

# Recommendations on rock lobster TACs for Gough and Inaccessible islands for the 2021/22<sup>1</sup> season

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## Executive Summary

OMPs are the agreed basis to recommend rock lobster TACs for all four islands of the Tristan da Cunha Group. The application of these OMPs using the most recent CPUE and survey data for input result in the following TAC recommendations for Gough and Inaccessible.

The new OMP-2021 for **Gough** recommends a TAC for 2021 at **100 MT + 5 MT rollover** (2020 TAC 100 MT). Note that as 12.5 MT of Gough quota was caught in advance of the Gough restoration program during the 2019 season, this amount must be deducted from the Gough 2021 allocation. The final Gough allocation should thus be **92.5 MT**. The new OMP-2021 for **Inaccessible** recommends a TAC for 2021 at **101 MT** (2020 TAC 98 MT).

If an overcatch of more than 0.5 MT is taken at an island in a given season, that amount is to be taken off the TAC allocated for the following season. Thus the 1.22 MT overcatch at Inaccessible for the 2020 season must be removed from the allocations for the 2021 season. The final Inaccessible allocation for the 2021 season will therefore be 101 MT – 1.22 MT = **100 MT**.

## Introduction

New OMPs for Gough and Inaccessible have recently been developed (Johnston 2021a, b). These two OMPs take both commercial CPUE and biomass survey data into account in the TAC setting formula. OMPs have been adopted for all four islands in the Tristan group for the purpose of scientific recommendations for TACs. All these OMPs have the same form, as set out below:

$$TAC_{y+1} = TAC_y + \alpha(I_y^{rec} - I^{tar})$$

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<sup>1</sup> The convention used here is that the split season (e.g. 2016/17) is referred to as the “2016” season.

where

$I_y^{rec}$  is the average of the GLM standardized CPUE over the last three years ( $y-2$ ,  $y-1$ ,  $y$ ),

$I^{tar}$  is the CPUE target index, and

$\alpha$  is a tuning parameter – the larger the  $\alpha$  value, the more “responsive” the OMP is to changes in the catch rate in the future.

A rule to control the inter-annual TAC variation is also applied. The baseline % TAC change relative to the previous year (“max V%”) is restricted to a maximum of either max V% up and max V% down:

If  $TAC_{y+1} < (1 - \text{max V\% down})TAC_y$  then  $TAC_{y+1} = (1 - \text{max V\% down}) TAC_y$

If  $TAC_{y+1} > (\text{max V\% up}) TAC_y$  then  $TAC_{y+1} = (\text{max V\% up}) TAC_y$

Furthermore a maximum TAC (ceiling) or a minimum TAC (floor) may be imposed, where the latter is subject to Exceptional Circumstances (EC) rules where if  $I_y^{rec}$  drops below  $l_{lim}$ , the ECs apply and TAC decrease constrains are overridden.

### Gough

The new OMP-2021 accepted has:

$I^{tar}$  the CPUE target index of 5.5 kg/trap,

$\alpha$  is 4,

max V% 5% up and 5% down,

$l_{lim}$  3 kg/trap,

TAC(2020) maximum = 100 MT.

### *Gough TAC for 2021*

The updated standardised CPUE are reported in Johnston and Butterworth (2021c). The biomass survey data are renormalised so that the average over 2010-2012 is equivalent to that of the commercial CPUE data (for 2010-2012). Table 1 reports the input data from both the commercial CPUE and biomass survey.

The calculation of the recommended 2021 TAC for Gough is as follows:

The combined  $I_{2020}^{rec}$  value:

$$I_{2020}^{rec} = \frac{w_1 I_{2020}^{rec,comm} + w_2 I_{2020}^{rec,survey}}{w_1 + w_2} \quad \text{i.e. used both indices}$$

$$= \frac{44 * 6.194 + 13 * 7.80}{57}$$

$$= 6.56$$

Note: No survey data are available for the 2020 season. As described in Johnston (2021a), missing data values are handled as follows:

“Calculate the  $I_y^{rec}$  value for each series ( $I_y^{rec,comm}$ ,  $I_y^{rec,Edin}$  and  $I_y^{rec,survey}$ ) as the average of the normalized values over the years within the last three years ( $y-2$ ,  $y-1$ ,  $y$ ) for which data are available, if only one or two years’ data are available”.

$$TAC_{2021} = TAC_{2020} + \alpha(I_{2020}^{rec} - I^{tar})$$

$$= TAC_{2020} + 4(I_{2020}^{rec} - 5.5)$$

$$= 100 + 4(6.56 - 5.5)$$

$$= 104 \text{ MT}$$

This TAC value is above than the “TAC maximum” of 100 MT set for 2020 thus this value is adjusted downwards to  $TAC(2020)=100$  MT. The  $I_{2020}^{rec}$  value of 6.56 is above the threshold  $I_{lim}$  value of 3.0 (thus ECs are not invoked). Accordingly the final TAC recommended for Gough for the 2021 season is **100 MT**.

