pacific cod
- Other rockfish and DSR
- Rockfish Modeling
- GOA trawl survey
- Arrowtooth Flounder
- Acoustic surveys
- Pollock assessment
- Sculpins
- PWS sablefish
- Proposed specifications



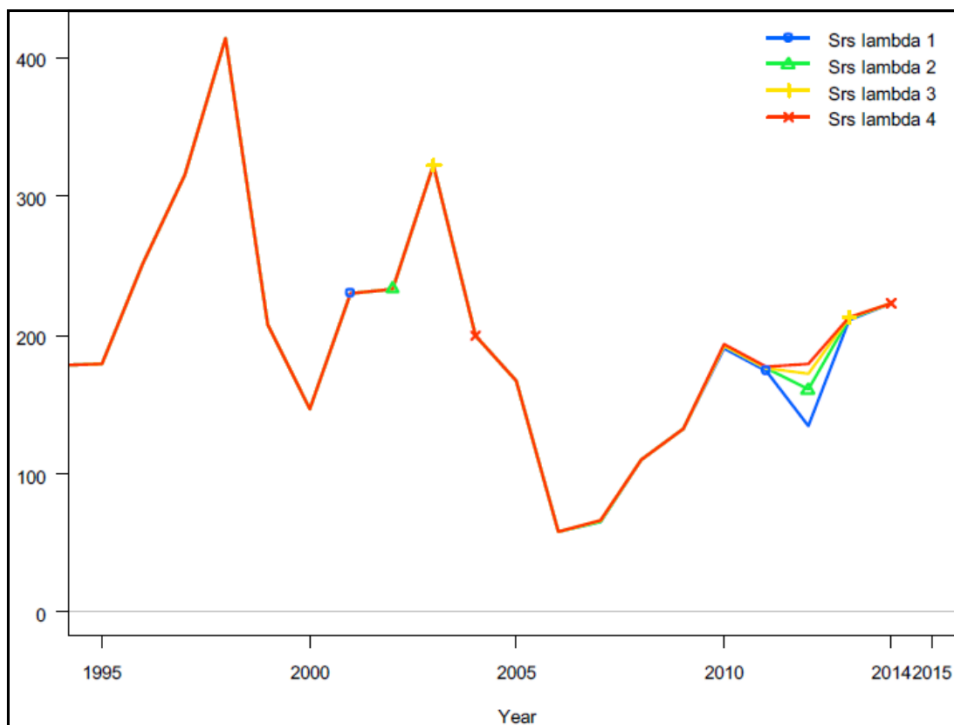
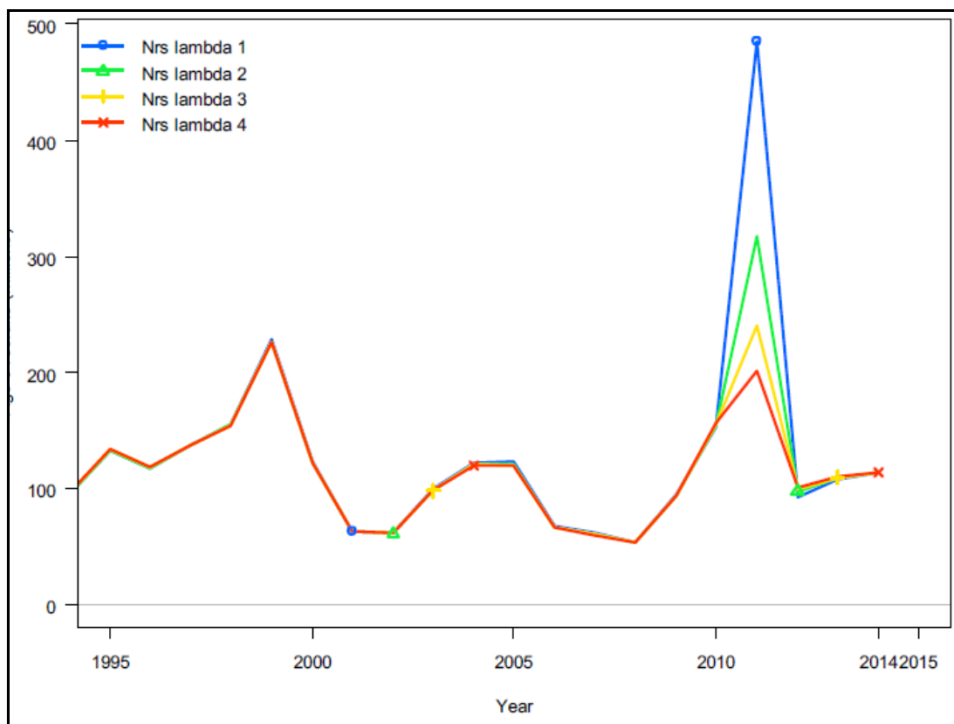
GOA Ecosystem considerations

