

2020/21 Preliminary Rock Lobster Assessment Summary

The southern rock lobster commercial TAC has been 1050.7t for the last seven years preceded by three years at 1103.24t. Overall over the last decade CPUE has risen substantially, initially through small increases, then large increases in 2016/17 and 2017/18 in response to a good recruitment event followed by a small decline over the last three years.

Stock assessment modelling indicates that statewide egg production is at 37.7% which is well above the 30% limit reference point. This reference point has been set at a level below which subsequent recruitment may be impacted, hence is a critical limit reference point for ensuring sustainability.

An interim biomass target reference point has been set at 25% of the unfished biomass. The target reference point is reflective of the stock state to which stakeholders aspire for maximising economic rent and recreational amenity. This TRP is an extremely low value for a target relative to those used in most fisheries so has been proposed as an interim target along a rebuild pathway. Once reached it is expected that a new and higher TRP that continues the rebuilding pathway will be established. Stock assessment modelling indicates that the TRP will only be achieved with a 64-66% probability with the current TACC (a probability of 70% is required). To achieve the required 70% probability a minimal 1-2kg/unit TACC reduction would be needed. It should be noted that with current catches the stock is rebuilding, but not at the rate required by the interim biomass target reference point.

Improvement in CPUE has been distributed across all stock assessment areas. Areas in the East Coast Stock Rebuilding Zone (SRZ) initially showed limited CPUE increase despite dramatic catch reductions. Then after a period of rapid CPUE increase, CPUE fell again in 2019/20 and 2020/21. Consequently area 2 and 3 remain well below the interim rebuild target of 20% virgin biomass stock and a further catch reduction is required to keep Area 2 on track for meeting this target by 2023. To achieve this the total catch in areas 1, 2 and 3 (combined over both sectors) would need to be substantially reduced. There are a number of factors contributing to this including recreational over-catch. However, the primary factors are a record low abundance of undersize lobsters coupled with the limited time remaining before the 2023 target year. It should be noted that the target is still expected to be achieved (i.e. rebuilding is expected to continue), but 2-4 years behind schedule.

Due to the long pelagic larval period (up to two years), egg production in different areas of the fishery is not closely linked to future recruitment in that region. Recruitment is affected by patterns in larval dispersal and it's known that the most important regions for larval sources tend to vary from year to year. The appropriate management response to this is to ensure that healthy egg production of at least 20% of the unfished level is maintained in all areas. Area 5 is the only area falling below this level, a regional size limit was put in place to address this in late 2019 which is expected to ensure a steady rebuild to over 20% by 2026.

Increasing CPUE has reduced the effort required to catch the TAC and hence the gap between lease price and beach price has narrowed. Consequently, competition for leased quota by fishers has become increasingly intense leading to a steady ongoing reduction in vessel numbers, down to 164 in 2020/21 and consequently employment. Some management changes such as a relaxation of input controls (e.g. allowing the use of 60 pots) can increase the price of lease quota and accelerate the process of fleet and employment reduction.

