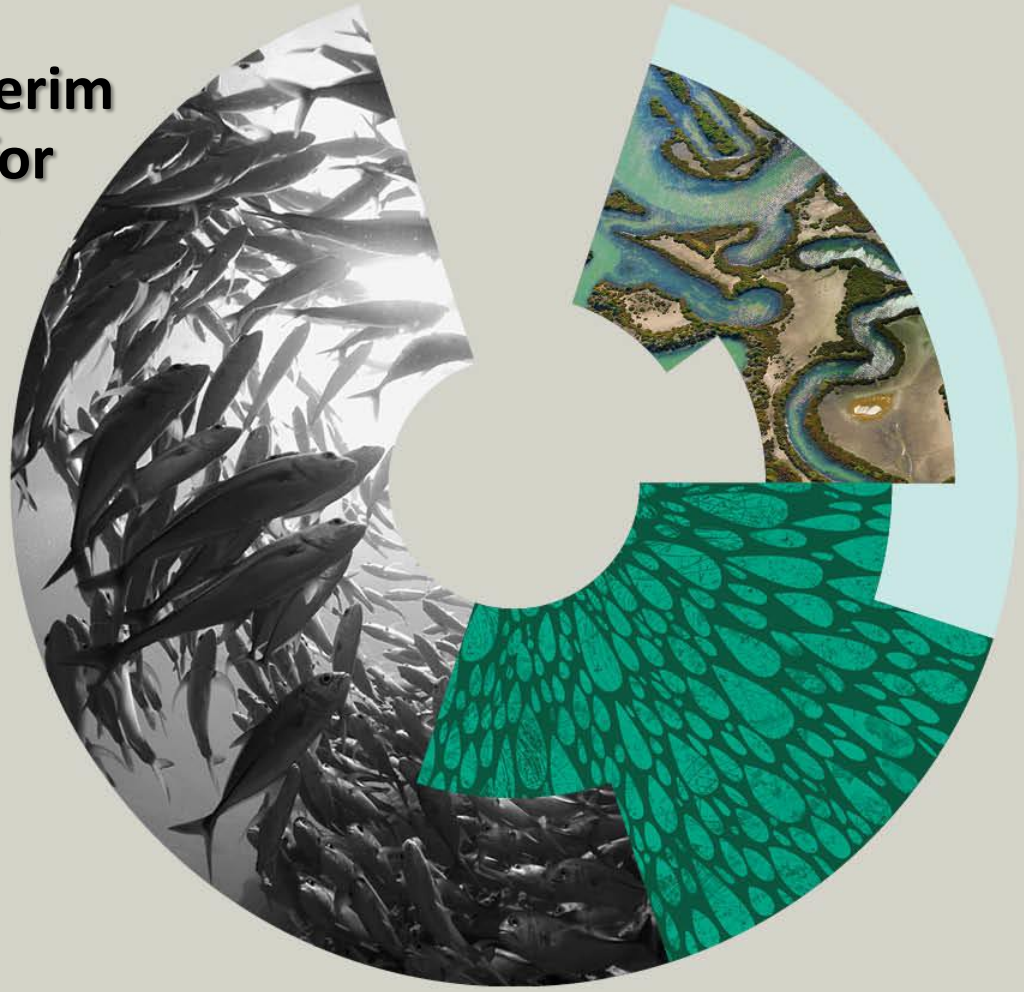
Australian Government
Department of Agriculture

Proposal for adopting interim acceptable levels of risk for breaching limit reference points of four key tuna species in the WCPO.



WCPFC-SC12
MI-WP-03
Bali, Indonesia

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August 2016

Purpose

Propose and provide a rationale for adopting interim acceptable levels of risk for breaching limit reference points of four key tuna species in the WCPO.

