T R A N S C R I P T

SELECT COMMITTEE ON VICTORIA'S RECREATIONAL NATIVE BIRD HUNTING ARRANGEMENTS

Inquiry into Victoria's Recreational Native Bird Hunting Arrangements

Melbourne – Wednesday 21 June 2023

MEMBERS

Ryan Batchelor – Chair
Michael Galea – Deputy Chair
Melina Bath
Jeff Bourman
Katherine Copsey
Bev McArthur
Evan Mulholland
Georgie Purcell
Sheena Watt

WITNESSES

Dr Dave Ramsey, Principal Scientist, Program Leader Wildlife Management, Arthur Rylah Institute for Environmental Research, and

Mr Peter Menkhorst, Program Leader, Waterbirds and Wetlands, Arthur Rylah Institute for Environmental Research, Department of Energy, Environment and Climate Action.

The CHAIR: I declare open the committee's public hearing for the Inquiry into Victoria's Recreational Native Bird Hunting Arrangements. Can all present please ensure your mobile phones have been switched to silent and that background noise is minimised.

I begin the hearing by respectfully acknowledging the traditional owners of the land we are meeting on here tonight and paying my respects to elders past and present. I acknowledge any Aboriginal and Torres Strait Islander Australians joining us today.

I welcome anyone who is joining us from the gallery or watching live. I remind everyone participating in tonight's proceedings to please be respectful of each other and the witnesses and ask those who are not speaking to remain silent.

Welcome. Thank you for coming. All evidence that we hear tonight is protected by parliamentary privilege as provided in the *Constitution Act* and the provisions of the Legislative Council's standing orders. Therefore the information that you provide during these hearings is protected by law. You are protected against any action for what you say during the hearing, but if you go elsewhere and repeat the same things, those comments may not be protected by this privilege. Any deliberately false evidence or misleading of the committee may be considered a contempt of Parliament.

All evidence is being recorded. You will be provided with the proof version of the transcript following the hearing. The transcripts will be ultimately made public and posted on the committee's website.

As we commence, and for the Hansard record, could you both please state your name and the organisation you are appearing on behalf of.

Dave RAMSEY: Yes. My name is Dave Ramsey. I am a Principal Scientist at the Arthur Rylah Institute.

Peter MENKHORST: And I am Peter Menkhorst, Program Leader, Waterbirds and Wetlands, at the Arthur Rylah Institute of DEECA.

The CHAIR: Thank you very much for joining us here tonight. What I will do is I will get you to make an opening statement. I know the committee secretariat has advised you can do that for about 5 minutes or as long up to that mark as you would like. Then I will get the members of the committee to introduce themselves, and we will start asking you a series of questions. We should be wrapped up in about an hour. Over to you.

Visual presentation.

Dave RAMSEY: Okay, thank you. I would like to make opening remarks about some of the research that the Arthur Rylah Institute has been involved with around adaptive harvest management of game ducks. We have been undertaking this research in partnership with the Game Management Authority. The journey started back in 2009, when an initial group was put together to sort of flesh out what adaptive management of game ducks might look like.

So just a little bit on adaptive harvest management and what it is, it is a scientific method about how to make decisions for managing natural resources. Adaptive management acknowledges that management decisions often have a large uncertainty around their effects, and adaptive management is a way of making robust decisions in the face of that uncertainty. In terms of adaptive harvest management, some of the uncertainties that we would like to know about are about the capacity of duck populations to support harvest. What level of harvest duck can populations support over the long term and still maintain a viable population? How do managers regulate harvest levels? Some of the instruments that managers use to regulate duck harvests include changes in daily bag limits and season lengths, so it is a bit uncertain what effect those might have on harvest

levels. Adaptive management is an instrument that allows managers to learn about how changing those things could change harvest levels in game ducks. The other thing is adaptive management also acknowledges that duck populations are subject to other factors that affect their numbers, like environmental conditions such as droughts, climate change or water regulation. Adaptive management allows for this, and it helps managers understand what effects those environmental changes might have on duck populations and also the additional effect of harvest.

As I mentioned, initially we looked at the feasibility of doing adaptive management for Victorian game duck populations back in 2009. There was a report on this that was put together in 2010 – I was the senior author on that – and there is a reference down there. For various reasons it was not implemented at the time, so there was a bit of a hiatus. We did an updated review in 2017, and that was mainly to learn what had changed.

As part of adaptive harvest management, one of the cornerstones of that is some knowledge about population abundance of game ducks. We did not really have any information that we could use to sort of estimate the total population size of game ducks in Victoria, so we put together – in partnership with the Game Management Authority, who supported this research – the first statewide survey of game ducks, which was undertaken in 2020, so aerial and ground surveys of over 800 water bodies in Victoria. We were able to estimate abundance for the main game species: wood duck, grey teal, black duck, shelduck and chestnut teal. As an example, the last survey was conducted in November 2022, with a total population estimate of 2.4 million birds of those five species.

Melina BATH: Aggregated together?

Dave RAMSEY: Yes, 2.4 million for all five species. Yes, that is correct. We have also recently undertaken similar research for stubble quail. The report, which we have finalised just in the last few weeks, was of a survey of over 70 sites around Victoria, and we had an estimate of 6.7 million stubble quail in suitable habitat in Victoria. So that is my opening address. I will now hand over to my colleague Peter Menkhorst.

