DRAFT RECORD OF MEETING – SESSION 1

Meeting #28, 30 July 2020
Microsoft Teams

CHAIR: Ian Knuckey **MEETING COMMENCED:** 9:30am

1. PRELIMINARIES

Present	
Ian Knuckey	Chair
Toby Jeavons	Victorian Fisheries Authority (Executive Officer)
Klaas Hartmann	Institute of Marine and Antarctic Studies (IMAS)
Lawrence Moore	Recreational fishing representative
Gary Ryan	Industry Member
Wayne Dredge	Industry Member
Mark Peychers	Industry member
Ross Bromley	Industry member
Michael Burgess	VRFish
Johnathon Davey	Seafood Industry Victoria (SIV) representative
Markus Nolle	Industry member
Rohan Henry	Bunurong Land Council Aboriginal Land Corporation
Rafael Leon	Institute of Marine and Antarctic Studies (IMAS)
David Reilly	Victorian Fisheries Authority
Caleb Gardner	Institute of Marine and Antarctic Studies (IMAS)
Guests	
Nicola Sondermeyer	Atlantis Fisheries Consulting Group
Apologies	
Dallas D'Silva	Victorian Fisheries Authority
Anthony Olver	Industry member
Russel Frost	Industry member

1.1. Welcome

Ian Knuckey, as Chair, stated an Acknowledgement of Country and welcomed members to the 28th meeting of the Victorian Rock Lobster and Giant Crab Resource Assessment Group (RLRAG). Ian acknowledged the apologies and provided guidance on protocols for undertaking an online meeting.

1.2. Adoption of agenda

The agenda was adopted with an eCatch update added to the agenda under 'other business'.

1.3. Minutes and actions from last meeting

Ian noted that a final copy of the minutes of the last meeting had been circulated via email. As a matter of process, the RLRAG endorsed the minutes to record that they are a true and accurate reflection of the meeting.

Progress against the outstanding actions were summarised as follows:

- Recreational rock lobster tagging – To be discussed in Agenda Item 2.2;
- Transition to electronic reporting– 6 fishers in each zone undertaking complementary reporting to provide opportunity for comparison of paper-based and electronic data collection. IVR (phone system reporting system) disabled from 1 July therefore maintaining two independent reporting processes was not possible. An update on this analysis will be provided at the next RLRAG;
- Puerulus collection program future direction – To be discussed in Agenda Item 3;
- Giant Crab input controls – To be discussed in Agenda Item 5;
- Research projects – Klaas has contacted Katie Cresswell who has advised that the research project has been funded and will include investigation of South Easterly weather patterns and their impact on productivity in Vic. Project application researching impact of larger lobster keeping smaller lobster from pots has been submitted to FRDC;
- Egg production calculation – Recalculation completed and to be discussed in Agenda Item 5.1. SA Egg production measures have been addressed through the new Management Plan/Harvest Strategy for the Southern Zone. Implemented egg production rebuild target of 20% by 2035 and HS designed to achieve this rebuild. SA has advised that robust testing has taken place including overly pessimistic recruitment scenarios indicating that egg production rebuild target of 20% by 2035 is robust. Harvest Strategy includes 'lowest rebuild trajectory points' for each year that trigger management review if not met. Egg production now at approximately 12-13%. RLRAG members expressed concern that SA are still not taking egg production seriously as the target is very low and accepting egg production levels below the bench-mark for many years. Ross noted the implications for SAFs and risk to export approval. Caleb noted that technically SA should account for greater weighting when egg production is averaged across the jurisdictions due to their large contribution to productivity. Ian noted further requirement to progress traceability within each jurisdiction;
- CPUE analysis – To be discussed in Agenda item 5;
- Development of MEY target – To be discussed in agenda Item 2.3;
- Harvest Strategy – The Western Zone exploitation rate has been reduced to 26.3%, remaining actions to be covered in Agenda item 5;
- Review of Harvest Strategy – Outstanding actions to be completed through review of Harvest Strategy over next 12 months;
- Administration – Toby has scheduled the next two RLRAGS on 22 October 2020 and 23 February 2021;
- Model development – To be addressed in Agenda Item 4;
- Stock Assessment – Actions to be addressed in agenda Item 6;
- LML consideration – To be undertaken as part of Harvest Strategy review;
- Eastern Zone PRI – To be discussed in Agenda Item 6 and Agenda Item 2;

The following actions remained outstanding:

- Undertake a review of industry code of practice – Markus Nolle;
- Biotoxin Management – Markus to take DRAFT Biotoxin Management Plan to SRL in coming weeks and also project proposal around traceability and provenance;
- Reef reseeding – Markus advised that funding has been redirected to develop a rock lobster sub-committee under SIV including an industry led management advisory committee;
- Model different levels of PRI and likelihood of breeching reference point – Klaas Hartmann;
- Strategic plan for future tag recapture program – Klaas Hartmann;

- Indigenous participation – Toby has followed up discussions with Rohan and Mike Gilby around project scope for 2020 to engage indigenous sector in telling the story of Southern Rock Lobster;
- Increase to LML in the Eastern Zone to be considered with respect to spatial and price components with MEY development;
- Recreational tagging App enhancement including recreational 'relative undersize abundance' measure – Toby;
- SRL – Markus to raise the MEZO project, biotoxin monitoring, whale entanglement and Aqui-S at the upcoming SRL meeting;

All other actions arising from Meeting 28 are outlined in the attached 'Actions List' circulated with the meeting minutes.

2. Management update

2.1 Rock lobster tagging program

Toby provided an update on the recreational rock lobster tagging program and future direction. Toby acknowledged that catches will be down for the current season due to COVID/bushfires/ adverse weather, which have all limited fishing opportunities. A season report will be compiled as part of stock assessment.

IMAS independent review has started. This includes a literature review of global approaches using Apps for recreational catch estimates, an initial phone survey to inform the review of program and an angler diary program for this coming season to compare recreational catch estimate methods.

Arrangements have been put in place for 2020/21 season, with the only change being a reduction to possession limit from 20 to 10, to reduce the excessive amount of tags sent out. This provides for a 12-month transition period whilst the program is refined and the new App is developed.

A steering committee is being put together with the first meeting to be held on 13 August 2020. The steering committee will consist of VFA management, Education & Enforcement, VRFish and their dive reference group members. The scoping of future requirements and improvements will be completed by October 2020 and will be informed by the IMAS phone survey and work undertaken by the steering committee. This work will include exploring the concept of adopting a digital tag and expanded App features and improved usability. Development of the new App to commence in January with new program ready to roll out on 1 July 2021.

2.2 VMS/eCatch implementation

Toby provided an update on two big reforms that launched on 1 July in addition to the regulation review being the transition to electronic reporting and mandatory requirement for VMS. Both are now up and running with widescale adoption and positive feedback. Further enhancements are underway with eCatch and will continue to be developed and new features provided. A comparative reporting program has been implemented to inform analysis of potential bias with transition to electronic reporting.

Toby also noted that there has been a number of recent wildlife interactions and a meeting is scheduled for a few weeks' time to review previous actions and discuss the interactions that have occurred this season.

2.2 Refining Management plan actions and objectives

At the last meeting in March, the RLRAG commenced discussion on pursuing a Maximum Economic Yield (MEY) target for the stocks as outlined in the objectives and actions of the current Rock Lobster Management Plan. Three recommendations were put forward by the RLRAG:

1) Establish a working group outside of, but in close partnership, with the RLRAG to develop targets that inform pursuing objectives related to social, economic and sustainability aspects of the fishery;
2) Bring forward a review of the Management Plan to commence as soon as possible; and,
3) Alter the contract with IMAs to broaden the deliverable related to pursuing MEY to include multiple objectives;

This work is scheduled to commence in the second half of 2020 and into 2021 with a working group to be put together to review the Management Plan. IMAS will support the development of multiple targets in broadening their contract deliverables.

Toby noted that it is timely to review objectives and actions achieved under the current Management Plan and will circulate a progress table out of session for review.

Action:

- Toby will circulate a Management Plan progress table out of session for review

3. MONITORING PROGRAM – Puerulus collection future direction

The puerulus collection sites in Port Campbell are becoming logistically difficult to service which has triggered a review of the ongoing value of the program and to assess future options. Options may include reallocation of funds to enhance other areas of the monitoring program, seeking alternative puerulus collection methods and considering relocation to more accessible sites. David Reilly was seeking recommendation from the RLRAG about the future direction with puerulus monitoring in Victoria.

David provided background as to the puerulus monitoring program in Victoria. Crevice collectors have been located at a number of sites across the State that were historically serviced by a commercial dive team each month on the full moon. There have been 12 – 13 sites trialled since the mid 90's. Apollo bay harbour (commenced 1994) and Port Campbell (since 2000) are the two remaining sites.

