RECORD OF MEETING

Meeting #26, 16 December 2019
Queenscliff

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)
David Reilly	Victorian Fisheries Authority
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
Guests	
Caleb Gardner	Institute of Marine and Antarctic Studies (IMAS)
Lauren Hall	VFA
Hilary Ingram	Recreational observer
Craig Starrit	Recreational observer – Black Rock Underwater Dive Group
Matt Harry	Industry member
Nicola Sondermayer	Atlantis Fisheries Consulting Group
Apologies	
Dallas D'Silva	Victorian Fisheries Authority
Anthony Olver	Industry member
Markus Nolle	Industry member
Russel Frost	Industry member
Rohan Henry	Bunurong Land Council Aboriginal Land Corporation
Hayden McFayden	Recreational observer - Geelong Freedivers

1.1. Welcome

Ian Knuckey, as Chair, stated an Acknowledgement of Country and welcomed members to the 26th meeting of the Victorian Rock Lobster and Giant Crab Resource Assessment Group (RLRAG). Ian explained to the group that the RLRAG is a scientific advisory committee. As such it can have access to data or information that may not be readily available to the general public. Ian stated that both members and observers need to respect this, and it is expected that they should not discuss such information outside the RAG. He also said that it is advisable that people wait until the final minutes are released and published on the VFA webpage.

1.2. Adoption of agenda

The agenda was adopted with no additional items added.

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. Mark Peychers confirmed this.

Progress against the outstanding actions were summarised as follows:

- Indigenous participation – Toby has met with Rohan Henry and discussed project scope for 2020 to engage indigenous sector in telling the story of Southern Rock Lobster;
- Eastern Zone PRI – Klaas has undertaken analysis of logbook data. The concept of industry champions for data analysis was raised at VRLA AGM and requires further details from industry of a list of 'champions'. VRLA port representatives were suggested as suitable candidates. Eastrock has not yet provided candidates for Eastern Zone. David Reilly suggested those collecting voluntary data could be an option. Toby mentioned that a relative abundance measure may be incorporated into the citizen science component of the RL Tagging App;
- Western Zone exploitation – Consultation to be undertaken during 2020 port visits;
- Biotoxin monitoring plan –Strong view from VFA that this will be fully industry funded and VFA will provide support where possible. One member asked Toby when this would be up and running. Toby said it's in early draft form, no definite end date but mid-year would be nice. Johnathon asked if this is something that needs to be rolled out and funded. One member said it should be top priority. Ian commented that a good monitoring program is essential. Toby said we will continue to build and improve as we go – we've got to make a start, it's clear that this is considered a priority here. Mark noted that if an event did occur, we must have a plan in place. Next meeting agenda to include a detailed discussion of the monitoring plan and what's involved;
- Model development – Klaas summarised this action. Project proposal is in place. Currently, Western Australia is happy to fund the ongoing development of new model, Vic and Tasmania requirements are a subset of what the WA model will deliver. We'd like to support that roll out of that modelling framework, so it comes as negligible cost, by working with what WA already have;
- Stock assessment report – To be covered in meeting;
- Other business – Toby following up with Kirsten Abernathy to determine level of data for MEY socio-economic study. Unsure if info will be helpful for MEY. Confidentiality concerns were raised and is a factor that needs to be considered. Toby summarised this and stated it is on track for 2020. Awaiting further details of data collected from Alastair McIlgorm. Klaas added that this is a deliverable for the second year of project in providing technical advice for the VFA to advise MEY strategy;
- Timing of fishing season – Discussed at VRLA AGM and is sitting with industry to provide consensus on proposal for VFA/RLRAG to consider;
- Proposal for increasing female LML in Eastern Zone – VRFish, Wayne and Ross did not submit formal submission during regulation review consultation, as they felt more information was needed before the proposal could be properly considered. Mike did review at the dive reference group and supports size limits based on size of sexual maturity. To be discussed further under Agenda item 6;
- Giant crab – Currently the VFA has no suitable loggers and has put Anthony Olver in touch with company to purchase independently. David to follow up with IMAS on the video technology they use;
- Review of Harvest Strategy – Model sensitivity to growth to be covered in meeting. Klaas to continue progressing strategic plan for tag recapture program and has further work to do on modelling to show likelihood of breaching reference points

The following actions remained outstanding:

- Undertake a review of industry code of practice – Markus Nolle;
- Discussion with IMAS on video technology for use in Giant Crab fishery – David Reilly;
- Model different levels of PRI and likelihood of breeching reference point – Klaas Hartmann;
- Strategic plan for future tag recapture program – Klaas Hartmann

All other actions arising from Meeting 26 are outlined in the attached 'Actions List' circulated with the meeting minutes.