Outline of presentation

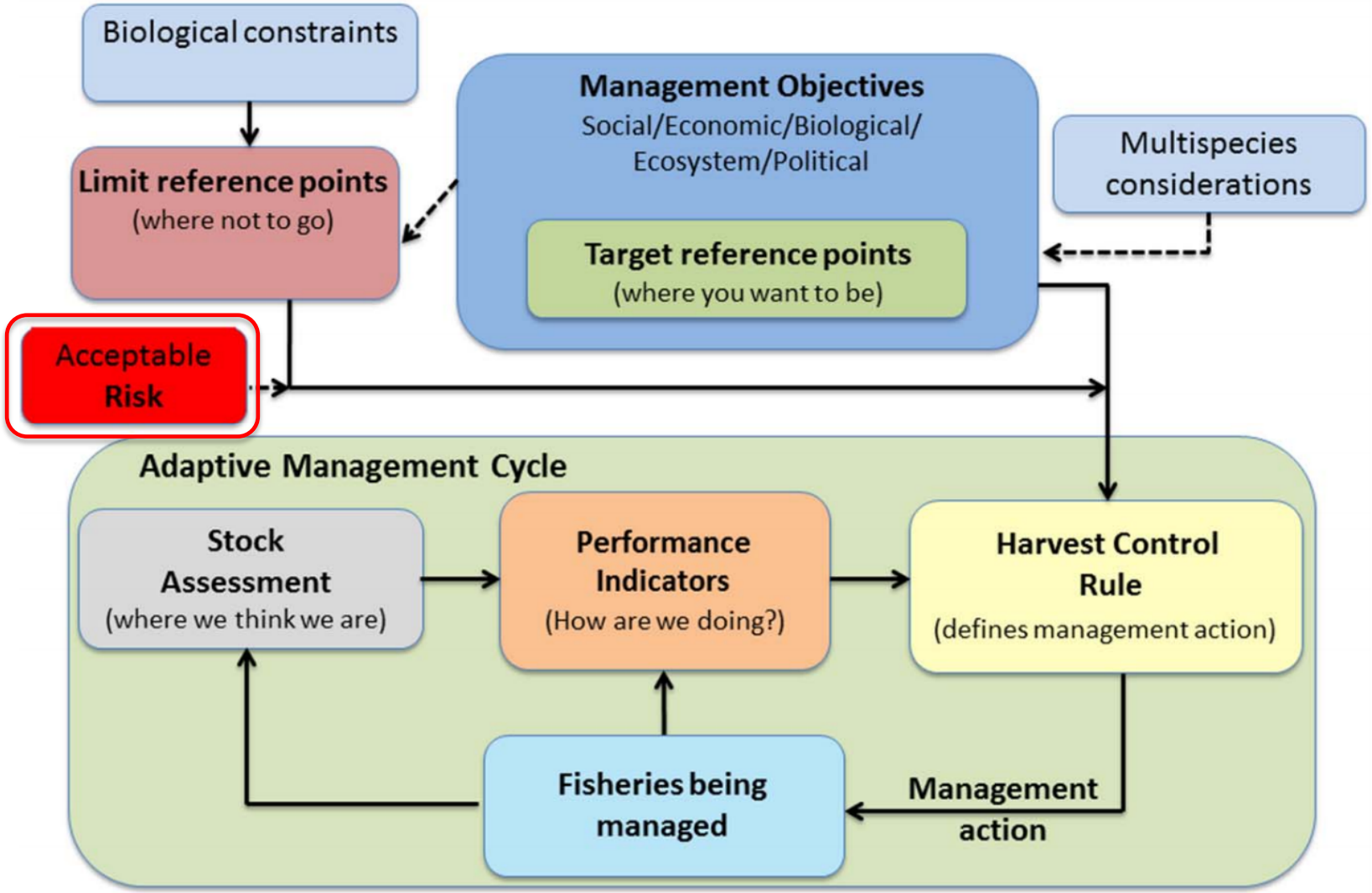
- Introduction—why do we need acceptable levels of risk for breaching the limit?
- Proposed interim acceptable levels of risk for breaching the limit.
- Rationale for the proposed interim acceptable risk levels:
  - "Very low"
  - Social and economic consequences
  - Potential biological consequences.
  - Buffer between limits and agreed or potential targets
- Conclusion and invitation

Why do we need to decide acceptable risk levels

- When designing harvest strategies, it is important to consider the risk that the stock may fall below the limit reference point.
- Reaching some agreement on these risk levels will help us to test and evaluate the performance of alternative harvest control rules.
- For example if we have agreed to a 10% risk level:

Candidate HCR	Tested risk level	
HCR 1	4%	√
HCR 2	13%	X

- An essential part of WCPFCs harvest strategy approach.
  "The Commission shall define acceptable levels of risk associated with breaching limit reference points..." (CMM 2014-06).


Biological constraints
Management Objectives
Social/Economic/Biological/
Ecosystem/Political
Multispecies considerations
Limit reference points
(where not to go)
Target reference points
(where you want to be)
Acceptable Risk
Adaptive Management Cycle
Stock Assessment
(where we think we are)
Performance Indicators
(How are we doing?)
Harvest Control Rule
(defines management action)
Fisheries being managed
Management action

A management decision for the Commission

- Commission and MOWs have been considering the issue of acceptable risks for several years.
- The Scientific Committee has provided a range of technical and scientific advice.
- Given the diversity of fishery objectives, as well as potential economic and social consequences, this has been identified as a management decision for the Commission.
- A decision on acceptable levels of risk for key tuna species is scheduled for 2016 (Harvest Strategy Workplan,WCPFC12).

- We are presenting this proposal to the the SC to:
  - Seek any further input from a scientific and technical perspective,
  - Provide an early airing of the proposal for CCMs to consider.

Proposed interim acceptable levels of risk

Proposed interim acceptable levels of risk for breaching limit reference points

Stock	Risk level
South Pacific albacore	5%
Skipjack	5%
Yellowfin	10%
Bigeye	10%

- Consistent with previous proposals or recommendations by FFA members.
- Risk tolerance differs because the severity of the social and economic consequences also differs across the four species.
- Proposed as 'interim' because they may be revisited as more information becomes available from the management strategy evaluation process. (There may be trade-offs but risk always need to be very low)

Rationale (1) - Requirement to adopt risk levels that are "very low"

- CMM 2014-06 and the UN Fish Stocks Agreement require that the risk of exceeding the limit reference point be "very low".
- We consider that the proposed risk levels of 5–10 per cent are very low, in accordance with this requirement.
- Consistent with the interpretation of international bodies:
  - E.g. CCAMLR 10% risk (with the same B20% limit)
- and national jurisdictions:
  - New Zealand 10%
  - Australia 10%
  - ICES/EU 5-20% (recommended but not adopted)

Rationale (2) - Social and economic

- A breach of the limit reference point would signal **a serious failure to achieve many of the objectives for a species or for its associated fishery**, including:
  - maximising economic yield, maintaining acceptable CPUE, securing food sources and provision of employment. (see 'Strawman' WCPFC10-2013-15b)
- Depleted stocks may require a prolonged rebuilding period involving significant cuts to catch or effort with associated impacts.
- We regard the consequences of serious stock depletion to be most dire for skipjack and South Pacific (hence lower proposed risk).

