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Performance statistics and monitoring strategies for skipjack and south Pacific albacore commensurate with: candidate management objectives for the tropical purse seine and southern longline fisheries

SC12-MI-WP-04

WCPFC-SC-12, Bali, Indonesia

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Background

paragraph 7 of CMM 2014-06

Elements of a harvest strategy

Each harvest strategy developed in accordance with this CMM shall, wherever possible and where appropriate, contain the following elements:

a) ***management objectives :*** *Defined operational objectives, including timeframes, for the fishery or stock*

b) ***reference points :*** *Target and limit reference points for each stock*

c) ***acceptable levels of risk :*** *Acceptable levels of risk of not breaching limit reference points*

d) ***monitoring strategy*** *: A monitoring strategy using best available information to assess performance against reference points*

e) ***harvest control rules*** *: Decision rules that aim to achieve the target reference point and aim to avoid the limit reference point, and*

f) ***management strategy evaluation*** *: An evaluation of the performance of the proposed harvest control rules against management objectives, including risk assessment.*

Background

- Candidate list of management objectives
  - MOW2 (WCPFC10-2013-15b) “straw person”
  - (tropical purse seine, southern longline fisheries)

- Agreed workplan for the adoption of harvest strategies (attachment Y)
  - Commission to record management objectives

- SC12 requested to develop advice on
  - a **monitoring strategy** to assess performance against reference points [and management objectives]
  - a range of **performance indicators** to evaluate the performance of [candidate] harvest control rules.

Starting point for discussions

The management objectives identified in WCPFC10-2013-15b are framed at the fishery level, however, the performance statistics and monitoring strategies considered here have been translated, where possible, to the stock level.

Interpretations

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Performance Indicators

- Interpreted in relation to management objectives and reference points
  - e.g. HCR_A has a 10% risk of SB falling below the LRP

- Reference points may not be available for all management objectives
  - Relative performance with regards to a management objective
  - e.g. HCR_A outperforms HCR_B with respect to PI_C

Monitoring Strategy

- Are the assumptions and conditions of the OM still appropriate?
  - Not considered in this paper

- Is the HCR performing as expected?
  - Are the outcomes consistent with the range of outcomes predicted by the evaluation process?

Interpretations

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Performance Indicators (expected performance)

- Interpreted in relation to management objectives and reference points
  - e.g. HCR_A has a 10% risk of SB falling below the LRP
- Reference points may not be available for all management objectives
  - Relative performance with regards to a management objective
  - e.g. HCR_A outperforms HCR_B with respect to PI_C

Monitoring Strategy (actual performance)

- Are the assumptions and conditions of the OM still appropriate?
  - Not considered in this paper
- Is the HCR performing as expected?
  - Are the outcomes consistent with the range of outcomes predicted by the evaluation process?

Limitations and caveats

- It may not be possible to generate informative performance indicators for all objectives (e.g. local market prices, investment in processing sector, etc.)
  - Calculation of performance indicators may be difficult but monitoring may be simpler
  - Ecosystem indicators generally difficult

- We note that the ultimate choice of performance statistics and monitoring strategies will depend on the decisions of managers on their objectives for the fishery.

- The examples of performance statistics and monitoring strategies presented here are for discussion by the Scientific Committee and should not be seen as definitive.

Performance indicators

- Performance indicators
  - biological management objectives - generally species specific.
    - Depends on multi-species aspects of the operating models
  - Economic management objectives – generally fishery level
    - Depend on the fishery groupings used in the operating models
  - Ecosystem management objectives
    - Complexity involved in developing ecosystem models
    - Fulton et al (2005) recommendation for multiple simple indicators (see also SC12-MI-WP-02)
  - Management objectives drafted in 2013
    - Focus on MEY
    - Current thinking may be for alternative reference points.

Monitoring Strategy

- Recommended that monitoring should be on a frequent basis
  - Different data types will be available at different time scales.
    - Fish prices; number of vessels etc.
    - Stock status – depends on stock assessment.
    - Variability, autocorrelation etc.
  - Exceptional circumstances
    - Monitoring to check that observed values are within the range of values predicted by the MSE
    - In the event that they fall outside, alternative rules may be necessary.
    - Important discussion - Not considered here

Conclusion

- Note that these are draft performance indicators and monitoring strategies for discussion by the SC

- Consider whether the suggested performance statistics are appropriate and likely to provide the necessary information to enable managers to choose a preferred management procedure from a range of candidates.

- Consider what information is currently available to support the monitoring of management procedures and what additional information may be required.