Animals Australia
for a *kinder* world

19th May 2023

Secretary to the Committee
Select Committee on Hunting Native Birds
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Dear Select Committee

Submission by Animals Australia to the
SELECT COMMITTEE - HUNTING NATIVE BIRDS

Animals Australia appreciates the opportunity to participate in this long overdue public Inquiry into duck shooting.

Animals Australia advocates for a complete and permanent prohibition of recreational duck shooting in South Australia as these practices raise serious concerns relating to:

1) Animal suffering and cruelty;
2) Lack of shooter skill and knowledge;
3) The example of mismanagement of duck shooting in Victoria;
4) Environmental / unsustainability issues;
5) Jurisdictional consistency;
6) Unnecessary public expenditure;
7) Regulatory failures;
8) Lack of due process;
9) Waning participation; and
10) The withdrawal of social licence

We outline these concerns in this submission and request the opportunity to give evidence before the Committee.

Note: Our submission will provide input to the Committee on those terms of reference (**ToR**) where we have pertinent information. Relevantly to ToR (f*) 'How native bird hunting is managed in other jurisdictions'* we advise that Animals Australia has over past decades engaged extensively with the Victorian authorities and other parties related to recreational duck and quail shooting in that jurisdiction.

This submission therefore deliberately provides comprehensive information and analysis of the Victorian regulatory system and of its multiple failures to protect native waterbird populations. This information is provided to enable the Committee to understand the inherent inability of recreational hunting of native birds to be humane or sustainable despite ongoing, substantive and expensive regulatory attempts, and educational and training opportunities for shooters in Victoria. We commend this 'Victorian-based' experience to the Committee to inform its important inquiry.

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1. Animal cruelty

Native bird hunting involves animal cruelty and causes unnecessary suffering, pain, fear and distress to animals. The only way to eliminate this cruelty is to permanently ban all recreational bird hunting. The inherent action of firing multiple shotgun pellet loads toward flying birds in the field will result in wounding some targeted and non-targeted birds.

We note that under the current South Australian *Animal Welfare Act 1985* (**Act**) it would be illegal for a person to wound a duck or other native waterbird in their backyard. It is incongruous that (other) legislation, Codes of Practice or similar, would then allow that person to do this at a wetland. The South Australian government has recently acknowledged there may be some elements of the Act that do not reflect contemporary practices or community expectations and has called the Act into review. Our position is that a permanent ban on all recreational bird hunting would be well aligned with those community expectations.

1.1 Wounding

We draw particular attention to the wounding of all shot birds, including those who are retrieved as well as those who are not retrieved. All wounded birds suffer pain, fear and distress, and it is likely that few wounded birds survive (e.g., death by starvation, predation, exposure to freezing winter conditions)[1].

While it may be acknowledged by the authorities and shooters that wounding is an unintended and unavoidable part of bird shooting, the welfare of wounded birds is not prioritised.. Recreational shooting is still permitted despite this acknowledgement, and thhe task of search and rescue for wounded birds remains largely left to community volunteers including wildlife carers and vets, who spend weeks on the wetlands carrying out this task.

A board paper of the Victorian Game Management Authority (**GMA**) in October 2019[2] acknowledged that *"waterfowl wounding and animal welfare issues in hunting are a major concern in Victoria and Australia more generally",* and a GMA presentation by S. Toop and J. Hampton[3] acknowledged that "*Duck hunting by shotgun unavoidably causes wounding of waterfowl due to insufficient pellet strikes that penetrate to vital organs or fail to immobilise the bird so it can be recovered and dispatched…Sub-lethally injured birds survive whereas severely wounded birds will die due to: direct injuries sustained, inability to adequately feed, inability to avoid predators,* [and] *inability to thermoregulate… Wounding is not only an animal welfare but a sustainability issue".*

There is no legal requirement for shooters to retrieve wounded birds and minimise their suffering. The *2023 Open Season Duck Hunting, Limitations, Restrictions and Conditions of Permit* document is also silent on the issue. Only in the *Modern Hunting in South Australia, a guide for responsible and sustainable hunting*" is it mentioned as a 'tip' to "*never take your eye from where a struck bird falls and don't shoot at other birds until you have retrieved your shot bird*".

There is therefore full agreement amongst key stakeholders and authorities that the suffering of wounded animals is a welfare issue that is inherent in bird shooting. For example, joining calls for a ban on duck hunting in Victoria, the Australian Veterinary Association (13 February 2023) stated –

[1] Van Dyke, F. (1981). Mortality in Crippled Mallards. *The Journal of Wildlife Management*, *45*(2), 444–453. https://doi.org/10.2307/3807926.
[2] DJPR FOI request 6662.
[3] DJPR FOI request 20-48275.

"Hunting ducks with shotguns often results in non-fatal injuries, where the birds are hit with the outer cluster of pellets, but not retrieved. This results in an ethical animal-welfare problem, as the bird may live for a number of weeks with a crippling injury, receiving no veterinary treatment. We are calling on the Government to take swift action and follow the suite of other states and territories that have banned duck hunting altogether."

1.2 Inhumane methods of killing

Rescuers in both Victoria and SA have documented shooters routinely using inhumane methods of killing, and prolonging animals' suffering. For example, the *Code of Practice for the humane destruction of birds by shooting in South Australia* states that injured birds must be killed as quickly and humanely as possible by either a second shot or a blow with a heavy instrument to the rear of the skull. However, shooters and even Authorised Officers have been observed and documented 'windmilling ducks' (swinging them around by the neck). Often still conscious and suffering, the birds are then stuffed in boxes, boats or belts.

The failure to kill retrieved wounded birds quickly or effectively by shooters was documented and widely reported on in state-wide media in SA during the opening week of the 2023 shooting season, provided (see **ATTACHMENT A**) and has been documented in past seasons by volunteer residents and community members. The illegal shooting of non-game species was also documented during the opening week of shooting season in SA.

1.3 Cruelty to parent birds and dependent young

Shooting of parent birds leaves behind orphaned young. In a 2022 submission to the Victorian government regarding the 2022 Hunting Season, Animals Australia cited the eyewitness account of a Victorian farmer in which he stated, "*baby ducklings without mothers that now have to fend for themselves*…[they] *will die over the next few days".* In a report[4] by the Arthur Rylah Institute in Victoria the numerous adverse effects on other birds on wetlands frequently by hunters is documented, including relevantly '*abandonment of nests or young due to the close presence of hunters in areas not normally visited by people'*.

It is an act of cruelty to kill or disturb parent birds and leave their young to starve and die, and Animals Australia calls at the very least wetlands to be closed to hunting when ducklings are present.

1.4 Animal cruelty occurring on private land

In South Australia there are no provisions to notify the authorities of recreational hunting on private land. Consequently, there is no publicly available information about which private lands are favoured by shooters, and there is no transparency about the level of regulatory oversight of private shooting grounds. Hunting on private land also has the potential for significant negative impacts on the amenity of neighbours. In NSW (where recreational bird hunting was banned in 1995), those hunting other species must obtain written permission two days prior[5]. In that way, hunting authorities are aware of the hunting locations and can supervise accordingly.

[4] Menkhorst, P.W. and Thompson, L. (2022). Assessing waterbird susceptibility to disturbance by duck hunters in Victoria (2022 update). Arthur Rylah Institute for Environmental Research Technical Report Series No. 338. Department of Environment, Land, Water and Planning, Heidelberg, Victoria.

[5] Gun Control Australia 2021, Duck hunting laws in Victoria: Legal Factsheet.

2. Environmental damage and unsustainability

Duck shooting in South Australia in 2022 killed an estimated 40 000 birds, not including an estimated 10 000 further birds who will have been wounded but not retrieved. Combined with Victoria's estimated (self-reported) 320 000 birds killed in 2022, this annual recreational activity is not only unsustainable, but is also driving native duck populations the brink. With all five of the waterbird species permitted to be shot in South Australia in long term population decline, the dire environmental impacts of bird shooting are clear.

2A. Environmental / population crisis – (DEW SA)

The Department of Environment (DEW) SA utilise two key surveys to assess waterbird and game species 'abundance' annually. The Wetland and Waterfowl Survey and the Eastern Aerial Waterbird Survey[6].

Both surveys continue to indicate stark trends of long-term, critical decline. Results from the SA Wetland and Waterfowl Survey are particularly alarming and present a strong case to end bird hunting in the state:

- Game species abundance was the second lowest on record in SA with most game species well below long-term average; and
- 6 of 8 species show continued long-term decline and each of the 5 species permitted to be shot for recreation in SA are in long term decline.

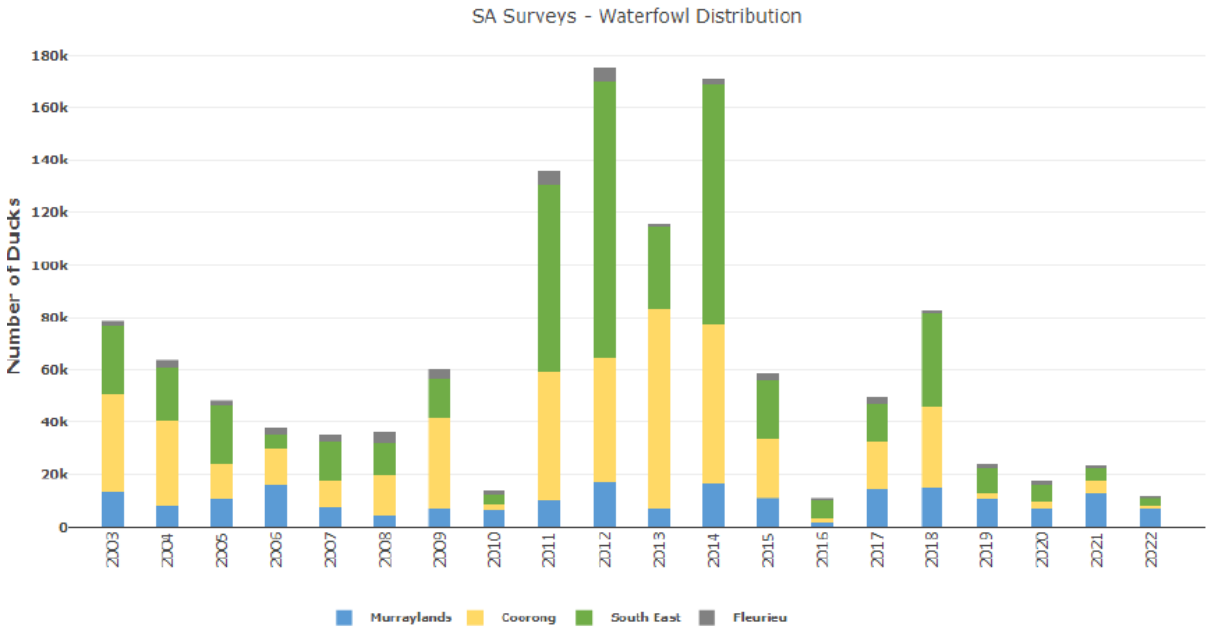
Total game bird abundance survey estimates for 2022[7] decreased to a little over half that counted in 2021 and, more disturbing still, it was just 19% of the long term (20 year) average (see extracted table below).

Game duck abundance

Year	Grey Teal	Chestnut Teal	Black Duck	Wood Duck	Mountain Duck	Blue-winged Shoveler	Hard Head	Pink-eared Duck	Totals
2003	43,948	3,177	2,801	1,389	1,102	1,428	8,126	16,946	78,917
2004	39,789	2,746	3,038	801	3,869	2,118	4,673	6,762	63,796
2005	27,339	1,848	7,824	522	4,583	1,956	3,190	1,292	48,554
2006	22,881	2,078	2,096	441	4,216	1,178	1,520	3,396	37,806
2007	22,594	2,055	1,709	501	4,537	908	1,792	1,589	35,685
2008	25,031	2,398	1,724	819	3,129	1,518	1,093	794	36,506
2009	39,626	3,232	2,955	724	3,539	1,364	7,084	2,088	60,612
2010	3,801	826	1,733	1,051	5,609	86	760	33	13,899
2011	86,256	7,341	3,689	1,661	5,482	715	26,342	4,358	135,844
2012	127,695	5,734	5,311	1,686	11,422	2,331	13,434	7,472	175,085
2013	89,105	2,658	689	627	2,052	4,419	8,435	7,353	115,337
2014	130,353	5,084	2,982	613	10,730	2,634	2,967	15,915	171,277
2015	28,392	7,630	1,243	464	7,251	6,374	2,277	5,487	59,117
2016	2,200	401	997	724	6,112	87	83	107	10,709
2017	34,009	5,776	2,324	841	1,692	171	3,636	1,535	49,983
2018	54,665	11,946	3,839	672	3,082	2,076	3,809	3,028	83,114
2019	15,151	2,818	2,283	395	955	438	1,341	572	23,954
2020	4,845	1,656	2,797	375	6,478	134	809	178	17,272
2021	7,715	1,900	3,748	1,172	4,331	73	1,815	2,873	23,627
2022	4,703	1,193	2,268	841	2,876	7	21	119	12,028
Average	40,505	3,625	2,803	816	4,652	1,501	4,660	4,095	62,656

[6] See - https://www.unsw.edu.au/content/dam/pdfs/unsw-adobe-websites/science/bees/ces/Eastern-Australia-waterbird-aerial-survey-2022-Final.pdf

[7] Slide 37 of the 2022 Waterfowl, Environment and Climate Conditions and Forecasts Report, 20 December 2022 Department of Environment and Water



Note: this graph - also from the 2022 Waterfowl, Environment and Climate Conditions and Forecasts Report, 20 December 2022 Department of Environment and Water SA - relates to ***all*** waterbirds, not only 'game' birds.

2B. Environmental / population issues – Eastern Australian Waterbird Surveys (EAWS)

Population decline of hunted duck species

The long-running EAWS led by Director of the University of New South Wales Centre for Ecosystem Science Professor Richard Kingsford[8], has found unequivocal decline of hunted duck species across Eastern Australia, including much of SA. All eight game duck species are in sustained decline, including all 5 of the species permitted to be hunted in SA. The NSW Riverina duck survey report [9] 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* [sic] *shown to respond predictably to changes in climate or only occur in low abundance*".

Shooter lobby groups often quote outdated research but contemporary data from EAWS shows that record abundance occurred in the 1980s, and long-term decline has followed. The Pink-eared Duck and Hardhead populations have collapsed and remained low during the last decade (see **ATTACHMENT B**) while all other species show long-term decline over four decades.

On previous occasions when we have sought information directly from EAWS, game duck breeding has been negligible (as it is again this year given that five non-game species accounted for 96% of observed nests).

[8] Conducted by Professor Richard Kingsford and team (UNSW) for the last 40 years.
[9] *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.

According to the Victorian 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 (see **ATTACHMENT C**). This is despite the generous rainfall from successive La Nina cycles which have enabled non-game species to rebound[10]. Game duck abundance across the eastern states is now the third lowest in four decades. With minimal breeding of game duck species, continued shooting simply diminishes any hope of a rebound.

Shooter lobby groups often use outdated quotes from Prof. Kingsford[11], when data suggested that duck populations appeared to show some resilience to hunting losses. However, Kingsford has changed his assessments based on subsequent data. For example, in 2006 he criticised the Victorian Government for holding a duck shooting season as the Millennium Drought gathered pace[12].

More recently, shooter lobby groups have tried to dismiss EAWS data which shows that the game duck hunting is unsustainable. Criticisms of EAWS are prevalent among those groups, many of which are incorrect. For example, it is claimed that:

- EAWS does not cover ducks on farm dams but in fact it does;[13]
- EAWS does not count all ducks but it covers 12.3% (almost one-eighth) of the land area of eastern Australia, flying across 10 broad east-west bands of 30km width, spaced evenly at every 2 degrees of latitude[14]. It is nonsensical to suggest birds somehow "hide" between, or "escape" outside, the broad grid of survey bands spanning one-third of the continent;
- Low counts in dry years are due to ducks spreading out to seek better habitat and low counts in wet years are due to ducks "dispersing" across multiple habitat options, but EAWS surveyed all the major wetlands (from 2010 onwards, including most Ramsar-listed sites) for the Murray-Darling Basin, and all major floodplains and lakes[15]. This counters the shooters' criticism that the birds spread out onto flooded areas and evaded the count; and
- The survey looks in the wrong places and is not fit for the purpose of deciding season settings. However, accepted methods to estimate animal populations do not have to count every individual. By covering the same large area in the same way each year for 40 years – including wet and dry periods – EAWS reliably monitors population trends which should inform settings, policies and legislative decisions.

[10] *Considerations 2023*, p30. https://cdn.revolutionise.com.au/site/rfppexgw1wfhojp0.pdf
[11] For example, in the previously mentioned *Scientific Panel Review of Open Seasons for Waterfowl in New South Wales*, 2002, Kingsford et al. On p5 the review stated: "All scientific studies available to the review indicate that hunting has no effect on waterfowl populations." But the studies available to that review are now decades old.
[12] See: https://www.theage.com.au/national/bird-expert-attacks-duck-season-ok-20060313-ge1x67.html.
[13] Explicitly stated in the Kingsford-Prowse review of the new Victorian helicopter survey of ducks, https://www.gma.vic.gov.au/__data/assets/pdf_file/0003/819282/Game-duck-review-Kingsford-Prowse.pdf.
[14] Braithwaite et al,1985: *An Aerial Survey of Wetland Bird Fauna in Eastern Australia - October 1983*. Available at: https://publications.csiro.au/rpr/pub?list=BRO&pid=procite:5c541e8f-7e20-4e8a-92d8-c6624dad2d07.
[15] Kingsford et al, *Aerial surveys of waterbirds in Australia,* Scientific Data, 2020: https://www.nature.com/articles/s41597-020-0512-9.

3. Mismanagement of duck shooting in Victoria – biodiversity conservation

We refer to the Committee's Terms of Refence item (f) *How native bird hunting is managed in other jurisdictions,* and make the following submissions in respect of the abysmal regulatory oversight of duck hunting in the Victoria in respect of biodiversity conservation. This indicates that despite considerable financial resources and regulatory attention, duck shooting remains highly problematic in that State, including continuing to cause great suffering and threatening game and 'protected' species of native waterbirds.

We recount issues for both SA and Victoria below.

3.1 Illegal and unethical shooter behaviour

The failure to kill wounded birds quickly or effectively by shooters was documented and widely reported on in state-wide media in SA during the opening week of the 2023 shooting season, (see **ATTACHMENT A**) and has been documented in past seasons by volunteer residents and community members.

During opening week in SA volunteers witnessed and documented:

- Birds left in piles alive (failure to dispatch);
- Shot but live birds given to children (failure to dispatch);
- Birds shot and left on the water (failure to dispatch);
- Birds shot and killed by suffocation in mud; and
- Shot but live birds given to dogs.

Shooting of non-game species was also documented during the opening week of shooting season in SA (**see ATTACHMENT F**)

In 2022, Victorian shooters who participated in the South Australian season represented almost a third (29%) of total duck shooters allocated permits by the SA Government[16]. The following must therefore be considered when assessing these activities in SA.

Animals Australia is advised that rescuers attending the **Victorian** open lakes and wetlands during the 2023 season have observed the examples of unacceptable or illegal activities listed below, primarily at Wooranook Lakes, Round Lake, Gill Gill, and Lake Buloke.

Formal complaints regarding the below observed and document activity were lodged by Animals Australia with the GMA:

1. Shooters wounding / killing birds but failing to retrieve them;
2. Shooting before 8am legal shooting time;
3. Walking with unbroken guns;
4. 'Windmilling' birds to kill them;
5. Shooters shooting at birds sitting on the water;
6. Shooters toileting less than 50m from shoreline;
7. Protected trees being cut for firewood;
8. Shooter camp set up less than 20m from shoreline;
9. Non-gun dogs on wetlands;
10. Shooters 'flushing' birds into the air with a boat;

[16] Permit allocation information obtained via FOI: 252 duck shooting permits issued to Victorians and 861 to South Australians.

11. Two threatened species (Blue Winged Shoveler) shot with wings removed, one found stuffed in a tree trunk, wings located separately.
12. Children feeding bread to ducks to lure them close (and before 10am).
13. At least three instances of un breasted shot game birds shot and dumped.
    i. 9 ducks shot and dumped in an industrial area in Geelong, VIC,
    ii. 5 ducks shot and buried at a camp site at Lake Koynock, VIC.
    iii. 18 ducks shot and buried at Taylor's Lake, near Horsham

Rescuers in Victoria during the 2023 season have located numerous unretrieved wounded or killed birds, some listed as threatened or protected species including:

1. *PROTECTED* Black Tailed Native Hen (Dead on arrival: **DOA**)
2. Grey Teal (x 4) (DOA)
3. Grey Teal (Euth)
4. *THREATENED* Hard Head (DOA)
5. *THREATENED* Blue Winged Shoveller (Euth)
6. *THREATENED* Blue Winged Shoveller (x3) (DOA)
7. Black Pacific (x 2) (DOA)
8. Chestnut Teal (x 2) DOA)
9. *PROTECTED* Eurasian Coot (DOA)
10. Grebe (DOA)

The Wildlife Victoria (**WV**) veterinary triage unit at Wooroonook Lakes has triaged 78 birds to date and has reported the following (not a comprehensive list, and it does not account for birds who are rescued by individual volunteers, or those who are taken for treatment or euthanasia to other vets (e.g., Zoos Victoria):

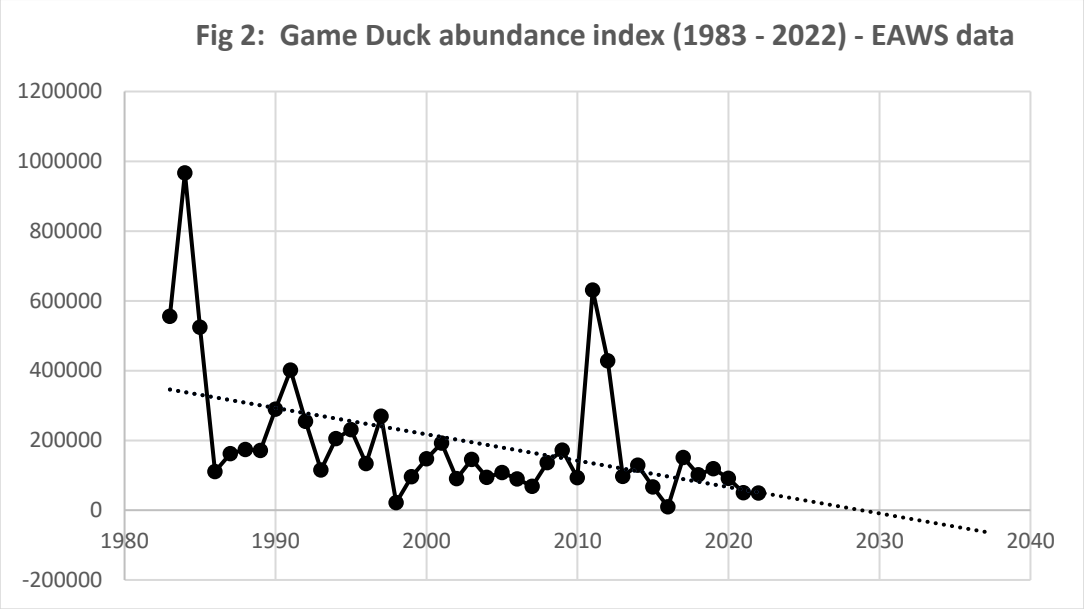
1. Birds left in the field, as of 30 April (day 5 of the season);
2. Hardhead Duck x 1, DOA, confirmed shot;
3. Freckled Duck x 1, DOA, confirmed shot;
4. Grey Teal x 1, DOA, confirmed shot; and
5. Pink Eared Duck x 1, presented alive and euthanised by the unit, confirmed shot.

Media has also reported the WV veterinary triage unit at Donald as seeing 4 x Blue Winged Shovellers and 1 x Hardhead Duck, presented DOA / with lethal gunshot wounds. WV also reported 3 x non-game species waterfowl have been killed.

It is important to note that the above instances are not exhaustive. Rather they are a 'snapshot' of known breaches and behaviours observed when independent witnesses have been at a wetland. They also do not account for birds that are rescued by individual volunteers, or those birds taken for treatment or euthanasia to vets outside of the Wildlife Victoria veterinary team (for example, taken to the Zoos Victoria veterinary clinics).

3.2 Possible game bird extinctions by 2030

Each year Animals Australia updates and submits the following game duck abundance graph showing a clear and alarming **downward trend** in native game duck abundance (Figure 2). In its 2023 briefing to the Minister, GMA mentioned that our submission provided "*a downward trendline graph (p.14) that extends to 2040*". In fact, the graph projects extinction by 2030.



3.3 The Kingsford-Klaassen (KK) model

The KK model, developed by Professors Kingsford and Klaassen[17], has been referred to by the Victorian GMA as "*the best science presently available to assist with objective decision-making on annual duck season arrangements"*[18].

Animals Australia has previously provided the Victorian government with details of the shortcomings of the KK modelling (much of it detailed by its authors). In summary, the KK model has not been peer-reviewed and continued over-reliance on it is a concern because:

- The KK model does not consider biodiversity;
- The KK model output is a bag limit, and it does not specify species;
- The KK model relies on several indices that cannot reliably distinguish between a cancelled season and a restricted season. 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 shooters.

It is our view that GMA misled the Victorian Ministers regarding the 2022 season by stating[19] that *"the KK [model] recommends a full-length season".* Hunting groups also erroneously claim that "*the science supports a full season*". However, the KK model is the only model that addresses such arrangements, and it does not provide support for a full season. Indeed, season length is not even a variable in the model. In one of their earlier (draft) papers[20], Kingsford and Klassen, stated –

[17] Kingsford and Klaassen, *Relationships among duck population indices and abiotic drivers to guide annual duck harvest management* Nov 2021, p7: https://www.gma.vic.gov.au/__data/assets/pdf_file/0006/863610/Combined-Final-Report-and-Attachment.pdf
[18] *Brief 2022*.
[19] 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.
[20] Kingsford and Klaassen, 2021, op. cit.

> *"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. In responding to stakeholder queries[21], they stated:

> *"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 appears that GMA opted for a long season *(with the associated less effective enforcement[22])* and commissioned a model that only varies bag limits. It is therefore misleading to claim that "the science" supports a fixed-length full season every year.

This is unlike the last thirty years when season length was one of the levers that could be used (in combination with bag limits) to reduce the cull. During the thirty years of data (1991-2020) used to derive the KK model, season lengths varied from zero (four cancelled seasons) to the default setting of 87 days, but in one half of those years, the season was shortened..

Given this variability in Victorian duck shooting season length for fifteen of the thirty years on which the KK model was developed, there seems no reason why season length cannot be drastically shortened, along with bag limits, as a further precaution to help safeguard biodiversity.

We strongly submit that on environmental grounds, season cancellation is necessary to safeguard of vulnerable targeted waterbirds (game birds). It is a travesty to suggest the KK model will ensure "sustainable" duck shooting seasons.

3.4 Adaptive Harvest Modelling (AHM)

Shooters have (seemingly) successfully persuaded the Victorian government to invest in "Adaptive Harvest Modelling (**AHM**)" to supposedly "take the politics out of duck shooting", but a 2017 review noted a range of difficulties with AHM in the Australian context[23].

In other countries (e.g., USA) where AHM has been used, it did not remove the politics or please stakeholders. Rather, it became an opaque academic project while stakeholders pleaded for a simpler way.

A more objective assessment would have noted the difficulties and vagaries of AHM for Victorian bird shooting, called out the false hope of pursuing AHM to "remove the politics" and saved Victorian taxpayers a lot of money.

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[21] KK N21 (pp26-27).

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

[23] *Towards the implementation of adaptive harvest management of waterfowl in south-eastern Australia*, ARI 2017 pp5-7. Available at: https://www.ari.vic.gov.au/__data/assets/pdf_file/0035/576917/ARI-Technical-Report-284-Towards-the-adaptive-harvest-management-of-waterfowl-in-south-eastern-Australia.pdf.

We are deeply concerned by the way GMA has presented some of the relevant scientific reports to justify continued taxpayer funding of more research to support the recreational killing of native waterbirds. Examples include its apparent misunderstanding of the EAWS, the new Victorian helicopter survey, and the KK modelling for season settings. It is ill-advised for non-scientists to apply quantitative results without an appropriate understanding of their limitations and sources of error.

3.5 Failure to account for cumulative threats

Australian native wildlife, including waterfowl, face multiple ongoing threats (e.g., large-scale changes in land use, climate change), which increases the imperative to reduce the additional threat posed by recreational hunting.

A report published in 2000[24] and based on last-century data, suggested that hunting did not impact game duck abundance. At the time that data was collected, game duck populations appeared to show resilience. However, native ducks can no longer withstand the cumulative pressure of hunting in addition to other threats – as amply demonstrated by the decades-long population trends and the recent failure to rebound after extremely high wetland areas due to high rainfall.

The KK model does not account for cumulative threats to waterfowl today. Decisions about shooting and dramatic changes to our environment over the past 40 years have destroyed the resilience of game duck populations, pushing several species to the brink in recent years.

3.6 Shooting non-game (protected) species

Shooters often illegally shoot non-game (protected) species, and species officially listed as threatened. The Victorian *Wildlife Act 1975* provides serious penalties for shooting protected or threatened waterbirds, but these have never been imposed. Further information from the 2023 shooting season in Victoria again demonstrates this (***3A.1 Illegal and unethical shooter behaviour)*** Given that in 2022, Victorian shooters who participated in the South Australian season represented almost a third (29%) of total duck shooters allocated permits by the SA Government[25], the information provided above (***3A.1)*** must be considered when assessing these activities in SA.

3.7 GMA fails its obligations under the Victorian Flora and Fauna Guarantee Act 1988

Section 4B of the *Flora and Fauna Guarantee Act 1988* (**FFGA**) 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 FFGA, 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…"*

[24] *Scientific panel review of open seasons for waterfowl in New South Wales,* Kingsford et al, Nov 2000.
[25] Permit allocation information obtained via FOI: 252 duck shooting permits issued to Victorians and 861 to South Australians.

It is our strong view that GMA fails to give "proper consideration" to FFGA objectives (a) to (d) listed above.

Victoria has many wetlands and waterways available for duck shooting, exposing many threatened species to harm. The thresholds for the triggering management actions (e.g., wetland closures) are far too high to offer effective protection. The GMA is also intransigent re: requests to close certain wetlands to duck shooting either for public safety reasons or to provide a much-needed sanctuary for birdlife.

Over the last three shooting seasons, only five wetlands have been closed to protect two threatened species[29]. Despite previous warnings about the inefficacy of partial closures[30], GMA made a partial closure of one wetland purportedly to protect two (unlisted) species engaged in colony breeding.

With the Victorian upper house parliamentary Inquiry now underway (in parallel with the SA Inquiry), sixteen wetlands have or will soon be closed or partially closed this year to protect birdlife in Victoria. This is a welcome uptick compared to other years but is likely still insufficient to protect threatened species from ongoing decline. Closures have been too few and too inconsistent.

By every measure, GMA's "management" of duck shooting has failed the test of "sustainability" and is contrary to its responsibilities under the Victorian FFGA.

3.8 The proposed 10% cull is not sustainable

GMA has suggested a 10% 'culling' figure in Victoria. In addition to concerns about animal cruelty and population declines (as outlined above), we have numerous concerns about this figure:

- **Lack of supporting evidence** – The ARI report gives no biological or environmental justification for a 10% cull. For the 2022 season, GMA seized on and publicly used the ARI report's 2.94 million gamebird abundance estimate, making no mention of its uncertainty[26]. 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. A 30% wounding rate would result in 79,000 wounded so the total loss far exceeds even the planned 10% cull.
- **Evidence of declines with a 10% quota –** A 10% quota has been adopted for the three most abundant game species during the NSW Riverina duck cull over rice farms. The latest (2022) NSW duck survey shows a marked fall in abundance, consistent with EAWS trends. This is significant, given extended La Nina periods, and GMA's previous advice to the Minister that the NSW Riverina duck populations were supposedly on the brink of "recovery"[27]. In a Ministerial brief in support of a 90-day season 2023, GMA has attempted to mislead the Minister by dismissing this significant NSW drop in game bird abundance[28]. GMA made claims that the Riverina drop can be

[26] See: https://www.gma.vic.gov.au/media-releases/2021/second-helicopter-survey-provides-new-data-on-victorias-game-duck-populations

[27] GMA's Ministerial brief in support of the previous (2022) shooting season can be found at: https://www.gma.vic.gov.au/__data/assets/pdf_file/0008/844613/Min-Brief-GMA-rec-2022-duck-season-inc-attachments-Redacted-copy_redacted_AS.pdf. It 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). Our caveat was ignored, and the Minister was subsequently misled.

[28] Victorian *Considerations 2023* (p27).

explained away by a change in survey coverage even though the findings of a decrease in abundance are sound.

- **Lack of applicability in the Australian context** – This 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 or will be sustainable under Australian conditions.

3A. Mismanagement of duck shooting in Victoria – unnecessary public expenditure

While there is little transparency about total government funding to regulate and support hunting and shooting in Victoria, it is clear from publicly available figures that millions of taxpayer dollars are being used for this purpose despite current budget pressures.

At **ATTACHMENT D** we set out information obtained through research and FOI requests. This information shows that the direct funding from the current government (for GMA, SHAP, gun clubs and cleaning-up lead pollution near shooting ranges) exceeds $70 million. This is likely an under-estimation because we have been unable to trace all public funds going to academic institutions, ARI and other government agencies in collaboration with GMA.

GMA's *Research Strategy 2020-2024* makes clear that university research funds, provided by the taxpayer, will be used[29]. Taxpayers, the majority of whom do not support duck shooting, are unwittingly paying for often ineffective and resource intensive programs for shooters, and activities to support hunting. These are all inappropriate uses of public funds.

3A.1 Expensive and ineffective programs for shooters

GMA has spent years and many thousands of dollars developing programs and materials for hunters. For example: Victorian Hunting Manual[30]; Shotgunning Education Program (**SEP**); Gamebird Hunting Essentials Masterclass; marketing surveys to improve attendance at SEP/ Masterclass training that is now defunct due to lack of attendees; trapping and testing of ducks to study wounding; social research to determine why duck shooters adopt behaviours that increase wounding; and now the ongoing development and implementation of a Wounding Reduction Action Plan (WP) which is yet to be released[31].

Participation rates in these taxpayer-funded programs for hunters are low. In December 2020, GMA acknowledged that fewer than 200 of the 25,000 licensed Victorian duck shooters had completed the SEP or Masterclass.

The programs are ineffective. A GMA survey of hunter knowledge(2020)[32] found duck shooters generally scored worst among all game hunters in respect to level of understanding of hunting laws, species recognition, best practice to minimise wounding, and humane treatment of wounded waterbirds. The WRAP proposes to invest yet more money on materials that have not and are highly unlikely to change shooter attitudes or behaviours.

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[29] GMA Research Strategy 2020-2024, especially its sections 3.2 and 6.3: https://www.gma.vic.gov.au/__data/assets/pdf_file/0003/610986/GMA-Research-Strategy-2020-2024.pdf.
[30] *Game Hunting in Victoria: A manual for responsible and sustainable hunting:* https://www.gma.vic.gov.au/__data/assets/pdf_file/0010/499096/Game-Hunting-in-Victoria-2nd-edition.pdf
[31] A Draft WRAP has been released under the Victorian FOI Act – Release no. 9436, and is quoted from I this submission.
[32] *Summary report of hunters' knowledge survey findings*, GMA, Dec 2019: https://www.gma.vic.gov.au/__data/assets/pdf_file/0007/614194/GMA-Hunters-Knowledge-Survey-Report.pdf

3A.2 Highly resource intensive activities to no end

Given the very small number of shooters, a disproportionate amount of public funding is being spent on highly resource intensive activities to placate the hunting lobby.

The WRAP now acknowledges that the helicopter surveys, upon which GMA recommended bag limits be significantly increased, had unacceptably high error rates/lacked sufficient accuracy. Furthermore, costly projects aimed at reducing the incidence of wounding are a waste of taxpayer funds because wounding (as accepted by all parties) is an inherent animal welfare issue that cannot be satisfactorily mitigated.

3A.3 Unnecessary replication

In some cases, activities are patently unnecessary as they replicate existing work by other Victorian government agencies. Examples of unnecessary replication include:

- **Chemical contaminants** – The GMA is testing avian blood samples for chemical contaminants even though the Environment Protection Authority (EPA) has already tested for these compounds and found unacceptable levels of lead and per- and polyfluorinated alkyl substances (PFAS) contamination in ducks; and

- **Helicopter surveys** – GMA commissioned a new aerial survey of ducks in Victoria. The first survey report ignored the movement and migration of ducks and showed a wide margin of error (Ramsey 2021)[39]. Peer review[40] of the survey identified several additional sources of potential error that would lead to an over-estimate of abundance, of concern as over-estimates can lead to over-harvesting. The WRAP now considers this population estimate to be so unreliable that GMA cannot calculate the "crippling ratio" in 2022. It claims the population data won't be good enough until 2025. *(As outlined in 1.5.8 of this submission, we calculated the crippling ratio for 2022 and it is damning, >80% for first-year birds).*

3A.4 Lack of cost-benefit analysis

Taxpayer subsidies and direct funding of hunting has been justified in Victoria by the spurious claims about the "economic benefits" of hunting. A key issue is whether this generous taxpayer funding provides "value for money" because no cost-benefit analysis has even been done for recreational native bird hunting.

The 2017 Pegasus report[33] criticised GMA for its one-sided promotion of the "economic and social benefits" of hunting –

> *"...the GMA's general power to conduct research appears to have been applied to* ***promote one side of a complex debate about the economic and social benefits of game hunting.*** *The GMA regularly draws in its public and internal documentation to an assessment of the economic benefits of game hunting prepared by the former Department of Environment and Primary Industries (DEPI) (2014) and provides a copy of the report on its website. The Hunting Manual, for example, claims that hunting generates hundreds of millions of dollars of direct and indirect economic activity…*
>
> *The findings of the DEPI study* ***have been challenged by other research bodies*** *(Parliament of Victoria Environment, Natural Resources and Regional Development Committee 2017, p 91). The GMA … do not acknowledge the criticisms that have been made of this study or provide references to studies that present other conclusions. It is reasonable, given the nature*

[33] Pegasus Economics 2017 – Assessment of GMA's Compliance and Enforcement Function. https://www.gma.vic.gov.au/__data/assets/pdf_file/0011/481682/Assessment-of-the-GMAs-compliance-and.pdf

> *of GMA Act, for the GMA to promote safe and sustainable hunting, but to assert that duck hunting contributes to the social, economic and environmental well-being of the state, and to seek to achieve this as a stated goal of regulation, seems to* ***move the GMA beyond its primary role as a regulator into an advocacy and promotional role for the game hunting activity that it is charged with regulating***." [emphases added]

GMA and the previous hunting regulator (Department of Environment and Primary Industries, henceforth "DEPI") commissioned hunter surveys in 2019 and 2013 respectively[45] to estimate the supposed "economic benefits" from hunting. Consultants, RMCG, who have also undertaken hunter surveys in NSW and nationally, undertook the work. Their findings should not be used as sole justification for the continuation of duck and quail shooting as even the report authors acknowledge that their work does not constitute cost-benefit studies *"and should not be used to favour one activity over another (or doing nothing)…Techniques such as cost benefit analysis, which express the relationship between the benefits to society and the costs incurred as a result of the action, are more appropriate…"*

Animals Australia has engaged an economist and a mathematician to review these reports. Key flaws were identified, leading to seriously misleading and inflated results. Concerns include:

- The survey was completely based on self-assessment by hunters, with no evidence sought or provided to back up their claims;

- Respondents opted in, rather than being randomly selected, so the results are biased towards the keener hunters (inflating the results, rather than being representative of all hunters);

- The results are so inflated that the average expenditure per duck bagged[46] was an incredible $235 per duck in 2013, increasing to $266 per duck bagged in 2019;

- Many items of expenditure (e.g., food, alcohol. Vehicle, vehicle maintenance) would be purchased whether hunting or not;

- The figures for game hunting (duck, quail, deer) are further inflated by allocating <u>all</u> off-trip expenditure to game hunting and none to non-recreational hunting;

- There has been no publicly available peer review of these surveys. The 2023 submission to GMA from Wildlife Victoria[47] raised concerns about potential conflicts of interest and the risks of using the same contractors all the time; and

- Only the net benefit is relevant as hunters would spend on other things if duck shooting was banned:
    - Other states found no economic loss when they banned duck shooting[48];
    - None of these studies considers the case where other forms of hunting remain but duck shooting ends; and
    - Pro-hunting politicians, hunting groups and the GMA focus on the gross expenditure or GSP, and often quote the figures for all types of hunting (including non-recreational hunting) when trying to promote duck shooting.

