



SECOND BIGEYE TUNA MANAGEMENT WORKSHOP (BMW02)

1 – 2 October 2026

Honolulu, Hawaii (Hybrid)

**CURRENT APPROACH FOR BIGEYE MANAGEMENT PROCEDURE DESIGN AND OPERATION FOR
CONSIDERATION AT BMW02**

WCPFC-BMW02-2026-WP04_Rev01

30 September 2026

SPC-OF¹

Revision 01:

- Clarification that “The nuclear grid is different for each spatial scenario.”
- Formatting of Figures 3 and 4
- Minor text changes

¹ Oceanic Fisheries Programme, The Pacific Community

Current Approach for Bigeye Management Procedure Design and Operation for Consideration at BMWo2

Spatial Scenario and Target Reference Point

BMW01 and SC22 identified four spatial scenarios (fleets controlled by the management procedure (MP) and area of application) for evaluation:

1. Tropical longline (LL) including the Hawaiian fleet operating south of 20°N,
2. Tropical LL excluding the Hawaiian fleet operating south of 20°N,
3. All LL fisheries operating within the WCPO – all fisheries subject to the MP, and
4. All LL fisheries operating within the WCPO – implementation through **TT-CMM**.

BMW01 and SC22 agreed to evaluate two target reference points (TRPs) relative to the average spawning biomass depletion between 2012 and 2015 ($0.94 \times SB/SB_{F=0, 2012-2015}$ and $1.06 \times SB/SB_{F=0, 2012-2015}$). The 'lower' TRP was also requested with a threshold probability of 60% and 70%, resulting in four TRP options:

1. $0.94 \times SB/SB_{F=0, 2012-2015}$,
2. $0.94 \times SB/SB_{F=0, 2012-2015}$ with 60% probability,
3. $0.94 \times SB/SB_{F=0, 2012-2015}$ with 70% probability and
4. $1.06 \times SB/SB_{F=0, 2012-2015}$.

The Nuclear Grid

The nuclear grid shows the long-term depletion of the bigeye stock relative to $SB/SB_{F=0, 2012-2015}$ at different levels of future longline catch and FAD open periods. The nuclear grid is different for each spatial scenario.

Notice different combinations of future longline catch and FAD open period achieve the same level of depletion, for example $0.94 \times SB/SB_{F=0, 2012-2015}$ highlighted blue in Figure 1.

