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Biological and economic consequences of different SP Albacore trajectories to a TRP

G. Pilling, M. Skirtun, C. Reid and J. Hampton

SPC OFP and FFA

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Overview

- Part 1: Alternative ways of achieving the TRP
  - 45% $SB_{F=0}$
  - Improved catch rates and vessel profitability
- Part 2: Economic consequences of status quo baseline and those alternatives (Maggie)

Acknowledgements: Australian DFAT and Environmental Defense Fund

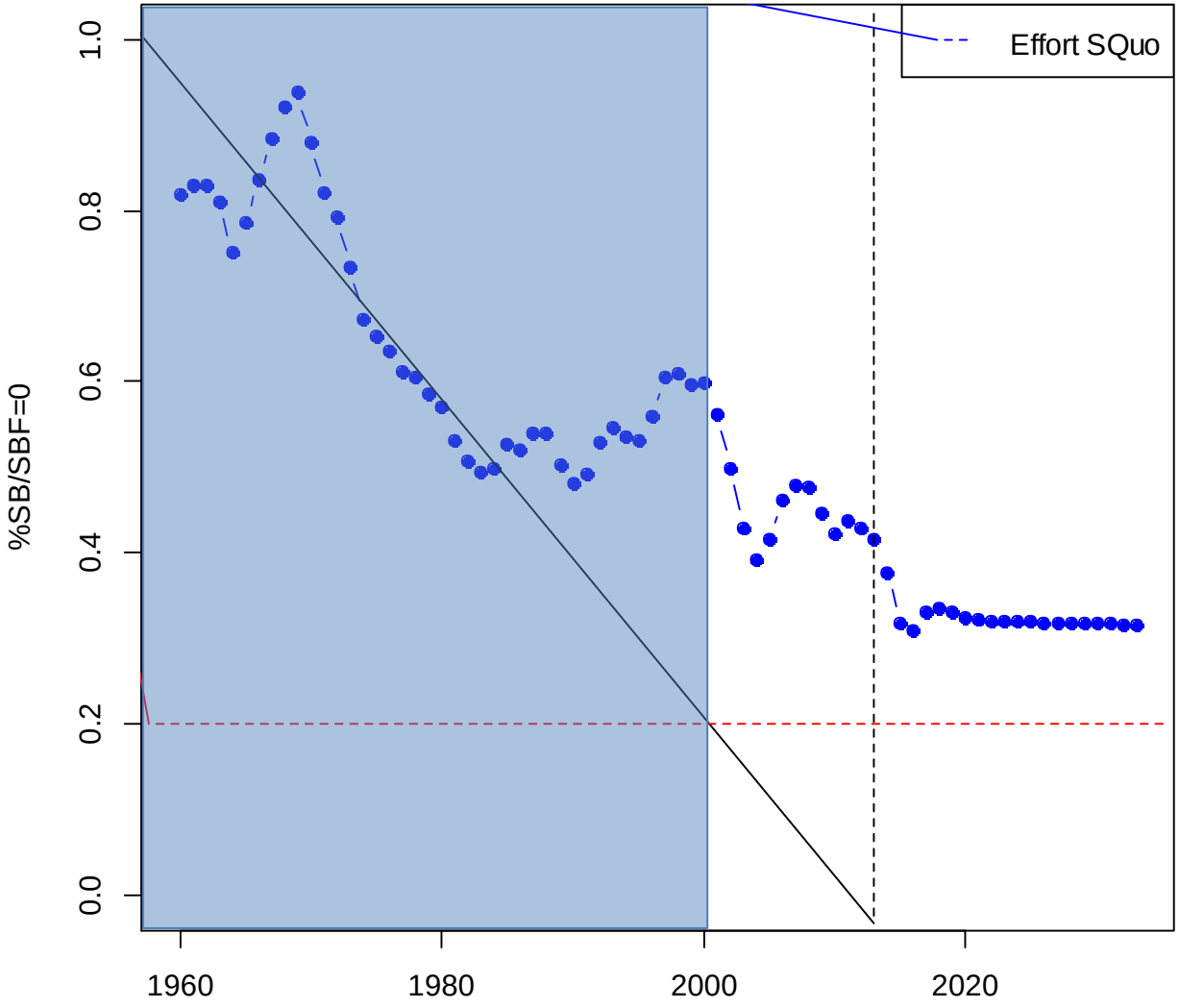
Aims

- Examine consequences of ‘status quo’
  - Effort (see in WCPFC12-2015-14)
  - Catch
- Examine alternative pathways to achieving TRP
  - Assume a 20 year timeframe
  - 3 alternatives that ‘bracket’ possibilities
  - Examine biological consequences
  - Examine economic consequences