The Cost of the program is approximately $15k per annum. In 2018 the servicing schedule was reduced from monthly to only 5 times/year.

The VFA is again reviewing the puerulus collection program for two reason. 1) The future of the Port Campbell site is unknown. The existing contractor is no longer able to service and there is difficulty in finding a new team to continue servicing. 2) Data from the program is not used in the current stock assessment. David noted the Northern Zone of South Australia is the only SRL jurisdiction currently using puerulus data in assessment.

David presented the trends between the Port Campbell site and the Apollo Bay site that show positive correlation. David compared modelled Western Zone recruitment in comparison to puerulus trends that again demonstrated positive R correlation. The trend associated with a 1-year lag shows the strongest correlation between puerulus settlement and model projected recruitment. Caleb noted that previous studies showed growth to 35 – 40mm carapace length over 12 months so this does not necessarily align with expectations and the 1 year time lag to 60mm. Klaas noted that this may be due to differences in the months used for defining a year between the puerulus settlement and model based recruitment index. Klaas also noted that the high degree of correlation indicates that the puerulus settlement index could be a useful additional data source for the model.

David provided a comparison between Victoria /South Australia and Tasmania puerulus monitoring that demonstrated correlation representing that the program is picking up a signal between the jurisdictions.

Ross questioned the very low number of puerulus collected per month and if this could be considered representative. Dave confirmed that we do have very low settlement numbers in Victoria and Caleb clarified that somehow even at these very low levels they still appear to show similar trends and remarkably they do seem to be representative.

Dave provided three options for the RLRAG to consider going forward:

1) **Continue puerulus monitoring at Apollo Bay site only – similarity between Port C and Apollo Bay suggests we could do this. Consider incorporating settlement data into stock assessment into future;**
2) **Maintain current sampling regime at current sites. Likely to be costly going forward;**
3) **Discontinue puerulus sampling at both sites. Focus on improving LF data through voluntary pot sampling program and on-board observer program.**

Caleb noted that the cost of running the program is much higher in Tasmania and that the previous arrangement with the previous contractor that Victoria had was very cost effective. Members suggested exploring interest among other sectors to assist with undertaking expanded shore-based monitoring such as local schools and Deakin University in Warrnambool. David noted that consistency of servicing and commitment to the process can be an issue and that servicing from commercial vessels may also be considered.

Ross noted that puerulus settlement is not currently used in the stock assessment process. Klaas clarified that correlation has not previously been as strong, therefore has not been used. This appears to have changed over previous years and may be incorporated into stock assessment model. Further consideration as to how this could be incorporated as part of Harvest Strategy review.

Ian summarised the sentiment of the RLRAG in support of maintaining the program to some extent. The RLRAG does not support continuing the Port Campbell site and would prefer to look at other options into the future to more effectively/efficiently monitor puerulus settlement. The RLRAG supports maintaining Apollo Bay as currently stands whilst transition occurs. It was suggested that local schools could be involved in the puerulus monitoring as part of an education program and that this would also benefit industry by reducing monitoring costs.

Action:

- **David/VFA/Industry to explore engaging other sectors to be part of the monitoring program and the potential of expanding further to other locations;**
- **David to review alternative collection methods**
- **David to report on feasibility of maintaining Port Campbell site in the short term**

4. Model development

Klaas presented an update on model development following hand over of the new model 'MELBA' developed by MEZO late last year.

Klaas provided context for the requirement to develop a new model. The existing 'ROCK' model has all the required core features, however as enhancements have occurred they have been poorly documented, become very complicated, difficult to build and to run with very limited operators who are able to use the model. This may limit options for scientific stock assessment providers in the future. Therefore, shifting to a new model is desirable.

The MEZO model is well documented, the stock assessment component has been run in parallel with the results virtually identical, however the model has only essential features for Victoria built to date. Klaas suggested that the Harvest Strategy evaluation and projection functioning components have been poorly documented and require expert coding skills to run. Correctly specifying recruitment in MELBA was challenging and once corrected, provided incorrect projections. This led to MELBA providing overly optimistic future biomass estimate scenarios.