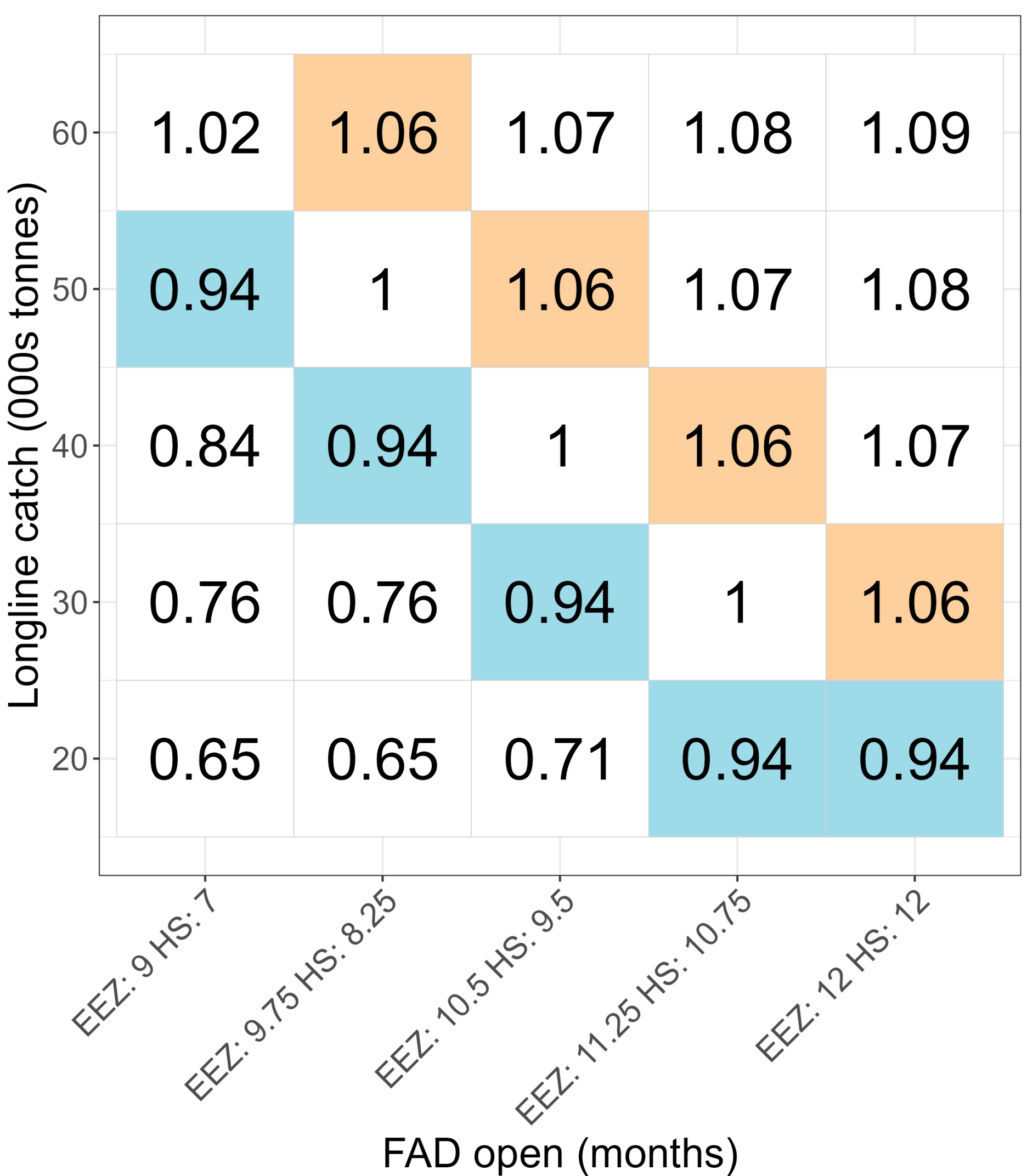


Figure 1. The long-term depletion relative to $SB/SB_{2012-2015}$ at different levels of future longline catch (vertical axis) and FAD open months (horizontal axis). Blue cells indicate fishing levels that achieve the lower TRP. Orange cells indicate fishing levels that achieve the upper TRP. The high seas (HS) open period is set in combination with the Economic Exclusion Zones (EEZ) open period.

Note!

The numbers used in all figures and examples here were made-up to illustrate how the bigeye management procedure has been designed with simple examples.

Harvest Control Rule (HCR) Pairs

What is an HCR pair?

Following discussions at WCPFC22 and BMW01, the proposed bigeye MP uses HCR pairs to set the fishing opportunities. Within an HCR pair, one HCR sets the catch of the longline fishery, and the other sets the FAD open period for the purse seine (PS) fishery.

Once a TRP is chosen, the cells in the nuclear grid (Figure 1) that achieve a depletion equal to that TRP define the valid set of HCRs. The nuclear grid is different for every spatial scenario and the set of valid HCR pairs is different for every TRP.

How to build the HCR pairs?

HCRs have a flat region for a stock status range (horizontal axis of Figures 2 - 5) that encompasses the TRP, called the 'Hillary step'. The height of the Hillary step determines the level of longline catch or FAD open period expected to maintain the stock around the TRP.

Let's assume the lower TRP of $0.94 \times SB/SB_{2012-2015}$ is chosen. The blue cells in the nuclear grid (Figure 1) define valid combinations of longline catch and FAD open period that achieve the lower TRP in the long term. So, each cell generates a valid HCR pair with different Hillary step heights.

Example 1

Let's look at the HCR pair corresponding to the leftmost blue cell in Figure 1. This cell tells us that a longline catch of **50,000 tonnes (t)** with a FAD open period of **9 months** in EEZs will achieve a depletion of $0.94 \times SB/SB_{2012-2015}$ in the long-term. Hence, the HCR pair corresponding to this cell specifies a longline catch of **50,000 t** with a FAD open period of **9 months** in EEZs when the estimated stock status is close to the TRP (Figure 2).