Approach

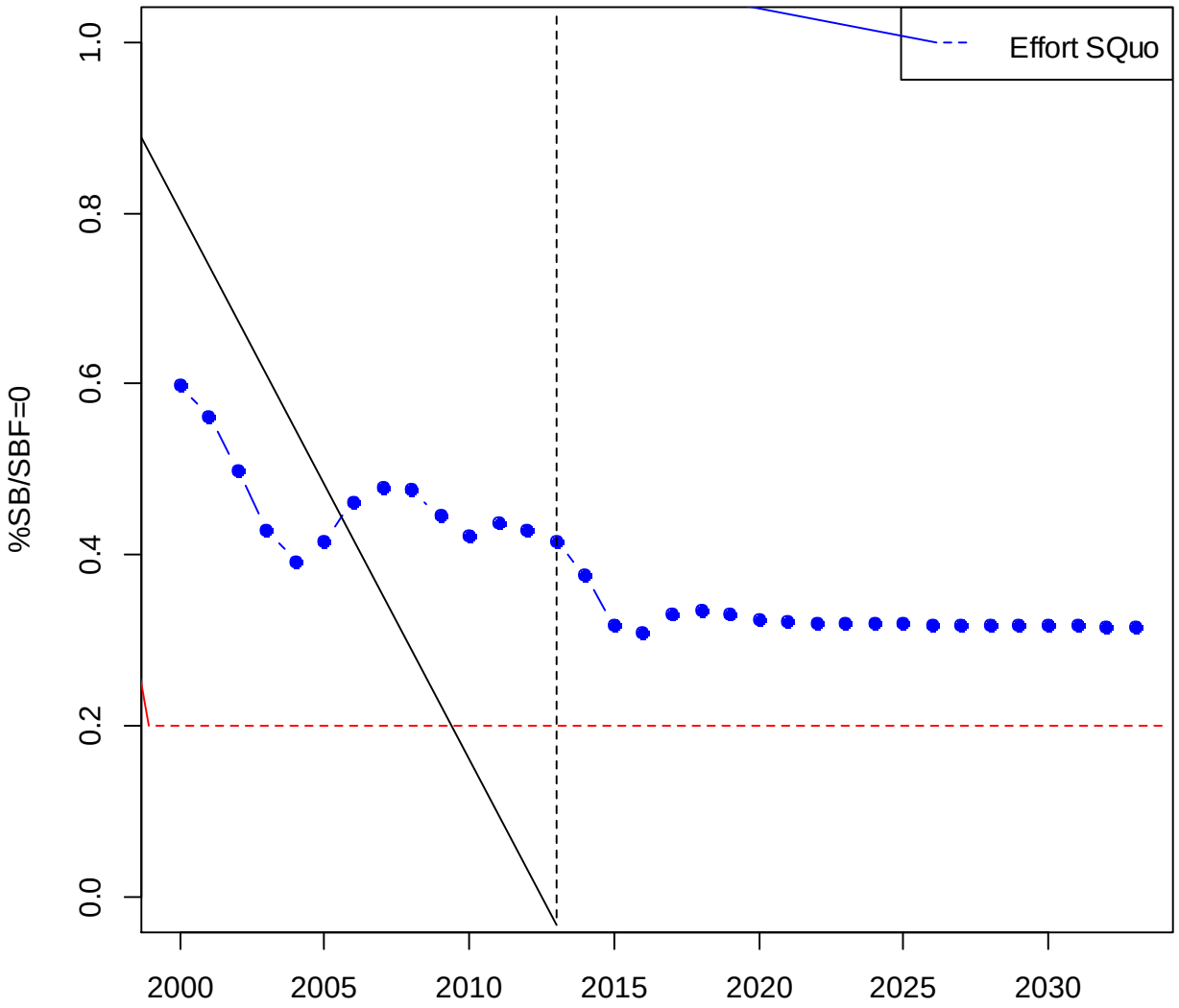
- From the 2015 assessment (2013 starting point)
- Project stock forward for 20 years deterministically (assuming recruitment = SRR)
- 3 scenarios:
  - ‘take the reduction early’ (‘2014’)
  - ‘delay the reduction’ (‘2024’)
  - ‘spread the reduction’ (% per year from ‘2015’)
- Identify the change in LL effort from 2013 that achieves the TRP by 2033
- Catchability constant