To adopt the new model 'MELBA' the following steps are required:

1. **Review and document input parameters;**
2. **Revise specification method of recruitment to identify and resolve bugs;**
3. **Undertake new comparison of MELBA/ROCK projection comparison;**
4. **Invest further to expand scenario testing features**

Klaas provided an update on progress made by Western Rock Lobster (WRL) in development of the Australian lobster model. The model development will be fully funded by WRL, include a comprehensive feature set, will be adopted in Tasmania and will have an active development community going forward. WRL are happy to share the new model however would like collaboration in research projects, contribution to user community and develop skills so other states can provide peer review. WRL model still in development but likely to be ready by 2021. However, the model is not likely to get similarity of matching model outputs with ROCK/MELBA and further analysis will be required.

Klaas provided the following recommendations:

1) Commit to adopting new framework;

2) Determine which model to adopt.

Ian captured the full support of the RLRAG that in the long term a new model is required. Ian then opened up the discussion for members to provide comment. Markus suggested that the MELBA model is not fit for purpose and is not satisfied with the product that has been delivered. Clarification was provided to Markus that all modelling programs have some level of bugs and require ongoing servicing. Members noted a need to understand the cost of fixing MELBA in comparison to adopting the new WRL model, which appears to have clear benefits. Klaas suggested that the transition to adopting the WRL model would only include costs associated with adapting to Victoria's need and further analyses of outputs against those provided by current model. In comparison, the MELBA model may require a few weeks of work to rectify bugs and undertake further comprehensive testing.

Members expressed the need for the WRL model to be developed further before making a decision about adopting it, and Klaas suggested that it may be possible to run all 3 models simultaneously for this year's stock assessment process. Caleb noted that when the MELBA model was proposed, an existing user community was already established, however the decision was made for Victoria to go alone and not capture these benefits. IMAS' involvement in Victoria's assessment provides large in-kind contribution as there is benefit for both jurisdictions. Caleb queried which model has enhanced scenario testing providing the ability for timely consideration for managers and stakeholders during meetings. Klaas suggested that MELBA is much faster and management scenarios could be run in a reasonable time frame, however the WRL model will include much broader scenario testing options.

Ian summarised discussion held by members in that there is disappointment with the expenditure and the product delivered with regard to MELBA. At a general level, members agree to moving to a more holistic process with complementary measures in place and joining forces with larger movement. Members are tending towards adopting the national WRL model with decision and consensus to be made in early 2021 (following WRL model progressing further) as to the final way ahead.

Klaas clarified that SA have not been previously keen to get on board development of the new WRL model. This is largely due to Rick McGarvey having a QR model that he prefers and a harvest strategy based around the ROCK model and reluctancy to adopt new model that may give different results. Klaas noted that the new model will provide different outputs. This will require reviewing the Harvest Strategy if adoption of the new model was considered.

Toby noted that the MEZO project has delivered a new model with matching stock assessment component that is faster, easier to operate and with updated coding and clear user instructions. Whilst there is a bug with the projection functioning, further investment to problem solve is an option. If development on the WRL model had not kicked off, Victoria would now be in a position to share MELBA and seek investment from other jurisdictions to develop further.

Action:

- **Klaas to provide further update on WRL model development as development occurs**
- **Klaas to run models simultaneously for 2019/20 Stock Assessment**
- **Decision to be made on final position on which model to adopt going forward following completion of new WRL model in 2021**

4.3 - Growth sensitivity/ temporal relationship analysis

Due to the issue with projections under MELBA, this agenda item was not able to be progressed. Klaas noted that the projection analysis that was previously completed for reef reseeding would also need to be revisited.

Action:

- **Klaas to investigate undertaking required analysis with ROCK model**

Meeting concluded 12:00pm

SESSION 2

Meeting #28, 31 July 2020
Microsoft Teams

CHAIR: Ian Knuckey **MEETING COMMENCED:** 9:30am

Present	
Ian Knuckey	Chair
Toby Jeavons	Victorian Fisheries Authority (Executive Officer)
Klaas Hartmann	Institute of Marine and Antarctic Studies (IMAS)
Lawrence Moore	Recreational fishing representative
Gary Ryan	Industry Member
Wayne Dredge	Industry Member
Mark Peychers	Industry member
Ross Bromley	Industry member
Johnathon Davey	Seafood Industry Victoria (SIV) representative
Rohan Henry	Bunurong Land Council Aboriginal Land Corporation
Rafael Leon	Institute of Marine and Antarctic Studies (IMAS)
David Reilly	Victorian Fisheries Authority
Caleb Gardner	Institute of Marine and Antarctic Studies (IMAS)
Dallas D'Silva	Victorian Fisheries Authority
Guests	
Nicola Sondermayer	Atlantis Fisheries Consulting Group
Justin Rizarri	Deakin University
Apologies	
Anthony Olver	Industry member
Russel Frost	Industry member
Markus Nolle	Industry member
Michael Burgess	VRFish

Ian Knuckey, as Chair, welcomed members to the second session of the 28th meeting of the Victorian Rock Lobster and Giant Crab Resource Assessment Group (RLRAG). Ian acknowledged the apologies and adopted the Agenda with no other items added.