Peter MENKHORST: This research that I understand you are interested in relates to management at the level of an individual wetland, so it is not talking about season length or harvest bag sizes or anything like that. Traditionally, prior to the duck season opening, there have been surveys of a sample of important hunting wetlands across the state, which have looked for the presence of a couple of rare duck species, notably the freckled duck and the blue-billed duck. The concern there was mainly around the risk of those species being unintentionally shot either through misidentification or just through bad luck. When birds flock together in mixed species and people shoot at them with a shotgun, there is a chance that other species might be harmed. However, the logic for this related mostly to unintentional mortality, as I said. We were also searching for significant breeding attempts that were taking place around the time that the duck season was on, particularly for colonially breeding species, where disturbance from noise and movement of hunters can lead to things like premature fledging from the nest. Juvenile cormorants or egrets or herons can jump out of the nest before they are ready to do so, and that reduces the breeding success for those species.

In recent years people have raised concerns about the impact of disturbance by hunters, as distinct from actual mortality, for a wider range of waterbird species. There are in fact 146 species of birds in Victoria that rely to a greater or lesser extent on wetlands. Waterbirds are a very diverse group, and as you have heard, there are currently only six of those that are able to be hunted. So in 2019, at the request of the GMA, we developed a scoring system that ranks these non-game species according to what we estimate is their risk from disturbance. Then we looked at developing appropriate trigger points that might instigate more intense management at a particular wetland. We cut down that 146 species by only considering species that are listed as threatened species under the *Flora and Fauna Guarantee Act* and also only species that are likely to occur in wetlands that are open to hunting. So some of those waterbird species, mainly marine, do not occur. Hunting is mostly not allowed on the coast in Victoria. That reduced it to 32 species of interest. We developed a process that looked at the behaviour and the ecology of each of those 32 species and scored them against a range of criteria that we came up with, which I can talk about in more detail if you wish. We ended up ranking those 32 species in order of the perceived risk of disturbance.

The groups of birds that came out as being of most concern were primarily migratory shorebirds that are trans-equatorial migrants. I do not know if anyone saw the program on ABC TV last night – if you did not, I

recommend it to you – on shorebirds. It really beautifully demonstrated how much of an energetic knife edge these migratory shorebirds are on.

Melina BATH: We were sitting in Parliament. We missed it.

Peter MENKHORST: Well, it is on iView. These migratory shorebirds literally fly 20,000 kilometres twice a year for their life, and they can live for 20 years or more. To do that they really need to put on a lot of weight before they leave, and so around February, March, April they are frantically feeding to put on that weight to maximise their chances of successfully migrating to Siberia or northern China and then successfully breeding when they get there. So migratory shorebirds scored highly. Extremely rare species like the orange-bellied parrot and the Australian painted-snipe also ranked highly. Predatory species that rely on seeing their prey to catch it and therefore can only feed during the daytime and not at night ranked highly too, so that is things like herons, egrets, bitterns and terns and some of the rarer duck species – the blue-billed duck, freckled duck, Australian shoveler and hardhead.

The brolga was a special case because of its social behaviour. In autumn and early winter brolgas in Victoria flock at a few traditional wetlands; they come together after they have bred. During the breeding season they are spread out as breeding pairs on particular wetlands, and then they tend to come together in autumn and early winter in much larger groups. You can have up to 150 at an individual wetland. There is a lot of brolga dancing and bugling going on, so it is pair bonding, and the juvenile brolgas are learning the social system of the species while that is going on. So that was also thought to be a situation where perhaps we ought to think about minimising disturbance to them at that time.

We then combined that ranking of risk with trigger points for triggering further consideration of management actions, and the trigger points are based on the estimated regional population levels of each of those species – and again, I can go into that. That system has been implemented for three years now and I think has been working quite well. There have been around about six to 10 wetlands that have had extra management attention in each of those three years. I will leave it there.

The CHAIR: All right. Thank you very much. I might ask the committee members to introduce themselves from that end of the table to that end of the table, and then we will start with questions.

Katherine COPSEY: Katherine Copsey, Member for Southern Metropolitan.

Georgie PURCELL: Georgie Purcell, Member for Northern Victoria.

Sheena WATT: Hello, I am Sheena Watt, Member for Northern Metropolitan.

Michael GALEA: Michael Galea, Member for South-Eastern Metropolitan.

Melina BATH: Melina Bath, Eastern Victoria Region.

Jeff BOURMAN: Jeff Bourman, Eastern Victoria Region.

Evan MULHOLLAND: Evan Mulholland, Northern Metropolitan.

The CHAIR: I am Ryan Batchelor, Member for Southern Metropolitan and Chair of the inquiry. I am going to get to go first because I am the Chair; that is the way it goes. There is a lot of obviously hard science going into this work. In summary, what do you think has the biggest effect on duck population in terms of the abundance estimates? There are a lot of factors in there – water coverage, environmental conditions. What do you think has the most effect on populations?

Dave RAMSEY: In terms of what drives the size of the population from year to year?

The CHAIR: Yes.

Dave RAMSEY: Probably changing environmental conditions, so habitat loss or gain. One of the things that we try and do when we do our abundance estimate is get some handle on estimating how much water is in the landscape, because that is what really drives duck numbers. When there is lots of water around, there are ducks; if there is less water around, there are less ducks. There are lots of things that affect water availability in the

landscape. There has been a fair bit of water regulation in the Murray–Darling Basin and also generally a drying climate. Those things probably predominantly have a major effect on driving duck numbers from year to year.

