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Submitted by email: graeme.ford@gma.vic.gov.au
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Dear Graeme,

***Animals Australia's submission regarding
Environmental and Population Conditions Relevant to Duck Shooting in Victoria 2023***

Animals Australia appreciates the opportunity to comment on data and information available to stakeholders with respect to deliberations pertaining to a potential 2023 Victorian duck hunting season – including the Game Management Authority (GMA) document 'Considerations for the 2023 duck season' (hereafter, "**Considerations 2023**") and the recently developed Kingsford-Klaassen model¹ ("the KK model") that attempts to model past decision-making to inform future approaches to duck shooting.

As you are already aware, Animals Australia totally opposes recreational duck shooting and continues to vehemently urge the Victorian Government and relevant ministers to ban this inherently cruel and unnecessary practice on animal welfare and ethical grounds. Regardless of this enduring and well-based stance, we are participating in this consultation to ensure a detailed and fair analysis is provided of the **environmental** 'considerations' that the GMA and Ministers must assess prior to any decision on duck shooting in 2023.

We also note that s86 of the *Wildlife Act 1975* ('the Wildlife Act') which empowers Ministers to vary or cancel a shooting season is **not restricted to environmental matters**, so in this submission we provide broader arguments as well.

¹ Professors Kingsford and Klaassen:

- (29 November 2021) *Relationships among duck population indices and abiotic drivers to guide annual harvest management – Version 2* (not available on GMA website); and
- (23 December 2021) *Using duck proxies and surface water to inform hunting arrangements* (published on GMA website); and
- (19 December 2022) *Using duck proxies and surface water to inform hunting arrangements for 2023* (published on GMA website).

In this submission these documents will be referred to respectively as KK N21; KK D21; KK D22.

As an independent statutory authority, GMA has a duty to monitor the impacts of hunting and provide appropriate advice to Ministers (sections 6(h) and 6(i) of the *Game Management Authority Act 2014* ('the GMA Act')) rather than taking a "set and forget" approach to the policies determined eleven years ago by a previous government through the *Wildlife (Game) Regulations 2012*.

It is our strong view after assessing the documents provided to us by GMA late in December 2022 that there should be **no duck shooting season permitted in 2023** based on the current environmental situation and game duck population 'abundance' estimates. **This submission outlines the dire situation facing these species and warns against reliance on an experimental model (the KK model) that is founded on past decision-making which has failed to arrest serious decline of game duck populations.** (In stark contrast, non-game species have flourished under current extended La Nina conditions.)

We alert and remind the GMA of **its biodiversity obligations under sections 4A and 4B of the *Flora and Fauna Guarantee Act 1988*** (hereafter "the FFG Act") which appear to have been overlooked in the past. The unnecessary recreational shooting of native waterbird species would provide further risk to their long-term survival (in addition to the cruel impact on targeted birds) and is contrary to the clear obligations of the FFG Act to take a precautionary approach and to protect biodiversity.

As a preliminary and relevant matter, we have a number of serious concerns regarding the GMA's briefing and recommendation to Ministers about the (previous) 2022 season. In particular, we believe the GMA misled Ministers prior to the 2022 season by claiming that its proposed season setting was "recommended" by Professors Kingsford and Klaassen.

We also express serious concerns regarding the GMA's representation of our 2022 submission and apparent failure to consider and respond to the serious concerns we raised. It seems GMA restricts its attention to "new data" in submissions, rather than considering stakeholder comments about how GMA uses or fails to assess and use existing data and information.

We now seek a response from the GMA Board in relation to three important matters that were raised in our last submission but failed to be addressed:

- Public disclosure of the legal basis on which GMA permits duck shooting (on sites other than the 241 sites covered by regulation 69); and
- Acknowledgement of the concerns raised by reviewers Kingsford and Prowse regarding likely over-estimation of game duck populations in the ARI helicopter survey (see our Attachment B); a follow-up assessment by these reviewers is necessary to check progress with rectification; and
- The longstanding request from an eminent regional ornithologist to restore sanctuary status to two of his local wetlands.

We now present an *Executive Summary* of our 2023 submission to GMA, with full details following in this submission. Key issues are also elaborated upon in the Attachments A and B.

EXECUTIVE SUMMARY

- I. We have deep concerns with GMA's advice to Ministers² concerning the 2022 duck shooting season (refer our Attachment A for elaboration), especially its failure to:
- consider the growing impact of global warming and climate change;
 - consider the GMA's sustainability and biodiversity obligations under sections 4A and 4B of the *Flora and Fauna Guarantee Act 1988*³;
 - provide any information about a central sustainability issue: the breeding (or failure to breed) of game duck species, and the associated ageing of these populations;
 - consider sustainability for each of the 8 individual species of game ducks, key to protecting biodiversity;
 - understand the findings from the NSW Riverina duck surveys⁴ (cited three times as "recovery" but these game ducks suffered a 10% decline in 2022);
 - explain how it complies with its obligations under ss5(a), 6(h), 6(i) and 8A of the GMA Act;
 - take seriously – or even mention - the detailed concerns raised in our 2022 submission, including in particular our concerns with the new "science" employed by GMA to justify so-called "sustainable" duck shooting.
- II. The Eastern Australia Waterbird Survey conducted in October-November 2022 (hereafter "EAWS 2022") has once again delivered stark and shocking waterbird population data for GMA, an agency tasked with promoting sustainability in game hunting. **Despite three years of La Nina conditions, record rains in some areas, and a strong rebound in non-game waterbird species⁵, game duck abundance estimates continue to decrease. Game duck abundance is now at a new, even lower "3rd lowest" on record** (previously the 2021 result was the 3rd lowest in four decades of surveys). Six of the eight game duck species are in long-term decline. The other two have suffered a sustained collapse during the last decade, with one of them (the Hardhead) now joining Victoria's Threatened list.
- As GMA has failed to report any EAWS data on breeding for game ducks, it seems this breeding continued to be minimal. The GMA also fails to act upon Birdlife Australia's request to set a baseline abundance for each species (that is, a target to be reached and maintained as a minimum for conservation). **By every measure, the management of game ducks has failed to arrest their long-term decline. This is contrary to GMA's responsibilities under sections 4A and 4B of the *Flora and Fauna Guarantee Act 1988* (hereafter "the FFG Act").**
- III. The KK model developed by Professors Kingsford and Klaassen has been referred to (even hailed) by GMA as "*the best science presently available to assist with objective decision-making on annual duck season arrangements*⁶." However it is currently the only model that addresses such arrangements. **We contend the KK model is not fit for purpose as a predictor of duck season settings. We strongly oppose its use to decide or defend GMA recommendations for shooting seasons.** The scientists clearly provided a number of caveats about its potential use.

² GMA's Ministerial brief (18.1.22) can be found on the GMA website under "*Previous duck season considerations*".

³ Referred to as "FFG Act" in this submission.

⁴ *2021-2022 Annual Waterfowl Quota Report to DPI Hunting*, NSW Department Primary Industries

⁵ <https://newsroom.unsw.edu.au/news/science-tech/waterbirds-respond-positively-widespread-flooding-aerial-survey>

⁶ *Brief 2022*.

We are unable to find any evidence that they recommended their model be used to justify full-length, or super-length (90 day) seasons, as in 2022.

The model has not been peer-reviewed, and it bases its modelling on historic decision-making patterns that are up to 30 years old, that is, before climate change and land use changes took full effect. Demonstrably and tragically those former duck season decisions and our changing environment have cumulatively helped to destroy the resilience of game duck populations, pushing several species to the brink in recent years.

Further, the model does not accurately reflect the history on which it is based. Inexplicably, it has been used to defend a policy of full-length seasons every year, but it is derived from a 30-year period (1991-2020) when half the seasons were shortened or cancelled. Further, this model fails to predict any season cancellations when applied to that period, not even during the Millennium drought.

Kingsford and Klaassen acknowledge that the KK model is not prescriptive, has an (unspecified) margin of error, and should only be used as a guideline along with “due diligence”. **We seriously question the “due diligence” exercised by GMA for the 2022 season settings** (refer our Attachment A). The ongoing decline in game duck abundance despite record rains confirms that GMA’s season settings are not consistent with sustainability.

- IV. The 2022 Victorian helicopter survey of game ducks designed by Dr Ramsey from the Arthur Rylah Institute (ARI) is not yet available to stakeholders. However these annual helicopter surveys which commenced in 2020 are still in a trial phase and serious inadequacies were exposed by the Kingsford-Prowse peer review in 2021⁷. There is no public information as to whether these problems have been adequately addressed. **A further peer assessment (by Kingsford-Prowse or other qualified peer review) is required before any public confidence can be placed in the results of these surveys.**

We are strongly opposed to ARI’s tacit acceptance of a 10% ‘cull’ as “sustainable” without any supporting evidence in Australian conditions. **Mere ‘acceptance’ of a standard 10% culling policy will guarantee no season is cancelled; shooters can target 10% of whatever ‘game’ bird populations are left on the wetlands, despite species decline and extinction risk.** The Riverina duck survey results indicate that a 10% duck cull around NSW rice farms has contributed to the recent, significant decline in duck numbers, despite favourable conditions.

- V. GMA in its “*Considerations 2023*” document emphasises recent rainfall and improved habitat. It then focuses on the rebound in “waterbird breeding” and “waterbird abundance”. This is seriously misleading: “waterbirds” and “game ducks” are two different groups. The vast majority (96%) of waterbird breeding seen by the EAWS team was of non-game species (primarily Ibis). **The “waterbird” statistics have rebounded in response to good rains, while game ducks continue to decline.** GMA seemingly fails to consider that shooting hundreds of thousands of game ducks every year may have depleted their resilience. **Inexplicably, GMA provides no data for game duck breeding or the ageing of these populations due to such low breeding levels in recent years.**

⁷ Prof Richard Kingsford and Dr Thomas Prowse, Untitled review of the ARI helicopter survey of Victorian game birds, Sept 2021.

Even if late breeding of game ducks were to occur in summer-autumn 2023, a shooting season is contrary to the relevant indication in the Regulatory Impact Statement (RIS) 2012⁸ that underpins the current hunting regime. That RIS states that duck shooting is “humane” because shooting seasons are timed to avoid breeding and moulting periods when ducks are highly vulnerable (p29). It would also be contrary to s6(e)(ii) and (iii) of the GMA Act 2014 (hereafter “the GMA Act”) which requires GMA to address the humane treatment of animals.