5. Harvest strategy evaluation

5.1 – Recalculation of egg production

Klaas presented a discussion on recalculation of model estimated egg production. Klaas clarified that the model estimated egg production must be above the limit reference point (LRP) of 20% of unfished biomass as per the Harvest strategy. 20% is the lowest bar that can be set however precautionary management may dictate a higher level due to recruitment failure of recent years and low puerulus settlement in the last decade. Ian clarified that 20% is standard across many fisheries and Caleb noted that whilst it is common practice, there are many fisheries now adopting reference points of 25% or 30%. Klaas noted that there may be an opportunity to lock in a higher reference

point at a time when it is unlikely that we will drop below a higher reference point, and this should be considered going forward.

Currently there is a fixed level of egg production that was calculated as the best estimate for 20% of the unfished level when the limit reference point was introduced. Klaas is proposing that when new stock assessments are completed a corresponding new unfished egg production level is calculated for comparison. This will avoid any mismatch between the egg production LRP and new model estimates of egg production for that current year and is the approach is undertaken in Tasmania. Caleb noted that variation in the estimate of absolute virgin egg production will be an issue for management if the egg production is close to the LRP. This has implications for credibility when recalculating virgin egg production if the methodology changes and determines if you are above or below the LRP.

Klaas clarified that pursuing 20% LRP with 90% confidence on average should keep stock well above this LRP.

The RLRAG supported running both methodologies for 2020/21 stock assessment in parallel. Change to the new calculation method and formally adopting to be considered as component of Harvest Strategy review.

Action:

- **Klaas to run both egg production calculation methodologies for 2019/20 stock assessment**
- **Consideration of formally adopting new methodology to be considered as part of Harvest Strategy review**

5.2 – CPUE analysis – 'Not fished' areas and spatial shifts, EZ weight v Numbers

Klaas presented a paper investigating the impact of spatial shifts in effort across the fishery. The analysis considered fishing 'blocks' that had a reduction in catch versus those that had an increase in catch and their corresponding CPUE. The analysis found that fishers shifted from blocks of lower CPUE to blocks that fished with higher CPUE. The resulting impact found that when the blocks with large changes in catch rate were excluded, CPUE had increased to a lesser degree for the Western Zone and decreased to a larger degree for the Eastern Zone. Klaas summarised that shifting catch has resulted in higher standardised catch rate.

To account for this change in fishing behaviour it may be possible to review the standardisation approach, however the limited data at finer spatial levels could be an issue. This approach would also require readdressing the Harvest Strategy as standardised CPUE would no longer match the CPUE/TACC lookup table. An appropriate time for reviewing the catch rate standardisation method will be during Harvest strategy review.

Ian noted that the standardisation process currently takes these shifts into account and is best practice across fisheries. Klaas clarified that the current method for standardisation is at regional level, not at finer block scale resolution. A future path could be to look at finer spatial scales as part of Harvest Strategy review**.** This will require also determining the spatial scales that are representative of how the fleet fishes.

Action:

- **Klaas to consider including finer spatial scale resolution in CPUE standardisation process during Harvest Strategy review**
- **Klaas/Dave to determine an appropriate finer spatial scale that is representative of how the fleet fishers**

5.3 – Legal biomass ratio and PRI

The current Harvest strategy applies the same PRI level regardless of the corresponding TACC band. To address this issue options to determine a PRI level relative to the catch rate include:

1) Divide the PRI by CPUE;
2) Divide PRI by proposed TACC – Each unit of TACC increase requires a certain number of PRI to flow through into fishery

The analysis of the two approaches were found to be very similar due to changing catch rates and changing recruitment. The variability in PRI dominates the variability in catch rates and is reflective of management strategies working effectively (TACCs set appropriately). Adoption of a new index will require a revised PRI threshold. The new index would provide for an earlier increase in TACC at lower bands, however may also result in greater industry support for conservative TACC reductions.

