

Salmon Amendment Committee Report

Amendment 16 to the Pacific Coast Salmon Fishery
Management Plan:

Draft Environmental Assessment for Stock Classification,
Status Determination Criteria, Annual Catch Limits and
Accountability Measures, and *De Minimis* Fishing
Provisions

Status of Amendment Process

- The SAC has Developed a Draft Environmental Assessment (EA)
 - The Council can adopt alternatives for public review
 - The Council can take final action in November
- Stock classification, stock complexes, ecosystem components, and international exceptions could affect EFH, SDC, and ACL specification.
- SDC alternatives likely to result in substantial changes to assessment and reporting on overfishing, overfished, approaching overfished, etc.
- ACL alternatives will not result in substantive changes in preseason planning process or NOF/SOF fishery structure
- AM alternatives could result in substantive changes to preseason process, and postseason reporting and assessments.
- *De Minimis* fishing provision alternatives should add management flexibility and streamline the preseason process.

Classification Alternative 1 – Status Quo

- “In the Fishery” – 69 stocks in FMP
 - Coho Stocks (21) – Hatchery, ESA, Washington Coastal, Puget Sound, Canadian
 - Chinook (45) – Hatchery, ESA, Central Valley Fall/Late Fall, Northern California Coast, Southern Oregon Coast, Mid-Northern Oregon Coast, Columbia River Summer and Fall, Washington Coast, Canadian
 - Pink (2) – Puget Sound, Canadian
- Ecosystem Components - None

Classification Alternative 2

- All stocks remain in the fishery, minor reorganization
 - Southern OCN component moved to SONCC ESU
 - Facilitate re-evaluation of the OCN Matrix
 - SONCC ESA Consultation Standard uses Rogue/Klamath coho
 - Smith River (CA) Chinook separated from ESA listed California Coastal ESU
- Stock complexes formed for Chinook ACL framework
 - Central Valley Fall (CVF) with SRFC indicator
 - Southern OR-Northern CA (SONC) with KRFC indicator
 - Far North Migrating Sp/Su (FNMSS) with Hoh indicator
- Ecosystem Components – None
- International exception for PST stocks
 - Puget Sound, WA coast and Canadian coho
 - Columbia River summer, URB, WA/OR Summer/fall, and Canadian Chinook
 - Puget Sound, Fraser pink salmon

Classification Alternative 3

- Ecosystem component stocks - Not in the fishery
 - Pink and FNM Chinook designated as EC (except ESA stocks)
 - Lower vulnerability in Council fisheries
 - Not generally retained
 - Not overfished or likely to become so absent Council management (based on new SDC)
 - EFH not specified for EC – some EFH overlap with coho, but not for mid-Columbia spring Chinook in Walla Walla, Umatilla, Upper Deschutes, Lower Crooked, and John Day rivers
 - More overlap with ESA steelhead Critical Habitat except for Upper Deschutes and Lower Crooked
- Minor reorganization as in Alternative 2
- Stock complexes formed for Chinook ACL framework
 - CVF with SRFC indicator
 - SONC with KRFC indicator
- International exception for Columbia River summer and Canadian Chinook

Other Classification Issues

- Consider additional alternative to remove FNM Chinook and pink salmon from the FMP
 - Same EFH issues as Alternative 3
 - Possibly better fit administratively
- Include FMP language to outline process for adding indicator stocks, partitioning stock complexes, etc.

Status Determination Criteria

- Overfishing, Overfished, Approaching Overfished, Rebuilt
- Based on Classification Alternative 3, SDC would be developed for:
 - Sacramento River Fall Chinook
 - Klamath River Fall Chinook
 - South Oregon Coast Chinook (OF'd and Rebuilt only for now)
 - Columbia River Summer Chinook
 - Washington Coast Coho
 - Puget Sound Coho
- Based on Classification Alternative 2, SDC also needed for FNM Chinook:
 - URB
 - WA/OR fall Chinook
 - WA Coast spring/summer Chinook
- SDC remain undefined for complex components (e.g., Klamath spring Chinook), Canadian Chinook and coho, Puget Sound and Canadian pink salmon

SDC Alternative 1- Status Quo



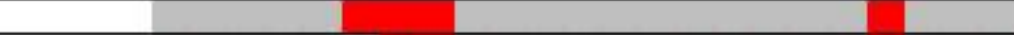














- Overfishing – Fishing contributed to triggering overfishing Concern
 - Not evaluated annually, only after triggering concern
 - Inconsistent interpretation of contribution
 - Not explicit in FMP
- Overfished – Overfishing concern triggered
 - Not explicit in FMP
- Approaching Overfished – Overfishing concern projected to be triggered
- Rebuilt – Conservation objective met or rebuilding plan objective met