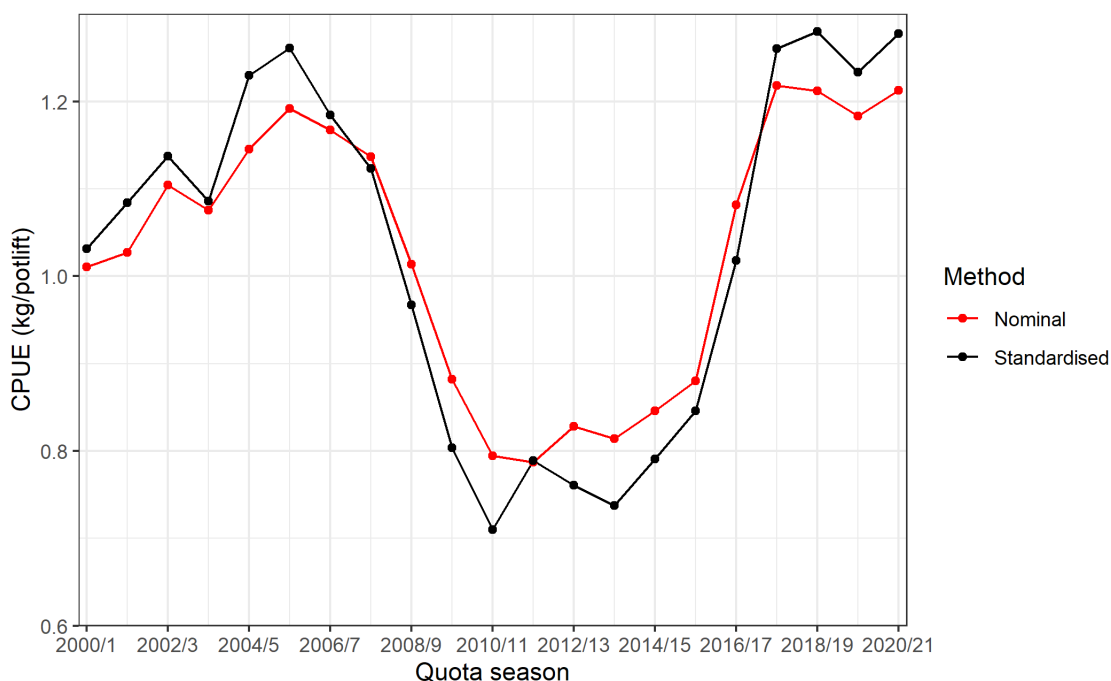


Figure 1: Nominal and standardised annual CPUE

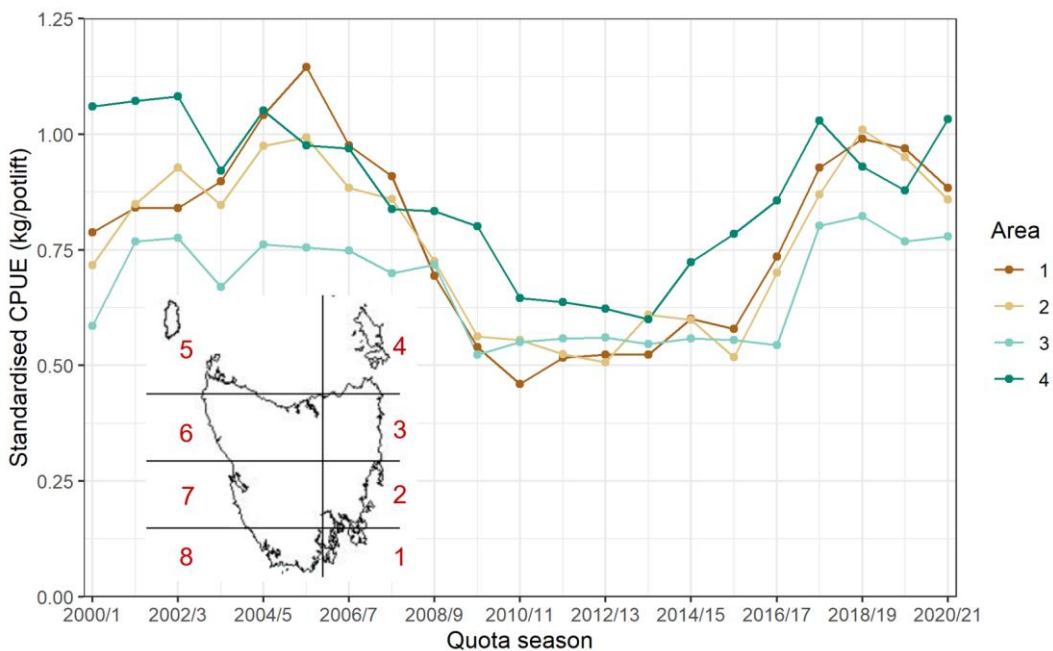


Figure 2: Standardised CPUE in the Eastern stock assessment areas

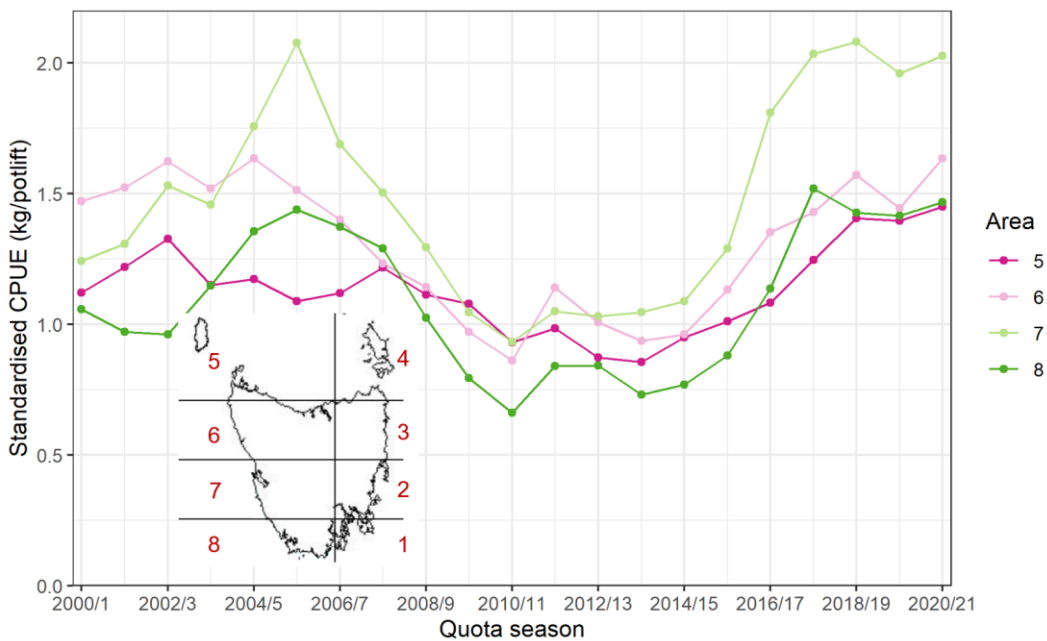


Figure 3: Standardised CPUE in the Western stock assessment areas