The CHAIR: I am interested that you talked about water. In the years that you have done your abundance surveys, obviously we know that 2022 was a particularly big rainfall year. The other years that you have conducted your surveys, how do they rate on the charts? Australia is dry and wet, it seems – trending drier, but it goes through these cycles. Have the survey years covered that kind of thing?

Dave RAMSEY: It is a good question. We have only done this for three years, so we do not have a lot of background data to determine what is a normal year. Certainly 2022 was very wet and the water availability was about 30 or 40 per cent higher than the previous year. But as to whether 2020 and 2021 were normal years it is probably a bit hard to say. I think there has generally been La Niña conditions over the last three years, so it has probably been average or above average on the balance things. So I would not say we have covered particularly dry environmental conditions. We have not really encountered those yet, I do not think.

The CHAIR: It is interesting, because the bureau expects those environmental conditions to be changing this season. One of the things that struck me was your abundance estimates for the main game species – grey teal, chestnut teal and one of the other ducks –

Dave RAMSEY: Wood duck.

The CHAIR: Yes; that will do. No, the Australian –

Dave RAMSEY: Shelduck.

The CHAIR: Shelduck have decreased compared to 2021. So in 2021–22 it was lower – this is from the report – than it was. Wood duck was similar, black duck has gone up and water surface levels were 58 per cent higher than they were. I am interested in what your view is. It seems to me that if there was so much more water – should we have been seeing more duck populations?

Dave RAMSEY: Another good question. There is probably a lag effect in that there has been a lot of water this year, but that has probably charged the system and there would be a lot of breeding. I think Richard Kingsford in his surveys has noticed there has been a lot of breeding going on this year, so we probably will not see the results of that until next year. I think the proof of the pudding will be in next year's survey to see whether we get that recruitment occurring and the consequent effect on abundance estimates.

Peter MENKHORST: We also probably have to wait until the inland breeding areas dry out and force the birds to come coastwards and south.

Dave RAMSEY: That is a good point.

Peter MENKHORST: The lag may be more than one year.

Dave RAMSEY: It could be, yes. That is true.

The CHAIR: Given the importance of water coverage to bird populations, have you considered whether there is a water coverage threshold that should be applied to hunting arrangements? The only thing that strikes me – and it is probably me just kind of editorialising a little bit – is that it seems from the methodology in your report that water is easier to measure than birds.

Peter MENKHORST: Sorry, water –

The CHAIR: Water is easier to measure – water coverage from a satellite and probably AI perspective these days. It is much easier to get good quality estimates of water coverage compared to what is much more of a manual count and extrapolation for bird numbers. Is there any work that you have done that has looked at the relationship between water coverage and bird numbers?

Dave RAMSEY: That is part of the adaptive management. The process is we would look at how the environmental drivers affect population numbers, but you need a bit of a time series – a couple of years is just

not enough data to really get a good relationship for how environment drives numbers. So that would definitely be part of an adaptive management framework, looking at how changing water conditions or water availability drive numbers and also where the water is falling – is it in the east in the Murray–Darling Basin or is it outside the basin? So the effects might not be as intuitive as people think, depending on where the water is.

The CHAIR: And obviously none of your work is as longitudinal as, say, Professor Kingsford's?

Dave RAMSEY: That is right. We are sort of taking baby steps at the moment. We have only really just started this journey, whereas Richard's stuff has been going for over 30 years.

The CHAIR: Just quickly, my last question is on this: you talked a lot about, particularly on the disturbance side, the effects of some of the levers that the government has got to pull in terms of season length and bag limits. What do you think has the most effect, of those levers, on population numbers?

Peter MENKHORST: Probably bag limits. I understand that a lot of hunters will shoot for a certain number of days, apparently is the experience overseas, and so if there is a shorter season they will tend to cram in their number of days into that period. If it is a longer season they might not necessarily increase the number of days that they shoot, but there is a lot of variability under behaviour, obviously. There are lots of keen hunters who live in rural areas and hunt their local wetlands, so they might hunt far more often than urban or Melbourne hunters, who go for a weekend every now and again.

The CHAIR: Thanks. Ms Bath.

Melina BATH: Thank you, gentlemen, for being here on a Wednesday evening. You spoke about the 32 species that you have homed in on in looking at them, and you mentioned the orange-bellied parrot. I am interested to understand. I believe that on Connewarre you have had a program where you have released the orange-bellied parrot onto the wetlands. Is that correct?

Peter MENKHORST: That is right, yes.

Melina BATH: Could you expand on what that program has been?

Peter MENKHORST: The orange-bellied parrot has fallen in its population number to less than 50 wild birds. We have for several decades had a captive breeding program trying to both create an insurance population for the species and also with the hope of boosting the wild population through releasing captive-bred birds. It is a migratory species. It breeds only in south-west Tasmania, and every autumn the entire population flies to the mainland and hangs out in coastal salt marshes between, basically, Corner Inlet and Adelaide, so around about 1000 kilometres of coastline. There are several areas around Port Phillip Bay which have traditionally been critically important winter habitat for the orange-bellied parrot and so we are trying to encourage birds to continue to use those areas. One way of doing that is to release captive-bred birds into those Port Phillip Bay sites during winter partly to act as kind of call birds in the hope that migrating birds from Tasmania might be attracted to use that site and also just to test whether the habitat there is still good quality. So we have released birds at the Spit Nature Conservation Reserve, which is adjacent to the Werribee sewage farm, and also in the last few years at Lake Connewarre. Connewarre has traditionally been a really important site for them. We have had 30 or 40 in the past; in the 1980s there were 30 or 40 individuals there regularly, and now there are only half a dozen or so.