The GMA has ignored pleas from regional residents for a cost-benefit study, taking into account negative effects of bird shooting (e.g., noise pollution, disruption to families, anxiety in children, emotional distress and impact on mental health, stress to animals, trespass on property (biosecurity risk); damage to wetlands, decline of species, loss of tourism, taxpayer subsidies for hunting/shooting, etc).

Loss of other benefits should also be taken into account (e.g., what else could that funding achieve in less controversial and more inclusive activities?)[34].

3B. Mismanagement of duck shooting in Victoria – The high likelihood that the WRAP will fail to reduce wounding (and cannot eliminate it)

The WRAP represents piecemeal "reforms" which are unlikely to reduce the crippling ratio (number of ducks wounded for every duck bagged) to 10% any time soon, if ever, and are no substitute for a total and permanent ban.

Disregarding Victorian field trials in 2008 and 2012[35] that showed the wounding rate for experienced shooters was around 30%, GMA has now adopted the Danish approach for monitoring wounding rates, despite the Danish methodology being unsuitable for Victoria. If adopted, the WRAP will extend the suffering of many animals for many years.

Animals Australia has previously warned GMA in our annual submissions that the WRAP is highlight likely to fail, and the Danish wounding reduction method is not applicable in Victoria. These concerns are summarised here.

3B.1 Prohibition is the only effective means to reduce wounding

The WRAP touts Denmark as a "world leader" in wounding reduction because it has reduced wounding in the hunting of Pink-footed Geese (PFG) to some 10%. Note that theNetherlands (1976), Germany (1977) and Belgium (1981) have banned the shooting of PFG long ago[36]. Their chosen method is costless, 100% effective, 100% humane, immediately available, and permanent.

3B.2 The WRAP relies on shooters to self-regulate

Self-regulation is not effective. There is ample evidence that shooters have not and cannot stop engaging in wounding-type behaviours and practices. In some cases, as indicated by discussions on social media (see **ATTACHMENT E**), some shooters deny that wounding is even a problem despite clear long-standing and ongoing evidence. For example:

- The massacre at Koorangie Marshes (2017) – Dozens of shooters commenced shooting before and after legal times. Hundreds of protected species were shot, and hundreds of birds were left un-retrieved. Volunteer rescuers recovered 183 illegally shot threatened species and 296 protected birds but no one was held accountable by the GMA despite their presence; and

- The massacre at Box Flat (2013) – Similar to the above.

[34] For example, GMA licence data shows that 98% of duck shooters are male.
[35] Conducted as part of a train-the-trainer program for the Shotgunning Education Program (SEP) and Masterclass *(information obtained from S Toop, GMA, by email 29.12.20).*
[36] The Dunn review: https://invasives.org.au/wp-content/uploads/2014/07/Game-Council-Governance-Review-S-Dunn-14-June-2013.pdf

3B.3 The WRAP relies on population data that does not exist

The Danish wounding reduction method relies on an accurate count of the duck population at the start of the shooting season but as noted by Kingsford and Klaassen (p7)[37], *"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".*

3B.4 General population trajectories differ between PFG versus avian populations in Australia

The Danish PFG populations are on the rise, whereas there is sufficient data on population trends to indicate that our "game" duck species are in long term decline.

3B.5 Population variability differs between PFG versus avian populations in Australia

PFG population numbers in Denmark follow stable, predictable seasonal patterns, whereas Australian ducks migrate through the eastern states according to climatic events that influence habitat and food supply. Therefore, wildfowl numbers in and geographic area are likely to fluctuate before and during the season, especially in response to increasingly erratic and severe climate-related events in the eastern states (drought, fire, storms, flood etc).

3B.6 Crippling ratio

Data on how many ducks are wounded for every ducked bagged are needed to calculate the crippling ratio[38]. We question how GMA has gone about collecting this data following the end of the shooting season 14 June to 22 August 2022[39], as it appears clear the methodology will have under-estimated wounding rate. To explain:

- **Selection of sites with low yields –** GMA undertook live-trapping of 596 ducks at 5 sites in Victoria. Three sites were clustered in the north-east near Wangaratta, and two were in the south-west at Lara and nearby Point Wilson. The selection of sites is puzzling because these two Catchment Management Authorities (**CMA**) regions had the second-lowest yields[40].

- **Omission of sites with high yields** – Two test sites near Sale (Dutson Downs and Heart Morass) – in the CMA with greatest harvest – have been removed from consideration. The Heart Morass site is owned by FGA and has installed hen houses to breed ducks for gun fodder, so would likely have high numbers of wounded ducks. Kerang, which is located in the CMA with the second-highest harvest result, has also been dropped[41].

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[37] Kingsford and Klaassen, *Relationships among duck population indices and abiotic drivers to guide annual duck harvest management* Nov 2021, p7: https://www.gma.vic.gov.au/__data/assets/pdf_file/0006/863610/Combined-Final-Report-and-Attachment.pdf.
[38] Calculations are based on a method devised by Clausen et al (2017), as described on p20 of the WRAP.
[39] Monitoring trends in waterfowl wounding 2022, GMA, p10: https://www.gma.vic.gov.au/__data/assets/pdf_file/0010/938548/Wounding-Results-Report-2022-Final-Artwork-Low-Res-Email.pdf.
[40] Harvest map taken from P11 from GMA's 2022 harvest report: https://www.gma.vic.gov.au/__data/assets/pdf_file/0009/938547/Game-bird-estimates-2022-Final-Artwork-Low-Res.pdf
[41] Monitoring trends in waterfowl wounding 2022, GMA Op cit

Despite not accounting for birds that did not survive wounding, and apparent attempts to sample ducks from less heavily shot areas, the likely results are damning. The WRAP focuses on first-year ducks which have survived one shooting season only.

We have extrapolated the "crippling ratio" (no. of birds wounded for each bird bagged) for first-year ducks:

Percentage x-rayed with shrapnel:	7.5%
2022 harvest:	262, 567
Estimated duck population at season start:	2.9m, 95% CI [2.4,3.6m]

Harvest rate = harvest / population at start of season
= 262,567 / 2.9m = 0.09

Crippling ratio = Wounding rate/Harvest rate
= 0.075/0.09
= 0.83

A crippling ratio of 83% means more than **8 stricken birds were abandoned for every 10 birds bagged**. Non-disclosure of this calculation does not bode well for transparency and trust in the WRAP or the regulator (GMA).

In Victoria under the supervision of the GMA, an estimated total of 2 million native waterbirds (self-reported) have been bagged across the 2015-2022 seasons. A conservative estimate of 30% crippling ratio means that an additional 600,000 were abandoned to suffer from their injuries. The crippling ratio of ~80% (derived above from the first year of WRAP data) would mean that 1.6 million native waterbirds have been left to suffer. This represents long-term, large-scale, state sanctioned animal cruelty.

3B.7 Differences in hunting licence requirements and training between Denmark and Australia

The Danish wounding reduction method, the results of which involved a different cohort of hunters complying to a different set of requirements, is not likely to be applicable in Victoria or elsewhere in Australia. This is due in part to different hunting licence requirements, which are far more onerous in Denmark[42]. For example:

- **Different training requirements –** In Denmark, anyone seeking a hunting licence faces mandatory training (over a weekend, costing ~$1,000 AUD), then a test of theory and practical shooting skills. In Victoria, apart from the once-off WIT test, Victorian bird hunters do not have to pass any tests for skill or knowledge. The WRAP only proposes a once-off online theory quiz, and there is no requirement for existing duck shooters to pass any practical shooting skills test. The WRAP rejected the recommendation of some stakeholders that mandatory training be included to complement testing and further improve hunter knowledge/skills in Victoria[43]. The US ballistics expert who trained the SEP trainers wrote of the highly disciplined efforts required for wounding rate to be reduced from an average of 31% down to 6%.

[42] Victorian Department DJPR FOI request 6662

[43] Refusal by GMA to mandate training is inconsistent with recommendations made in the Pegasus report (2017) (p26) - *"Under the current arrangements, the GMA is providing education and awareness programs to hunters only after they have acquired a licence to hunt, which does not provide any strong incentive for hunters to participate… The current arrangements are analogous to VicRoads providing driver education only after a licence has been allocated to drive on a public highway."*

- **Different incentives/disincentives** – In Denmark, hunters had to demonstrate **significant** reductions in wounding rates or face a hunting ban. In contrast, in Victoria, there is no mention of possible restrictions or a ban. Instead, the proposal is to offer shooters as yet unspecified "incentives" or "inducements" to complete a practical test.

- **Different bird retrieval rules** – In Denmark, hunters must use a retrieval dog when hunting PFG, so fewer wounded birds would be left at the wetland. In contrast, only ~26% of quail hunters used dogs last year, and it is likely that few duck hunters in Victoria use dogs[61].

3C.8 WRAP will virtually sanction large-scale, long-term animal cruelty

Victoria's average (hunter self-reported) duck "harvest" is 24 times that of PFG hunters in Denmark[44]. After 25 years, the Danes reduced their wounding rate for first-year geese from 100% (one wounded for each one bagged) to 10% (one wounded for every ten bagged) which the Danes claim is "socially defensible". Even if Victorian taxpayers were prepared to wait – and pay – for 25 years of a WRAP project, a 10% wounding rate here would still result in some 32,000 abandoned, injured ducks every year. Such levels of abject animal cruelty are indefensible" in 21st century Victoria[64].

3C.9 WRAP makes no accommodations for prohibition

The GMA does not appear to have adopted one of the key aspects of the Danish approach, namely[45] that "*hunters were granted a limited period to significantly reduce wounding voluntarily…If "major" reductions were not achieved, restrictions and obligations would be increased. If that failed, waterfowl hunting would be banned in Denmark."*

3C. Waning participation in duck shooting

Duck shooting is waning in Victoria. Less than 0.2 per cent of Victorians went duck shooting in 2022.

As of 30 June 2022, GMA lists 23,098 licensed shooters, the lowest since 2010 (despite Victoria's population booming during this time). Despite the elongated 90-day season in 2022, less than half (n= 11,282) of the licensed duck shooters took part in 2022[46]. Those with a duck licence also have an entitlement to shoot the native Stubble Quail, but few do. In 2022, only 9% of them (n= 2,549) took part in the three-month quail shooting season.

When fewer and fewer people are applying for licences and the number of active shooters is declining, it begs the question why so many resources- in Victoria are being directed to support the harmful activities of this group.

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[44] AEWA European Goose Management Platform, *Briefing Note Population status and management recommendations* 2022 p2: https://egmp.aewa.info/sites/default/files/download/population_status_reports/EGMP_population_status_briefing_note_2022.pdf.

[45] These three points were cited in a presentation, *Monitoring wounding in recreational duck hunting in Victoria*, by GMA's Toop and Hampton. DJPR FOI 20-48275

[46] *Estimates of Duck and Stubble Quail Harvest in Victoria for 2022,* GMA, p9: https://www.gma.vic.gov.au/__data/assets/pdf_file/0009/938547/Game-bird-estimates-2022-Final-Artwork-Low-Res.pdf

4. Lack of shooter skill and knowledge

Given that in 2022, Victorian shooters who participated in the South Australian season represented almost a third (29%) of total duck shooters allocated permits by the SA Government, the information pertaining to lack of shooter skill and knowledge below should be allied to those licensed to shoot in SA[47].

A GMA survey of hunter knowledge (2020)[48] found Victorian duck shooters generally scored worst among all game hunters in respect to level of understanding of hunting laws, species recognition, best practice to minimise wounding, and humane treatment of wounded waterbirds. The survey highlights licenced duck shooters vastly lack basic knowledge around animal welfare, which species of ducks they can legally shoot and their personal and public safety while using firearms.

- Less than 4% could answer all questions correctly when asked about animal welfare, waterbird identification and safety,
- 61% don't know how to shoot to minimise wounding
- 80% couldn't identify species they're permitted to kill and those who are protected
- 84% don't know how to kill ducks they have shot and injured
- Only 15% of duck shooters understand the safety risks associated with firing at ducks at close-range

To our knowledge no similar survey has been done in SA, but given the similarities with only the WIT being required as a once off test, and no other compulsory training for licensees, it is likely to yield a similar and unacceptable result in regard to hunter knowledge and capabilities.

5. Jurisdictional inconsistency

On animal welfare and conservation grounds, and community opposition, duck shooting was banned decades ago in Western Australia (1990), New South Wales (1995) and Queensland (2005) and have never been permitted in the Australian Capital Territory (ACT).

Duck hunting for recreation is therefore illegal across almost two-thirds[49] of our continent, and for almost two-thirds of the Australian population, yet inexplicably is still permitted in South Australia. A prohibition on recreational native bird hunting in South Australia is long-overdue to bring it in line with other progressive Australian jurisdictions.

6. Withdrawal of social licence

The majority of South Australians now have a zero tolerance for recreational cruelty to native birds. Contrary to the historic claim that duck shooting is an economic lifeline for the regions, there are growing calls from regional residents and businesses to end duck shooting[50]

[47] Permit allocation information obtained via FOI: 252 duck shooting permits issued to Victorians and 861 to South Australians.
[48] *Summary report of hunters' knowledge survey findings*, GMA, Dec 2019: https://www.gma.vic.gov.au/__data/assets/pdf_file/0007/614194/GMA-Hunters-Knowledge-Survey-Report.pdf.
[49] As at 30 June 2022, recreational duck and quail shooting was illegal in WA, NSW, Qld and the ACT, representing 64% of our population and 66% of our land mass.
[50] See for example residents' comments on the website of Regional Victorians Opposed to Duck Shooting inc: https://www.regionalvictoriansotds.com/.

Polling in South Australia in 2020 found three in four South Australians would support their MP to push for an end to this activity. It also found that duck shooting negatively impacts tourism, with three quarters of respondents unlikely to visit an area with shooters[51].

Recreational duck and quail shooters make up a fraction of the overall population of SA. In Combined, they represent a mere 0.07% of the South Australian community.

Concluding remarks

In summary, Animals Australia advocates for a permanent prohibition on all recreational native bird hunting in South Australia for reasons including but not limited to:

- Inherent animal cruelty and suffering;
- Environmental / population/biodiversity dire decline;
- The example of current failures of management in Victoria including biodiversity conservation failings and significant and unnecessary costs to taxpayers, apparent misuse and misrepresentation of the science resulting in erroneous policy and legislative decisions, failures in due process and a litany of regulatory failures;
- Lack of shooters' skill and knowledge;
- Jurisdictional inconsistencies (game bird hunting is prohibited in other states/territories); and
- Community opposition and the clear withdrawal of shooters' social licence to operate.

We commend this submission (and attachments) to the Committee.

Please contact me if you require additional information or references in the interim.

Yours sincerely,

Glenys Oogjes
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Animals Australia Federation

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[51] South Australian ReachTEL poll, March 2020.

Media depicting cruel shooting activity during the opening week of Duck shooting in SA.

Footage of South Australian hunters apparently being slow to kill ducks released ahead of ban inquiry

ABC South East SA
By Eugene Boisvert and Becc Chave
Posted Thu 23 Mar 2023 at 11:09am

Controversial activity shatters tranquility of Aussie lake

Shotgun blasts are once again echoing across South Australian waterways as duck season begins.
Michael Dahlstrom
Environment Editor
20 March 2023·

Divisive event shatters the peace at popular Aussie lake usually filled with swimmers and campers: 'It is something you never forget'

By ZAK WHEELER FOR DAILY MAIL AUSTRALIA
PUBLISHED: 17:10 AEST, 20 March 2023 | UPDATED: 19:56 AEST, 20 March 2023

ABC Southeast Radio

https://www.southaussiesforanimals.org.au/wp-content/uploads/2023/03/20230323-ABC-SE-duck-hunting.mp3

Attachment L. Pink-eared duck and Hardhead duck population trends

Throughout the last decade, the abundance of Pink-eared Duck (game) has fallen well below the long-term average and not recovered.

Consider the EAWS 2022 graph (p21) for Pink-eared duck (below).

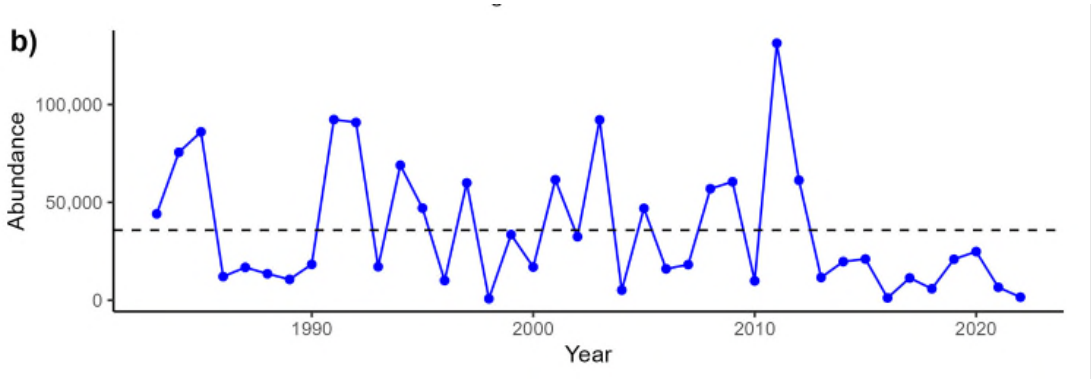


Fig 9: EAWS graph showing relative abundance trends for Pink-eared Duck

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 (p18) for the Hardhead (below).

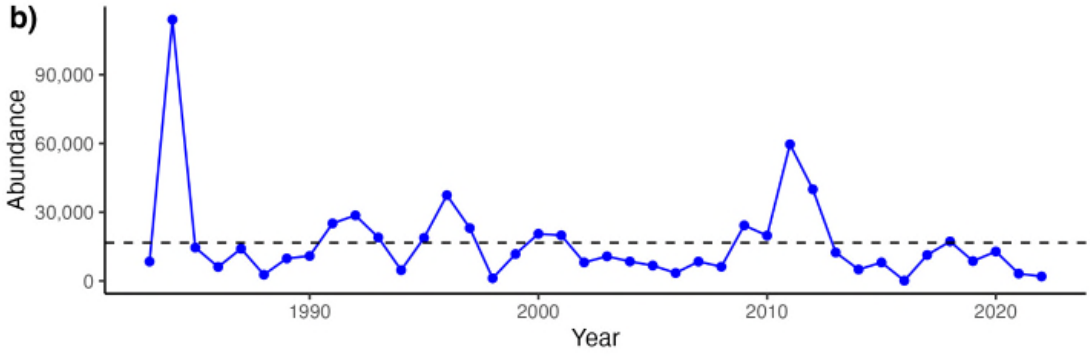


Fig 10: EAWS graph showing relative abundance trends for Hardhead

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 (below zero on the vertical axis) 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 and 2023 seasons, but 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 FFGA 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.

To: Minister for Outdoor Recreation

Game Management Authority

RECOMMENDATIONS FOR THE 2023 DUCK SEASON ARRANGEMENTS

Core message

- Environmental conditions for game ducks throughout eastern Australia have improved considerably in 2022 following above average rainfall and widespread flooding in the Murray-Darling Basin. Game ducks are widely distributed in low densities throughout eastern Australia and breeding has increased. However, game duck abundance remains low following a prior period of drought. Given the improved conditions, an increase in breeding and likely resultant increase in abundance, the Game Management Authority (GMA) believes a duck season can be sustained in 2023. However, in recognition of the low abundances, there is a need to reduce the total seasonal harvest to support recovery by reducing the daily bag limit from that prescribed in the Wildlife (Game) Regulations 2012.
- The GMA also believes that the season should open mid-week with later start times for the remainder of the week to improve safety, compliance and sustainability outcomes and that two game duck species should be prohibited from hunting due to their threatened status.

Recommendation

- The GMA Board recommends the following arrangements for the 2023 duck season:
  - a daily bag limit of four (4) ducks per day
  - the season should be full length with a slight extension to accommodate a mid-week opening, commencing on Wednesday 15 March and ending on Monday 12 June 2023, inclusive
  - hunting start times should be delayed to 08:00 from Wednesday 15 March to – Sunday 19 March, inclusive
  - a prohibition on hunting the Blue-winged Shoveler and Hardhead for the 2023 duck season.

Process

- The GMA's recommendation is informed by a range of national and interstate reports, including the Eastern Australian Waterbird Survey (conducted for 40 consecutive years, recently by the University of New South Wales and led by Professor Richard Kingsford) and the second independent Interim Harvest Model output report (prepared by Professor Marcel Klaassen), which proposes a daily bag limit of four ducks.
- The GMA also considered submissions from eleven hunting, environmental and animal welfare stakeholders. Stakeholder recommendations were polarised with animal welfare groups recommending a closed season and hunting groups recommending a season of full-length, with a daily bag limit of 10 birds (or more) and all game species to be included.
- The GMA Board took a comprehensive, due diligence approach and considered all data and submissions available to it separately and as a whole and believes that there is no substantive basis to deviate from the IHM output report with respect to the daily bag limit. The GMA believes this to be a precautionary approach that provides a sustainable and responsible set of arrangements for the 2023 duck season.
- The GMA is available to brief you on this recommendation in person should you wish.

Due	As soon as possible
Explanation	To allow industry, the hunting community and government agencies to make arrangements.

Recommendation

That you:

1. approve the GMA recommendation to modify the 2023 duck season by reducing the daily bag limit to four birds, implementing a mid-week opening commencing on Wednesday 15 March and ending on Monday 12

To: Minister for Outdoor Recreation

June 2023, inclusive, delaying hunting start times to 08:00 from Wednesday 15 March to – Sunday 19 March, inclusive, and prohibiting the hunting of the Blue-winged Shoveler and Hardhead for 2023.

Recommendation 1 ☐ Endorsed ☐ Not endorsed ☐ Noted ☐ Returned for review

2. note that if this recommendation is accepted, the GMA will inform the community on the changes and conduct compliance operations together with its partner agencies.

Recommendation 2 ☐ Endorsed ☐ Not endorsed ☐ Noted ☐ Returned for review

3. advise whether you would like an in-person briefing from staff and Directors of the Board on the above recommendations.

Recommendation 3 ☐ Endorsed ☐ Not endorsed ☐ Noted ☐ Returned for review

Minister's Comments

Signed **Hon Sonya Kilkenny MP**
Minister for Outdoor Recreation

Date

Approved by [redacted] **Date** 13 January 2023

Brian Hine, Chairperson Game Management Authority ☎ [redacted]

Endorsed by: Graeme Ford, CEO Game Management Authority ☎ [redacted]

Prepared by: [redacted] Game Management Authority ☎ [redacted]

To: Minister for Outdoor Recreation

From	GAME MANAGEMENT AUTHORITY	**Ref**	
Title	RECOMMENDATIONS FOR THE 2023 DUCK SEASON ARRANGEMENTS	**File**	
		Due	As soon as possible

1. Key Information

Sustainable duck hunting in Victoria

Arrangements for the annual duck season (bag limits, season length, game species, hunting methods and times) are prescribed in the Wildlife (Game) Regulations 2012. However, to ensure that duck hunting remains sustainable, a number of environmental and game duck population variables are monitored and reviewed annually to identify whether any modification is required. These include the abundance, distribution and extent of breeding of game ducks, the distribution and extent of waterfowl habitat and the current and forecast climatic conditions affecting waterfowl populations. All of eastern Australia, and not just Victoria, is considered in recognition of the highly mobile nature of many game duck species and their ability to move large distances in short periods of time.

Information considered

In forming recommendations on the seasonal arrangements, the GMA considered the best available data and science, including Bureau of Meteorology (BOM) published climate data, the Eastern Australian Waterbird Survey (EAWS), the NSW Department of Primary Industries Annual Waterfowl Quotas, South Australian Department of Environment and Water Duck Season Considerations data and previous Victorian harvest data. The GMA was also guided by the Interim Harvest Model (IHM) output report which considers abundance indices and surface water estimates over four drainage areas of eastern Australia over different time periods. The IHM is an important input into the GMA Board's consideration. It was developed by two members of an independent expert panel created to provide advice to government on the approach to setting duck season arrangements, consistent with government's policy commitment in its Sustainable Hunting Action Plan to establishing adaptive harvest management for duck hunting in the near future. The IHM adds to the scientific rigour to the decision-making process.

BOM, EAWS, NSW quota and IHM information was shared with hunting, environmental and animal welfare stakeholders who were invited to provide any additional data and make submissions to the GMA for consideration.

Summary of conditions

The document *Considerations for the 2023 Duck Season as at 20 December 2022* (see Attachment 1) provides a summary of a range of information collected from the above sources relating to the status of game duck populations and their habitats across eastern Australia. A summary of this information is provided below.

Habitat availability

La Niña and other drivers have influenced Australia's climate for the last three years, resulting in significant rainfall throughout parts of eastern Australia. Water storages, wetlands and waterways have benefitted from record spring rainfall. The EAWS wetland area index is above the long-term average. Multi-year rainfall deficiencies experienced during the 2017-2019 drought have been almost entirely removed from the eastern states.

Storages, wetlands and waterways in the Murray-Darling Basin are near or at capacity and major rivers in the central and southern Basin experienced some of the highest flood levels recorded. However, central Australia did not receive the heavy rainfall that was seen in the south-east and coastal areas and Lake Eyre and some of its tributaries experienced small to moderate flooding and supported low numbers of waterbirds. A large part of Queensland is in drought or drought affected.

To: Minister for Outdoor Recreation

Distribution of habitat
The majority of the habitat recorded during the October 2022 EAWS occurred in bands 2 (northern Victoria) to 5 (northern NSW). This is reflected in the increased wetland area in the Murray-Darling Basin. Unlike the major eastern Australian floods of 2010 and 2011, Lake Eyre Basin wetlands failed to benefit from the rainfall in 2022. Although water did flow along some tributaries, Lake Eyre currently contains very little water and is likely to dry over summer.

Game duck abundance

- *Eastern Australia Waterbird Survey*
  The game duck abundance index decreased by 2% from last year. The 2022 game duck abundance index was the third lowest recorded in 40 years and is at 25% of the long-term average. Game duck abundance in Victorian bands 1 and 2 declined in 2022 compared to 2021, despite similar habitat conditions in the previous year (although there was an increase in habitat in band 2).

- *NSW waterfowl quota reporting*
  Helicopter counts of randomly selected farm dams were conducted throughout the NSW Riverina in June 2022 to determine waterfowl abundance in order to set annual crop damage mitigation destruction quotas. Game duck numbers decreased from the previous year by 16% from 1,149,395 to 963,902. Unlike previous years, large dams, wastewater ponds, wetlands and channels were not surveyed in 2022, which may have affected abundance estimates.

- *South Australian waterfowl aerial surveys*
  The South Australian Department of Environment and Water reported that surveys of 75 wetlands in late-October / early-November 2022 covering 30,399 ha (2.4 times the long-term average area surveyed) detected 12,028 game ducks, or 19% of the long-term average. The number of ducks counted decreased from the previous year (23,627) and was the second lowest abundance estimate in 19 years of surveys.

Waterbird distribution
EAWS showed that waterbirds were widely dispersed throughout eastern Australia, generally in low densities. However, a large proportion (65% of those detected) were concentrated in survey bands 3 and 5, in the Lowbidgee Wetlands (southern NSW) and Macquarie Marshes (northern NSW), respectively. Seventy-five per cent of total waterbird abundance was concentrated in eight wetlands located throughout NSW and Victoria. Approximately 41% of surveyed wetlands supported no waterbirds (which includes wetlands that were dry).

Waterbird abundance in the Lake Eyre Basin declined in 2022 from 2021 in contrast with the Murray-Darling Basin which increased significantly.

Waterbird breeding
The EAWS waterbird breeding index (all species combined) increased substantially from the previous year and was well above the long-term average and the second highest recorded. Five species of non-game waterbirds (i.e. ibis, pelican, spoonbill, tern and egret) comprised 96% of the total breeding recorded. EAWS breeding species richness increased considerably from 2021 and was well above the long-term average and was the fifth highest on record. Most breeding occurred in bands 3, 4 and 5 (NSW, Murray-Darling Basin). Ibis comprised most of the breeding recorded (80% of the total).

With specific reference to game ducks, although the detection rate of broods is generally low, the breeding index increased from previous recent years in response to improved conditions and was 86% of the long-term average and three times the median value.

To: Minister for Outdoor Recreation

Long-term trends
EAWS waterbird abundance, breeding and habitat availability are all showing long-term declines over the last four decades. Six out of the eight game duck species show long-term declines in abundance. Previous research has shown this is due to habitat loss caused by modification to river flows, including competition for water resources. A drying climate is also having an impact.

While not the driver of population decline, hunting during periods when there is low recruitment (e.g. dry periods) removes breeding stock which can negatively affect future recruitment and drive further decline. This is why conditions are regularly monitored and hunting arrangements modified when required. Similarly, climate change impacts are considered through annual monitoring and review of environmental conditions and population status. The Sustainable Hunting Action Plan commits to identification of sustainable levels of harvest, including a minimum population size below which harvest should not occur. This 'sustainability window' will be used in development of a harvest framework and strategy in consultation with key stakeholders. The Department of Jobs, Skills, Industry and Regions (DJSIR) is leading this work.

Climate outlook
La Niña continues in the tropical Pacific. Atmospheric and oceanic indicators of the El Niño –Southern Oscillation reflect a mature La Niña. Models suggest a return to ENSO-neutral in January or February 2023. The Indian Ocean Dipole has returned to neutral. For January to March as a whole, most of Australia has close to equal chances of above to median rainfall.

Interim harvest model and due diligence assessment
The interim harvest model (IHM) was developed to inform and improve transparency, objectivity and defensibility in decision-making over duck season arrangements while adaptive harvest management (AHM) is being developed. It is the best science currently available to government and has been accepted by the Department of Energy, Environment and Climate Action, DJSIR and the GMA for use in decision-making on duck season arrangements.

The model uses information from long-running population data to explore the relationship between game duck abundance (sourced from EAWS and Victorian ground counts), habitat availability (i.e. water surface area, estimated from LANDSAT satellite imagery) and time (1-3 years) for Victoria and a large part of eastern Australia. To counter the inherent uncertainties in the different data sources used and reduce the influence of any one line of evidence, the model uses multiple indices to inform duck hunting arrangements (a multiple lines of evidence approach, in this case, five). It favours adjusting bag limits over season length as the preferred way to regulate seasonal harvest.

An independent expert and co-creator of the IHM ran the model using recent data and produced a report (see Attachment 2) which proposed to reduce the daily bag limit for the 2023 duck season to four birds per day.

Creators of the IHM (Professors Kingsford and Klaassen) recommended that due diligence should be applied when using the model output to inform decisions on duck season arrangements and that other data sources should be considered to provide context and checks and balances to decision-making. In doing so, the GMA considered a broad range of evidence on habitat extent, recent and antecedent rainfall, waterbird/game duck abundance, waterbird breeding and the distribution of game ducks with a focus on "clumping" or concentrating of birds in areas where harvesting occurs. The GMA Research Committee also discussed the findings of the IHM output report directly with Professor Klaassen. Based on this assessment, none of the data sources when considered in the full context of environmental conditions were believed to contradict the model output.

To: Minister for Outdoor Recreation

Other management considerations

Mid-week opening with later start times

The Board has previously recommended government implement a mid-week (Wednesday) season opening in an effort to reduce the focus on opening weekend to achieve better compliance, safety, sustainability and responsibility outcomes. To support a mid-week opening, it was also recommended to apply a later start time of 08:00 hours from the Wednesday – Sunday, inclusive, during the first week of the season. The GMA again recommends that this be adopted for the 2023 duck season. It is recommended that the season opening day should be Wednesday 15 March, which is three days prior to when the season would normally open under the regulations (i.e. Saturday 18 March), meaning a slight lengthening of the regulated season by three days.

Prohibiting hunting of the Blue-winged Shoveler and Hardhead

In 2021, the Blue-winged Shoveler and Hardhead were both listed as threatened species (vulnerable) under the Victorian *Flora and Fauna Guarantee Act 1988*. Given the listing and concern over the conservation status of these species in Victoria, it is considered responsible to prohibit hunting of these two species in 2023.

Social and economic impact

The recommendation for a mid-week opening commencing on 15 March increases the season length by three days over the currently prescribed season length. The GMA does not believe that this will materially change hunter participation rates but rather spreads opening weekend participation over a longer period. Therefore, it is not considered to create any potential social or economic gains or losses, except in an anticipated improved compliance, safety, sustainability and responsibility outcomes.

With respect to the proposed reduced daily bag limit, harvest data shows that only a minority of hunters can achieve a daily take of greater than four ducks per day which has been the annual average since 2009. Therefore, it is unlikely that a four-bird bag limit will act as a disincentive for the majority of hunters. Hardhead and Blue-winged Shoveler only ever make up a very small percentage of harvested game ducks, so precluding them from hunting in 2023 will have little impact on hunting opportunity.

Animal welfare

Wounding is a direct consequence of duck hunting and creates animal welfare and sustainability issues. The extent of wounding in duck hunting in Victoria is unknown and losses are not factored into annual harvest estimates. Development of a Waterfowl Wounding Reduction Action Plan (Action Plan) and the establishment of a key stakeholder working group to provide advice on its development were key commitments in the government's Sustainable Hunting Action Plan (SHAP) 2021-2024. The purpose of the Action Plan is to improve animal welfare outcomes by reducing wounding and ensuring sustainable and responsible hunting. The Game Management Authority established a working group consisting of key stakeholders and an independent chair (Professor Andrew Fisher) to provide input into development of a draft Action Plan. The GMA Board endorsed the draft Action Plan and presented it to the previous responsible Minister (Agriculture) for consideration in September of last year. Given the change in responsibility and the Minister for Outdoor Recreation becoming lead Minister, I have attached a copy of the draft Action Plan for your information (see Attachment 3). I would encourage your consideration of this advice and recommend its approval so the important actions contained in the Action Plan can be implemented. I understand that DJSIR has briefed government on funding required to implement the plan.

2. Context

Duck hunting in Victoria

Duck hunting is permitted under the *Wildlife Act 1975*. The season length, species composition, bag limits and hunting methods are prescribed under the Wildlife (Game) Regulations 2012. Under these regulations, a duck

hunting season occurs annually, commencing on the third Saturday in March and concluding on the second Monday in June. Eight duck species may be hunted, and the daily bag limit is set at ten game ducks per day, which includes a maximum of two Blue-winged Shoveler.

There are approximately 23,300 licensed duck hunters who, on average, harvest 320,000 game ducks annually.

Modifying a duck hunting season
Under section 86 of the *Wildlife Act 1975*, the Minister, by notice in the Government Gazette, may further regulate the duck hunting season where there is a need to alter the prescribed seasonal arrangements.

Under the Administration of Acts General Order dated 5 December 2022, section 86 of the *Wildlife Act 1975* is jointly administered by you, as Minister for Outdoor Recreation, the Minister for Environment and the Minister for Agriculture. Any modification to the prescribed duck hunting season must be agreed to by all Ministers.

Role of the Game Management Authority in setting duck season arrangements
Under section 5(a) of the *Game Management Authority Act 2014* (GMA Act), an objective of the Game Management Authority (GMA) is to 'promote sustainability and responsibility in game hunting in Victoria.'

Under section 6(h), the GMA is to 'monitor, conduct research and analyse the environmental, social and economic impacts of game hunting and game management' and under section 6(i), the GMA may make recommendations to relevant Ministers in relation to:

(i) game hunting and game management, and
(iii) open and closed seasons and bag limits.

Also, section 8A 'Guiding principles' requires the GMA to have regard to the following relevant principles when exercising its powers or performing its functions:

(b) the principle of triple bottom-line assessment, which means an assessment of all the economic, social and environmental costs and benefits, taking into account externalities;
(d) the principle of an evidence-based approach, which means considering the best available information when making decisions.

Communication strategy
The GMA will implement a targeted communication strategy via appropriate social and traditional platforms to inform the community on the arrangements for the 2023 duck season once decided by government.

3. Consultation

On 19 and 20 December 2022, the GMA provided information to stakeholders on current and predicted environmental conditions, waterbird habitat extent and distribution and waterfowl distribution and abundance indices throughout eastern Australia. All information was posted on the GMA website.

The following stakeholders were invited to make comments on any of the documents provided, including the interim harvest model proposal, whether they had any additional information or data relevant to decision-making and their views on what the arrangements for the 2023 duck season should be. The broader policy question of whether duck hunting should be permitted generally was not a matter for consideration.

- BirdLife Australia
- Field and Game Australia
- Sporting Shooters' Association of Australia (Vic)

To: Minister for Outdoor Recreation

- RSPCA
- Animals Australia
- Shooting Sports Council of Victoria
- Coalition Against Duck Shooting
- Regional Victorians Opposed to Duck Shooting

Eleven submissions (five solicited, six unsolicited) were received and thoroughly considered by staff and the Board. Stakeholders provided commentary on their interpretation of the data. Polar opposite views on the season were expressed, with supporters of hunting calling for a full (or more) season and those who oppose hunting seeking for the season to be cancelled. A range of other issues outside the matter at hand were raised and will be considered by the Board at a later date.

A summary of stakeholders' positions regarding possible hunting arrangements for the 2023 duck season is included below. A more detailed summary is included at Attachment 4 and the full submissions are included at Attachment 5. Two late submissions were received and are not reflected in the below table but are included in Attachment 5. GMA acknowledged all submissions received.

Organisation	Position
Animals Australia	Cancel season
BirdLife Australia	No submission received
Coalition Against Duck Shooting	Cancel season
*Duck and Quail Hunting Australia	Full prescribed season with a 17-bird daily bag limit (additional 2 Blue-winged Shoveler plus an additional 5 game species ducks)
*Ducks in Flight Geelong	Full prescribed season
Field and Game Australia	Full prescribed season
*Geelong Duck Rescue	Cancel season
*Honker Hunters	Full prescribed season plus an additional 2 Wood Duck and/or Mountain Duck per day
Regional Victorians Opposed to Duck Shooting	Cancel season
RSPCA	Cancel season
Shooting Sports Council of Victoria	No submission received
Sporting Shooters' Association of Australia (Vic)	No submission received
*Victorian Duck Hunters' Association	Full prescribed season
Wildlife Victoria	Cancel Season

*Unsolicited submission

4. Attachments

Attachment 1 Considerations for the 2023 duck season
Attachment 2 Interim Harvest Model output report – Relationships among duck population indices and abiotic drivers to guide annual duck harvest management. Professor Marcel Klaassen, Deakin University
Attachment 3 Draft Waterfowl Wounding Reduction Action Plan
Attachment 4 Summary of stakeholder submissions on the 2023 duck season arrangements
Attachment 5 Stakeholder submission on the 2023 duck season arrangements

Considerations for the 2023 duck season

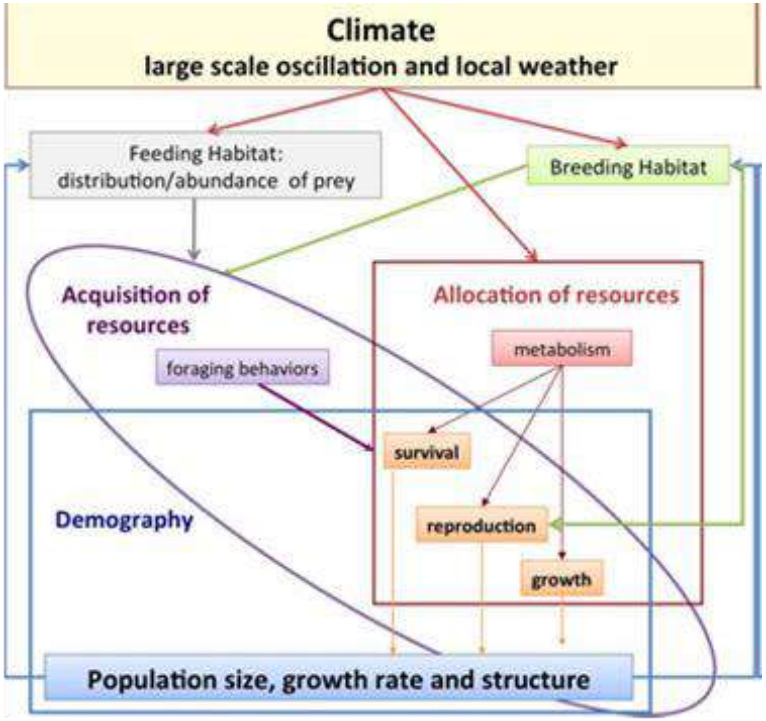
Current as at 20 December 2022

Game Management Authority

Past and present climatic conditions dictate environmental conditions
Climatic predictions can be used to consider whether environmental conditions will change into the future

Climatic conditions and waterfowl

- Climatic conditions, such as large scale oscillations (e.g. Southern Oscillation Index) and local weather (e.g. rainfall and temperature) can effect the distribution, productivity and size of waterfowl populations.
- In Australia, waterbird abundance is strongly related to river flows and rainfall (Kingsford *et al.* 2017).
- Large and extensive rainfall events can contribute to population increase as conditions are enhanced to support breeding and recruitment. Conversely, during dry periods, breeding may be modified or greatly reduced (see Kingsford and Norman 2002).
- 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).