SDC Alternatives 2 & 4 - Single Year

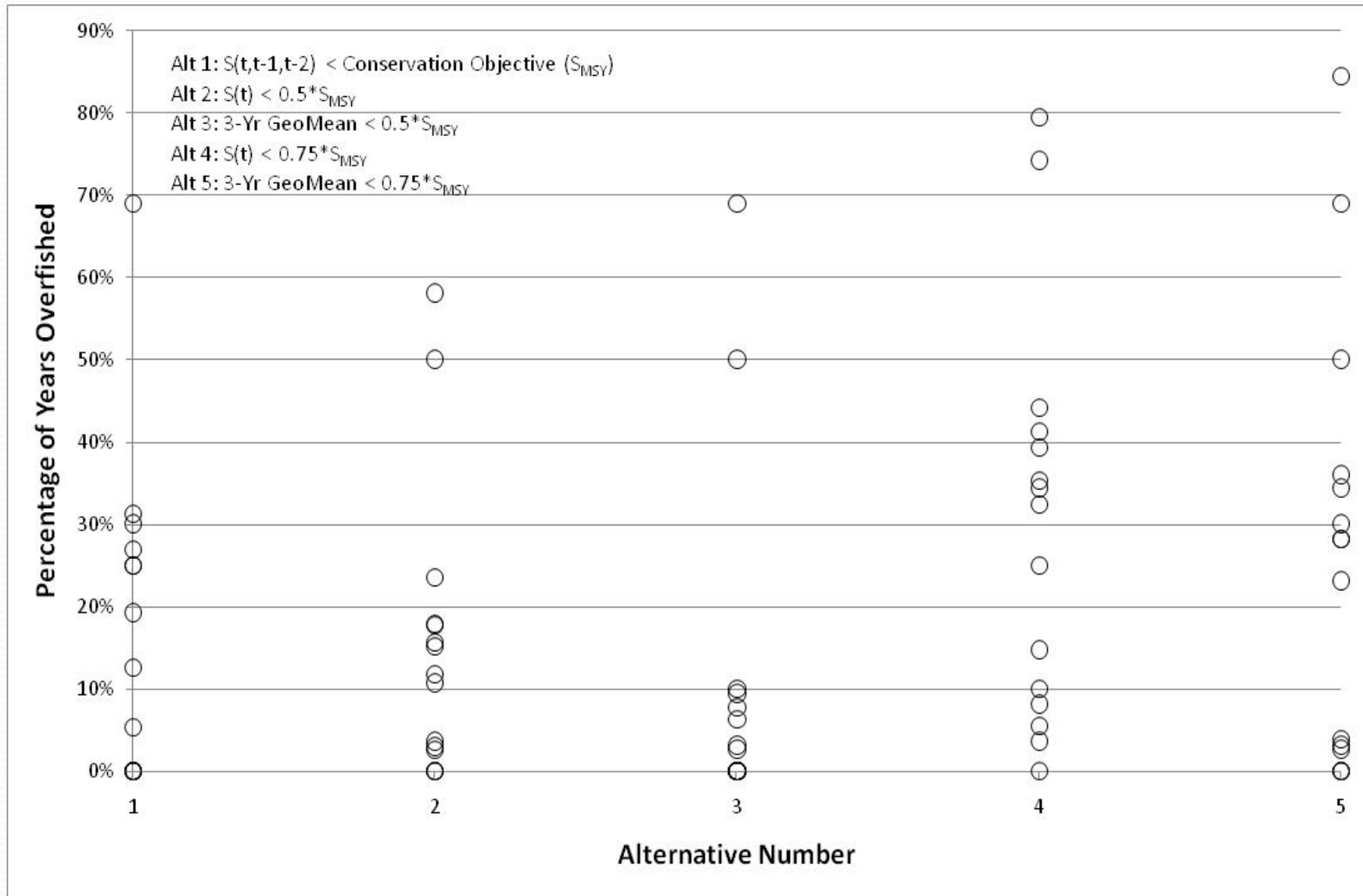
- Overfishing – MFMT: Exploitation Rate Exceeds F_{MSY}
Exploitation Rate
- Overfished – MSST: Spawning Escapement $<0.5 * S_{MSY}$ or $<0.75 * S_{MSY}$
- Approaching Overfished: Spawning Escapement Projected $<0.5 * S_{MSY}$ or $<0.75 * S_{MSY}$
- Rebuilt: Spawning Escapement $>S_{MSY}$

SDC Alternatives 3 & 5 - Multi-Year

- Overfishing – MFMT: Exploitation Rate Exceeded F_{MSY}
Exploitation Rate (Same as Single Year)
- Overfished: Recent 3-Year Geometric Mean of Spawning Escapements $<0.5 * S_{MSY}$ or $<0.75 * S_{MSY}$ (MSST)
- Approaching Overfished: Geometric Mean of Recent 2-Year Spawning Escapements and Projected Spawning Escapement $<0.5 * S_{MSY}$ or $<0.75 * S_{MSY}$ (MSST)
- Rebuilt: Recent 3-Year Geometric Mean of Spawning Escapements $>S_{MSY}$