Melina BATH: Of these parrots?

Peter MENKHORST: Of the parrots, yes.

Melina BATH: Thank you. Am I correct in my understanding that last June, in 2022, you released 11 parrots into that Connewarre area? We have been there; as a committee we have had a look. I did not see any, but that is not to say that they were not there. That was in 2022. They were released during duck season, in April, and they were still around some months later. Can you expand on that if that is correct?

Peter MENKHORST: Yes. The critical habitat in that Lake Connewarre system is not open to hunting. It is a wildlife reserve and has been for a couple of decades. That is the area that the parrots mostly use, and so it was not felt necessary to close the remainder of the area in previous years.

Melina BATH: And they were still there post season to your knowledge?

Peter MENKHORST: The parrots?

Melina BATH: Yes.

Peter MENKHORST: I do not have the information in my head, sorry. But the birds were there for much of the winter in 2022, and there are now five birds there presently that have been seen.

Melina BATH: Maybe there is a document that you have got on it or there is some piece of information you could provide. I think it is just an example of what you are releasing and then how those species are going. Your surveys are conducted before the start of the season. Have you thought about doing a post-season abundance survey, so after the end of a duck-hunting season, on the same lands?

Peter MENKHORST: Of waterbirds or of parrots?

Melina BATH: No, on those ones that you have mentioned, the various ones that you spoke about before.

Peter MENKHORST: No. It is important to understand that Australian waterbirds are highly mobile. They move around from habitat to habitat. The pre-duck season counts are done as close as possible to the opening day, but they cannot be the day before the opening day because of legislative requirements under the *Wildlife Act*, so we have to do them about a month beforehand.

Melina BATH: Thank you. I am running out of time. I do apologise. In terms of the game species, so game duck species, has there been a decision that you have made that you could actually check afterwards? What would your comment be on that, doing those surveys after the end of a season?

Peter MENKHORST: There is so much variability in duck numbers through time that I doubt that you would find any difference.

Melina BATH: Okay. From the start of the season to the end of the season there could be the same level of abundance.

Peter MENKHORST: Well, the difference is probably such that you could not say that it was due to hunting.

Melina BATH: Yes, it is immeasurable.

Peter MENKHORST: It could just be climatic conditions or habitat drying out.

Melina BATH: Thank you. I have more, but I can put them on record and send them to you if we do not have time.

The CHAIR: Thanks, Ms Bath. Ms Copsey.

Katherine COPSEY: Thank you. Has it been your experience that although we are doing our best to locate endangered species populations to inform pre-emptive wetland closures, usually things come up during the season, additional sightings and so on, that inform? Do you think that that is inevitable in terms of the practice of trying to predict where threatened species might be around duck season?

Peter MENKHORST: Given the capacity that we have for the number of wetlands that we can survey, yes. We do not claim to have anywhere near full coverage. So yes, it is not uncommon for threatened species to be sighted after the season has begun. But if those are reported to the Game Management Authority or DEECA, they are investigated, and action can be taken during the course of the season.

Katherine COPSEY: Would you be comfortable making an estimate on the kind of resourcing that would be required in order to visit the state game reserves to predict this more accurately?

Peter MENKHORST: There are thousands of wetlands in Victoria that are open to hunting. Many of them are on private land, so we do not necessarily have access. Dave's aerial survey talked about covering 800 wetlands. For our on-ground counts pre-duck season we cover about 140 high-priority wetlands, and we

have developed that list in association with the Game Management Authority. So the capacity is restricted by both budgets and by personnel – having adequate skilled people to undertake it.

Katherine COPSEY: It would be a big job.

Peter MENKHORST: We do what we can.

Katherine COPSEY: Yes. I am interested in, in your 2017 report, some of the recommendations regarding the medium-term improvements that might be added to the adaptive harvest model, including harvest bag surveys. Can you give me any insight into whether that recommendation has been adopted and how far it is along in terms of incorporating that into the methodology?

Dave RAMSEY: Yes, I believe so. The Game Management Authority conducts the hunter bag surveys. I believe they have made some efforts to adopt those recommendations. It gives you an idea about – you can get ratios of juvenile to adult birds, so you get some idea of recruitment from those surveys. So, yes – I do not know whether they have fully implemented them, but they definitely changed the number or the intensity of the surveys that they do.

Katherine COPSEY: Because my understanding from what we have heard so far is that the bag surveys were mainly undertaken for enforcement purposes and checking compliance with regulations.

Dave RAMSEY: That certainly is its primary purpose, yes.

Katherine COPSEY: Right. So do you think that it has yet reached the level that you were recommending around that being a statistically valid sample of bags?

Dave RAMSEY: Good question. I have not had the opportunity to analyse the revised hunter bag survey data yet, so I do not know whether an adequate sample has been collected that would be statistically valid. So I do not have an answer to that question, I am sorry.