Status quo

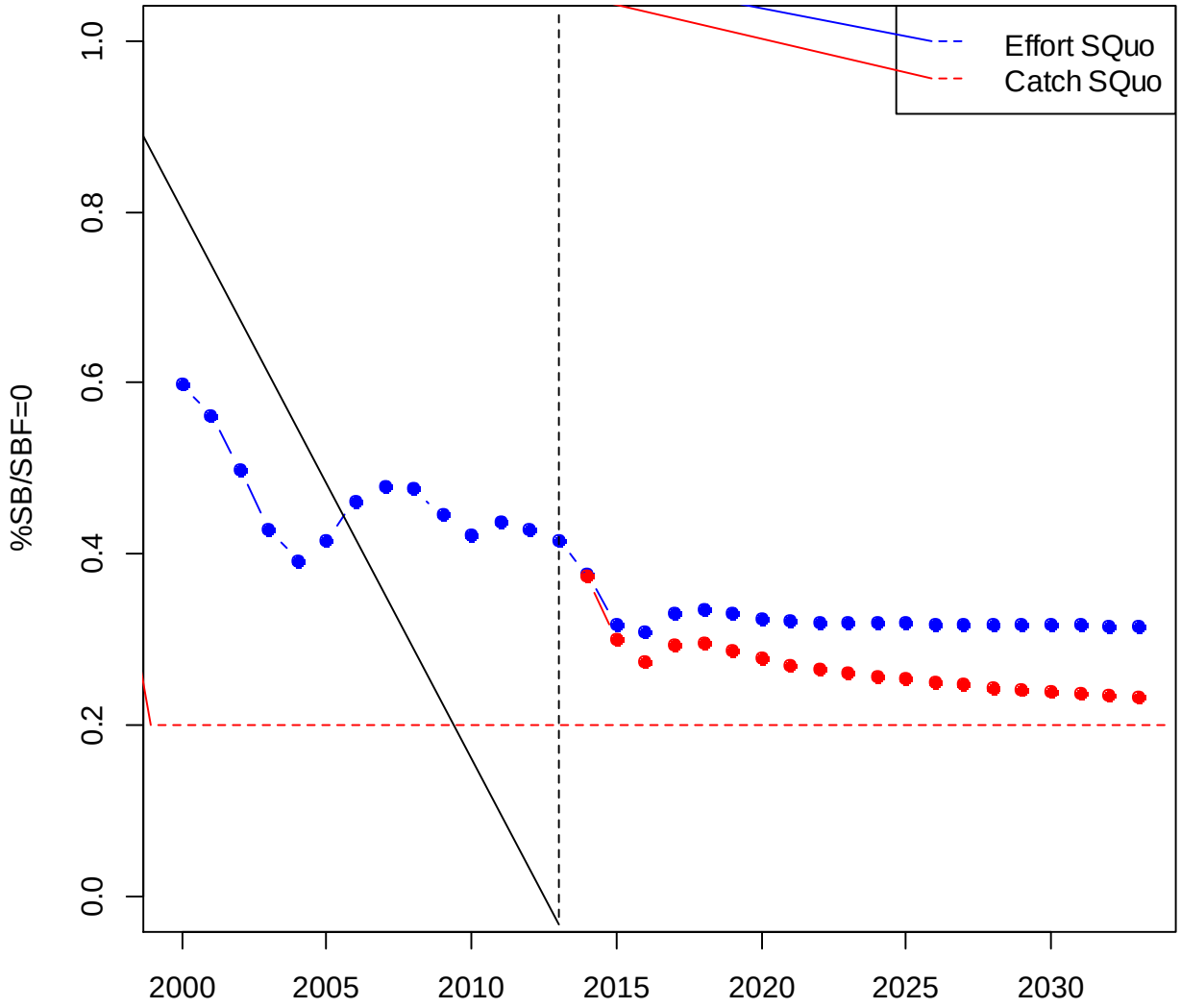


LRP Risk: 20%

Status quo

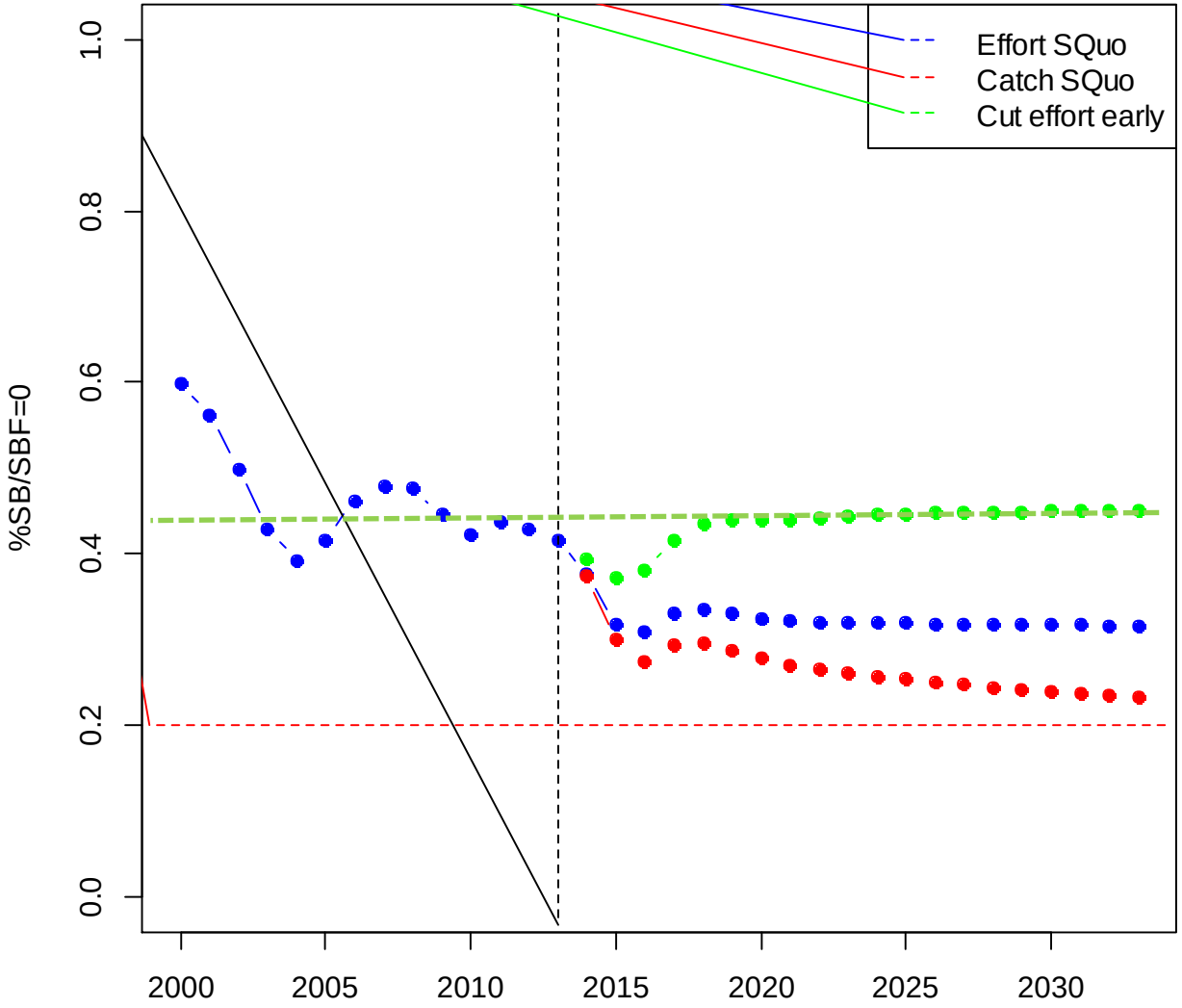

Effort SQuo
%SB/SBF=0
0.0
0.2
0.4
0.6
0.8
1.0
2000
2005
2010
2015
2020
2025
2030

Status quo

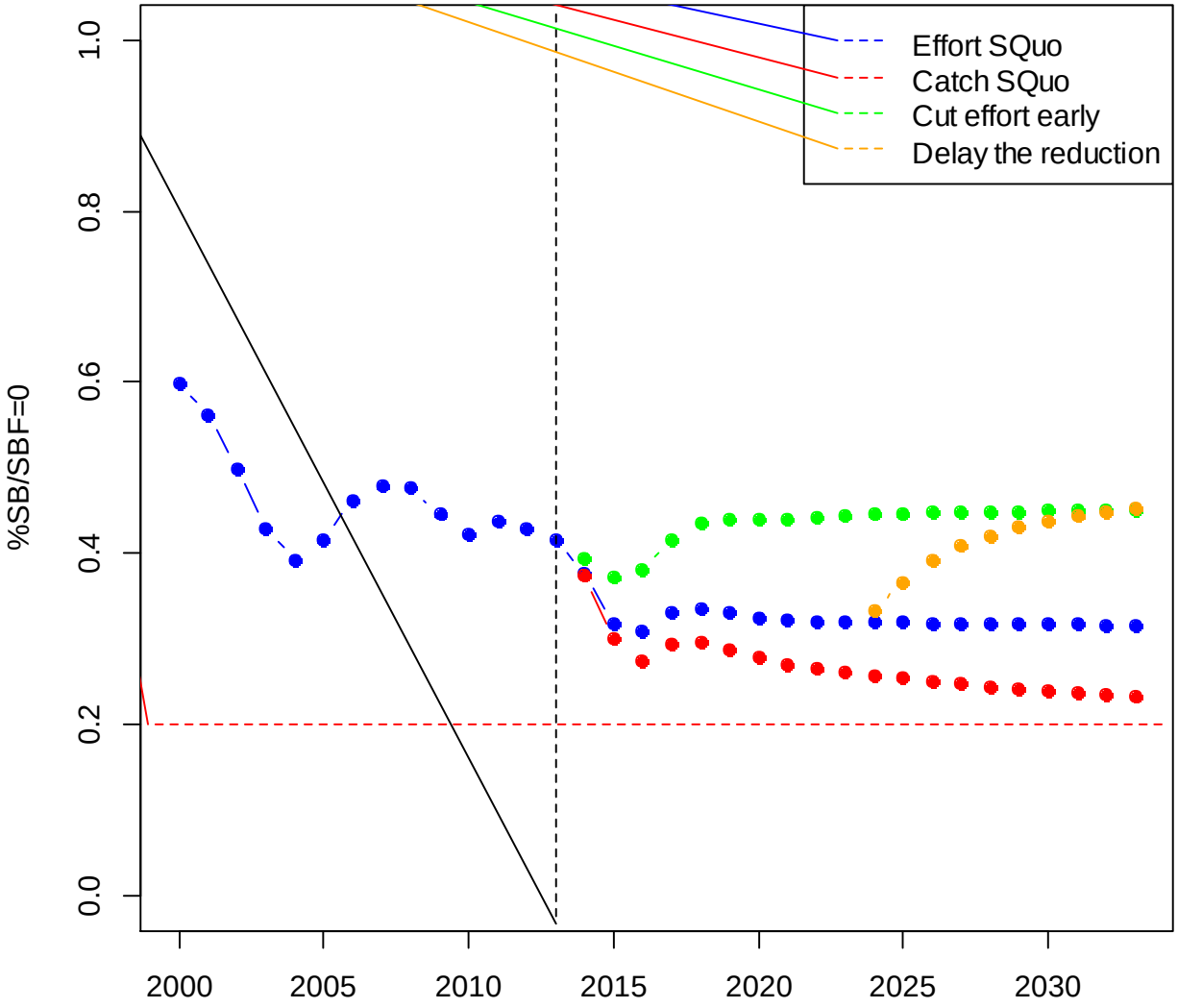


LRP Risk: 41%
Some risk of stock collapse

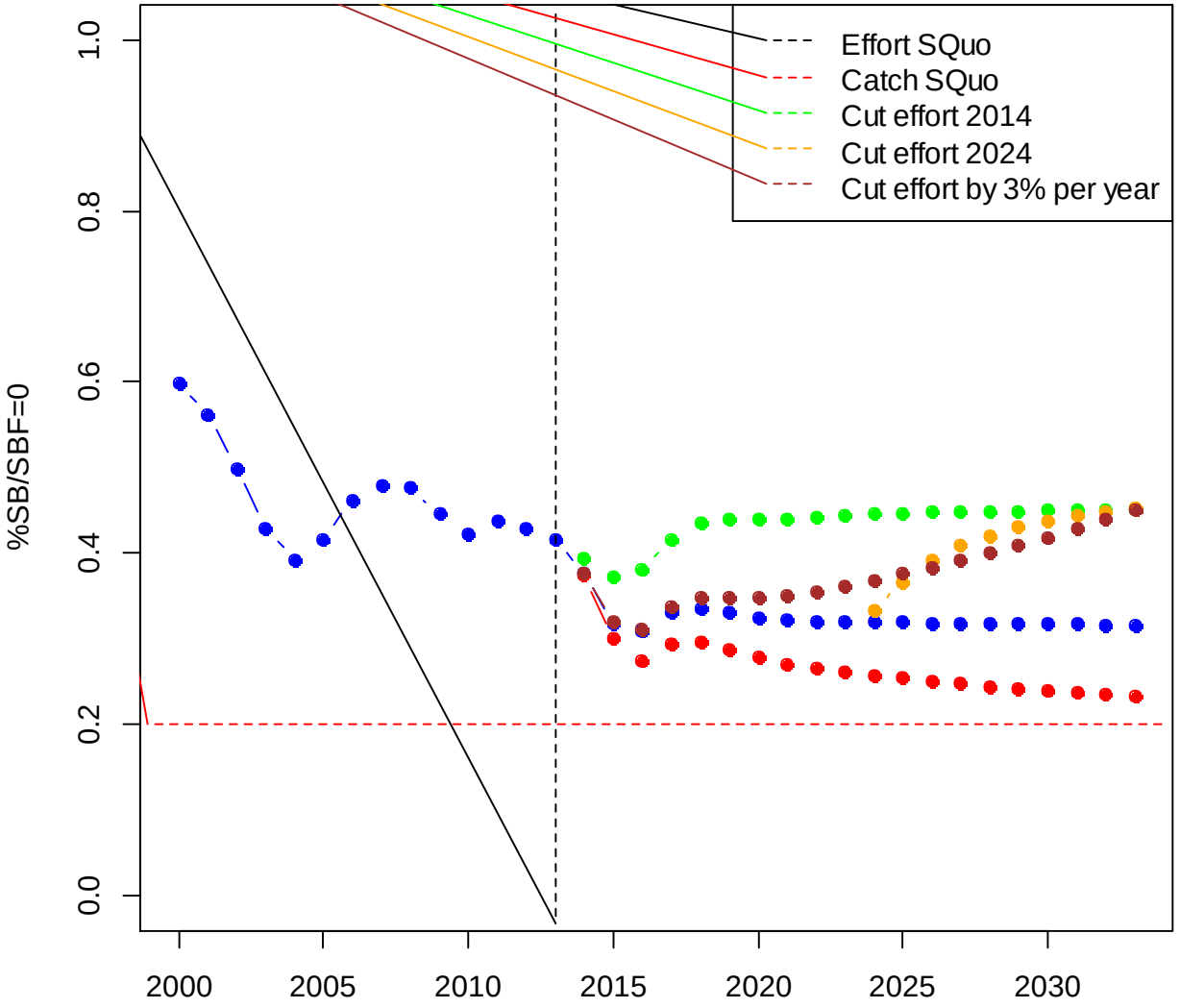
‘Take reduction early’



‘Delay the reduction’



‘Spread the reduction’



Summary

	LL effort scalar (2013)	Median $SB_{2033}/SB_{F=0}$	Median longline VB_{2033}/VB_{2013}	Median albacore catch (Catch $_{2033}$/Catch $_{2013}$)
Status quo effort	1	0.32	0.86	0.72
Status quo catch	[2.2]	0.23	0.68	1

Recap: trajectory scenarios

1. Effort status quo at 2013 levels
2. Catch status quo at 2013 levels
3. Take the reduction early: immediate one-off cut to effort (to 53% of 2013 levels)
4. Delay the reduction: one-off cut to effort in 2024, to 49% of 2013 levels
5. Spread the reduction: annual effort cut of 3% (relative to 2013 levels) from 2015 onwards