SRFC: $F_{MSY} =$	0.78	Rel Freq. Of Fing
Alt 1- Status Quo: $S(t,t-1,t-2) < 122,000 \& C+S > 122,000$		7.4%
Alt 2: $F(t) > F_{MSY}$		22.2%
KRFC: $F_{MSY} =$	0.72	
Alt 1- Status Quo: $S(t,t-1,t-2) < 35,000 \& C+S > 35,000$		17.4%
Alt 1b- Status Quo: $S(t,t-1,t-2) < S_{MSY}$		13.0%
Alt 2: $F(t) > F_{MSY}$		4.0%
CRSu: $S_{MSY} =$	0.75	
Alt 1- Status Quo: $S(t,t-1,t-2) < 37,041.8 \& C+S > 37,041$		27.3%
Alt 2: $F(t) > F_{MSY}$		0.0%
Grays Harbor Coho: $F_{MSY} =$	0.69	
Alt 1- Status Quo: $S(t,t-1,t-2) < 35,400 \& C+S > 35,400$		3.7%
Alt 2: $F(t) > F_{MSY}$		8.7%
Queets Coho: $F_{MSY} =$	0.68	
Alt 1- Status Quo: $S(t,t-1,t-2) < 5,800 \& C+S > 5,800$		18.5%
Alt 2: $F(t) > F_{MSY}$		21.7%
Strait JDF: $F_{MSY} =$	0.60	
Alt 1- Status Quo: $S(t,t-1,t-2) < 14,800 \& C+S > 14,800$		21.7%
Alt 2: $F(t) > F_{MSY}$		13.0%
Skagit: $F_{MSY} =$	0.60	
Alt 1- Status Quo: $S(t,t-1,t-2) < 30,000 \& C+S > 30,000$		17.4%
Alt 2: $F(t) > F_{MSY}$		21.7%
Hood Canal: $F_{MSY} =$	0.65	
Alt 1- Status Quo: $S(t,t-1,t-2) < 21,500 \& C+S > 21,500$		26.1%
Alt 2: $F(t) > F_{MSY}$		34.8%

Overfished Alternatives Analysis



SDC Analysis

- Overfishing is very unlikely to occur under Alternative 2
Exploitation Rate $> F_{MSY}$
- Overfished less likely to occur for multi-year criteria compared to single year criteria
- Rebuilding takes longer for multi-year criteria
- Multi-year criteria with $MSST = 0.75 * S_{MSY}$ most similar to Status Quo
- Overfished more frequent with $MSST = 0.75 * S_{MSY}$ than Status Quo
- Alternatives 2-5 are consistent with MSA, NS1Gs, objective and measurable, and implementation is practical

Stocks that Require ACLs

- Based on SAC proposed classification, international exception, and flexibility for hatchery and ESA-listed stocks, ACLs need to be developed for:

Central Valley Fall (CVF) Complex

- Sacramento River Fall Chinook – **Indicator**
- Central Valley Fall/Late Fall Chinook

Southern Oregon Northern California (SONC) Complex

- Klamath River Fall Chinook – **Indicator**
- Southern Oregon
- Smith River Chinook
- Klamath River Spring Chinook

Far North Migrating Spring Summer (FNMSS) Complex (if not EC)

- Hoh Spring Chinook – **Indicator**
- Mi-North Oregon Coast Spring Chinook (except Umpqua)
- Mid – Columbia Spring Chinook
- Grays Harbor Spring Chinook
- Queets River Spring/Summer Chinook
- Quillayute Summer Chinook

Alternatives Considered

- Alt 1) Status Quo: Undefined
 - Does not meet purpose and need – no OFL, ABC, or ACL
- Alt 2) Catch-based (C)
- Alt 3) Spawning Escapement-Based (S)
 - Will require use of “flexibility” provision in the NS1Gs

Alternatives Considered but Not Viable

- F Based (as mentioned in June 2010)
- Based on buffered conservation objective
 - Overly conservative
- Species level complexes (e.g., Chinook)
 - Data and models used for South of Falcon assessments are currently not suitable for large scale quota management
- Sector-ACLs under the C-based framework :
 - $ACL > ACL_{PFMC}$
 - $ACL_{PFMC} = ACL_{Commercial} + ACL_{Sport}$

Viabile Alternatives – C & S

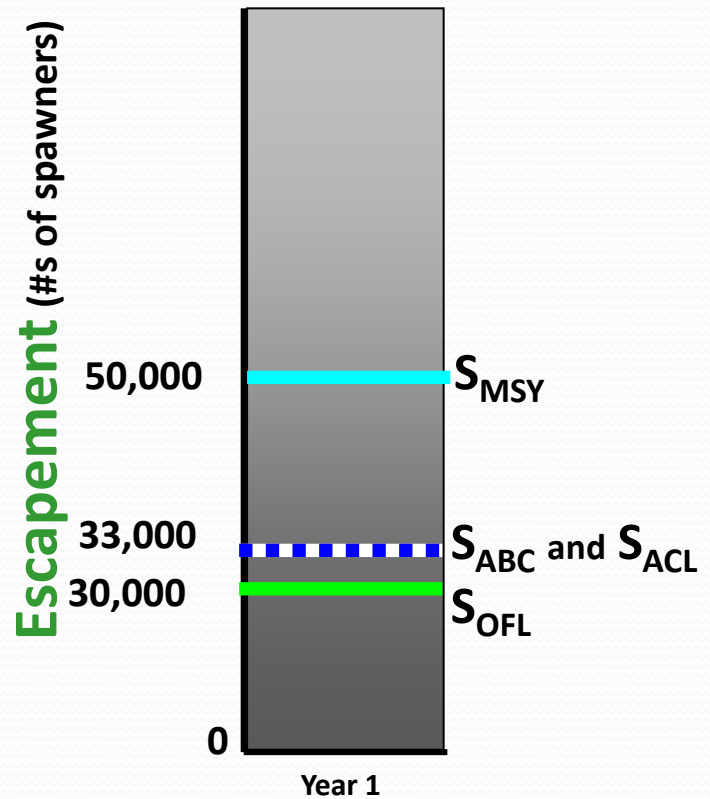
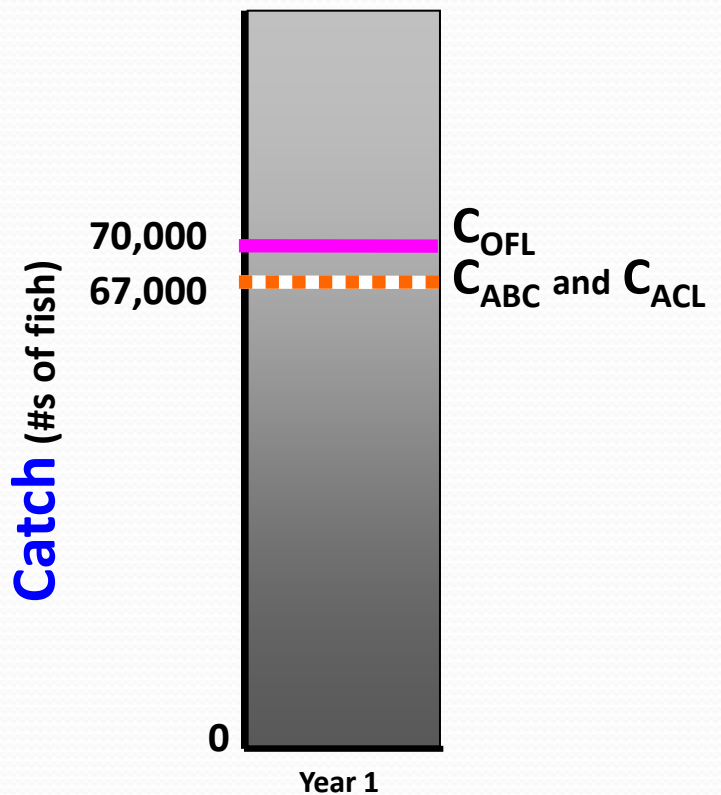
- C & S approaches are the inverse of each other but both specify ACL equal to the ABC:
 - Catch-based (C)
 - $OFL > ABC = ACL$
 - Spawning Escapement-based (S)
 - $OFL < ABC = ACL$