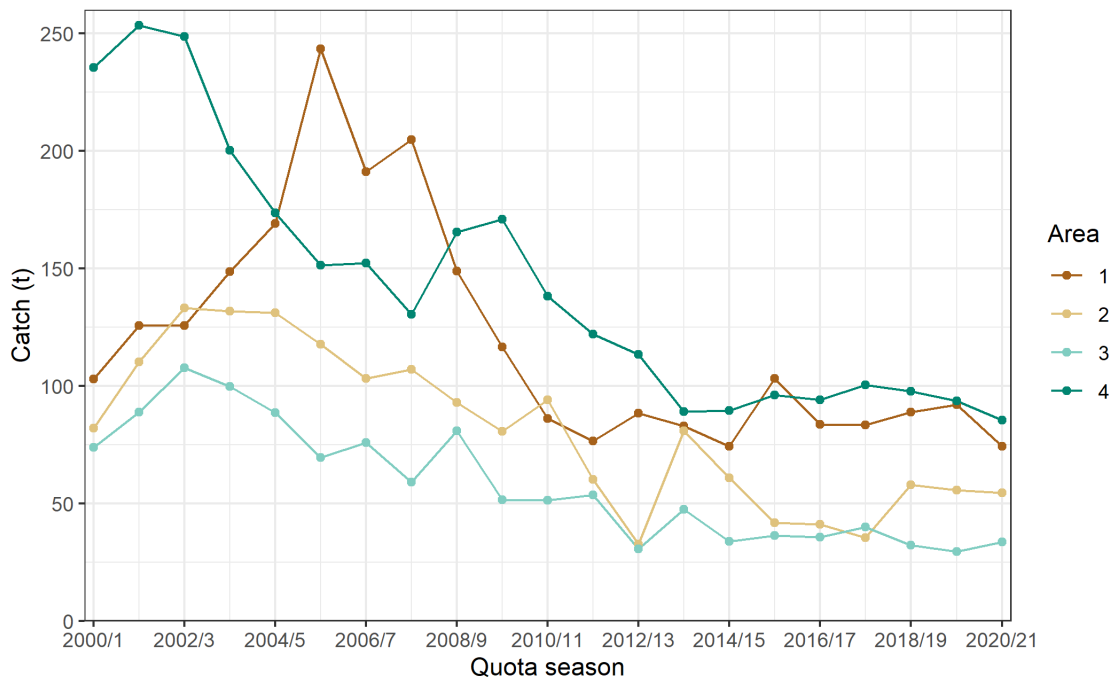


Figure 4: Commercial catch in the Eastern stock assessment areas

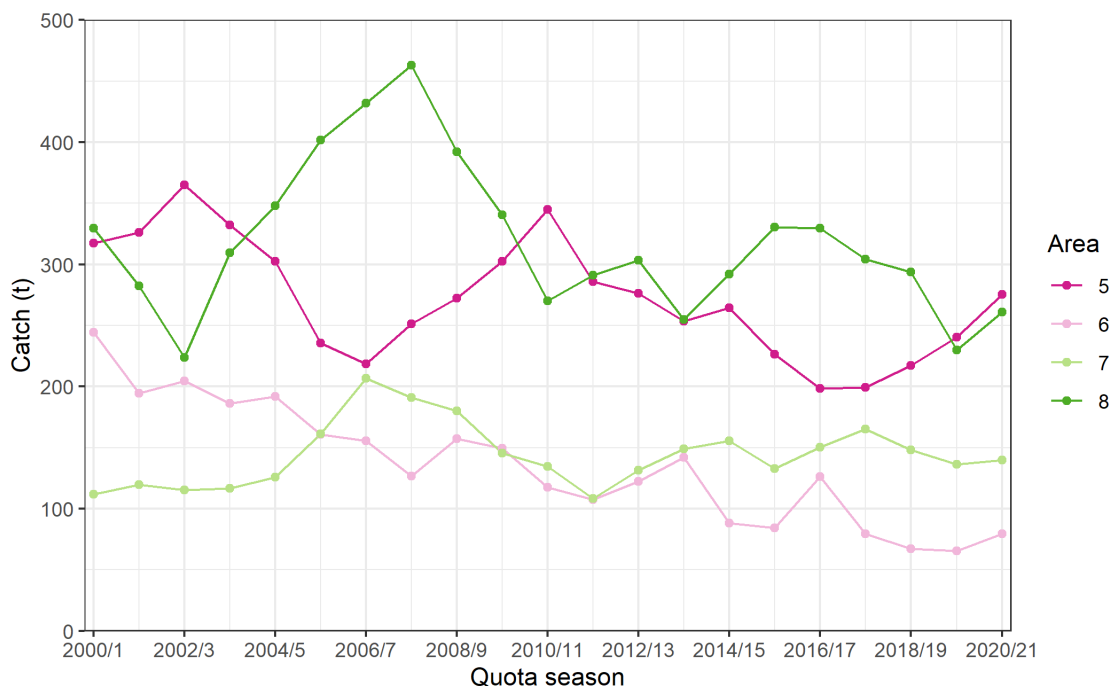


Figure 5: Commercial catch in the Western stock assessment areas

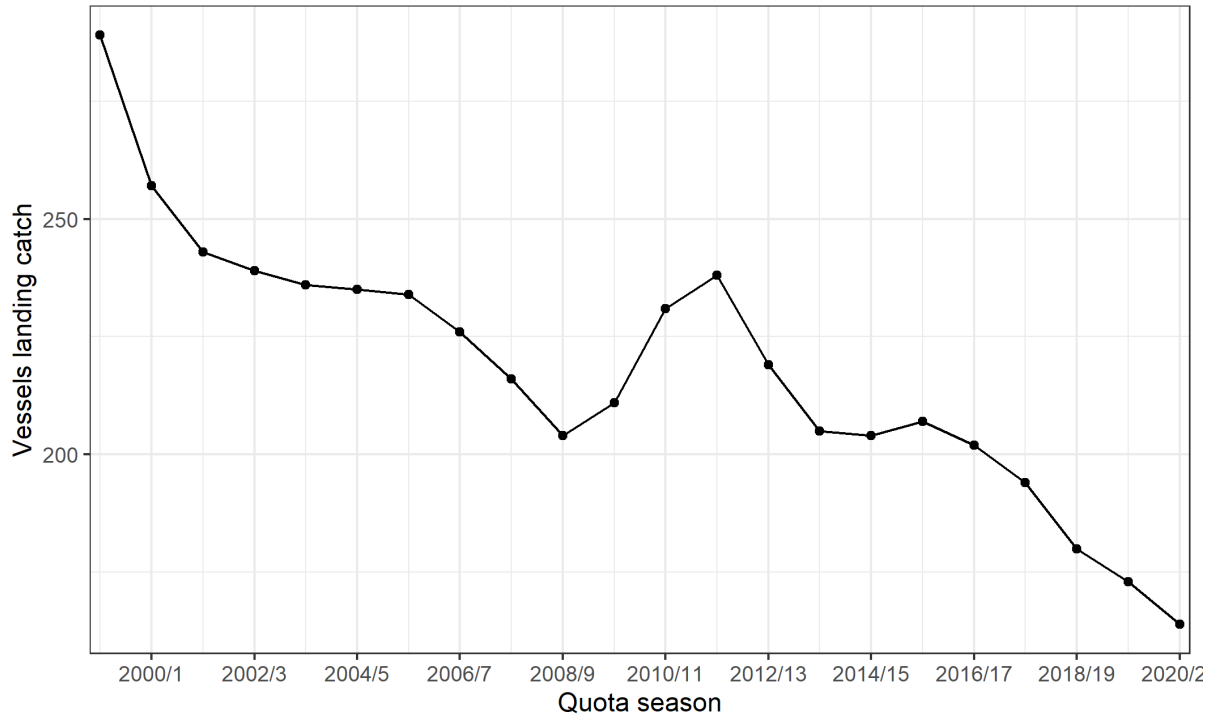


Figure 6: Number of vessels landing catch in each quota season.