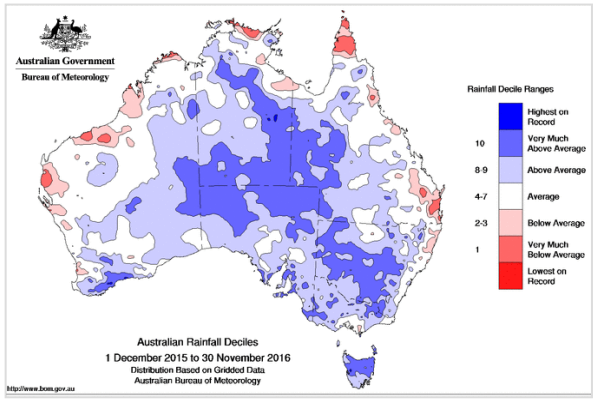
Climate effect on waterbird populations. Source: Jenouvrier 2013

Game Management Authority

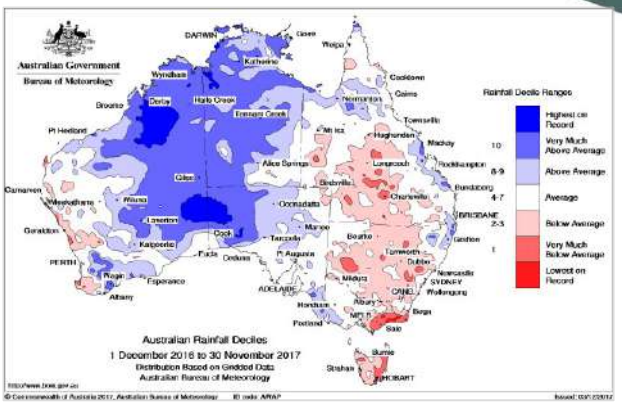
Annual rainfall deciles 2016 to 2022

(Deciles = rainfall received compared to historical averages)

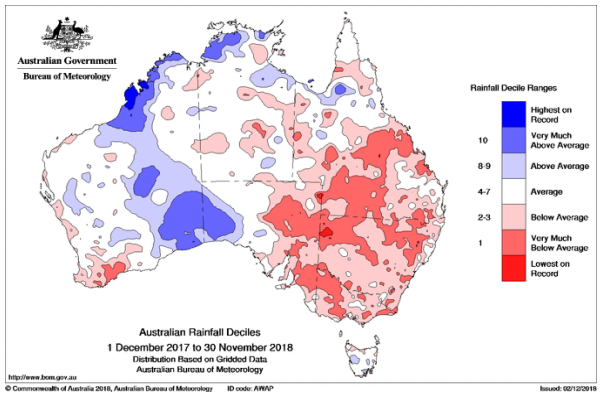
2016



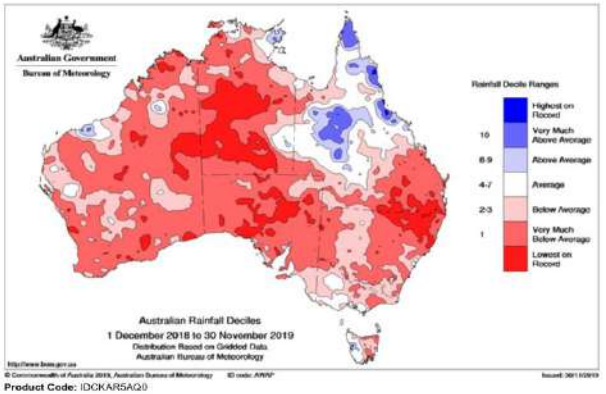
2017



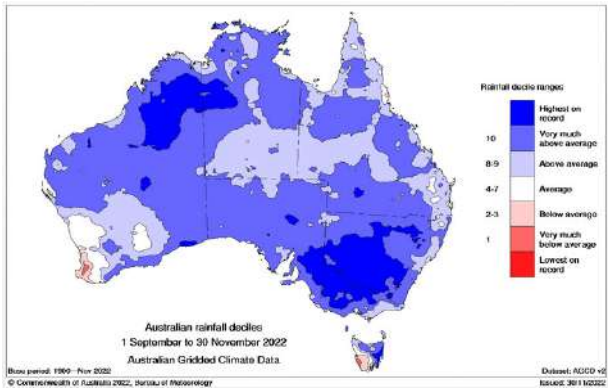
2018



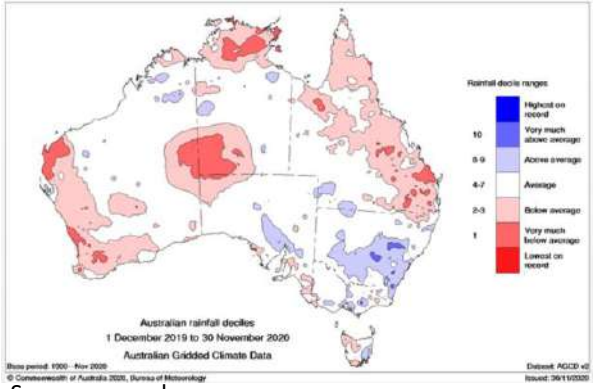
2019



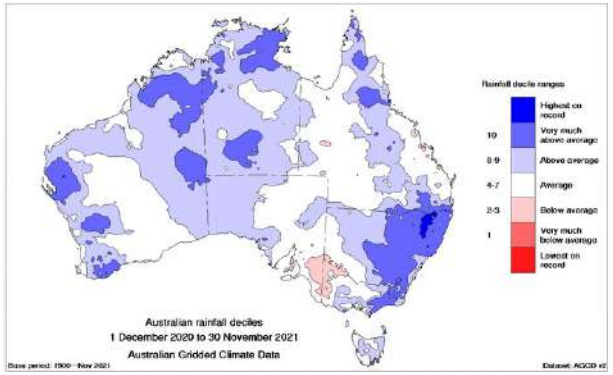
2022



2020



2021

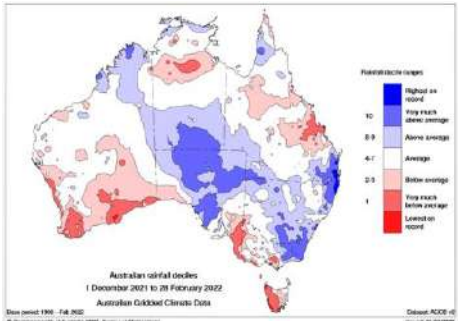


Source: www.bom.gov.au

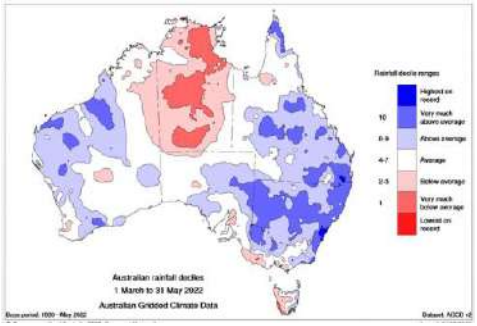
Game Management Authority

Rainfall through the seasons 2022

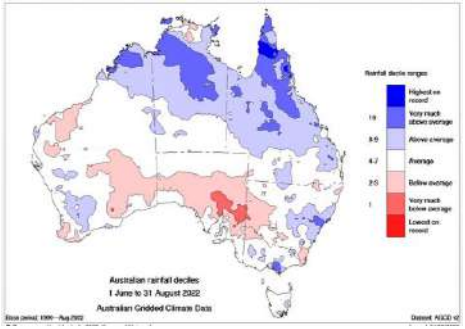
Summer



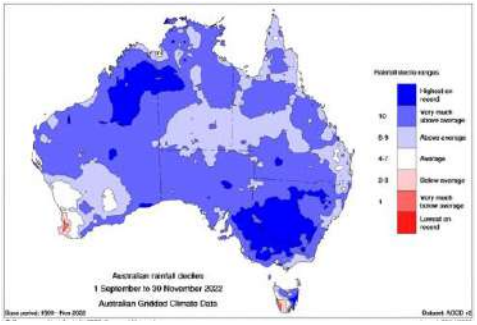
Autumn



Winter



Spring

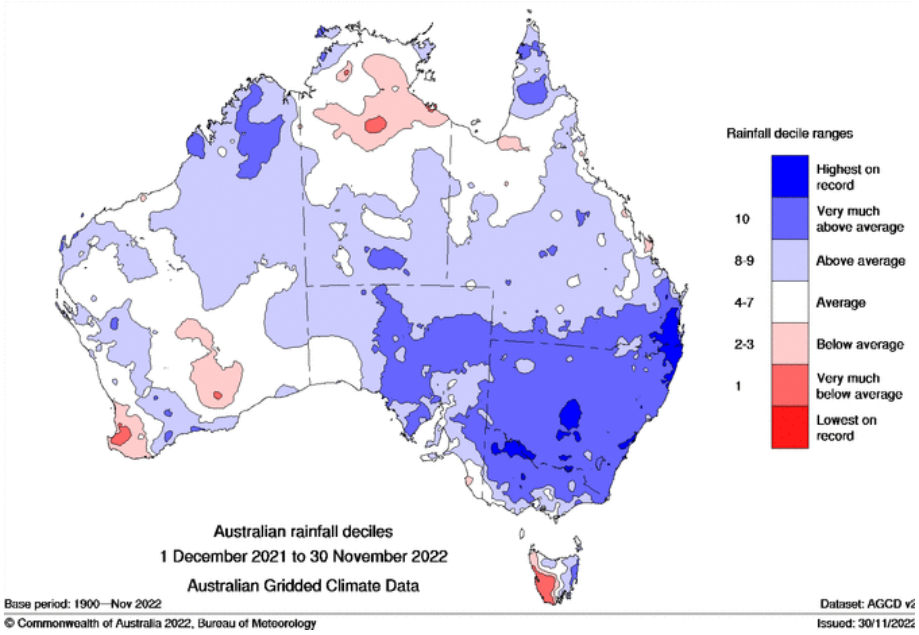


- **Summer:** In eastern Australia, much of NSW, parts of southern Queensland and eastern Victoria received above average rainfall over the summer period. Most of Queensland and Victoria received average to below average falls. South-eastern South Australia received below average rainfall.
- **Autumn:** NSW, the southern half of Queensland, northern Victoria and Gippsland received above average rainfall in autumn.
- **Winter:** Average rainfall was received across most of Victoria, half of NSW and parts of southern Queensland in winter. Below average rainfall was received in parts of western NSW and parts of south-east South Australia. All of northern Queensland experienced above average rainfall.
- **Spring:** All of eastern Australia received above average rainfall with most of Victoria and NSW receiving highest rainfall on record leading to extensive flooding.

Source: www.bom.gov.au

Year-to-date rainfall 2022

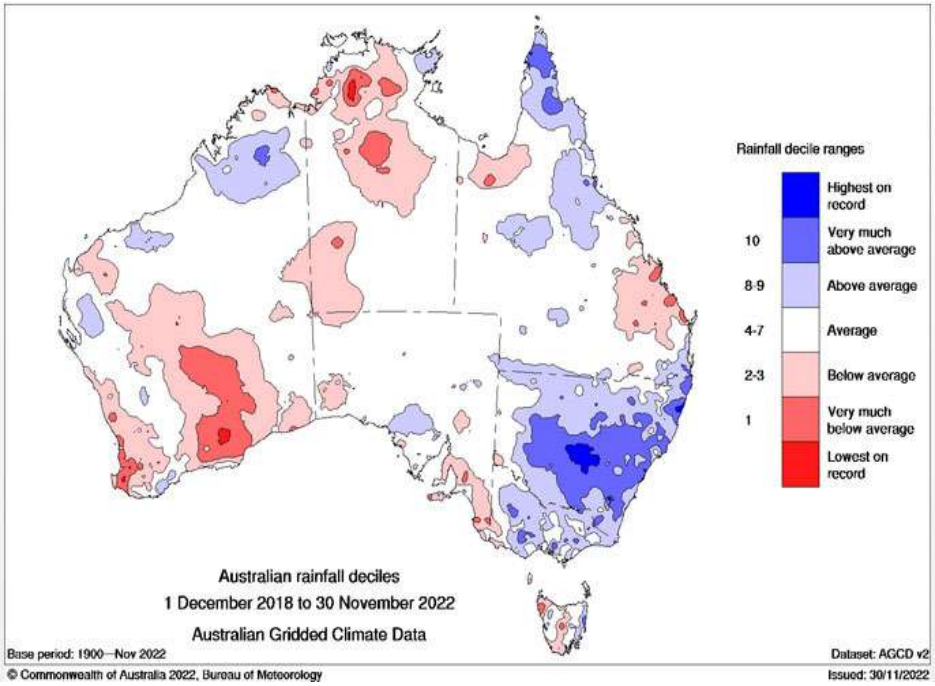
- Spring rainfall was the highest on record for NSW, Victoria and the Murray Darling Basin (MDB) as a whole, with very much above average rainfall received for most of Australia, fuelled by a weakening negative Indian Ocean Dipole and La Niña event.
- It was Australia's second wettest spring since the La Niña of 2010, and the tenth wettest since records began in 1900.
- Serious rainfall deficiencies have been cleared in most of Australia following very much above average spring rainfall.
- Record spring rainfall has resulted in many water storages in the northern MDB either at or above full capacity.



Source: www.bom.vic.gov.au

Four-year rainfall

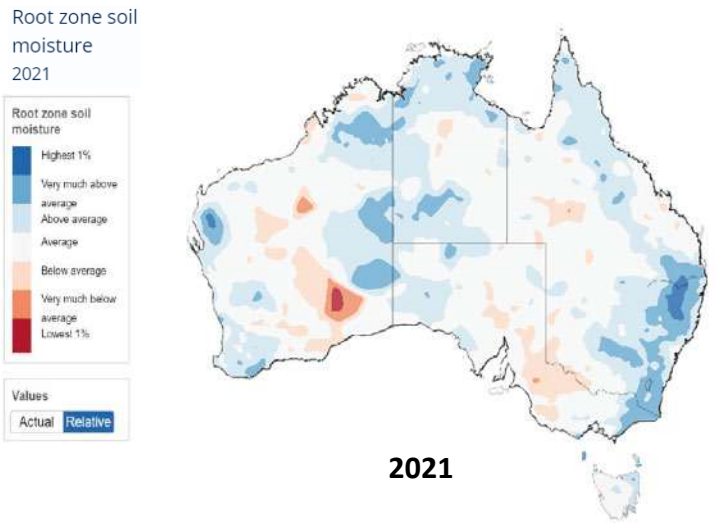
- Multi-year rainfall deficiencies which originated during the 2017-2019 drought have been almost entirely removed from the eastern states, with the largest area of remaining multi-year rainfall deficiencies in parts of Western Australia and northern NT.
- Seasonal conditions have improved over large areas in the last two years, with water storage levels significantly increasing across much of Australia, especially in the Murray-Darling Basin
- Many areas experiencing rainfall deficiencies for periods longer than 24 months have typically experienced above average rainfall.



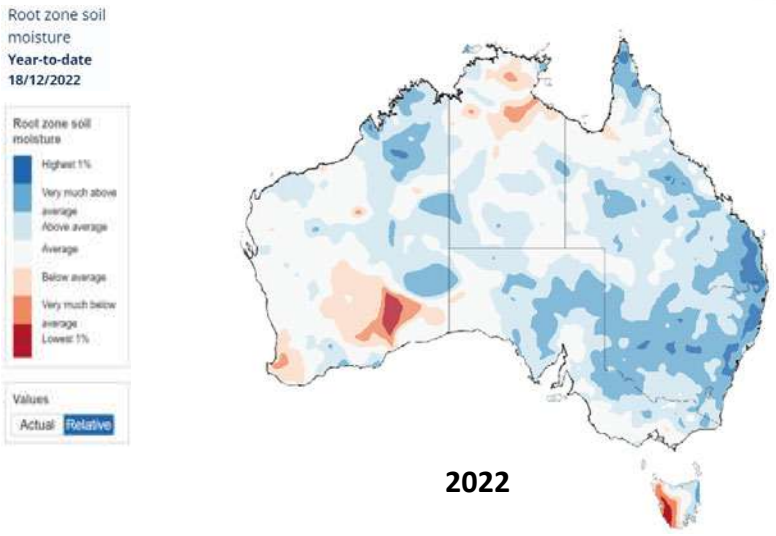
- Further periods of above average rainfall are needed to progress drought recovery, especially in parts of Queensland and South Australia.
- Low storage conditions continued in parts of central Queensland and 41% of the state was in drought or drought affected (as of November 2022).

Source: www.bom.vic.gov.au

Soil moisture – December 2022



2021



2022

- Root zone (0-100cm) soil moisture as at December showed an improvement over much of eastern Australia from 2021 to 2022.
- At 10 December 2022, root zone soil moisture was above average for most of Australia, except for parts of Western Australia, reflecting very much above average spring rainfall.
- Parts of coastal NSW and Queensland and central NSW recorded in the highest 1% runoff.

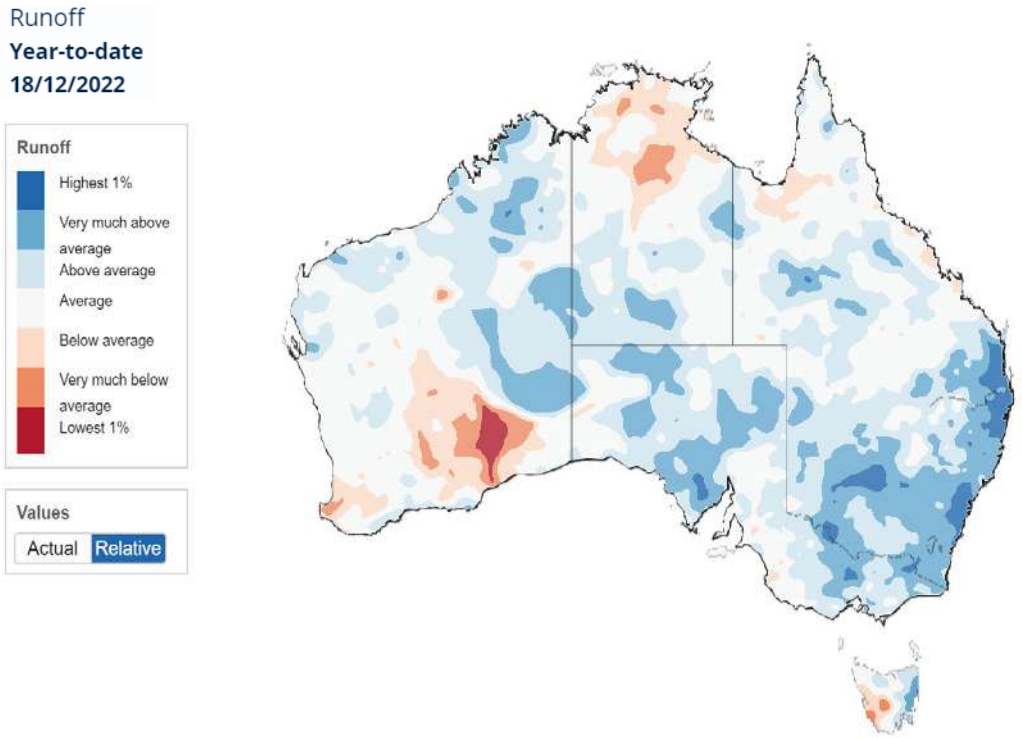
Game Management Authority

Source: www.bom.gov.au

Runoff

Runoff impacts the availability of water in the wetlands and the health of riverine systems. It has a direct influence in the creation and maintenance of waterbird habitat.

- Year-to-date runoff for much of eastern Australia and parts of South Australia has ranged from above average to very much above average.



Source: www.bom.gov.au

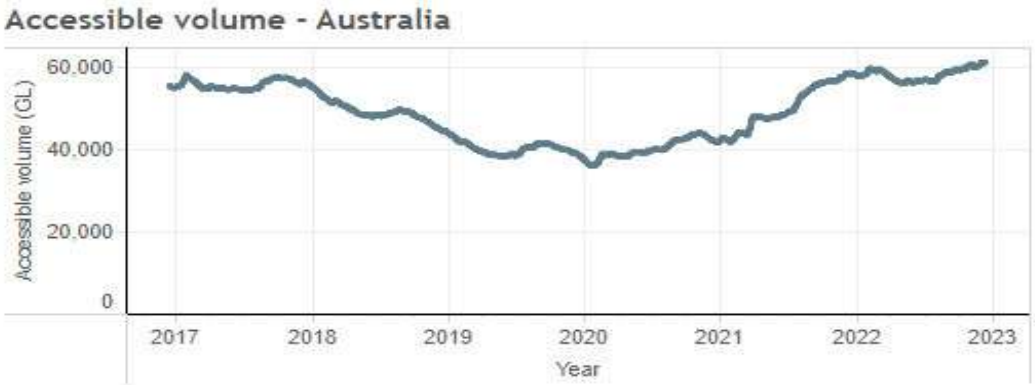
Australian water storage levels

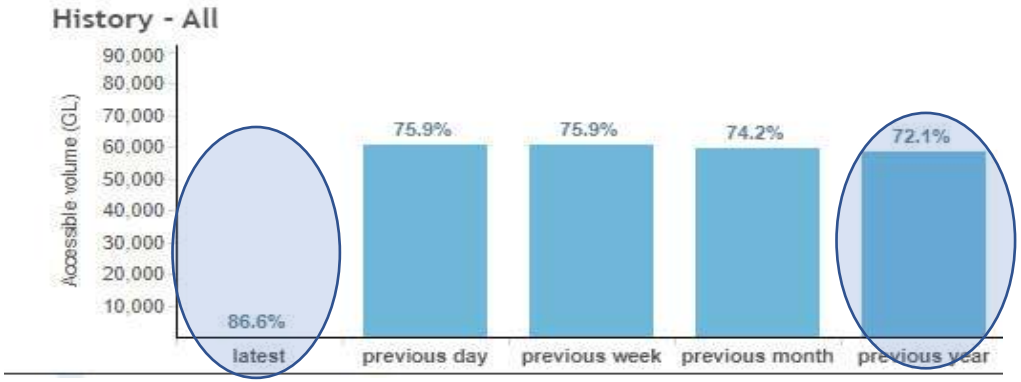
Water storage levels provide an indicator of the availability of waterbird habitat and waterflows through feeder systems.

However, often impoundments and storages can trap water and prevent it from entering creeks, streams and wetlands, thereby reducing available habitat. Therefore, this information must be considered in context, particularly during dry periods.

Deep storages generally provide poor habitat for game ducks.

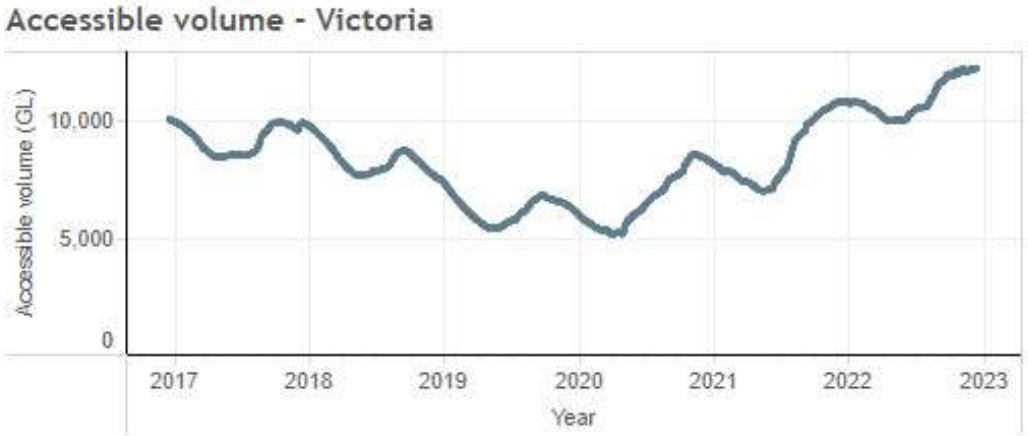
- In 2022, Australia's water storages increased by 14.5% from the same time last year, from 72.1% to 86.6%.

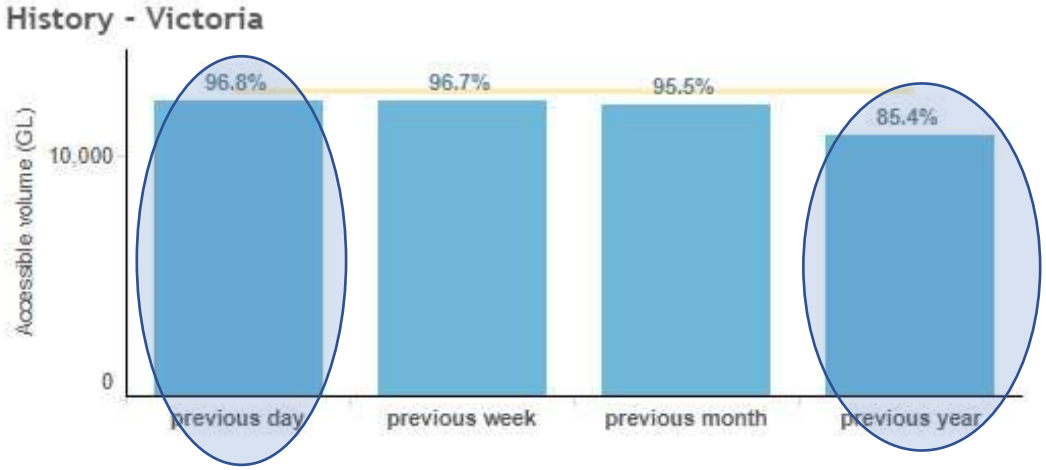




Source: www.bom.gov.au

Victorian water storage levels





- The total (Melbourne and Regional) Victorian water storage levels are currently at 96.8% compared to 85.4% last year.
- Storage levels have increased by 11.4% from this time last year.

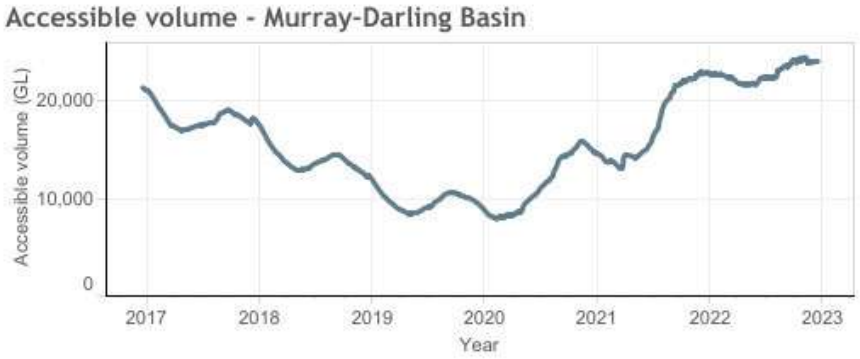
Game Management Authority

Source: www.bom.gov.au

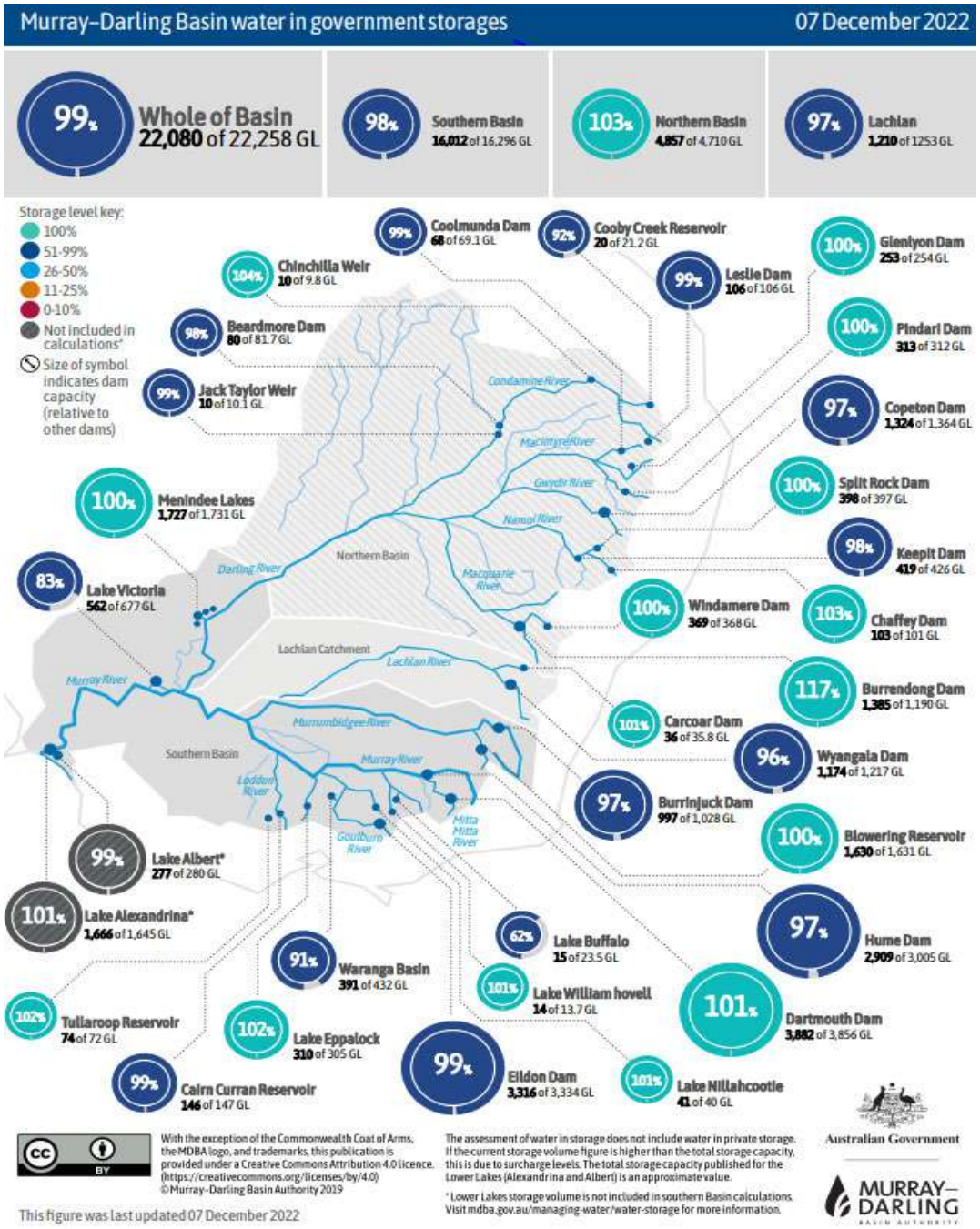
Murray-Darling Basin water storage levels

The Murray–Darling Basin is a critical area for waterfowl production and Australia's most developed river basin (240 dams storing 29,893 GL).

- Storage systems in the MDB are at 96.9% of capacity, which is 6.6% higher than at the same time last year (90.3%).
- Storage volumes in the northern MDB are at 103%, up from 90.9% in November 2021.
- Storage volumes in the southern MDB are at 98%, up from 90.4% in November 2021.



Source: www.bom.gov.au



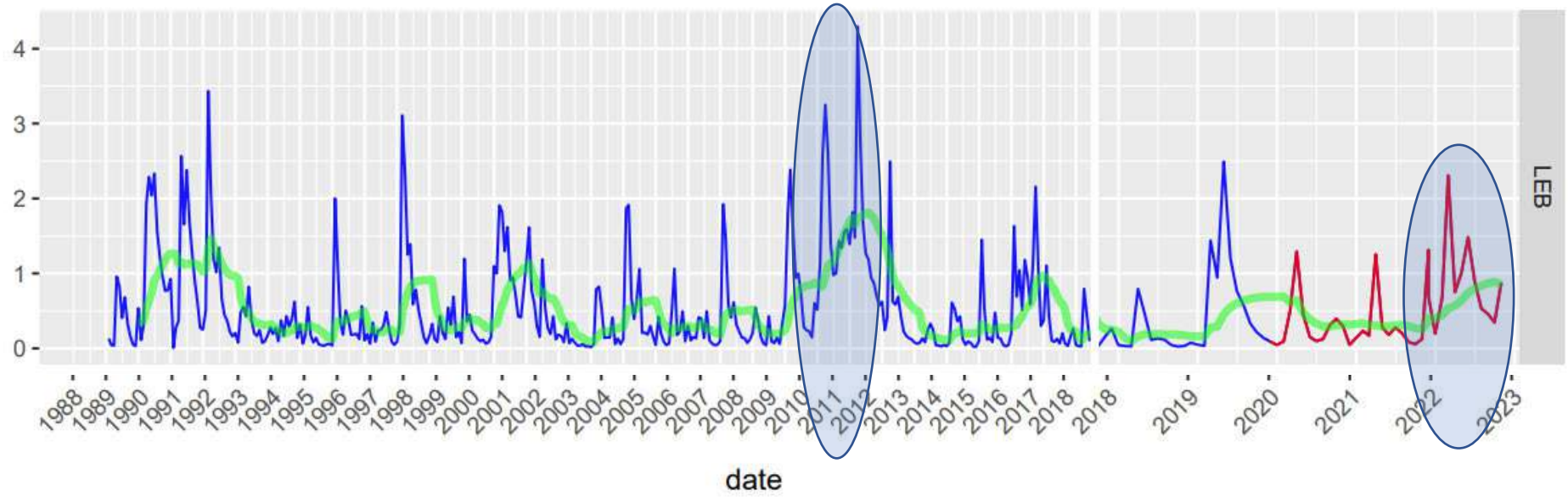
- This figure shows a detailed breakdown of storages in the Murray-Darling Basin.
- It shows that the majority of storages are nearing or exceeding capacity.

Game Management Authority

Source: www.bom.gov.au

Lake Eyre Basin

- Central Australia did not receive heavy rainfalls seen in the south east and coastal areas of eastern Australia.
- Some rivers and wetlands in the northern Lake Eyre Basin experienced small to moderate floods which have since subsided. Lake Eyre had minor flooding but is expected to dry.
- There are indications that monsoonal conditions, widespread rainfall and cooler weather may develop near northern Australia over the coming period which could affect the northern Basin.
- Water surface area in the Lake Eyre basin are not as favourable as the last major wet period experienced during 2010-2012 and are at average levels in 2022.



Source: Klaassen 2023

Habitat availability

Eastern Australian Waterbird Survey (EAWS)

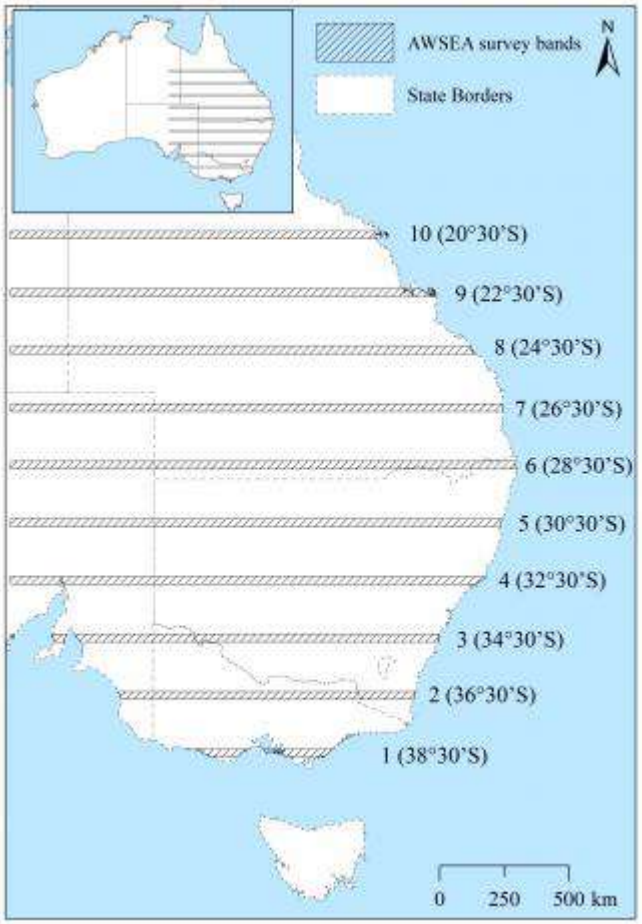
The EAWS monitors changes in the abundance and distribution indices of 50 waterbird species in eastern Australia. It also tracks changes in waterbird habitat over time.

The EAWS was designed by CSIRO's Dr Graeme Caughley and has been conducted annually in October since 1983. Waterbirds are counted from the air across ten aerial survey bands (each 30 km in width), every two degrees of latitude, crossing eastern Australia to monitor all wetlands over 1ha in size.

The EAWS provides:

- an index (not total count) of abundance of waterbirds, including game ducks
- information on the distribution of waterbird and game duck populations along survey bands
- the extent and distribution of habitat along survey bands, and
- information on waterbird breeding.

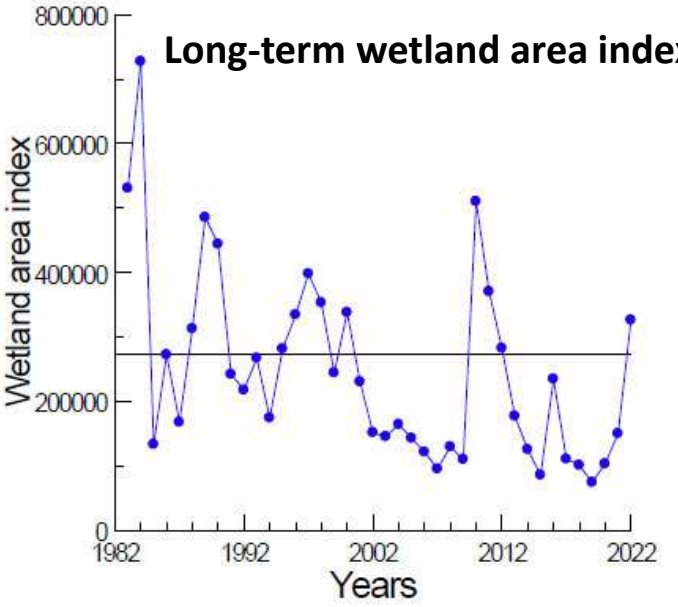
The information is valuable for examining waterbird trends on over one-third of continental Australia and over a long period.



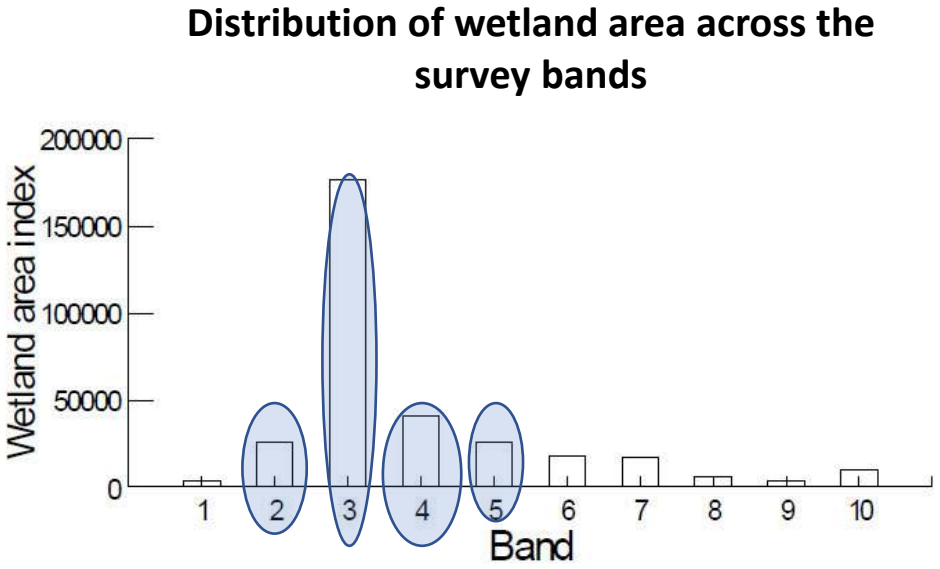
EAWS wetland area index

The wetland area index is a measure of wetland availability across all 10 EAWS transects (bands). This gives an indication of the extent and distribution of habitat available for waterbirds.

- The 2022 wetland area index ranked 13th of the 40 surveys.
- The wetland area index is above the long-term average.
- The majority of the available habitat occurs from northern Victoria to northern NSW (bands 2-5).



Changes over time in wetland area in the Eastern Australian Waterbird Survey (1983 - 2022); horizontal line shows long-term average.