Under Both Approaches:

- OFL is based on a stock's estimated F_{MSY} and its preseason abundance forecast (N)
 - C Based: $C_{OFL} = F_{MSY} * N_t$
 - S Based: $S_{OFL} = (1 - F_{MSY}) * N_t$
- Difference between ABC and OFL to account for scientific uncertainty
 - Tier 1: 5% for Directly Estimated F_{MSY}
 - Tier 2: 10% for Proxy Based F_{MSY} Estimates

C-Based vs. S-Based Examples

Abundance (N) = 100,000
 S_{MSY} = 50,000 spawners
Tier 1 stock (5% ABC buffer)

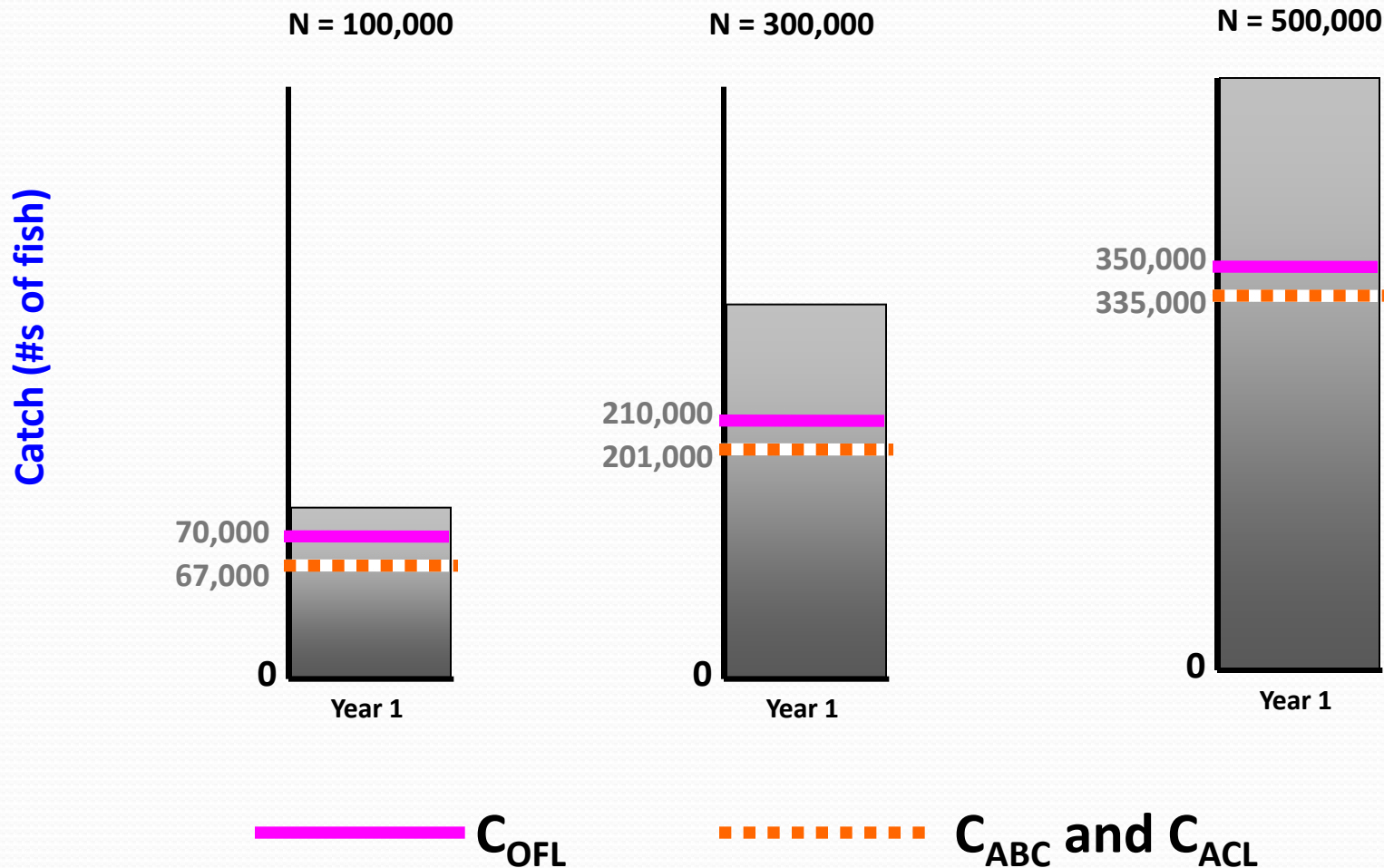


Not drawn to scale; distance between reference points just illustrative.

C-Based Reference Points

Examples in years with low, medium, high abundance

$S_{MSY} = 50,000$ spawners, Tier 1 stock (5% ABC buffer)

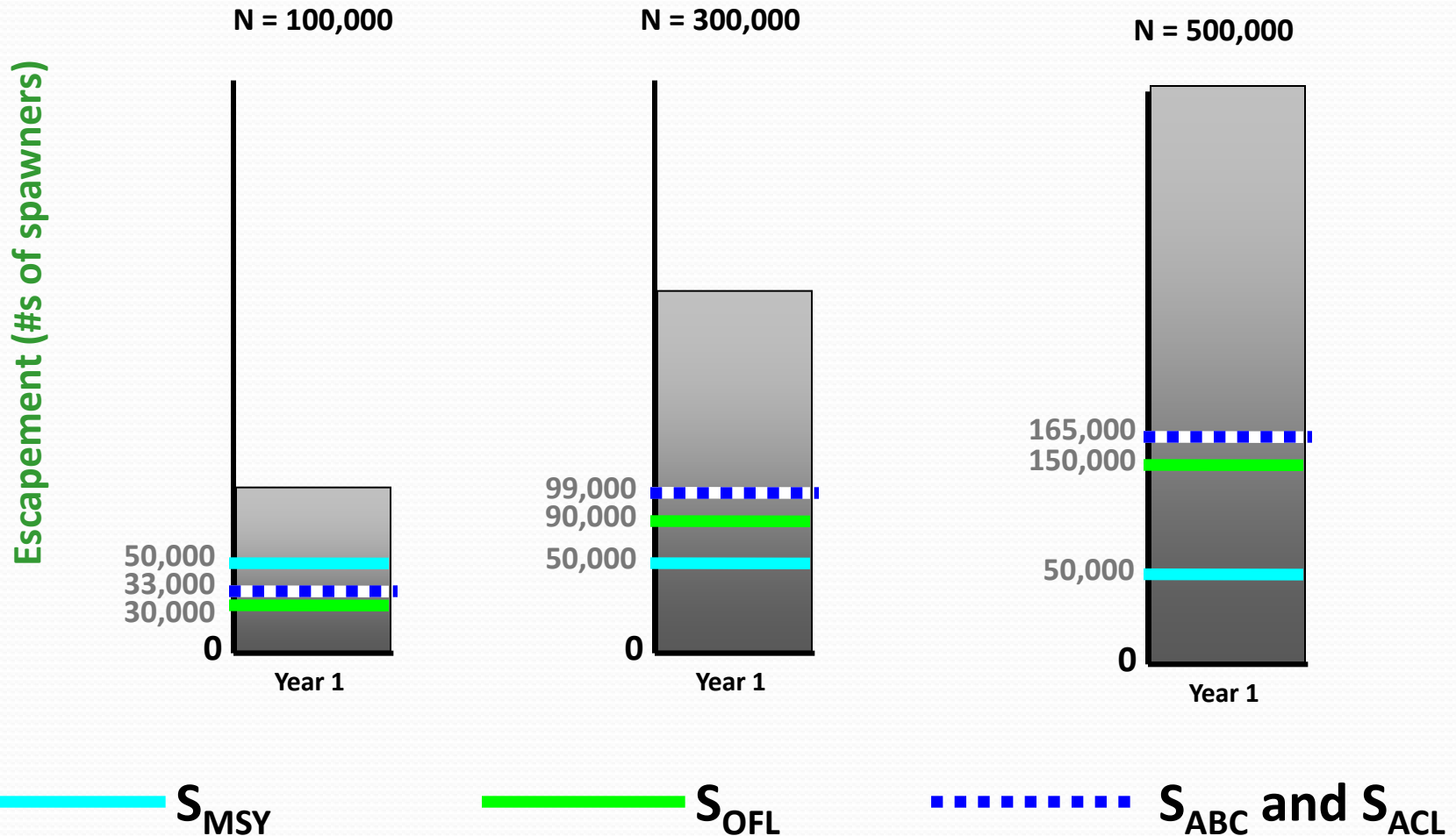


Not drawn to scale; distance between reference points just illustrative.