*Options 3-5 achieves the candidate TRP of 45%$SB_{F=0}$ by 2033

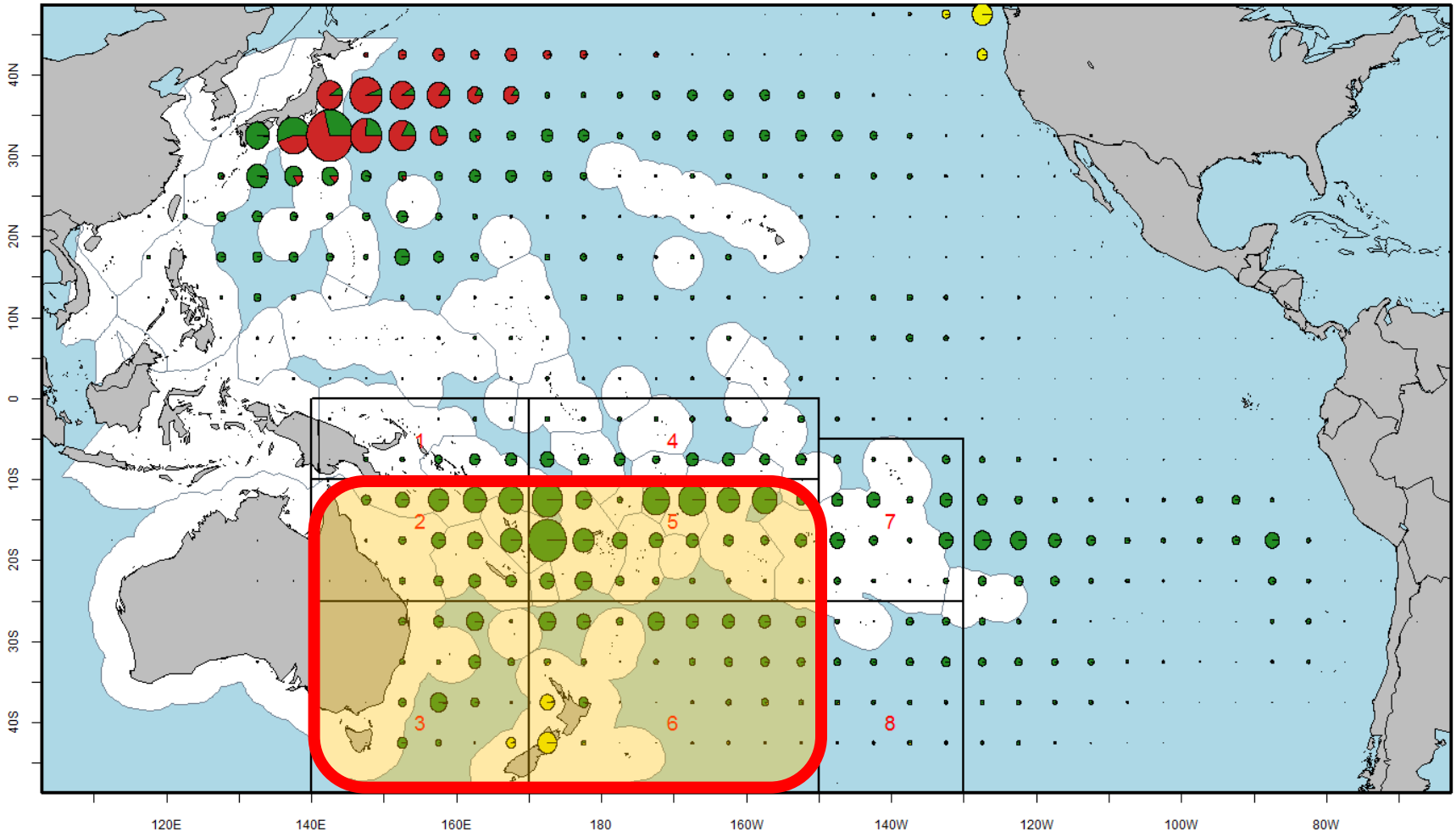
Methodology

- Undiscounted annual real profits
  - Measures the economic implications along the transition paths of the different scenarios
- Discounted cumulative net present value
  - Measures the accrue benefit/loss over the projection period, i.e. the relative cost of transition under each scenario
- Prices = long term average ±20%
- Cost per hook (excl. access fees) = $1.10 ±$0.20
- 3 economic conditions: base, optimistic, pessimistic

Scope of analysis

- The economic analysis is concentrated on the southern longline fishery (assessment areas 2, 3, 5 and 6, excl. the overlap area with IATTC)
- Economic implications considers also changes to revenue from YFT, BET and other species in addition to ALB as a result of changes to effort in the fishery
- Catches of YFT and BET are projected on the specified longline effort within the regional bioeconomic model*. Resulting relative annual catch changes were applied to the 2013 catch levels estimated for SPA-targeting vessels

Assessment area and the SLL fishery



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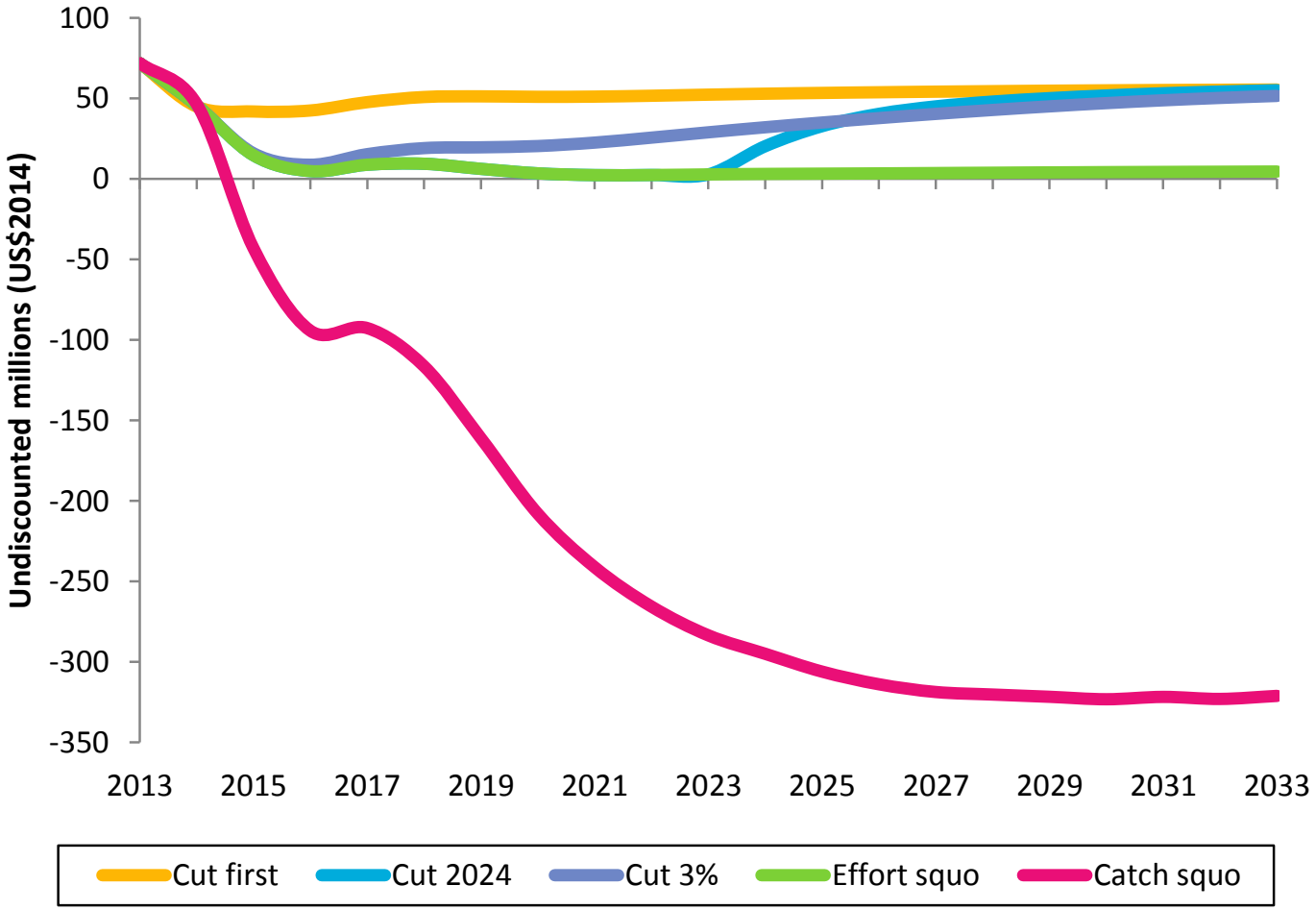
- Economic implications considers also changes to revenue from YFT, BET and other species in addition to ALB as a result of changes to effort in the fishery
- Catches of YFT and BET are projected using rates of change against effort, generated from the regional bioeconomic model*. The rates are applied to the 2013 actual catch history provided by SPC