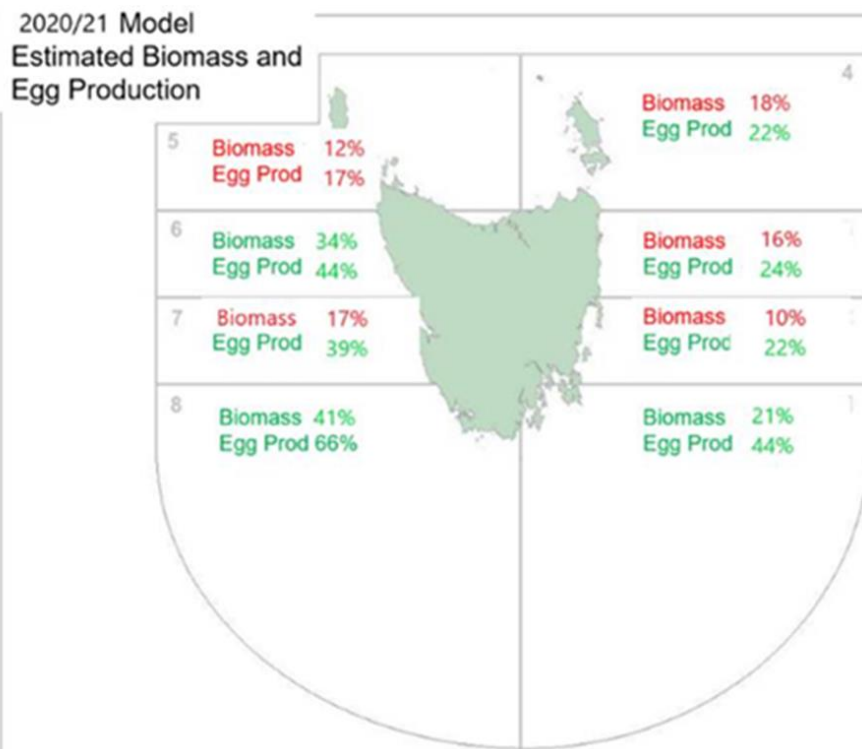


Figure 7: Egg production and biomass (>60mm) compared to the unfished levels by stock assessment area. Note that small fluctuations from year to year due to model uncertainty are expected and small changes from the 2019/20 assessment are not necessarily indicative of trends in the stock. For more detail the individual area trajectories need to be considered in full.

Table 1. Evaluation of biological reference points. The required levels are relative to the estimated unfished stock. For example, the egg production limit requires egg production to remain above 30% of the level estimated to have been produced prior to the commencement of fishing.

Statewide Reference point	Level	Year	Probability	
			Required	Achieved
Egg Production Limit	30%	2021	90	100
Virgin Biomass Limit	20%	2021	90	100
Virgin Biomass Target	25%	2026	70	64-66

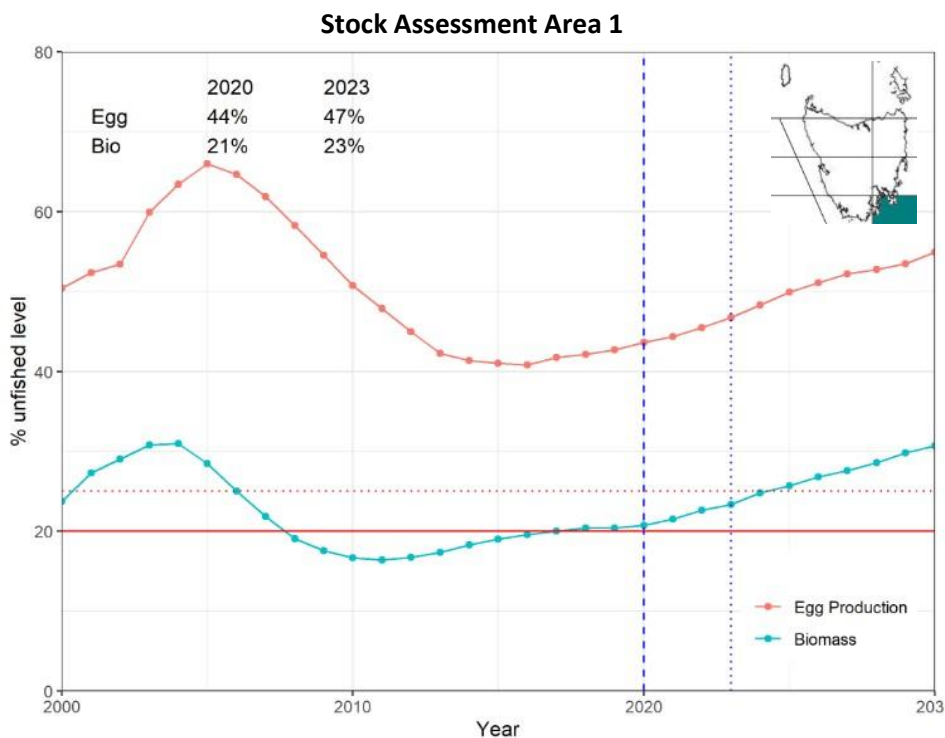


Figure 8: Biomass and egg production compared to unfished levels in area 1.

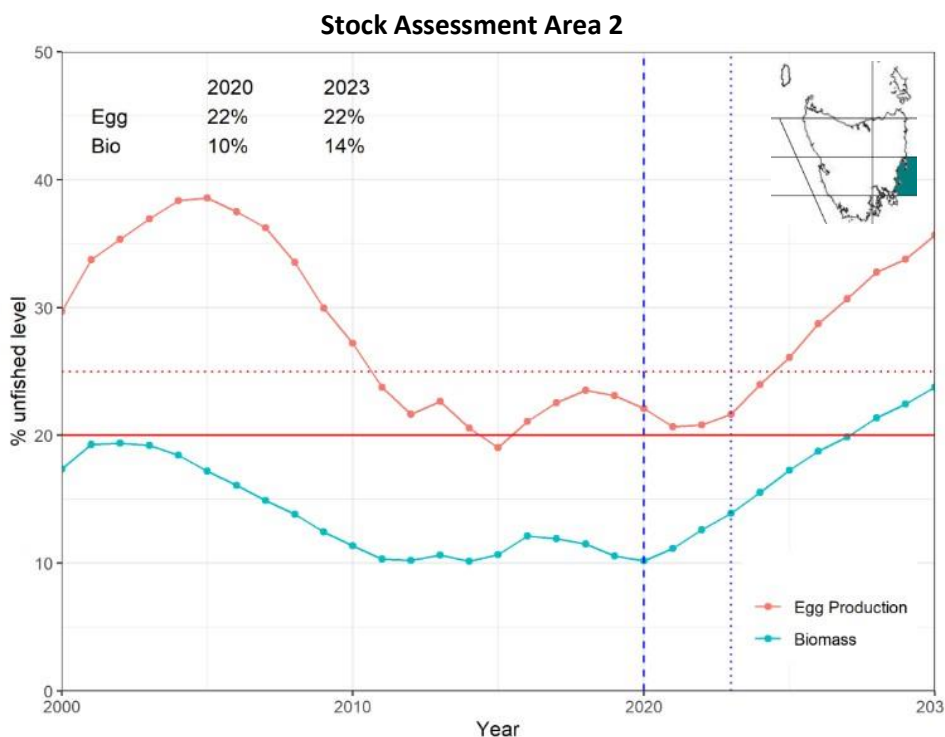


Figure 9: Biomass and egg production compared to unfished levels in area 2.