1.4. Membership renewal

All industry members have received a letter signed by VFA CEO renewing their term of membership for a further 12 months. The emerging leadership position within the Terms of Reference for recreational membership will continue to provide the opportunity to identify new candidates. Observers will continue to have the opportunity to attend RLRAG meetings.

2. TAGGING OF RECREATIONALLY CAUGHT ROCK LOBSTERS

Toby presented a summary of Season 1 and 2 of the recreational rock lobster tagging program.

A total of 6,786 southern rock lobster were caught by recreational rock lobster fishers during the 2018/19 Season, slightly less than the 7,922 that were caught during Season 1. 3,074 rock lobster were caught in the Eastern Zone and 3,712 in the Western Zone. The majority of participants in the program reported using 1-2 tags for the Season with over 93% of these reported between the summer months of November to April. Approximately 65% of rock lobster taken were males with an average weight of 2.26kg in the Eastern Zone and 1.83kg in the Western Zone.

Over 600 fishers (11% of participants) opted in to provide additional valuable data through the citizen science program. This information has indicated that the majority of rock lobster catch in the Western Zone was from the Warrnambool region, and Queenscliff region in the Eastern Zone. The citizen science program has also identified that free diving is the most popular method for targeting lobster in the Western Zone and the use of captive air (Hookah/Scuba) is utilised to a greater degree in the Eastern Zone. In both seasons the Eastern Zone accounted for a greater number of larger male lobster, with the Western Zone accounting for a larger number of smaller females.

It was pointed out that the 'Unused' and 'Not used' terms for the tag reporting is a little confusing. RLRAG suggested to use the terms 'Not reported' and 'Not used' (reported as not used) for the stock assessment report.

Members observed that the data shows rock lobster reported as 'used' during the closed season in October. This appears to be an error that will be investigated further.

Statistics from 189 rock lobster inspections conducted by Fisheries Officers were presented. They showed that 48.1 percent of tags were accurate as observed by Fisheries Officers and reported by fishers via the RL Tagging App with respect to length, location and date. This increased to 55 percent when including minor discrepancies observed with regard to length accuracy. The 110 tags that were considered to be reported inaccurately were broken down to the following:

- 18 tags remained as unreported;
- 67 tags inaccurate due to date and/or length;
- 16 tags reported as 'Not used';
- 9 tags reported as lost.

Members discussed the compliance results. It was clarified that 'inaccurate' was defined as a difference between what was observed by Fisheries Officers and what a fisher reported via the online system. The 67 tags that were inaccurate due to mismatching date/length were still considered as valuable data just because they were actually reported. It was unclear why fishers had not reported accurately with regard to 'Lost' or 'Not Used' and felt that further exploration as to why fishers reported incorrectly was required. A possibility that needs to be investigated is that fishers have recorded the wrong tag number against different lobster, therefor deeming reporting as 'inaccurate'. Rectifying this issue may significantly increase accuracy of reporting.

RAG members felt it was great that the VFA is collecting this compliance data and that it would be good to understand the compliance 'strike rate'. It was explained that the 189 inspections were random as part of the course of duty of Fisheries Officers. It was noted that currently fishers are not able to report days of zero catch and this could be a future app enhancement.

There was concern that tags that were lost or unused could make up a large number of crays taken that haven't been reported and questions about the risk this posed. It was explained that there is an FRDC-funded independent review that will commence in 2020 looking to investigate confidence in the data collected and identify areas for improvement.

There was further queries about what 'inaccurate' entailed when analysing differences in length. It was clarified that any observed difference was considered inaccurate, but that the measurement was to the nearest cm. It was suggested that some fishers are simply disorganised, and various ways to improve the reporting process should be considered.

It was reiterated that compliance with the tagging program on the water has been very high and the VFA recognises that the current system is not perfect and there are areas for improvement. It was noted that the program has been mostly received as positive among the recreational sector All RAG members acknowledged that the recreational tagging program has taken a big step forward in getting recreational fishers to report their catch and refining the system further will be the next step. The potential next steps are to: review and refine the tagging program in line with the FRDC independent study; consider digital enhancement to improve accuracy; use map-based reporting with photos of catches; consider digital tags (with a photo accepted as a digital tag, time stamp and location stamp); reporting zero catch days; and, potential for photo recognition of individual rock lobsters.

At the conclusion of this agenda item, it was emphasised that the compliance summary requires further analysis and has not yet been published, and all people at the meeting must recognise the confidentiality of the information provided.

Action:

- **Klaas to look into analysis of rec tagging data to determine why lobsters appear to have been reported during the closed season**
- **Toby to look at enhancement to the app to be able to report days of zero catch**
- **Toby to continue to investigate feasibility of digital enhancement of the App**
- **Toby to circulate PDF copy of presentation with meeting minutes**

3. MONITORING PROGRAMS

David Reilly presented on the 2018/19 Monitoring Program. It was explained that length measurements of 5000 rock lobsters / year in each zone is considered to be a robust sample size and could be achieved in the Western Zone. In consideration of the smaller size and lower catch rates, a minimum target of 2,500 lobster, length measurements was adopted for the Eastern Zone.

