

Impact of possible catch roll-overs at Gough island

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Summary

Projections of the lobster abundance at Gough island to 2030 with and without roll-overs (or roll-unders) in TACs since 2019 of the extent already agreed or under discussion, show that such a redistribution of catch over time makes virtually no difference to future abundance. This indicates that such roll-overs will have no negative impact on the resource. This is in line with other experience internationally which shows that such roll-overs are not problematic for relatively long-lived resources if the cumulative catch over a number of years remains the same.

Introduction

The intent of this document is to provide an illustration of the impact on the resource of possible roll-over schemes for the 2019+ period that are under discussion for the lobster fishery at Gough island. At basis, these schemes would not take a different total catch over the period of years considered (here 2019 to 2022), but rather only redistribute those catches amongst those years

Table 1 provides details of a possible roll-over scheme which might be implemented at Gough island to ameliorate catch loss due to the Gough eradication programme as well as the loss of the Geo Searcher vessel (in 2020). The requested future roll-overs to off-set the reduced catch due to the loss of the Geo Searcher in 2020 total 25t. A further 12.5t roll-over in 2019 has already been agreed and implemented to off-set the loss of catch in 2020 due the Gough eradication program. Table 1 reflects the most extreme of the possible future roll-over schemes proposed; certainly, slight variations of these roll-over amounts may eventuate.

Methods

The Gough assessment was last updated in 2018. This assessment model has been used to project the resource forwards (deterministically) to 2030 under the two scenarios set out in Table 1. Scenario 1 assumes a constant annual catch equal to the current TAC, viz. CC=100t without any roll-overs. Scenario 2 includes a possible future roll-over of 25t over the 2021 and 2022 seasons combined . Note that if no future roll-overs are allowed, there would be a loss of 25t to the fishery. Figure 1 compares plots of the catches for the two scenarios. Figure 2 shows both the resultant projected exploitable biomass (Bexp) and spawning biomass (Bsp) trajectories for each scenario.

Discussion

The $B_{exp}(2030)/B_{exp}(2018)$ values for the roll-overs versus no roll-overs scenarios are 1.232 and 1.233 respectively, i.e. the exploitable biomasses are virtually identical by 2030, with a difference amounting to only 0.8%. (Note that B_{exp} corresponds to the CPUE which the fishery will experience.) The basic reason for this is that the total catches removed for both scenarios are identical over the period considered. The differences between the trajectories projected are slightly larger earlier, reaching a maximum of 6% in 2020. Differences in spawning biomass are considerably smaller, and again are hardly noticeable after 10 years.

To summarise then, the extent of redistribution of catches over time suggested under scenario 2 with roll-overs will have a hardly distinguishable impact on the resource compared to scenario 1 without such roll-overs.

Internationally there is scientific consensus that for longer-living species, smallish roll-overs are inconsequential. For example, for whales 5-year-block catch limits are set, with flexibility (“carry-overs”) allowed as to how catches may be spread through that period – the reason that this can be allowed is because annual sustainable catches for stocks comprised of long-lived species are much smaller than their abundances (IWC 2020). In South Africa, COVID-related delays in hake harvesting in 2020 have led to an agreed roll-over of 15% to 2021, following an analysis which indicated that the differential impact on the resource would be minimal (Butterworth and Ross-Gillespie 2020).

References

- Butterworth, D.S. and Ross-Gillespie, A. 2020. Investigation of impact of a 15% roll-over of the 2020 hake TAC to 2021. Department of Environment, Forestry and Fisheries document, FISHERIES/2020/AUG/SWG-DEM/10. 5 pp.
- IWC. 2020. Annex D Report of the Sub-Committee on Implementation Reviews and Simulation Trials Journal of Cetacean Research and Management 21 (Suppl.): 77-106.
- Johnston, S.J and Butterworth, D.S. 2020. Updated 2020 GLMM-standardised lobster CPUE from the Tristan da Cunha outer group of islands. MARAM document, MARAM/TRISTAN/2020/MAY/09.