Annual profit in the SLL fishery

FFA



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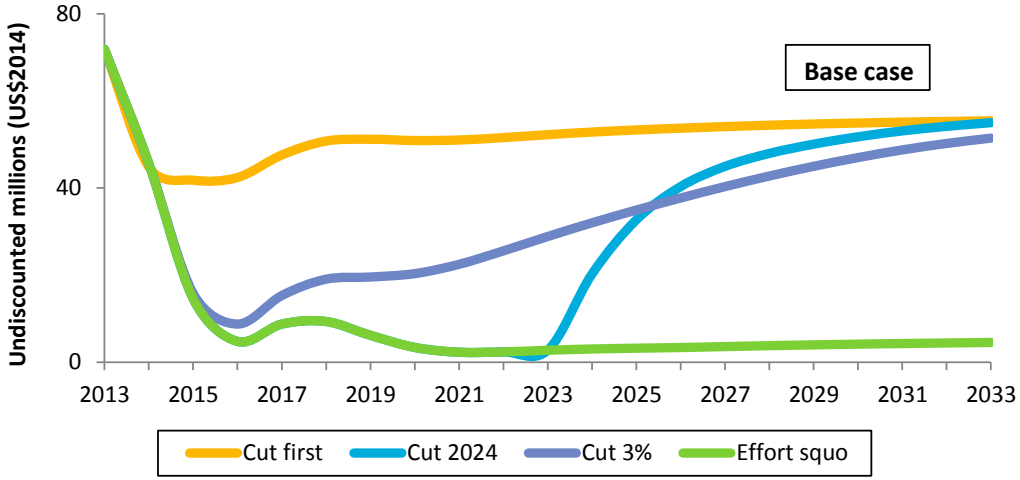