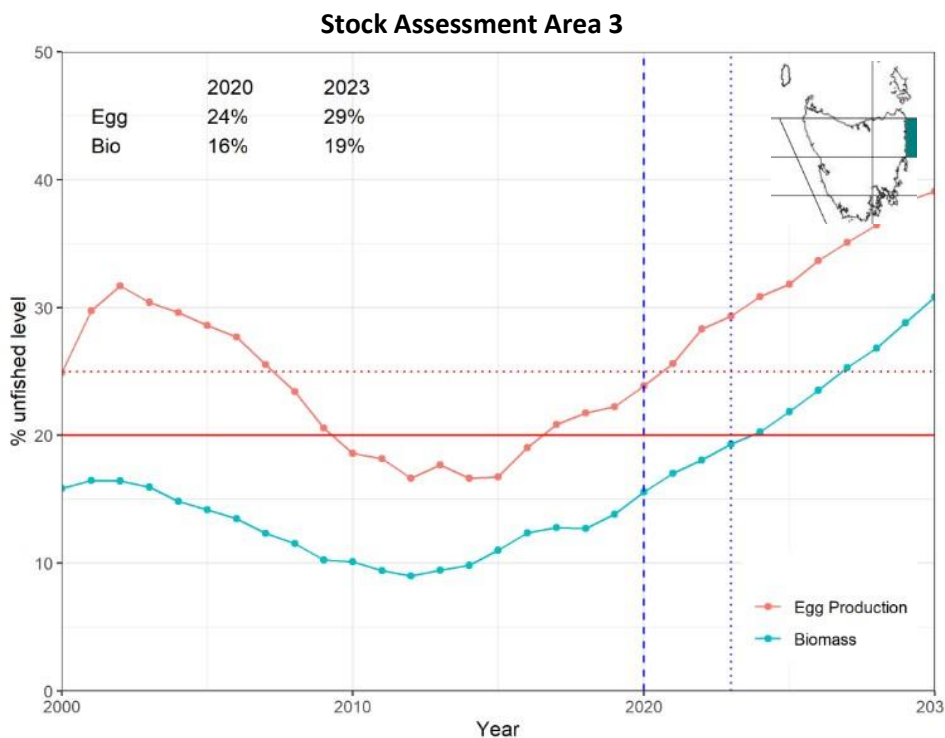


Figure 10: Biomass and egg production compared to unfished levels in area 3.

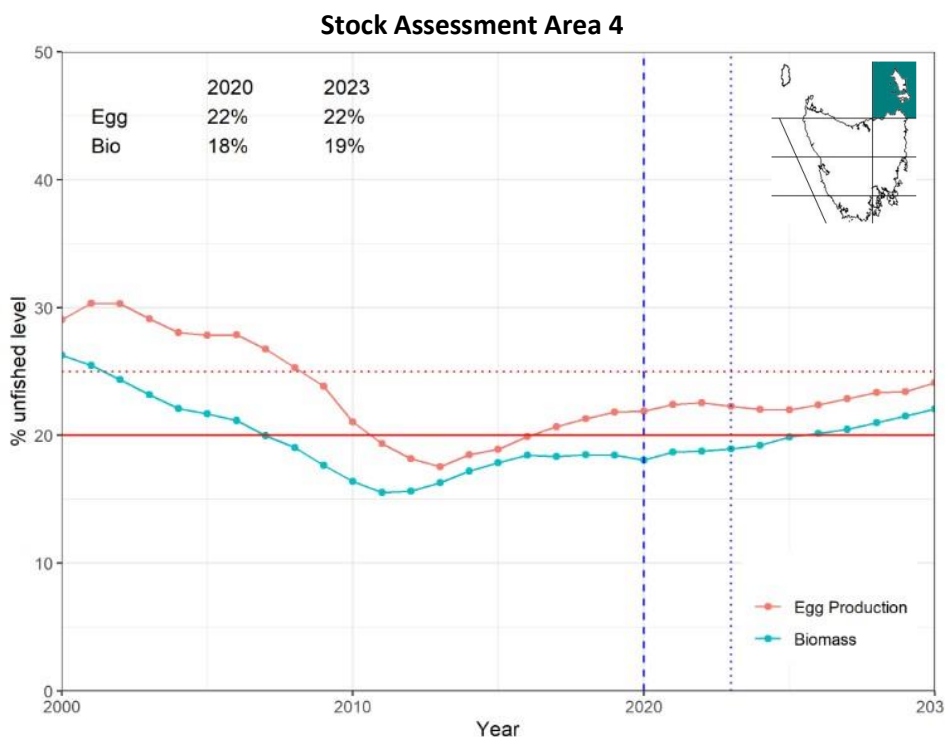


Figure 11: Biomass and egg production compared to unfished levels in area 4.