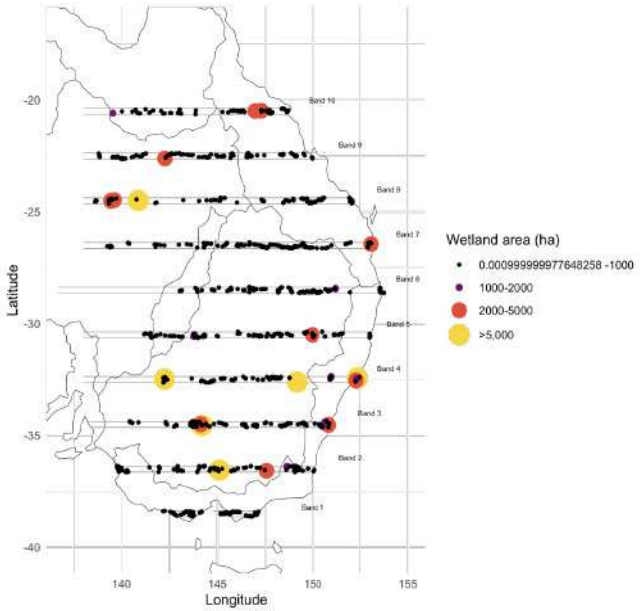


Distribution of wetland area index in 10 survey bands of the Eastern Australian Waterbird Survey in 2022.

Wetland distribution – 2021 & 2022

2021

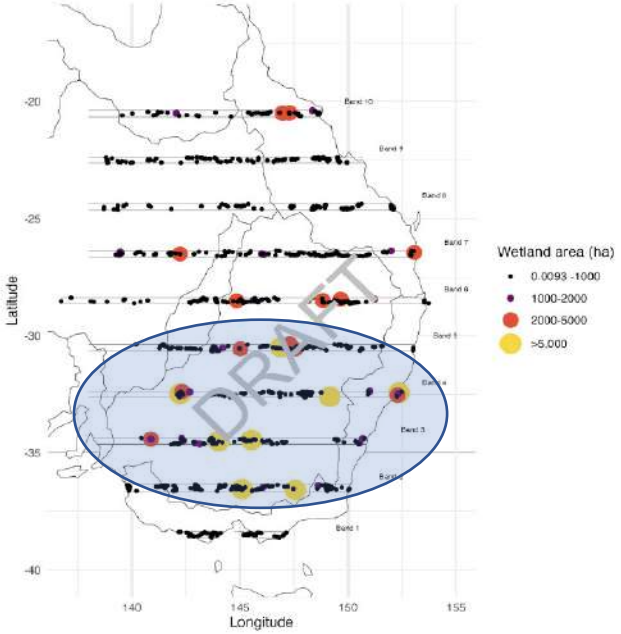
2021 Wetland area index – 150,803 ha



All surveyed wetlands with surface water present are plotted; dry wetlands not plotted

2022

2022 Wetland area index – 326,769 ha

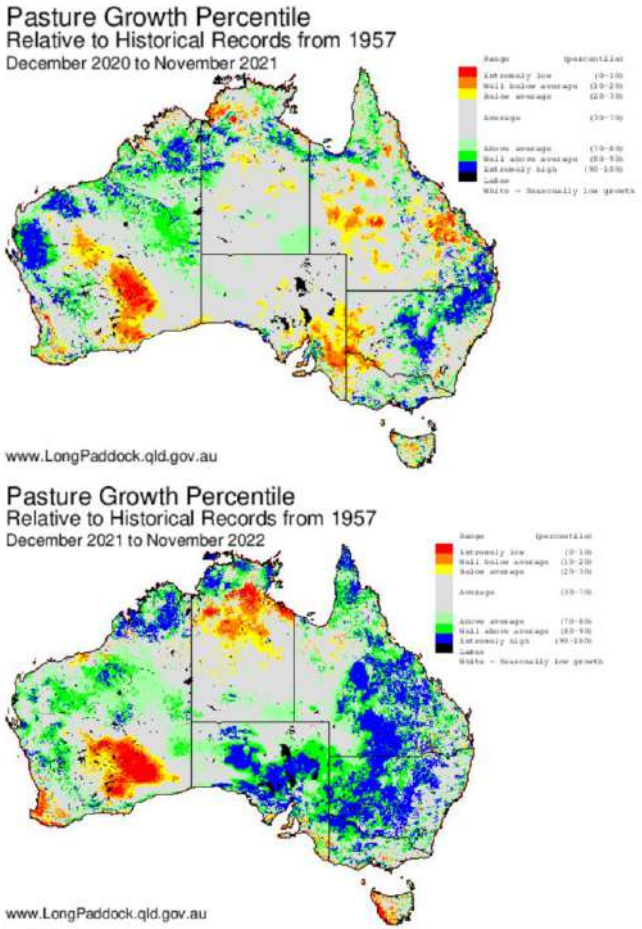


- The majority of the habitat surveyed occurred in bands 2 to 5. This is reflected in the increased wetland area in the northern Murray-Darling Basin, in particular the Macquarie Marshes, Lowbidgee wetlands, Talyawalka Creek and Menindee Lakes.

Pasture conditions

Pasture condition is a coarse indicator of potential feeding habitat for grazing species, such as Wood Duck and Mountain Duck, and nesting habitat for ground-nesting game ducks.

- Over the last 12 months, pasture growth throughout much of eastern Australia has increased substantially from 2021.
- Pasture growth in almost all of eastern Australia was average to extremely high, with most 2021 deficiencies removed.



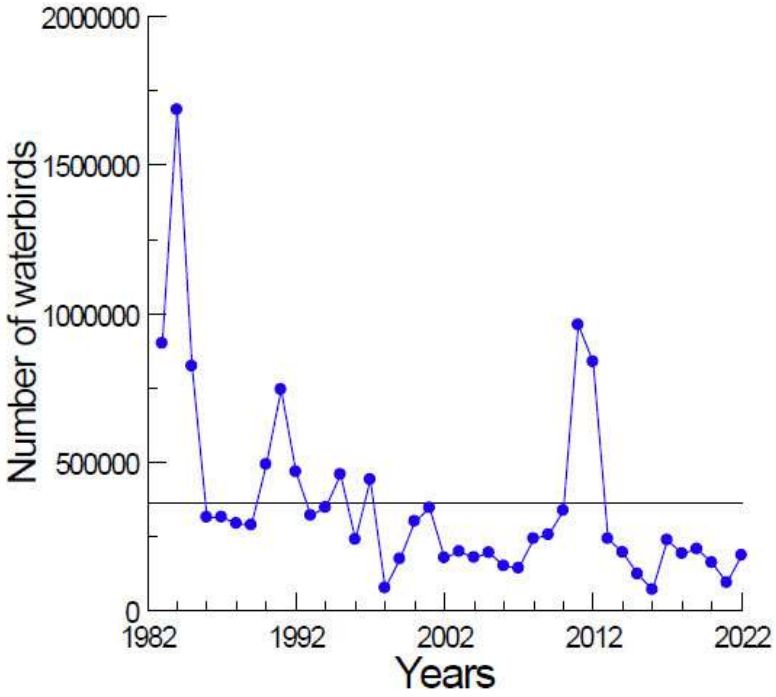
Game Management Authority

Population indices of abundance, distribution and breeding

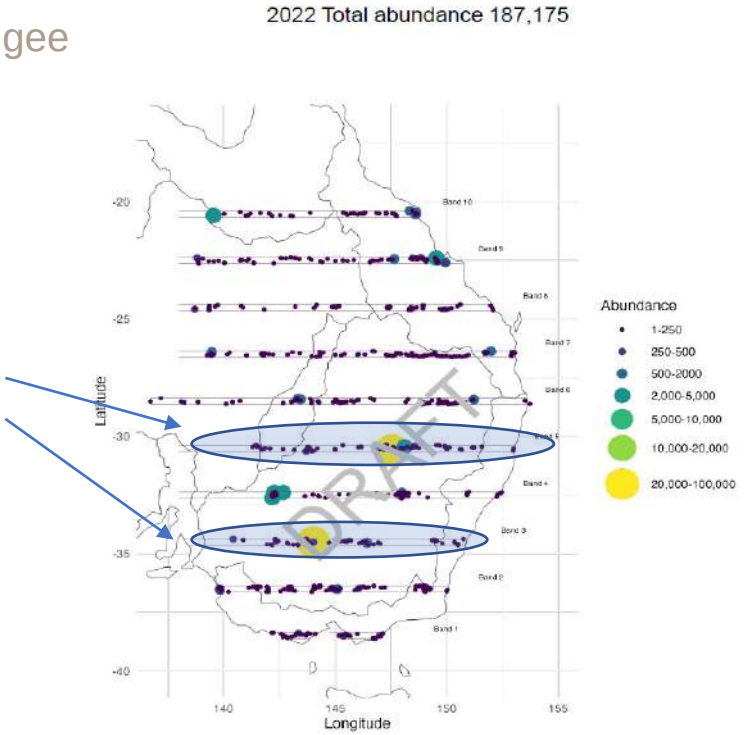
Index of waterbird abundance (all waterbirds)

Up to 50 waterbirds species are surveyed in October each year and includes all Victorian game duck species and non-game species such as swans, Freckled Duck, ibis, coots etc.

- The index of waterbird abundance (187,175) increased by 96% from 2021 (95,318) but was still below the long-term average. The waterbird abundance index was the 11th lowest in 40 years.
- Two wetland complexes (Macquarie Marshes, Lowbidgee Wetlands) supported 65% of the total abundance.



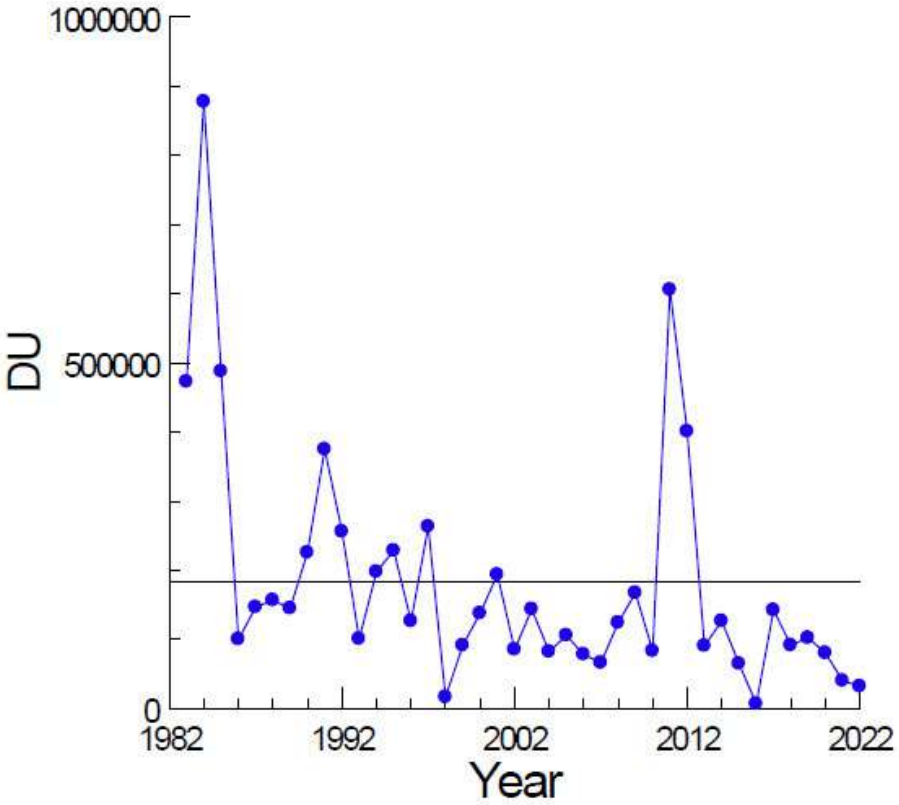
Waterbirds were most abundant in bands 3 and 5.



Dry wetlands and wetlands with zero waterbirds not plotted

The abundance index is not a total count. It provides information on the trends in waterbird abundance along the survey bands.

EAWS game duck abundance index



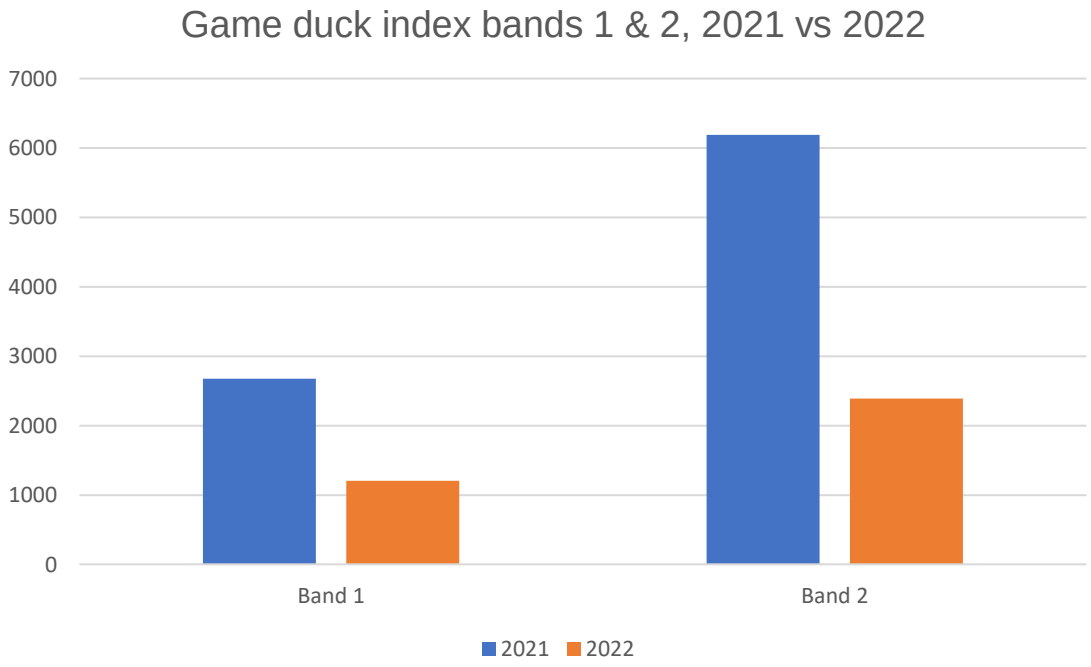
This index provides information on game ducks only.

- The game duck abundance index decreased by 2% from last year.
- The 2022 game duck abundance index was the 3rd lowest recorded in 40 years and is at 25% of the long-term average.
- The decrease in the index was despite an increase in available habitat. Game duck abundance and habitat availability have a positive relationship, so when habitat increases, so does duck abundance but with a lag as it takes time for the habitat and birds to respond.
- Six out of the eight game duck species show long-term declines in abundance.

Game Management Authority

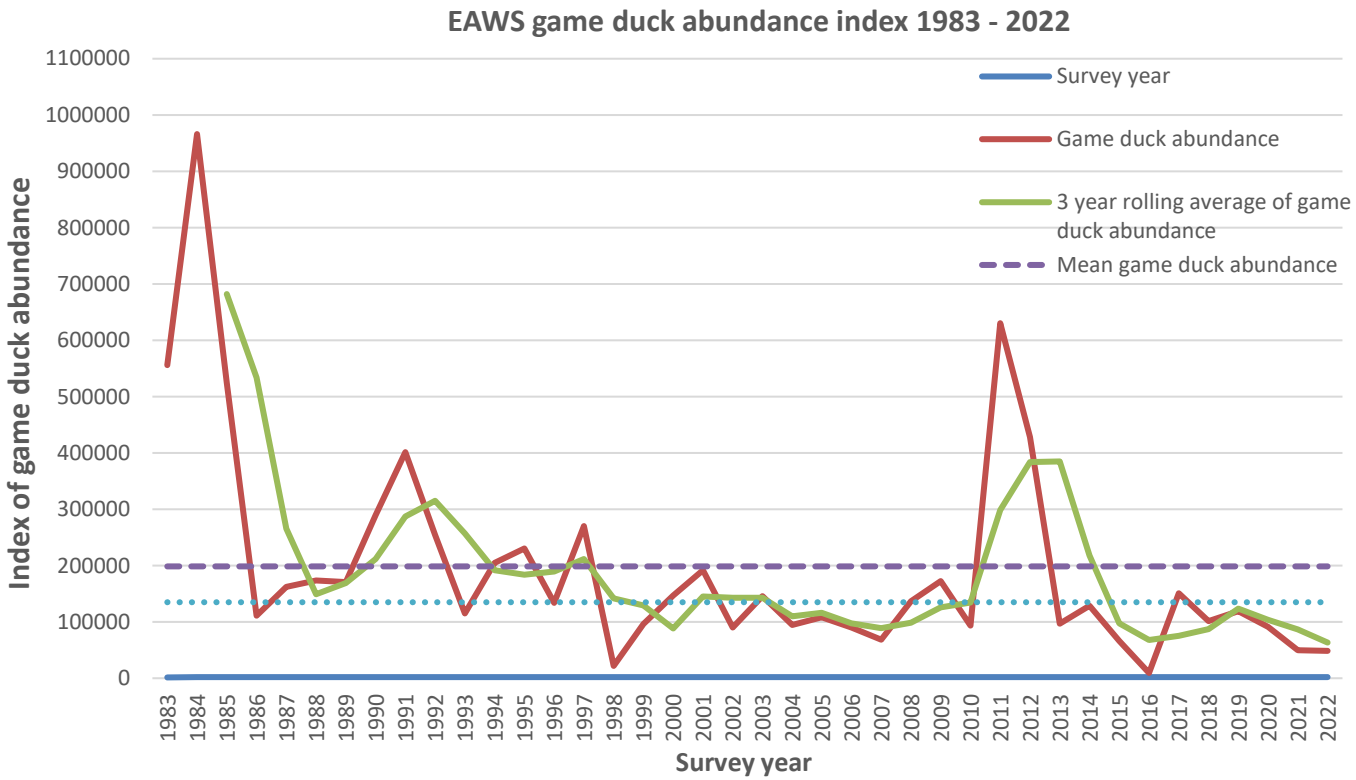
EAWS game duck abundance index bands 1 & 2 (Victoria)

- Bands 1 and 2 cover parts of Victoria. Band 1 covers parts of southern coastal Victoria and band 2 covers parts of northern Victoria.
- Game duck abundance in bands 1 and 2 declined in 2022 compared to 2021, despite similar habitat conditions in the previous year (although there was an increase in habitat in band 2).



Game Management Authority

EAWS game duck abundance index over time

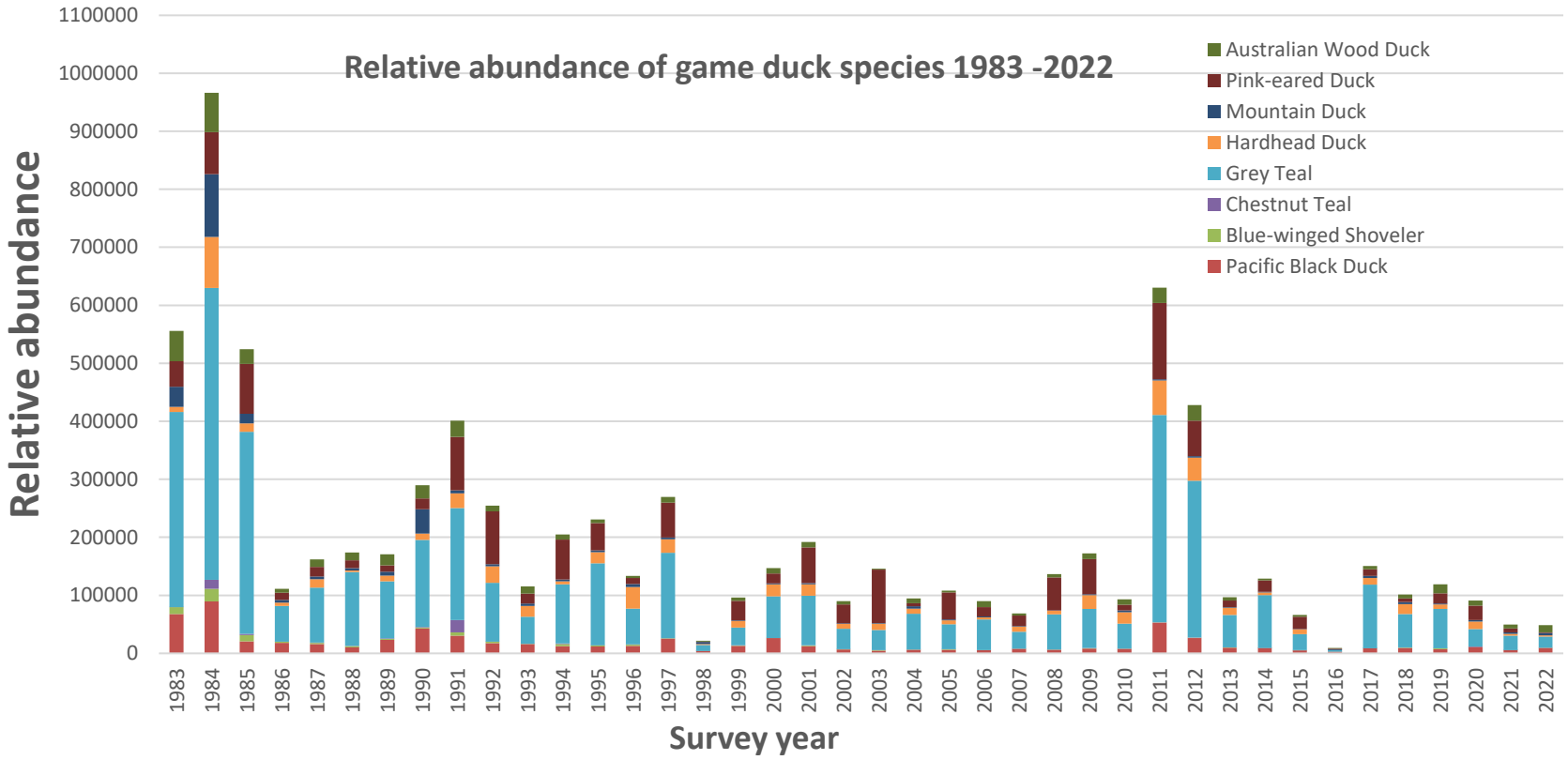


When considering management implications, the abundance index must be considered in context with:

- distribution of birds
- habitat availability and distribution
- climatic forecasts
- concentrations of birds

- This graph includes abundance index data (red line) and the 3-year rolling (or moving) average (green line). A rolling average is used to get an overall trend in a data set.
- The long-term average (mean) and median abundance levels are also included. The median is the mid-value and can be more suitable than the average when outliers are present.
- Eastern Australian game duck abundance was below both the mean and median for 2022.

EAWS relative abundance of game duck species 1983-2022



The percentage of game ducks detected in 2022 EAWS were:

- Black Duck 18% (11%), Grey Teal 40% (50%), Wood Duck 26% (14%), Pink-eared Duck 2% (13%), Hardhead 4% (6%), Mountain Duck 9% (5%), Chestnut Teal <1% (<1%) and Blue-winged Shoveler 1% (<1%). Figures in parentheses are from 2021.

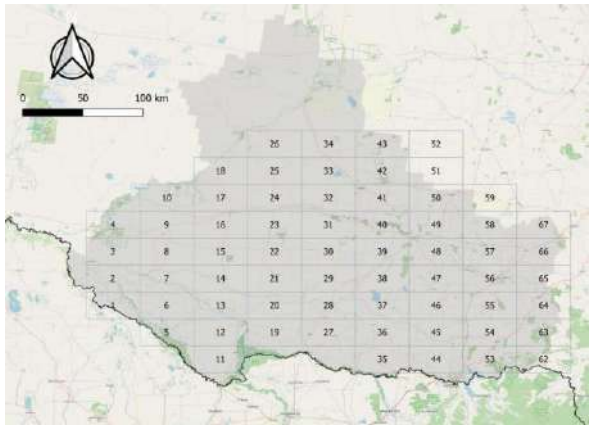
Victorian game duck abundance estimates

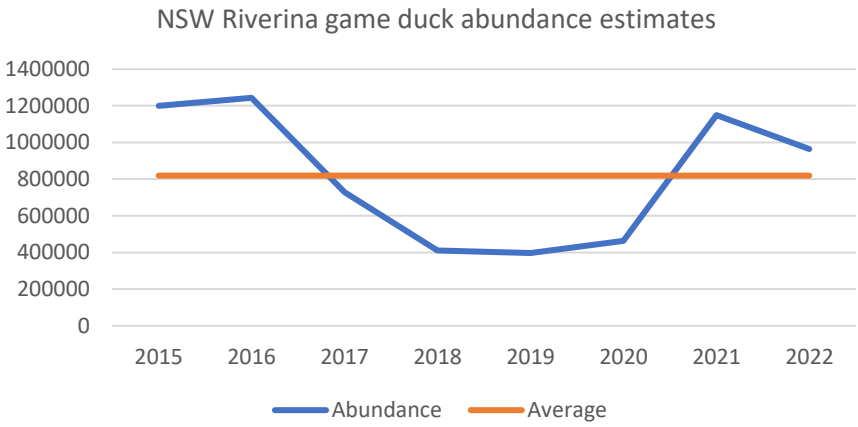
- The annual aerial survey of Victoria's game duck population commenced on 14 October 2022 and was postponed on 16 October due to weather conditions and flooding across the state.
- The survey re-commenced on 25 November 2022 and concluded on 12 December 2022. Results from the survey will not be available until late-February or early-March in 2023.

NSW Riverina waterfowl abundance surveys

- Helicopter counts of randomly selected farm dams were conducted throughout the NSW Riverina in June 2022 to determine waterfowl abundance in order to set annual crop damage mitigation destruction quotas.
- Unlike other years, large dams, wastewater ponds, wetlands and channels were not surveyed in 2022, which may have affected results.
- Game duck* numbers decreased from the previous year by 16% from 1,149,395 to 963,902.

*Includes Plumed Whistling Duck, which is not a Victorian game duck species





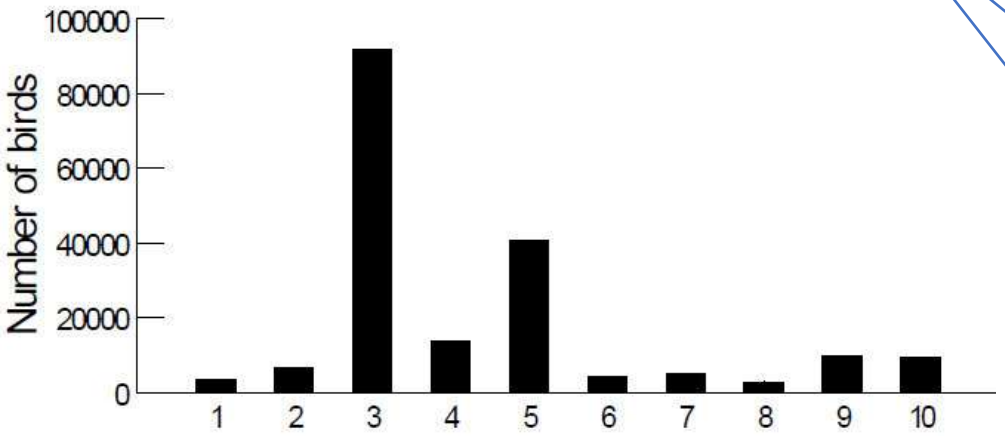
Game Management Authority

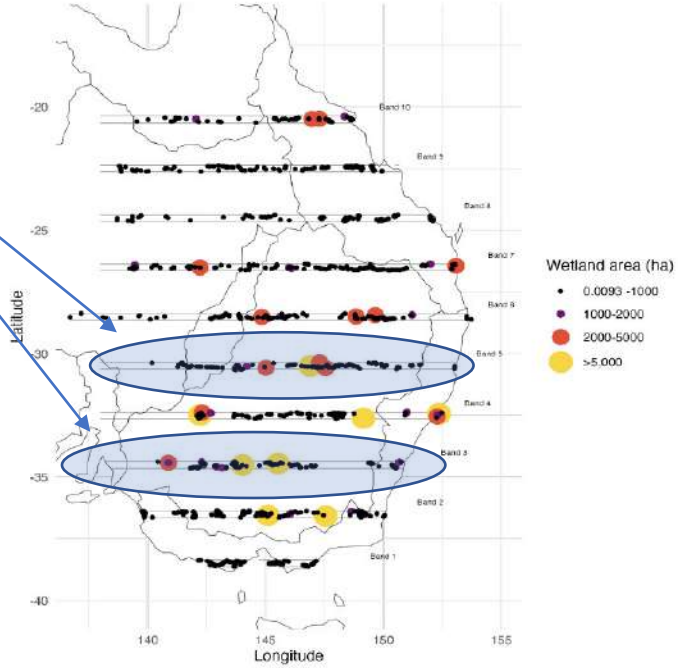
Source: NSW Department of Primary Industries (2022) *2022-2023 Annual Waterfowl Quota Report to DPI Hunting.*

EAWS waterbird distribution

2022 Wetland area index – 326,769 ha

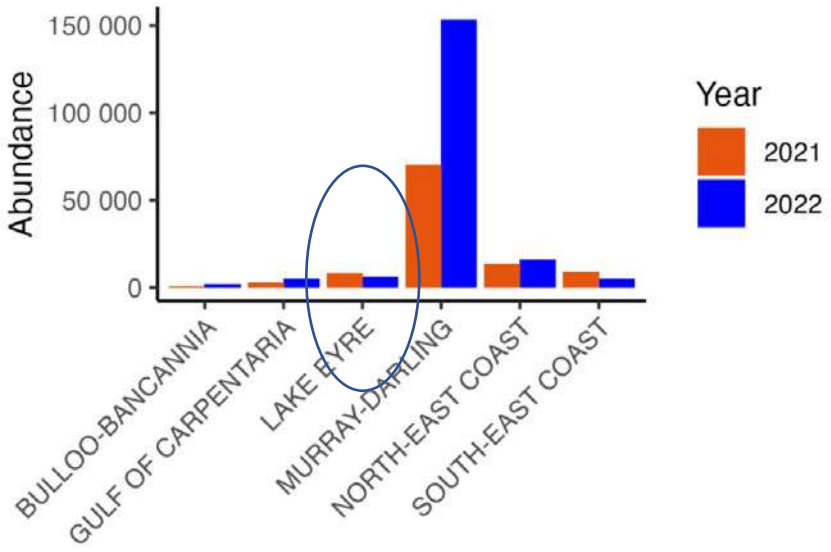
Waterbirds were most abundant in bands 3 and 5.





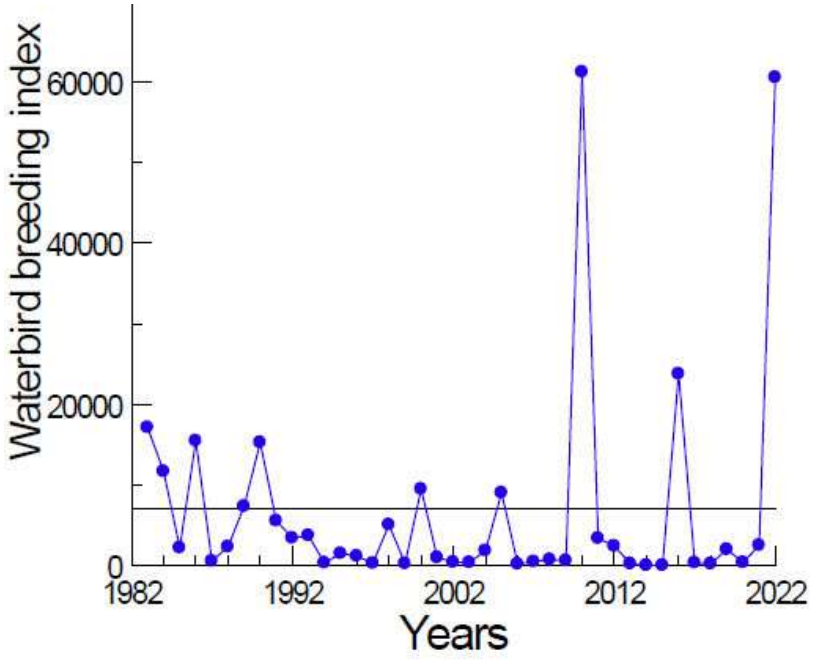
- Waterbirds were widely dispersed in low densities. However, a large proportion of waterbirds (65% of those detected) were concentrated in survey bands 3 and 5, in the Lowbidgee Wetlands and Macquarie Marshes, respectively.
- 75% of the total waterbird abundance was concentrated in eight wetlands.
- Around 41% of surveyed wetlands supported no waterbirds (which includes wetlands that were dry).

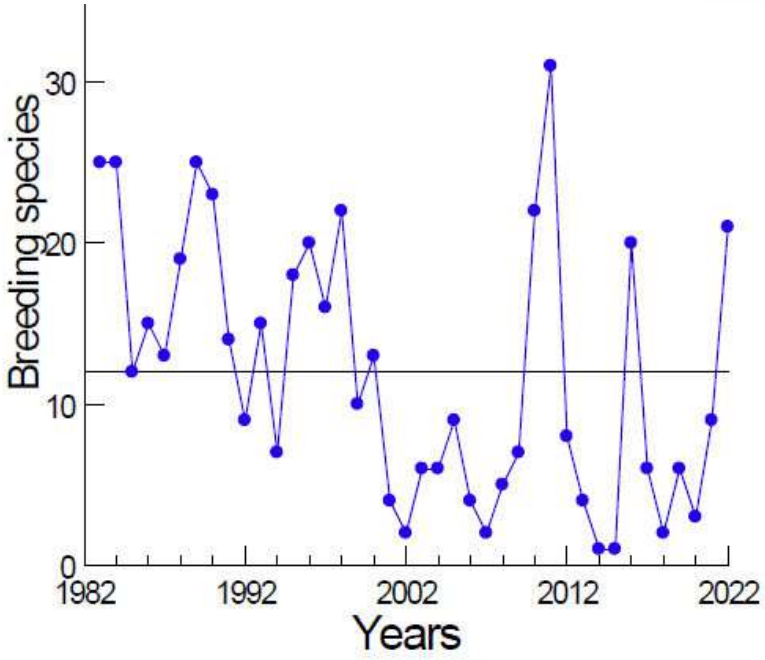
EAWS waterbird distribution cont..



- Unlike the major eastern Australian floods of 2010 and 2011, Lake Eyre Basin wetlands failed to benefit from the rainfall in 2022.
- Central Australia did not receive the heavy rains seen in the south east and coastal areas and Lake Eyre only had minor flooding. Lake Eyre contains very little water and may dry.
- Some rivers and wetlands in the northern Lake Eyre Basin, including the Diamantina and Georgina Rivers, experienced a small to moderate flood and only supported low numbers of waterbirds. Waterbird abundance in the Lake Eyre Basin declined in 2022 from 2021 in contrast with the Murray-Darling Basin which increased significantly.

Waterbird breeding (all species combined)

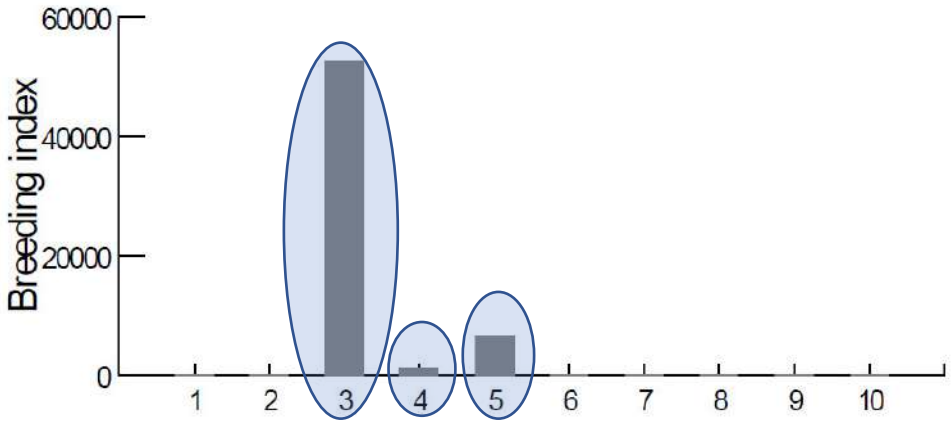




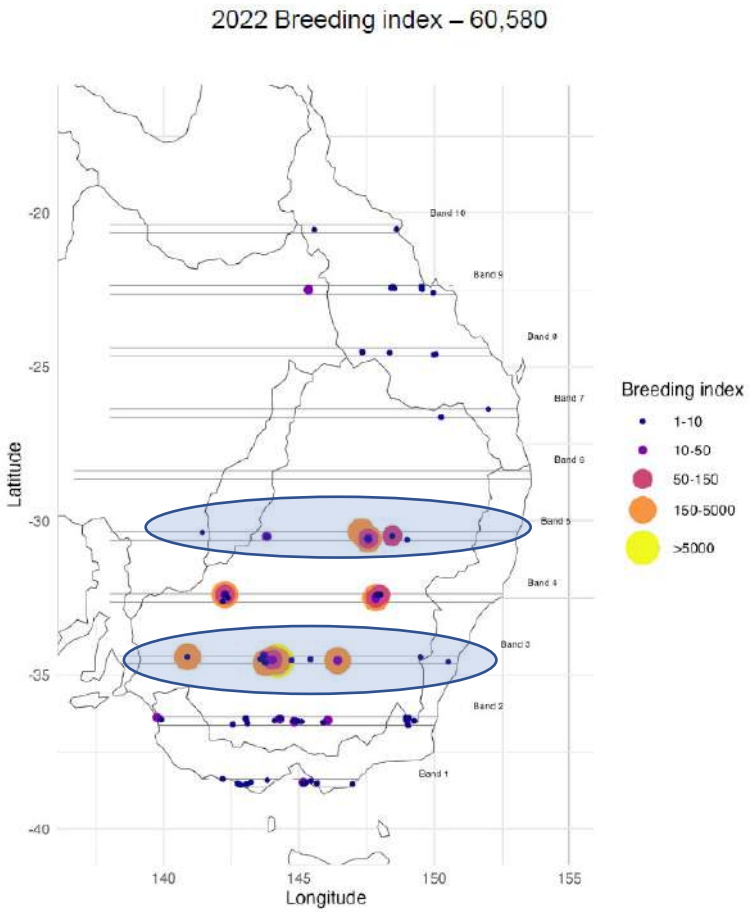
- The EAWS breeding index (all species combined) increased an order of magnitude from the previous year and was well above the long-term average and the second highest recorded.
- Five species of non-game waterbirds (i.e. ibis, pelican, spoonbill, tern and egret) comprised 96% of the total breeding recorded.
- EAWS breeding species richness increased considerably from 2021 and was well above the long-term average and was the fifth highest on record.

Game Management Authority

Waterbird breeding (all species combined)

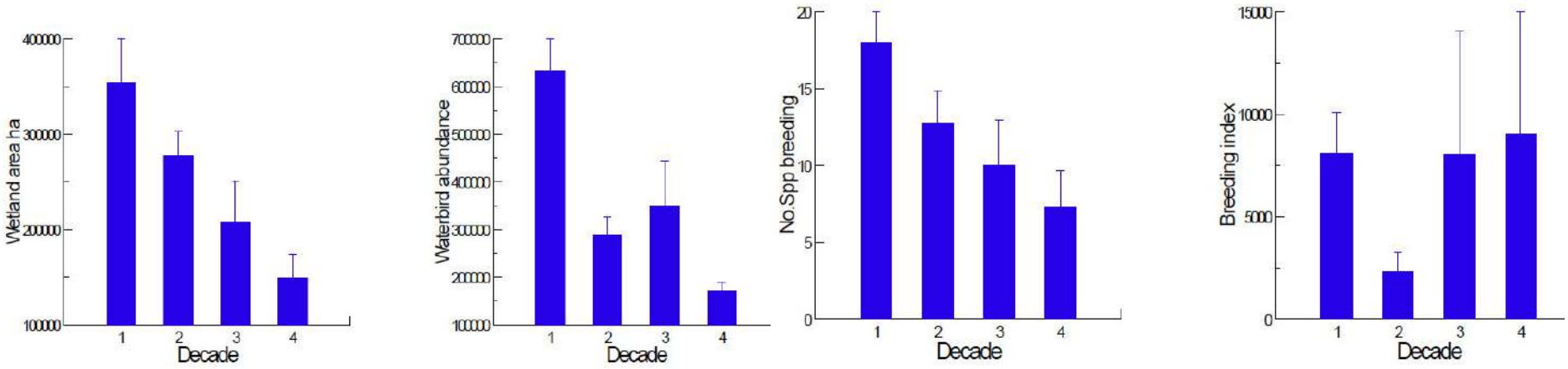


- Most breeding occurred in bands 3, 4 and 5 (New South Wales, Murray-Darling Basin).
- Ibis comprised most of the breeding recorded (80% of the total).