Rationale (3) - Potential biological consequences

- The LRP is regarded as a threshold for recruitment overfishing for productive stocks (Myers 1994), and recruitment declines (Beddington and Cooke 1983).
- Other potential biological consequences include (Sainsbury 2008):
  - higher variability in productivity,
  - genetic modifications,
  - reduced age structure with consequences to the quality of spawning,
  - changes to the ecological role of the species in the food web.

- Some may gradually manifest and become more extreme with increasing depletion, while others may manifest suddenly.

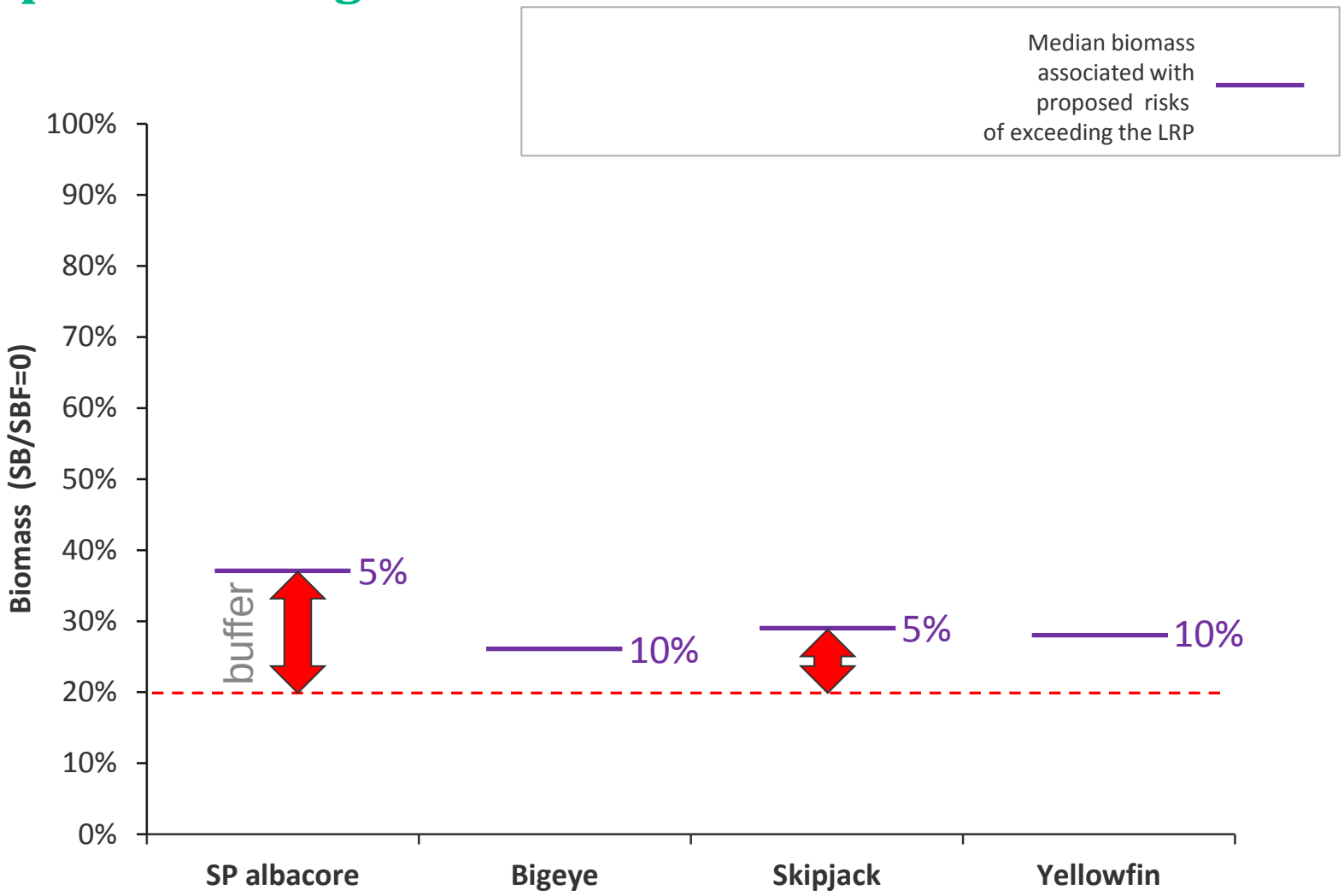
Rationale (4) - Buffer between limits and agreed or potential targets

- *"Target reference points shall be conservative and separated from limit reference points with an appropriate buffer, with a view to ensuring that the target reference points are not so close to the limit reference points that the chance that the limits are exceeded is greater than the agreed level of risk."* (CMM 2014-06)
- Do the proposed risk levels provide a sufficient buffer from potential target reference points?