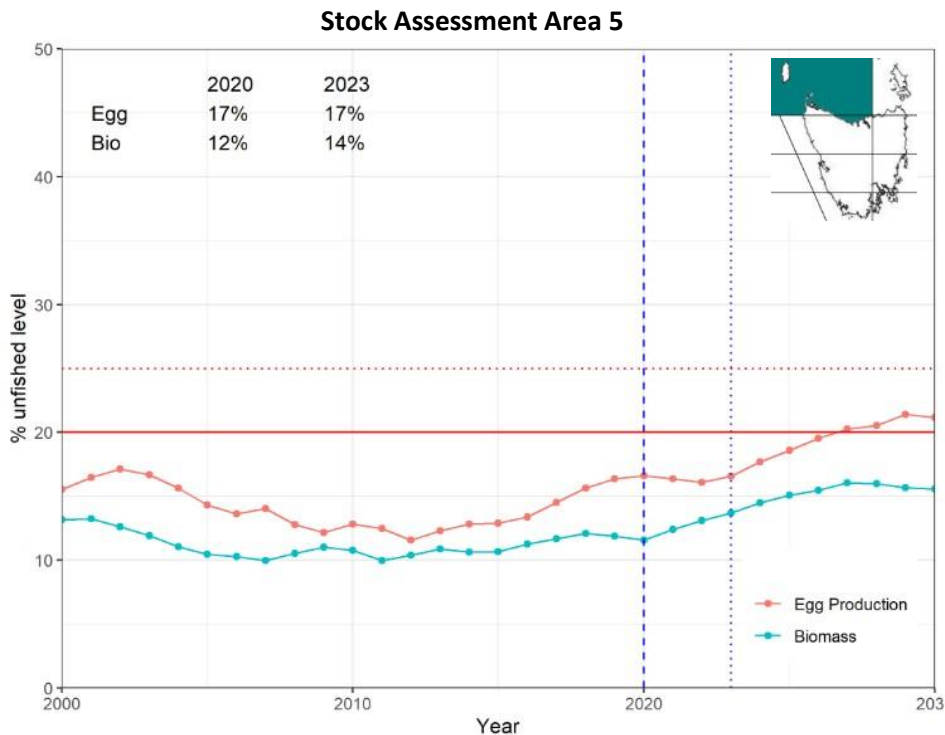


Figure 12: Biomass and egg production compared to unfished levels in area 5.

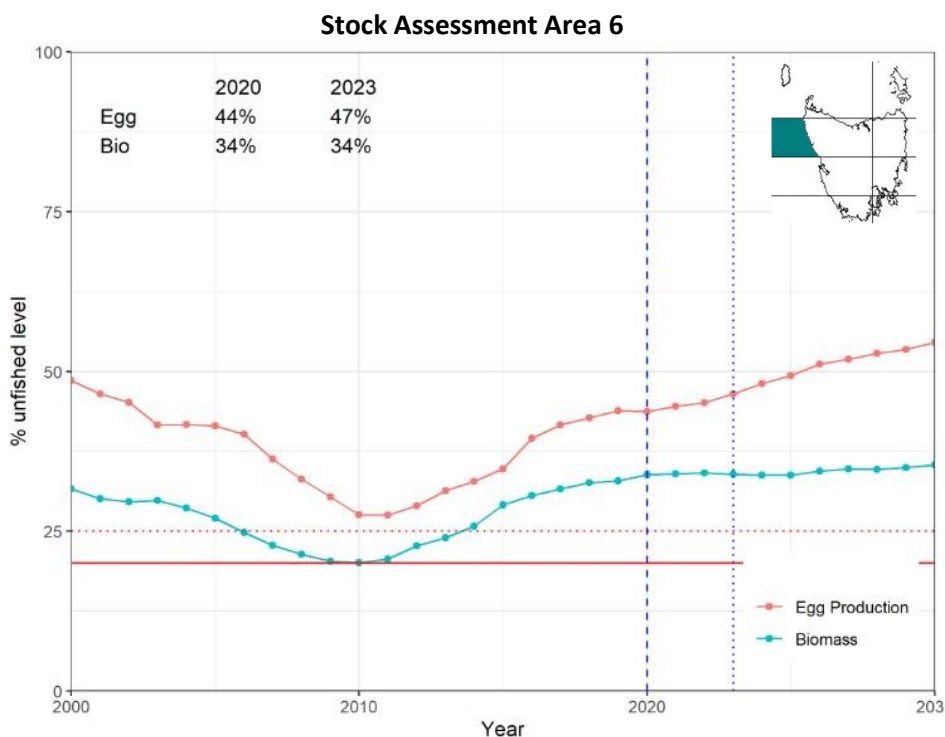


Figure 13: Biomass and egg production compared to unfished levels in area 6.

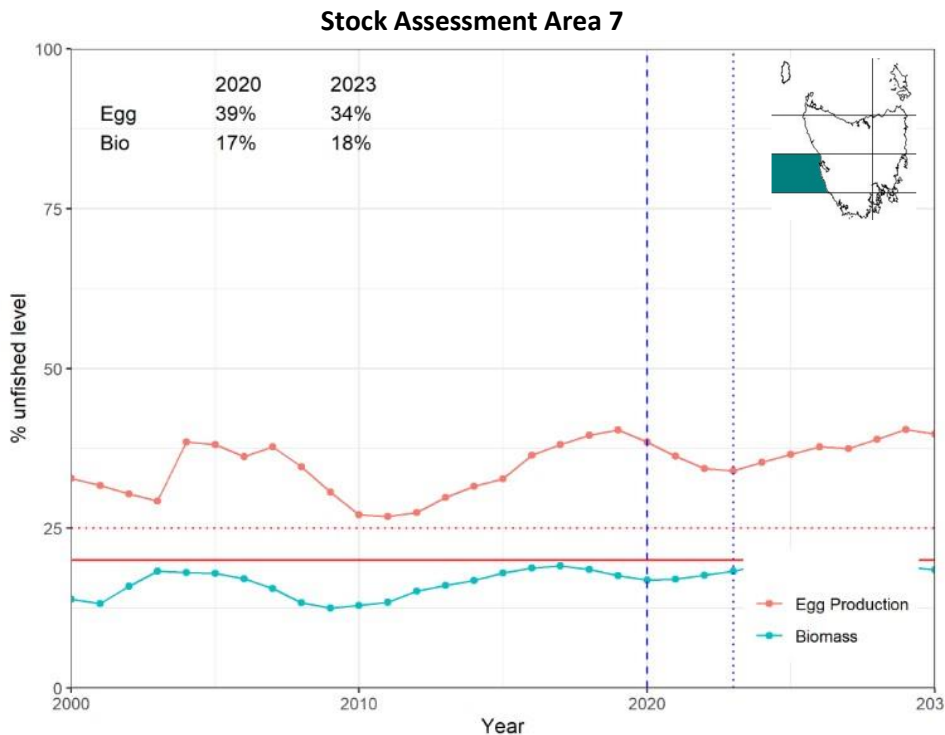


Figure 14: Biomass and egg production compared to unfished levels in area 7.