Game Management Authority

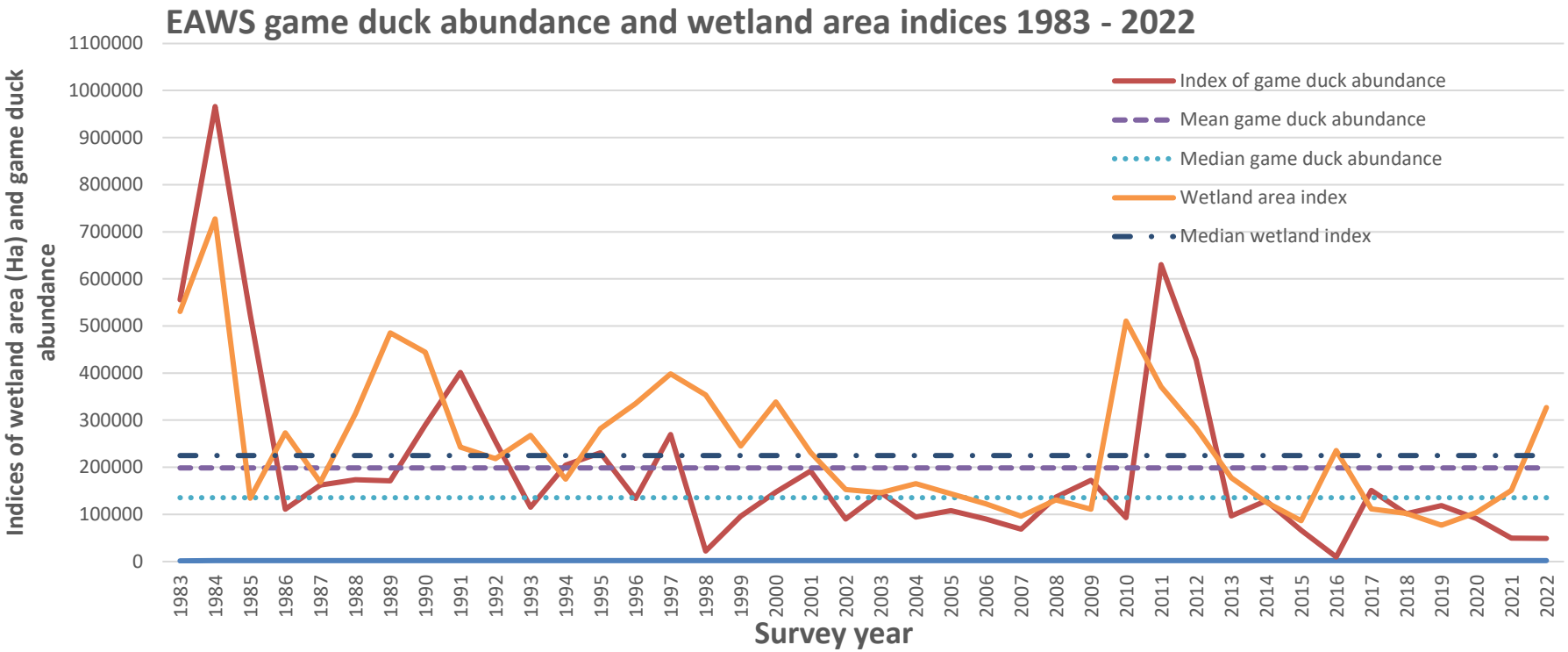
EAWS indices over time



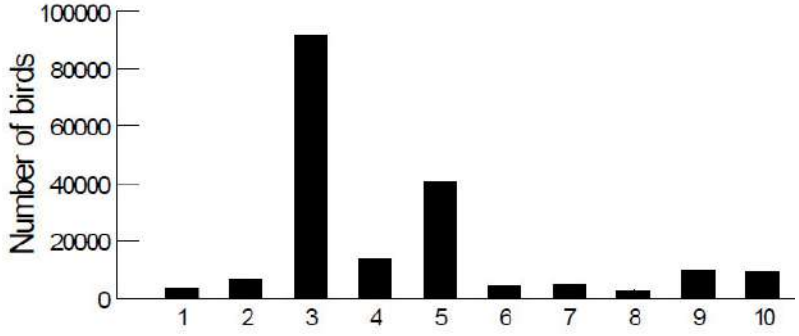
Decadal changes in indices for total abundance, wetland area, number of breeding species and breeding in the EAWS 1983 - 2022

- For eastern Australia, overall waterbird abundance, breeding index and breeding species richness are positively related to habitat availability (wetland area index).
- Major EAWS indices for waterbirds (wetland area index, total abundance index, number of species breeding) continue to show significant declines over time.

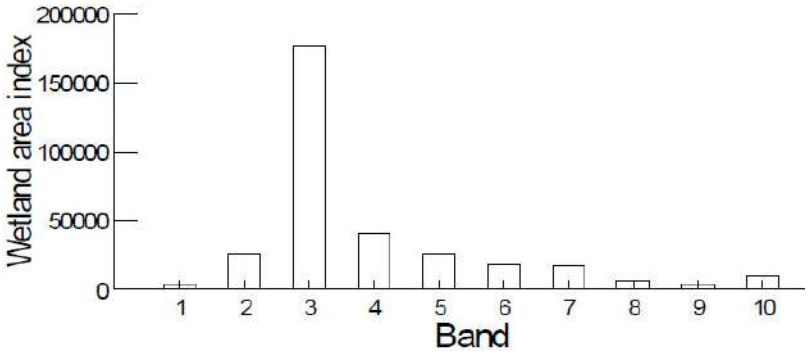
EAWS game duck abundance, distribution and habitat - summary



Where the ducks are



Where the habitat is



Climate predictions – future conditions

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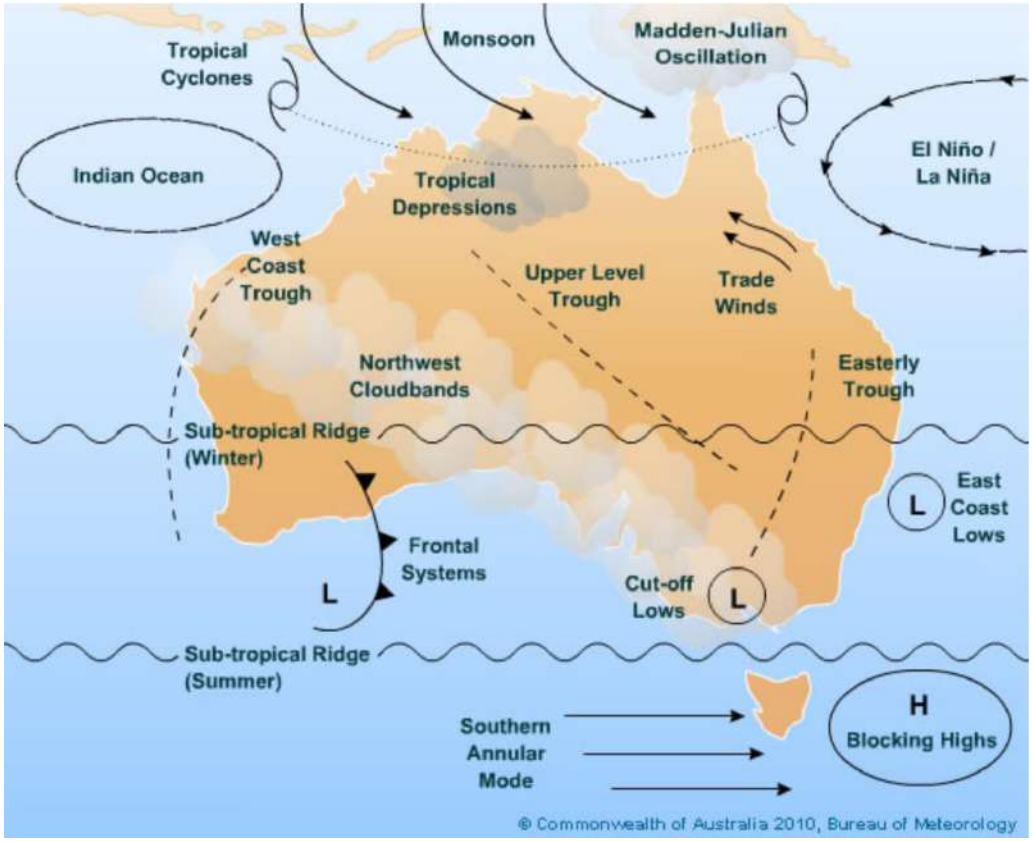
Current climate drivers

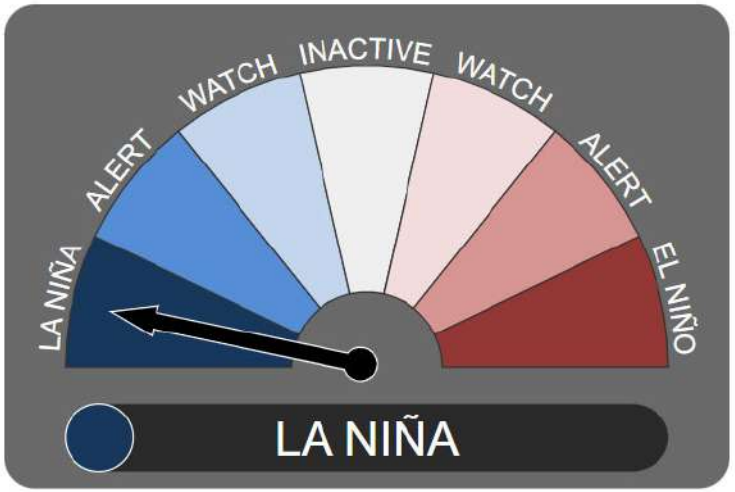
- Australia's climate can vary greatly from one year to the next.
- A number of drivers can influence the Australian climate. Influences will have varying levels of impact in different regions at different times of year.
- Current influences on Australia's climate include:
  - La Niña
  - The Southern Annular Mode (SAM)
- These influences typically result in above average rainfall for northern, eastern or central parts of the country.

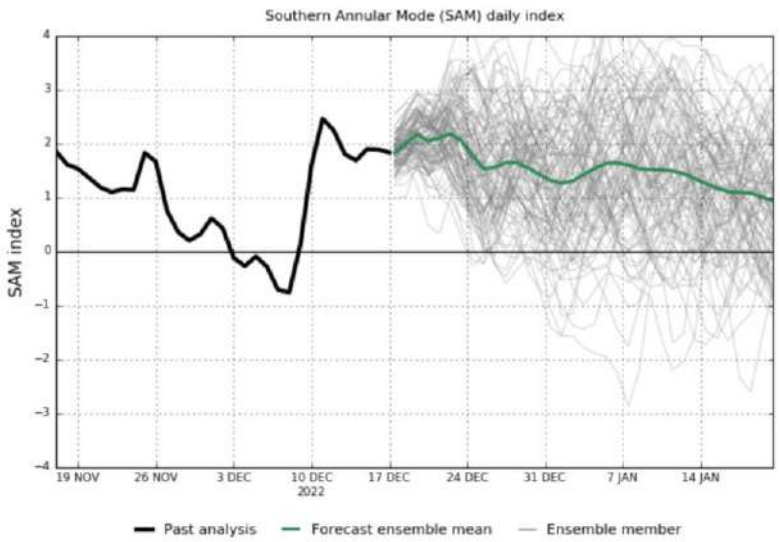


Source: www.bom.gov.au

La Nina and Southern Annual Mode

- La Niña continues in the tropical Pacific. Atmospheric and oceanic indicators of the El Niño–Southern Oscillation (ENSO) reflect a mature La Niña. Models suggest a return to ENSO-neutral in January or February 2023.
- The Southern Annular Mode is in a weakly positive phase and is likely to be neutral to positive through December. During summer, a positive SAM increases the chance of above average rainfall for parts of eastern Australia and below average rainfall for western Tasmania.
- The Indian Ocean Dipole (IOD) has returned to neutral. Weekly values of the IOD index have been in the neutral range (between −0.4 °C and +0.4 °C) for five consecutive weeks with the most recent value being −0.16 °C.

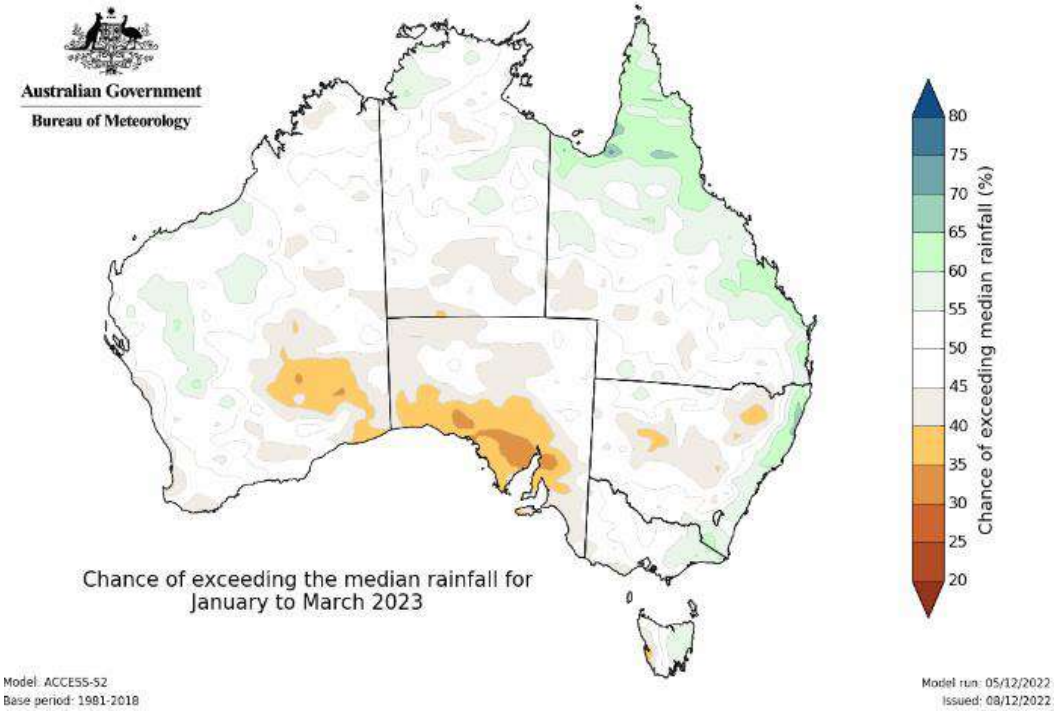




Source: www.bom.gov.au

January – March 2023 predicted rainfall

January – March rainfall prediction can be used to indicate the potential impact on habitat for the forthcoming season.



- For January to March as a whole, most of Australia has close to equal chances of above to median rainfall. Above median rainfall is likely (>60% chance) for the Cape York Peninsula and east of the Great Dividing Range for south-east parts of Queensland and north-east parts of New South Wales. Below median is likely (>60% chance) for parts of the southern interior of Western Australia and southern parts of South Australia.

Source: www.bom.gov.au

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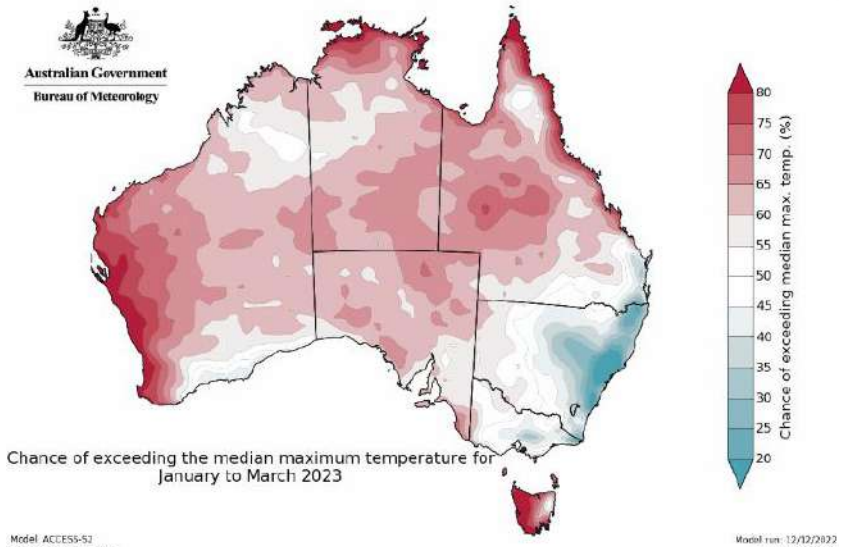
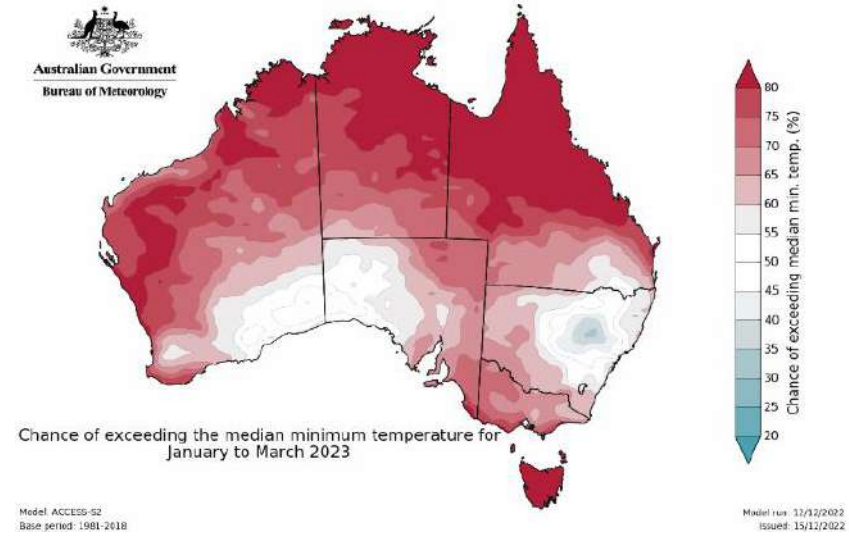
January – March 2023 temperature prediction





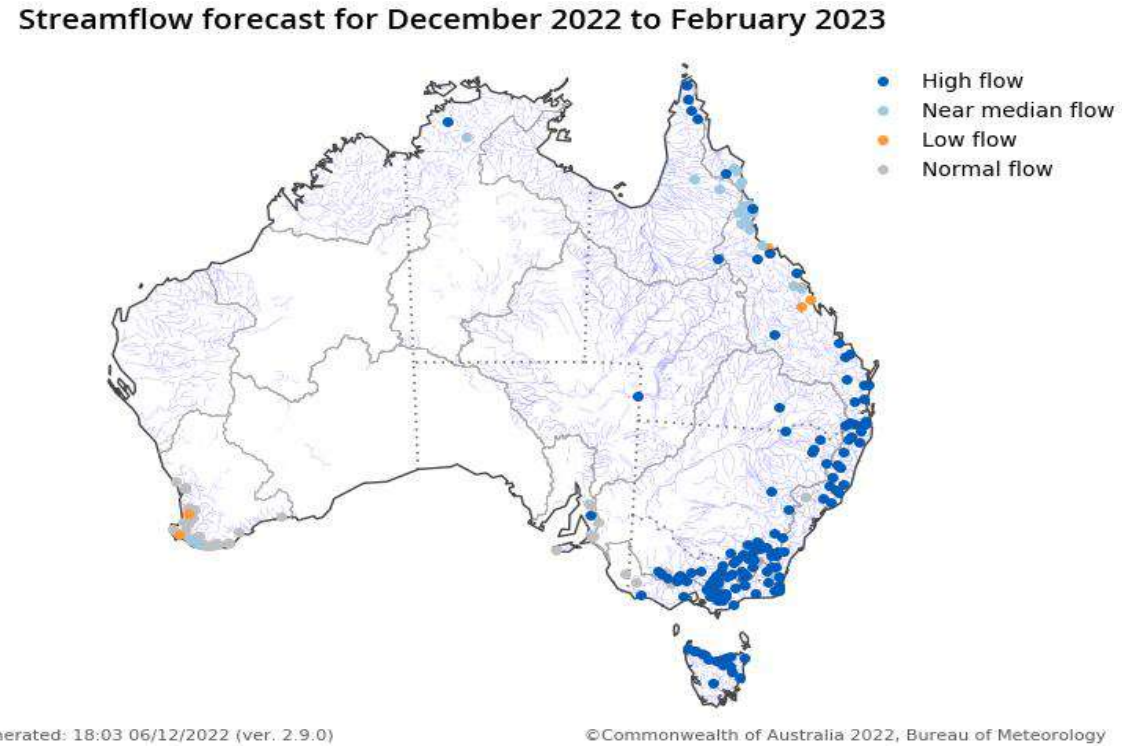
- For January, above median maximum temperatures are likely (>60% chance) for most of Australia except for most of southern Queensland, New South Wales and Victoria where below median temperatures are likely.
- January to March median minimum temperatures are likely to very likely (>60% to >80% chance) be warmer than median for most of Australia except over north-eastern NSW, south east Western Australia and western South Australia.

Source: www.bom.gov.au

Streamflow predictions

Streamflow has a direct influence on waterbird habitat extent and population abundance. Rivers and creeks provide feeding, resting and breeding habitat and provide inputs into wetlands where they have not been diverted.

- High streamflows are forecast for December to February for most sites in eastern Australia.



Source: www.bom.gov.au

2022 harvest estimates

Harvest statistics can provide information on the health and dynamics of game duck populations, including distribution, abundance and productivity.

- The 2022 duck season ran a full 12 weeks. The season length was 90 days, commencing on 16 March and concluding on 13 June, and the daily bag limit was four birds. Blue-winged Shoveler and Hardhead could not be hunted.
- There was a maximum of 23,098 Game Licence holders endorsed to hunt duck in 2022. It was estimated that 50%, or 11,549, actually hunted, each taking an average seasonal harvest of 23.3 ducks.
- The average number of duck hunting days per active duck hunter was estimated to be 8.5 days, twice the long-term average.

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Source: Moloney, P.D. and Flesch, J.S. (2022) *Estimate of duck and Stubble Quail harvest in Victoria for 2022 (in draft).*

2022 harvest estimates cont…

- The estimated seasonal harvest in 2022 was 262,567, 82% of the long-term average (320,000).
- The total estimated number of duck hunting days was 96,100, 14% above the long-term average (85,140).
- The two most commonly harvested species were Pacific Black Duck (37%) and Australian Wood Duck (26%). The remaining ducks harvested were Grey Teal (18%), Chestnut Teal (10%), Mountain Duck (8%) and Pink-eared Duck (1%).
- Pacific Black Duck, Grey Teal and Wood Duck usually make up approximately 90% of the total harvest, each with approximately 30%. Pacific Black Duck harvest was slightly up on the average and Grey Teal were significantly reduced.
- The total harvest was estimated to be greatest in the West Gippsland CMA, followed by the North Central CMA and the Goulburn Broken CMA.
- The top five towns for the total reported number of ducks harvested were (in descending order) Sale, Bairnsdale, Shepparton, Kerang and Geelong.

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Long-term harvest estimates

Estimates	2009[1]	2010[2]	2011	2012	2013	2014	2015[3]	2016[4]	2017[5]	2018[6]	2019[7]	2020[8]	2021[9]	2022[10]	Avg 2009 - 2022
Licensed hunters	18,348	21,861	23,716	24,533	24,036	26,261	25,837	25,681	26,324	25,799	24,925	23,378	24,330	23,098	24,153
Total # hunter days	76,659	85,801	103,450	109,718	91,748	118,800	91,264	100,749	96,508	91,570	81,023	29,501	19,720	96,102	85,186
Total harvest	222,302	270,574	600,739	508,256	422,294	449,032	286,729	271,576	438,353	396,965	238,666	60,403	52,456	262,567	320,065
Avg # days hunted in the season	4.0	4.0	4.5	4.6	3.7	4.6	3.6	3.9	3.8	3.6	3.3	1.26	2.57	8.5	4
Seasonal harvest per licence holder	11.1	12.5	26.0	21.2	17.2	17.3	11.4	10.5	17.4	15.7	9.62	2.58	2.16	11.57	13.3
Opening w/end bag per hunter	4.5	4.2	9.2	5.3	9.5	5.7	5.8	5.1	7.1	6.3	4.4	N/A	N/A	N/A	5.6*
Avg # ducks per day hunted	2.7	3.1	5.7	4.6	4.6	3.7	3.1	2.6	4.5	6.4	2.9	2.05	2.33	2.73	3.6

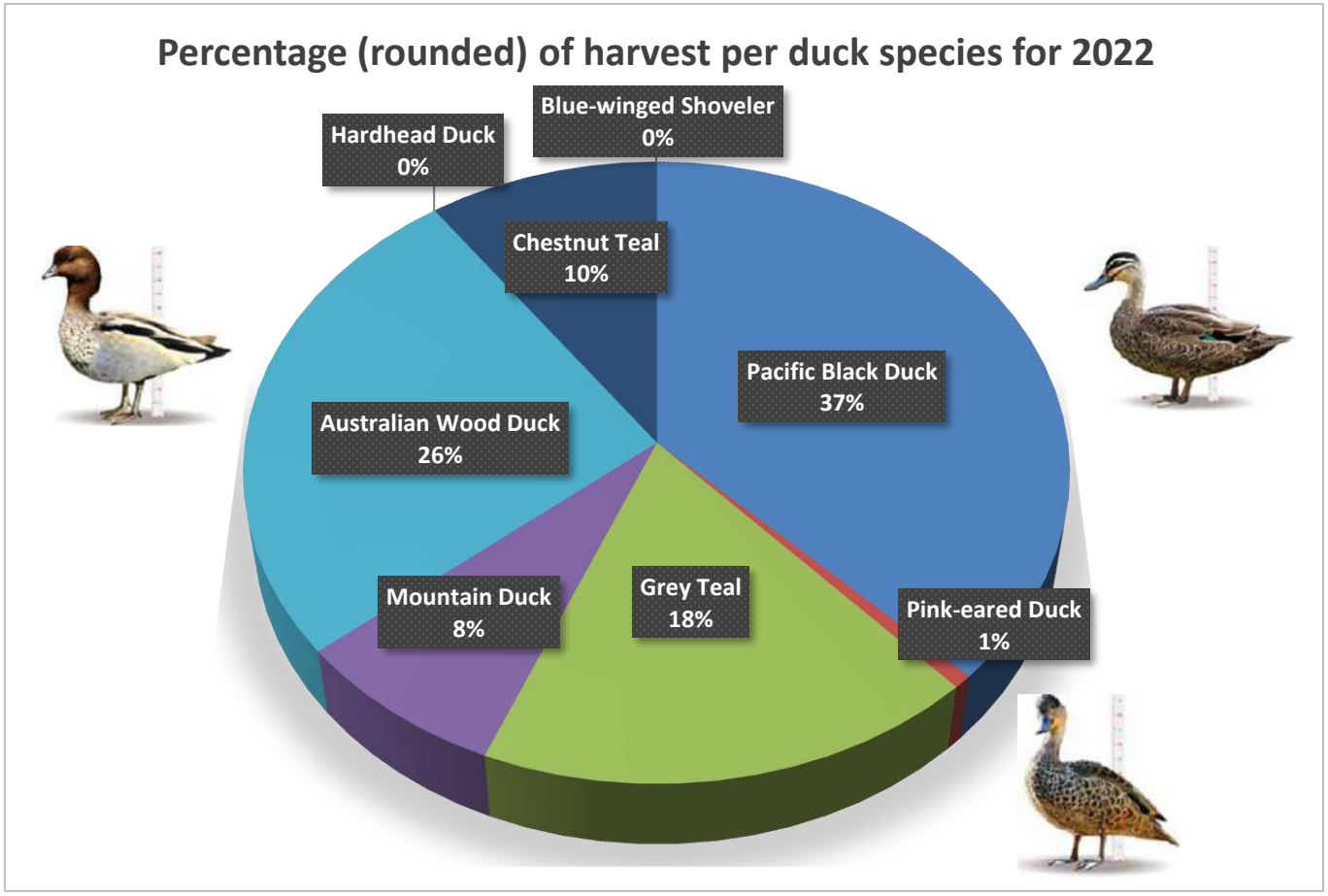
**Does not include 2020, 2021 and 2022 following a mid-week opening*

Harvest estimates are at 95% confidence intervals

Modified season arrangements

1. Two (2) birds a day with an additional three (3) Wood Duck. No Blue-winged Shoveler (BWS), Pink-eared Duck or Hardhead duck (49 day season)
2. Five (5) birds a day with an additional three (3) Wood Duck. No more than one (1) Blue-winged Shoveler (72 day season)
3. Ten (10) birds a day which included a maximum of two (2) BWS on opening day. Five (5) birds per day which includes a maximum of 1 BWS for season remainder (80 day season)
4. Eight (8) birds on opening day. Four (4) birds a day for season remainder. No BWS hunted in 2016 (87 day season)
5. Ten (10) birds a day. No BWS hunted in 2017 (87 day season)
6. Ten (10) birds a day. No BWS hunted in 2018 (87 day season)
7. Four (4) birds per day on opening weekend. Five (5) birds per day for the remainder of the season. No BWS hunted in 2019 (65 day season)
8. 3 birds per day. No BWS hunted in 2020 (38 day season). COVID-19 restrictions applied to travel, gathering size, no overnight camping
9. 5 birds per day. No BWS hunted in 2021 (20 day season). COVID-19 restrictions applied to travel and the size of social gatherings
10. 4 birds per day. No BWS and Hardhead hunted in 2022 (90 day season)

Harvest per game species



Source: Moloney, P.D. and Flesch, J.S. (2022) *Estimate of duck and Stubble Quail harvest in Victoria for 2022 (in draft).*

Interim Harvest Model output

- An expert panel recommended to develop a harvest management framework to translate waterfowl monitoring and wetland availability data into harvest recommendations while adaptive harvest management is developed simultaneously.
- An interim harvest model was developed by two members of the expert panel who are experts in waterfowl ecology.
- The model uses information from long-running duck population data sets to explore the relationship between game duck abundance and habitat availability.
- The relationship between the total point score and historic seasonal arrangements produces a recommended daily bag limit for the forthcoming season.
- Based on 2022 data, the recommendation for 2023 is four birds per day.
- The experts recommended to regulate the bag limit rather than season length if there was a need to restrict seasonal harvest.

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Summary

Summary

- This report should be read in conjunction with source material and references cited below.
- La Niña and other drivers have influenced Australia's climate for the last three years, resulting in significant rainfall throughout parts of eastern Australia. Water storages, wetlands and waterways have benefitted from record spring rainfall, including wildlife that inhabit these environments. The EAWS wetland area index is above the long-term average. Multi-year rainfall deficiencies experienced during the 2017 – 2019 drought have been almost entirely removed from the eastern states.
- Storages, wetlands and waterways in the Murray-Darling Basin are near or at capacity and major rivers in the central and southern Basin experienced some of the highest flood levels recorded. However, central Australia did not receive the heavy rainfall that was seen in the south east and coastal areas and Lake Eyre and some of its tributaries experienced small to moderate flooding and supported low numbers of waterbirds. A large part of Queensland is in drought or drought affected.
- As a result of the improved conditions in the Murray-Darling Basin, waterbird breeding and breeding species richness indices have increased significantly and are above the long-term averages.
- Although having increased from the previous year, the waterbird abundance index was below the long-term average. Waterbirds were most abundant in New South Wales (in bands 3 to 5), as was waterbird breeding. The highest abundances were recorded in southern (band 3) and northern (band 5) New South Wales, with major concentrations in the Lowbidgee Wetlands and Macquarie Marshes.
- The EAWS index of game duck abundance for eastern Australia has declined from 2021 and is the third lowest recorded in 40 years, or 25% of the long-term average. The game duck abundance index for Victoria decreased from the previous year. Six of the eight game species show continued long-term declines.
- Climatic influences causing above average rainfall in eastern Australia are predicted to decline in the coming months and neutral conditions are expected to return. Cooler conditions over most of New South Wales and Victoria are expected to persist for the outlook period. High streamflows are forecast for December to February at most locations in eastern Australia.
- The interim harvest model which considers the relationship between game duck abundance and the extent of habitat throughout eastern Australia recommends a daily bag limit of four ducks. This is influenced by low-moderate duck abundance, recent drought conditions from 2017-19, benign conditions in the Lake Eyre Basin and the time it takes populations to recover and grow.

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- The Long Paddock- www.longpaddock.qld.gov.au

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Using duck proxies and surface water to inform hunting arrangements for 2023

compiled by Marcel Klaassen

Surface water data:
Roxane Francis & Richard Kingsford
University of New South Wales

Victorian Duck Season Priority Waterbird Counts:
Peter Menkhorst
Arthur Rylah Institute for Environmental Research

Eastern Australian Waterbird Survey data:
John Porter & Richard Kingsford
University of New South Wales

19 December 2022

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1 Introduction

Based on literature, practices elsewhere, and earlier recommendations, duck harvest management for Victoria should contain indices that inform on (i) breeding conditions in Victoria, (ii) breeding conditions throughout SE Australia, (iii) current or recent duck population size in Victoria, and (iv) duck population size throughout SE Australia.

In the protocol outlined in *Relationships among duck population indices and abiotic drivers to guide annual duck harvest management* by Klaassen and Kingsford (2021) we proposed to calculate five indices reflecting the above elements i-iv. Three of these indices, reflecting breeding condition elements i and ii, use availability of water in the landscape (LANDSAT satellite imagery) across up to 4 regions in SE Australia and up to three years back in time. The models underlying these three indices are updated annually making use of the latest LANDSAT and game count data. The three indices used in the models are based on the *Victorian Duck Season Priority Waterbird Counts* (from here on Priority Game Counts or PGC), the *Eastern Australian Waterbird Survey counts for Victoria* (Victoria aerial counts or VicC) and the *Eastern Australian Waterbird Survey counts for NSW* (NSW aerial counts or NSWC).

While the first three indices are based on the availability of water in the landscape in SE Australia over the past three years, the two remaining indices are directly calculated from the 2022 VicC and NSWC data.

After starting with presenting the water and count data in section 2, the updated models for the first three indices are presented in section 3. Next, in section 4, we present all five indices and compare these with actual hunting regulation data over the years 1991 to 2021 and briefly evaluate their use in advising on future annual hunting arrangement.

Finally, in section 5, a proposed hunting arrangement for 2023 is presented, which suggests to implement a bag limit of four ducks per day.

2 The data

2.1 Water surface area across SE Australia

The monthly maximum water surface area in the landscape calculated from LANDSAT imagery using the DEA Sandbox tool were kindly obtained and shared by Roxane Francis and Richard Kingsford (UNSW) for the following regions:

- Lake Eyre Basin catchment (LEB)
- Murray-Darling Basin catchment (MDB)
- SE Australia south of the MDB (SEDB)
- Victoria (VIC)

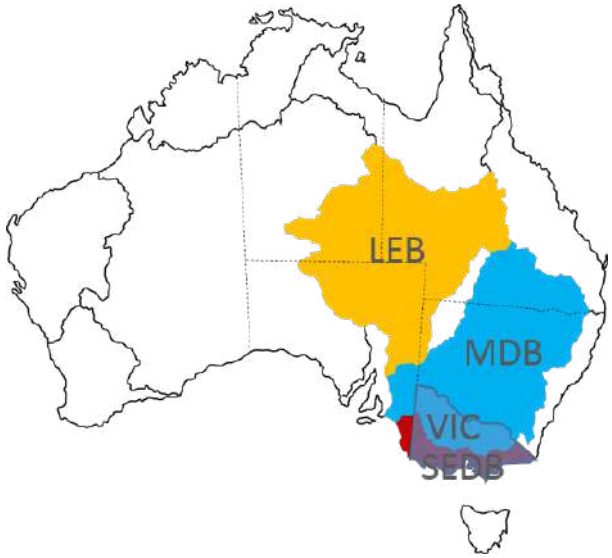


Figure 1: The regions across which percentage of surface water was extracted from satellite imagery

In Figure 2, the water surface area (in %) across Victoria (VIC), Murray-Darling Basin (MDB), SE Australia south of the MDB (SEDB) and Lake Eyre Basin (LEB) is depicted. The monthly values are plotted in blue with the last three year's data plotted in red. It is these last three years of data on which the graph also zooms in, since it is this period of water availability in the landscape that is used in making predictions on duck numbers and calculation of three of the five indices. The right-aligned, 12-month rolling average for the water surface areas (i.e. annual trends in water surface area corrected for monthly variations) are depicted in green.

The interim harvest model is a statistical model. This means that count and water data over the past three decades is being used to make models and that these models are next used to make predictions on waterfowl numbers using the latest water data. Such use of models to make predictions is only allowed when the input values are not extremely outside the range of values used

to make the predictive model. While we have experienced an unprecedented third La Nina year in a row, Figure 2 shows that the current amounts of water in the landscape across most of the four regions are high but not abnormal. This supports the modelling approach taken.

Figure 2: Percentage water surface area over time for four Australian regions considered to be of importance to duck numbers in Victoria

2.2 Waterfowl across SE Australia

As mentioned earlier the analyses here presented rely both on water surface data presented above and on three sets of waterfowl counts:

- The Victorian Duck Season Priority Waterbird Counts (PGC; e.g. 2021 report), the latest available information of which was made available to the analyses presented here by Peter Menkhorst (Arthur Rylah Institute for Environmental Research). These counts mostly take place a month before the duck hunting season during the month of February.
- the Victorian aerial counts (VicC) were extracted from the Eastern Australian Waterbird Survey data (EAWS; Kingsford, R. T., J. L. Porter, K. J. Brandis, and S. Ryall. 2020. Aerial surveys of waterbirds in Australia. Scientific Data 7:1-6.), with the latest updates made available for the analyses by John Porter and Richard Kingsford (UNSW). These counts typically take place in October each year. From this data set we used bands 1-3 to represent Victoria (and the SE of SA)
- The NSW aerial counts (NSWC) were extracted from the same EAWS data set as bands 4-6 covering NSW and southern Queensland as well as the E of SA bordering NSW.

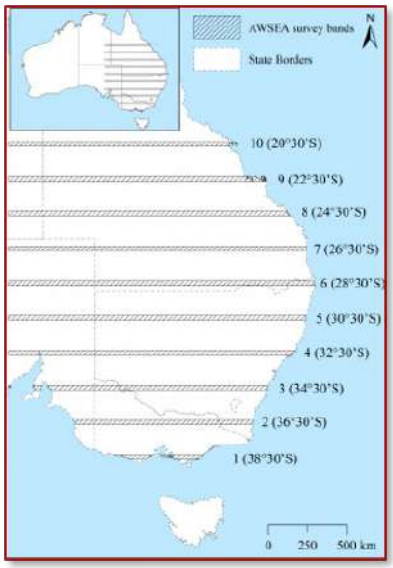


Figure 3: EAWS survey bands across the east of Australia

In Figure 4 below, an overview of the count data used in the modelling and starting 1991 is presented. Also presented in this figure are the bag limits set over the period 1991-2021. Note that the three count data sets show relatively low levels for 2022.

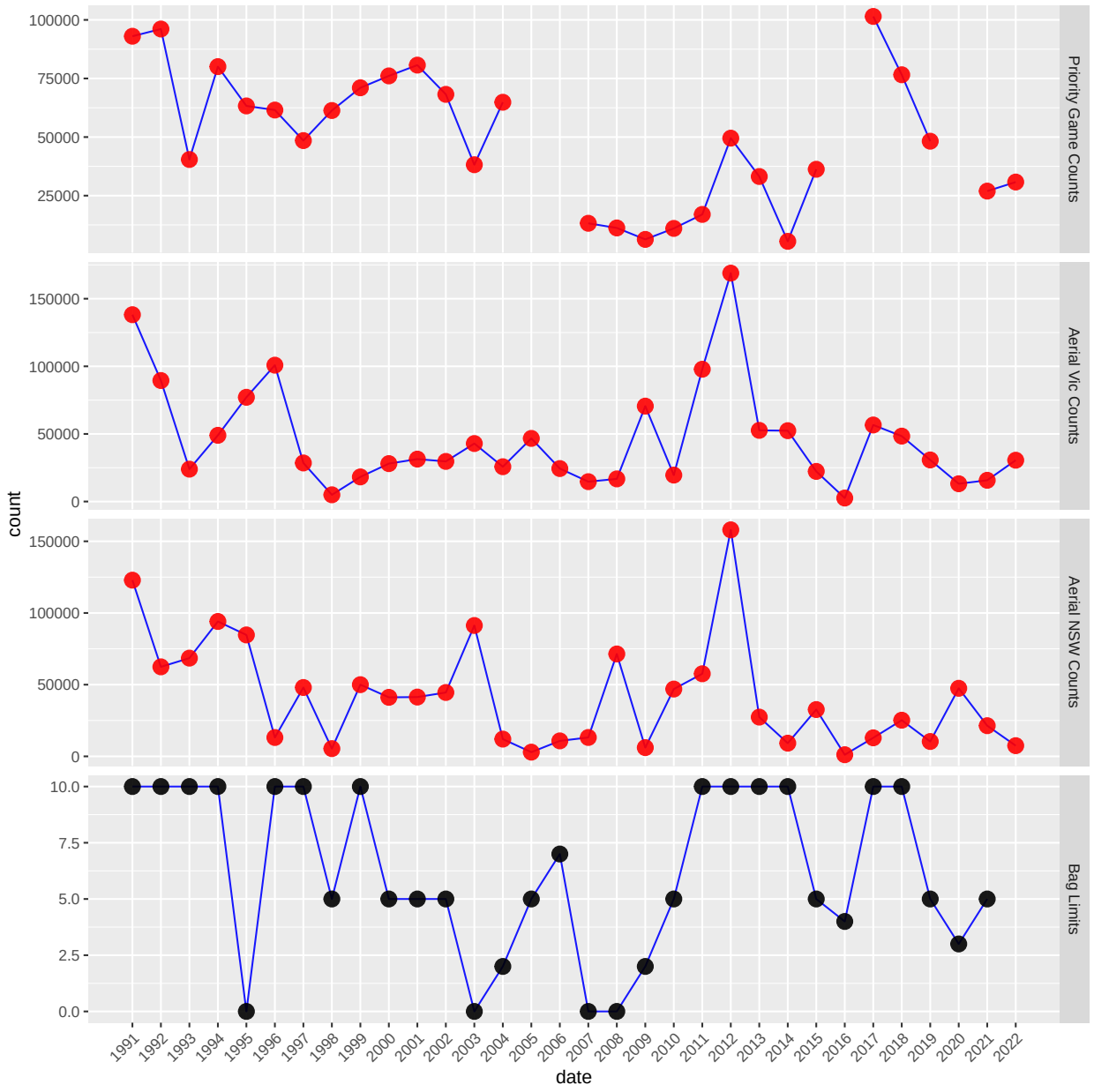


Figure 4: Overview of all the count data used in the modelling as well as the bag limits that have been imposed up till 2021, i.e. until the moment the interim harvest model came into effect.