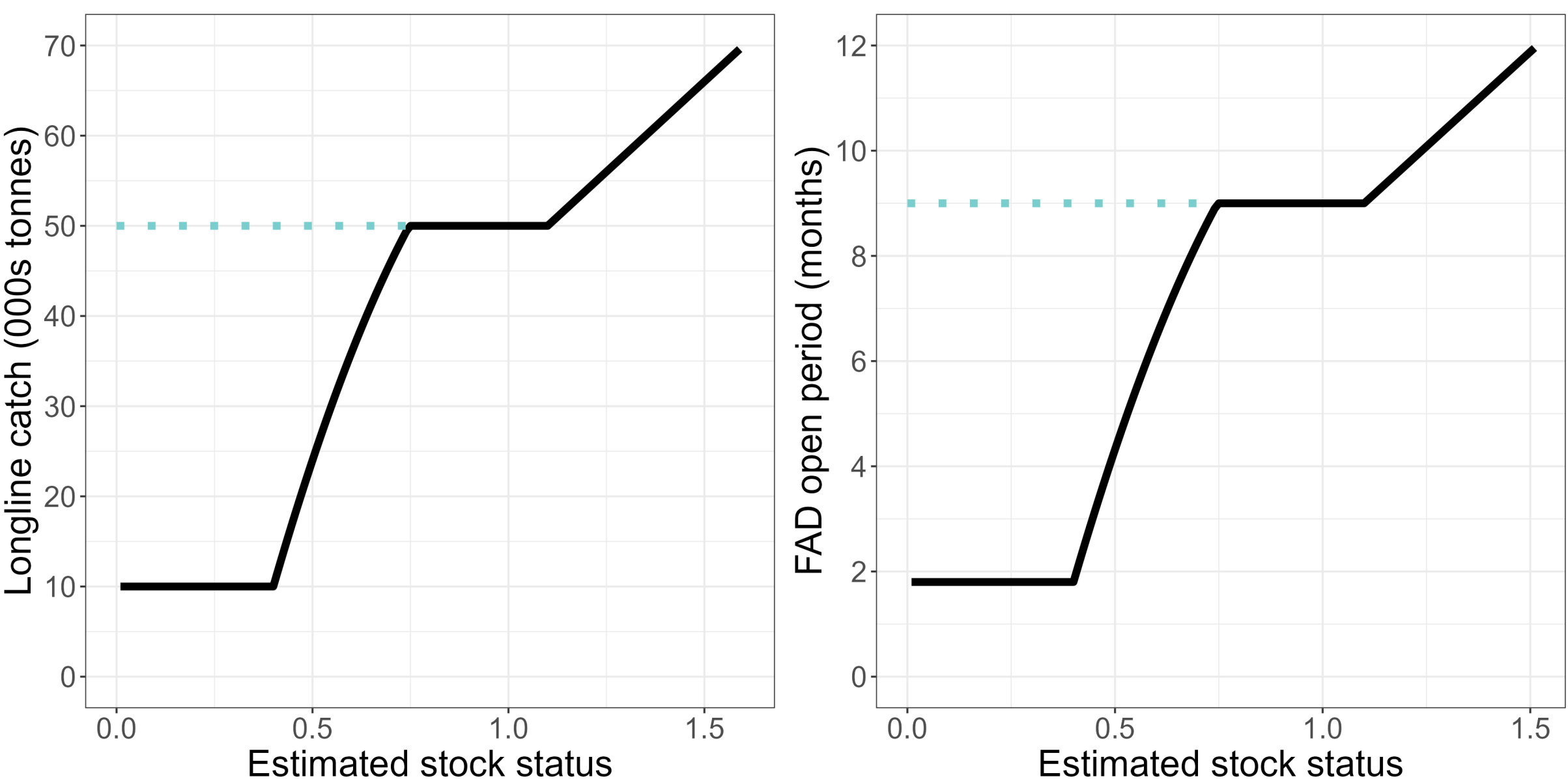


Figure 2. HCR pair from leftmost blue cell in nuclear grid.

Example 2

An equally valid HCR pair arises from the rightmost blue cell in the nuclear grid which tells us that a longline catch of **20,000 t** and FAD open period of **12 months** in EEZs will also achieve a depletion of $0.94 \times SB/SB_{F=0, 2012-2015}$ in the long-term.