Eastern Zone data summary

Data source	No. days	No. vessels	No. potlifts	No. Lobsters
On-board observer	24	7	1,297	453
Fixed site	12	3	722	346
Voluntary Log	57	4	632	508
Total				1,307

It was noted that a total of 1,307 length measurements were collected for the Eastern Zone, which was below the target. This was due to a reduced number of observer-days, resulting from poor weather and observer availability. The retirement of three fishers from the Queenscliff region also meant that there were fewer options for the observers. Voluntary logbook data has doubled over the past 12 months, which was very positive.

It was questioned why the voluntary log data in the Eastern Zone almost appears to be 1:1 lobster per potlift and much higher than other data sets. It was explained that this was due to differences in the time of year and location of the data collected. Having a full season of data, with more fishers involved across the entire zone, would improve this information.

Western Zone data summary

Data source	No. days	No. vessels	No. potlifts	No. Lobsters
On-board observer	49	8	3,878	6,116
Fixed site	33	6	1,645	3,556
Voluntary Log	100	5	298	588
Total			5,845	10,260

10,260 length measurements in total, aimed to get 5,000 measurements. The RAG members considered this a great result.

3.1 Update on puerulus sampling program

David described the two puerulus sites at Apollo Bay (EZ) and Port Campbell (WZ), with 6 collectors each. Data has been collected at these sites for 25 years. It was questioned if harbour dredging works has impacted the results in Apollo Bay. The collectors were removed in May 2018 and replaced in September 2018 in preparation for the October 2018 service. The impact of this on last season's results was difficult to determine, but for October and November this season, there have been zero puerulus recorded at either site.

The puerulus data for Apollo Bay showed a downward trend in recent years, now with record low levels of puerulus. Port Campbell also showed decreasing puerulus numbers since 2015/16 with a slight increase in 2018/19.

It was noted that Tasmania has had record puerulus settlement recently, but this is not being observed in Victoria.

It was clarified that puerulus counts are not used in the PRI, but are used as a secondary indicator.

3.2 Data on undersized lobsters

David presented the members with a map showing the location of the fixed-sites. All three Eastern Zone sites and eight Western Zone sites were surveyed in 2018/19 assessment period. Plots were presented which compared the number of undersized lobsters per potlift for observer, fixed-site and voluntary data. All three data types showed similar trends, so this should give confidence in the voluntary data collected by fishers.

It was questioned whether undertaking the voluntary pots surveys report the number of undersize from the three research pots with escape gaps closed, in the commercial logbook. Since, the current log book does not differentiate between commercial and research pots, it was thought that the numbers of undersized recorded as part of the voluntary log should not be recorded in the commercial log book. This issue will be addressed as part of the development of E-catch.

Eastern Zone

- Survey sites in the Queenscliff and San Remo regions again showed record low numbers of undersize/potlift.

Western Zone

- The two sites in the Apollo Bay region both showed a decline in the numbers of undersize/potlift in the 2018/19 fishing season
- The two sites in the Warrnambool region showed an increase in the number of undersize/potlift over the last two fishing seasons.
- In the Portland region, the sites in the Western part of Discovery Bay, closest to the SA border, showed a decline in the number of undersize. The site near Portland showed an increase in undersize in 2018/19 whilst the site near Cape Bridgewater has shown increasing numbers of undersize over the last four seasons since 2016/17.

The trends in the numbers of pre-recruits or undersized lobsters/potlift were not consistent across the whole of the Western Zone.

Ian thanked the observers and fishers involved in the voluntary log program for their participation.

4. ROCK LOBSTER STOCK ASSESSMENT RESULTS

Klaas commenced by providing an overview the work undertaken by IMAS since the last RLRAG on September 24.

Klaas summarised the following actions:

- Received stock assessment data 7/11, GC data 13/11;
- Received recreational data - several versions throughout November final on 6/12;

Contingent on receipt of this data:

- Conduct 18/19 rock lobster assessment with existing model (Klaas Hartman);
- Conduct 18/19 assessment with new model (Rafael Leon);
- Compare model outputs (RL);
- Conduct analysis and write report for recreational tagging program (KM);

- Full re-evaluation of harvest strategy using 18/19 model (KH);
- Evaluate size limit scenarios using 18/19 model (KH); and,
- Conduct size-sensitivity analysis using new 18/19 model (RL).