- VI. **Legal issues:** We continue to hold grave concerns regarding GMA’s compliance with its “responsibility and sustainability” mandate (s5(a) of the GMA Act) and sections 6 and 8A of the Act. Similarly, GMA has important biodiversity obligations under ss4A and 4B of the FFG Act.

We also question the legal basis on which duck shooting is permitted on areas other than the 200 State Game Reserves and the additional 41 wetlands listed in the *Wildlife (Game) Regulations 2012* (hereafter “the Regulations”). We raised this concern in our submission last year and it was included in GMA’s brief to Ministers. **We now respectfully seek a direct response from the GMA Board (and not simply a referral to DELWP’s successor DEECA).**

- VII. **We recommend and urge a complete cancellation of the 2023 season on environmental grounds** (being the basis of the information provided in the ‘*Considerations 2023*’ document). The critical and ongoing decline of game duck species – despite extended La Nina conditions that brought welcome recovery for other waterbird species - will only be exacerbated by the shooting of breeding stock and the demise of late-bred ducklings.

⁸ Regulatory Impact Statement prepared for the *Wildlife (Game) Regulations 2012*, available from <https://www.vic.gov.au/regulatory-impact-statements-2012>

1 SUSTAINABILITY

1.1 Biodiversity

We are deeply concerned that GMA appears to support a maximum-length duck shooting season each year. This is despite ever-decreasing game duck populations and negligible breeding of these species, even under the recent (unusually prolonged) wet conditions produced by successive La Nina cycles. **By every measure, GMA’s “management” of duck shooting fails the test of “sustainability” and is contrary to its responsibilities under the FFG Act.**

1.1.1 GMA’s biodiversity obligations under the Flora and Fauna Guarantee Act

Section 4B of the FFG Act requires that when performing functions that “may reasonably be expected to impact on biodiversity”, Ministers and public authorities must give “proper consideration” to the objectives of the FFG Act, which include:

“(a) to guarantee that all taxa of Victoria’s ...fauna... can persist and improve in the wild and retain their capacity to adapt to environmental change; and

(b) to prevent taxa and communities of ... fauna from becoming threatened... and to recover threatened taxa and communities so their conservation status improves; and

(c) to protect, conserve, restore and enhance biodiversity... and

(d) to identify and mitigate the impacts of potentially threatening processes to address the important underlying causes of biodiversity decline...”

Despite this obligation, since GMA was formed two game duck species – the Hardhead and Blue-winged Shoveler – have joined Victoria’s Threatened list (contrary to (b) above). All eight game duck species are in sustained decline. The Pink-eared Duck and Hardhead populations have collapsed and remained low during the last decade, while all other species show long-term decline over four decades. Yet GMA’s “sustainable hunting” approach employs a new Victorian-only duck survey and a new computer model that acknowledge they lack sufficient accuracy to cater for individual species – which are the essence of biodiversity.

In 2021 GMA failed to recommend a ban on shooting Hardhead, despite knowing this species had met the “threatened” criteria and would be officially listed as such later that year. Inexplicably, GMA has not recommended the Hardhead and Blue-winged Shoveler be removed from the “game” list. Rather than protecting species as the FFG Act demands, this policy protects shooters, shielding them from the onerous penalties for harming threatened species.

CASE STUDY: Threatened species shot (eye-witness account; name and contact details provided)

“Within the first hour of shooting at Lake Bael Bael (Kerang) in 2022, while police and GMA officials were present, two Blue-winged Shovelers were struck and abandoned – one maimed, the other dead. Volunteers retrieved them, and the wounded bird was x-rayed by volunteer vets then euthanised, as its injuries were too great for rehabilitation. No shooter was held to account.”

If GMA was actively surveying to check for threatened species prior to the season opening (consistent with the objectives listed above), this wetland should have been closed to shooters

It is our strong view that GMA fails to give “proper consideration” to FFG Act objectives (a) to (d) listed above.

Under section 4A of the FFG Act, decisions, policies and programs must (inter alia) give proper consideration to:

“(b) the potential impacts of climate change;

(c) the best practicably available information relevant to biodiversity;

(d) the precautionary principle, such that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;

(e) enabling public participation...”

GMA’s annual *Considerations* documents demonstrably do not give “proper consideration” to the potential impacts of climate change (s4A(b) above) despite our past sound pleas for this major and indeed existential threat to be central to considerations.

GMA’s *Considerations 2023* (p24) says of its game duck abundance graph:

“the 3-year rolling (or moving) average ... is used to get an overall trend in a data set.”

It then ignores the fact that **this rolling average for game duck abundance is now at its lowest point on record.**

For many years GMA quoted a year 2000 report⁹ (based on last-century data) as evidence that hunting does not impact game duck abundance. Prior to serious global warming and significant changes in land use, game duck populations showed resilience. But while other waterbirds continue to show resilience, the stark declines for all game duck species show that the situation has changed. It seems they can no longer withstand the pressure of hunting.

It is instructive to see in the NSW Riverina duck survey report¹⁰ that it urges additional protection for 5 of these 8 game duck species - Pink-eared Duck, Hardhead, Chestnut Teal, Mountain Duck and Blue-winged Shoveler - which *“have not shown to respond predictably to changes in climate or only occur in low abundance”*.

Contrary to s4A(d) above, **GMA has consistently failed to heed submissions which advocate for the precautionary principle** (cancelling the season or protecting a species) **in light of climate change and species decline.**

Further, rather than genuinely enabling “public participation” (s4A(e)), **GMA imposes an unreasonable timetable on stakeholders:** a mere two weeks that span the most popular Christmas and New Year family holiday times is given for detailed submissions from key stakeholders. Sadly, but perhaps not surprisingly, Birdlife Australia chose not to submit in 2022, and no other “environmental” groups were consulted.

⁹ *Scientific panel review of open seasons for waterfowl in New South Wales*, Kingsford et al, Nov 2000

¹⁰ *2022-2023 Annual Waterfowl Quota Report to NSW DPI Hunting*, NSW Department of Primary Industries, Aug 2022, p11. These five species are not to be shot (as part of a bird control program at rice farms) unless there are extenuating circumstances.

Far from taking a precautionary approach, GMA has chosen to commission the KK model based on the duck season decision-making patterns from the last 30 years despite a changing climate and environment and the clear decline of species. Shooting continually (artificially and indiscriminately) destroys breeding stock and contributes to population declines. GMA's *Considerations 2023* rightly quotes scientific evidence (p3):

“Hunting during periods when there is little recruitment (e.g. dry periods) removes breeding adults which can negatively affect subsequent recruitment and further drive declines in hunted species (Kingsford et al. 2017 ¹¹).”

Contrary to s 4A(c) of the FFG Act above, **GMA provides no information about the breeding of game ducks in the *Considerations 2023* document**. On previous occasions when we have sought this information directly from the EAWS team, game duck breeding has been negligible (as it is again this year given that five **non-game** species accounted for 96% of observed nests).

As noted in our 2021 submission (p7) to GMA:

*“Given the desperately low breeding of game ducks, it is surprising that GMA did not include [in its *Considerations* document] an estimate of the lifespan of a game duck. According to follow-up advice, the average lifespan is around 4 years¹². **Given the lack of breeding, populations are ageing and catastrophic failure of species is likely - or perhaps is already underway, given the drop in abundance despite improved habitat availability.**”*

Contrary to s4A (c) of the FFG Act, GMA apparently (correspondence with us) neither requests nor receives any game duck breeding data from the EAWS survey team.

The “all waterbird” breeding data regularly included in GMA's *Considerations* documents is mainly for non-game species such as ibis, pelican, spoonbill, tern and egret. It is an irrelevant distraction from the sustainability and biodiversity concerns for game duck species.

GMA and its predecessor, Game Victoria, have been responsible for 13 seasons (2012-2022) but have never recommended a cancellation. Contrary to s4A(d) of the FFG Act, game ducks have been provided no opportunity to recover, and this is reflected in the sustained decline of populations. An apt observation here could be aligned with the alleged statement from Albert Einstein: *“Insanity is doing the same thing over and over and expecting different results.”*

¹¹ Kingsford RT, Bino G, Porter JL. (2017) *Continental impacts of water development on waterbirds, contrasting two Australian river basins: Global implications for sustainable water use*. *Glob Change Biol*. 2017, p9.

¹² Private communication from GMA (S Toop), 29.12.20

1.2 Misuse of science?

We are deeply concerned by the manner in which GMA has presented some of the relevant scientific reports to then justify continued recreational killing of native waterbirds.

As an independent regulator concerned with sustainability of our precious waterbirds, a cautious approach to the information available is key, but such analysis appears lacking. We believe GMA should be focussed on the key questions, including:

How comprehensive and reliable is this data? What are the likely sources of error? Is the species in decline? Is the species breeding sufficiently to replenish stocks? How can we reverse the rapid and continuous decline of species?

1.2.1 The 10% cull

The reports from Arthur Rylah Institute (ARI) researchers on new helicopter duck surveys in Victoria refer to a 10% cull. However this “sustainable harvest” figure has been borrowed from overseas where it is used for species that are increasing (unlike our game ducks). No evidence has been provided that it is sustainable in Australian conditions, especially with global warming.

CASE Study Example :

The Riverina precedent

A 10% quota has been adopted for the NSW Riverina duck cull over rice farms, but only for the three most abundant game species. The latest NSW duck surveys show a marked fall in abundance despite extended La Nina periods. However GMA’s *Considerations 2023* (p27) dismisses this disturbing result:

“Unlike other years, large dams, wastewater ponds, wetlands and channels were not surveyed in 2022, which may have affected results.”

But the Riverina survey reports itemise their results by type of waterbody. Comparing like with like (that is, results for small farm dams only) there was **a decline of 10% this year in the game duck species that are shot in Victoria** – despite improved conditions.