Median levels of spawning biomass depletion (SB/SBF=0) associated with a given risk of exceeding the limit reference point of 0.2SBF=0 for the four main tuna stocks. (Source: MOW3 WP-02, except for south Pacific albacore which were derived from HSW-WP-05)

Acceptable risk	SP albacore	Bigeye tuna	Skipjack tuna	Yellowfin tuna
5%	0.37	0.28	0.29	0.31
10%	0.34	0.26	0.27	0.28
15%	0.33	0.25	0.26	0.27
20%	0.32	0.24	0.25	0.25

Rationale - Buffer between limits and agreed or potential targets



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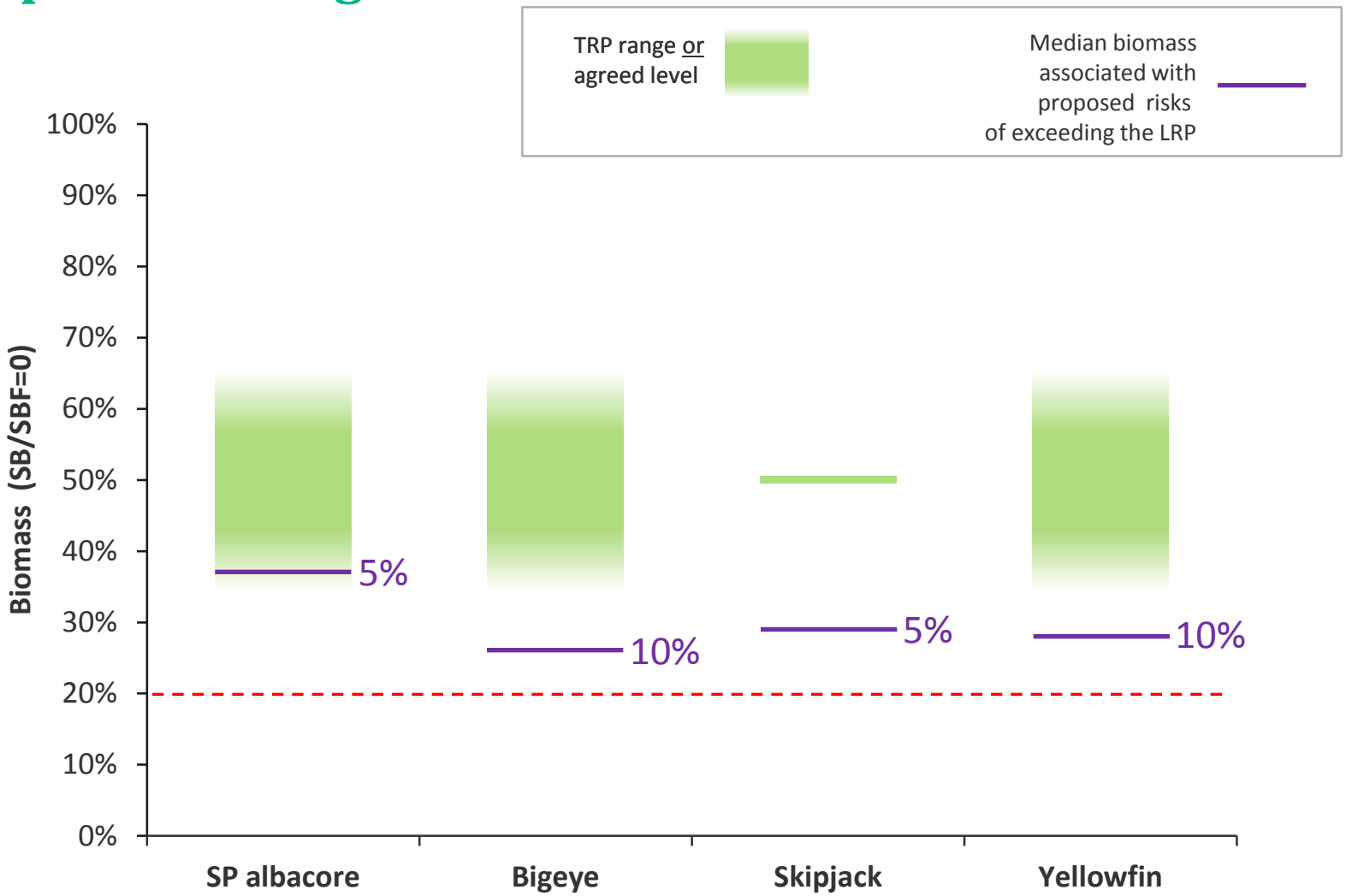

Conclusion and an Invitation

- FFA members put forward this proposal:
  - For the consideration of WCPFC CCMs,
  - for technical and scientific consideration by the SC, and
  - with a view to adoption at WCPFC13
- Welcome questions from interested CCMs.
- Invite CCMs to put forward alternative proposals, preferably accompanied by a rationale.