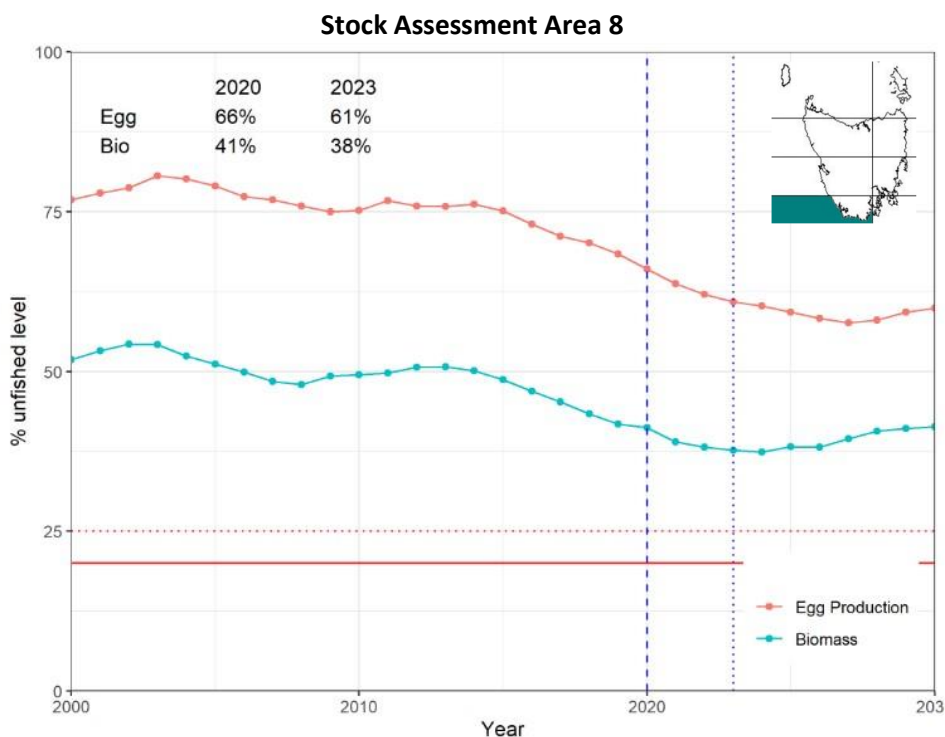


Figure 15: Biomass and egg production compared to unfished levels in area 8.

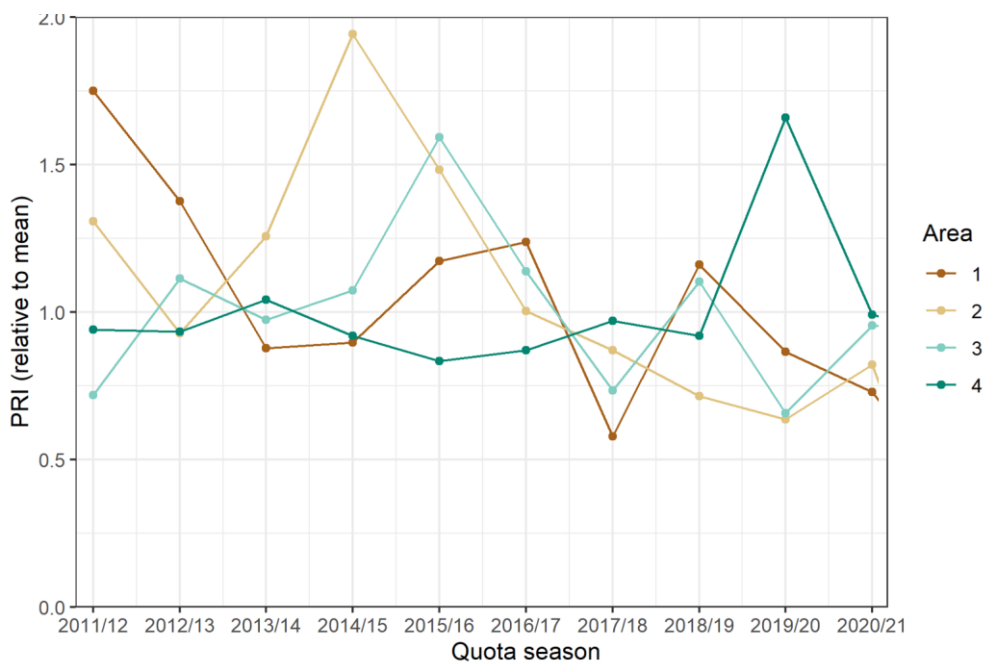


Figure 16: Index for number of lobsters <100mm per potlift from research pot data for the Eastern stock assessment areas. A value of 1 indicates the long term mean.

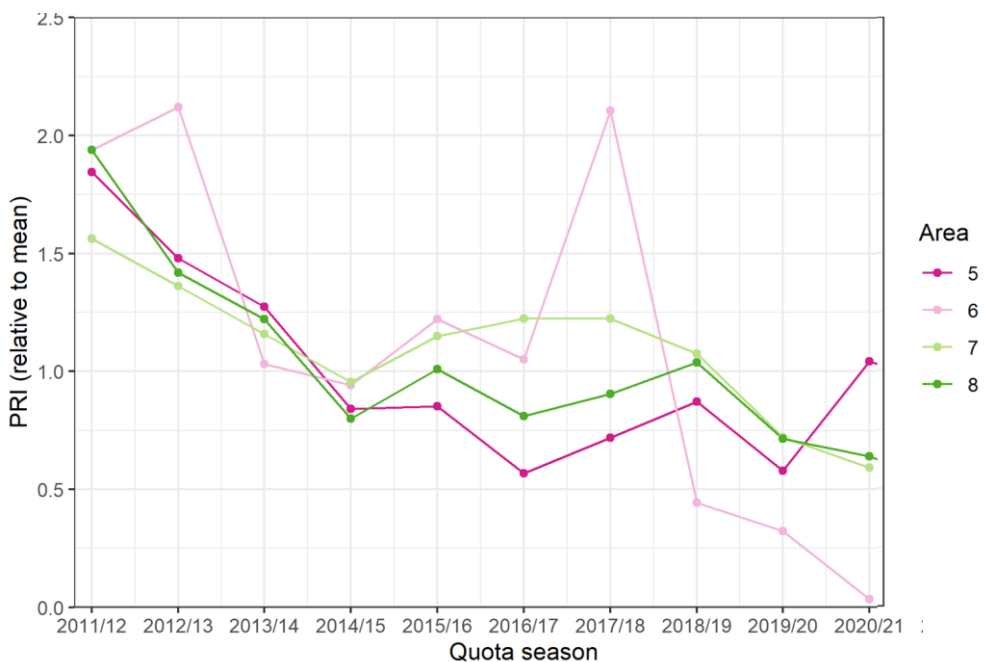


Figure 17: Index for number of lobsters <100mm per potlift from research pot data for the Western stock assessment areas. A value of 1 indicates the long term mean.

