



**NORTHERN COMMITTEE
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**EVALUATION OF CANDIDATE HARVEST CONTROL RULES FOR
NORTH PACIFIC ALBACORE**

WCPFC-NC11-2015/DP-01

UNITED STATES OF AMERICA

**EVALUATION OF CANDIDATE HARVEST CONTROL RULES
FOR NORTH PACIFIC ALBACORE**

**Proposal by the United States of America
to the
Eleventh Regular Session of the Northern Committee**

**Commission for the Conservation and Management of
Highly Migratory Fish Stocks in the Western and Central Pacific Ocean**

This proposal is offered to further the work identified in the Precautionary Management Framework for North Pacific Albacore. The United States recognizes that the ISC and its Albacore Working Group have prepared some suggestions related to management strategy evaluation (MSE), but the suggestions have not yet been presented to the Northern Committee. The United States anticipates that those suggestions, along with other NC members' input, can be considered during NC11, and this proposal can be appropriately revised and adopted at NC11.

1. In support of the future work identified in the Precautionary Management Framework for North Pacific Albacore, the Northern Committee requests that the ISC evaluate—for the North Pacific albacore stock and associated fisheries—the performance of candidate harvest control rules against specific criteria as described below.
2. The ISC is encouraged to perform the evaluation as part of a formal MSE. Recognizing that developing the operating model and other aspects of the MSE will take time and might require further dialogue between the Northern Committee and the ISC, while the MSE is in development, the ISC is requested to perform this work using the tools at its disposal.
3. The ISC and Northern Committee will consult with each other, and consider any input from the IATTC, to further develop and refine the candidate control rules and performance criteria, with the expectation that an evaluation will be conducted in concert with a stock assessment in 2017, and that further evaluations will be conducted after that date, particularly as the ISC develops the tools needed for a formal MSE. While these evaluations are underway, the Northern Committee will continue, on an ongoing basis, to consider the need for management action based on the best available information, and to recommend conservation and management measures as appropriate.
4. **Harvest control rules:** The harvest control rules to be evaluated include a set based on total allowable catches (TAC; A and C below) and a set based on total allowable effort (TAE, B and D below). Control rules A and B are illustrated in Figure 1; control rules C and D are illustrated in Figure 2. All sets are model-based and involve resetting the TAC or TAE once every three years, in concert with a new stock assessment. Recognizing that performance will depend on how the TAC or TAE is allocated among fisheries (because of differing selectivities), allocations among fisheries can be assumed to be the same as in recent years, but evaluation of alternative allocations is also invited. Recognizing that the TAE control rules' performance will depend on catchability, which is subject to change due to

technological developments and fishermen's shifting incentives, the ISC is encouraged to develop methods to account for, or at least to assess the implications of, potential shifts in catchability.

- A. If $SB_{curr} \geq SB\text{-limit}$, TAC for subsequent three years set to correspond to F-target at B_{curr}
If $SB_{curr} < SB\text{-limit}$, TAC for subsequent three years set to correspond to $(F\text{-target} * SB_{curr}) / SB\text{-limit}$ at B_{curr}
- B. If $SB_{curr} \geq SB\text{-limit}$, TAE for subsequent three years set to correspond to F-target
If $SB_{curr} < SB\text{-limit}$, TAE for subsequent three years set to correspond to $(F\text{-target} * SB_{curr}) / SB\text{-limit}$
- C. If $SB_{curr} \geq 2.0SB\text{-limit}$, TAC for the subsequent three years set to correspond to F-target at SB_{curr}
If $SB_{curr} < 2.0SB\text{-limit}$, TAC for the subsequent three years set to correspond to F-target * $(0.5SB_{curr} / SB\text{-limit})$ at SB_{curr}
- D. If $SB_{curr} \geq 2.0SB\text{-limit}$, TAE for the subsequent three years set to correspond to F-target
If $SB_{curr} < 2.0SB\text{-limit}$, TAE for the subsequent three years set to correspond to F-target * $(0.5SB_{curr} / SB\text{-limit})$

5. **Reference points:** For each of the sets of control rules identified above, the following combinations of reference points (and any other promising combinations) should be evaluated:

- 1. SB-limit: $SB_{0.5R0}$, where $h = 0.75$ ¹
F-target: $F_{10\%}$
- 2. SB-limit: $SB_{0.5R0}$, where $h = 0.75$
F-target: $F_{20\%}$
- 3. SB-limit: 14% of unfished SB
F-target: $F_{20\%}$
- 4. SB-limit: 20% of unfished SB
F-target: $F_{30\%}$
- 5. SB-limit: 20% of unfished SB
F-target: $F_{40\%}$

6. **Performance criteria:** The candidate harvest control rules will be evaluated against the following criteria:

- a. Success in achieving F-target: proximity of F to F-target and degree of variation in proximity
- b. Success in avoiding overfished state: frequency of, and/or probability of, breaching SB-limit

¹ R0 refers to the recruitment under unexploited conditions; $SB_{0.5R0}$ is the spawning biomass corresponding to that which produces a 50% reduction in recruitment as calculated in a Beverton-Holt spawner-recruit model with steepness (h) of 0.75. See SAC-05-14 for background.

- c. Success in maintaining relatively high biomass (e.g., to avoid adverse ecosystem effects): average SB and inter-annual variation in SB
- d. Stability in management regime: inter-annual variability in TAC or TAE
- e. Yields: average annual catches, by fishery
- f. Stability of yields: inter-annual variability in catches, by fishery
- g. Catch success: catch per unit of effort, by fishery
- h. Fishing opportunities: average annual fishing effort, by fishery
- i. Other potentially useful measures of economic performance

7. The Executive Director shall communicate this decision to the IATTC.

Figure 1 (for control rules A and B).

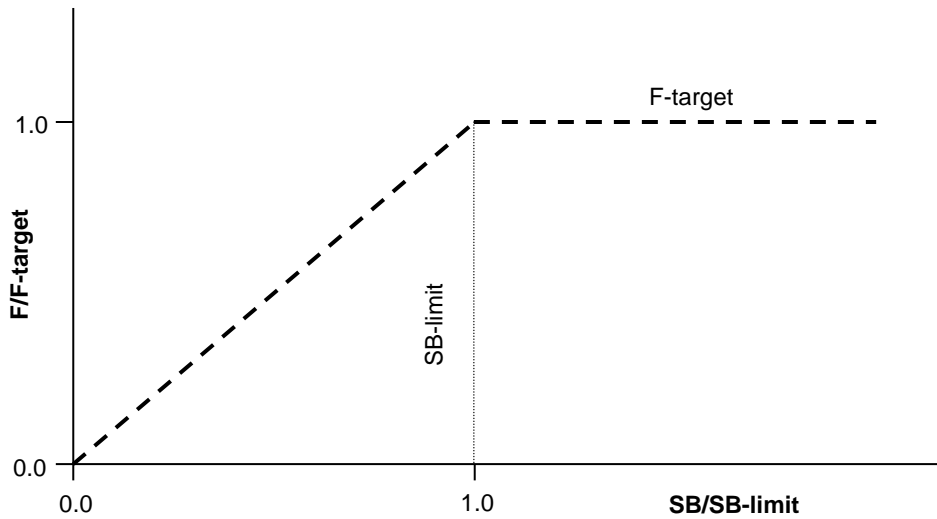


Figure 2 (for control rules C and D).