Terima kasih

(thankyou)

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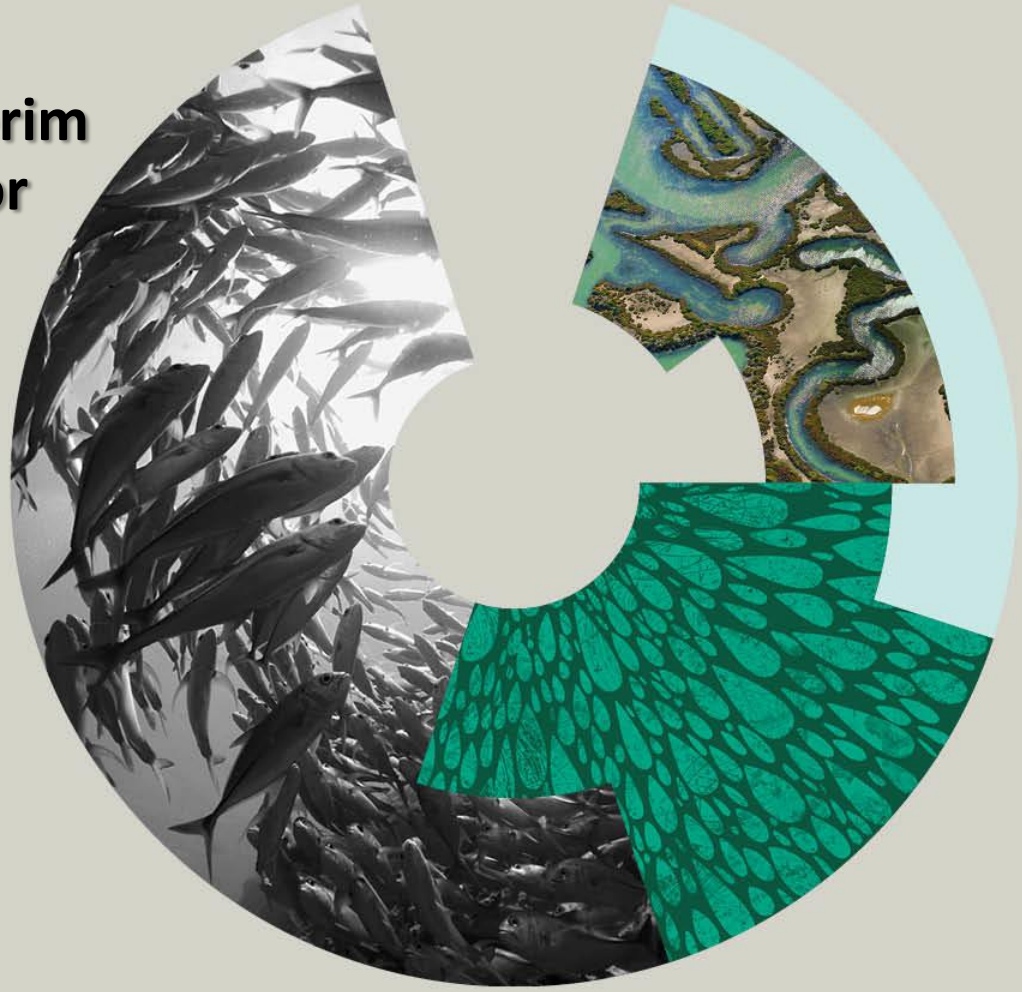

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Summary Points

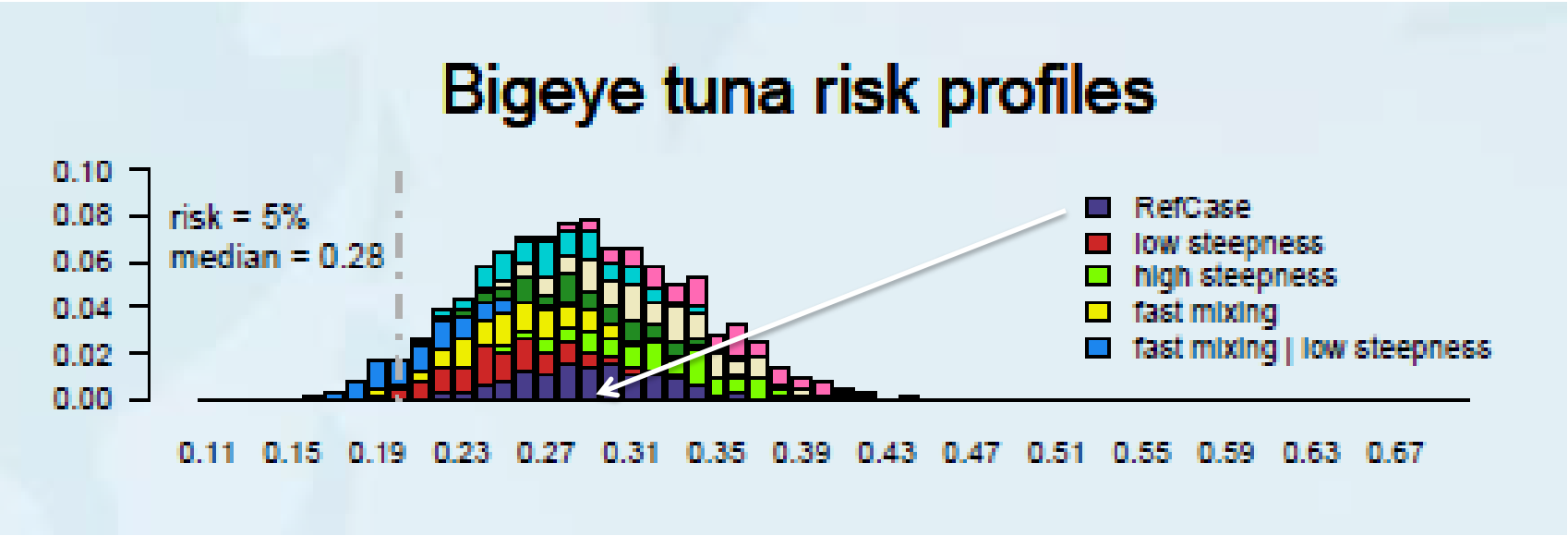
- Establishing acceptable levels of risk is important for guiding management decisions (UNFSA, CMM 2014-06).
- The lowest risk tolerance (5%) requires a larger buffer and implies minimum targets of greater than ~$B_{30\%}$ for SKJ, YFT and BET and greater than $B_{37\%}$ for ALB.
- However, these are below the targets under consideration. ✓
- There are biological, economic and social consequences of breaching the LRP. More severe consequences would suggest lower probabilities desirable.
- There is an inevitable link between estimated risk and how uncertainty is characterised.