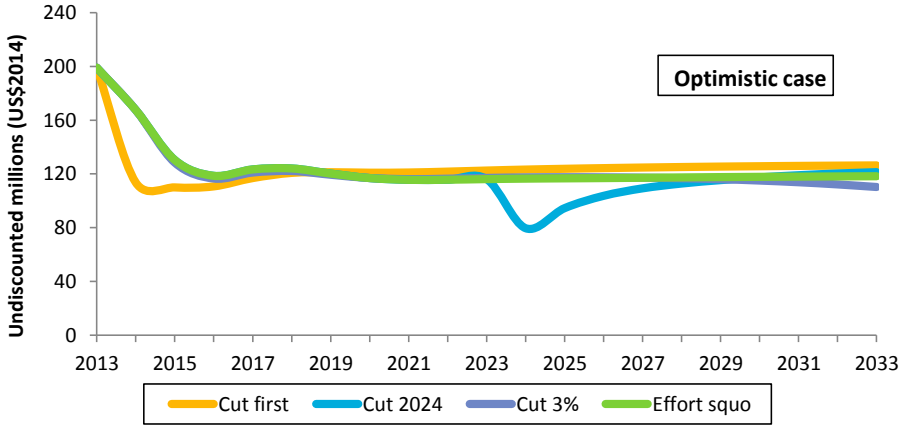

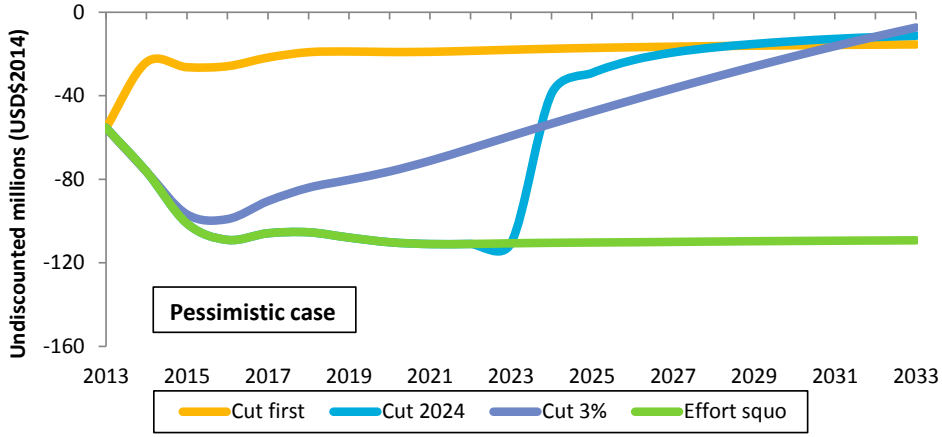

Net present value in the SLL fishery

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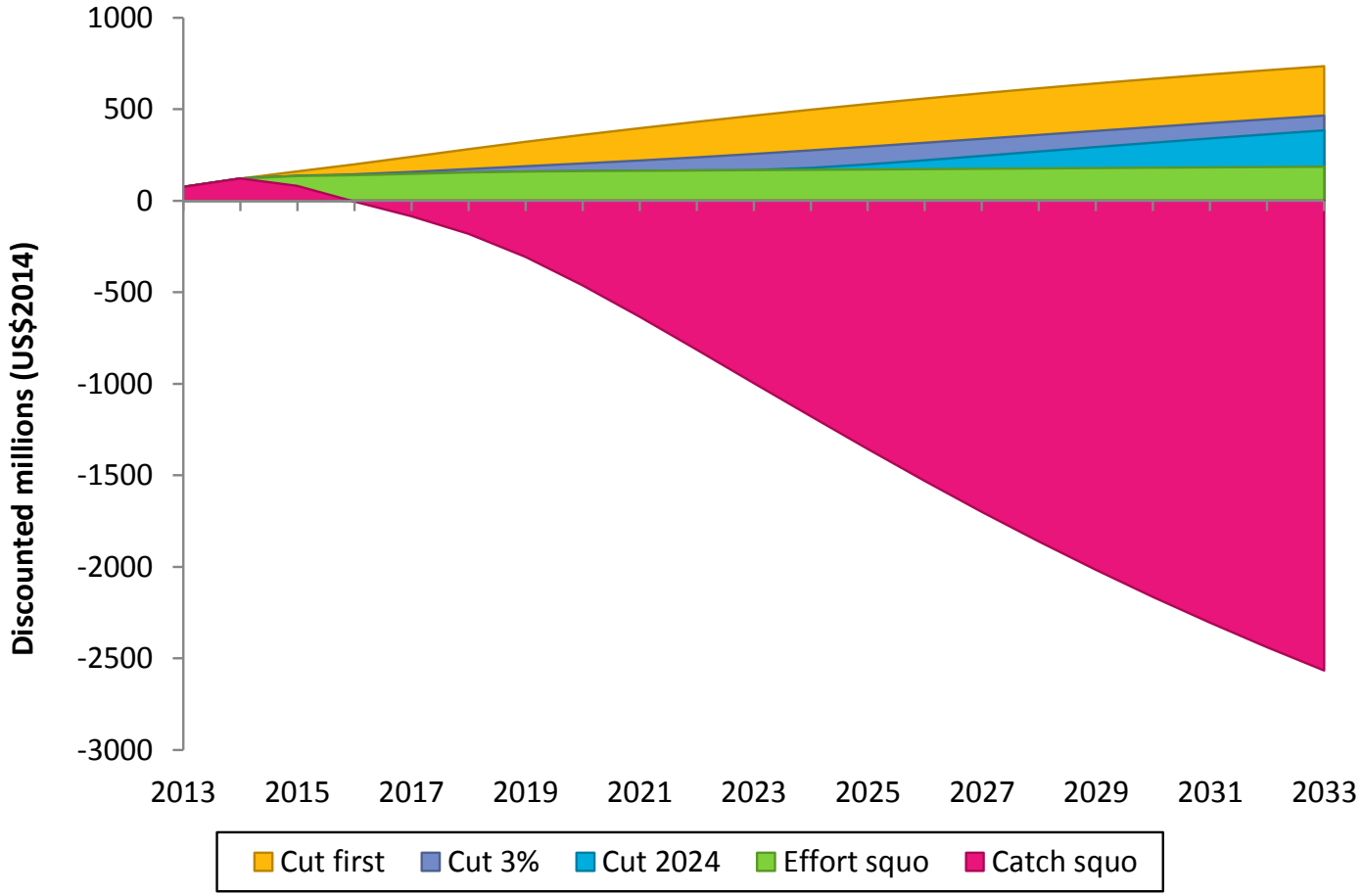
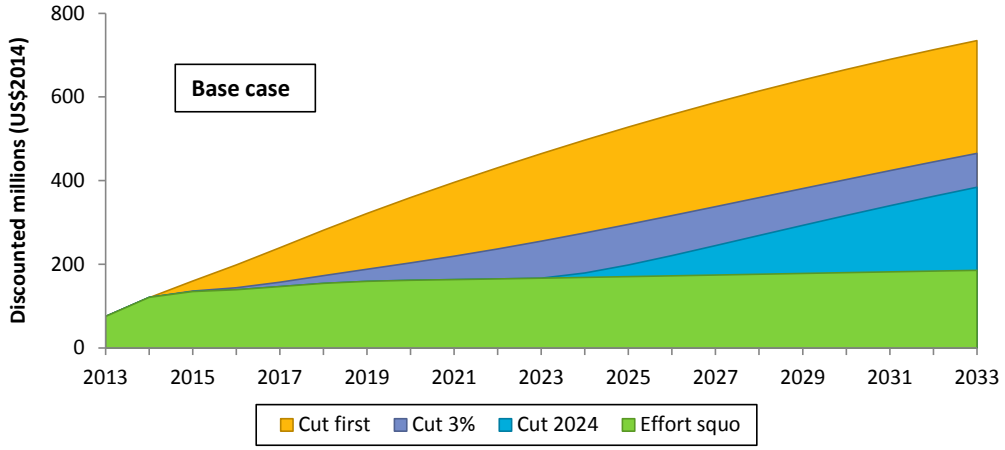
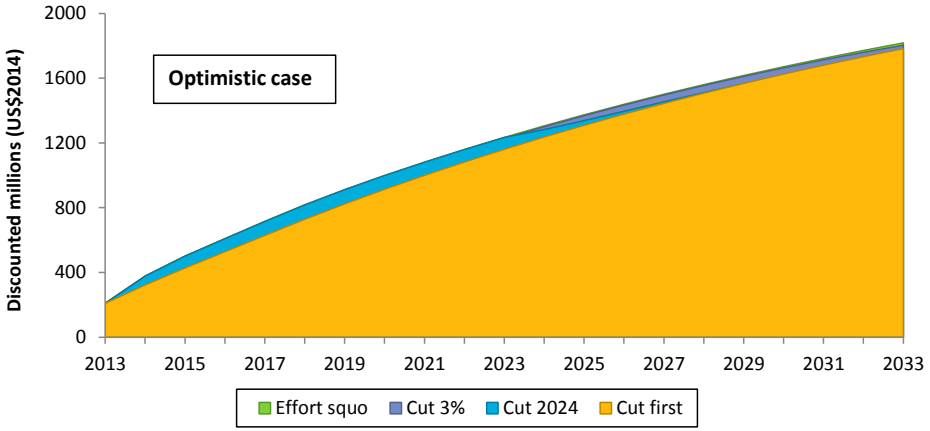
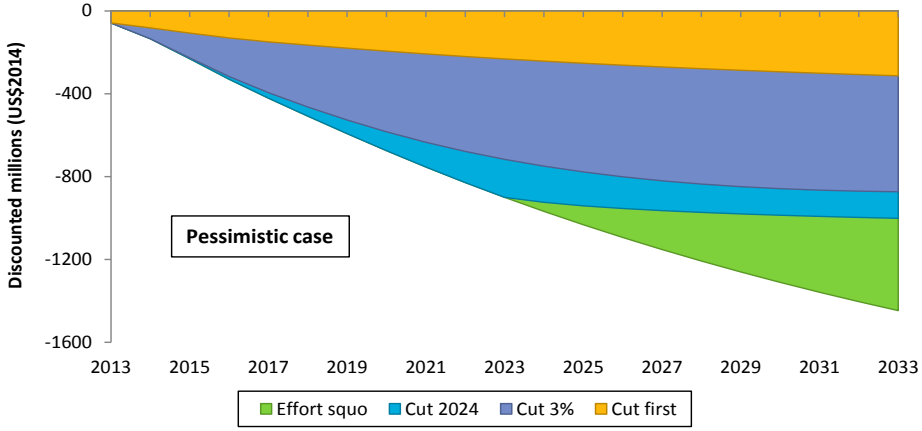