Klaas clarified that these decisions initially kicked off from industry concerned with taking TACC reductions at risk they could not receive future increases due to not satisfying PRI rule. Toby added for context that the current EZ PRI is at 0.08 and reference point of 0.32 so a long way to go before we are at the threshold. Members noted concern that lowering the bar with a sliding scale is not desirable, particularly given the current egg production concerns. Ian suggested that a concept may be to adopt a sliding scale above a threshold at the higher end of the TACC table.

Action:
- **Klaas to consider including concept of a sliding PRI scale (including above a threshold on the CPUE/TACC table) as part of the Harvest Strategy review**

5.4 – CPUE in numbers

Klaas explored comparison of CPUE calculated by weight and by numbers. Calculations using the numbers of lobster instead of weight resulted in a less pronounced increase in the Western Zone and a more pronounced decrease in the Eastern Zone. Calculations using weight as the indicator of legal biomass is the most appropriate for the TACC and best fit for the stock assessment. However, the HS does not use mean lobster size or consider impacts on productivity.

The model also takes into account weights, numbers and size of lobster. Caleb noted that the analysis shows an increase in larger animals, but less of them. Given that the TACC is set in tonnage, the standardised catch rate in weight is the best proxy for biomass and effectively implements exploitation rate. The lack of recruitment and low PRI are a separate concern and reflected through other measures. Wayne noted that average weight right across the zone has increased not just from individual fishers targeting larger fishers.

Ian summarised the collective discussion of the RLRAG in that weight remains the most representative indicator, however it is important to keep the changes in numbers and divergence between measures at hand. The changes in numbers and weight is what you would expect in a fishery with low recruitment.

Action:
- **Klaas to present calculations of CPUE by weight and CPUE by numbers for consideration at stock assessment RLRAG**

6. Industry data analysis

6.1 – Eastern Zone 'industry champions' undersize data analysis

Klaas presented an analysis of 'industry champions' undersize logbook data. Klaas clarified that a little bit of data from a large number of vessels is better than a lot of data from a smaller number of fishers, however this is underpinned by the data being reliable. Undersize logbook data has been known to have data quality issues, hence industry has identified 'champions' who accurately complete undersize logbook data.

The analysis showed that for the Western Zone the 'industry champions' data showed a greater correlation with the PRI in comparison in the broader logbook data. For the Eastern Zone, the correlation with PRI increased slightly with industry champions data in comparison to wider logbooks, however to a lesser degree between the two data sets in the Eastern Zone. Klaas recommended that the voluntary data collection program continue to be expanded and that both indices should be reviewed as part of the stock assessment. However, logbook data may still be considered to have too many issues to include formally in the assessment document.

Ian summarised the discussion among members in that there is benefit moving forward for industry in pursuing 'industry champions' data. Caleb noted that the process of identifying industry champions needs to be thoroughly considered. It is also important to consider that fishers who are willing to participate in voluntary data collection are collecting data at the scale that it is used and streamline as much as possible.

Discussion was held on maintaining an appropriate level of data that fishers are mandated to collect. Data from fewer people that is of higher quality is preferential to larger amounts of data that is less reliable. RLRAG members were supportive of further investigation into finding the right balance between mandated data requirements and reliability/overlap with the voluntary data collection program. However, if mandated data collection requirements were reduced, industry would be required to maintain a level data collection before it would require funding.

Action:

- **David and Toby to consider data collection requirements that are mandated/overlap with the voluntary data collection program and be presented at next RLRAG**

6.2 – Fishing power analysis – 3D mapping

Klaas undertook an analysis of fishers who had self-nominated as using 3D mapping. Some fishers had changed vessel simultaneously as they adopted 3D mapping, as such their data was not statistically significant and not included in the analysis. For the remaining fishers (one in each zone) the change in CPUE due to adoption of 3D mapping was not found to be statistically significant.

Overall, the analysis was limited by sample size and natural variability. The impact on CPUE is a second order effect and likely to have impact on the standardised CPUE. The outcome aligns with anecdotal information in that 3D mapping improves the efficiency of fishers in setting their gear, although has had limited impact on their CPUE.