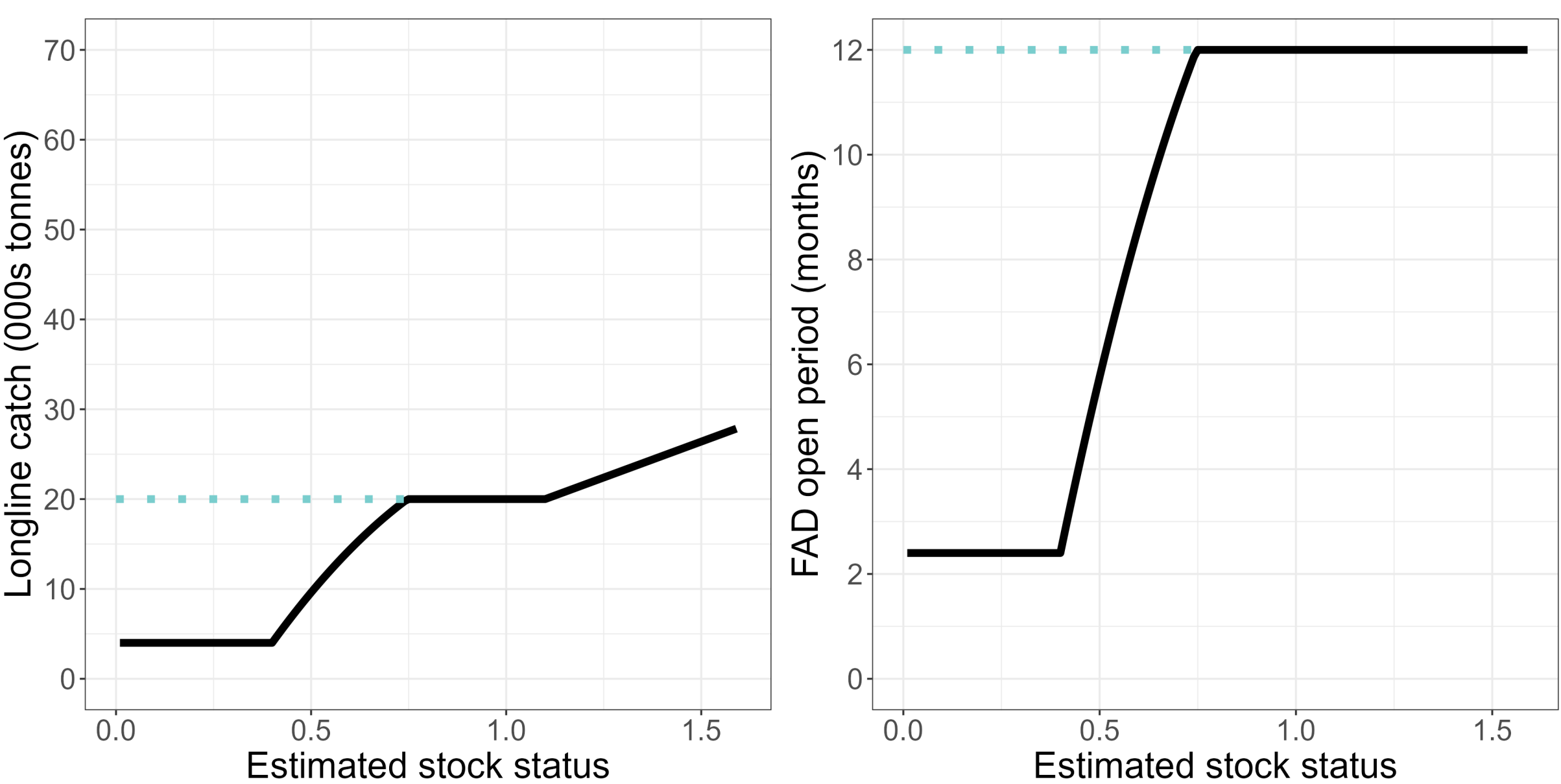


Figure 3. HCR pair from rightmost blue cell in nuclear grid

Negotiations

Our understanding is that Commission members wish to negotiate the specific combination of purse seine and longline fishing (i.e., which cell in the nuclear grid) to be implemented in the subsequent 3-year management period as part of the harvest strategy. This means, that the HCR pair may change each management period.

How does this work in practice?

The MP allows the purse seine and longline fishing to be negotiated through the choice of HCR pair. The HCR pair may be chosen such that one of the fisheries has a pre-specified level of fishing. We can demonstrate this with an example. If the longline fishery wants 40,000 t of catch for the next management period, there is a valid HCR pair that enables this. However, the HCR pair will change depending on the estimated stock status.

Landing on the Hillary step

If the estimated stock status is on the Hillary step, then the HCR pair that enables 40,000 t of catch for the longline fisheries has a step height of 40,000 t. We search the nuclear grid for the blue cell with a longline catch of **40,000 t** and find that the corresponding FAD open period on the Hillary step is **9.75 months** in EEZs. The valid HCR pair is shown in Figure 4.