Discussion Points

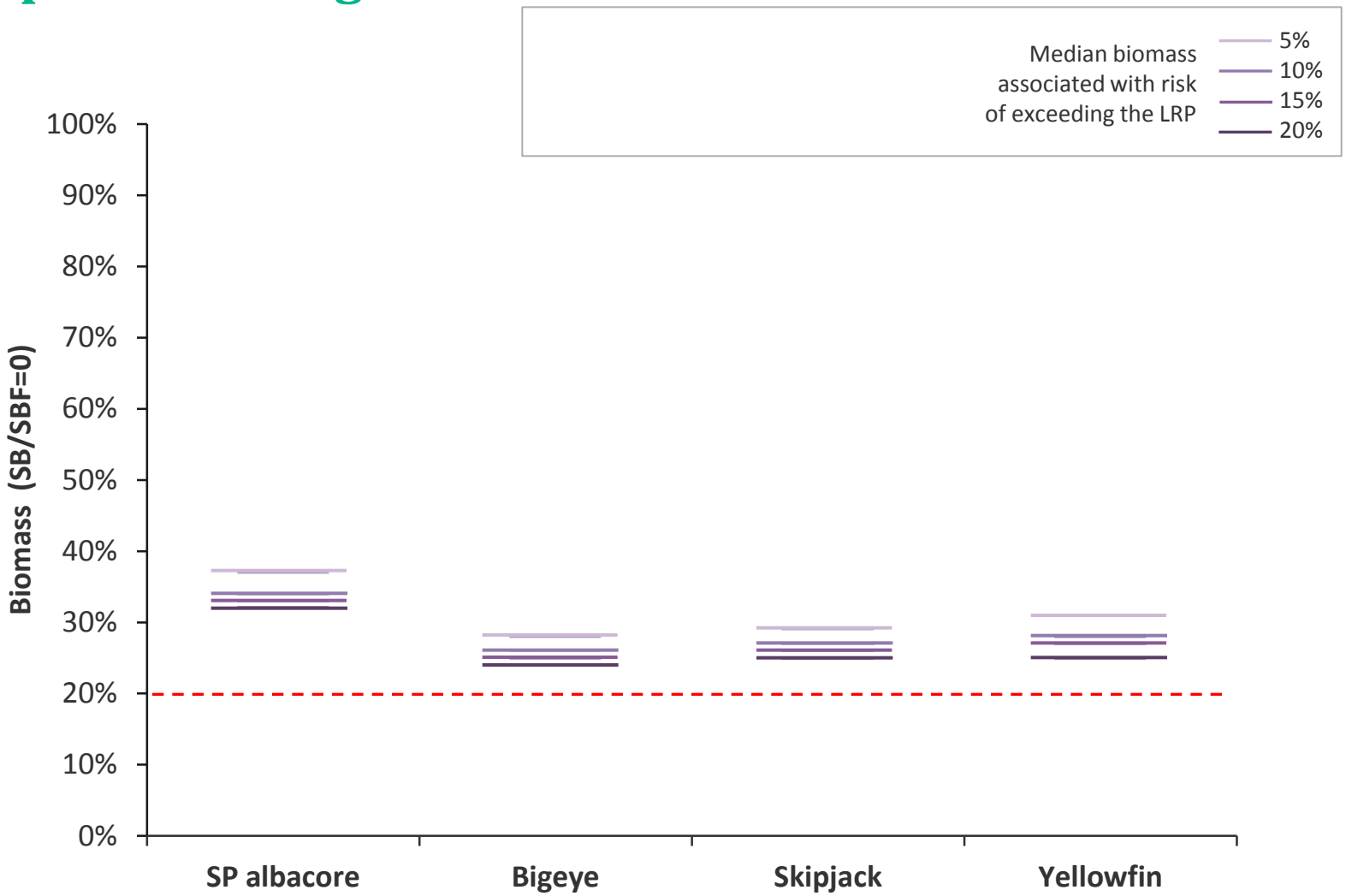
- The relationship between limits, required buffers, targets and uncertainty.
- What might be the consequence of breaching the LRP for the different stocks?
- Proposals for risk levels for key tuna species?