It is significant that GMA’s Ministerial brief in support of a 2022 shooting season made much of a perceived “recovery” in the Riverina, mentioning this no less than three times as a precursor of likely “recovery” elsewhere as habitat improves. Our 2022 submission had warned the Riverina “recovery” should be seen in context: duck numbers had only returned to their 2016 level (when EAWS found game duck abundance at a record low). But GMA did not reflect our crucial observations and it seems now that the Ministers were seriously misled by this excessive emphasis on forthcoming “recovery”.

GMA has suggested the 10% culling figure, despite the ARI report giving no biological or environmental justification for it. **A 10% cull will guarantee no season is cancelled, as shooters can kill a tenth of whatever birds are left, until virtually all birds are lost.** This strategy is completely contrary to the FFG Act, as discussed above.

1.2.2 The new helicopter surveys of game ducks in Victoria

The first Victorian helicopter survey report (Ramsey 2021)¹³ showed a wide margin of error, as expected for a new survey in a challenging field. However the Kingsford-Prowse review¹⁴ of the survey identified a number of additional sources of potential error that would lead to an over-

¹³ *Abundance estimates for game ducks in Victoria*, Ramsey and Fanson, ARI, April 2021.

¹⁴ Op. cit.

estimate of abundance. Kingsford-Prowse explained that this overall uncertainty in results of the helicopter survey is of concern if the abundance estimates are used for determining season settings: **there is risk of over-estimates leading to over-harvesting**. Results for the rarer species were the least accurate.

In Attachment B to our 6.1.22 submission to GMA we provided a detailed summary of Kingsford-Prowse's concerns and suggested that GMA's website is misleading in its glowing words about the helicopter survey and its reviews. As the relevant wording on GMA's website has not been amended, we include our detailed summary once again (see **Attachment B to this 2023** submission) **As there is no publicly available information as to whether any of Kingsford-Prowse's concerns have been addressed in the subsequent 2021 and 2022 helicopter surveys, it is difficult to have confidence in their results.**

For the 2022 season, GMA seized on and publicly used the ARI report's 2.94m gamebird abundance estimate, making no mention of its uncertainty¹⁵. Applying a 10% cull to this figure gives a target of 294,000 ducks permitted to be bagged, compared with the season's actual (shooter self-reported) toll of 262,567 plus (inevitably) tens of thousands of crippled/unretrieved birds.

According to GMA's *Considerations* documents, the EAWS data showed game duck abundance fell by 2% in 2022 compared with the previous year, and the 2021 abundance was less than half (42%) that of 2020. This is despite the generous rainfall from successive La Nina cycles which have enabled non-game species to rebound¹⁶. Game duck abundance across the eastern states is now the third lowest in four decades. **If game ducks cannot recover even in favourable conditions, how is GMA's recommended approach to ongoing recreational shooting seasons "sustainable"?** With minimal breeding of game duck species, continued shooting simply diminishes any hope of a rebound.

1.2.3 The Kingsford-Klaassen model

It is our view that GMA misled the Ministers regarding the 2022 season by stating¹⁷:

"The KK [model] recommends a full-length season ..."

We are unable to find any such recommendation from Professors Kingsford and Klaassen's work. In KK N21 (p15) under the heading *Final caveats* they say:

"We were asked to advice [sic] on the social, economic and ecological costs and benefits associated with reducing either season length or bag limits in relation to reductions in harvest.... If recreational hunters aim for a fixed seasonal effort that would translate into a fixed number of days of hunting in each year, as suggested by the data available to date, limiting daily bags rather than season length might be more effective." [emphases added]

It seems GMA asked the scientists to choose between modifying season length or bag limits – without giving them the option to vary both.

¹⁵ <https://www.gma.vic.gov.au/media-releases/2021/second-helicopter-survey-provides-new-data-on-victorias-game-duck-populations>

¹⁶ *Considerations 2023*, p21 and p30.

¹⁷ GMA's Ministerial brief (18.1.22) is available from <https://www.gma.vic.gov.au/hunting/duck/duck-season-considerations/2020-duck-season-considerations> Refer p1.

In KK N21 (pp26-27) the scientists respond to stakeholder queries. They state:

*“Research (including analyses of hunters’ behaviour in Victoria) indicates that manipulating season length is less effective than modifying bag limits. But that indeed does not invalidate it as a management option. To be effective season length will have to be drastically modulated...
The point [that compliance monitoring is easier/cheaper for a shorter season] regarding enforcement load is valid.” [emphasis added]*

It is easier to design a model with fewer variables. It seems the GMA opted for a long season with the associated less effective enforcement¹⁸, and commissioned a model that only varies bag limits.

This is unlike the last 30 years when season length was one of the levers that could be used (**in combination** with bag limits) to reduce the cull.

However, the scientists did not recommend a full-season length. In their subsequent papers, KK D21 and KK D22, there is no mention of season length. During the 30 years of data (1991-2020) used by the scientists to derive the KK model, season lengths varied from zero (4 cancelled seasons) to the default setting of 87 days, but in one half of those years, the season was shortened (Fig 1, below).

Fig 1: Shortened season lengths for half of the period (1991-2020) used by KK to derive their model

Year	Shooting days
1995	0
2003	0
2007	0
2008	0
2020	38
2009	49
1997	58
2004	58
2019	65
1992	72
2010	72
1993	73
1991	76
2015	80
1994	86

Given this variability in season length for 15 of the 30 years on which the KK model was developed, there seems no reason why season length cannot be drastically shortened by GMA, along with bag limits, as a further precaution to help safeguard biodiversity. However, as argued in this submission on environmental grounds, season cancellation is the ultimate, and at this stage very necessary, safeguard of the vulnerable targeted waterbirds (game birds). The concept of varying bag limits rather than season length seems to have grown from two Danish studies cited in KK N21 (p15):

¹⁸ It is easier to monitor compliance when the season is short, as the sound of gunshot is easily heard outside the legal period.

“Although changes in season length have an effect (Sunde and Asferg 2014, Madsen et al. 2016) it is limited. A phenomenon that may be due to recreational hunters either investing a fixed effort or aiming for a specific yield within a given season (Sunde and Asferg 2014).”

But it is dangerous to assume behaviour in one country will translate to another.

Given a record long 90-day season in 2022, duck shooters more than doubled their hunting days (8.5 days compared with the previous average of 4 days)¹⁹, greatly increasing the hunting pressure and undermining the scientists’ assumption of a “fixed effort”. There is clearly no scientific basis for a fixed, full-length season in Victoria.

Rather than GMA taking a precautionary approach to sustainability, and cancelling the season, its reliance on the KK model resulted in an estimated 262,567 game ducks killed (self-reported by shooter surveys), **comparable to (82% of) the average long-term cull**. In addition, many more will have been shot but not retrieved, as would occur each year, and so are not counted.

There is a corollary to the argument that modest changes to season length have little impact on hunters or total kill numbers. A shorter season would be less disruptive to the lives and livelihoods of regional Victorians, and to the tourism industry, yet shooters would not experience any negative impacts.

Historical data from 1952 onwards (source: GMA website) shows that duck shooting seasons used to be much shorter at 8 or 9 weeks, compared with the current default length of 12.5 weeks. There is ample scope to reduce the season length out of consideration for non-shooters in the regions (refer s8A (c) of the Act re the principle of equity).

Under such dire environmental conditions, seasons should be cancelled - but if the GMA and government lack the political courage to fully protect waterbirds from further decimation, then both bag size and season length should be severely restricted, regardless of inevitable protests from the hunting fraternity. Note again that we offer this observation (not recommendation) based on the information available on the effect of season length, not because we countenance any season to be justifiable regardless of length.

KK (in their *‘Final caveats’* mentioned above) say that “limiting bags rather than season length might be more effective.” But in 2022 a 60% decrease in the bag limit produced only an 18% reduction in birds bagged – which doesn’t seem highly effective. And it certainly didn’t give the game ducks the respite they need to start a recovery in this favourable window before the next drought cycle.

The KK N21, KK D21 and KK D22 documents show **the KK model will never predict a season cancellation**, despite the 4 cancelled seasons in the historic period (1991-2020) on which it is based²⁰. A draft version of the KK model released in September 2021 for stakeholder consultation allowed for 4 season cancellations, similar to the historic pattern (1991-2020). But there were no season cancellations in the later versions. **We ask: how can a model be regarded as “best science” when it never predicts a cancelled season, not even in the Millennium drought?**

Now KK D22 has introduced a new correction factor (the “Major Axis relation” described on its pp24-25) to adjust the proposed 2023 bag limit upwards by 33% (from the predicted 3 to a new

¹⁹ Considerations 2023, p40

²⁰ See Table 4, p23 in KK D22, and the corresponding Table in KK D21 (which lacked any page numbers or Table names).

4 bird limit) to even more closely mirror the destructive patterns of the past. Close inspection of the relevant KK graph shows that the “corrected” bag limit is closer to 3.6, not 4. **This is not a case where numbers should be rounded up.** Every increase in bag limit results in tens of thousands more birds wounded and killed, further reducing any potential for species recovery.

We take strong exception to GMA’s cryptic misreporting to Ministers regarding our position on the KK model²¹. Under a heading “Support model output?” we are claimed to “Support in part”.

To be clear, we would have to be anti-science to totally oppose development of any model - a computer experiment that tries to explore linkages between variables. We recognise the importance of such attempts. The KK model successfully identified two ‘outliers’, including the GMA’s decision to hold a full, unrestricted season in 2017 despite the lowest-ever EAWS 2016 game bird abundance data.

But like the comments of Kingsford and Prowse about the Victorian helicopter survey, **we have strong concerns about using the output of a new and experimental computer model to determine season settings for duck shooting, or to justify such decisions.** The cryptic phrase “Support model output?” can be interpreted in a variety of ways. We have no problem if the “output” continues to be a way to understand data but we do not support its use by GMA to determine season settings that are claimed to be “sustainable”. Our key concerns are that the model:

- attempts to repeat the patterns of the past 30 years (which have contributed to the perilous state of game ducks today);
- would never permit a cancelled season (not even during the Millennium drought);
- has been used to justify a full-length (or extra-length 90 day) season every year - even though we can find no evidence of the scientists explicitly supporting this, and seasons were shortened in half of the years on which the model is based;
- does not consider biodiversity (refer previous discussion of FFG Act obligations). There is a greater need to protect rarer species of game duck, as noted by even the Riverina survey report. The KK model output is a bag limit and it does not specify what species can go in the bag;
- relies on several indices that cannot reliably distinguish between a cancelled season and a restricted season (refer Fig 11, p22 of KK D22). Its 2023 predictions rely on two of these flawed indices (iPGC and tfVicC); and
- successive versions of the KK model show that it is easily tweaked to appease the concerns of shooters.