Appendix 1: Additional analyses requested by RecFAC.

To provide a better indication of the impact of different potential catch scenarios for the East Coast Stock Rebuilding Zone, the Recreational Fisheries Advisory Committee requested three additional scenarios to be considered. They are:

1. 20% Reduction: Commercial catch is reduced by 20%, recreational cap is limited at current allocation.
2. 20t over-run: The combined catch over-runs by 20t each year
3. No over-run: The current catch limit is met for both sectors.

Note that the third scenario is more optimistic from that presented in Figure 8 and Figure 9 which uses the best estimate of future recreational scenarios (which indicates that an over-run is likely).

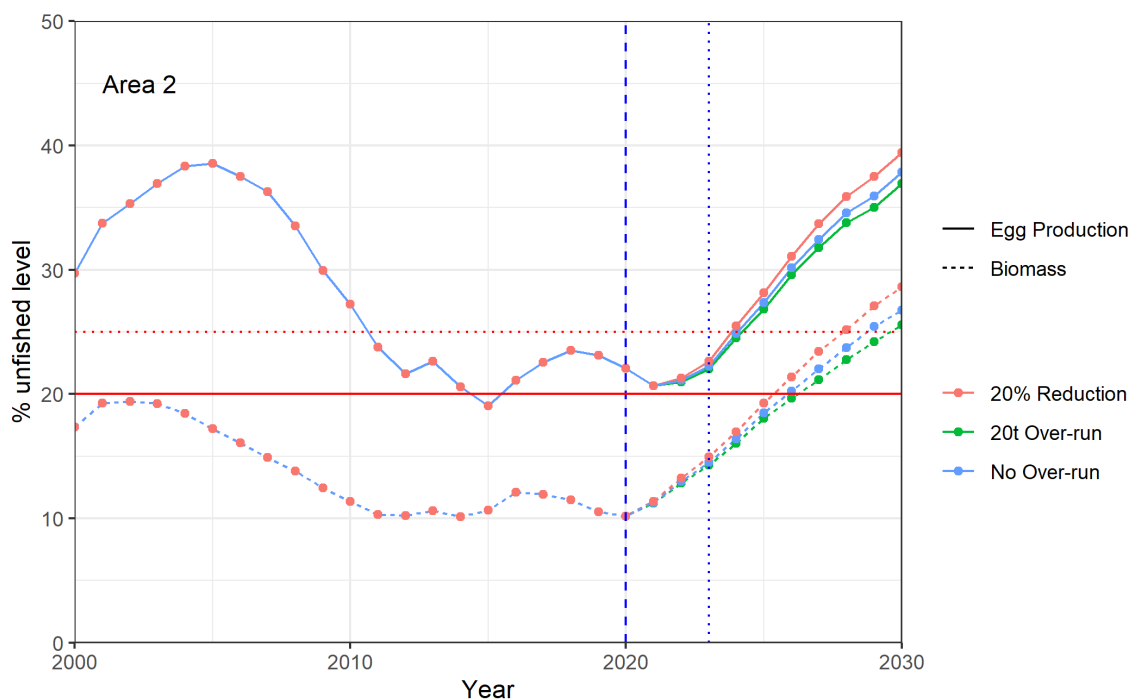


Figure 18: Biomass and egg production compared to unfished levels in area 2 for three different scenarios requested by the Crustacean Fisheries Advisory Committee.

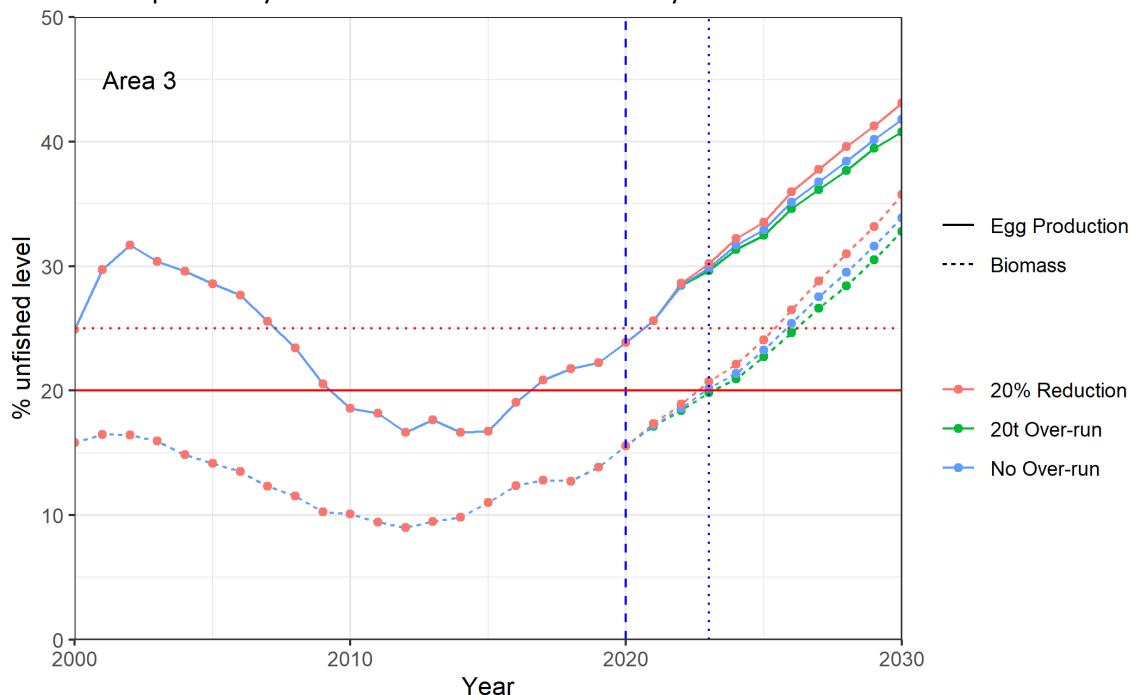


Figure 19: Biomass and egg production compared to unfished levels in area 3 for three different scenarios requested by the Crustacean Fisheries Advisory Committee.