A value of **5 MT** will be added to this TAC in 2021 (and in 2022 and 2023) as part of an agreed rollover scheme to make up for lost TAC due to the sinking of the Geo Searcher in 2020 and a part of the TAC having being left in the water during the 2020 season.

Inaccessible

The final Inaccessible new OMP-2021 accepted has:

$I^{tar}$	the CPUE target index of 5.0 kg/trap,
$\alpha$	is 2.5,
max V%	5% up and 5% down,
l <sub>lim</sub>	3.0 kg/trap.

*Inaccessible TAC for 2021*

The calculation of the recommended 2021 TAC for Gough is as follows:

The combined  $I_{2020}^{rec}$  value:

$$I_{2020}^{rec} = \frac{w_1 I_{2020}^{rec,comm} + w_2 I_{2020}^{rec,survey}}{w_1 + w_2} \quad \text{i.e. used both indices}$$

$$= \frac{29 * 6.958 + 16 * 4.034}{45}$$

$$= 5.92$$

Note: No survey data are available for the 2020 season. As described in Johnston (2021a), missing data values are handled as follows:

“Calculate the  $I_y^{rec}$  value for each series ( $I_y^{rec,comm}$ ,  $I_y^{rec,Edin}$  and  $I_y^{rec,survey}$ ) as the average of the normalized values over the years within the last three years ( $y-2$ ,  $y-1$ ,  $y$ ) for which data are available, if only one or two years’ data are available”.

$$TAC_{2021} = TAC_{2020} + \alpha(I_{2020}^{rec} - I^{tar})$$

$$= TAC_{2020} + 2.5(I_{2020}^{rec} - 5.0)$$

$$= 98 + 2.5(5.93 - 5.0)$$

$$= 101 \text{ MT}$$

The  $I_{2020}^{rec}$  value of 5.93 is above the threshold  $I_{lim}$  value of 3.0 (thus ECs are not invoked). Accordingly the final TAC recommended for Gough for the 2021 season is **101 MT**.

## References

Johnston, S.J. 2021a. Extended CMP results for VAR6, VAR5.5 and Var5 for Gough island lobster. MARAM/TRISTAN/2021/JUL/13.

Johnston, S.J. 2021b. Inaccessible CMP results. MARAM/TRISTAN/2021/JUL/14.

Johnston, S.J. 2021c. Exceptional Circumstances rule for the Tristan OMP 2020 when one or more data inputs are unavailable. MARAM/TRISTAN/2021/MAY/03.

Johnston, S.J. and Butterworth, D.S. 2021c. Updated 2021 GLMM -standardised lobster CPUE from Gough Island of the Tristan da Cunha outer group of islands. MARAM/TRISTAN/2021/MAY/06.

Johnston, S.J. and Butterworth, D.S. 2021d. Updated 2021 GLMM -standardised lobster CPUE from Inaccessible and Nightingale islands. MARAM/TRISTAN/2021/JUL/07.

Table 1: The updated Gough and Inaccessible (2021) GLMM powerboat CPUE and Biomass survey series for to be used for the  $I_{2021}^{rec}$  calculations. Values input to the TAC computations are shown bolded and in red.

	Gough			Inaccessible		
	Commercial CPUE	Biomass survey pre-normalised	Biomass survey Re-normalised	Commercial CPUE	Biomass survey pre-normalised	Biomass survey Re-normalised
2018	7.323	14.81	8.97	4.930	13.44	4.05
2019	5.080	10.96	6.64	6.264	10.16	3.06
2020	6.178	-	-	9.680	-	-
Average $I_{2020}^{rec}$	<b>6.194</b>	12.89	<b>7.80</b>	<b>6.958</b>	11.80	<b>3.73</b>