²¹ Op. cit.

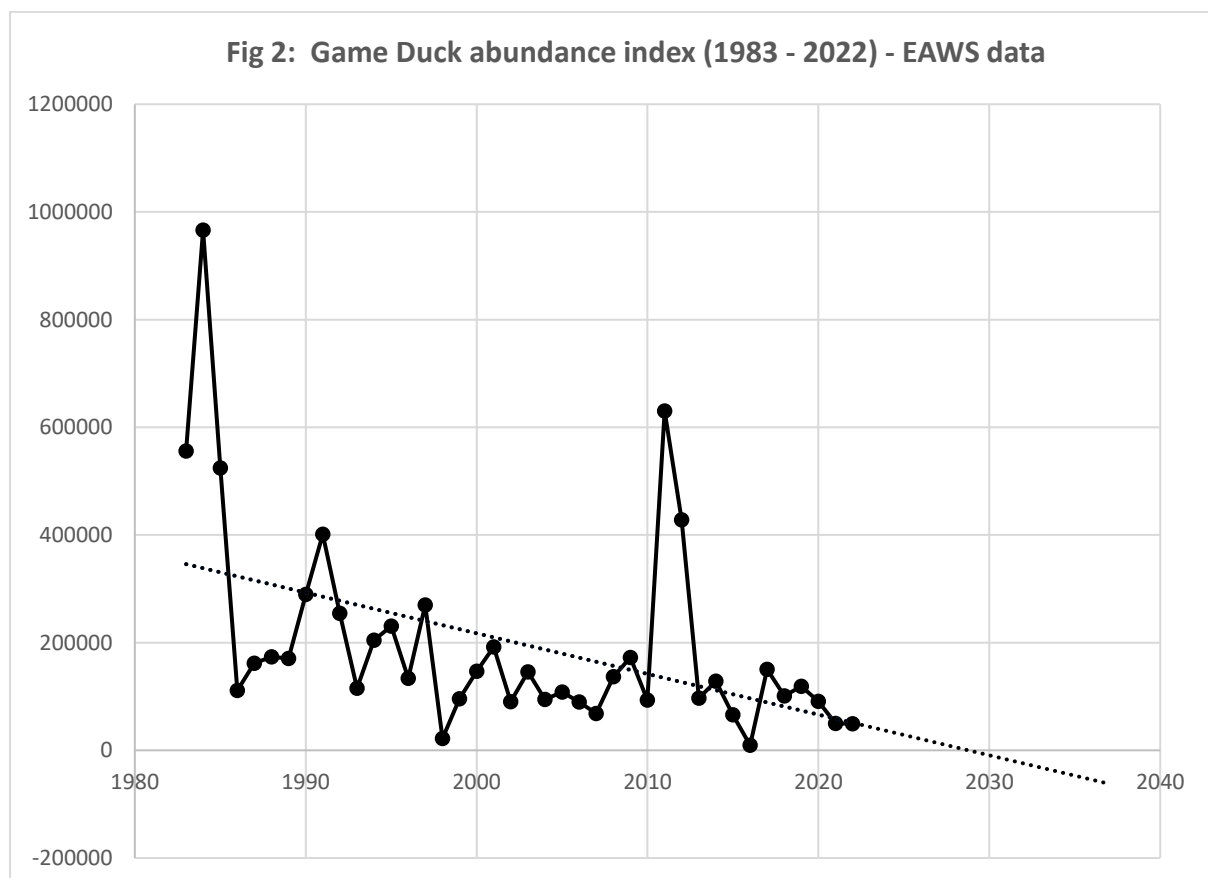
1.3 Concerns with ‘*Considerations 2023*’

As in previous years, this GMA document focuses extensively on any type of water – rainfall, streamflow, water catchments, La Nina weather patterns, predicted rainfall and predicted streamflow. It also focuses on the boost of abundance and breeding in “waterbirds” – a category that includes non-game species which have responded favourably to current environmental conditions - contrary to game birds. The “waterbirds” broad category is irrelevant and misleading in this context (except as background) in a document addressing the sustainability situation of game duck species. The story (particularly the EAWS survey results) for the **game birds sub-set** is very different.

The broad positive news for the non-game species that are recovering is a distraction from the fact that the situation for game ducks is dire. GMA has not in this document posed or provided answers to questions such as : If other species have responded well to better conditions, why have game ducks failed to flourish? Could it be because of the added pressure of recreational duck shooting killing an average (self-reported) 320 thousand game birds each year, a large portion of which will be breeding adults and thus diminishing the population’s resilience?

Again, there is no commentary about game duck breeding, or the desperately low abundance of individual species of game ducks (biodiversity considerations).

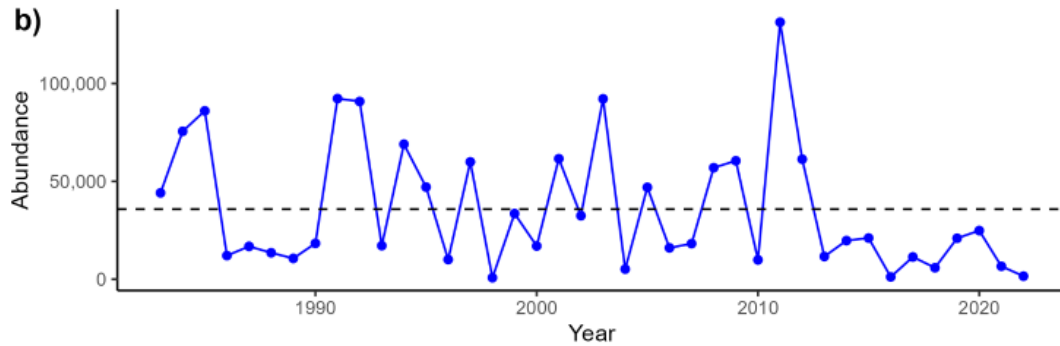
Each year we submit the following game duck abundance graph showing a clear and alarming downward trend line. Inexplicably, GMA never includes it among their *Considerations*:



As noted previously, *Considerations 2023* includes a 3-year rolling average on its graph of game duck abundance, but fails to note that **the three-year rolling average of game duck abundance is now at the lowest value on record.**

Although the EAWS reports include a separate time series graph for each of the game duck species, these are not provided in the *Considerations* commentary despite their importance.

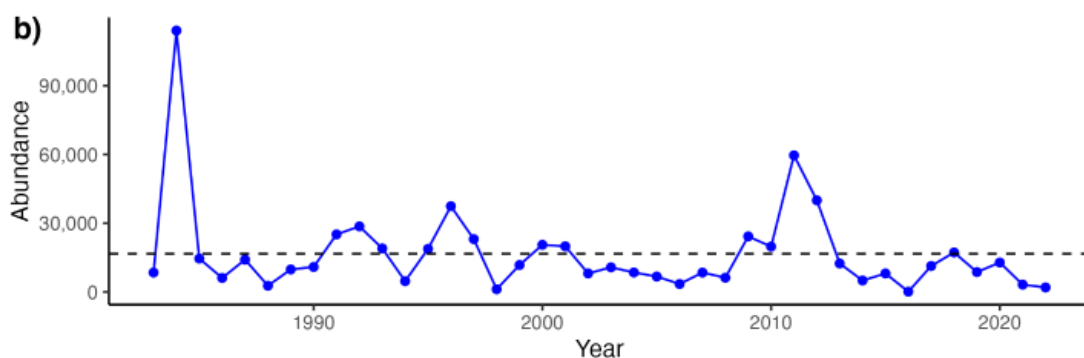
Consider the EAWS 2022 graph (p21) for Pink-eared Duck:



Throughout the last decade, the abundance of Pink-eared Duck (game) has fallen well below the long-term average and not recovered. The population has collapsed, yet it does not show up statistically as “long-term decline” measured over 40 years because it stayed resilient for the first 30 years of that period. The species comprised only 1% of “harvest” in 2022 and 2021, and 0% the year before, yet GMA has not mentioned this duck as a species of concern (biodiversity risk).

It is important to note that the EAWS graph has shifted the horizontal axis southward so that the extremely low data points can be clearly seen, rather than these low data points just sitting on the horizontal axis line. However this may mislead the reader as it suggests the data values are “higher” than they really are. Normally the horizontal axis meets the vertical axis at zero; in this case it meets the vertical axis at a negative value.

Likewise consider the EAWS 2022 graph for the Hardhead (p18):



The Hardhead (game) species has collapsed in the last decade, when all its abundances were consistently below the long-term average. *Considerations 2023* does not mention this, as (like the Pink-eared Duck) the Hardhead was resilient in earlier decades so it doesn't show up statistically as in “long-term decline”.

The Hardhead data points are so low that this horizontal axis has also been shifted downwards for clarity. This makes the data points appear higher than they really are, partly disguising the dire state of abundance.

Hardhead is now on the threatened list so GMA finally barred it from shooters for the 2022 season only; it is not a permanent ban. GMA “harvest” reports show that 0% of the cull was Hardhead for the previous three years (2019-2021); it was 1% in 2018 and 2% in 2017. **Clearly the Hardhead has been in trouble for years yet** (and contrary to the FFG Act as outlined earlier) **the GMA failed to recommend its protection until AFTER it was officially listed as “Threatened”**. The evidence from the shooters’ own reports shows Hardhead populations have collapsed in Victoria. The EAWS 2022 graph further shows that Hardhead has collapsed across the eastern states.

Of concern, we understand that shooters are pressing to have the Hardhead and Blue-winged Shoveler removed from Victoria’s Threatened lists. This contradicts both the data and the shooters’ claims to be “conservationists”.

