Attachment G

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

**Northern Committee
Ninth Regular Session**

**Fukuoka, Japan
2–5 September 2013**

PRECAUTIONARY MANAGEMENT FRAMEWORK FOR NORTH PACIFIC ALBACORE

(USA Concept paper)

Introduction

At the Sixth Regular Session of the Northern Committee (NC), Canada submitted a paper (WCPFC-NC6-DP02) on the development of a precautionary fishery management regime for the northern stocks. Building on this paper, NC7 agreed to a three-year work programme to develop a precautionary management framework for North Pacific (NP) albacore.

Important elements of a precautionary management framework including management objectives, limit and target reference points for stock size and fishing mortality, and associated decision rules (e.g. pre-agreed actions that will be taken in the event that a limit reference point is breached). Under the NC's work programme, NC9 is tasked with agreeing on appropriate reference points and decision rules.

In accordance with Convention Article 6, and as set out in the Northern Committee work programme, NC will further develop a precautionary management framework for North Pacific albacore as follows:

1. Management objectives

To build upon the fundamental management objectives for highly migratory fish stocks as set out in the Convention, NC will work to establish specific management objectives for NP albacore fisheries. In doing so, NC will contribute to, and consider the outcomes of, the Commission's "Management Objectives Workshop" initiative.

2. Biological reference points

Following the hierarchical approach adopted by the Commission:

Level	Condition	LRPs
Level 1	A reliable estimate of steepness is available.	F_{MSY} and B_{MSY}
Level 2	Steepness is not known well, if at all, but the key biological (natural mortality, maturity) and fishery (selectivity) variables are reasonably well estimated.	$F_{X\%SPR_o}$ and either $X\%SB_o$ or $X\%SB_{current,F=0}$
Level 3	The key biological and fishery variables are not well estimated or understood.	$X\%SB_o$ or $X\%SB_{current,F=0}$

- NP albacore is to be treated as a Level 2 stock.[1]
- The limit reference point for the fishing mortality rate, or F-limit, is $F_{[\ ]\%SPR}$.[2]
- The limit reference point for the stock size, or B-limit, is [ ]$\%SB_{current,F=0}$.[3,4]

NC will work to establish a control rule in which the F-limit decreases with decreasing B, of the type illustrated in Canada's 2010 paper (WCPFC-NC6-DP02).

Once specific fishery management objectives have been adopted, NC will work to establish target reference points for F and/or B, the purpose of which will be to guide the formulation of management strategies such that the fishery management objectives are achieved.

3. Decision rules

NC will develop and recommend management strategies for the stock that ensure that the risk of F exceeding F-limit and of B decreasing below B-limit is very low. With respect to the B-limit, NC will use a risk level of [ ] percent. With respect to the F-limit, until target reference points are established, NC will account for risk by designing management strategies such that F is unlikely to exceed [ ] percent of the F-limit. NC will periodically request the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC) to evaluate the performance of a suitable range of alternative management strategies with respect to these limits and risk levels.

In the event that, based on information from ISC, the fishing mortality rate exceeds the F-limit for at least one year, NC will, at its next regular session, or intersessionally if warranted, recommend a conservation and management measure that can be expected to reduce F to less than the F-limit within one year of its adoption.

In the event that, based on information from ISC, the spawning stock size decreases below the B-limit at any time, NC will, at its next regular session, or intersessionally if warranted, adopt a reasonable timeline for rebuilding the spawning stock to at least the B-limit and recommend a conservation and management measure that can be expected to achieve such rebuilding within that timeline. Furthermore, NC will develop management strategies that are consistent with pre-agreed on levels of F specified in any adopted control rule.

NC will work to establish specific pre-agreed on management measures that would be automatically triggered upon breaching a limit and/or warning reference point.

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[1] This determination is based on the information provided by ISC (see NC9-IP-03).

[2] This F-limit replaces the interim F-limit, $F_{SB-ATHL}$.

[3] Based on the information provided by ISC (see NC9-IP-03), B-limit should be X$\%SB_{current,F=0}$ (unfished SB) rather than X$\%SB_0$ (initial SB) because the estimate of the latter is highly uncertain.

[4] The F-limit and B-limit are specified such that the B-limit serves as a second line of defense behind the F-limit, as follows: If the stock were fished at the F-limit, SB would be expected to average about a particular level associated with that level of F, but would vary above and below that level due to variation in recruitment, natural mortality, and other environmental factors. To accommodate such expected natural variation, it is appropriate that SB be allowed to decrease some amount below the level associated with the F-limit before taking the serious corrective action that would be triggered by breaching the B-limit. The greater the stock's expected natural variation, the greater that allowance should be (to a certain point). A stock's natural mortality rate, M, is a crude indicator of the degree of natural variation in SB that would be expected under a constant fishing mortality rate. Therefore, it is appropriate to set the B-limit at (1-M) times the proportion of unfished SB that would be expected, on average, when fishing at the F-limit. For NP albacore, M is estimated to be 0.25, so the B-limit is set at [ ]% of unfished SB.