S-Based Reference Points

Examples in years with low, medium, high abundance

$S_{MSY} = 50,000$ spawners, Tier 1 stock (5% ABC buffer)



Not drawn to scale; distance between reference points just illustrative.

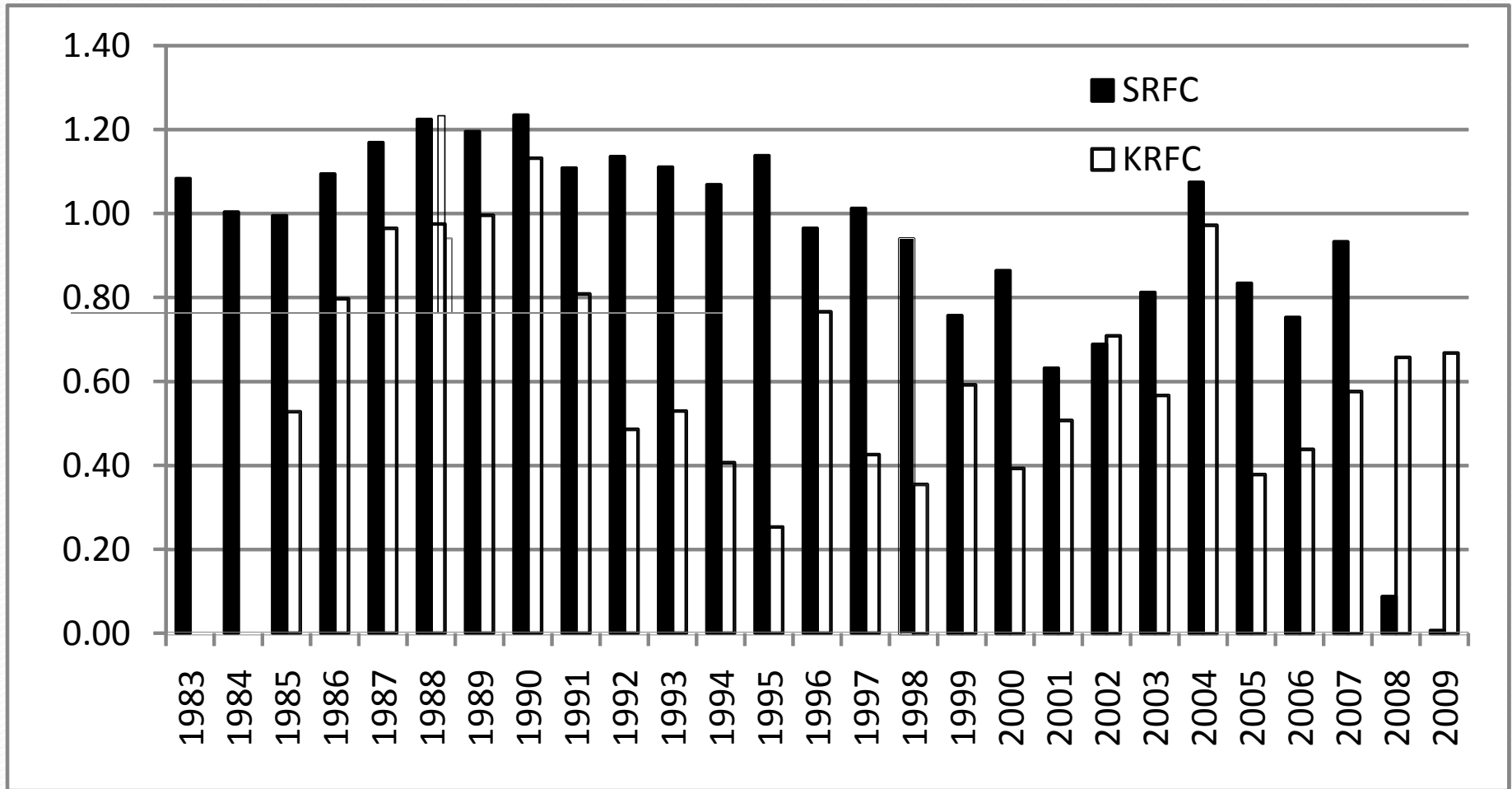
Pros & Cons of the C & S Approaches

Considerations	Alt 2: C-Based	Alt 3: S-Based
Similarity to Status Quo Processes and Terminology	CON: Current conservation objectives expressed in terms of spawning escapement, not catch	PRO: Current conservation objectives expressed in terms of spawning escapement, so may be easier to relate to current thresholds that are familiar
Risk of overfishing	No difference	No difference
Feasibility of Implementation	CON: Catch specified in terms of spawner equivalents, which does not necessarily equal total catch. Additional methods need development to estimate catch of spawner equivalents.	PRO: Spawning escapement estimated directly on an annual basis. Escapement clearly interpretable and does not require further methods to comply with the framework.
MSA and NS1Gs definitions and expression of reference points	PRO: More obviously consistent because reference points are expressed in catch, as in the NS1Gs	CON: Generally consistent, but requires invoking “flexibility provision” in the NS1Gs to express the reference points in spawner escapement rather than catch
NS1Gs framework relationship of reference points	PRO: More obviously consistent because reference points are expressed in catch, thus the relationship follows that identified in the NS1Gs where OFL would be greater than ABC, and ABC is greater than or equal to ACL	CON: Generally consistent but requires invoking “flexibility provision” in the NS1Gs so that the relationship would be OFL is less than ABC, and ABC is less than or equal to ACL (i.e., the inverse)
Scientific uncertainty & specification of ABC	No difference (buffer between OFL and ABC)	No difference (buffer between OFL and ABC)
Mgt uncertainty	No difference (No ACT specified at this time)	No difference (No ACT specified at this time)
Relationship of the ACL to AMs	No difference (AMs triggered using post-season CACL)	No difference (AMs triggered using post-season SACL)
Performance standard for exceeding the ACL	No difference (use post-season CACL)	No difference (use post-season SACL)