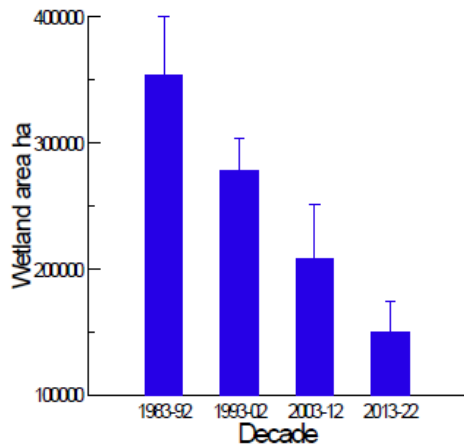
On p23, *Considerations 2023* presents a bar graph comparing abundance of game ducks in Victoria (EAWS flight paths for Band 1 and Band 2) for 2022 and 2021. **Despite similar or improved habitat, these Victorian abundances have been more than halved in 2022, contradicting the common belief that habitat always drives abundance.** *Considerations 2023* fails to provide the even more worrying context: in Band 2, the 2021 abundance had dramatically fallen (by more than 70%) since 2020. These results run counter to the claims of the Victorian helicopter duck surveys, that there are increasing millions of game ducks available for shooting in Victoria.

EAWS 2022 reported that most game species abundances “were well below long term averages, in some cases by an order of magnitude”. This key “sustainability” indicator was not mentioned in *Considerations 2023*, which focused instead on the good (but irrelevant in this context) news that breeding for other (non-game) species had jumped by an order of magnitude (p30).

On p35 of *Considerations 2023* GMA discusses “current climate drivers”. **Again, it seems inexplicable that there is a total omission of global warming or climate change factors discussed.** This is contrary to the Andrews government’s acceptance of the reality of climate change and commitment to strong action to respond to it. GMA’s consistent failure to acknowledge mainstream medium-term climate science predictions and their application to waterbird management is contrary to GMA’s obligations in s8A(d) of the GMA Act to have regard to “*the principle of an evidence-based approach, which means considering the best available information when making decisions*”. It is also contrary to the FFG Act s4A as previously discussed. This obligation to seriously consider the impact of global warming is escalated now that available evidence strongly indicates the long-predicted game duck population decline.

Despite repeated requests from Birdlife Australia and animal welfare groups, GMA has not adopted a precautionary approach, i.e. cancelling duck shooting seasons until there can be confidence in a restored and continuing abundance of duck populations.

We reiterate our concern that GMA seems unaware or unwilling to exercise the “precautionary” obligation in the FFG Act (s4A(d)) when it approaches recommendations for recreational duck season. Yet the continuing, long-term impact of climate change and changes in land use is dramatic and undeniable, as shown by this graph of wetland area over four decades, taken from EAWS 22 (p7):



1.4 Dismissive approach

GMA’s stated “science-based” management initiatives have been promoted as “taking the politics out of duck shooting” but that will not happen given the uncertainty and opacity of the methods used. It is dangerous for non-scientists to apply quantitative results without an appropriate understanding of their limitations and sources of error.

The KK model and the Victorian helicopter survey will likely be seized upon once again by pro-shooting stakeholders as evidence for a shooting season that will further reduce the prospects of species recovery from long-term decline and ultimate extinction.

The three Victorian helicopter surveys are still in the trial phase. In no way are they a substitute for the long-running EAWS, which is a reliable indicator (an index, not a count) of trends across the states where these species migrate. The ARI scientists have not yet revealed the actual number of each species that were physically counted in the 2022 helicopter survey, and their report will not be ready for some months to come. Hence there is currently little transparency in this trial process.

The shooting fraternity has long dismissed the EAWS data which shows that the sustainability of game ducks is severely threatened and as such so is their recreational duck shooting threatened. GMA has now invested considerable public funding in new “science” and regrettably (as indicated above and elsewhere) prematurely and without further adequate analysis bolstered arguments to justify continued duck shooting. It is perplexing that this seems to have been at the expense of the clear science of game species decline trends recorded by the long-established EAWS science – a 40 year long endeavour. We now must reluctantly question the ‘independence’ of the regulator, GMA²², and therefore its recommendations to Government and management of seasons, given the apparent and dangerous plight of our native waterbirds.

Given the dire situation for game ducks, shooters reportedly are hoping for some late breeding in early 2023. **If there is some late breeding, then it would be inhumane to shoot while offspring are immature.**

As indicated earlier in the submission, the 2012 Regulatory Impact Statement (RIS) for the hunting regulations²³ (p29) claimed that duck shooting seasons are less inhumane because they are timed to

²² FOI Request number 18-7423 to GMA (made by another party): provides information that some key personnel in GMA are duck shooters themselves.

²³ Op. cit.

avoid the vulnerable times of breeding and subsequent moult. The RIS is the basis or attempted justification for the current hunting rules. GMA should therefore, as a minimum, not support activities that contradict these RIS baseline undertakings.

In our 2022 submission, we included one Victorian farmer's eye-witness account of the cruelty and destruction inflicted on duck broods during the shooting season:

"As I write there are many baby ducklings without mothers that now have to fend for themselves. The poor things are only golf ball size. Their mother's shot dead while some are still injured and will die over the next few days."

We are particularly disappointed with the GMA's dismissal of this eye-witness evidence concerning an example of blatant cruelty. In its brief to Ministers, GMA dismissed this as *"an anecdote from an unnamed source"*. Animals Australia devotes considerable time and effort at a most inconvenient time of year, for the preparation of its annual submission to the GMA. As a reputable organisation enjoying wide community support, we would never consider including baseless information.

We had and have the name and contact details of this farmer. She is a reliable source but we wish to protect her privacy. We are well aware that many "quiet Victorians" – especially women - who live in regional areas are afraid to go public with their concerns about duck shooting; over the years there have been far too many threats of reprisals from angry shooters. For example, in Gippsland last summer, a community-funded billboard (not one of ours) in opposition to duck shooting was vandalised with a knife. The story was featured in the *Gippsland Times*²⁴.

We are extremely concerned from an ethical perspective as well as the effect on bird populations if the GMA allows or recommends a shooting season to proceed while late breeding is in progress. Currently wetlands can be closed when threatened species are present. As stated throughout this submission, we are firmly of the view that the 2023 shooting season should be cancelled due to the continuing decline in waterbird abundance. **However if a shooting season goes ahead, relevant wetlands must be closed to shooting if any waterbird breeding is observed there.** A responsible and independent regulator would encourage locals to report any instances of late breeding.

CASE STUDY example:

On the 2022 opening day at Lake Bael Bael (Kerang), duck shooters disturbed a number of swan nests. Frightened swans circled overhead then abandoned their young. The story was reported in the Age and Sydney Morning Herald²⁵. It was also featured on the Facebook page of Wildlife Victoria²⁶ (who had a mobile veterinary van on site).

GMA staff and police were in attendance but no one was held to account. It seems the GMA has not issued any advice to shooters to report wetlands with late waterbird breeding so they can be closed. This is part of the cruel "culture" of duck shooting: nature can be trashed, along with the wetlands.

It is our strong view that it should not be left to community volunteers and animal welfare charities to speak up for the protection of breeding species. GMA has obligations under its own Act (s6(e)).

²⁴ <https://www.gippslandtimes.com.au/news/2021/01/14/anti-duck-hunting-billboard-in-rosedale-vandalised/>

²⁵ <https://www.smh.com.au/environment/conservation/fearful-swans-abandon-their-nests-at-start-of-duck-shooting-season-20220318-p5a5yd.html>

²⁶ <https://www.facebook.com/wildlifelifevictoria/photos/a.629932290373602/5290136541019797/>

1.5 Legal issues for GMA

While earlier governments and regulators did cancel duck shooting at times of severe drought, the GMA and the current Andrews government have never supported the cancellation of a season. Given the constant and severe decline in game duck abundance, this approach is at odds with the GMA's sustainability mandate (s5(a) of the Act). It also conflicts with GMA's biodiversity obligations under ss4A and 4B of the FFG Act.

GMA's reliance on the KK model and the ARI's duck surveys as "the best science" is implausible. Neither of GMA's chosen "scientific" approaches has the accuracy to deal with the five game duck species most at risk. The model appears incapable of predicting a season cancellation and is used to defend full-length seasons every year - despite being derived from an historic period when half the seasons were shortened or cancelled.

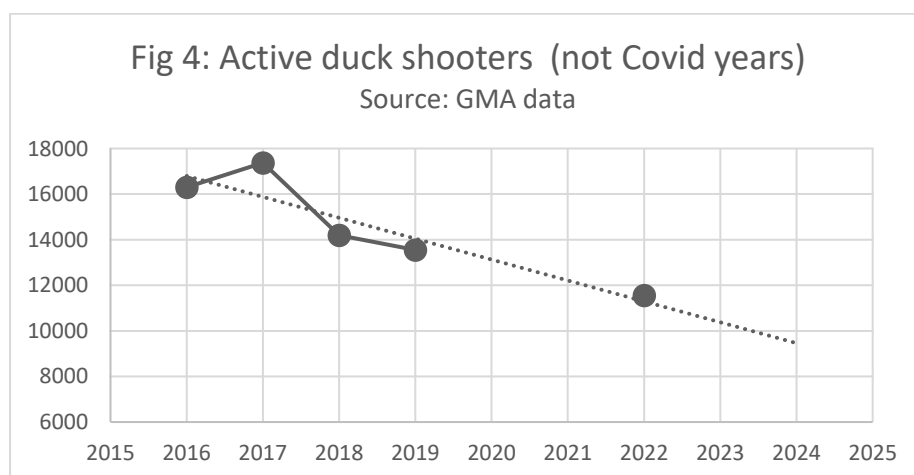
GMA may claim the KK model and the new Victorian duck surveys ensure "sustainability" but real-world observations show this to be false. Game duck populations continue to decline while non-game species have responded well to improved conditions.

GMA's advice to Minister Thomas for the 2021 season backed its recommendation by saying that the modified season "*allows duck populations to recover when environmental conditions improve.*" Clearly that advice was both misleading and ultimately now shown to be incorrect.

Attachment A outlines apparent flaws in the advice to Ministers for the 2022 season.

It is important to note also that s5(a) of the GMA Act does not refer to "sustainability of game species" but rather, sustainability generally. Thus, the impact of duck shooting on protected and threatened species is also directly relevant.