Table 1: Catch assumptions for scenario 1 (no roll-overs from 2019) and scenario 2 (roll-overs allowed). **Bold** indicates the situation that has already occurred (in 2019), with *italics* indicating the hypothesised roll-over scenarios (for 2020+).

		Scenario 1: No roll-overs permitted 2019+	Scenario 2: Roll-overs permitted for 2019+		
	TAC	Total Catch t no roll-over adjustment	Roll-over or under amount	Total Catch t with roll-over adjustment	Explanation
2019	105	105	+12.5t	117.5	12.5t already allocated due to eradication program
<i>2020</i>	<i>100</i>	<i>100</i>	<i>-37.5t</i>	<i>62.5</i>	<i>Reduction of 12.5t from 2020 TAC which was landed in 2019 utilised in 2020 due to Geo loss</i> <i>Expected shortfall of 25t due to Geo Searcher loss[#]</i>
<i>2021</i>	<i>100*</i>	<i>100</i>	<i>+12.5t</i>	<i>112.5</i>	<i>Roll-over Geo Searcher loss</i>
<i>2022</i>	<i>100*</i>	<i>100</i>	<i>+12.5t</i>	<i>112.5</i>	<i>Roll-over Geo Searcher loss</i>
<i>2023</i>	<i>100*</i>	<i>100</i>	<i>0</i>	<i>100</i>	
<i>2024+</i>	<i>100*</i>	<i>100</i>	<i>0</i>	<i>100</i>	
<i>Total over 2019-2024</i>	<i>605</i>	<i>605</i>	<i>0.00</i>	<i>605</i>	

*the current TAC of 100t for 2020 is assumed to continue into the future (for illustrative purposes).

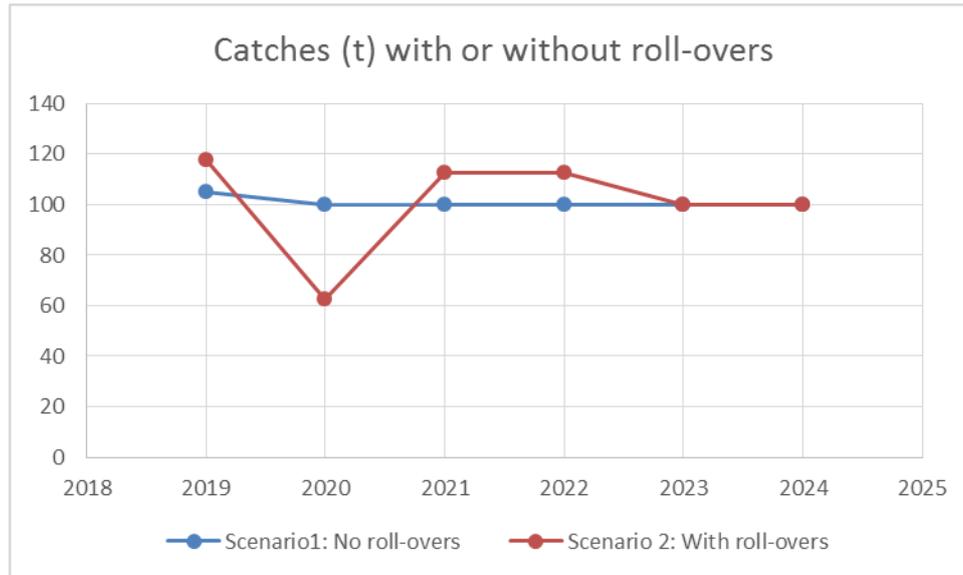


Figure 1: Catches linked to both scenario 1 (no roll-overs) and scenario 2 (with roll-overs). Note that the total cumulative catch over the period considered is the same for these two scenarios.