- **Updated on conditions in 2014 early 15**
 - ♦ Warm water
 - ♦ Increase in small copepods indicative of warm conditions
 - ♦ Jellyfish high
 - ♦ SE AK pink salmon forecast 54.5M – harvest 33.3M
 - Southern SE very low
 - ♦ Sablefish prediction model – chlorophyll a and temp
 - 2014 YC should be strong (Corroborated by abundance 1+ juveniles in near shore waters)
 - ♦ Heading into a strong El Nino
 - ♦ In November additional 2015 info
 - At request of SSC will expand Disease Ecology section focus on Ichthyophonus and mushy halibut



Northern and southern rock sole

- **Focus on model development rather than input data**
- **Three model configurations**
 - ♦ Undifferentiated (Urs), Northern (Nrs) only, Southern (Srs) only
 - Catch assumed to be 50%
- **Use of asymptotic survey selectivity 1990 on**
- **Results**
 - ♦ NRS model sensitive to specified “lambda” which affects recent recruitment estimates
 - ♦ Length based survey selectivity and separate Srs and Nrs models fit best
- **Team recommendations**
 - ♦ If recruitment patterns in NRS model persist after adding in new survey data, explore options to stabilize the recent recruitment estimates
 - ♦ Asymptotic survey selectivity at length
 - ♦ Estimates for each species separately
 - ♦ For 2016 address PT and SSC comments that weren’t addressed





Rex sole

- Last time fully assessed was 2011
- Shifting to SS3 from ADMB platform
- SS3 model able to reasonably replicate ADMB
 - ♦ Slight differences due to inability to replicate age-length transition matrix
 - ♦ Selectivity parameterization differed
- **Team recommended moving forward with SS3**
- **Bring to November**
 - ♦ SS3 model like original with updated data
 - ♦ One or more alternative models that explore minor changes
 - Include some fishery age comps, filling in for missing EG with RE model, look at age comps when survey didn't go deep,
 - ♦ Team recognized that it is possible that all changes will be implemented by Nov



Pacific cod

- Focus on model development rather than input data
- Sub committee recommendation LL survey data
 - ♦ Taken on later by new author
- On going issue is how to treat age 1 fish and 84 and 87 surveys
 - ♦ No age data for 84
 - ♦ Range of ages for 87 is truncated
- Four model configurations
 - ♦ Model 0 - Final from 2014
 - ♦ Model 2 - Final from 2011 (12 blocks of survey selectivity)
 - ♦ Model 3 – Model 0 with minimum age (A_{min}) 2 instead of 1 and explore initial conditions
 - ♦ Model 4 – Model 0 with
 - Omit all age-1 survey data 1990 on
 - A_{min} increased from 1 to 2;
 - 3 or 4 blocks of survey selectivity; Non-parametric or double normal survey selectivity (4 submodels)

Pacific Cod

- Model 2 (2011) did not fit the 27 cm + survey data very well even with time varying selectivity; Model 3 did not improve on model 0
- Alternate model 4 configurations exhibited similar trends in biomass and is the authors preferred model because better selectivity patterns and reduced blocks of survey selectivity rather than many blocks (12).
- “None of the model explorations were successful in addressing the high estimate of age-0 recruits for 1977, although the 4 versions of Model 4 had estimates lower than those for Models 0 and 3 and similar to the estimate from Model 2. The performance of the 4 Model 4 configurations seems to be an improvement on previous model configurations, with the limitation that all age-1 data are omitted from the survey abundance indices and age data for 1990 on.”
- **Team recommended going forward with Model 0 and authors preferred model (Model 4 with non parametric selectivity and 4 blocks)**
- Discussion about historical survey ages from 1987 survey

Other rockfish and demersal shelf rockfish

- **Yelloweye model (exploratory)**
 - ♦ Regions modeled separately EYKT, CSEO, SSEO
 - ♦ Explore different assumptions for M (0.01- 0.06)
 - ♦ Team concerned about low levels of uncertainty
 - Need to examine input sample sizes and data weighting
 - Likelihood profiling to look at M
 - Look at other empirical estimates of M (Then et al. 2015)
 - ♦ **Team recommendations**
 - Evaluate ageing error matrix
 - Continue to work with informal working group

OR and DSR SSC and PT requests

- Many SSC and PT comments
- Consolidated into four tasks:
 - Stock Structure Template
 - Evaluate utility of IPHC survey for Other Rockfish (OR) and Demersal Shelf Rockfish (DSR) for assessment
 - Five species commonly caught – canary, quillback, redbanded, silvergrey (EY/SEO) and YE (GOA wide)
 - Investigate potential for GOA – wide DSR assessment
 - Random effects approach for OR
 - Modeling complex as a whole best model fit
 - **Team recommended follow PT guidance of for complexes**