Gary noted that it is no coincidence that in any zone the fishers with the best catch rates are adopters of 3D mapping. Klaas suggested that on a day to day basis this may not have a big impact on catch rate. Gary commented that he is confident that the mapping significantly improves the ability to set pots to maximise catch. Caleb noted that a number of factors add up to improvements in technology and operating efficiency. Caleb suggested that whilst we don't know the exact impact of technology improvements on catch rates and may not be able to determine this, the RLRAG could consider including a fishing power increase per year as part of the stock assessment. Ian commented that the Northern Prawn Fishery uses a 1-2% improvement index each year over the past 30 years. Klaas noted that some fishing power is accounted for through standardisation at the vessel change level.

Action:

- **RLRAG to consider adopting a standard efficiency improvement factor over time as part of Harvest Strategy review.**
- **Consider analysis between adopters of technology over time versus fishers that have not adopted technology.**

7. Giant Crab Harvest Strategy development

Justin Rizzari presented progress in reviewing the giant crab fishery management plan and harvest strategy. Justin provided background on the current management plan that was declared in 2010 and slated to have a review undertaken after 5 years. The Harvest Strategy does not provide any guidance in increasing TACC or reviewing input controls. The limit reference point was based on the mean catch rate between 98/99 to 2000/2001 (Lowest point that fishery has rebounded from). Limit and trigger reference points are defined but there is no mechanism for increases in TACC, only guidance in considering decreases. The existing reference points were determined during a period in which the fishery operated significantly differently.

Justin presented a tiered Harvest strategy approach whereby the provision of additional data provides for the ability of TACC increases and consideration of input controls. As the levels of the table are progressed, the investment in data collection increases, as does the data available to assess the fishery, thereby providing increased options for management. At the highest level this would include a stratified depth survey, fisher dependent data and stock assessment model.

Justin acknowledged that the details of the table are to be further refined however looking for endorsement of the approach to developing a new harvest strategy. This includes:

1) **Adoption of tiered approach;**
2) **Review of rules underpinning harvest strategy – Includes reviewing meta rules, terminology of trigger/limit reference points;**
3) **Updating the CPUE standardisation approach including formally incorporating uncertainty around soak times;**
4) **Reviewing limit reference point and updating to a more contemporary reference period.**

Anthony noted this is a sensible approach and had problems with what has been outlined and looks forward to contributing to further discussions. Ian noted that industry is empowered to make the decision as to level of investment and direction of the fishery under the tiered approach. Klaas clarified that the values currently included for reference points do not match current fishing practices and this requires updating.

The RLRAG endorsed adopting a tiered approach as it puts the industry in a position where they have the decision to invest in further research. Harvest strategy should still incorporate paths for TACC increase at lower levels of tiered table. Caleb noted that catch rate still provides a reasonable signal for this fishery and independent survey may not provide as much bang for buck, therefore would support the ability for TACC increase based on CPUE trends.

Members noted that the fishery appears stable, but not rebuilding. Ian questioned if the length frequency data will only be used in running the model or to form a separate indicator in decision process? Justin suggested that this can be considered as the time series is expanded and be discussed through review of Harvest Strategy.

Ian summarised that the RLRAG has endorsed pursuing a tiered harvest strategy approach, updating reference points, reviewing the standardisation approach and reviewing harvest strategy rules

through the current management plan and harvest strategy review. Ian also noted the importance of collaborating with South Australia and Tasmania as we develop new plan.

Action:

- **Giant crab management plan review to include:**
  1) **Adoption of tiered approach;**
  2) **Review of rules underpinning harvest strategy – Includes reviewing meta rules, terminology of trigger/limit reference points;**
  3) **Updating the CPUE standardisation approach including formally incorporating uncertainty around soak times;**
  4) **Reviewing limit reference point and updating to a more contemporary reference period.**

8. Other business

8.1 SRL RD&E update

No update to provide since the December RLRAG as SRL have not held a meeting during this time. Markus not present. Caleb provided an update on a project working effectively to enable individual lobsters to be traced through supply chain however communication of project has been poorly undertaken. Caleb again highlighted the need for traceability for marketing/provenance and demonstrating origin around egg production and biotoxin concerns.

8.2 Scheduling RLRAG meetings for 2020

Toby has confirmed the meeting dates for the next two RLRAG meetings as 22 October 2020 and 23 February 2021.

8.3 FRDC giant crab project

The giant crab project will look to enhance data collection in the giant crab fishery through utilising new technologies such as photo recognition and machine learning. The application received a request for further information and was re-submitted in December. The FRDC has provided a further update that they are currently not in a position to sign off on application decisions and they are unsure when this will occur. Further information to be provided as it becomes available.

Meeting concluded: 12:30pm