3 The models and thresholds

3.1 Predictive models for priority game counts

We used linear modelling to conduct a regression across all priority game count data across 40 priority wetlands for the years in which also water surface data was available for all four regions. Water surface area was time shifted by 4 months. This was done to allow already predicting in December what the expected duck numbers are going to be in March the following year, from which sensible hunting arrangements can next be gauged.

We ran models using as explanatory variables the average water surface area over the preceding 12 months for all four regions (designated by the respective region codes LEB, MDB, SEMD and VIC). For all four regions, we also used the average water surface area over the period 13-36 months (i.e. 2 years of water data) prior to the "decision" point in December (designated by LEB2, MDB2, SEMD2 and VIC2). All possible combinations of these 8 explanatory *water surface* variables were tested.

We first present a correlation chart (Fig. 5) for all variables used in the models, including their Pearson correlation coefficients. Next, in Table 1, we present the 25 best models ranked by their deltaAIC value, starting with the best model (deltaAIC=0). Typical models with a deltaAIC between 0 and 2 are considered models with substantial statistical support and models with a score between 2 and 7 to have moderate statistical support only.

In Table 1, the use of a red font indicates models where all explanatory variables have a $P<0.05$. The orange columns indicate variables where we a priori expected a possible effect.

We ultimately selected a model as the most satisfying model that:

1. was high ranking
2. had significant and preferably positive parameter estimates for all its parameters (not considering the intercept)
3. had a high adjR2 or R-squared

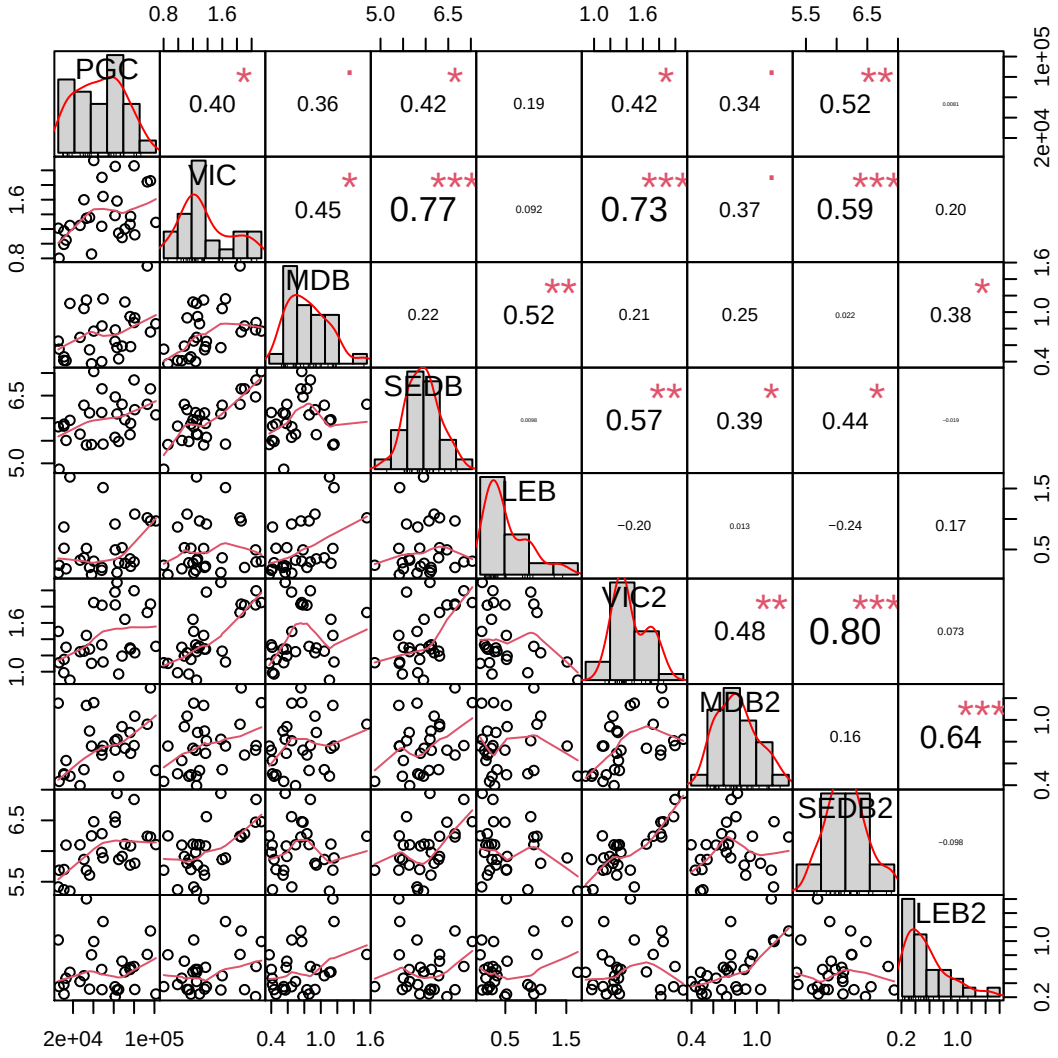


Figure 5: Correlation chart depicting the correlations between the annual game counts (PGC) and all eight explanatory water surface variables used in the models, with frequency distributions of the variables depicted on the diagonal and the Pearson correlation coefficients presented in the top right half of the matrix. Stars indicate significance levels.

Table 1: Top 25 models predicting game counts in Victorian priority wetlands ranked starting with best best (top row) first. The first nine columns present the estimated intercept and slopes for all eight explanatory water surface variables. NA indicates the variable was absent from the model. The three final columns contain quality indicators of each model: R squared, delta AIC and whether all model slopes were significantly different from zero.

(Intercept)	LEB	LEB2	MDB	MDB2	SEDB	SEDB2	VIC	VIC2	adjR^2	delta	AllSignif
-363395	NA	-44356	51390	93891	NA	71185	NA	-70027	0.614	0.00	TRUE
-193794	NA	NA	34643	NA	NA	36174	NA	NA	0.390	2.96	TRUE
-364725	8099	-43191	43990	92054	NA	70719	NA	-65687	0.624	3.30	FALSE
-217972	22409	NA	NA	NA	NA	42575	NA	NA	0.373	3.75	TRUE
-374409	NA	-42734	50374	91135	2966	70587	NA	-70880	0.616	3.87	FALSE
-363599	NA	-44320	51523	93856	NA	71234	-349.3	-69818	0.614	3.98	FALSE
-221747	21529	NA	NA	28856	NA	39614	NA	NA	0.430	4.04	FALSE
-328858	NA	NA	36114	43868	NA	63793	NA	-46476	0.486	4.45	FALSE
-195022	NA	NA	30166	21493	NA	34212	NA	NA	0.420	4.54	FALSE
-173213	NA	-29066	38202	46842	NA	29232	NA	NA	0.483	4.62	FALSE
-214818	13218	NA	24429	NA	NA	39787	NA	NA	0.417	4.71	FALSE
-217327	NA	NA	31349	NA	9382	31183	NA	NA	0.410	5.03	FALSE
-348793	NA	NA	47671	NA	25879	44017	-40750.9	NA	0.473	5.14	FALSE
-246146	20767	NA	NA	NA	11540	35942	NA	NA	0.404	5.32	FALSE
-205695	23575	-22166	NA	49900	NA	36286	NA	NA	0.469	5.33	FALSE
-240335	NA	NA	38368	NA	NA	47278	NA	-16318	0.402	5.39	FALSE
-170871	NA	NA	NA	NA	NA	36725	NA	NA	0.266	5.41	TRUE
-176889	NA	NA	NA	30868	NA	33804	NA	NA	0.332	5.51	FALSE
-187742	NA	-7564	38108	NA	NA	35481	NA	NA	0.397	5.62	FALSE
-214433	NA	NA	39710	NA	NA	41125	-9335.9	NA	0.397	5.65	FALSE
-304300	20967	NA	NA	44478	NA	58425	NA	-29872	0.459	5.88	FALSE
-314143	23391	-28518	NA	77324	NA	61092	NA	-40908	0.520	6.15	FALSE
-218735	14826	NA	18226	23818	NA	38051	NA	NA	0.453	6.18	FALSE
-209773	NA	NA	NA	NA	14194	29094	NA	NA	0.314	6.27	FALSE
-196605	14443	-28678	26462	48769	NA	33039	NA	NA	0.514	6.49	FALSE

3.2 Predicted versus observed PGC and threshold calculation

Based on the criteria listed above we select model 2 as the preferred model. Below we present the critical statistics for this model and a plot of the predicted versus the observed Victorian Game counts. In this graph (Fig. 6), the symbol colour reflects hunting bag limits for the season (not considering potential separate limitations for individual species and special restrictions during opening weekend). Red line depicts *observed=predicted*, while the blue line is the linear regression relationship with grey shading reflecting the 95% confidence interval of this line. Black horizontal line is the threshold for the dependent variable, reflecting the lower limit above which unlimited seasons were called. The black square symbol resembles data for 2022. Since hunting bag limits were based on this methodology starting with the 2022 hunting season, the hunting bag limit for 2022 was discarded in calculating the threshold.

Game counts in 2022 turned out lower than average and came out at 30799 or on the 28.6 percentile of all counts.

As expected, since adding a single year to the existing data set of 27 years is unlikely to change the outcome by much, the current model is very similar to the model calculated last year and reported in Using duck proxies and surface water to inform hunting arrangements (Klaassen & Kingsford 2021). Accordingly, the threshold value for the Victorian Game counts increased only slightly from 74,700 to 77,000. This threshold value was calculated by taking the highest predicted PGC amongst years in which hunting restrictions were in place (i.e. the bag limit was less than 10; all non-purple symbols in Fig. 6).

Observations	28
Dependent variable	PGC
Type	OLS linear regression

F(2,25)	8.01
R^2	0.39
Adj. R^2	0.34

	Est.	S.E.	t val.	p
(Intercept)	-193794.33	67856.97	-2.86	0.01
MDB	34643.35	15357.86	2.26	0.03
SEDB2	36174.18	11115.41	3.25	0.00

Standard errors: OLS

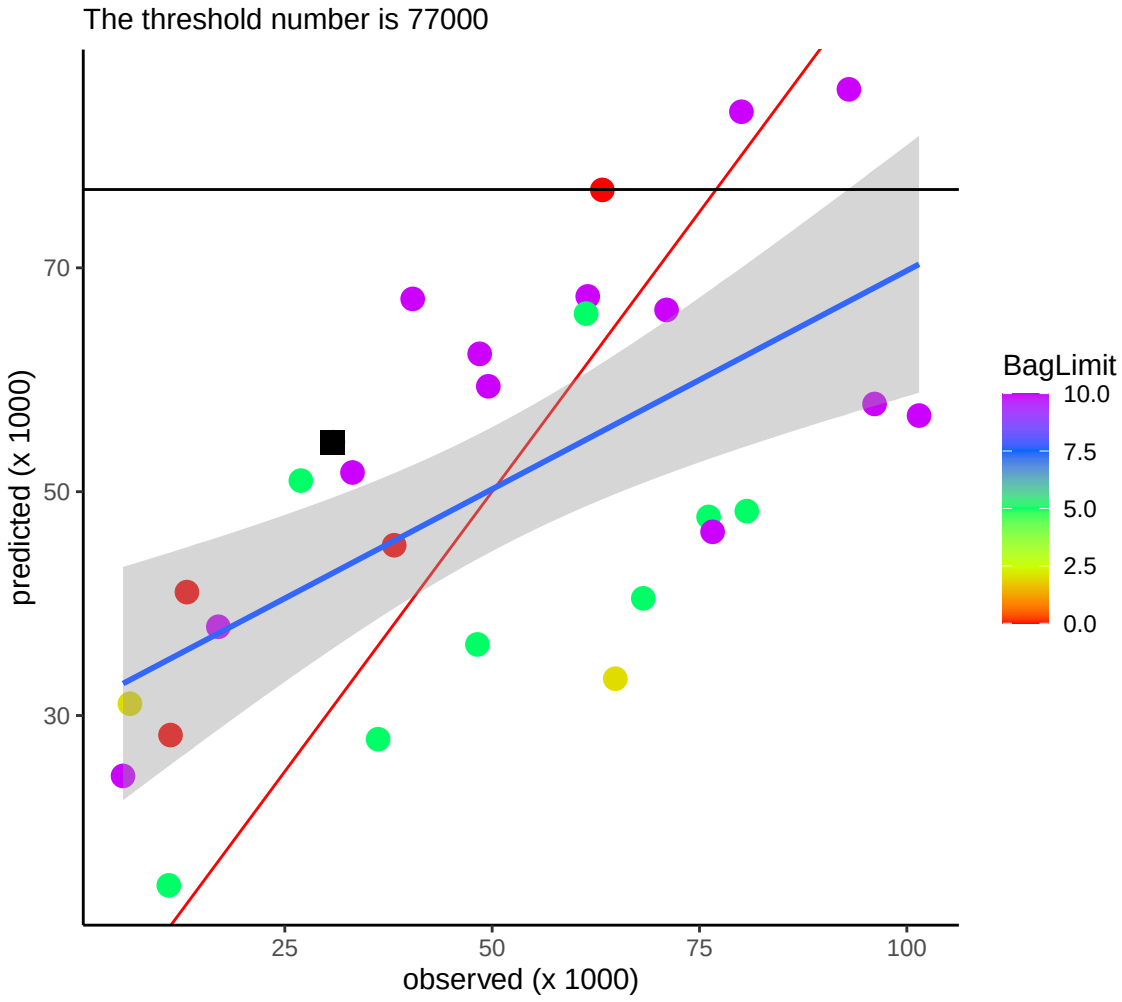


Figure 6: Predicted versus observed Victorian Game counts, where symbol colour corresponds with the season's hunting bag limit, and black square is the data for 2022. Red line is observed=predicted and blue line is the linear regression relationship (with 95% confidence interval). The black horizontal line is the threshold or lower limit above which unlimited seasons were called.

3.3 Predictive models for aerial Victorian counts

We ran models analogous to what we presented above for the "Water surface areas and game counts in priority wetlands". Also the selection of the preferred model followed the same selection criteria. We again present a correlation chart (Fig. 7) for all variables used in the models, including their Pearson correlation coefficients as well as a table (Table 2) presenting the 25 best models, starting with the best model (deltaAIC=0).

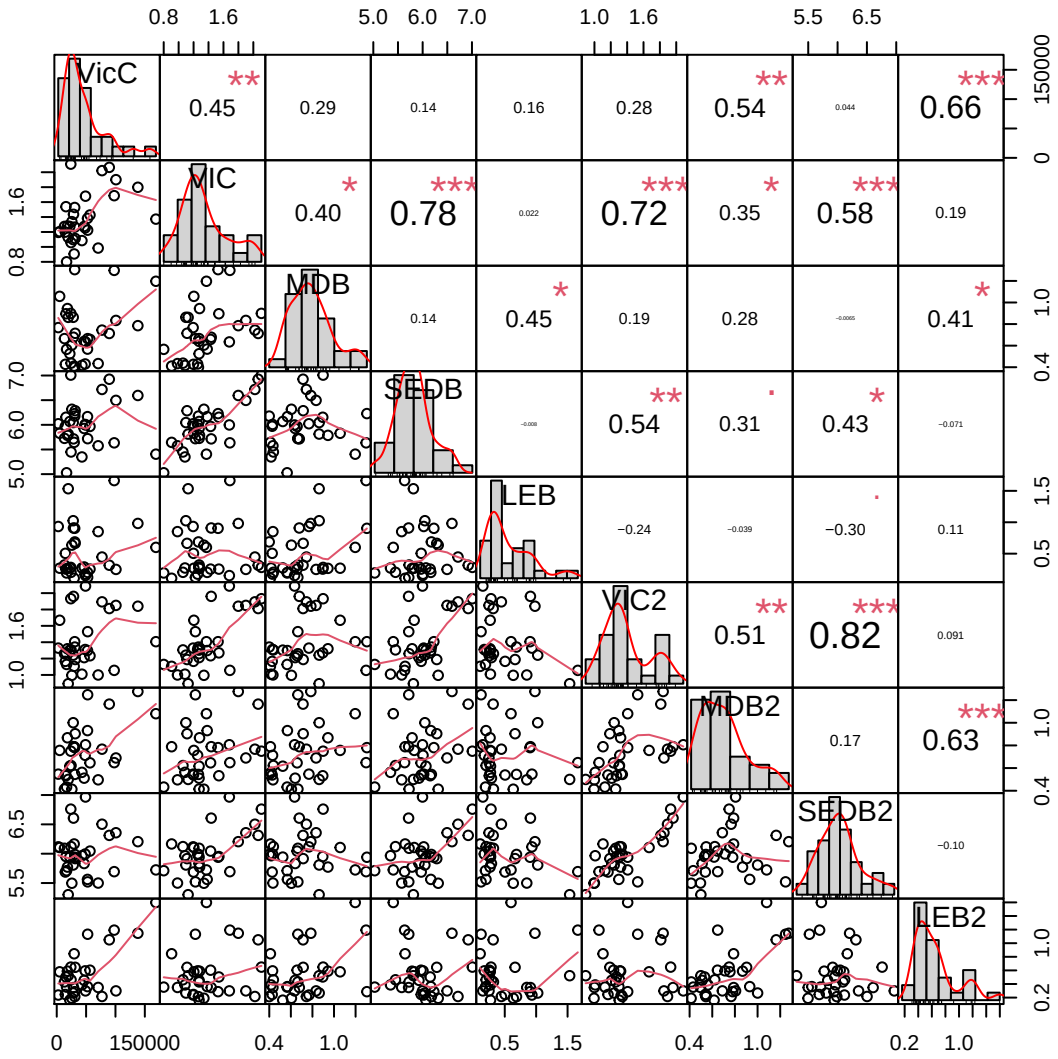


Figure 7: Correlation chart depicting the correlations between the annual EAWScounts for Victoria (VicC) and all eight explanatory water surface variables used in the models, with frequency distributions of the variables depicted on the diagonal and the Pearson correlation coefficients presented in the top right half of the matrix.

Table 2: Top 25 models predicting annual EAWS counts for Victoria ranked starting with best best (top row) first. The first nine columns present the estimated intercept and slopes for all eight explanatory water surface variables. NA indicates the variable was absent from the model. The three final columns contain quality indicators of each model: R squared, delta AIC and whether all model slopes were significantly different from zero.

(Intercept)	LEB	LEB2	MDB	MDB2	SEDB	SEDB2	VIC	VIC2	adjR^2	delta	AllSignif
-42863	NA	65684	NA	NA	NA	NA	39042	NA	0.549	0.00	TRUE
54168	NA	59496	NA	NA	-20972	NA	62343	NA	0.569	1.39	FALSE
35419	NA	62076	NA	NA	NA	-15198	49748	NA	0.563	1.83	FALSE
-38176	NA	70392	-19165	NA	NA	NA	43838	NA	0.561	2.00	FALSE
-46778	8767	64576	NA	NA	NA	NA	39028	NA	0.558	2.23	FALSE
-46572	NA	60625	NA	12909	NA	NA	36868	NA	0.553	2.58	FALSE
-40683	NA	65442	NA	NA	NA	NA	42691	-5091	0.550	2.76	FALSE
168252	NA	53937	NA	NA	-24654	-18842	79706	NA	0.590	2.88	FALSE
78775	NA	64448	-24960	NA	-24971	NA	73031	NA	0.588	3.02	FALSE
211420	NA	NA	NA	95331	-55369	NA	124954	-53782	0.587	3.06	TRUE
-42209	17557	71997	-34730	NA	NA	NA	47703	NA	0.587	3.10	FALSE
80313	NA	46039	NA	28741	-28408	NA	65762	NA	0.584	3.32	FALSE
247633	NA	58800	-35434	NA	-31765	-26183	101643	NA	0.624	3.37	FALSE
65425	NA	67345	-25892	NA	NA	-19794	59464	NA	0.583	3.42	FALSE
87494	19611	65569	-43001	NA	-27795	NA	80649	NA	0.620	3.73	FALSE
50129	8737	58401	NA	NA	-20942	NA	62296	NA	0.577	3.82	FALSE
360762	NA	NA	NA	71698	-53327	-33761	112794	NA	0.577	3.83	TRUE
-28132	NA	70667	NA	NA	NA	NA	NA	26079	0.487	4.12	FALSE
233926	NA	34313	NA	38745	-35659	-23868	88946	NA	0.615	4.14	FALSE
60634	NA	58930	NA	NA	-21659	NA	68605	-7672	0.571	4.29	FALSE
259105	NA	NA	-29894	104639	-63788	NA	146891	-62871	0.613	4.30	FALSE
323377	NA	37893	-37572	41860	-44084	-32056	112950	NA	0.654	4.35	FALSE
6825	NA	72869	NA	NA	NA	NA	NA	NA	0.439	4.38	TRUE
81910	NA	60476	NA	NA	NA	-25856	43198	19615	0.569	4.42	FALSE
38230	NA	55026	NA	17080	NA	-16697	47927	NA	0.569	4.45	FALSE

3.4 Predicted versus observed VicC and threshold calculation

Based on the criteria set out earlier we select model 1 as the preferred model for which we present the critical statistics below, followed by a plot of the predicted versus the observed EAWS counts for Victoria (Fig. 8).

The EAWS count for Victoria in 2022 was average with a count of game birds amounting to 30557, which was exactly at the 50 percentile of all counts used in the analyses.

Also here, adding a single year to the existing data set of 31 years did not result in a major change to this model compared to the one reported last year (Klaassen & Kingsford 2021). It has led to a slight downward correction of the threshold value from 50,800 to 50,300.

Observations	32
Dependent variable	VicC
Type	OLS linear regression

F(2,29)	17.67
R^2	0.55
Adj. R^2	0.52

	Est.	S.E.	t val.	p
(Intercept)	-42863.43	20596.08	-2.08	0.05
LEB2	65683.94	13973.45	4.70	0.00
VIC	39042.50	14653.46	2.66	0.01

Standard errors: OLS

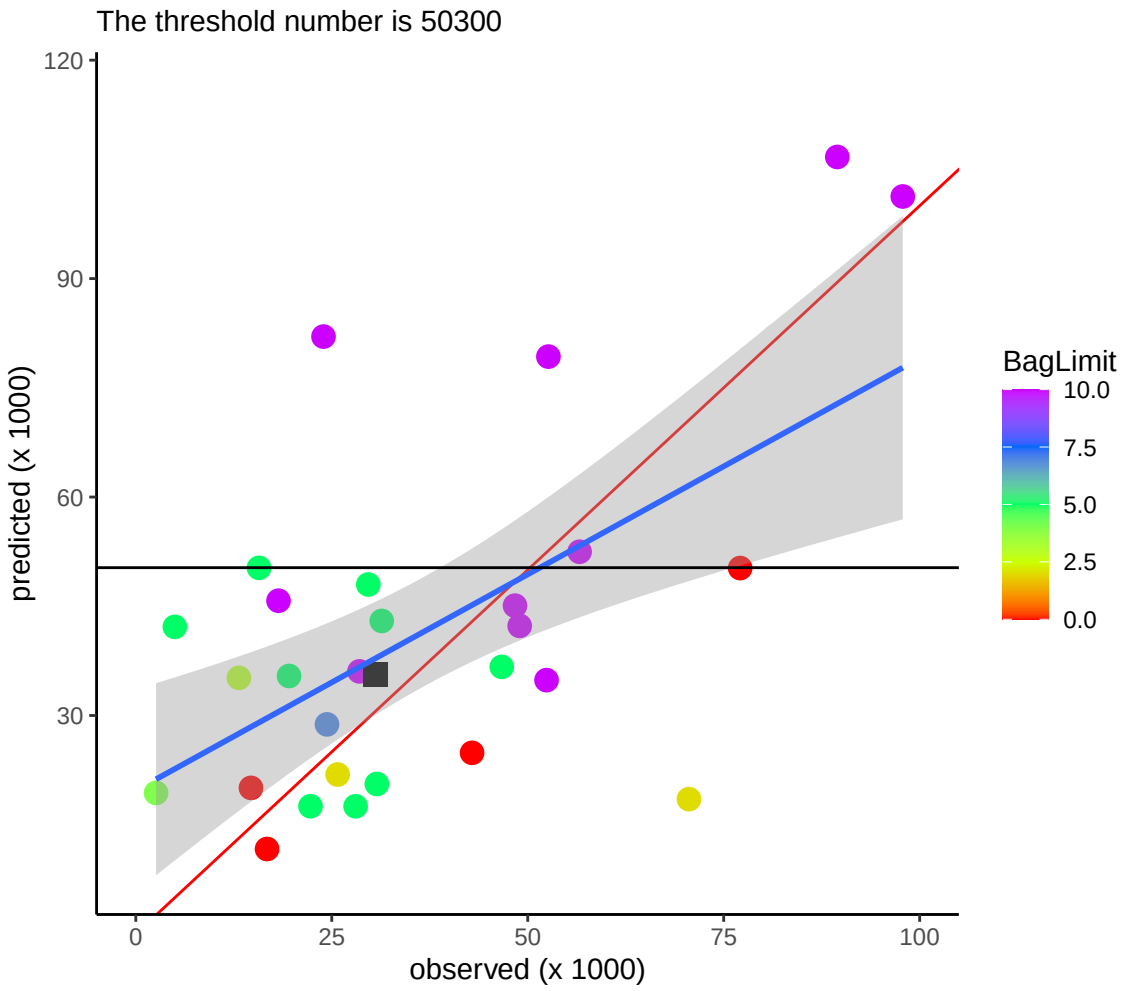


Figure 8: Predicted versus observed EAWS counts for Victoria, where symbol colour corresponds with the season's hunting bag limit, and black square is the data for 2022. Red line is observed=predicted and blue line is the linear regression relationship (with 95% confidence interval). The black horizontal line is the threshold or lower limit above which unlimited seasons were called.

3.5 Predictive models for aerial NSW counts

We again ran a series of models analogous to the above but now to predict annual EAWS counts from NSW from water surface areas across the four regions. The selection of the preferred model again followed the same selection criteria presented earlier. We present a correlation chart (Fig. 9) for all variables used in the models, including their Pearson correlation coefficients as well as a table (Table 3) presenting the 25 best models.

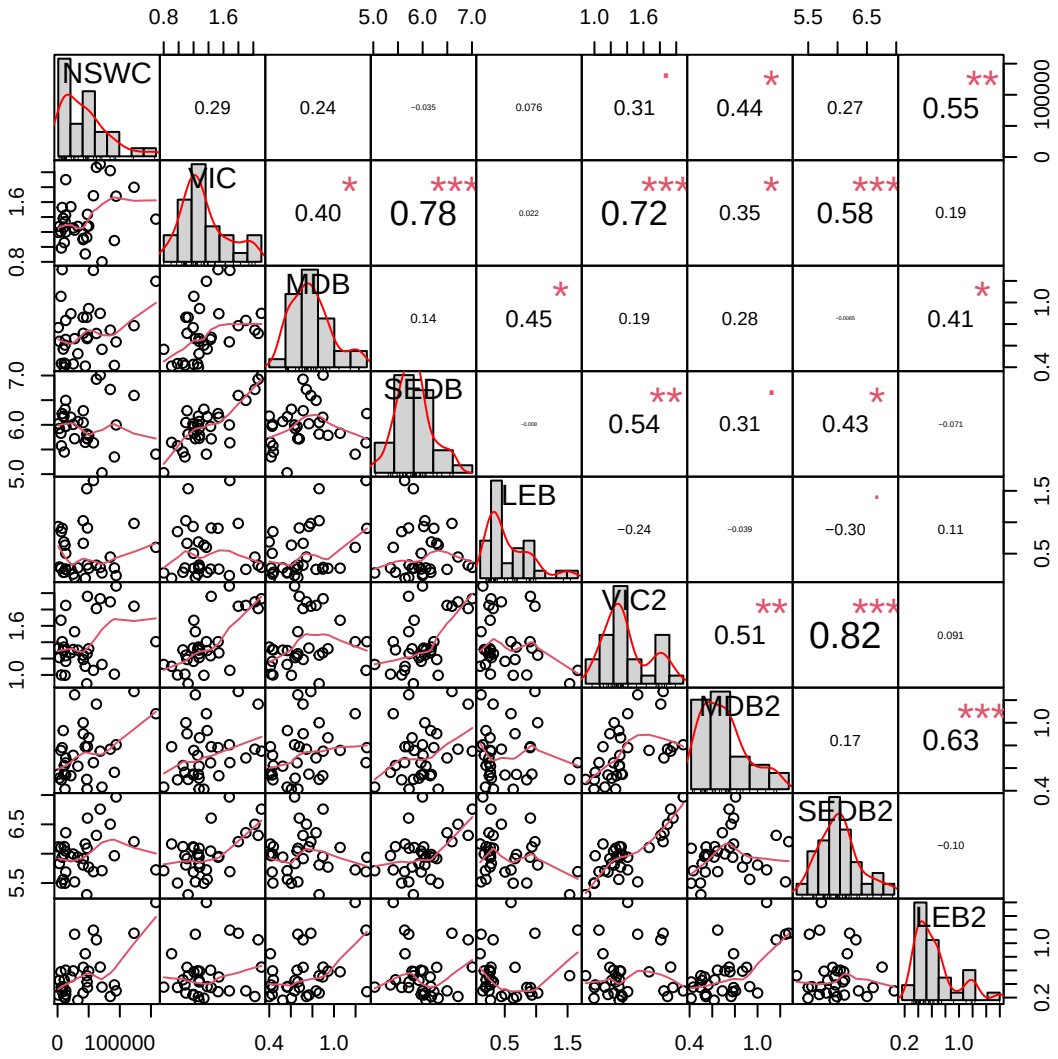


Figure 9: Correlation chart depicting the correlations between the annual EAWScounts for NSW (NSWC) and all eight explanatory water surface variables used in the models, with frequency distributions of the variables depicted on the diagonal and the Pearson correlation coefficients presented in the top right half of the matrix.

Table 3: Top 25 models predicting annual EAWScounts for NSW ranked starting with best best (top row) first. The first nine columns present the estimated intercept and slopes for all eight explanatory water surface variables. NA indicates the variable was absent from the model. The three final columns contain quality indicators of each model: R squared, delta AIC and whether all model slopes were significantly different from zero.

(Intercept)	LEB	LEB2	MDB	MDB2	SEDB	SEDB2	VIC	VIC2	adjR^2	delta	AllSignif
-187598	NA	62908	NA	NA	NA	32673	NA	NA	0.407	0.00	TRUE
-146181	NA	62405	NA	NA	-13757	39566	NA	NA	0.429	1.64	FALSE
-31576	NA	56768	NA	NA	NA	NA	NA	31005	0.372	1.82	FALSE
-214016	11353	61850	NA	NA	NA	36200	NA	NA	0.420	2.10	FALSE
248083	NA	NA	NA	66239	-60907	NA	80558	NA	0.414	2.46	TRUE
9985	NA	59386	NA	NA	NA	NA	NA	NA	0.302	2.61	TRUE
-185254	NA	60155	NA	6277	NA	31765	NA	NA	0.408	2.78	FALSE
-191633	NA	63406	NA	NA	NA	33774	-2062	NA	0.407	2.82	FALSE
-194473	NA	63277	NA	NA	NA	34314	NA	-2274	0.407	2.82	FALSE
-187940	NA	62671	806.1	NA	NA	32655	NA	NA	0.407	2.82	FALSE
157218	NA	44235	NA	NA	-37800	NA	63725	NA	0.404	3.01	FALSE
55010	NA	54112	NA	NA	-17216	NA	NA	43992	0.401	3.15	FALSE
-18521	NA	52799	NA	NA	-32129	29025	36979	NA	0.454	3.24	FALSE
-17669	NA	55387	NA	NA	NA	NA	21729	NA	0.337	3.58	FALSE
-172465	13672	61063	NA	NA	-15594	44733	NA	NA	0.448	3.61	FALSE
-127569	NA	52914	NA	21351	-17292	38248	NA	NA	0.437	4.21	FALSE
195772	NA	24390	NA	42384	-48764	NA	68767	NA	0.437	4.23	FALSE
-38724	8278	55503	NA	NA	NA	NA	NA	33568	0.380	4.28	FALSE
-2747	NA	48654	NA	25380	NA	NA	NA	NA	0.317	4.53	FALSE
-104145	NA	60405	NA	NA	-15805	32032	NA	11863	0.431	4.54	FALSE
-31012	NA	60380	NA	-9141	NA	NA	NA	34005	0.374	4.58	FALSE
-29687	NA	58086	-4681.2	NA	NA	NA	NA	31562	0.373	4.61	FALSE
134003	NA	46270	NA	NA	-35332	NA	41240	27548	0.430	4.62	FALSE
-146754	NA	60746	5565.7	NA	-14352	39737	NA	NA	0.430	4.63	FALSE
-31272	NA	56894	NA	NA	NA	NA	-1032	31759	0.372	4.65	FALSE

3.6 Predicted versus observed NSWC and threshold calculation

Based on the criteria set out earlier we select model 1 as the preferred model for which we present the critical statistics below, followed by a plot of the predicted versus the observed EAWS counts for Victoria (Fig. 10).

The EAWS count for NSW in 2022 turned out far lower than average and was 7458 or at the 15.6 percentile of all counts.

In this case, adding an additional year to the existing data set of 31 years did result in a change of model compared to the one reported last year (Klaassen & Kingsford 2021). Last year, the preferred model contained explanatory variables MDB2, VIC and SEDB, whereas it now contains LEB2 and SEDB2. However, it should be considered that the correlations between these water surface variables tend to be high (see Fig. 9). This change of model has led to a moderate upward correction of the threshold value from 54,900 to 67,000.

Observations	32
Dependent variable	NSWC
Type	OLS linear regression

F(2,29)	9.96
R^2	0.41
Adj. R^2	0.37

	Est.	S.E.	t val.	p
(Intercept)	-187597.61	87549.15	-2.14	0.04
LEB2	62907.88	15537.10	4.05	0.00
SEDB2	32673.22	14385.50	2.27	0.03

Standard errors: OLS

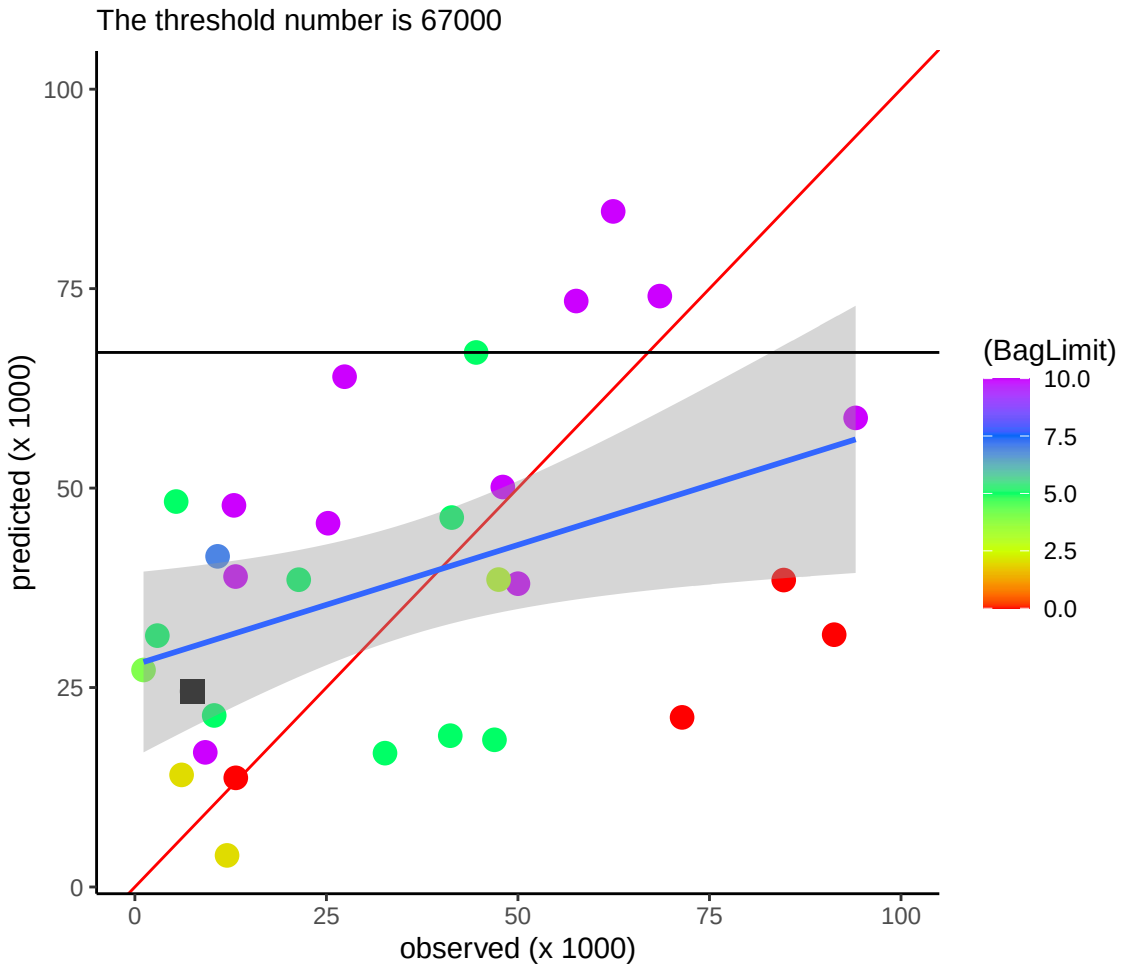


Figure 10: Predicted versus observed EAWS counts for NSW, where symbol colour corresponds with the season's hunting bag limit, and black square is the data for 2022. Red line is observed=predicted and blue line is the linear regression relationship (with 95% confidence interval). The black horizontal line is the threshold or lower limit above which unlimited seasons were called.

4 From predictive models to duck population indices

4.1 Summary of predictive models

The following preferred models were selected (with R squared in brackets):

PGC ~ SEDB2 + MDB + 1 (0.39)

VicC ~ LEB2 + VIC + 1 (0.55)

NSWC ~ LEB2 + SEDB2 + 1 (0.41)

It should be noted that in all models long-term patterns in water availability (i.e. water in the landscape 2-3 years prior to the counts) appear crucial. Indeed, in the case of NSWC, water in the landscape 12-36 months prior to the counts appeared to be solely responsible for the number of birds counted.

It should moreover be noted that in all cases the birds counted not only depend on the local availability of habitat, but also on conditions elsewhere in SE Australia. Indeed, for PGC the water availability across Victoria as a whole was not in the top model. Similarly, for NSWC water surface area in NSW was also not in the preferred model. Also here, it should again be stressed that water surface areas in the different regions tended to be (highly) correlated (cf. Fig. 3, 6 and 8).

4.2 Calculation of the indices

Using the preferred predictive models as well as the two aerial duck counts themselves, following the protocol outlined in *Relationships among duck population indices and abiotic drivers to guide annual duck harvest management* by Klaassen and Kingsford (2021) we calculate indices that broadly inform on the current population status of ducks in SE Australia and Victoria in particular.

Threshold values for game counts in Victoria and aerial surveys for Victoria and NSW were selected above which no years ever had hunting restrictions imposed (and, conversely, below which some years, but not all, had bag limits imposed; see figures 5, 8 and 10 in section 3.2, 3.4 and 3.6, respectively).