In our view, given the dire situation of long-term decline of game ducks and their failure to recover under extended La Nina conditions while non-game species flourish, together with the tiny and diminishing percentage of Victorians who actively shoot ducks (less than 0.2 per cent in 2022), it is time to end duck shooting.



However we are concerned (as indicated above) that GMA is now seemingly a conflicted and expensive bureaucracy that supports this unpopular and unsustainable activity.

Currently the *Wildlife (Game) Regulations 2012* allows for duck shooting at 200 State Game Reserves and 41 other specified wetlands. However the legal basis for shooting ducks in other parts of the state remains unclear: GMA refers queries to (the former) DELWP and DELWP refers questions back to GMA. **Unless the legal basis can be clearly stated on the GMA website (s8A (f) – the principle of transparency) then duck shooting should cease on all but the 241 wetlands clearly specified in Regulation 69.** We raised this concern in our previous submission and it was mentioned in the advice to Ministers, but no clarity has been provided. The continuing obfuscation suggests there may be no legal basis for the thousands of other sites around the state where duck shooting has been permitted by GMA. **We now request that the GMA Board answer this question.**

Relevantly, it is unclear how GMA complied with s8A(b) of the GMA Act in recommending the 2022 duck shooting season. That imposes an **obligation to consider all the economic, social and environmental costs and benefits of its duck season decisions.** GMA seem to have only considered the economic, social and environmental impacts of *changes to the default season setting*, claiming the default setting is “government policy”. Yet GMA is an independent statutory authority with mandates under s6 (h) and (i) to monitor the impacts of hunting and provide advice to Ministers. Its job is not simply to implement the status quo or “government policy”. That stance in our view makes a mockery of the government’s claim that it “takes advice” from the GMA.

The current hunting regulations were made by the previous government eleven years ago (slightly modified after the terrible incidents during the 2017 season). The GMA has made no apparent attempt to monitor or research the costs to non-shooters affected by duck shooting. Many regional residents are supporters of Animals Australia, and they suffer disruption to their work, their health and their family life as a result of the constant shotgun noise and the anxiety it creates in humans (especially children) and animals.

We are aware of requests to close certain wetlands to duck shooting either for public safety reasons or to provide a much-needed sanctuary for birdlife, but GMA claims to have no role in such matters (despite its obligations under the GMA Act and the FFG Act as previously outlined) and such requests are passed between GMA and DELWP and back again. Regional residents complain of getting nowhere with both GMA and DELWP.

In our 2022 submission we submitted the following longstanding issue for your attention. The matter was raised by an eminent ornithologist on behalf of a regional environment group in a 2016 submission to the state’s consultation on *Protecting Victoria’s Environment – Biodiversity 2036*²⁷ :

“Restoration of sanctuary status to wetlands – the revision of the Wildlife Act in 1975 resulted in the inadvertent loss of long-held sanctuary status for Lakes Linlithgow and Bullrush. DELWP has steadfastly refused to restore that status, which would give protection to waterbirds, including reducing disturbance to large flocks of Red-necked Stint and Sharp-tailed Sandpipers [preparing for their long flight to Siberia].”

This cannot be dismissed as “an anecdote from an unnamed source” (see footnote below) yet it appears to have been dismissed by GMA. We now ask that the GMA Board respond to us, outlining

²⁷ Submission from Hamilton Field Naturalists Club, p2 available from <https://www.hamilton-field-naturalists-club-victoria.org.au/publications-information.html?view=article&id=91> accessed 3.1.23

whether they will or will not **advocate for the restoration of sanctuary status to Lakes Linlithgow and Bullrush**, and why, especially given the vastly reduced number of duck shooters since 1975, and the many thousands of other sites where GMA permits duck shooting. A referral to DELWP or DJPR is not a satisfactory response regarding how GMA fulfils its own obligations.

Aside from our comments on GMA's considerations for the 2023 season, **we re-submit this case** in light of GMA's obligations to the welfare of non-hunted species (s6(e)(iii) of the GMA Act), its mandate to promote sustainability (s5(a) is not restricted to game species) and its obligation to make recommendations to relevant Ministers (s6(i)). In addition, GMA has biodiversity obligations under ss4A and 4B of the FFG Act. Those two wetlands could simply be closed to hunting until their classification is revised.

We note that the recent ARI report into duck shooting disturbance on non-game species set a threshold (for "consideration" of management action) so unattainable that it was "*unlikely to significantly hinder duck hunting opportunities*".²⁸ The threshold selected is essentially the threshold for gaining Ramsar status as a wetland of global significance.

Yet even for threatened species, it appears the GMA's thresholds for the triggering of management action are far too high to be consistent with its legal obligations. That ARI report (p12) states:

"The triggers are based on flock size and are aimed at reducing the risk of mortality rather than disturbance. Current thresholds are: Bluebilled Duck - 50 individuals on a small wetland and 150 individuals on a large wetland; Freckled Duck - a flock of 20 or more." (emphasis added)

²⁸ *Assessing waterbird susceptibility to disturbance by duck hunters in Victoria (2022 update)*, Menkhorst and Thompson, ARI, p11

2 RESPONSIBILITY

GMA's mandate (s5(a) and s6 of the GMA Act) also requires that it promote responsibility in game hunting, address the humane treatment of animals that are hunted, and minimise negative impact on non-game wildlife, including protected and threatened wildlife.

2.1 Wounding

Wounding rates are still around 30 per cent of targeted birds, in part at least because less than one per cent of the state's duck shooters completed field-based training to improve accuracy²⁹. For years the GMA annual report lauded its shooter education program, originally tagged the Shotgunning Education Program and later rebadged as a "Masterclass". However, such programs have been an overall failure. A report to the GMA Board in April 2020³⁰ stated:

"...uptake of the in-field program has been poor to the point that the program is essentially defunct. Written materials have been mailed directly to hunters and are available on the Game Management Authority website and on DVD. However, it is unknown whether hunters read, understand or put this information into practice."

GMA has now adopted (or will soon) the Danish approach to wounding reduction. GMA has no specific target for decreasing the wounding rate³¹ and after 30 years, the Danish program has only reduced its wounding rate to 10% (important, but insufficient reduction for a recreational activity). Given Victoria's average "harvest" size, that would imply more than 30,000 maimed ducks each year, a shocking level of cruelty. There is little point in further investing taxpayer funds into a program that is completely out of step with community standards. The clear and humane alternative is to stop recreational hunting of waterbirds.

But there is also an important technical problem with GMA's adoption of the Danish approach to wounding reduction. The Danish methodology relies on having an accurate measure of duck population at the start of the shooting season³². In Denmark, an actual census is done on a set day of the year. In Australian conditions, a census would be impossible. A survey is the only possibility but that is not accurate (see the concerns of Kingsford and Prowse, outlined in our Attachment B).

GMA should have seen the inability to accurately measure duck populations at the start of the shooting season as an insurmountable stumbling block, before embarking on long-term and expensive adoption of the Danish methodology.

The main aim of this futile exercise in our view is likely to be the deflection of public criticism about animal cruelty.

²⁹ Private communication from Simon Toop, GMA, 29.12.20

³⁰ Now in the public domain, following an FOI release to another party.

³¹ Private communication from S Toop, op. cit.

³² *Crippling ratio: A novel approach to assessing hunting-induced wounding of wild animals*, Clausen, Holm, Haugaard and Madsen, *Ecological Indicators* 80 (2017), 242-246. Refer p243.

GMA's 2020-21 Annual Report announced the establishment of a Wounding Reduction Working Group which in time will develop a Wounding Reduction Action Plan. According to GMA's website, the Working Group has so far held only one meeting, in July 2021. Relevantly, it is understood (indirectly)³³ that the Wildlife (Game) Regulations due to be remade in 2022 and now postponed till 2023 may require proficiency testing of some type for hunters. Whilst welcome, skills and shotgun proficiency is only one element of the equation – the inherent action of the spray pattern of shotgun pellets will continue to wound a portion of all birds targeted.

Meanwhile the 2023 season must be cancelled, to avoid the prospect of a hundred thousand game ducks suffering appalling injuries and lingering deaths (average season with an estimated 30% wounding). Note that nothing has yet changed in terms of the shooters and their accuracy or their actions at this point, and that the 30% wounding rate estimate relates to those birds retrieved and bagged. A further unknown number escape to recover over time or die from injuries, exposure or predation.

2.2 Knowledge and skills

The 2020 release of GMA's survey of shooter skills and knowledge³⁴ showed duck shooters generally scored worst among all game shooters. Duck shooters failed survey questions in particular on hunting laws, species recognition, best practice to minimise wounding, and humane treatment of waterbirds. That result simply confirms what duck rescuers and regional residents have been observing and reporting for several decades: birds continue to be wounded, waterbirds and all other wetland inhabitants distressed and disturbed.

While the knowledge survey report attempted to dismiss the results as simply a benchmark to highlight areas for improvement in the future, the reality is that the GMA has failed to effectively promote responsibility in duck shooting. The GMA has spent years and many thousands of dollars in the preparation and dissemination of educational material (e.g. Hunting Manual; social media applications; participation in hunting shows and other events with shooter groups), but these results indicate the material has unfortunately been ineffectual. We are not surprised by this failure as human cultural or behavioural change can take generations to occur. This is particularly so when the targeted activity is largely undertaken in remote areas (without community observation) and where detection of unacceptable behaviour or unskilled practice is rare and thus without consequences (for the hunter).

Following the illegal and irresponsible behaviour of shooters at the 2017 duck season opening, GMA was required to commission a review of its competence to manage hunting. The subsequent report by Pegasus Economics was severely critical. It found GMA was "too comfortable" with shooters and issued hunting licences without any checks on hunters' knowledge of the law or good practice³⁵:

"... with the exception of duck hunter identification skills and hound hunter knowledge skills, applicants currently seeking a licence to hunt game are not required to prove any knowledge of the law, demonstrate even a basic understanding of safe and responsible hunting practices or possess any hunting competence... The current arrangements are analogous to VicRoads providing driver education only after a licence has been allocated to drive on a public highway."

³³ Weekly Times, 7 December 2021: 'Game Management Authority: Victorian hunters face mandatory shooting tests'

³⁴ Summary report of hunters' knowledge survey findings, GMA, August 2020

³⁵ https://www.gma.vic.gov.au/data/assets/pdf_file/0011/481682/Assessment-of-the-GMAs-compliance-and.pdf Refer p26.