Net present value in the SLL fishery







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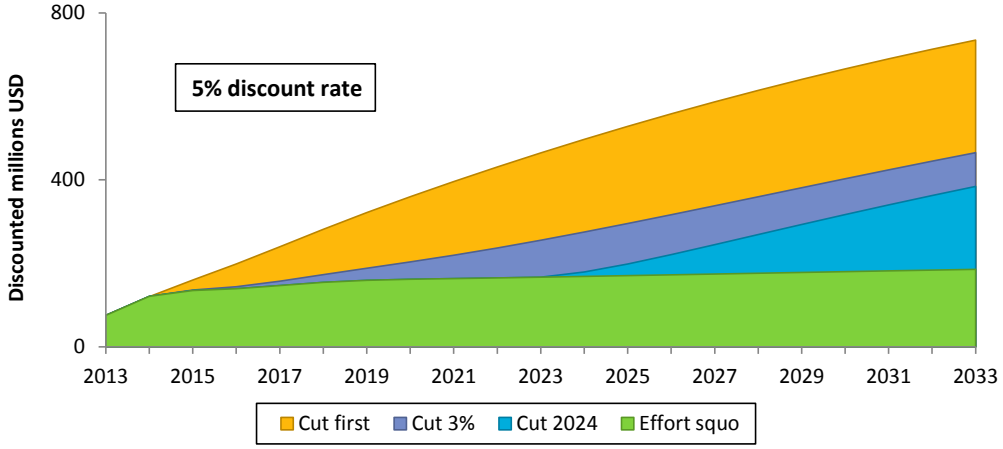

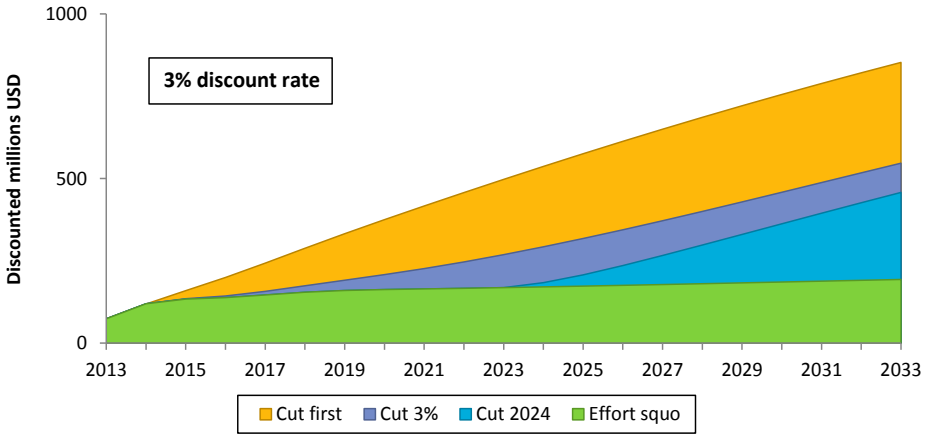

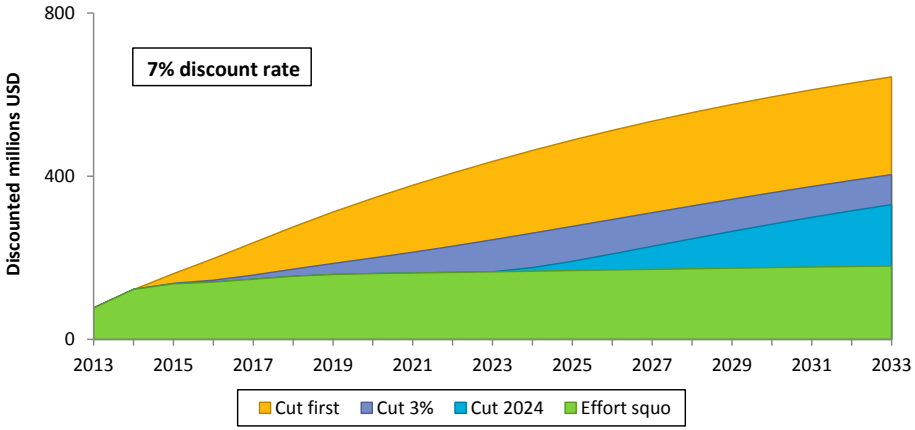

Summary

- 'take the reduction early': able to minimize biomass reductions and lead to relatively rapid recovery
- Annual profits and NPV were highest for 'take the reduction early', followed by 'spread the reduction' and 'delay the reduction' under base conditions
- Ranking of the results altered slightly under different economic conditions*
- Results do not take into consideration displacement costs to industry or declines in other wider economic benefits (e.g. access fees). Also, per unit costs and prices are not assumed to vary with changes in fleet size

Recommendations

- Consider approach taken to evaluate biological and economic consequences for southern longline fishery
- Note biological and economic consequences of status quo fishing levels
- Note economic consequences of alternative recovery strategies
- Note importance of key bycatch spp. assumptions on economics
- Suggest approaches for modelling economic losses due to vessels existing fishery
- Consider implications of these analyses when providing advice to WCPFC13