Recommendations on rock lobster TACs for the Tristan group of islands for the 2019/20[1] season

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Executive Summary

OMPs have recently been accepted as the 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 standardized CPUE data for input result in the following TACs.

The OMP for Tristan recommends the TAC for 2019 at **120 MT** (2018 TAC 120 MT).
The OMP for Nightingale recommends the TAC for 2019 at **87 MT** (2018 TAC 83 MT).
The OMP for Inaccessible recommends the TAC for 2019 at **93 MT** (2018 TAC 89 MT)**.**
The OMP for Gough recommends the TAC for 2019 at **105 MT** (2018 TAC 111 MT)**.**

Introduction

With the recent adoption of OMPs for Tristan (Johnston and Butterworth 2016, Johnston and Glass 2017) and Nightingale, Inaccessible and Gough (Johnston and Butterworth 2018 a,b), all four islands in the Tristan group now have OMPs adopted for the purpose of scientific recommendations for TACs. All four of these OMPs have the same form, as set out below.

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

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

[1] The convention used here is that the split season (e.g. 2016/17) is referred to as the "2016" season.

α is a tuning parameter – the larger the α 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 $TAC_{y+1} < (1 - \max \text{V\% down}) TAC_y$ then $TAC_{y+1} = (1 - \max \text{V\% down})\, TAC_y$

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

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 Ilim, the ECs apply and TAC decrease constrains are overridden.

Tristan

The final Tristan OMP accepted has:

I^{tar}	the CPUE target index of 1.257 kg/trap,
α	is 25,
max V%	5% up and 5% down,
Ilim	0.9 kg/trap,
TAC ceiling	NA, and
TAC Floor	120 MT.

Tristan TAC for 2019

The updated standardised CPUE are reported in Johnston and Butterworth (2019a). The calculation of the recommended 2019 TAC for Tristan is as follows:

$$TAC_{2019} = TAC_{2018} + \alpha(I_{2019}^{rec} - I^{tar})$$

$$= TAC_{2018} + 25(I_{2019}^{rec} - 1.257)$$

$$= 120 + 25(1.176 - 1.257)$$

$$= 118\ MT$$

This TAC value is lower than the "TAC floor" of 120, but the I_{2019}^{rec} value of 1.176 is above the threshold Ilim value of 0.90 (thus ECs are not invoked). Accordingly the final TAC recommended for Tristan for the 2019 season is **120 MT.**

Nightingale

The final Nightingale OMP accepted has:

I^{tar}	the CPUE target index of 5.0 kg/trap,
α	is 2.5,
max V%	5% up and 5% down,
Ilim	3.0 kg/trap,
TAC ceiling	85 MT and,
TAC floor	NA.

Nightingale TAC for 2019

The updated standardized CPUE for Nightingale is reported in Johnston and Butterworth (2019b). The calculation of the 2019 TAC for Nightingale is as follows:

$$TAC_{2019} = TAC_{2018} + \alpha(I_{2019}^{rec} - I^{tar})$$

$$= TAC_{2018} + 2.5(I_{2019}^{rec} - 5.0)$$

$$= 83 + 2.5(10.563 - 5.0)$$

$$= 96.91\ MT$$

This TAC value is greater than the maximum 5% increase from the previous TAC (83 MT); thus this TAC is adjusted to equal a 5% increase over the 83 MT, which is **87** MT.

The I_{2019}^{rec} value of 10.563 is not below the metarule threshold Ilim value of 3.0 kg/trap, so the metarule is not invoked.

Given that the TAC ceiling value of 85 MT is not exceeded, the final TAC is **83 MT.**

Inaccessible

The final Inaccessible OMP accepted has:

I^{tar}	the CPUE target index of 5.0 kg/trap,
α	is 2.5,
max V%	5% up and 5% down,
Ilim	3.0 kg/trap,
TAC ceiling	NA, and
TAC floor	NA.

Inaccessible TAC for 2019

The updated standardized CPUE for Inaccessible is reported in Johnston and Butterworth (2019b). The calculation of the 2019 TAC for inaccessible is as follows:

$$TAC_{2019} = TAC_{2018} + \alpha(I^{rec}_{2019} - I^{tar})$$

$$= TAC_{2018} + 2.5(I^{rec}_{2019} - 5.0)$$

$$= 89 + 2.5(7.004 - 5.0)$$

$$= 94.01\ MT$$

This TAC value is greater than the maximum 5% increase from the previous TAC (89 MT); thus this TAC is adjusted to equal a 5% increase above 89 MT, which is **93** MT.

The I^{rec}_{2019} value of 7.004 is not below the metarule threshold Ilim value of 3.0 kg/trap, so the metarule is not invoked.

The final TAC(2019) is thus **93 MT.**

Gough

The final OMP accepted has:

I^{tar}	the CPUE target index of 6.0 kg/trap,
α	is 10,
max V%	5% up and 5% down,
Ilim	3.0 kg/trap,
TAC ceiling	NA, and
TAC floor	NA.

Gough TAC for 2019

The updated standardized CPUE for Inaccessible is reported in Johnston and Butterworth (2019b). The calculation of the 2019 TAC for Nightingale is as follows:

$$TAC_{2019} = TAC_{2018} + \alpha(I^{rec}_{2019} - I^{tar})$$

$$= TAC_{2018} + 10(I^{rec}_{2019} - 6.0)$$

$$= 111 + 10(4.996 - 6.0)$$

$$= 101\ MT$$

This TAC value is greater than the maximum 5% decrease from the previous TAC (111 MT); thus this TAC is adjusted to 0.95*TAC_{2018} = 105 MT.

The I^{rec}_{2019} value of 4.996 is not below the metarule threshold Ilim value of 3.0 kg/trap, so the metarule is not invoked.

The final TAC(2019) is thus **105 MT.**

References

Johnston, S.J. and Butterworth, D.S. 2016. Initial results in the development of a new OMP 2016 for Tristan da Cunha island rock lobster. MARAM/TRISTAN/2016/MAY/07.

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Johnston, S.J. and Butterworth, D.S. 2019b. Updated 2019 GLMM-standardised lobster CPUE from the Tristan da Cunha outer group of islands. MARAM document, MARAM/TRISTAN/2018/FEB/01.

Table 1: The updated (2019) GLMM CPUE (kg/trap) series used for the I_{2019}^{rec} calculations.

Season	**Tristan**	**Nightingale**	**Inaccessible**	**Gough**
2016	1.179	13.101	6.988	5.789
2017	1.190	10.453	7.822	3.396
2018	1.160	8.136	6.203	5.804
Average (I_{2019}^{rec})	**1.176**	**10.563**	**7.004**	**4.996**