Klaas then summarised IMAS updated workplan:

- Ongoing recreational tagging analysis and report (Karlie McDonald);
- Ongoing evaluation of new model (year 1 deliverable) (RL);
- Provide recommendations and technical advice for development of MEY strategy (year 2 deliverable, but aiming to start at next RAG) (Steven Rust);
- Provide recommendations and technical advice for development of Giant Crab management plan and harvest strategy (year 1 deliverable) (Justine Rizari);
- Technical review and guidance Caleb Gardner –
- Ongoing core assessment work and project management (KH)

4.1 Updated harvest strategy components

The RAG noted that the VFA has a policy of continuous improvement. Over the last 18 months, the harvest strategy has been reviewed and updated.

Key changes:

- Egg production evaluated against unfished population (20% reference point);
- Updated relationship between biomass and CPUE (from which TACC tables are calculated);
  - All available years used in EZ due to limited data
  - From 2000 onwards in WZ
- Exploitation rate changed;
  - From 15% to 20.5% in EZ
  - Under consideration in Western Zone.

4.2 2018/19 preliminary stock assessment results

Western Zone

WZ Assessment - Data inputs

Klaas provided an overview of data for the Western Zone. Overall, the stock indicators in the Western Zone show a marginal improvement. The standardised catch per unit effort (CPUE) improved from 0.62kg/pot-lift in 2017/18 to 0.64kg/pot-lift in 2018/19. The numbers of undersize lobsters have increased from the recent historical low, but are still at very low levels. The pre-recruit index (PRI) was at 1.59 undersize/pot-lift. Whilst having increased this remains below the PRI reference point of 1.81.

Catch has increased slightly whilst effort has been slowly reducing in the Western Zone. The Portland and Warrnambool regions have observed slight increases in CPUE during the 2018/19 period and Apollo Bay has decreased slightly.

RLRAG members noted a divergence between nominal and standardised CPUE in the Western Zone. Klaas explained that this is thought to be largely driven by fleet composition with less efficient operators leaving the fishery. It was suggested that the difference could also be due to fleet-wide technology changes but it may partly be due to improvements in bottom mapping and some due to improvements in the stock.

It was questioned whether the standardisation process accounts for changes in mean size with regard to animal weight and clarified that the model incorporates size frequency data separate to the CPUE standardisation. Ian summarised that there appears to be some changes as a result of technology creep that may not be being captured in assessing the status of the stock.

Action:

- **Fishers using 3D sounders to provide Klaas with date of adoption to run analysis on efficiency changes**

Pre-Recruit Index

Klaas summarised the Data sources for calculating the PRI as follows:

- Observer program;
- Fixed-site survey program.

Additional data that is considered but not formally incorporated when calculating the PRI includes:

- Logbook records of undersize returned;
- Voluntary length-frequency recording (paper based and deck logger).

Observer program

There has been a reduction in number of undersize male lobster and an increase in spread of larger male lobsters, with a notable reduction in undersize females in the Western Zone.

Pre-Recruit Index

The combined fixed-site and observer program data with applied weighting shows a slightly increasing PRI. The data collected from the observer and fixed-site surveys show consistent trends through time which Klaas suggested is reassuring. It was clarified that the fixed-site data shows less abundance of undersize in comparison to the observer data due to the adjustment that is made for comparison.

Voluntary length frequency sampling has increased since 2015. The PRI and voluntary trend are tracking similarly since 2015.

Action:

- **Klaas to compile and analyse 'Industry Champions' data**
- **Markus to provide list of VRLA port representatives**

Klaas also presented a comparison of undersize reporting rates between the Eastern and Western Zones. Shots with undersize reported (%) are consistently lower in the Eastern Zone. The trends for undersize as recorded in logbooks have shown declines since 2010 for both the Eastern and Western Zones. It was explained that the logbook data was filtered to remove fishers who have recorded very low undersize numbers (as likely incorrect reporting).

Klaas recommended that the current PRI should continue to be used and the voluntary data collection program should be expanded in the Western Zone.

CPUE model fit

RLRAG members discussed a mismatch between a low PRI and increasing catch rates. The model does match catch weights consistently through time, however tends to be pessimistic for the most recent year. The model has accordingly been weighted towards catch rate data rather than length frequency data. Ian expressed concern around the mismatch between size frequency data and CPUE trends and suggested that this needs to be the biggest focus for model improvement / understanding in the new year. Klaas suggested there may be something biological that we are missing.

WZ Assessment - Outputs

Biomass and exploitation rate

Exploitation rate is shown to be increasing, whilst the biomass is decreasing. There was concern expressed that we are trying to keep exploitation rate down, and this is not currently what we are observing.

Egg Production

Limit reference point for egg production is 20% of unfished levels and the fishery is currently comfortably above that. It was questioned whether the 20% reference is the same in Tasmania and clarified that the 20% reference point is standard across the SRL jurisdictions and further clarified this is a limit, not a target.

Action:
- **Klaas to investigate consistency of calculating egg production with other jurisdictions**

It was noted that the lack of an explicit egg production target or biomass target has been an ongoing challenge with the Victorian Management Plan and Harvest Strategy. It was clarified that a target biomass reference point is more critical than an egg production target and is a standard requirement now in most harvest strategies.