Relationship between risk and uncertainty

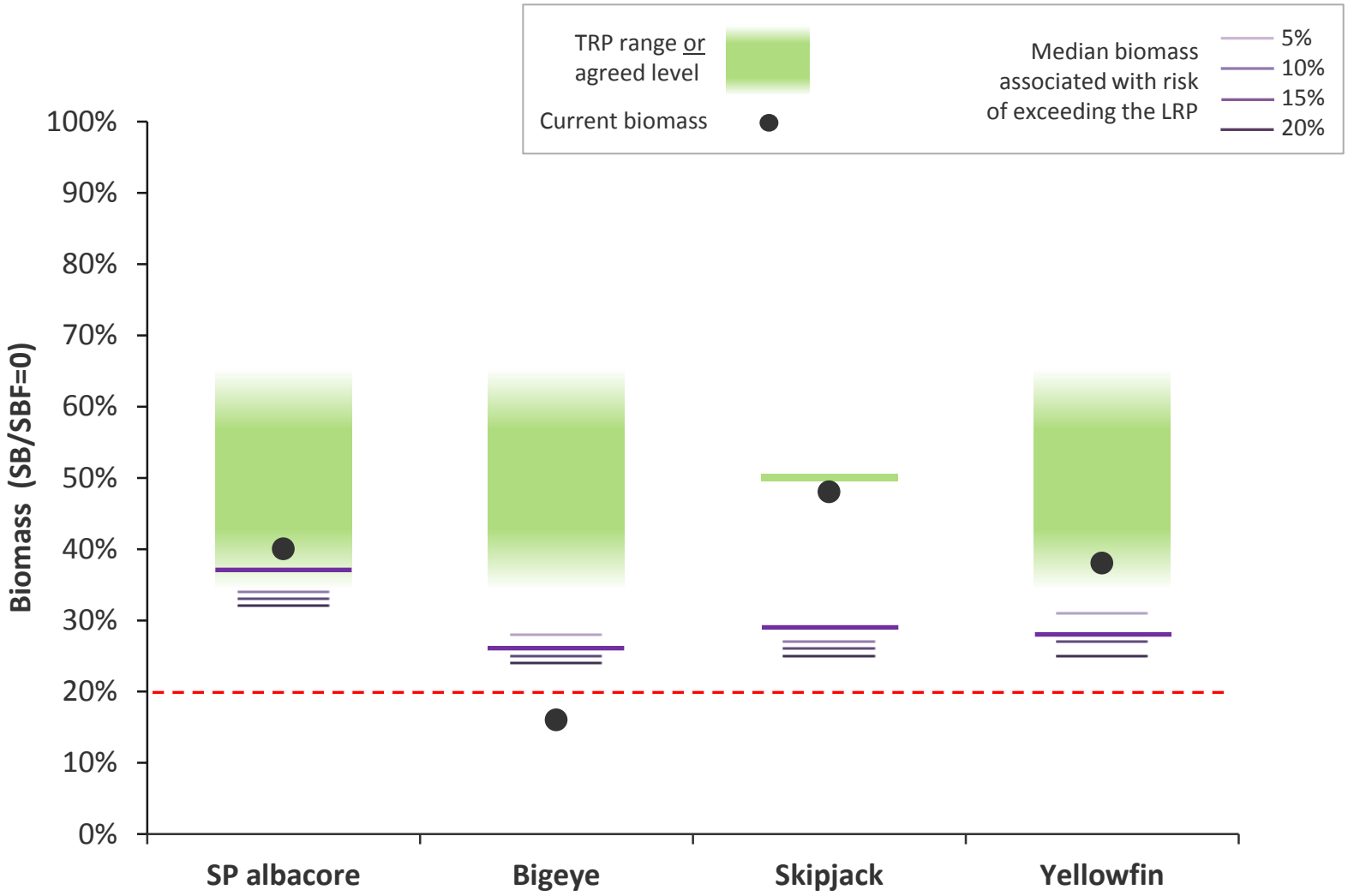
- How we perceive uncertainty will impact our consideration of risk