ACL Evaluation and Performance Measure

- Under both approaches, the reference points (OFL, ABC, & ACL) will be calculated:
 - **Pre-season** –with forecast estimates to design the fishery to prevent overfishing and achieve conservation objectives, as is currently done
 - **Post-season** – with actual values for abundance and exploitation rates for the purposes of performance monitoring and triggering AMs
 - KRFC: Preliminary in One Year, “Final” in Two Years
 - SRFC: “Final” in One Year

ACL Compliance Analysis



Retrospective compliance as a percentage of ACL

Accountability Measures

- None Specified, but many FMP measures qualify
 - Inseason – Closure Authority, Quota Monitoring, Gear/Bag/Size/Trip Limits, Reporting Requirements, Conservation Alert Action, etc.
 - Postseason – Annual SAFE Document, Overfishing Concern Assessment, Methodology Review, etc.
- Additional Alternatives May be Considered
 - Modify Overfishing Concern and/or Conservation Alert Actions
 - Annual Catch Targets
 - Others Related to ACL compliance

AM Alternative 1 – Status Quo

- Specify measures currently identified in FMP as AM
 - Many meet the intent of preventing overfishing and mitigating for exceeding target harvest levels.
 - Include Preseason, inseason, and postseason measures
- Limit fishing, assess cause and implications of shortfalls at the conservation objective (S_{MSY}) level
 - Notify Co-managers of situation
 - Conservation Alert action – constrain fishing
 - Approaching Overfished – Co-managers report
 - Overfishing Concern - STT and HC reports
- Develop rebuilding plan, criteria for end of Concern

AM Alternative 2 – Modify FMP “Overfishing Criteria”

- Eliminate Conservation Alert fishing restriction
- Change terminology of Overfishing Concern to Abundance Advisory
 - Less prescriptive actions
 - Relax assessment periods
 - Defer assessment of implications to AMs associated with ACLs and SDC (e.g., rebuilding plans)
- Retain assessment of cause and role of fishing
- Retain co-manager notifications

AM Alternative 3 – Eliminate Overfishing Criteria

- Eliminate Conservation Alert and Overfishing Concern
 - Defer actions to rebuilding plans and AMs associated with ACLs and SDC (e.g., rebuilding plans)

AM Alternatives 2 and 3 –

Common Elements

- Specify other measures currently identified in FMP as AM
- ACT available to address management uncertainty, but not prescribed
- Limit fishing, assess cause and implications of shortfalls at the ACL level
 - SAFE report
 - Co-manager notice
 - Methodology Review
- Re-evaluate framework if ACL non-compliance more than 1 in 4 years
 - Tier levels, S/R update (F_{MSY} , S_{MSY}), other scientific and management uncertainty (e.g., ACT)
 - Adaptive Management approach

Measures Associated with SDC

- Should consider actions associated with triggering SDC, analogous to Overfishing Criteria in current FMP
- Overfishing – Would already trigger AM associated with ACL
- Overfished – Assessment, Rebuilding Plan
- Approaching Overfished – Assessment, Potential Management Action

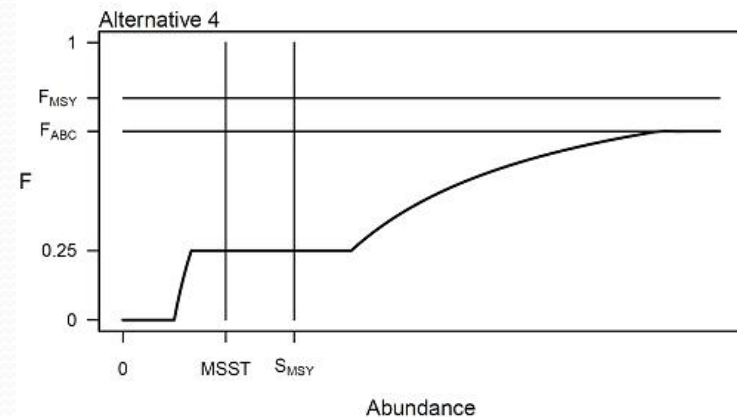
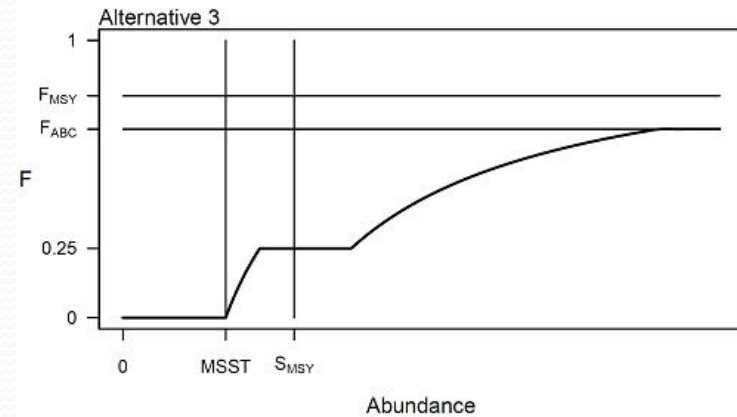
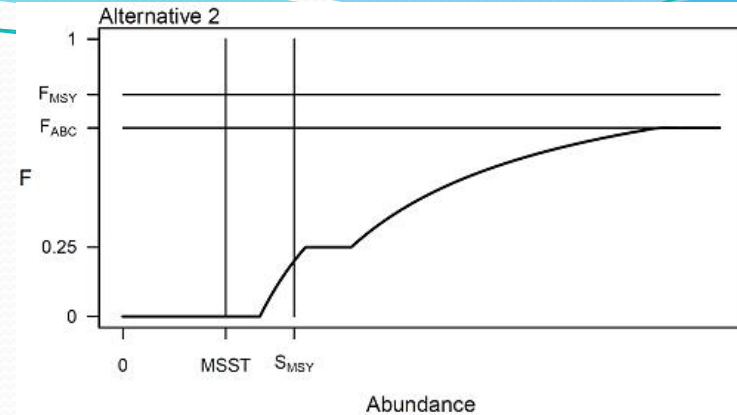
De Minimis Alternatives