Peter MENKHORST: One thing the Game Management Authority did do was ask my team to develop ageing and sexing guidelines for the game ducks, which we did. So they now have much better capacity to examine the birds in hunters' bags and age them and sex them to give the sort of population information that Dave needs for his model.

Katherine COPSEY: Can you recall when that request was made? Around roughly in the last –

Peter MENKHORST: It was around about 2017–18 that we produced that.

Katherine COPSEY: Okay.

Dave RAMSEY: I reckon it was 2018, yes.

Katherine COPSEY: I would be interested in, if you have got capacity to provide, an estimate around what size of a sample you would need for it to be representative, your thoughts for the GMA on whether that is achievable given the resources and the kind of uplift in resources that would be required in order to fulfil that recommendation adequately. I do not expect it this evening.

Peter MENKHORST: Is this for the bag surveys?

Katherine COPSEY: The harvest bag surveys recommendation, yes.

Dave RAMSEY: I think the main issue is there probably would be definitely enough data for one or two species. It is about whether it would cover all the game species – that would be the question. You are a little bit at the mercy of what hunters have got in the bag, so even with the best survey, if the species is not that common at those areas, then you might not get enough to be statistically valid.

Katherine COPSEY: It might not be feasible.

Dave RAMSEY: Yes.

Katherine COPSEY: Great. Thank you.

The CHAIR: Can you just tell us on notice what those species are that you think are the most –

Dave RAMSEY: The most common species? That would be grey teal, Pacific black duck and Australian wood duck. They are by far the majority of the game species that are hunted each year.

The CHAIR: Mr Galea.

Michael GALEA: Thank you, Chair. Good evening, both. Thank you for joining us. These are very thorough, very good reports that you produce. Can I ask: what is the typical cost of producing them?

Dave RAMSEY: Good question. So the cost of producing, say, the report into the abundance of game birds – there is the cost of doing the surveys, which is covered by the Game Management Authority. They fund and organise those. They give me the data and I conduct the analysis and write the report, so that is a relatively cheaper part of the whole process. Typically an analysis and report is somewhere between sort of 40K and 50K.

Michael GALEA: Sorry?

Dave RAMSEY: $40,000, $50,000.

Michael GALEA: That is just your component?

Dave RAMSEY: Yes.

Michael GALEA: In terms of your staffing and other resources that you require for that, again does the GMA contribute a fair share of that?

Dave RAMSEY: Yes, they fund the analysis as well as the surveys. For the abundance estimates there are two of us. I do the population estimates, and I have got a colleague who does analysis of satellite imagery to work out water availability in the landscape.

Michael GALEA: Cool. I think every hearing that we have we have more and more questions for the GMA, so I am glad they are at the end. In terms of your broader picture work with waterbirds, I am assuming the staffing resources will be similar – you can spread that out over different reports – but what would you estimate the aggregate cost of your entire work with waterbirds to be?

Peter MENKHORST: For our annual pre duck season surveys, the cost to ARI is about $30,000, but the surveys are conducted by regional staff. So each of the DEECA regions has costs, which I do not have a good figure on.

Michael GALEA: So your role is central, coordinating all these DEECA actions?

Dave RAMSEY: Yes. We are not really involved a lot in the data collection side of things. We are really the synthesis side of the equation. Once there is the data, we do the quantitative analysis and make the recommendations from what the data said.

Peter MENKHORST: And the funding for the pre duck season surveys comes from DEECA rather than the GMA.

Michael GALEA: What is from the GMA, sorry?

Peter MENKHORST: Rather than from the GMA.

Michael GALEA: So DEECA provides all the funding for your part of the work.

Peter MENKHORST: Yes.

Michael GALEA: Thank you. I note that you have attempted to create a formula for the government to be able to use as a bit of a threshold indicator for when a wetland should be closed. Has that ever been used to your knowledge?

Peter MENKHORST: Yes, it has been used for the past three years.

Michael GALEA: So whenever there is a section 86 order, that is as a result of your survey, or is this more pre season?

Peter MENKHORST: It is usually based on our pre-season survey.

Michael GALEA: Sure. So the determination for which wetlands will and will not be open or, probably more accurately, which will be closed that would otherwise be open, is based off your research. Is that correct?

Peter MENKHORST: Yes.

Michael GALEA: Thank you. Can I also ask about your methodology? Is it peer reviewed or independently reviewed?

Peter MENKHORST: It has been reviewed by colleagues at the institute.

Michael GALEA: So self-reviewed within the ARI or within DEECA?

Peter MENKHORST: Within ARI, but my co-author on the 2022 report is from a wildlife policy group in DEECA.

Michael GALEA: Okay. Thank you.

Peter MENKHORST: Sorry, and it is also reviewed by the GMA.

Michael GALEA: Cool. You did talk about data collection earlier as well, the collection points. Is that something that you are across or is that more for DEECA – that they sort of choose those collection points and where samples are?

Peter MENKHORST: No, they are chosen by us.

Michael GALEA: And are they done at a random scale? Are they designed to be representative? How do you decide which sites are looked at?

Dave RAMSEY: We are talking about two surveys. There are the preharvest surveys which are used to close wetlands, and then the population surveys are done at a –

Michael GALEA: Sorry, I was referring to the population surveys.

Dave RAMSEY: The population surveys – yes, they are done using principles of random sampling. So we stratify water bodies into different types and different sizes, and we take a random sample of those to conduct our surveys. Because we do that, that allows us then to make some inference, to go from the sample to the population of water bodies in the state, to get to our population estimates.