Related to the Pegasus findings, Animals Australia’s Legal Counsel wrote to Minister Thomas on 4 February 2021 expressing the urgent view that:

“... the only option that would promote the objects of the Wildlife Act, specifically, the protection and conservation of wildlife (s1A) would be an absolute prohibition on duck shooting for the 2021 season, and until effective regulatory reforms [recommended by Pegasus] are made. “

It was therefore disappointing to read (in the papers disclosed by parliament, Sept 2021) that a senior executive at (the former) DJPR dismissed our letter as containing *“nothing new by way of claims that have been made by Animals Australia and others in the past.”*

CONCLUSION

We refer you to our Executive Summary for an overview of this extensive submission, and commend the detail and analysis to you at this crucial decision-making point for the survival of our native waterbirds. **Attachments A and B** (included below) provide further detail of some of our key points.

Whilst our animal protection charity, and the vast majority of Victorians, oppose recreational shooting of sentient wild-living native ducks on ethical grounds, we are aware this consideration is regrettably not within ‘scope’ of the request for submissions. We recognise that all animals are currently not treated and protected equally in this State, leaving many vulnerable to human-centred and (often) destructive interests. The Victorian government has committed to a modernised animal protection Act (to replace the dated *Prevention of Cruelty to Animals Act 1986*) which will *explicitly* (and soon) recognise the ‘sentience’ of animals; their ability to suffer, to experience pain and distress. The killing and/or inherent wounding and maiming of native waterbirds through recreational shooting will then be an even more stark contravention of any claim that Victoria is currently a humane society.

We recommend and urge a complete cancellation of the 2023 season on environmental and waterbird sustainability/ biodiversity grounds. The serious and sustained long-term decline of our game duck species – despite extended La Nina cycles - will only be exacerbated by the shooting of remnant breeding stock and the killing of late-bred ducklings.

Please contact me if further clarification of the points made in this submission are required.

Yours sincerely,



Glenys Oogjes
Chief Executive Officer

Note: Attachments A and B follow and provide important further information to the points made in the body of this submission.

ATTACHMENT A

Our concerns re GMA's 2022 brief to Ministers (18 Jan 2022)

Bias toward unjustified optimism

The 2022 Ministerial brief aims to present an optimistic picture to justify an extended season of duck shooting. However a regulator concerned about sustainability of the eight game duck species would have written with quite a different emphasis.

The EAWS 2021 game duck abundance was the **third lowest since records began four decades ago**.

The brief falsely informed Ministers that GMA had considered "*a number of environmental and game duck variables ... including the extent of breeding of game ducks*". **GMA does not expressly obtain or seemingly consider the breeding data for game ducks. Recovery cannot occur without breeding!**

Misleading and irrelevant statements about "waterbird breeding" and "waterbird abundance" were used to create a more positive impression. The "waterbird" category includes non-game species that are in a much better position than game ducks - no doubt helped by the fact that they aren't being shot every year. **Non-game species and "waterbird" statistics are irrelevant (and distracting) to a decision about whether to shoot game ducks.**

The NSW Riverina duck survey was quoted without appropriate context. It was cited no less than three times in the brief as an example of imminent "recovery" for game ducks. But in 2021 the Riverina abundance had only returned to 2016 levels (the year when EAWS showed the lowest-ever game duck abundance). We raised this issue of context in our submission, but our comments were ignored. The brief highlighted an improvement to "44% above average" without acknowledging the average spanned only 5 years, during which conditions were relatively dry. Now in 2022 the purported Riverina "recovery" has reversed to a 10% decline (refer details on p9 of this submission).

The brief heralded the forecast continuing La Nina conditions as "an opportunity for game ducks to continue to recover". This was merely optimistic conjecture. Game duck populations had dropped by 58% in 2021 and have since fallen a further 2% in 2022. By contrast, non-game waterbirds are recovering.

Omissions

Global warming was omitted again in the brief. This omission is a major concern given that GMA claims to be using 'science' to guide its decisions. Instead, GMA followed the prediction of the KK model that is based on historic decision-making from a 30-year period that was largely irrelevant to today's conditions. A regulator concerned about the sustainability of species in a warming world would adopt a precautionary approach and cancel seasons until recovery was clear and sustained for all species.

Long-term declines of game duck species were largely attributed to changes in land use, with only a passing reference to "a drying climate". The trend towards lower rainfall is one aspect of climate change, but so is the warming which causes faster evaporation, and so are the extreme weather events that are now more frequent. **Most relevantly, climate change is disrupting usual weather patterns and unseasonal breeding of waterbirds is now common and more likely to overlap with shooting seasons.**

The fragility of individual species targeted by shooters was never mentioned in the brief. It seems GMA will only protect species once they enter the Threatened list – in contravention of its responsibilities under the FFG Act. Neither of the two “science” projects commissioned by the GMA – the ARI duck survey and the KK model – have the accuracy to deal with individual species, especially the rarer species of game ducks.

The brief misled Ministers by claiming it invited submissions from “*a range of ...environmental ... stakeholders...*”. Given the impact of climate change on our natural environment (including wildlife species), it is of concern that GMA has not included any environmental groups in its stakeholder consultation. In 2021, GMA ignored the advice from Birdlife Australia and the state’s Environment Department (the former DELWP). In 2022 Birdlife Australia did not make a submission. The artificially rushed timeframe for making submissions (a mere two weeks that extends through the most popular Christmas-New Year family holiday period) seems contrary to s4A(e) of the FFG Act, to encourage participation, especially from charities with limited resources.

In an era of “inclusiveness”, it is inexplicable that the brief’s consideration of social and economic impact focused on duck shooters only, ignoring the 99.8 per cent of Victorians who do not take part in this activity, especially the regional residents who would be forced to live with duck shooting for 90 days - one quarter of their year. As mentioned already in the main section of this submission, an independent statutory authority such as GMA should not simply implement “government policy” without adequate question, especially as it has a legal mandate [s6(h) and (i) of GMA Act] to monitor hunting’s impact across the community and to make recommendations to Ministers.

Dismissing issues raised

The brief says submissions were “polarised”. It seems they had no influence on the GMA’s considerations, yet not all submissions are of equal merit. In the early days of the debate on climate change, the media felt obliged to give equal oxygen to each side of the argument. But time has shown the science was right. Unfortunately, successive years are showing that only a cancellation of shooting seasons will give game ducks any chance of long-term recovery, despite the protestations of shooters.

The brief notes our point that there is never any game duck breeding data in the GMA’s *Considerations* documents. Clearly that point was ignored; there is still no relevant breeding data in *Considerations 2023*.

As discussed previously, GMA must have misunderstood our grave concerns about the use of KK model output to guide season settings. The “Support in part” caption allocated to us in a column headed “Support model output?” was ambiguous and quite inappropriate.

GMA dismissed eye-witness evidence in our submission, regarding environmental destruction and cruelty. It was discounted as merely “an anecdote from an unnamed source”. The issue was a first-hand account from a farmer who saw shooters wounding and killing mother ducks, orphaning their tiny chicks. No follow-up action was taken by GMA to obtain further details or act on the issue. There is absolutely no “social licence” for this cruelty but GMA has taken no action to stop it.

The brief made no mention at all of another environmental issues raised in our submission: a request from a respected ornithologist to have two local wetlands returned to their former status as bird sanctuaries.

The brief noted our request for clarification of the legal basis for Victoria’s duck shooting sites (other than those covered by regulation 69). As GMA has never responded to this query, we assume there

is no satisfactory answer, in which case Ministers should have been warned that there is no clear legal basis for the thousands of shooting sites across this state.

Due diligence

Continuing its optimism for more duck shooting, the brief claims it has accepted the prediction of the Kingsford-Klaassen model which is *“the best science presently available to assist with objective decision-making on annual duck season arrangements.”* In fact it is the only science available for this purpose. That doesn't mean it is accurate, objective or as yet suitable for use for this purpose.

As mentioned previously the KK model has already gone through at least three iterations and it seems clear this so-called “traffic light” model does not have a red light, only orange and green. No season would be cancelled, not even in the conditions of the Millennium drought.

The brief claims that GMA has exercised “due diligence” in making this decision. However GMA's consideration of its new “science” projects – the ARI helicopter survey and the KK model - suggests a lack of basic scientific literacy. New computer models trying to repeat past history, and new surveys using complex mathematics in a challenging ecological space, should be treated with great caution, even scepticism, especially in their formative years. But GMA is seemingly keen to label duck shooting as “sustainable” without full analysis, and without first asking key questions including:

- What are the likely sources of error? How reliable are these estimates and predictions?
- What were the assumptions built into the modelling? Are they valid?
- How good was the data on which the model is based?
- Have the projects been peer reviewed by experts with direct relevant experience in both the theoretical and practical aspects?
- Have any concerns been remedied, and if so have the improvements been independently assessed?

Given the tight timing imposed by GMA, it is likely that Board members and Ministers would be heavily dependent on the summaries prepared by GMA staff. The wording on the GMA website re the Kingsford-Prowse review of the ARI helicopter survey would convince readers that all was fine, But as outlined in Attachment B (below), serious concerns were identified and must be addressed if the survey is to have any usefulness.

We are unaware of any (appropriately qualified) peer review of the KK model at this stage.

The “due diligence” does not seem to have noticed that there was no data for the critical issue of game duck breeding.

The “due diligence” failed to notice the KK model is agnostic about season length; it is not a variable in the model. As mentioned previously, half the seasons on which it was based were either shortened or cancelled. Regardless, in 2022 the GMA recommended an extra-full-length season, longer even than the default setting; avoiding criticism by claiming this was recommended by scientists.

The KK model has already been shown lacking and “unsustainable” by real-world results:

- Contrary to claims from KK and GMA that hunter participation is not affected by season length (other than drastic season shortening), average hunting days more than doubled in the extraordinarily long 2022 season. This greatly increased the hunting pressure for 2022.