Other rockfish and DSR stock structure

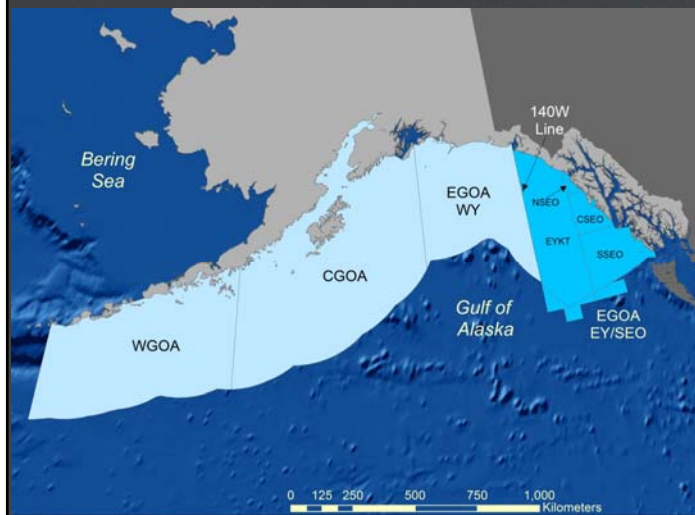
- Draft report
- Limited information on genetics, spatial age growth
- For other rockfish catch/biomass highest in WG and CG lowest in EG where majority of species reside (no trawl fishery in SE AK)
- Research priorities
 - ♦ Improved biomass estimates, validated ages, age of maturity
- No information that would suggest spatial management changes (except for OR-DSR fishery interactions)
- **Team recommended more in depth look at areal comparisons of exploitation rates**

Other rockfish (OR) and DSR management

Existing management

- ◆ DSR (yelloweye + 6 species) in SEO and EYAK
- ◆ DSR included in OR in WYAK and CG and WG
- ◆ DSR occupy different habitat and caught in different fisheries than OR
 - OR deeper, trawl fisheries
 - DSR shallow, LL fisheries (halibut)
- ◆ Yelloweye is dominant species in DSR and generally retained
- ◆ Issues with OR reaching ABC in WG and CG resulting in discarding of yelloweye
- ◆ Looked at three options for alternative management

DSR Complex



EGOA (EY/SEO)

Canary rockfish
China rockfish
Copper rockfish

Quillback rockfish

Rosethorn rockfish


Tiger rockfish

Yelloweye rockfish

7 Species

OR Complex

WGOA & CGOA	EGOA (WY)	EGOA (EY/SEO)
Blackgill rockfish	Blackgill rockfish	Blackgill rockfish
Bocaccio	Bocaccio	Bocaccio
Canary rockfish	Canary rockfish	
Chilipepper rockfish	Chilipepper rockfish	Chilipepper rockfish
China rockfish	China rockfish	
Copper rockfish	Copper rockfish	
Darkblotched rockfish	Darkblotched rockfish	Darkblotched rockfish
Greenstriped rockfish	Greenstriped rockfish	Greenstriped rockfish
Harlequin rockfish	Harlequin rockfish	Harlequin rockfish
	Northern rockfish	Northern rockfish
	Pygmy rockfish	Pygmy rockfish
	Quillback rockfish	
	Redbanded rockfish	Redbanded rockfish
	Redstripe rockfish	Redstripe rockfish
	Rosethorn rockfish	
	Sharpchin rockfish	Sharpchin rockfish
	Silvergray rockfish	Silvergray rockfish
	Splitnose rockfish	Splitnose rockfish
	Stripetail rockfish	Stripetail rockfish
	Tiger rockfish	
	Vermilion rockfish	Vermilion rockfish
	Widow rockfish	Widow rockfish
	Yelloweye rockfish	
	Yellowmouth rockfish	Yellowmouth rockfish
	Yellowtail rockfish	Yellowtail rockfish
24 Species	25 Species	18 Species



Alternative OR/DSR

- **Alt 1 Status Quo**
- **Alt 2 Dissolve “DSR”**
 - ♦ Include in OR, Gulfwide OFL
 - ♦ Sub alternatives - separate ABC’s
 - ♦ Possible Plan amendment
- **Alt 3 (authors preferred)**
 - ♦ Move DSR species that are currently in OR into the DSR assessment
 - makes sense biologically based on habitat and fishery interactions
 - ♦ Tier 6 calculations for non YE in EYSEO; Tier 6 for all DSR in Wyak, CGOA and WGOA
 - No data to expand current methods for yelloweye (line transects and data for potential ASA model)
 - Small ABC in WY – hard to manage
 - ♦ Given the trade-offs between biological benefits and management challenges **the Team recommends further evaluation of the author preferred Alternative 3 in coordination with the Council’s process for determining spatial management.**