The five duck population indices are:

- iPGC: index of game counts limited to 40 priority wetlands using the predictive model from section 3.2 divided by the game count threshold of 77000
- iVicC: index of aerial survey for Victoria using the predictive model from section 3.4 divided by the threshold for these counts of 50300
- iNSWC: index of aerial survey for NSW using the predictive model from section 3.6 divided by the threshold for these counts of 67000
- tfVicC: index of aerial survey for Victoria using actual counts divided by the threshold for these counts of 50300

- tfNSWC: index of aerial survey for NSW using actual counts divided by the threshold for these counts of 67000

Index values higher than 1 indicate a good to excellent population status of ducks, while values lower than 1 indicate a poor to good population status.

4.3 Past performance of the indices

Below, in Fig. 11, boxplots are presented for the five duck-population indices, as well as the median of these five indices. For all six of these, three box plots are drawn, one for unrestricted hunting seasons (bag limit = 10, blue), one for cancelled hunting season (bag limit = 0, red) and one for hunting seasons with restrictions (bag limit = 2-7, green).

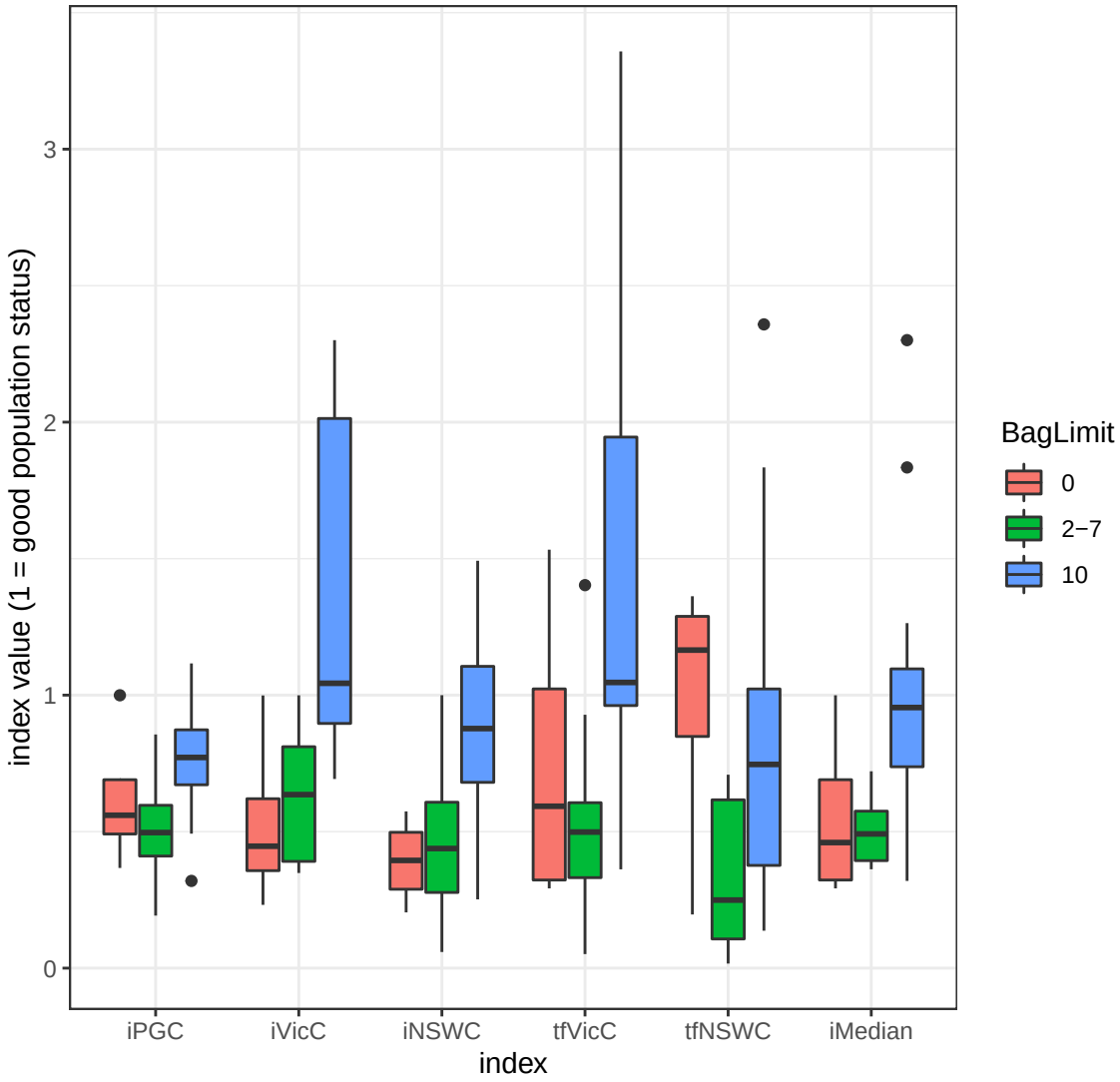


Figure 11: Boxplots of the five duck-population indices and their median seperated for years without hunting (bag limit=0), unrestricted hunting and intermediate bag limit levels. Boxplots depict minimum, 25 percentile, median, 75 percentile and maximum values as well as outliers

Table 4: Overview of the annual bag limits, the five predicted duck population indices, as well as the aggregated point system for the years 1991-2021. Years are ranked by their bag limit.

		using water surface			using aerial counts		
Year	BagLimit	iPGC	iVicC	iNSWC	tfVicC	tfNSWC	aPS
2007	0	0.53	0.40	0.20	0.29	0.20	1
2008	0	0.37	0.23	0.32	0.33	1.07	2
2003	0	0.59	0.49	0.47	0.85	1.36	4
1995	0	1.00	1.00	0.57	1.53	1.26	9
2004	2	0.43	0.44	0.06	0.51	0.18	1
2009	2	0.40	0.37	0.21	1.40	0.09	2
2020	3	0.48	0.70	0.58	0.26	0.71	3
2016	4	0.52	0.38	0.41	0.05	0.02	1
2015	5	0.36	0.35	0.25	0.44	0.49	0
2019	5	0.47	0.41	0.32	0.61	0.15	1
2010	5	0.19	0.70	0.28	0.39	0.70	2
2005	5	0.35	0.73	0.47	0.93	0.04	3
2000	5	0.62	0.35	0.28	0.56	0.61	3
1998	5	0.86	0.84	0.72	0.10	0.08	3
2021	5	0.66	1.00	0.57	0.31	0.32	4
2001	5	0.63	0.85	0.69	0.62	0.62	5
2002	5	0.53	0.95	1.00	0.59	0.66	7
2006	7	0.51	0.57	0.62	0.48	0.16	3
2014	10	0.32	0.69	0.25	1.04	0.14	3
2018	10	0.60	0.90	0.68	0.96	0.38	5
1997	10	0.81	0.72	0.75	0.57	0.72	5
1999	10	0.86	0.91	0.57	0.36	0.75	5
2017	10	0.74	1.04	0.71	1.13	0.19	6
1996	10	0.88	1.01	0.58	2.00	0.20	6
2011	10	0.49	2.01	1.10	1.95	0.86	7
2013	10	0.67	1.58	0.95	1.05	0.41	7
1993	10	0.87	1.63	1.11	0.48	1.02	7
1994	10	1.09	0.84	0.88	0.97	1.40	8
1992	10	0.75	2.12	1.26	1.78	0.93	9
2012	10	0.77	2.30	1.49	3.36	2.36	9
1991	10	1.12	2.04	1.30	2.75	1.83	10

Next, in Table 4, the five predicted duck population indices for the years 1991-2021 where years are ranked from most (BagLImit = 0) to least (BagLimit = 10) restricted hunting seasons (values are not considering opening weekend and species-specific regulations). The index values are colour coded with dark colours indicating good and light colours indicating poor population status. White indices relate to proxies from Victoria whereas yellow indices relate to proxies from NSW. In the final column an overall duck-population-valuation is presented using an aggregated point system (*aPS*) based on all duck population indices in each year. For more detail on the calculation of aPS see section 5.

Finally, in Fig. 12, the actual bag limits and the aggregated point system scores as calculated from the five duck population indices for the years 1991-2021 are plotted against each other. The blue line in this graph depicts the major axis relationship.

The average actual bag limit over the years was 6.2258 and the average aPS was 4.5484. Although tending to be somewhat lower, the aggregated point system does not deviate much from the actual bag limits between 1991 and 2021, with a clear positive relationship between actual bag limits and aggregated point system over this period.

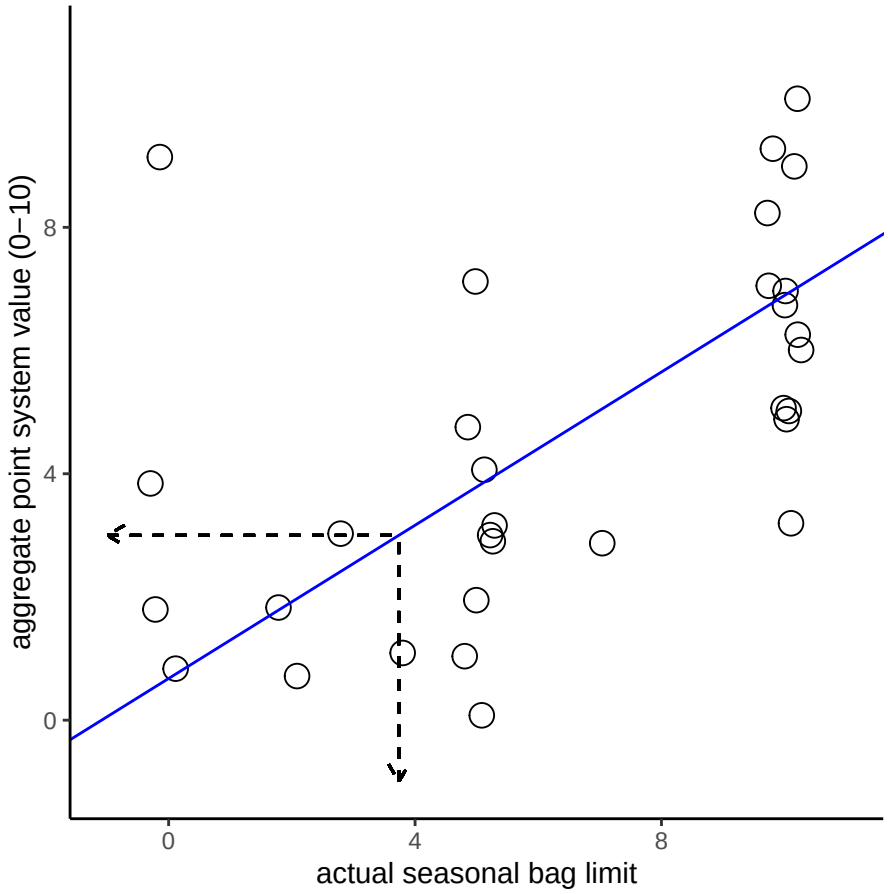


Figure 12: Relationship between the annual bag limit and the aggregated point system value based on the five predicted duck population indices for the years 1991-2021.A small amount of random variation has been added to otherwise overlapping data points to improve data presentation. The blue line is the major axis relationship between the two. Dashed drop lines from this major axis line connects the aPS and proposed bag limit for 2023.

5 Proposed hunting arrangement for 2023

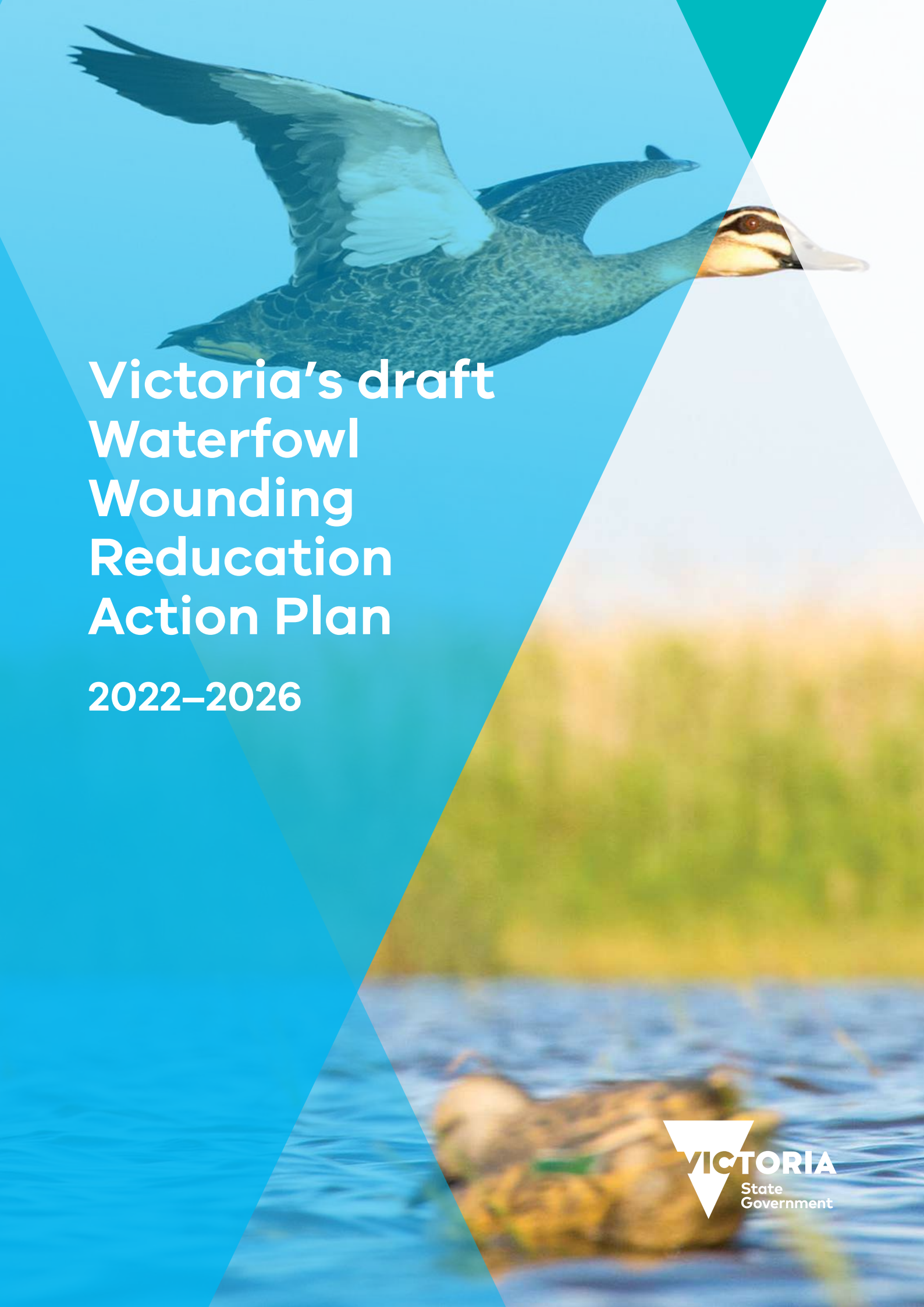
Although some indices are less prone to error than others, collective use of these indices should adequately address the four key elements that form part of a decision model. We thus propose to include all five indices in a highly straightforward and transparent manner in guiding decision-making for annual hunting arrangement of which seasonal bag limits form an important part. We propose to do this using the aggregate point system (*aPS*). In this system, each index with a value between 0.5 and 0.9 attracts 1 point and a value over 0.9 attracts 2 points. Given 5 indices, the maximum number of points amounts to 10, when all indices are >0.9. This aggregate point system thus provides a valuation of the overall population status of game ducks in Victoria on a scale from 0-10.

For 2023 the five indices have the following values:

- Using water surface area, the Vic priority game count prediction is: 66259, resulting in an iPGC of: ", 0.86, worth 1 aPS points.
- Using water surface area, the Vic aerial game count prediction is: 35642, resulting in an iVicC of: 0.71, worth 1 aPS points.
- Using water surface area, the NSW aerial game count prediction is: 24517, resulting in an iNSWC of: 0.37, worth 0 aPS points.
- Aerial game counts Vic amounted to: 30557 , and the concomitant tfVicC is: 0.61, worth 1 aPS points.
- Aerial game counts NSW amounted to: 7458 , and the concomitant tfNSWC is: 0.11, worth 0 aPS points.

Finally, using these five indices in the aggregated Point System calculation results in an aPS of: 3. Using the Major Axis relation between aPS and actual seasonal bag limits (blue line in Fig. 12) this translates to a daily bag limit of 4 ducks per day.

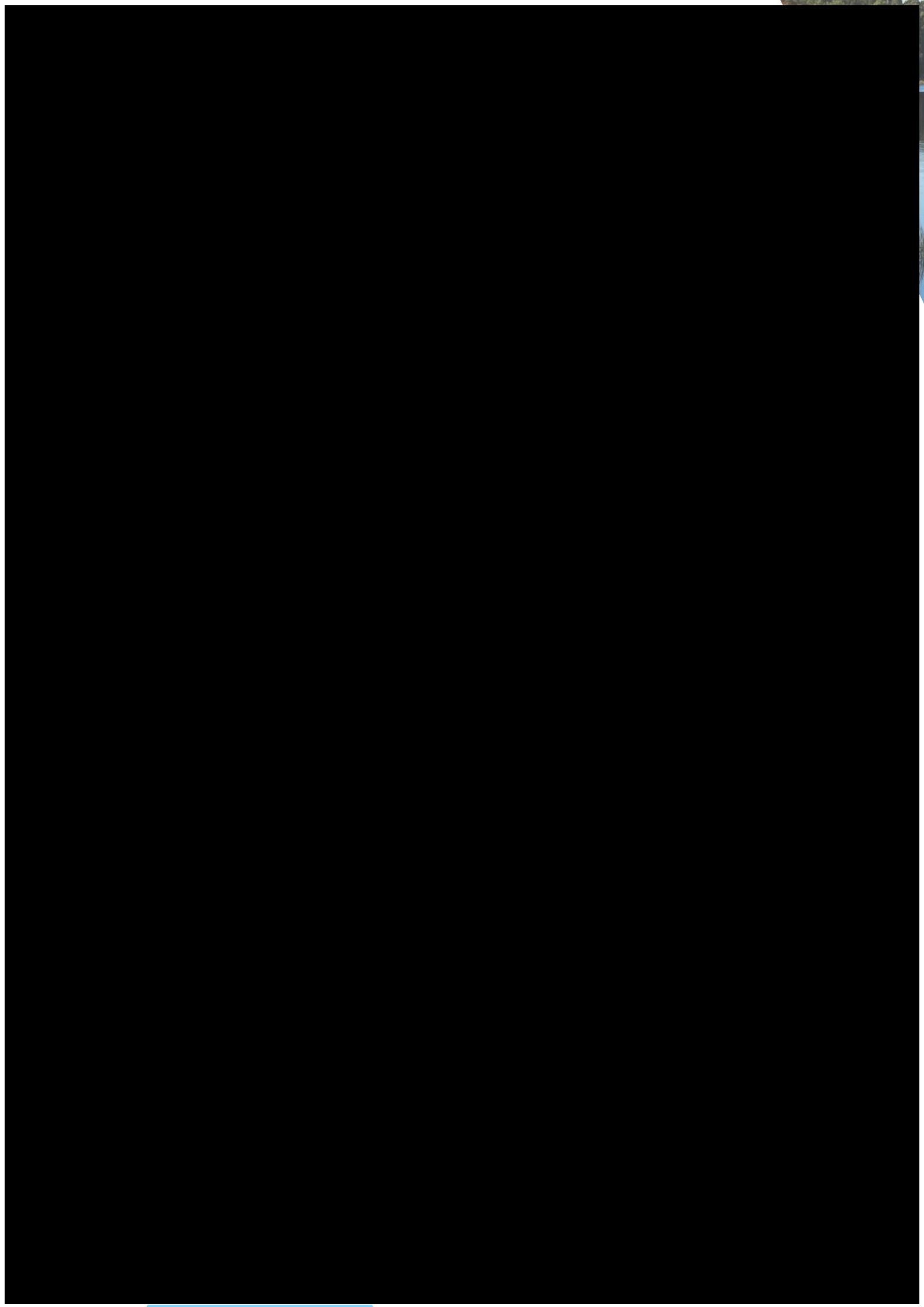
In light of unprecedented rainfall in recent times this may seem a low limit. It should be reiterated though that this rainfall follows a period of considerable drought and that not all parts of Australia (e.g. LEB) have similarly profited from this rainfall (cf. Fig. 2). Next, it should be reiterated that, based on the modelling results, duck numbers seemingly respond to long-term rainfall patterns (section 4.1). Also, duck counts, both on the ground and from the air, show low to moderate numbers (cf Fig. 3). Finally, it needs stressing that the protocol followed here results in an integration of five indices in a single aPS score that, had it been used in the past, would have performed well in setting bag limits (cf comparisons of aPS scores with actual seasonal bag limits between 1991-2021 in Table 4 and Fig. 12).

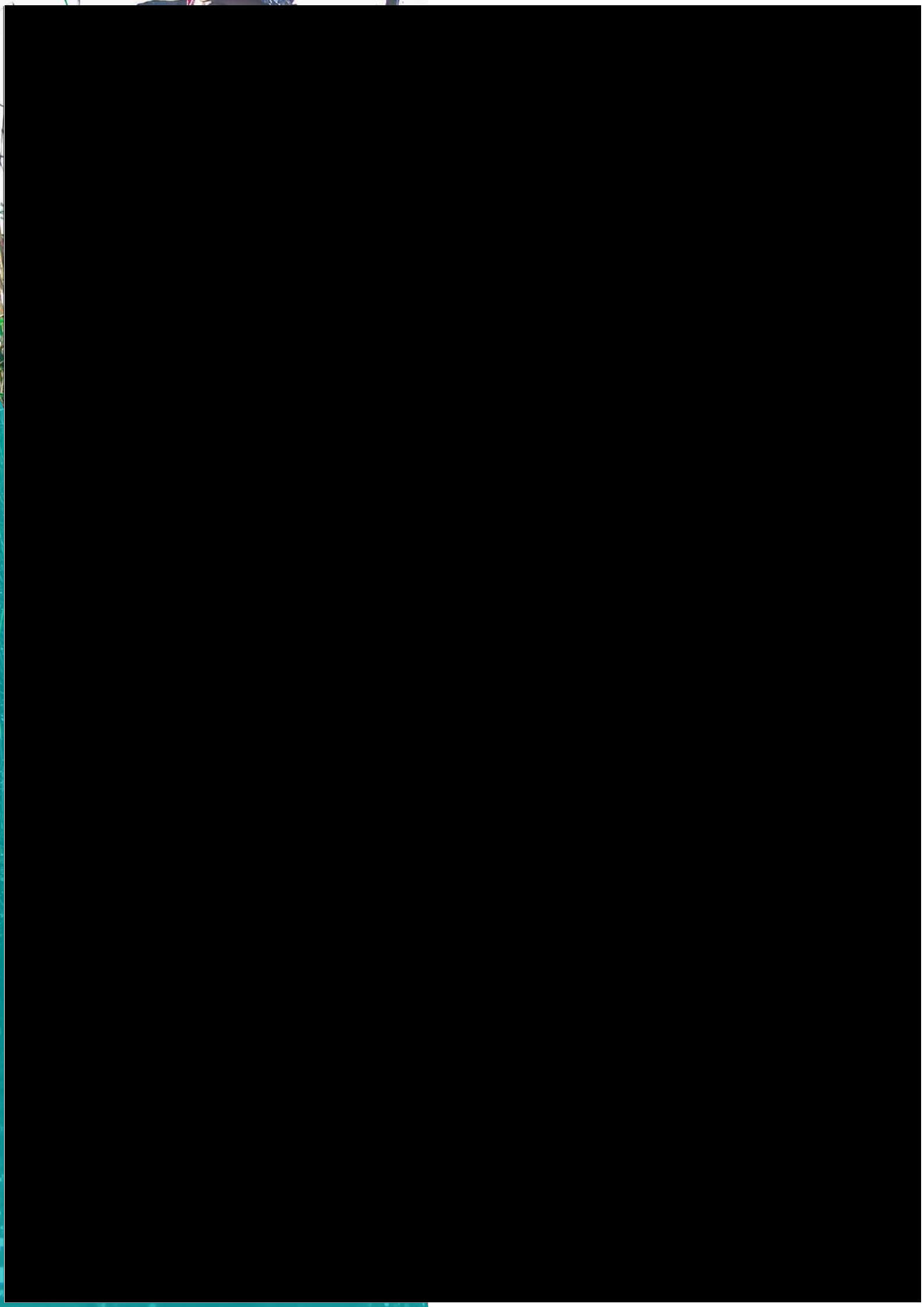


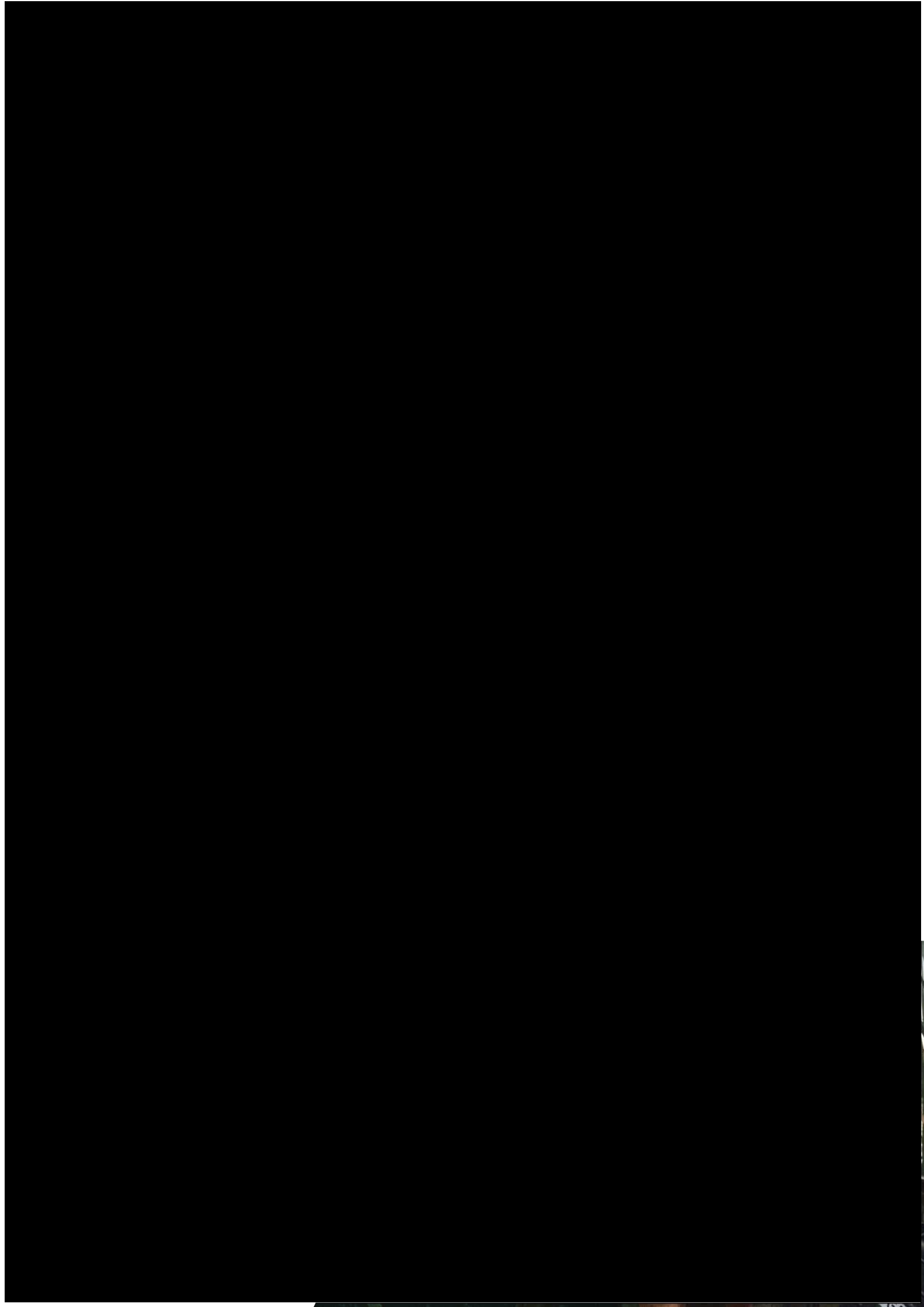
Victoria's draft Waterfowl Wounding Reducation Action Plan

2022–2026

VICTORIA
State Government







Attachment 4

Summary: stakeholder views on 2023 duck season arrangements

Organisation	Recommendation	Comments
Animals Australia (AA)	**Cancel** the 2023 duck season.	AA recommends that the 2023 duck season be cancelled, basing its position on animal welfare concerns, current environmental conditions, and game duck sustainability / biodiversity grounds. AA highlights concerns regarding the following claims: - The GMA misled ministers prior to the 2022 season by claiming that its proposed season setting was 'recommended' by Professors Kingsford and Klaassen - The GMA misrepresented AA's 2022 submission by failing to consider and respond to concerns raised by AA, and that the GMA restricted its attention to 'new data' in submissions rather than considering stakeholder comments about how the GMA uses or fails to assess and use existing data and information - Legal issues for GMA: the GMA has failed to consider: the impact of global warming and climate change; sustainability and biodiversity obligations under sections 4A and 4B of the *Flora and Fauna Guarantee Act 1988*; the sustainability of each of the eight game duck species - The GMA has failed to provide any information about a central sustainability issue (i.e. the breeding, or failure to breed, of game duck species and associated ageing of these populations) - Responsibility: the GMA has failed to explain how it complies with its obligations under sections 5(A), 6(H), 6(I) and 8A of the GMA Act - The GMA has failed to take seriously detailed concerns raised in AA's 2022 submission, and raises concerns in relation to the GMA's January 2022 brief to ministers in which AA claims contains bias toward unjustified optimism, omissions regarding global warming, dismissing issues raised and due diligence - The GMA has failed in its management of game ducks by not arresting long-term decline, failing to report any EAWS data on breeding for game ducks and failing to act on Birdlife Australia's request to set a baseline abundance for each species - AA contends that the IHM is not fit for purpose as a predictor of game duck settings. AA questions the due diligence exercised by the GMA and opposes its use to decide or defend GMA recommendations for duck seasons as it has not been peer-reviewed, bases its modelling on historic decision-making patterns that pre-date climate and land use changes and not accurately reflecting the history on which it is based - No public information has been provided on whether the inadequacies concerning the helicopter survey, identified by the 2021 Kingsford-Prowse peer review, have been addressed. AA recommends a further peer assessment before any public confidence can be placed in the survey results

Organisation	Recommendation	Comments
		- The GMA's Considerations 2023 document is misleading in its emphasis on recent rainfall and improved habitat and that no commentary is provided about game duck breeding or low abundance of individual species of game ducks - Legal issues: AA questions the legal basis for duck shooting being permitted on areas other the 200 State Game Reserves and additional 41 wetlands listed in the Regulations. AA seeks a direct response from the GMA Board - Misuse of science: AA is concerned by the manner in which the GMA has presented of the relevant scientific reports to justify continued recreational hunting of native waterbirds - Knowledge and skills: AA references the 2020 release of the GMA's survey of shooter skills and knowledge and how duck hunters failed survey questions on hunting laws, species recognition, best practice to minimise wounding and humane treatment of waterbirds. AA contends that the results confirm what duck rescuers and regional residents have observed and reported over time. Additional data provided in its submission included a downward trendline graph (p.14) that extends to 2040 and questions why the GMA never includes it in its Considerations document, and an anecdote from an unnamed source that was referenced in AA's 2022 submission.
BirdLife Australia	No submission/comments provided	N/A
Coalition Against Duck Shooting (CADS)	**Cancel** the 2023 duck season	CADS recommends a cancelled season for 2023, citing climate change, illegal shooting of threatened species and duck welfare concerns. No additional data or evidence was provided, other than news media articles on threatened species being shot and black swans disturbed from their nests at Lake Bael Bael during the 2022 duck season.
Field and Game Australia (FGA)	**Support a full 2023 season**	FGA recommends a full season for 2023, as per the Wildlife (Game) Regulations 2012. FGA makes the following claims: - The IHM is not transparent or science-based and that it does not remove the subjectivity and politics from the process, nor does it ensure bag limit and season length determinations are made solely on the sustainability of Victoria's duck populations in setting duck season each year. The IHM is focussed heavily on harvest reduction, not maintaining sustainable harvest levels backed by existing science. FGA refers to an independent review of the settings used in the IHM, which found that making small alterations to the point score ranges would deliver significantly different harvest arrangements – with no apparent detriment to the sustainability of the model. FGA expresses a lack of confidence that a full legislated season could be

Organisation	Recommendation	Comments
		achieved under the current IHM and is concerned over impartiality in developing an ongoing adaptive harvest model - FGA states that a heavily-reduced bag limit recommendation in a year of exceptional duck breeding seems counter-intuitive - Believes the GMA has lost sight of the fact that a full legislated season should occur in all instances, unless there is a clearly defined and identified reason to modify that season - Rainfall: FGA states that rainfall in 2022 has been significant and widespread and that duck populations respond rapidly to this with dispersion and breeding and that eastern Australia is a significantly better habitat for breeding waterfowl in 2022 than it was in the last two years with an expectation that this would be reflected in actual population figures - Catchment levels: FGA states that many water catchments across eastern Australia have reached or exceeded capacity and that this has created ideal conditions for waterbirds to breed and produce multiple successful clutches of young in a single year. FGA states current modelling does not seem to allow for 'compound breeding events' and their significant increase in the corresponding population in March of the following year - EAWS: FGA states that the averaging out of EAWS data across all of eastern Australia, including other documented deficiencies of using EAWS data in season setting, is the reason why it wants EAWS data completely phased out from the season setting process - Victorian helicopter survey: FGA notes that the aerial survey data is not included in any modelling - FGA states that some game duck species cause damage to agriculture and infrastructure and that consideration should be given for allowing hunters to take an increased take of Wood duck that will otherwise be controlled by farmers - FGA states that hunter engagement in this model is low and that the GMA should consider the barriers being placed before hunters, and the effect on the Victorian community - FGA states that there has been a failure to deliver on key timeliness goals on season modification announcements - FGA claims that some data (i.e. estimate of hunter days average) in the 2022 gamebird harvest (currently in draft form and referenced in the Considerations 2023 document as such) is erroneous and questions how the estimate was reached.
RSPCA	**Cancel** the 2023 duck season	RSPCA recommends cancelling the 2023 duck season, basing its position on: - animal welfare impacts caused by hunter disturbance to native waterfowl - climate outlook data that does not support sustainable duck hunting - long-term declines in game bird species abundance and not having recovered with increased habitat - community concern over animal welfare impacts of duck hunting, such as wounding

Organisation	Recommendation	Comments
		RSPCA provided information regarding community opposition to hunting in which it engaged a market research firm (Kantar) to assess Victorians' attitudes towards duck hunting.
Shooting Sports Council of Victoria	No submission/comments provided	N/A
Sporting Shooters Association of Australia (Vic)	No submission/comments provided	N/A
Regional Victorian Opposed to Duck Shooting (RVOTDS)	**Cancel** the 2023 duck season	RVOTDS recommends the 2023 season be cancelled and based its position on the following: - continued and long-term declines in game ducks - continued lack of breeding in game ducks - significant adverse impacts of hunting on protected species and regional communities (RVOTDS claims this has not yet been adequately investigated by the GMA) RVOTDS claims that the bag limit (as recommended by the IHM) is not a solution as it will be impossible to monitor, require significant law enforcement costs, result in significant adverse impacts to protected species, nearby families, farmers and other recreational users, and not provide bird populations the opportunity to recover. RVOTDS claims that the GMA's representation of the IHM as a basis for its recommendations is flawed. RVOTDS claims that the GMA has not given due consideration to the following factors in the season considerations: - long-term effects of climate change which are predicted to worsen - birds' susceptibility to climate change - threat to migratory birds already experiencing significant decline - detrimental impact to bird populations of shooting monogamous bird species - adverse impacts of lead shot which is still used legally and illegally - lack of data regarding bird species present on wetlands prior to shooting - lack of data of birds shot during season - impact of shooting on protected and threatened species - shooters' critical knowledge gaps as proven by recent tests - lack of social / economic impact studies of bird shooting on the wider community, including lost tourism, inability to work from home, and health and safety implications including noise pollution.

Organisation	Recommendation	Comments
		RVOTDS has provided downward trendline projections (page 5 of their submission) of game ducks becoming extinct by 2030. RVOTDS has also provided attachment links in its submission that relate to a 2018 survey of regional residents and a 2021 petition comments link regarding Closing a Public Waterway to Shooting in Central Victoria. RVOTDS also recommended that the 2023 quail hunting season be cancelled due to a claimed decline in Stubble Quail abundance.
Honker Hunters (HH)	**Season length** Full length (12 weeks) commencing on the 3rd Saturday in March **Bag limit** Ten (10) birds per day - including a maximum of two (2) Blue-winged Shoveler Two additional birds per day, being either Mountain and/or Wood Duck **Other** Opening weekend – 8.00am start time Remainder of season – hunting start times to accord with Regulations	HH has recommended a full 2023 duck season, citing favourable weather conditions that has contributed to increased breeding activity and an abundance of waterfowl across private property in Victoria, which includes private dams, private farmland, adjacent rivers and creeks running through private land. HH states that the season, as per the legislation, should not be altered unless there is proven evidence of extreme circumstances. HH also states that the GMA should not rely heavily on the EAWS. HH claims that the IHM and AHM report released is disputable and controversial, and assumes that its result is an assumption and not fact. HH states that IHM or AHM is not legislation and, until its proven, should not determine the season. HH claims that current waterfowl observations need to consider the possibility of the abundance of waterfowl being missed. HH has provided information relating to observations undertaken in southern, western and north-west Victoria. (Note that these observations only include travel areas where observations took places (for example, name of locality) and no specific numbers of game ducks observed. No dates were specified of when observations took place other than on consecutive weekends.) HH provides general information regarding observations of extremely high numbers of mountain ducks in close proximity to crops and feeding on established and harvested crops. (No locations or dates of observations were provided.) HH have recommended an additional two birds per day, in addition to the ten-bird daily bag limit. HH claims that the Wood Duck and Mountain Duck species have negatively impacted on crops.

Organisation	Recommendation	Comments
	Time zones to be re-introduced across Victoria	
Duck and Quail Hunting Australia (DQHA)	**Season length** Full length – commencing 7am on 3rd Saturday in March **Bag limit** Ten (10) birds per day, including an additional two (2) Blue-winged Shoveler Additional five (5) game duck per day due to loss of recent past hunting opportunities	DQHA has recommended a full 2023 duck season and claims that record-breaking rainfall make for prime duck breeding conditions. Its recommendation includes an additional five game species to the daily bag limit, as DQHA states that hunters have had a heavily reduced bag limit in the past few seasons yet still having to pay full game licence fees.
Geelong Duck Rescue (GDR)	**Cancel** the 2023 Duck Season	GDR recommends cancelling the 2023 duck season and bases its position on: - declining duck numbers - climate change and environmental factors - enforcement considerations, in relation to inadequate staffing and training required to police a significant number of wetlands across Victoria - GMA bias and a perceived conflict of interest in regulating game hunting - community gun safety posed by duck hunting - negative impacts on regional Victorian tourism GDR questions the accuracy and usefulness of the IHM in being used as tool to guide and inform decision making. While GDR supports a season cancellation, it provides recommendations should the season be declared. These include: - a significantly reduced season length (four weeks)

Organisation	Recommendation	Comments
		- Blue-winged Shoveler, Hardhead and Pink-eared Duck being prohibited from being hunted due to low numbers - each game species to be given a significantly reduced bag limit as well as having a reduced daily bag limit overall - closure of any designated hunting area within two kilometres of a major community facility, such as shopping centres, schools, sporting grounds and community halls for the duration of the season (eg. Connewarre State Game Reserve in Geelong) - erection of adequate warning signs at all locations where hunting is permitted.
Ducks in Flight Geelong (DIFG)	**Full season**	DIFG recommends a full season in 2023 and bases its position on evidence outlined in the Considerations document relating to spring rainfall across eastern Australia being well above average. DIFG claims that its members have observed and reported prolonged and widespread breeding as well as duck populations being widely dispersed across a variety of wetlands. (DIFG have not provided further information to substantiate these claims.) DIFG also highlight concerns regarding ongoing harassment, interference and intimidation from coordinated activist groups. (No further information is provided to substantiate their claim.)
Wildlife Victoria (WV)	**Cancel the 2023 duck season**	WV recommends cancelling the 2023 season basing its position on: - legislative considerations in the context of the plan for Victoria's new animal care and protection laws. WV requests that the GMA consider the viability of strategic positioning of the continuation of duck hunting in within the soon to be new framework for animal care and protection - community expectations and declining popularity and support for duck hunting - lack of any publicly available documentation that reports on the true economic benefits of duck hunting - compliance and enforcement capability in the context of findings of the Pegasus review - ducks left injured or dead in the field (WV has provided a table of data outlining the number of ducks treated at Lake Bael Bael from 16-18 March 2022) - threatened and endangered species and documented in-field evidence of widespread hunter non-compliance of shooting only the listed game ducks - ecosystem and biodiversity impacts - amenity impacts WV also makes recommendations in their submission regarding: - phasing out duck hunting by 2025 - reviewing the economic, environmental and reputational costs to the Victorian public for the GMA to administer duck hunting - reduction of duck hunting seasons leading to an eventual phase out by 2025

Organisation	Recommendation	Comments
		- Government review of the GMA's role, scope and purpose - review of external survey contractors, audit of associated risks and conflict of interest registers - review of hunter speecies identification testing and species listing processes - review of duck hunter requirements - review of impacts of duck hunting on surrounding wildlife - survey of duck hunting sites.
Victorian Duck Hunters Association (VDHA)	**Full season**	VDHA recommends a full season in 2023. VDHA bases its position on climate conditions that, it claims, has led to multiple breeding events and a significant increase in birds available for harvest. VDHA considers the IHM to be inconsistent and rejects this process from being used to inform season arrangements.