Action:
- **Klaas to incorporate relative biomass level in the stock assessment report**

Given the recent length frequency data, the model predicts egg production will fall after 2020, but then commence rebuilding under long term average recruitment levels. It was pointed out that current PRI indicators suggest that average recruitment levels may not be achieved, which is a concern for future projections.

The model is showing we will be below egg production limit of 20% from 2022. Concern was expressed given that egg production is based on historic average recruitment and that the projection looks very bad (below 20%). If we get further years of poor recruitment this could look even worse. It was noted that this could trigger Southern Rock lobster under SAFs reporting as depleted. The RAG members noted that the lack of undersize lobster is the largest concern, how this corresponds to future catch rates should be used with caution.

Action:
- **Klaas to investigate divergence between decreasing biomass and increasing catch rates**
- **Klaas to Investigate and report on technology creep implications**

WZ Assessment – RAG considerations

The RLRAG held consensus that the priority is to rebuild this fishery and that the current exploitation rate is too high. Toby explained that this issue will be the focus during the TACC consultation period. Western Zone industry members revisited the concept of adjusting the exploitation rate to provide greater certainty with remaining above the limit reference point for egg production in the future. Western Zone members also suggested capping the TACC at 246 t to let the fishery rebuild. Toby suggested that this could be included for consultation.

Noting there is a divergence of views, Industry questioned what level of acceptance from industry is required to progress lowering the exploitation rate. Given that during last year's consultation there was a lot of proposed changes, the concept and clarity of messaging regarding the need to lower the

exploitation rate was convoluted. This will be much clearer during the upcoming consultation process with lowering the Western Zone exploitation rate the main agenda item.

It was questioned where the TACC sits in terms of the stock MSY is unknown, but Klaas explained that an MSY analysis has not been undertaken and there is no clear target to rebuild towards. However, RAG members re-emphasised that the exploitation rate should achieve a level of stock rebuild.

Action:

- **Toby to include capping the Western Zone TACC at 246 for consideration during 2020/21 TACC consultation period**

WZ Assessment – Application of Harvest Strategy

Western Zone

Decision Rule	2018/19 Stock Indicator Level	Outcome
1. Egg Production **Is the model estimated egg production above the limit reference point of 20% of unfished levels?**	The 2018/19 egg production level is estimated at 23.5% of unfished levels.	Decision rule has been met. Go to Rule 2
2. TACC Determination		
a. What is the standardised CPUE relative to the preceding season	Standardised CPUE is 0.64kg/pot-lift in 2018/19	Standardised CPUE has increased from 0.62 in 2017/18 to 0.64 in 2018/19
b. Is the 2018/19 PRI at or above the reference point of 1.81 undersize/pot-lift?	The PRI is 1.59 undersize/pot lift	Decision rule not met. No further decision rules considered
	RESULT	**NO INCREASE IN TACC**

Eastern Zone

EZ Assessment – data inputs

Klaas provided an overview of data collected for the Eastern Zone. The standardised CPUE has reduced from a recent high of 0.64kg/pot-lift in 2012/13 to 0.36kg/pot-lift in 2017/18. The PRI declined to 0.08 undersize/pot-lift in 2018/19, the lowest level since 2005/06 and below the PRI reference point of 0.32 undersize/pot-lift. The model estimated level of egg production has reduced over the last five years from 27.5% to 23.2% of an unfished stock, however this remains above the 20% limit reference point.

CPUE has slightly increased in the Queenscliff, San Remo and Lakes Entrance regions.

Pre-Recruit Index

Data collected under the observer and fixed-site surveys shows a lack of undersize indicators for both male and females. The trends for both the fixed-site surveys and observer programs shows consistency through time however the Eastern Zone PRI has continued to decline over the past several years.

Voluntary length frequency sampling has increased since 2015. The PRI and voluntary trend are tracking similarly since 2015.

Length Frequency data for the Eastern Zone shows a lack of undersize males and females. Wayne has observed very large lobsters overall.

Klaas recommended continued use of the PRI in the Eastern Zone and expansion of the voluntary data collection program that is showing to be tracking similarly with the PRI since its expansion of past seasons.

CPUE model fit

The model fit for the Astern Zone is more consistent than Western Zone. Ian commented that even though there is less bias, there is greater uncertainty in the Eastern Zone.

EZ Assessment - Outputs

Biomass and exploitation rate

Biomass is trending downwards and exploitation rate is increasing. EZ industry members expressed concern that what they are seeing out on the water is worse than the results are showing. Concern was raised over the increase of exploitation rate and decrease in biomass and do not believe there has been an improvement in the fishery.

