

Rescaling of the daily/monthly nominal Tristan CPUE to make it comparable with the target CPUE level (Itar) used in the OMP.

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The MARAM document MARAM/Tristan/2016/MAY/08 provides the full details of the updated (and rescaled) Tristan GLM-standardised lobster CPUE analysis. From the results presented in this document, the most recent target level for Tristan has been calculated (which is 1.257).

Ovenstones receive electronic logbook updates of the powerboat fishing at Tristan on a daily basis, and this has been used to calculate the daily CPUE rates to compare them with previous seasons as well as the target CPUE level. Whilst this information is not what is used as input to the OMP, it is useful to be able to assess the performance of the fishery in real time.

There is a problem however with just considering the simple nominal CPUEs (at a daily or monthly level) when comparing them to the target CPUE, as the nominal CPUE values do not take important factors such as the monthly variation in CPUE into account. The CPUE target is an “annual” target level – but due to monthly natural variations in CPUE performance, the target thus in reality varies between months.

This document briefly outlines the steps suggested in re-scaling the daily CPUE values so that they will be comparable with the target CPUE value.

The equation to be used when rescaling the nominal CPUE ($CPUE_{nominal,month}$) to a value that is comparable with the CPUEs used as input into the OMP i.e. the Itar value ($CPUE_{OMP,month}$) is:

$$CPUE_{OMP,month} = \left[(CPUE_{nominal,month} + \delta) e^{(\beta_{sept} - \beta_{month})} - \delta \right] * Scalar_{season}$$

where

δ is a constant that is used in the CPUE GLM standardisation (to avoid taking logs of zeros),

β_{month} is the monthly factor that was estimated from the GLM standardisation, and where the month September was used as part of the intercept (and hence set to zero),

$Scalar_{season}$ is the scalar that is specific for each season that is used in the final re-scaled GLM CPUE series to take into account changes in fishing efficiency.

Table 1: The month factors that were estimated in the most recent CPUE GLM analysis.

Month	β_{month}
Jan	-0.0387
Feb	-0.0953
Mar	-0.1168
Apr	-0.1680
Jul	-0.0205
Aug	0.0387
Sep	0
Oct	0.0535
Nov	0.1160
Dec	0.0927

Table 2: The seasonal scaling values that were estimated in the most recent CPUE GLM analysis.

Season	$Scalar_{season}$
2013/14	1.1246
2014/15	1.1468
2015/16	1.1695
2016/17*	1.1582

*Note that the most recent CPUE GLM analysis did not include the 2016/17 data so no seasonal scaling value has been estimated for the 2016/17 season as of yet. For now it is suggested that the average of the 2013/14-2015/16 values are used for the 2016/17 season.

Figure 1: A comparison of the previous unscaled nominal CPUE values calculated so far for the 2016/17 season, along with the suggested re-scaled nominal CPUE values. The target CPUE level (Itar) is also indicated.