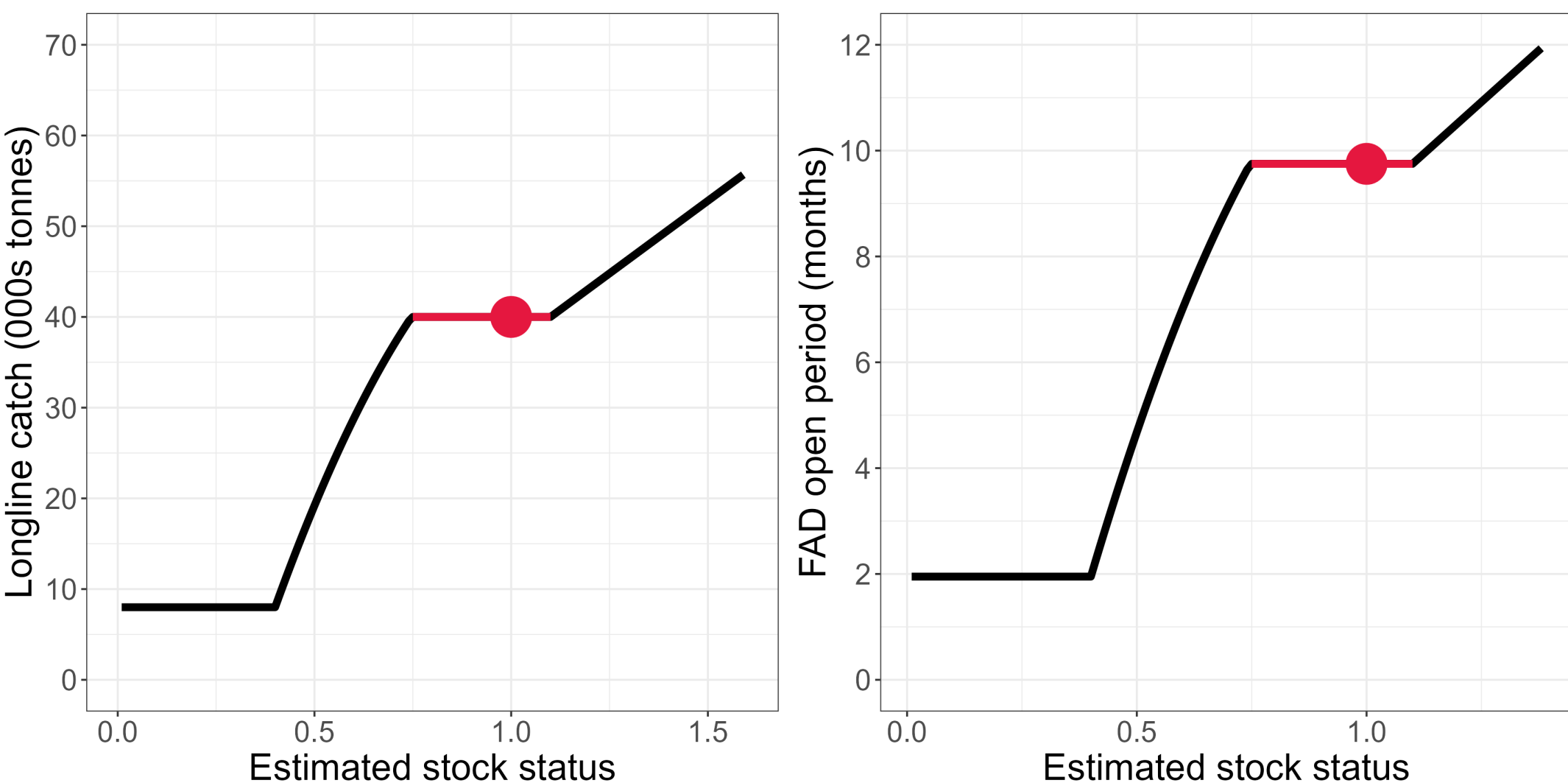


Figure 4. A valid HCR pair compatible with 40,000 t of LL catch when the stock status is on the Hillary step, e.g., estimated stock status = 1 (red dot).

Landing on the descending limb

If the estimated stock status lands on the descending limb of the HCR (e.g., estimated stock status = 0.65), we have identified two potential approaches:

1. The LL/PS HCR combination from the previous management period is retained, and the level of fishing in both LL and PS is reduced according to the descending limb of that HCR (note this would not work the first time the MP was called).
2. The Commission continues to negotiate, and a new HCR pair is identified. To continue the example, the leftmost cell in the nuclear grid produces a HCR pair that results in a longline catch of **40,000 t** when the estimated stock status is 0.65. This HCR pair indicates that when the estimated stock status is 0.65, the longline catch is **40,000 t** and the FAD open period is **7 months** in EEZs.