Egg Production

Eastern Zone egg production is now trending downwards. Future egg projection shows it levelling out above the limit reference point. The range of very large lobsters in the EZ fishery (with virtually no undersized) was difficult for some people to reconcile, but was an obvious factor behind the increase in mean weight of lobster in the Eastern Zone. A review of the population biology with regard to the length-frequency data was suggested to explore whether there may be some underlying problem in model assumptions in the EZ model.

Action:

- **Klaas to include plots of Length Frequency under virgin biomass in stock assessment report for comparison**
- **Klaas to review growth estimates of large lobster in the Eastern Zone**

EZ Assessment – RAG considerations

Toby explained that the decision to diverge from the Harvest strategy and set the TACC at 40t for 2019/20, rather than taking the reduction to 32t, was a one-off exception.

Matt suggested that even if the PRI did increase he would not want to see the TACC increased to the next level of 51t as the fishery could not support this.

Industry expressed deep concern over the situation of the stock in the East. It was considered that the current level of recruitment is not enough to support current catches. The increase in CPUE is a result of increasing mean weight of lobsters and given that there appears to be very little recruitment, the stock is compromised.

EZ Assessment – Application of Harvest Strategy

Decision Rule	2018/19 Stock Indicator Level	Outcome
1. <u>Egg Production</u> **Is the model estimated egg production above the limit reference point of 20% of unfished levels?**	The 2018/19 egg production level is estimated at 23.2% of unfished levels.	Decision rule has been met. Go to Rule 2
2. <u>TACC Determination</u>		
a. What is the standardised CPUE relative to the preceding season	Standardised CPUE is 0.41kg/pot-lift in 2018/19	Standardised CPUE has **increased** from 0.36 in 2017/18 to 0.41 in 2018/19.
b. Is the 2018/19 PRI at or above the reference point of 0.32 undersize/pot-lift?	The PRI is 0.08 undersize/pot lift	Decision rule not met. No further decision rules considered
	RESULT	**NO INCREASE IN TACC**

The RAG members thanked Klaas and the IMAS assessment team for the work in preparing the assessments noting that in future it would be valuable to have the preliminary assessments circulated at least a week prior to the meeting so that members could read through and prepare for the meeting.

<u>Action:</u>
- **Toby to circulate draft rock lobster stock assessment report out of session for comment by the RLRAG**

5. GIANT CRAB STOCK ASSESSMENT RESULTS

With regard to VFA's privacy policy preventing presentation of data from 5 fishers or less, Ian highlighted the need for meeting participants to consider the confidentiality of the majority of data informing the stock assessment process for the giant crab fishery, which is captured by a single operator. Toby explained that discussions have been held with the single operator and the data will continue to be used to inform stock assessments.

Klaas provided an overview of the 2018/19 stock assessment results. Overall, the targeted catch rate in 2018/19 was 1.04 kg/24-hour pot-lift. This is a substantial reduction from the 2017/18 value of 1.27kg/24-hour pot-lift but remains well above the limit reference point of 0.52 kg/24-hour pot-lift for the fishery.

Catch history shows current catches around the 10t level. This level has been sustained over the past eight years whilst fishing at a much smaller biomass in comparison to the early 1990s.

RAG participants were reminded that soak time is standardised and capped at 4 days and it was reiterated that whilst the current coefficient gives the best fit between catch and soak-time, there is substantial uncertainty around this relationship and the CPUE time-series. Coupled with the small number of operators in this fishery, this indicates that caution should be used when interpreting the CPUE time-series.

The size limit for male crabs was reduced to 140mm in August 2019. No crabs were landed in the 2018/19 assessment period after this date, consequently the change did not impact the calculated CPUE for this assessment. However, in future years this will need to be addressed to ensure that CPUE remains a consistent biomass index.

Mean weight for the fishery has remained relatively stable and voluntary size data collected has shown an increase in larger crab and distribution across a range of size classes.

The RLRAG noted that there were no giant crab fishers to provide comment on the data that was presented.

It was pointed out that growth rate of these animals is extraordinarily slow, compared to that of rock lobsters. A one-off single year snap shot is interesting, but it does not provide enough to inform decision making and should be expanded further.

Toby commented that a new harvest strategy is required for Giant Crab as this has not been updated since 2010.

6. CONSIDERATION OF FEMALE LML INCREASE

Klaas presented a paper that considers the potential benefits of changing size limits in Victoria and one particular proposal to increase the size limit of female lobsters in the Eastern Zone to 110mm without altering the male size limit.

Increasing the female LML in the Eastern Zone is expected to result in a reduction to short-term catch and an increase in future egg production. The scale of the change is minimal with a projected 0.5t increase in catch in 2030 and a 1 percent increase in egg production. There is a positive/negative trade off with altering the male/female size limit respectively, in that:

1) Negative – Increased pressure on females
2) Positive – Increased yield/recruit on males

By increasing the female size limit, a short-term reduction in catch will be offset by future gains in egg production. Given the projected uncertainty with breaching the limit reference point for egg production, stepping away from the LRP would be a sensible approach.