ABC/OFL values

Based on 2014 assessment values

	Complex	Other Rockfish Sub Group ABC			Demersal Shelf Rockfish Sub Group ABC				GOA-wide	
		W/ CGOA	Eastern GOA		W/ CGOA	Eastern GOA		ADFG	ABC	OFL
			WY	EY/ SEO		WY	EY/ SEO			
Alt - 1	OR	1,031	580	2,468					4,079	5,347
	DSR						225		225	361
Alt - 2a	OR	1,116	614	2,550				60	4,440	5,829
Alt - 2b	OR	961	585	2,489	155	29	161	60	4,440	5,829
Alt - 2c	OR	1,116	614	2,489			161	73	4,453	5,917
Alt - 3a	OR	961	585	2,489					4,035	5,289
	DSR				155	29	234		418	629

Rockfish modeling

- General look age structured rockfish models
 - Length stratified (survey design) vs assumption of random samples for growth
 - Difference in growth is minor
 - SD in mean length at age differed
 - Lower SD if length stratified
 - For November length stratified
 - Plus age group problems with ageing error matrix
 - Extend model ageing error further out improved fit to age comps in all rockfish models
 - Extension of plus age group
 - No definitive answer of what is best but clearly need to extend further than in current models
 - **The Team recommends moving forward with these three improvements and encourages the authors to further examine choosing the appropriate plus age groups. To facilitate model evaluation, the Team recommends the authors present the two alternative models suggested (1- Updated growth and ageing error extension) and (2- extension of plus group)**



Rockfish modeling

- Rougheye/blackspotted model
 - ♦ SSC issues with trawl selectivity
 - Fishery catches older fish than survey so makes sense that survey selectivity dome shaped
 - Multiple selectivity options examined – gamma and third differences looked best
 - ♦ Improved fits with extension of plus age group
 - ♦ Team suggested looking at different plus groups for fishery and trawl survey
 - ♦ **The Team recommends the authors present last year's base model with updated data along with an alternative model that explores updated growth information and an extended ageing error matrix, and second alternative model that also incorporates new selectivity curves and new plus age groups.**



GOA Bottom Trawl Survey

- Three boats first time since 2009
 - ♦ Problems with one of the boats (slower)
- Surveyed to 1000 m first time since 2009
- Random age samples for some species
- 772 successful stations
 - ♦ Planned 800 – WY had disproportionate loss relative to planned
 - ♦ 200 more than 2013
- POP highest catch, ATF, Pollock




Arrowtooth Flounder

- Development of generalized model that can be used in the GOA and BSAI
 - ♦ Differences in BSAI and GOA model
- Current BSAI generalized for more flexibility
 - ♦ Generally same results compared to current.
 - ♦ Some minor differences in recruitment and selectivity
- Use of generalized model in GOA yielded substantial differences
 - ♦ Attributed to range of ages fit by the two models
- **The Team encourages further work on the standardization of the models, and recommends running the two BSAI models with all parameters fixed. Differences in model outputs between these two runs would reveal if any difference in model equations existed.**



2015 GOA Acoustic Surveys

- **Winter survey goal to sample pre-spawning aggregations of pollock**
 - ♦ Biomass in Shelikof similar to 2013 and 14 (845,000 t)
 - 2010 YC
 - ♦ Shumagin, Sanak Marmot Bay, Chirikoff dominated by 3 year olds (2012 YC)
 - ♦ Deployment trawl resistant bottom moored sensors in Shelikof– Feb – May
 - Fish moved northward in Feb March then south March/April
- **Summer survey - Biomass estimates for pollock and POP**
 - ♦ Pollock mostly on the shelf and Shelikof
 - Lower proportion in Shelikof than 2015 – 19% vs 48% of biomass
 - ♦ High proportion of 2012 YC (88%)
 - ♦ POP biomass much higher than 2013
 - 263 kt vs 614 kt



Pollock stock assessment

- No major changes for November
- CIE wanted evaluation of Stock Synthesis model
- Achieved a nearly identical match with SS model



Sculpins

- Looking at alternatives on how to apply M for Tier 5 complex
- **Team recommended following advice from survey averaging working group for species complexes**



Prince William Sound Sablefish

- State managed fishery that has been in decline
- Lowest harvest and fishery CPUE in the time series
- GHL level hasn't been reached for quite a few years
- Team recommended looking at mixing rates between PWS and GOA
- Data sets identified that aid in improving GHL and understanding CPUE
 - ◆ Log books
 - ◆ Vessel experience and effects on CPUE
 - ◆ Size comp, hook spacing, mixed species sets



Proposed specifications

- The Team recommended rolling over the 2016 GOA final harvest specifications for OFLs and ABCs (as published in the Federal Register in February 2015 for the proposed 2016 and 2017 OFLs and ABCs.