Michael GALEA: Wonderful. Thank you. With 4 seconds, I will yield the rest of my time. Thank you very much.

The CHAIR: Mr Mulholland.

Evan MULHOLLAND: Cool. Thank you. You mentioned six to 10 wetlands that need extra management techniques. Could you expand on this?

Peter MENKHORST: That has been the experience over the past three years, that when there is disturbance the susceptibility equation has been applied. That is just what we have found the outcome has been. It will vary from year to year depending on what species of waterbirds are found at the wetlands that we monitor.

Evan MULHOLLAND: Cool. You have bird counters and field staff out counting birds. Can your staff correctly identify a bird prior to 8 am?

Peter MENKHORST: Prior to 8 am?

Evan MULHOLLAND: Yes.

Peter MENKHORST: We do our surveys throughout the daily period.

Evan MULHOLLAND: Let me rephrase: at what time do think you could make a confident, correct identification?

Peter MENKHORST: Any time after sunrise, really – before sunset.

Evan MULHOLLAND: Okay. And is there –

Peter MENKHORST: We are using spotting scopes and binoculars and so on.

Evan MULHOLLAND: Yes. Is there any crossover that is achieved during your abundance survey? So is there anything being observed that could benefit non-game species?

Dave RAMSEY: It is primarily game species from the observations taken from the helicopter. They do have observations of other species; I think they have taken observations of brolga. But in terms of other waterbirds, there has not been any concerted effort to get estimates of other waterbird species besides the game species just because it requires a lot of people who are skilled in the identification of a wider range of waterbird species.

Evan MULHOLLAND: Cool. I am interested in the disturbance rankings. Stakeholders on Friday mentioned that the only management action that seems to be applied in Victoria at the moment is total closures. Can you talk us through perhaps a more nuanced approach, where it might be more appropriate to implement partial closures, for example, or to prohibit motorboats and things – how that works?

Peter MENKHORST: Those partial measures are applied in Victoria, so the measures range from total closure, which is fairly extreme. We have partially closed wetlands. There was one this year at Reedy Lake near Nagambie; just one portion of it was closed off. We have in recent years banned shooting from boats on Lake Bolac to give the big flocks of blue-billed ducks that were there a chance to stay out of range of shooters from the shore. That goes right down to just putting up more signage or having more staff on the ground. I think the range of possible extra management measures is being applied. But it is not up to me or even DEECA; it is a joint decision between DEECA and the GMA.

Evan MULHOLLAND: Cool. Thank you, Chair.

The CHAIR: Mr Bourman.

Jeff BOURMAN: Thank you, Chair. Thank you, gentlemen. We are now at the interim adaptive harvest model stage, I understand. Do you believe that the model that you have created is fit for purpose for the long-term management of the harvesting of waterfowl? Do you see that you are on the right track?

Dave RAMSEY: So you are not talking about the interim model that is being applied now, you are talking about the adaptive harvest management?

Jeff BOURMAN: My understanding is we are working towards –

Dave RAMSEY: That is right, yes.

Jeff BOURMAN: the adaptive harvest model, using this to modify it as we go along.

Dave RAMSEY: Yes. So we would need a few other things to fall into place before I think we are ready to apply the adaptive harvest model. One of those things is being able to make better use of Richard Kingsford's eastern Australian aerial waterfowl survey, because we conduct our surveys from a helicopter for various reasons, and we need to work out how to utilise Richard's surveys, which are undertaken in a fixed wing, so that we are comparing apples with apples, basically. We need to do that and probably also conduct some additional surveys of maybe small farm dams in New South Wales or southern bits of New South Wales or other parts of the basin that are not covered at the moment. Once that is done, I think then we will be pretty close to being able to start implementing it.

Jeff BOURMAN: I guess as you are scientists, to a large degree we are here to question you. Do you feel that the harvest model we are working to is going to create any problems with duck numbers ongoing? Obviously the harvest goes up and down with the conditions and so on – no-one is really disputing that – so I am kind of asking you to state the obvious, I guess, but do you see that your scientific model is going to promote the longevity of these species?

Dave RAMSEY: Yes, absolutely, and I say that not because I believe it myself; the same system has been used to manage duck harvests in the USA for over 25 years. In North America they manage their duck harvest using the same process as what we are trying to implement here. They have also implemented it in Denmark. They manage a migratory goose population using adaptive harvest management, the same process as what we are trying to implement here. So there are precedents for this in other jurisdictions, and that seems to have worked successfully.

Jeff BOURMAN: Thank you. I assume you work off both the American and Danish models to give you a path. Are you able to supply on notice whatever data you have about the Danish and the American models?

Dave RAMSEY: I do not have any raw data as such. They publish results in scientific journals, and we read those and we get some understanding about their process through those sources rather than analysing their data. You know, we would not implement exactly the same model as they would, because it is a different system over here. It is a bit of a boom–bust over here – we have wet periods and then extreme dry periods – so we need to adapt the approach to cater for our unique environmental conditions over here.

Jeff BOURMAN: I think someone wrote a song or a poem that said something about droughts and sweeping rains. We get it all.

Dave RAMSEY: Yes. That is right. That is the one.