Industry pointed out that there are differences across the Eastern Zone. In some areas of the Eastern Zone fishery, the majority of the catch is smaller fish and the proposed size limit change would impact some fishers heavily, with financial implications not worth the projected long-term 0.5t gain. Members also discussed the uncertainty around stock-recruitment relationships and that potentially there would be no localised benefit from a 1 percent increase in egg production.

RLRAG members raised questions concerning the economic implications of introducing a size limit change and agreed that the associated costs would need to be better understood through undertaking a cost-benefit analysis. Members reached consensus that this could be explored though the work to develop an MEY for the fishery in 2020 as part of the IMAS contract.

Ian sought input into the size limit discussion from the recreational participants. The recreational sector generally advocates for size limits that are larger than an animal's size of sexual maturity. Thus from a recreational point of view, because lobster in the Eastern Zone do not reach sexual maturity until they are 112mm, a higher size limit is needed to provide opportunities for them to breed..

Some Industry members expressed concern over how many management changes are currently occurring. This includes the introduction of VMS and potential size limit changes. Toby clarified that

there is no commitment to altering the size limits for the fishery and that this work is being undertaken at the request of industry. Toby agreed that there is a lot of change occurring with the introduction of E-catch and VMS and that the VFA will continue to keep fishers informed.

Action:

- **Klaas to incorporate alternative LML's as component of work in developing MEY**
- **Klaas to look at both spatial and price components**

7. MODEL COMPARISON AND SENSITIVITY TO GROWTH

Model comparison

Klaas presented a comparison of the new MEZO and current model noting that they were extremely similar with respect to exploitable biomass estimates. This was reassuring in terms of using the new model. It was noted that the new model is well documented, with slightly easier plotting/reporting and that the underlying code is clearer and easier to add features. However, the MEZO model has less features than existing model. Both models required experienced modellers to run and the MEZO model is good for a scientist with strong R programming skills.

The preliminary recommendation is that it is too soon to switch completely to the new model and that both models are continued, which is minimal additional work, and provides VFA with the greatest flexibility going forwards. The work undertaken on enhancement of the WRL model as discussed in previous RLRAG's also forms important consideration with the future of model use in Victoria.

Mark expressed concern over the introduction of electronic reporting in that this has had major implications in New Zealand. New Zealand has observed a 20 percent change in CPUE in one CRA area under the new reporting system. The RAG was interested in finding out what's going on there and that there must have been some bias introduced with new reporting system.

Action:

- **Klaas to investigate MEZO projection/harvest strategy evaluation function**
- **Toby to contact Mark Edwards for further details regarding implications for data with transition to electronic reporting**

Model sensitivity to growth

Klaas presented biomass projections with plus/minus 15 percent growth rate change. Overall, the modelled was not sensitive to changes in growth rates. Egg production projections were more sensitive to growth due to the relationship between size and egg production.

The RLRAG noted concern around growth data lacking on legal sized animals and with an increasing proportion of larger animals tis may have greater implications regarding sensitivity of the model.

Action:

- **Rafael to investigate uncertainty and sensitivity to growth at larger sizes**
- **Rafael to investigate temporal relationships**

8. REEF RESEEDING FEASIBILITY UPDATE

Justin Rizarri was welcomed to present on a reef reseeding feasibility study that has been undertaken in collaboration with one of his students, Darren Wong. The objective of the study is to provide possible outcomes for various scenarios of reseeding lobster and to highlight further considerations if the project is to proceed.

Justin highlighted that there are currently no efficient means of raising SRL puerulus to harvestable size in that it takes 18 months.

The feasibility study has used the stock assessment model MELBA to model project biomass increases under reseeding 10,000, 100,00 and 500,000 lobster at 60mm, 80mm and 100mm carapace lengths in the Eastern and Western Zones. It was suggested that the preliminary numbers of lobster put forward to be reseeded may be too high as you do not want too many enhanced animals in the population due to genetics.

The Western Zone would require 500,000 lobster before and real biomass benefit was realised, with a slight increase observed with reseeding of 100,000 lobsters.

Reseeding in the Eastern Zone appears to be more viable with the reseeding of 100,000 lobster projecting significant biomass benefits.

Justin noted a number of challenges as follows:

- Sourcing puerulus – Difficult to obtain the required numbers;
- Potentially a contentious issue – Ownership and translocation; and,
- Proximity to culture site and release location may increase costs.

Justin provided a basic cost estimation for rearing lobster to 400g (60mm CP). The formula used estimated that it would cost $5.33 per lobster, therefore $533,333 to make 100,000 lobsters required to see stock benefit in the Eastern Zone. Justin reiterated that this cost estimate is very simplistic and the cost of collecting puerulus was not included and is likely to add significant additional costs.

