

# SSC Update

**SSC Meeting held February 26 - March 2, 2018**

Caribbean Fishery Management Council

San Juan, PR

April 2017

## Sustainable Yield Level (SYL)

- The SEFSC noted that, given the data quality issues in this region, the use of Overfishing Limit (OFL) in Tier 4 is inappropriate without a stock assessment, and Tier 4 is used when a stock assessment is not available.
- *The SSC accepted the recommendation to replace OFL with Sustainable Yield Level (SYL) in the language of Tier 4.*
- Exceeding the SYL would NOT trigger an “overfishing determination”, but would trigger a letter requiring that the situation be examined to see if corrective measures were necessary.

# Tier 4 Language

- **4a.** Condition for use: No accepted assessment, but the stock has relatively low vulnerability to fishing pressure. A stock's vulnerability to fishing pressure is a combination of its productivity, and its susceptibility to the fishery. Productivity refers to the capacity of the stock to produce MSY and to recover if the population is depleted, and susceptibility is the potential for the stock to be impacted by the fishery. If SSC consensus\* cannot be reached on the use of Tier 4a, Tier 4b should be used.
- $SYL = \text{Scalar} * 75^{\text{th}} \text{ percentile of reference period landings}$
- $\text{Scalar} \leq 2$  depending on perceived degree of exploitation, life history and ecological function
- $ABC = \text{buffer} * SYL$  where *buffer* must be  $\leq 0.9$  (e.g., 0.9, 0.8, 0.75, 0.70...)
  
- **4b.** Condition for use: No accepted assessment, but the stock has relatively high vulnerability to fishing pressure (see definition in Tier 4A Condition for Use), or SSC consensus\* cannot be reached on the use of Tier 4a.
- $SYL = \text{Scalar} * \text{mean of the reference period landings}$
- $\text{Scalar} < 1$  depending on perceived degree of exploitation, life history and ecological function
- $ABC = \text{buffer} * SYL$  where *buffer* must be  $\leq 0.9$  (e.g., 0.9, 0.8, 0.75, 0.70...)

\*Consensus for purposes of Tier 4 is defined as 2/3 of participating SSC members

## Intent of Tier 4a

- The intent of Tier 4a is to *allow expansion of fishery* on those stocks or stock complexes whose *low susceptibility* (high scores =3) suggest they could sustain a higher rate of exploitation, but to *hold at approximate current level* those stocks or stock complexes whose *moderate susceptibility* (moderate scores =2) suggest they would not sustain much higher rates of exploitation, but also suggest that they are not overly vulnerable

## Intent of Tier 4a

Understanding the intent of Tier 4a is critical, because following the intent does two things:

- 1: it links the scalar to susceptibility scores, and
- 2: it grounds the baseline for scalars and buffers. such that
  - a susceptibility score = 2 should lead to a harvest level that is similar or only marginally increased,
  - a susceptibility score = 3 should result in an increase in allowable harvest levelrelative to the current Harvest Control Rule = average catch over the reference period.

**Critically, these provide the rationale for scoring scalars and buffers.**

## Definition of SYL

SYL = Scalar x 75<sup>th</sup> percentile of landings for the reference period.

The Scalar is based on two parts and is defined as follows:

$$\text{Scalar} = \text{Susceptibility Score} * \underbrace{(3 - \text{CV})/3}_{\text{Variability Adjustment Factor (VAF)}}$$

Variability Adjustment Factor (VAF)

Where: CV = Coefficient of variation, and

3 = maximum susceptibility score

# Calculation of the 75<sup>th</sup> percentile

- *Cap CV to a maximum value = 1.0*
- *Remove zeros from the data (SSC vote- Yes: 4, No: 1; Abstained 4)*

# Species of High Ecological Value

- Surgeonfishes: 25% additional reduction
  - Scalar =  $0.75 \times \text{Susceptibility Score} \times \text{VAF}$
- Angelfishes: 25% additional reduction
  - Scalar =  $0.75 \times \text{Susceptibility Score} \times \text{VAF}$
- Parrotfishes: 15% additional reduction
  - Scalar =  $0.85 \times \text{Susceptibility Score} \times \text{VAF}$

## Recreational Landings (PR only)

Unable to back-calculate recreational landings

- *Calculate separate SYLs for the commercial and recreational sectors*
- *Add these to get an overall SYL.*
- *The reference period for recreational landings begins in 2000.*
- *If the target group is currently under management (i.e., has an ACL) the reference period extends to the same limit applied for commercial landings.*
- *If the target group is not currently under management, the reference period extends to 2016.*

# Stock Complexes

The SSC reiterated: *For complexes with no indicators, landings would be summed by aggregate for calculating SYL and ABC.*

The SSC clarified: *For complexes with 2 indicators, their SYLs and ABCs would be calculated separately and then summed to give the SYLs and ABCs for the complex (of indicator species).*

# Unspecified Landings

- *If unspecified landings  $\leq 1\%$ , those landings will be ignored in the calculation of SYL*
- *If unspecified landings  $> 1\%$ , allocate those landings proportionally among the species reported for each year*

# Buffers

Buffers are to account for scientific uncertainty and are used to set the ABC from the SYL. Scientific uncertainty is a function of the following:

- Reporting, which includes potential biases (over reporting, underreporting, trends), changes in forms, changes in behavior, and unspecified landings
- Expansion factors and validation capacity
- Availability of recreational landings (quantity and quality)
- Availability of ancillary data (e.g., SEAMAP surveys for queen conch USVI; comparative study of red hind)
- Life history parameters (included in PSA)

# Buffers Relative to Data Collection Regimes

- Despite differences among platforms, *the SSC voted to have the buffers equal across all platforms (5 Yes, 3 No, 1 Abstention).*

# Default Buffer Value

*Use a 0.5 Buffer, to be modified as necessary for species/species groups and island by the factors discussed under scientific uncertainty. The validity of the multiplier (buffer) declines over time, and the SSC is of the opinion that a two-year period after implementation is the maximum for which the current buffer can be used\*. As such, the SSC requests to evaluate/modify the buffer in two years in response to changes in information on the reliability of landings or lack thereof, and annually after that.*

\*As a scientific principle the older the information used to assess and manage a stock, the more uncertainty there is. The longer the landings are unverified, the greater the possibility of the stock trajectory trending downward; hence the SSC believes that an adjustment to the multiplier (up or down) needs to be considered in 2 years.

# Departures from the Default Buffer Value

## Spiny Lobster

- Set *Buffer for spiny lobster on all islands to 0.6* (SSC vote- 5 Yes; 3 No; 1 Abstention).
- Rationale: Comparison to Florida Stock Assessment, with larger CL in US Caribbean. Mean CL relative to minimum size.

## Red Hind (STT)

- *Retain Buffer for red hind on St. Thomas at 0.55.*
- Rationale: Recent study shows Hind Bank population had significantly greater density, larger mean and maximum lengths, older fishes and a lower F:M sex ratio – all indicative of a fairly healthy population – relative to Lang Bank & PR Buoy 4.

## Dolphinfish

- *Apply the default buffer value of 0.5 to dolphinfish for all islands.*

# Queen Conch STX

- Due to difficulties interpreting queen conch catch data, the SSC felt there was no basis for using the methodology in the Tier 4 ABC Control Rule to set SYL and ABC.
- Previously, the issue was the disparity between the reported OFL (512,718 lbs) and recommended ABC (37,000lbs).
- However, 512,718 was actually the total OFLs for queen conch summed across all platforms. The STX OFL was 107,720 lbs.
- *The SSC reiterated its decisions from its December 2017 meeting to retain the current OFL, now SYL, for queen conch in St. Croix (i.e., 107,720 lbs), and to set the ABC at 37,000 lbs.*
- Rationale: Although slightly higher than the highest landings in the reference period, this was supported by SEAMAP surveys of conch on St. Croix, which indicated both a comparatively high density and age-structure, and with an increasing trend over time.

# Caveats

## *Unspecified Landings*

### Proposed, but passed?

- If unspecified landings are  $<10\%$  of reference period total, then do not adjust baseline buffer
- If unspecified landings are 10-35% of reference period total, then reduce baseline buffer by 0.05
- If unspecified landings are  $>35\%$  of reference period total, then reduce baseline buffer by 0.1

# Caveats

## *Time Limitations*

Clear dissatisfaction: many decisions made through split votes due to the vast amount of uncertainty AND also due to the limited time available to fully discuss/investigate some of the issues. Among the most important were

- the inability to fully assess the implications of the procedural changes that were proposed, e.g., the deletion of all the reported zero catches in the calculation of SYL, which occurred at the very end of the meeting
- the use of the selected buffers (i.e., 0.5) after significant changes were made in the procedure for calculating SYL
- the discussion of the validity that reported zero catches add nothing to assessing the dynamics of a stock. This last point best exemplifies the problem, as the person proposing the method had insufficient time to adequately explain/demonstrate the justification for it to the satisfaction of many on the SSC before a vote was called, the final act of the meeting

# Caveats

## *Insufficient Testing*

- No testing was conducted using recreational landings data (PR only)
  - For several species the recreational catch dominates
  - Correction factor can cause estimated catch to swing wildly, leading to high CV and non-normality
- Testing was insufficient to confirm performance on a broad scale
  - Elimination of zeros for calculating the 75<sup>th</sup> percentile
  - Several cases with ABC being below the mean
- ABC below the mean
  - Is this consistent with intent, or should perfection not be expected when dealing with uncertain landings?

# Caveats

## *Data Corrections*

- A number of problems were identified during initial testing and were rectified by reviewing the data and identifying input errors.

## *Dropping Species*

- Most problems during testing were when landings were low and/or intermittent.
- Should these units be dropped from the list of managed taxa? For PR, some units only pursued by recreational or commercial fisheries. Can one sector be dropped?

# Caveats

- *Buffer – Tier 4b*
- Buffer for Tier 4b species has not been formally adopted. SSC used Buffer = 0.9 as a placeholder for the default value.
- Note: although the same considerations of scientific uncertainty apply to both Tier 4a and 4b species/units, the absolute values for scalars and buffers would not necessarily be the same between 4a and 4b as their values would be tied to intent, which are different for 4a and 4b.