Jeff BOURMAN: Thank you for that. I am thinking about the section 86 notices – and this is probably for Mr Menkhorst. Can you explain to me how the process was used to close Reedy Lake near Nagambie for flying foxes, given that they are not even one of the bird species considered – well, technically they are not even a bird. I am trying to figure out at what point these notices can be used to shut a wetland down when they – I am wildly paraphrasing here – are not really meant for that level of nuance, when you are starting to go into other species. Correct me if I am wrong; I am happy to be corrected.

Peter MENKHORST: No, you are not wrong. The process has focused on birds until now, but when we heard that there was a colony of grey-headed flying foxes, a threatened mammal, that had formed at Reedy Lake – that was brought up, I forget where that information came from – it was discussed during the meeting at which we discuss the potential for extra management attention. I argued that flying foxes are susceptible to disturbance and that maybe we should think about whether hunting was appropriate around the flying fox colony, and the group of people agreed that it perhaps was not.

The CHAIR: Thanks, Mr Bourman.

Jeff BOURMAN: I am technically out of time. But I guess we were breaking new ground. There is always a way of putting it. I do not think it was part of the actual study. I am trying not to paraphrase you, but it was not part of any previous study.

Peter MENKHORST: No, that is right.

Jeff BOURMAN: It was a new thing.

Peter MENKHORST: It was a new thing.

Jeff BOURMAN: Thank you. I am out of time.

The CHAIR: Ms Watt.

Sheena WATT: Hello. Thank you both for being here and for the work you do. You mentioned earlier about the GMA and that they review surveys or reports, I think it was. Is that right?

Dave RAMSEY: Yes, so they do have an opportunity to review the report, but we do get our work reviewed by other parties. For instance, the abundance estimates were reviewed by Richard Kingsford – the methodology was reviewed by Richard Kingsford and Tom Prowse at Adelaide University. They made some recommendations about things that we could improve, and we implemented all of those.

Sheena WATT: That is the Adelaide University folks you mentioned?

Dave RAMSEY: That is right, yes. There were two people that reviewed our work.

Sheena WATT: Okay. Has the GMA ever requested any changes to the reports?

Dave RAMSEY: Have they?

Sheena WATT: Ever requested any changes to those reports?

Dave RAMSEY: Only points of fact.

Sheena WATT: Only on points of fact; alrighty, that is helpful to know. The GMA are funding the surveys on which your analysis is based, is that right?

Dave RAMSEY: Sorry?

Sheena WATT: GMA funds the surveys on which the analysis is based?

Dave RAMSEY: They do, yes.

Sheena WATT: Do they actually conduct the surveys?

Dave RAMSEY: No, they contract the actual surveys out to a third party. It is an outfit called Ecoknowledge based in South Australia. It is put out for tender, but Ecoknowledge has been the successful bidder for that work, and they have expertise at aerial surveys of wildlife.

Sheena WATT: Any knowledge of how long that body has had that gig for, frankly?

Dave RAMSEY: Well, we have only done it for a year.

Sheena WATT: So is it all three?

Dave RAMSEY: Yes. They have done it each year.

Sheena WATT: Each year. Okay. Great. So who decides then which wetlands will be surveyed?

Dave RAMSEY: I decide.

Sheena WATT: You decide. Okay. There we go; that is very helpful. That was my question. Also with skilled personnel, I imagine there is a range of skilled personnel needed to conduct these surveys, and that they would be hard to come by, I imagine. Talk to me about these sorts of skilled personnel. I cannot imagine what the role is, so talk to me a little bit about what they do.

Dave RAMSEY: So part of the tender process was that the personnel who were doing the observations had to have so many hours of work in identifying game species of duck. There was a minimum amount of previous experience that they had to have before they could conduct the surveys. Exactly what that was I cannot recall, but we obviously needed people who could identify birds from the air. The only real difficulty I think that we had was that some, for example, grey teal and female chestnut teal, are very similar in appearance so we had to make allowance for that in the analysis.

Sheena WATT: So allowance for some error?

Dave RAMSEY: Yes, so the observers would count. Male chestnut teal are brightly coloured and easy to discern from grey teal, but female chestnut teal are very similar to grey teal, so we had to do some extra ground surveys to make a correction for the amount of female grey teal that could have been chestnut teal.

Sheena WATT: That is very helpful. Thank you very much. I just want to go to some of the other witnesses who proposed other indicators or measures in the adaptive harvest model that were not accepted. Are there any other major indicators that are not in the model?

Dave RAMSEY: Such as – sorry, when you say 'indicators' –

Sheena WATT: I think any other measures that you consider, or you do not consider, rather, in the work that you do?

Dave RAMSEY: Yes, so there is an interim harvest model that is currently being used, which is not the adaptive harvest model that we are developing. And the interim harvest model is based on a bunch of indicators such as amount of water in the landscape, indices of duck abundance from Richard Kingsford's aerial survey work and a few other things. I think there might be –

Peter MENKHORST: Our pre-season survey –

Dave RAMSEY: Yes, the surveys that Peter oversees. They are all used as indicators in that interim harvest model. I was not responsible for that interim harvest model. That was developed by Richard Kingsford and Marcel Klaassen at Deakin University.

Sheena WATT: That is right. Just going to those overseas jurisdictions, and you talked about the USA, I think.

Dave RAMSEY: Yes.

Sheena WATT: And Denmark, I understand, is geese or something, I think.