- Game duck abundance continued to decline through 2021 and 2022, despite a rare period of successive La Nina events when non-game species recovered. By following the predictions of the KK model, GMA has facilitated the slaughter of 262,567 ducks and the crippling of tens of thousands more. It is a travesty to suggest the KK model is ensuring “sustainable” duck shooting seasons. While the “harvest” fell within the GMA’s 10% target of the ARI survey estimate, the real-world result was continued decline of species. Will the “due diligence” see the light in 2023 and cancel the season to give the ducks a chance to start a recovery before the next drought sets in?

ATTACHMENT B

ARI's Victorian helicopter survey of game ducks:

Key concerns raised by the independent reviewers Prof Kingsford and Dr Prowse

Contrary to enthusiastic reporting of the survey on the GMA website, these reviewers of the helicopter survey methodology and results expressed serious concern that the resulting population estimates have too many uncertainties to be used for decisions about season settings, due to risk of "over-harvesting".

The reviewers highlighted a number of sources of error in the implementation of this survey (while praising its meticulous planning). According to the reviewers, these errors would lead to over-estimates of game duck abundance.

In April 2021, GMA received the results of a trial helicopter survey and rapidly moved to more than double the daily 'bag' (ducks per shooter per day) from 2 to 5 birds for the imminent shooting season. Papers later released by the parliament showed that the highly technical project – designed, led and self-assessed by researchers at ARI - had suffered from serious data problems and delays. However GMA seemingly relied at that time (April 2021) on a superficial review from a non-mathematician (Dr Steve McLeod, March 2021) to back the resulting estimate of 2.45m game ducks in Victoria (as at Nov 2020). McLeod's review made no attempt to address **the obvious question: what were the potential areas of uncertainty in these new results?**

Since that time GMA has obtained a review of the ARI survey by two academics with more directly relevant review expertise, both in terms of mathematical theory (Dr Prowse) and waterbird ecology and the practical problems of aerial surveys (Prof Kingsford). However this review³⁶ - unlike the McLeod review – was not circulated to stakeholders; we discovered it when perusing the GMA website for other reasons.

Kingsford and Prowse provided an in-depth report pointing to a number of issues that cast serious doubt on the validity of the ARI game duck population estimate. However GMA has seemingly selectively quoted from the report, posting the following on its website:

"An evaluation of the monitoring program was conducted by the Arthur Rylah Institute for Environmental Research. In addition, Dr Steve McLeod, an expert who works in this field, and Dr Thomas Prowse (mathematical ecologist and Research Associate, University of South Australia) and Professor Richard Kingsford (Director of the Centre for Ecosystem Science, University of New South Wales) have separately reviewed the survey design and approach to data analysis. Both found that the program is robust and rigorous and is an effective way of counting ducks and provides critical data to ensure that duck season arrangements remain sustainable. Recommendations for refinements to the monitoring program contained in the reviews have been incorporated into the monitoring program."

³⁶ Prowse, T.A.A. and Kingsford, R.T. (2021). Review of Ramsey and Fanson (2021) Abundance estimates for games ducks in Victoria. Unpublished report to the Game Management Authority. Available at: https://www.gma.vic.gov.au/__data/assets/pdf_file/0003/819282/Game-duck-review-Kingsford-Prowse.pdf.

In our view, this GMA comment (above) is a misrepresentation of what Prof Kingsford and Dr Prowse actually found.

Key concerns identified by Kingsford/Prowse include:

- The need to recognise the ***“sometimes-competing dual objectives around sustainable hunting and conservation of species”***.
- ***“It is important to clearly identify the uncertainties in the model-based estimates so that their use within subsequent decision-making processes does not lead to unintended population consequences for these species (i.e. determining quotas). Further, Victoria’s game species do not only belong to or solely inhabit Victoria, and the current management system does not consider population drivers or data from outside Victoria.”***
- The survey focused heavily on two species which have reliably high counts – Wood Duck and Grey Teal³⁷ – and total abundance estimates for these species are more precise than for the remaining three species considered (Mountain Duck, Pacific Black Duck, Hardhead). However **the rather uncertain abundance estimates for these three species are used to determine the total population estimate and hence the harvest quotas.**

Note that Pink-eared Duck and Blue-winged Shoveler were not considered by the survey at all, as the counts of these species were far too low for analysis. Nevertheless, regrettably the GMA offered no protection for the Pink-eared Duck when announcing the increased bag size of 5 birds daily.

ARI combined Chestnut Teal and Grey Teal into one “Teal” category due to the counters’ difficulty in distinguishing one from the other.

- A critical component of the survey was the “probability of detection” – a recognition that observers will miss counting some birds. A correction factor is then applied to account for those missed. **But in this survey the reviewers considered the correction factors were too high, resulting in over-estimates.** For example, *“...detection probabilities for [small] dams are likely to be greater than 60% as estimated”*.
- Relatively large proportions of game species are usually found on large wetlands, but it seems the survey used a pro-rata method of counting on such wetlands – counting over a portion of the area and then scaling up to a total estimate. The survey helicopter travelled around the outside perimeter, focusing on the edge rather than the middle. The reviewers commented that **if only a portion of the edge is counted, then “extrapolation to the entire area will inflate counts” because most birds are found around the boundary.**³⁸
- The (Binomial) mathematical approach used for the estimation of counts assumes that the probability of detection is constant, but that assumption was not valid in the field. The consequence is ***“under-estimation of probabilities of detection and over-estimation of population sizes.”***
- *“... there were some clear gaps in wetland coverage... It was not clear why no wetlands in western Victoria were surveyed. There are a range of ephemeral wetlands in this region which could have held water.”* [Satellite images would show **wetlands in the western region, but in fact they support very few birds due to salinity. Hence the survey would over-estimate bird numbers in western Victoria by assuming its watery areas were similar to those in other regions.**]

³⁷ Grey Teal and Chestnut Teal were combined in the ARI survey results.

³⁸ The EAWS survey always covers the entire area of a large wetland.

- *“The classification between natural wetlands, dams and sewage ponds, with category sizes is simplistic.... there are large farm dams... which are significantly different to large storages (e.g. Dartmouth Dam)... **Dartmouth Dam does not support any game species, despite its considerable size.**” Yet because the survey is based on average number of ducks per unit of water surface area, Dartmouth Dam could be given a considerable duck allocation – a significant over-estimate.*
- There are no replicate counts done (on different days) as a check to see if birds have moved over short-term time scales. [EAWS does replicate counts to estimate error.]

Not surprisingly, Kingsford and Prowse did not answer the critical question put by GMA: “Are the estimates of waterfowl abundance and survey accuracy sound and reasonable?” Instead, these reviewers (tactfully) referred to their list of concerns raised, and added:

“... uncertainties remain in terms of estimating total abundances of the eight game species.”

Kingsford also takes the opportunity in this document to refute the common criticism raised by shooters and GMA personnel, namely that the EAWS allegedly misses the ducks on farm dams. This appears to have been one of the driving factors behind commissioning a Victorian duck counting survey (at considerable taxpayer expense). Kingsford states clearly that the EAWS *“surveys small dams and treats data as an index [not a total count]”*.

We take issue with the GMA’s misleading claim (see website text copied above) that *“Recommendations for refinements to the monitoring program contained in the reviews have been incorporated into the monitoring program.”*

The Kingsford-Prowse review was dated 28 September 2021 and the second helicopter survey of game ducks in Victoria took place from 19 October to 7 November 2021. It is unlikely that the timing would have allowed for these recommendations to be considered, discussed and implemented.

We have received confirmation³⁹ that one of Kingsford-Prowse’s important recommendations had not been implemented, namely the replacement of proportional counts (and extrapolations) on large wetlands with comprehensive counts. The proportional count method leads to **an inflated estimate of bird populations**. To avoid such errors, Kingsford notes the EAWS survey always covers the entire area of a large wetland.

As GMA’s website commentary effectively denied the above serious concerns, it is unlikely there will be a credible update on any rectification program. Until there is another independent review of the project, there can be no public confidence in the abundance estimates of these ARI surveys. They should not be used to make decisions about the killing of these declining native species.

Finally, another anomaly to cast further doubt on the ARI survey: neither ARI, GMA nor Kingsford/Prowse have commented on the extraordinarily high number of Mountain Duck (Australian Shelduck) reported in these helicopter surveys (Nov 2020 and Oct-Nov 2021). In both surveys this species was estimated at 17 per cent of the total population, yet in GMA’s “harvest”

³⁹ Private communication from D Taneski, GMA, 5 January 2021

reports they average at 2 per cent of hunter bags over the period 2009-2020. A possible reason for this discrepancy is provided in a publication from the Australian Museum⁴⁰:

“It has only recently been confirmed that during the second moult [towards the end of the spring breeding season] Mountain Ducks like to concentrate in large numbers on a few suitable stretches of water – preferably large salt lakes near the sea or in sheltered estuaries.”

During the moult, they are vulnerable and flightless for 26 days. After moulting, they “*disperse widely to breed in any suitable lakes, rivers and marshes.*” It’s likely that the ARI helicopter is counting the Mountain Ducks as they gather together during their second moult. However by the time the shooting starts in autumn they will have scattered widely – possibly out of Victoria.

Candid Comments from Kingsford and Klaassen relevant to the Victorian helicopter count:
(refer KK N21):

- *“The number of ducks in Victoria and SE Australia is unknown and, despite the best of efforts and the use of advanced technology, likely also impossible to know with great accuracy.” (p7)*
- A robust total population estimate is *“as yet problematic”*. (p20)

This is a key problem with GMA’s adoption of the Danish approach to wounding reduction. As mentioned in the main submission, the Danish methodology relies on having an accurate measure of the game bird population at the start of the shooting season⁴¹. In Denmark, an actual census is done on a set day of the year. In Australian conditions, a census would be impossible. A survey is the only possibility but that is not accurate (as discussed above), nor is it conducted immediately prior to the start of the season, and in Australia game ducks are highly mobile.

In our view an independent regulator should have seen that as an insurmountable stumbling block before embarking on a long-term and expensive adoption of the Danish methodology.

⁴⁰ *The Waterbirds of Australia*, Australian Museum, 1985, p160

⁴¹ *Crippling ratio: A novel approach to assessing hunting-induced wounding of wild animals*, Clausen, Holm, Haugeard and Madsen, *Ecological Indicators* 80 (2017), 242-246. Refer p243.