- Flexibility for *U.S. v. Washington* and *Hoh v. Baldrige* preserved
- Would not apply to other stocks with explicit *de minimis* provisions
- Developed for KRFC and SRFC as directed by Council
- Modify conservation objective control rules to allow limited exploitation rate
 - < 25% AEQ exploitation rate (total)
 - Rates tied to S_{MSY} and MSST
 - Rates scale down to zero at lower abundance

Alternative *De Minimis* Control

Rules

- $F_{de\ min} = 0.25$
- Alt 2: $F = 0$ at midpoint between S_{MSY} and MSST
- Alt 3: $F = 0$ at MSST
- Alt 4 $F = 0$ at $\frac{1}{2}MSST$



De Minimis Alternatives Analysis







- KRFC – $F_{de\ min}$ starts at 54,000 natural area spawners, not 47,000 if based on S_{MSY} , not 35,000 floor
- KRFC – Amendment 15 nebulous reduction at spawners less than 30,000 or 22,000 is now structured
- SRFC – $F_{de\ min}$ starts at 163,000 spawners if based on $S_{MSY} = 122,000$
- Alternative 4 with $F = 0$ at $\frac{1}{2}MSST$ not viable because probability of becoming overfished $> 50\%$.
- Intent is that the Council would manage fisheries on the basis of these control rules at all stock abundance levels without need for emergency rules or other special approval







Council Guidance Needed



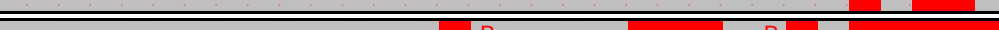


- Stock Classification
 - Alternative removing FNM Chinook and pink salmon from FMP
 - Hoh Sp/Su Chinook indicator stock for FNMSS Chinook stock complex
 - More detailed stock boundaries
- Status Determination Criteria
 - F_{MSY} and S_{MSY} assumptions for SRFC, WA Coastal coho
- OFL/ABC/ACL Framework
 - Range of Alternatives – C-based and S-based
 - Scientific uncertainty buffers and adaptive management approach
- Accountability Measures
 - Disposition of conservation alert, overfishing concern, and related actions
 - ACT options
- De Minimis Fishing Provisions
 - Other alternatives

The End

Overfished/Rebuilt Alternatives Analysis

SRFC: $S_{MSY} =$	122,000	Rel Freq. OF'd
Alt 1-Status Quo: $S(t,t-1,t-2) < 122,000$		5.3%
Alt 1b-Status Quo: $S(t,t-1,t-2) < S_{MSY}$		5.3%
Alt 2: $S(t) < 0.5 * S_{MSY}$		2.5%
Alt 3: 3-Yr GeoMean $< 0.5 * S_{MSY}$		2.6%
Alt 4: $S(t) < 0.75 * S_{MSY}$		10.0%
Alt 5: 3-Yr GeoMean $< 0.75 * S_{MSY}$		2.6%

KRFC: $S_{MSY} =$	40,700	Rel Freq. OF'd
Alt 1-Status Quo $S(t,t-1,t-2) < 35,000$		30.0%
Alt 1b: $S(t,t-1,t-2) < S_{MSY}$		30.0%
Alt 2: $S(t) < 0.5 * S_{MSY}$		15.6%
Alt 3: 3-Yr GeoMean $< 0.5 * S_{MSY}$		10.0%
Alt 4: $S(t) < 0.75 * S_{MSY}$		34.4%
Alt 5: 3-Yr GeoMean $< 0.75 * S_{MSY}$		30.0%

Queets Spring/Summer: $S_{MSY} =$	700	Rel Freq. OF'd
Alt 1: $S(t,t-1,t-2) < S_{MSY}$		25.0%
Alt 2: $S(t) < 0.5 * S_{MSY}$		15.2%
Alt 3: 3-Yr GeoMean $< 0.5 * S_{MSY}$		9.4%
Alt 4: $S(t) < 0.75 * S_{MSY}$		32.4%
Alt 5: 3-Yr GeoMean $< 0.75 * S_{MSY}$		34.4%