Dave RAMSEY: Yes, the pink-footed goose.

Sheena WATT: That is the one. Thank you. They have a similar approach. How were their environmental conditions different, and how much so? I mean, you said about the boom and bust. Is that in both of those jurisdictions, that difference, or is it more –

Dave RAMSEY: No, I was talking about – the boom and bust is mainly Australia. We are a bit different.

Sheena WATT: And so they are similar, both Denmark and the US, just to understand them?

Dave RAMSEY: Yes, broadly, yes.

Sheena WATT: Given that then, how applicable do you find those overseas studies to the work that you do?

Dave RAMSEY: Yes. The approach is the same, but the implementation would differ based on the local conditions. So, yes, that is the difference. There is the principle of adaptive management, so the theory about how you go about constructing a credible model that represents the local populations of ducks. So in North America you would have a model that makes predictions about their mallard populations and how they would respond to harvest. In Australia we would do something slightly different based on our unique environmental conditions over here.

Sheena WATT: Lovely. Thank you.

The CHAIR: That is time, Ms Watt. Ms Purcell.

Georgie PURCELL: Thanks, Chair. Thank you for appearing tonight. In the 2022 Arthur Rylah report, the trigger criteria in many people's opinions are virtually guaranteed to never activate a wetland closure. The trigger chosen is the same bird abundance criteria used to qualify a wetland for globally significant Ramsar status, about 1 per cent presence of the population. It seems that GMA and DJSIR consider it more important to protect the convenience of shooters than to protect vulnerable species. Who suggests the criterion, and what is the science behind it?

Peter MENKHORST: I suggested it, and it needed to be defensible and err on the side of caution. I think the 1 per cent of the regional population, not the global population – we are applying it to the south-eastern

Australian population and south-eastern Australia, from a duck's point of view, is the Murray Darling Basin plus the Lake Eyre drainage basin pretty much – is southern Queensland, pretty much all of New South Wales, pretty much all of Victoria and even Tasmania. So, yes, we had estimates for the population within that area and yes, I suggested it. It was just accepted pretty much. But I do not agree that it almost never gets met because it does. We closed 10 wetlands before this season just started.

Georgie PURCELL: Before the season, but a number of wetlands were closed during the season that would not have met the criteria that were deemed necessary for threatened species there. I guess I am interested to know how ARI know that this model protects sustainability and endangered species.

Peter MENKHORST: It is a process that is a step in the right direction, I think. And it grew out of complaints from both hunters and the opponents of hunting that the decision-making process around closure of wetlands or extra management of wetlands was not transparent and was inconsistent. So this process was initiated to try and produce a logic and a transparent process that would help overcome some of those concerns, and it is out there. It is open to criticism and adaptation as people see necessary.

Georgie PURCELL: Yes. Do you think that the 1 per cent trigger level set according to the 2016 and 2019 population data might have been artificially high?

Peter MENKHORST: The 1 per cent might have been artificially high? It is a high ask, yes.

Georgie PURCELL: Okay. Thank you. Do you think that you know the long-term effects of climate change on birds, and is that considered in the modelling?

Peter MENKHORST: No, we do not know the long-term effects of climate change on waterbirds, but they are almost certainly going to be deleterious.

Georgie PURCELL: Okay. I want to talk a bit about the duck season summer waterbird priority count. In 2021 the waterbird priority count was less than a quarter of the long-term mean. There were no freckled ducks counted at all across 150 priority wetlands, yet this critical data was not publicly released until August 2021, well after the end of the shooting season. GMA's website does not show either the 2022 or 23 summer waterbird priority counts. In the interests of transparency, why cannot this data be made publicly available more quickly before the season decision?

Peter MENKHORST: It is mostly to do with workload. We hold the surveys as close as possible to opening day. We get the data in, we make a quick assessment of those data and then we have the round-table discussion about what actions those data trigger. Then duck season takes place, and in the meantime we enter the data into the computer system and analyse it and write the report. That is fairly protracted. Writing a scientific report is not a quick thing, and getting it approved –

Georgie PURCELL: Yes, I can understand. There is a lot of interest in it. A documents motion that was passed in Parliament a number of years ago released some correspondence between ARI and GMA in disagreement on a season decision – some of the recommendations. What do you do when this happens?

Peter MENKHORST: The GMA make recommendations to their minister and the department makes recommendations to our minister, and the ministers sort it out.

Georgie PURCELL: Okay.

The CHAIR: That is time. I had one really minor question. One of the species of birds in your report has a negative susceptibility score. What does that mean? Lewin's rail – it has got negative 0.25 on its susceptibility score. Is that just a quirk of the data?

Peter MENKHORST: It is a quirk of the scoring system.

The CHAIR: Okay. It does not mean anything more significant than that?

Peter MENKHORST: No.

The CHAIR: Okay. I was just picking out one thing that looks different from everything else and thinking, 'Why is it like that?'

Peter MENKHORST: It is at the bottom of the priority list as a consequence.

The CHAIR: Yes. I just wanted to check. Thank you so much for coming in and providing us with your clearly considerable evidence tonight, plus the TV recommendation – always welcome. The secretariat will provide you a copy of the transcript for review in about a week, before we publish it on the website. With that, we are done for the day.

Peter MENKHORST: Thank you.

Dave RAMSEY: Thanks for the opportunity to come in and give evidence today.

Committee adjourned.