ABC Control Rule for South Atlantic Species – Final Concept

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ABC Control Rule Development Meeting – March 2009 Characteristics

- Determines the buffer between OFL and ABC
- Incorporates a tiered system based on data and assessment information availability
- Objective criteria with numerical scoring that can be applied to all stocks
- Acknowledges cumulative nature of uncertainty

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Caveats

- Applicable when the OFL can be stated in fish weight and some measure of statistical uncertainty about the OFL can be estimated
- Setting ABC = OFL implies P(Overfishing) = 50%
- The P(Overfishing) applies to the entire projection period of management

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- Framework comprised of
  - Dimensions – critical characteristics of uncertainty to be evaluated
  - Tiers – Objective levels within dimensions that reflect the range of information available
- The framework currently assumes equal weights for dimensions and for tiers within dimensions
- The framework generates an uncertainty "penalty" that is applied to determine the P(overfishing) to be used for management

Dimensions

- Assessment information
  - Reflects available data and assessment outputs
- Characterization of uncertainty
  - Reflects how well uncertainty is characterized on a qualitative scale
- Stock Status
  - Based directly on the final status determinations
- Productivity and Susceptibility
  - Evaluation of biological “risk”. MRAG approach adopted in June 2009.

Overfished Stocks and Rebuilding Plan Selection

- Adjustment factor can be used to derive a probability of rebuilding success for selecting rebuilding schedules
- Subtract the "penalty" from 100% to determine P(rebuilding success)
- Probability value applies to the entire projection period, not annual values

Tiers Within Dimensions

Assessment Information

Tier Description	Penalty
Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks.	0.0
Reliable measures of exploitation or biomass, no MSY benchmarks, proxy reference points	2.5
Relative measures of exploitation or biomass, absolute measures of status unavailable, proxy reference points	5.0
Reliable catch history	7.5
Scarce or unreliable catch records	10.0

Tiers Within Dimensions

Uncertainty Characterization

Tier Description	Penalty
Complete. Key determinant – uncertainty in both assessment inputs and environmental conditions are included	0.0
High. Key determinant – reflects more than just uncertainty in future recruitment	2.5
Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections	5.0
Low. Distributions of Fmsy and MSY are lacking	7.5
None. Only single point estimates; no sensitivities or uncertainty evaluations	10.0

Tiers Within Dimensions

Stock Status

Tier Description	Penalty
Neither overfished nor overfishing. Stock is at high biomass and low exploitation relative to benchmark values.	0.0
Neither overfished nor overfishing. Stock may be in close proximity to benchmark values.	2.5
Stock is either overfished or overfishing.	5.0
Stock is both overfished and overfishing.	7.5
Either status criterion is unknown.	10.0

Tiers Within Dimensions

Productivity and Susceptibility - PSA

Tier Description	Penalty
Low Risk. High productivity, low vulnerability, susceptibility low.	0.0
Medium Risk. Moderate productivity, moderate vulnerability, moderate susceptibility.	5.0
High Risk. Low productivity, high vulnerability, high susceptibility	10.0

Overall risk scores are classified as: High (>3.18), Moderate (2.64 – 3.18), Low (<2.64) (Hobday et al. 2007). Based on MRAG formulation.

Examples

- Gag Grouper

Dimension	Tier	Penalty
Assessment Information	Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks.	0.0
Uncertainty Characterization	Medium	5.0
Stock Status	Not overfished, overfishing is occurring	5.0
PSA	High risk	10.0
	Total Penalty	20.0
	P(Overfishing)	30.0

Examples

- Red Snapper

Dimension	Tier	Penalty
Assessment Information	Reliable measures of exploitation or biomass, no MSY benchmarks, proxy reference points	2.5
Uncertainty Characterization	Medium	5.0
Stock Status	Overfished, overfishing is occurring	7.5
PSA	Medium risk	5.0
	Total Penalty	20.0
	P(Overfishing)	30.0
	Requires Rebuilding Plan P(Rebuilding Success)	70.0

Examples

- Goliath Grouper

Dimension	Tier	Penalty
Assessment Information	Scarce or unreliable catch records	10.0
Uncertainty Characterization	None	10.0
Stock Status	Unknown overfished, not overfishing	10.0
PSA	High	10.0
	Total Penalty	40.0
	P(Overfishing)	10.0

Depletion Threshold

- Adopted a 10% threshold
  - Based on precedent set by the Pacific Fishery Management Council
- If biomass is estimated below 10% of the virgin condition, then directed fishing should not be allowed
- Similarly , in cases where biomass estimates are considered unreliable or SPR is at or below 10% directed fishing should not be allowed

Further Needs

- OFL estimation for data poor species
- Discussed issue via conference call in January 2010
- Requested data streams and catch data for April 2010 meeting
- Looking at quantitative methods and improvement over average catch approach
- Future “tweaking” as we learn more about the performance of the control rule