Rationale - Buffer between limits and agreed or potential targets



Scientific Advice - Separation of potential targets from limits



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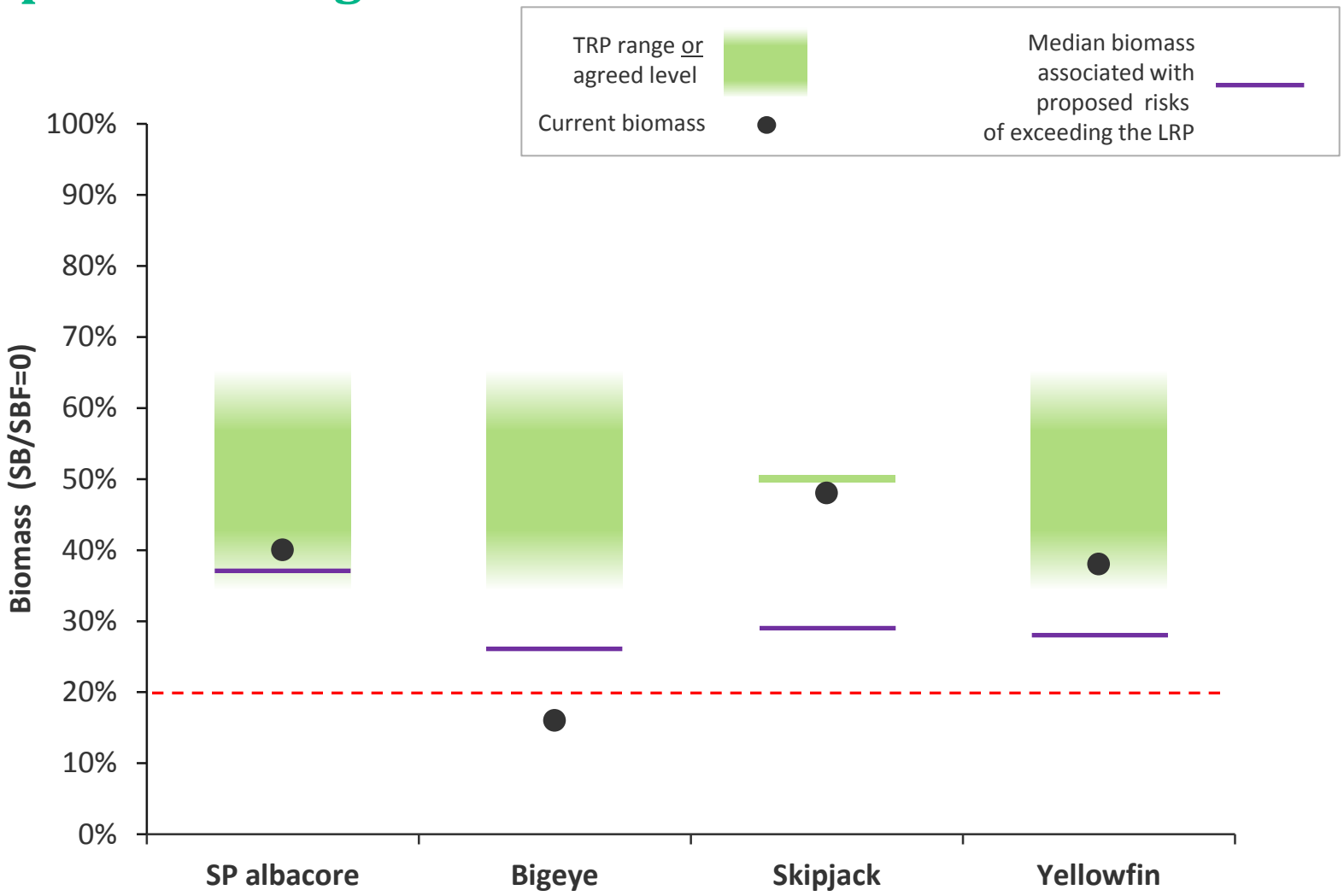
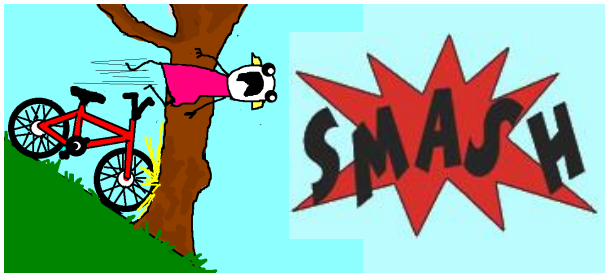


Rationale - Buffer between limits and agreed or potential targets

- The proposed interim risk levels imply minimum target reference points of greater than ~B30% for SKJ, YFT and BET and greater than B37% for ALB.
- There is sufficient "buffer" between the limit and targets under consideration under the proposed interim risk levels

What are the consequences of breaching limits?



Some example consequences:

- **Biological:** Depletion below the LRP is where we might expect declines in recruitment and higher recruitment variability.
- **Economic:** Low biomass can result in reduced total yields, lower catch rates with reduced or no economic returns (E.g. south Pacific albacore).
- **Social:** Social and food security consequences, particularly for nations or communities with a substantial reliance on that stock.

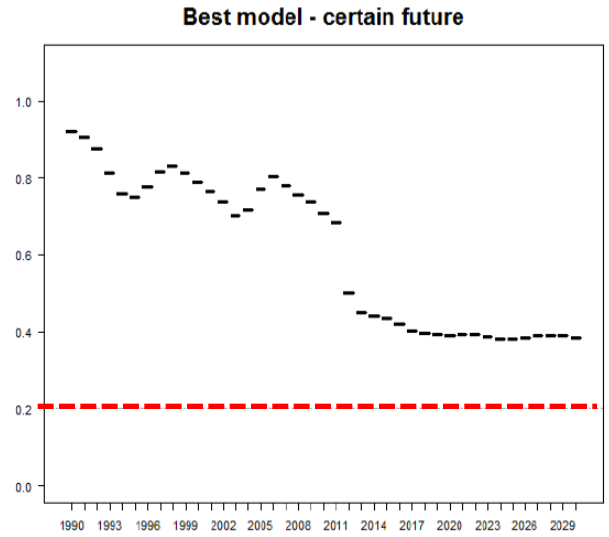
... plus other consequences.

What is “very low”?

- UN Fish Stocks Agreement and CMM 2014-06 require that the risk of exceeding limit reference points is “very low”.
- If the consequences are severe then you would want a very low probability.
- What have others adopted?
  - CCAMLR 10%
  - New Zealand 10%
  - Australia 10%
  - ICES/EU 5-20% (recommended but not adopted)

Relationship between risk and uncertainty

- How we perceive uncertainty will impact our consideration of risk



What is risk