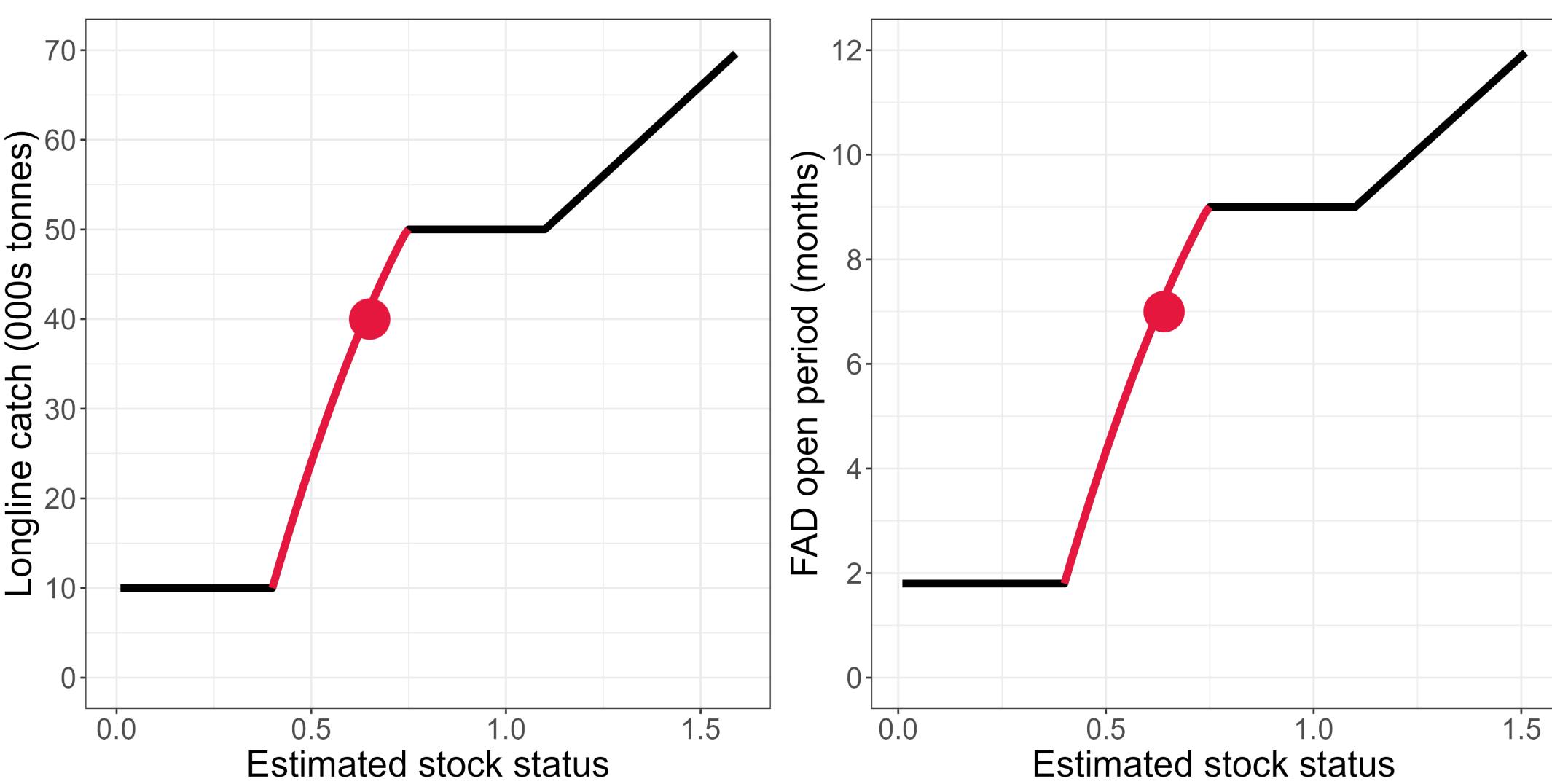


Figure 5. A valid HCR pair compatible with 40,000 t of LL catch when the stock status is on the descending limb, e.g., estimated stock status = 0.65 (red dot).