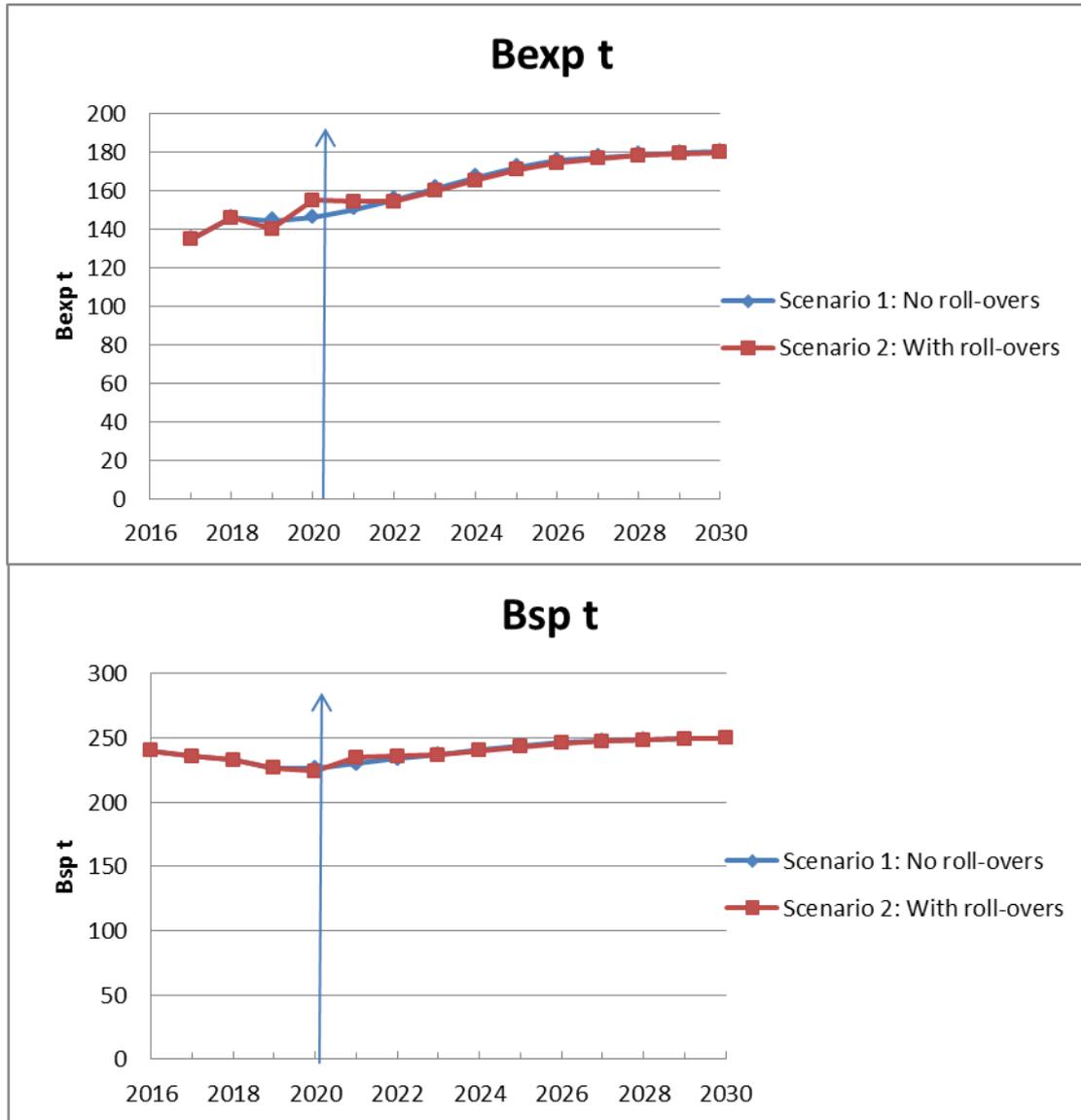


Figure 2: Bexp and Bsp trajectories assuming a basic future constant annual catch of 100 mt for scenario 1 (no roll-overs) and for scenario 2 (with roll-overs allowed) as described in Table 1 and shown in Figure 1.