It was suggested the focus should initially be on a smaller spatial scale than the entire EZ and WZ. Further work needs to be undertaken to refine estimates of labour and aquaculture costs. There is also a need to consider biosecurity and translocation of individuals. However, reseeding is possible, and stock benefit may be possible in the Eastern Zone.

It was questioned if sea cages had been considered to reduce ranching costs. Justin agreed that this could be an option and can be include din future project discussions and costing estimates. It was noted that oyster farmers catch puerulus in large numbers in Tasmania and ay provide a potential source for puerulus if translocation concerns could be overcome.

It was also noted that Tasmania is currently building a hatchery for aquaculture of tropical rock lobsters. Costs are $10 a puerulus to produce tropical lobster, $50 per puerulus to produce southern rock lobsters – not economically viable. At these costs, the SRL puerulus would need to be sourced from the wild to make economically viable. The on-growing costs will need to be refined. The only reason this has not historically progressed in Tasmania is due to concerns over ownership.

The concern of biosecurity was raised, noting the detrimental effect that an virus had on abalone in western Victoria and the association this may have had with an aquaculture facility.

The next steps for the project were queried. Justin suggested that the end game would be to at least continue pursuing this at a small spatial scale, depending on funding. It was suggested that if the project focussed on a reef or a small scale area, it might increase the confidence that this is actually viable for everyone. It was suggested that there may be potentially three more seismic surveys occurring across the Otways that could contribute further funding to the project.

Action:

- **Toby to facilitate follow up meeting with relevant stakeholders in 2020 to discuss next steps and opportunities**

9. OTHER BUSINESS

9.1 SRL RD&E update

Toby noted that Markus was absent from the recent SRL meeting due to leave. Toby asked that the group consider any research needs that could be put for consideration at the SRL level.

Caleb noted potential research needs that had arisen from the meeting including:

- Knowledge gaps in growth data – Potentially seek funding for legal size tagging program
- Larval dispersal research gap

9.2 Whale entanglement

As well as the impact on individual animals, Toby highlighted the social licence risk associated with increasing whale interactions. The risk will continue to increase with growing populations of humpback whales. A number of events occurred during the past whale season with footage of whales entangled in rock lobster ropes appearing on National Television. Toby highlighted the importance of being on the front foot with this emerging social licence risk.

A meeting was facilitated by the VFA with DELWP, VRLA and SIV with a number of key actions identified:

1) Stickers on commercial vessels with numbers to call and actions to take.
2) Development of consistent media talking points
3) Involving fishers in a whale citizen science program to assist better understanding changes in whale numbers and migration patterns.

Johnathon suggested that the whale citizen science app also be communicated to the recreational sector to provide further information out on the water. Toby will provide Mike Burgess with the link to distribute to VRFish member base

DELWP has also improved their practice, working with VFA and the compliance team so that they can attach whale tracking buoys whilst a complete DELWP response team is mobilised.

JD – FRDC has a national whale entanglement group, workshop in Sydney. Use what's already been funded, use the resources that are already been there.

Action:

- **Toby to send RL fishers and Mike Burgess link to whale citizen science App**

9.3 RLRAG workplan for 2020

Toby summarised the work plan and will send with the meeting minutes for further comment.

Clarification was sought on the likelihood of the lobster tagging program continuing and the RLRAG providing input and recommendation into this process. Toby noted that the March RLRAG will be the perfect time to discuss this. Initially, confirmation has been sought with the Minister to continue to the program and secondly the future direction and options will be explored.

Timing on plans to formally revisit the current Harvest Strategy were requested. Toby noted this will occur in 2022 and that 2021 will require some significant input from RLRAG.

It was suggested there was a need for a review of the voluntary monitoring program to check that data reporting is accurate. This will be included in the March agenda.

Toby noted that the Western Zone exploitation rate paper will be circulated in the new year for comment prior to the port visits. Toby also noted that the draft stock assessment will be circulated outside of meeting for comment and RLRAG recommendation in the lead up to consultation.

An industry member suggested that the scheduling of RLRAG meetings be reconsidered with the following suggestions:

- October meeting is moved to the beginning of September
- December meeting is moved further from Christmas (reconsider deliverables to achieve this)

Toby suggested that during the March RLRAG meeting that we lock in dates for rest of the years' meetings.

Action:

- **Toby to send 2020 RLRAG work plan with the meeting minutes for comment**
- **Toby to set next RLRAG meeting date for late March**
- **Toby to circulate Western Zone exploitation rate paper for discussion when finalised**
- **Klaas to undertake analysis of voluntary program to ensure accuracy**
- **Toby to circulate Draft RL stock assessment for comment and RLRAG recommendation**

FRDC giant crab project update

Toby provided a summary of the progress towards submitting an FRDC funding application for a tri-state project. The 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 will be re-submitted in the coming week.

Meeting concluded: 4:30pm