5 January 2023

Mr Graeme Ford
CEO - Game Management Authority
GPO Box 4509
Melbourne VIC 3001

Submitted by email: graeme.ford@gma.vic.gov.au
cc: daniel.taneski@gma.vic.gov.au simon.toop@gma.vic.gov.au

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 model[1] ("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 Ministers[2] 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 surveys[4] (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 species[5], 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.

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[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 2021[7]. 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) 2012[8] 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 <u>at its lowest point on record.</u>**

For many years GMA quoted a year 2000 report[9] (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 report [10] 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 years*[12]. ***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 review[14] 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 uncertainty[15]. 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 rebound[16]. 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 stating[17]:

"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.

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[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 enforcement[18], 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 based[20]. 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 model[21]. 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*'

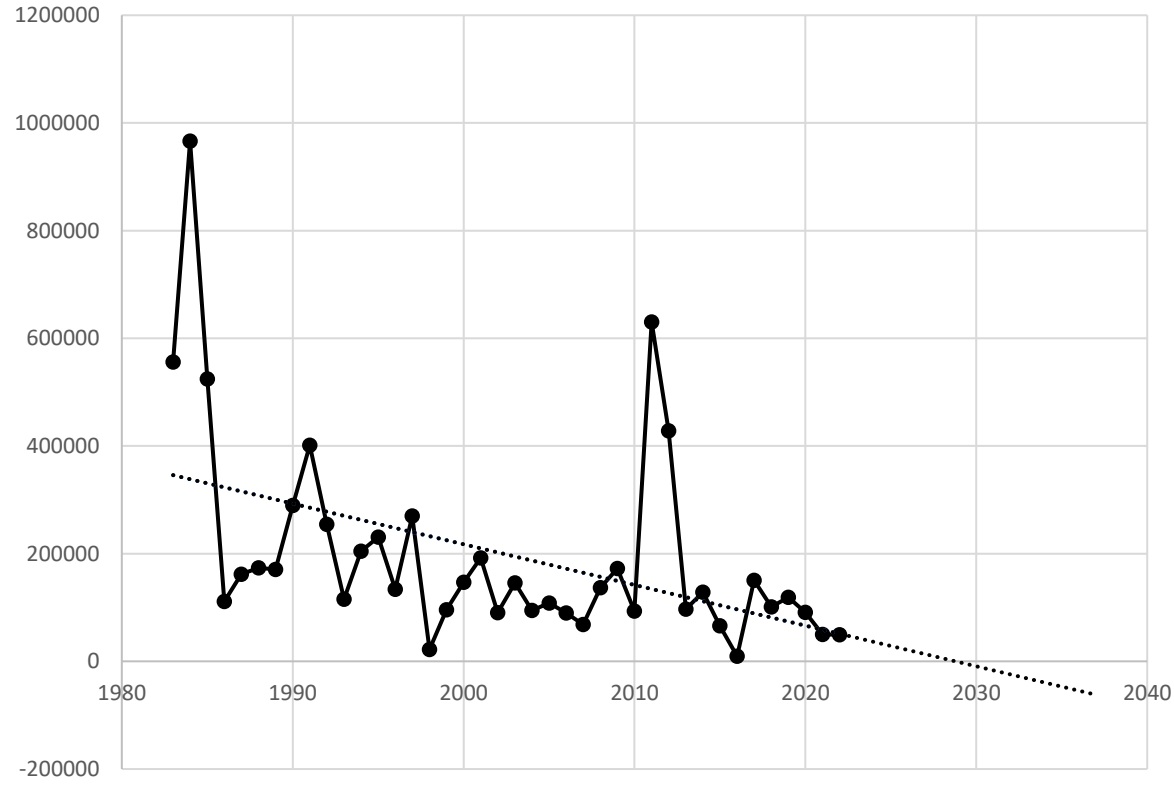
As in previous years, this GMA document focuses extensively on any type of water – rainfall, streamflow, water catchments, La Nina weather patterns, predicted rainfall and predicted streamflow. It also focuses on the boost of abundance and breeding in "waterbirds" – a category that includes non-game 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*:

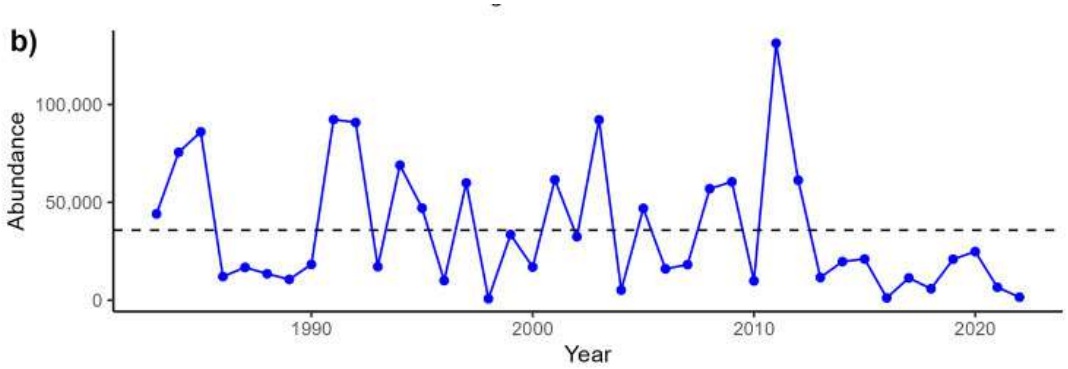
Fig 2: Game Duck abundance index (1983 - 2022) - EAWS data



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.

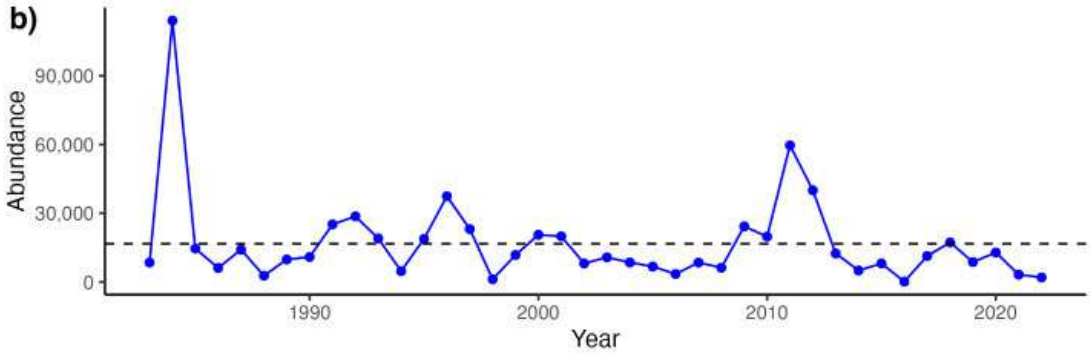
Consider the EAWS 2022 graph (p21) for Pink-eared Duck:



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".

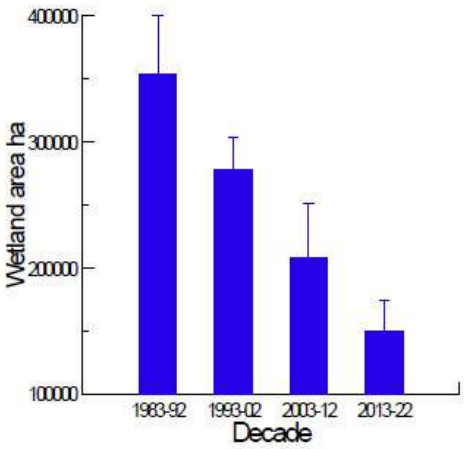
On p23, *Considerations 2023* presents a bar graph comparing abundance of game ducks in Victoria (EAWS flight paths for Band 1 and Band 2) for 2022 and 2021. **Despite similar or improved habitat, these Victorian abundances have been more than halved in 2022, contradicting the common belief that habitat 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, GMA[22], 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 regulations[23] (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 Herald[25]. It was also featured on the Facebook page of Wildlife Victoria[26] (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/wildlifevictoria/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.

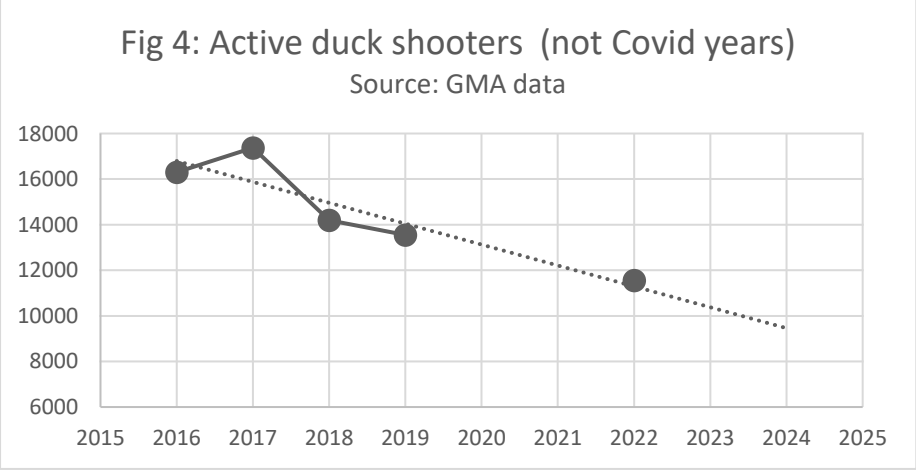
GMA may claim the KK model and the new Victorian duck surveys ensure "sustainability" but real-world observations show this to be false. Game duck populations continue to decline while non-game species have responded well to improved conditions.

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 <u>independent</u> 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 and4B 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 accuracy[29]. 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 2020[30] 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 rate[31] 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 season**[32]. 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 knowledge[34] 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 practice[35]:

"... 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."

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[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 Minsters 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.

<u>Dismissing issues raised</u>

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 review[36] - 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 Teal[37] – 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 confirmation [39] 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 Museum[40]:

"*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 season[41]. 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, Haugaard and Madsen, Ecological Indicators 80 (2017), 242-246. Refer p243.

Coalition Against Duck Shooting

3 January 23

Submission to the GMA regarding the 2023 duck shooting season

On the opening of the 2022 duck shooting season at Lake Bael Bael, with only about 50 duck shooters present, they still illegally shot protected and threatened species (Australasian Blue-winged Shovelers and Hardhead). Yet even with a contingent of GMA compliance officers present, they were unable to protect those threatened species. The GMA compliance officers were also unable to protect the breeding Swans that had been sitting on eggs. These protected birds were frightened off their nests by the shooting and didn't return (see attachments).

At some point of time, the Game Management Authority must be held accountable for recommending that shooting seasons go ahead. These recommendations unleash heinous gun violence and cruelty crimes against Australia's sentient native waterbirds, just for the recreational enjoyment of duck shooters who make up only 0.2 per cent of Victoria's population.

Last year, two game species were removed from the game list and were put straight onto the threatened species list. If these native waterbirds had been removed from the game list 10 years ago, they wouldn't be on the threatened list today. There are three other game species that will also soon wind up on the threatened list.

With climate change and illegal shooting, including overshooting of native game birds and the illegal shooting of threatened species, duck shooting must be banned in Victoria as it has been in three other progressive Labor states.

Laurie

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Fearful swans abandon their nests at start of duck-shooting season

The Age, By Miki Perkins and Rachel Eddie
March 18, 2022

Black swans have abandoned their eggs after being scared away by the sound of gunshots on the opening day of Victoria's duck-hunting season.

Animal rescuers who have been working at Lake Bael Bael, near Kerang in the state's north, say the parents had flown from at least six black swan nests, leaving their eggs behind.

Play Video

Play video
1:37
Gunshoots frightened black swans from their nests
Wildlife rescuers at Lake Bael Bael near Kerang, in Victoria, say gunshoots have frightened black swans and forced them to abandon five or six nests.

lost an opening weekend of the hunting season.

Also this week, two blue-winged shoveler ducks and one hardhead duck – all endangered species – were either killed by hunters or had to be euthanised.

Bird rescue volunteer Gavin, who did not want to use his surname for professional reasons, said before the duck hunting season began on Wednesday he saw swans sitting on the nests at Lake Bael Bael.

An endangered blue-winged shoveler duck- being examined by a Wildlife Victoria vet. It was later euthanised.

But when he went back on Wednesday morning, there were about 15 hunters in the same area of reeds as some nests, and the swans had flown.

“I went down to have a look when I could and all the nests were empty,” he said.
“We saw one parent circling over where the nests were and calling, frantic, she looked stressed. She did come down, but the shooters ended up entering the water not long after, and she took off.”

Wildlife rescuers said the eggs in one nest had been scattered into the water.

One of the abandoned black swan nests at Lake Bael Bael, near Kerang.

Lisa Palma, chief executive of Wildlife Victoria, said her organisation had sought expert advice on the nest abandonment, and were advised that after a few hours without a parent sitting on the nest, there was a high likelihood the swan eggs would be unviable. Black Swans are not an endangered species.

“There are multiple bird species at this wetland and with the duck season we’ve observed birds taking off in fright every day when the guns go off in the morning,” Ms Palma said.

“We are concerned because other species of birds are at the site which are threatened species.”

A total of 19 ducks have been treated at Wildlife Victoria’s veterinary tent since Wednesday. Although it is against the law to shoot birds and leave them, lead vet Dr Natasha Bassett has seen birds each day that have been left to die. The majority showed shotgun pellets inside their bodies.

Earlier this week, Premier Daniel Andrews resisted calls to end duck hunting and urged hunters to follow the rules.

“Some of us play golf. Some people go shooting. That’s a choice they are free to make, but there are rules and I do see some reports the rules seem to have been broken,” he said on Thursday.

Justice Helen Rofe dismissed the interim injunction filed by the Coalition Against Duck Shooting on Friday afternoon.

RELATED ARTICLE

Exclusive

The Game Management Authority, Environment Minister Lily D'Ambrosio and Agriculture Minister Mary-Anne Thomas were named in the failed application.

Jo Soren, for the coalition, argued the authority and ministers were in breach of Commonwealth environment and conservation laws by allowing the full 90-day game season to go ahead.

She said waterbird species had not recovered from the recent drought, and birds that were not shot were still displaced from critical habitat and could be traumatised by the noise of gun shots: "The birds don't get a chance to bounce back."

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Miki Perkins is a senior journalist and Environment Reporter at The Age.Connect via Twitter or email.

Rachel Eddie is a Victorian state political reporter for The Age. Previously, she was a city reporter and has covered breaking news.Connect via Twitter or email.

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'Terrible tragedy unfolding': Threatened species gunned down during duck season

Michael Dahlstrom
·Environment Editor
17 March 2022·

WARNING - GRAPHIC CONTENT: Protected birds threatened with extinction have been gunned down by shooters as Victoria begins its controversial duck season.

Photos supplied by the state's peak rescue charity Wildlife Victoria show a number of ducks left dead or dying since the season began on Wednesday.

Among the dead are blue-winged shovelers and a hardhead, species which the state government has this year explicitly warned are "listed as threatened due to declining populations".

Wildlife Victoria have catalogued the deaths non target species including a blue-winged shoveler, an Australasian coot and a hardhead. Source: Supplied

Wildlife Victoria's CEO Lisa Palma warned she is seeing evidence of a "terrible tragedy unfolding".

She is leading a triage mission to care for injured ducks left at Lake Bael Bael in Kerang, near the NSW border.

“Duck shooting is horrendous given the ever diminishing state of our water bird population and the fact that many of the shooters can’t differentiate between one species over another,” she said.

“Surely the ducks that we have witnessed coming through Wildlife Victoria’s triage facility are evidence enough to confirm the fact that duck hunting is indiscriminate, cruel and senseless.”

Duck season 'out of step with community'

Under Victorian Government guidelines, shooters have a “bag limit” of four ducks a day and must make “all reasonable efforts to immediately recover” those they have shot.

Despite this regulation, Wildlife Victoria vet Dr Natasha Bassett has examined a number of dead and injured birds retrieved at Kerang.

As a medical professional, she is frustrated having to administer treatment to preventable injuries, inflicted by a practice she describes as “out of step with community standards”.

“It’s disappointing the government hasn’t done the right thing and ended this across the state,” she told Yahoo News Australia.

“These are species protected throughout much of the year and then left to be shot with not enough oversight.”

Authorities investigating death of protected species

Duck hunters must score 85 per cent on a waterfowl identification test before they are granted a license, and must correctly identify all non-game species.

Those who ignore guidelines face penalties including official warnings, infringement notices, prosecutions and licence cancellations, however Game Management Association (GMA) is yet to confirm how many hunters they have sanctioned.

They advised Yahoo News Australia they are aware of an incident involving a threatened species recovered during the 2022 season.

"The GMA has identified a person who is alleged to have shot a threatened species. Enquiries regarding the matter are ongoing," a GMA spokesperson said in a statement.

"Illegal hunting and irresponsible behaviour will not be tolerated."

Amid ongoing concern from wildlife lovers that hunters are continuing to leave birds dead and dying in the water, the Victorian Government has initiated a duck wounding reduction action program.

Known as the Sustainable Hunting Action Plan (SHAP), it will aim to educate hunters about how to reduce wounding of birds.

GMA confirmed they are already running a communications campaign called Respect: Reduce Wounding to tackle the issue.

Victoria Government stands firm on duck season

As the world faces a biodiversity crisis, many conservationists believe Victoria's duck season should end.

Wildlife Victoria have administered treatment to ducks with gunshot injuries at Kerang.
Source: Supplied

With numbers of duck shooters believed to be declining, pressure has been growing on the Andrews Labor Government to phase out the annual slaughter.

Game Management Authority
Level 2, 535 Bourke Street
MELBOURNE Vic 3000

Duck And Quail Hunting Australia
Victorian Duck Season Submission 2023

Duck and Quail Hunting Australia are once again privileged to be able to make a Victorian duck season submission for the 2023 season.

Summary:
The bureau or meteorology (BOM) have stated that, Victorian's year-to-date rainfall total for January to December was around 829 mm, which was 35% above average and the highest since 1974.
Statewide, rainfall was around 96% above the 1961-1990 average.
The November average of 52.0mm was the fifth highest on record and the highest November rainfall since 1954.

With record breaking rainfall over the state for the past 12 months, it has made it a prime breeding season for all ducks species, with most duck species reported to have had 2-3 breeding cycles over the past 12 months.

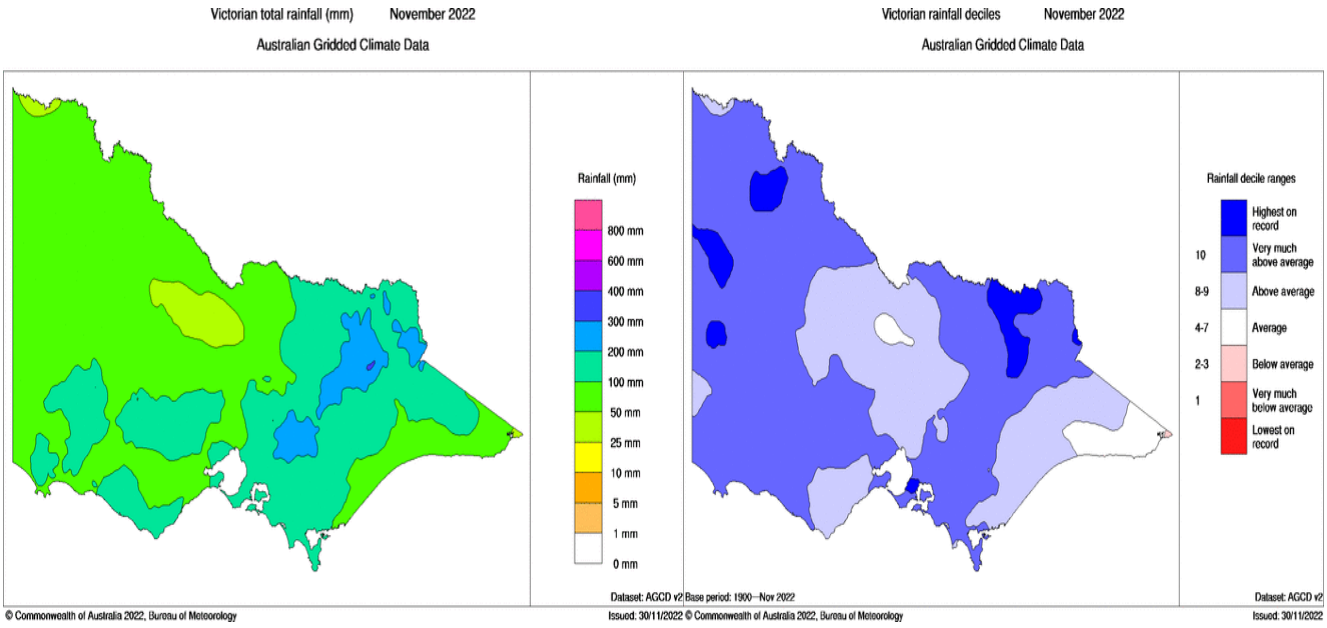
"The Victorian duck season is prescribed under the Wildlife (Game) Regulations 2012 to occur every year between the third Saturday in March and ending on the second Monday in June.

All game species and season lengths in Victoria are legislated, yet the duck season is the only one that undergoes a process of annual submissions and relies on the Ministerial review.
The duck season needs to stay as to what is ***legislated.***

The Interim Adaptive Harvest Model Specific seasonal arrangements for duck hunting in Victoria are set using the Interim Adaptive Harvest Model (IAHM). The IAHM and a move to a mature Adaptive Harvest Model promise to deliver stable, full-length seasons, with a variable bag limit based on seasonal conditions. Both the IAHM and the AHM are not what's currently legislated.

-Hunting in Victoria, including duck and quail hunting, is a legal and legitimate activity carried out by tens of thousands of Victorians each year. It brings hundreds of millions of dollars annually into the Victorian economy.

-If the duck season is to be altered as to what's already legislated, it should be announced in a timely fashion 2-3 months before the season commences to allowed hunters and business owners, time to prepare for the up coming duck season.



http://www.bom.gov.au/climate/current/month/vic/summary.shtml

Conclusion:
With Victoria having record-breaking rainfall in the past 12 months making it prime duck breeding conditions. These prime breeding conditions will continue well into next season with more heavy rainfall still predicted to fall.

Duck and Quail Hunting Australia strongly recommend for a
-Full 12-week duck season,
-Commencing at 7am on the traditional third Saturday in March until 30 minutes after sunset on the second Monday in June,
-All the 8 Game species to be hunted throughout the season.
-Ten bird per day bag limit including an additional two Blue-winged Shoveler.
-Plus an additional 5 game species ducks to be added to the bag limit due to hunters having a heavily reduced bag limit the past few seasons, yet hunters are still having to pay full game license fees, which are bases on having a full legislated duck season.

Rafic Dimachki
Duck and Quail Hunting Australia

23 December 2022

Ducks in Flight Geelong **04/01/2023**
Submission and recommendation for 2023 Victorian Duck Season.

The following submission and recommendation for the 2023 Victorian Duck Season is made on behalf of Ducks in Flight Geelong and its 417 members.

Background – Ducks in Flight Geelong is a network of enthusiastic duck hunters. Originally comprising of local Geelong duck hunters, our network has expanded to include people from all over Australia as well as North America, New Zealand and Europe. Our members have a diverse range of backgrounds and interests but a shared love of the outdoors, waterfowl, hunting, wetlands and conservation.
This submission and recommendation have been made following an assessment of the Considerations for the 2023 duck season from the Game Management Authority (GMA) and input from our members including their own personal observations from on the ground.

Recommendation – A full length 12 week season with a bag limit of 10 ducks per day comprising of all 8 Victorian Game Bird species of which no more than 2 should be Australasian Shoveler.
The season should commence on the 3rd Saturday in March (18th) at Sunrise and conclude 30 minutes after sunset on the 2nd Monday in June (12th).

Reasoning – Our members report improved wetland conditions. This is supported by evidence in the considerations showing Spring rainfall across Eastern Australia was well above average, as was the 2022 totals and the 4 year average showing the majority of Eastern Australia receiving average or above average rainfall. The considerations also show soil moisture, runoff and water storage levels are all high.
Our members have reported prolonged and widespread breeding.
Our members have observed game duck populations to be widely dispersed across a diverse variety of wetlands.
Victoria provides vast volumes of refuge and sanctuary for our game bird populations. This incorporates both public and private waterways and wetlands where hunting is not permitted. This refuge provides a safeguard for game bird populations.
Increased wetland availability has lead to wider dispersal of game birds. Birds being less concentrated means hunters are less likely to be concentrated too, leading to less pressure on game bird populations.
The Eastern Australian Waterbird Survey (EAWS), by its own admission only provides and Index of waterbird abundance, not a total count and of its 3 transects within Victorian borders, 2 barely intersect the state at all. As a result our members feel it is given too much significance in the Interim Adaptive Harvest Model (IAHM). There is no recognition for game birds or wetlands that exist outside of the EAWS area.

Further Recommendations – Our members are concerned about the ongoing harassment, interference and intimidation they are facing from coordinated activist groups. There are genuine concerns that these activists have been empowered in recent years following their inclusions as stakeholders, being given special considerations as “wildlife rescue” and their use of both Game Licenses and in many cases Firearms Licenses to avoid prosecution for breeching section 58B, 58C, 58D & 58E of the Wildlife Act 1975. Our members feel there needs to be a much improved focus on the following areas -
The sale of game licenses to those who DO NOT intend to use it for the purpose of hunting.
The use of firearms license for purposes other than the genuine reason they were obtained for.
Protecting duck hunters right to hunt without harassment, disruption and interference from activists.

Regards,

Duck in Flight Geelong.

FGA Comments on the 2023 Duck season considerations.

Introduction.

In 2023 GMA have again sought "written comments from key stakeholders" regarding season setting for the upcoming 2023 Victorian Duck Season.
This is despite the fact that more than a year ago – prior to the setting of the 2022 season stakeholders were told we could expect an interim harvest model that was transparent, science based and that would remove the subjectivity and politics from the process, and ensure *bag limit and season length determinations are made solely based on the sustainability of Victoria's duck populations* of setting duck season every year.
This has not been delivered.

FGA have concerns that the regulators may have lost sight of the fact a full legislated season should occur in all instances, unless there is a clearly defined and identified reason to modify that season.
Until a review and update of the current legislation occurs – The Wildlife (game) Regulations 2012 still maintains that the Victorian duck season should:
Commence from the beginning of the third Saturday in March in each year until 30 minutes after sunset on the second Monday in June in each year.
And should allow the daily harvest of:
A maximum of ten ducks.

This season arrangement can be reviewed, and modifications may be implemented by the ministers "in exceptional circumstances".
The interim harvest model was touted as a way to "inform" the decision of if a change was necessary – and what that change might be, however it seems to have completely dislodged the premise that a full legislated season exists.
Instead of having a full legislated season unless there are exceptional circumstances, we are now in the position where an interim model is being used to "inform" a board, that will then make "recommendations" to a department, that will then "advise" three different ministerial positions – who will then set a season, with no reference back to the legislated season length or Bag limit.

There seems to be a desire to trend back towards the previous fundamentally flawed and subjective decision making process.
Lack of transparency is continuing to erode trust and confidence that hunters hold in the Game Management Authority as competent regulators.
There is a high risk of further disengagement of the hunting community and hunting organisations with this process.

Field & Game Australia (FGA) maintain support for the stated objectives of a move to an

Adaptive harvest model (AHM), and while we have concerns over the current interim harvest model (IHM), we will continue to be involved wherever possible in the development of a true adaptive harvest model.

FGA is satisfied that Adaptive Harvest Modelling is the world best practice to maintain the sustainability of well-regulated and ethical hunting activities, and should be the focus moving forward.

Any new model should therefore be clear that in the first instance the outcome is always a full legislated season, unless downward modifications are required for scientific (not emotive or ideological) reasons.

FGA are supplying these comments to represent members and outline what we believe should be the key considerations leading into the setting of a 2023 Victorian duck season. We retain the position that the previous season setting process has been fundamentally flawed, and is over reliant on poor science inputs primarily from the EAWS, the IHM that also relies heavily on these inputs falls into the same category.

Comments on "Considerations for the 2023 Duck season (20 Dec 2022)".

Rainfall:
Rainfall in 2022 has been significant and widespread. Duck Populations respond rapidly to this with dispersion and breeding. Eastern Australia is a significantly better habitat for breeding waterfowl in 2022 than it was in the previous 2 years. Expectation would be that this is reflected in actual population figures. This should therefore lead to an increase in the permissible harvest over the previous year. Exceptional conditions produce exceptional dispersion as evidenced in the EAWS 2016 and 2010. Naturally game bird abundance across EAWS bands are reduced via this dispersion

Rainfall stats stated in considerations document:
"Second wettest spring since 2010 – 10th wettest since records began – any rainfall deficiencies for yearly averages are cleared" -
"Multi-year rainfall deficiencies which originated during the 2017-2019 drought have been almost entirely removed from the eastern states…"

Catchment levels:
Many catchment areas in Eastern Australia are full – with many additional areas flooded for the first time in a decade. As well as this – spring and early summer rainfalls have continued to maintain high water levels and flood outlying areas meaning water is not just confined to catchments (a key driver for waterfowl breeding).
The Murray Darling Basin in particular – recognised as a critical area for waterfowl production - is not only full but storage volumes are at 103%!
This creates ideal conditions for Waterbirds to breed and produce multiple successful clutches of young in a single year. Current modelling does not seem to allow for "compound breeding events" and their significant increase in the corresponding populations come March the following year.

Catchment and soil moisture stats stated in considerations document:
"Water storages in Vic and MDB mostly at or above full capacity"
"soil moisture as at December showed an improvement over much of eastern Australia from 2021 to 2022, At 10 December 2022, root zone soil moisture was above average for most of Australia, except for parts of Western Australia, reflecting very much above average spring rainfall."
"Runoff impacts the availability of water in the wetlands and the health of riverine systems. It has a direct influence in the creation and maintenance of waterbird habitat. Year-to-date runoff for much of eastern Australia and parts of South Australia has ranged from above average to very much above average."
"In 2022, Australia's water storages increased by 14.5% from the same time last year, from 72.1% to 86.6%".
"The total (Melbourne and Regional) Victorian water storage levels are currently at 96.8% compared to 85.4% last year.
Storage levels have increased by 11.4% from this time last year."

Eastern Australian Waterbird Survey (EAWS):
While EAWS covers the whole of Eastern Australia (averaging out many results) – of note in 2023 is that Band 3, and 5 of the EAWS (Northern Vic/Southern NSW) contained most of the waterbird activity – and over 65% of the total waterbird numbers counted. This should be a factor when setting a Victorian season. Waterbird numbers in Qld should have less impact than Southern NSW and Vic. The averaging of EAWS data across all of Eastern Australia, as well as the other well documented deficiencies of using EAWS data in season setting is the reason FGA would like to see the complete phasing out of EAWS data from season setting process'.
For example: A count of only 38 Chestnut teal is at the complete opposite of ground observations and confirms inability of this survey to correctly identify and determine abundance of game species, additionally the EAWS produces zero abundance of Pink Ear below band 4, yet on the ground observation indicates healthy abundance. On the positive side of the scale the EAWS correctly identifies the dispersion across nearly all bands of the survey of the Grey Teal; the game species that most rapidly multiplies in boom cycles.
It is stated in the notes of the EAWS itself that the abundance index must be considered in context with the distribution of birds, habitat availability and distribution, climatic forecasts, concentrations of birds.
Increased habitat availability, distribution and widespread breeding all have downward pressure on counted birds – despite the fact they all have net increases on actual population. Historical data also confirms this – EAWS' indices are simply not accurate as an abundance estimate during boom cycles and when waterfowl are widely dispersed.

EAWS Data of note in 2022:
"The wetland area index is above the long-term average."
"The majority of the available habitat occurs from northern Victoria to northern NSW (bands 2-5).
Pasture condition is a coarse indicator of potential feeding habitat for grazing species, such as Wood Duck and Mountain Duck, and nesting habitat for ground-nesting game ducks*.
*(Blue Wing Shoveler)

Over the last 12 months, pasture growth throughout much of eastern Australia has increased

substantially from 2021.
Pasture growth in almost all of eastern Australia was average to extremely high, with most 2021 deficiencies removed.

The index of waterbird abundance (187,175) **increased by 96% from 2021** (95,318)

The EAWS breeding index (all species combined) increased an order of magnitude from the previous year and was well above the long-term average and the second highest recorded.

More accurate population data and considerations for Breeding:
FGA are very interested to see what the Victorian Game duck abundance estimates/helicopter surveys show. A key flaw in current abundance estimates is that when there is a lot of available habitats across all Eastern Australia – birds spread out and become harder to count. A satisfactory model for multiplying actual counted numbers when birds are widely dispersed is yet to be developed – counting individuals and multiplying by water surface area seems to not be accurate given that all indications are that birds are multiplying extremely successfully – but populations are shown as trending down!
There is also a Waterbird breeding index in the EAWS. In 2022 this index was the second highest on record – this will clearly influence population in 2023 – but seems to be overlooked in the IHM.
Indications are the helicopter counts are complete – why does modelling/release of this data take so long?

Concerning the Interim Adaptive Harvest Model:
FGA has grave concerns that the interim harvest model adopted is focused too heavily on Harvest Reduction, not maintaining sustainable harvest levels backed by existing science. There are also concerns that inputs are being changed or selected based on what inputs will give the lowest possible outcomes – not impartial or un-subjective data processing.
We have concerns over the implications from this for a permanent Adaptive Harvest model.

An independent review of the settings used in the interim Harvest Model (Analysis of settings used in Interim Model used to inform hunting arrangements for 2023 Prepared by: Paul Brown – Principal consultant/ecologist), used to inform hunting arrangements for 2023 has found that making small alterations to just two apparently arbitrary settings deliver significantly different harvest results - with no apparent detriment to the scientific sustainability of the model.
The IHM does not contain any indices for breeding, it's a predictive model so given it's nature it should also include an Aps score for breeding.

The IHM seems to be overtly influenced this year by NSW data, the NSW water abundance for the Murray Darling Basin (MDB) is excluded from some calculations in the IHM this year, instead the Lake Eyre Basin (LEB) score is used (which was lower – but still has flood water transiting to it). As per above the MDB is in flood and water surface area is at levels not seen since the 70's. How could this have been overlooked or not included? The NSW DPI helicopter data count this year was also flawed (as indicated in the GMA recommendation) and it should have been corrected in the IHM.

While FGA are aware of the extensive knowledge of the scientists who developed the IHM (Klassen and Kingsford) - FGA are of the view for the modelling from both the interim and permanent model to be credible that it should be independently peer reviewed by one or more appropriate adaptive harvest modelling experts.

Peer review could consider factors such as:

- assumptions or "arbitrary" settings within the model.
- three-year lag times or averaging of water data – does it really take 3 years for duck populations to recover from drought? Conversely – should bags be restricted faster after only one dry year?
- the model switching water basins it is utilising for water surface measure namely NSW not even using MDB surface area this year though it did the previous year.

Agricultural impacts:
In past years there were species specific increases for taking specific species that will otherwise cause damage to agriculture and infrastructure.
FGA would advocate for the same to be implemented in 2023.
Specifically – Given the noted exceptional conditions for grazing ducks in 2023 - Consideration should be given to allowing recreational hunters to take an increased take of Wood ducks that will otherwise need to be controlled by farmers anyway – thus increasing utilisation of our wild game resource.

Economic impacts and Hunter Participation:
Hunter engagement in this model is exceptionally low.
The Game Management Authority needs to be completely clear on communicating direct to hunters on why their modelling is recommending a 60% decrease in the legislated bag limit when seasonal conditions have been so good for ducks in 2022.

FGA would encourage the Game Management Authority to also consider the barriers they are placing before hunters – and the effect on the Victorian Community.

In his independent review – Paul Brown states:
Victorian duck hunters' attitudes to highly restrictive regulations imposed when required for resource sustainability reasons have not been surveyed. North American studies of the effects on duck hunter-behaviour of imposing highly restrictive regulations such as low bag-limits, show that compliance rates reduce (Martin and Carney 1977), and participation-rates drop (Haugen et al. 2015). Reduced compliance and participation are undesirable for both the resource-management and hunter-advocacy stakeholders.

Victorian data exists that clearly correlates a decrease in hunter participation, and significantly – a decrease in hunter travel/spending in regional communities in years where low bag numbers are set.
Hunters cannot reasonably be expected to travel for hours and stay in regional communities (where their spending has significant impact) to harvest 4 birds.
Hunters will still hunt – but they will do so closer to home, and more sporadically across the season. Victorian towns like Donald and Boort – that historically saw massive influxes of hunters on opening weekends, simply miss out on the hunter spending.

Conversely – Hunters in northern Vic will cross the border and hunt ducks in NSW (under pest mitigation quota's) where restrictive bag limits do not apply – and spend their money in NSW.

There has previously been a push from some "stakeholders" to discount these economic factors, and claim spending is either over-stated or insignificant.
Rural towns and business' that are struggling to survive would likely disagree.
If hunters cant hunt – the spending will go elsewhere – and will not still be spent in those communities.

Other seasonal considerations:
FGA would like to see due consideration given to the data used for modelling, and possible late season adjustment.
The current modelling utilised average water figures over a period ending 31/10/2022.
Victoria has seen sustained wet conditions in November and December of 2022, and exceptional conditions for ducks – FGA have had numerous reports from members of continuous breeding events since august 2022.
In years where water peaked in October and then receded the seasonal conditions would not have seen this level of breeding – and a much smaller population of young birds would be around in March of 2023.
We have seen this historically in years such as 2010/2011 and again in 2016/2017.
The model seems to be deficient in allowing for these boom conditions. While appreciating the constraints of aiming to have the season announced in December, there should be consideration given to ensuring ministers are aware of the additional water/breeding conditions – and adjustments made to increase the daily bag if it has been unduly restricted.

Commitments were made under the Sustainable Hunting Action Plan to ensure timely season announcements – This has not been delivered, and we seem to still be discussing a season announcement not likely to be delivered prior to February 2023!

FGA Comments on overall season setting parameters and future direction:

FGA and its members are concerned that despite near perfect waterbird breeding and habitat conditions in 2022 – the indications are that the GMA will again propose heavily reduced bag limits in 2023 - despite the climatic improvements. This causes severe concern around the current and future models being built to unnecessarily restrict seasons when a full legislated season would otherwise have been declared.

Closing points/Conclusion
Key areas of concern/comment on the GMA's 2023 Duck season considerations:

- IHM and GMA are too focused on reducing harvest
- Heavily reduced Bag limit recommendation in a year of exceptional duck breeding seems counter-intuitive
- Lack of apparent transparency in why the IHM would give the same season recommendations (bag limit) in 2023 as was given in 2022 given the improved climate.

- Ongoing concerns on not fit for purpose data being used to underpin the IHM model (EAWS)
- Victorian helicopter data (ARI) counts still not included in any modelling
- Failure to deliver on key timeliness goals around season modification announcements
- Lack of confidence that a full legislated season could be achieved under current IHM
- Concern over impartiality in development of an ongoing adaptive harvest model
- Failure to deliver on key timeliness goals around season modification announcements
- Harvest data from 2022; estimates of hunters participating, actual licence holder numbers and most importantly the estimate of hunter days at 8.5, twice the long term average in a season where fuel prices and reduced bag limit heavily influenced hunter behaviour, is erroneous. We would like to see how that estimate was reached and evidence of influencing factors.

Field & Game Australia are genuinely invested in the sustainable management of our natural resources – especially in our native waterbirds. No "stakeholder" is more invested in ensuring the long-term sustainability of native ducks than hunters.
FGA have genuine concerns about a Game management model that is more about limiting hunters than about maintaining the sustainable use of a natural and renewable resource.
Field & Game welcome the introduction of a robust Adaptive Harvest Model – but as before is continuing to insist this model must be science based and must remove the political and subjective inputs to season setting. This includes inputs within the model itself!
Good regulations encourages participation and compliance!

The biggest challenge continuing to face native waterbirds is habitat degradation and feral predation. Existing science supports that hunting has little to no gross effect on the sustainability of duck populations, but hunters do have a positive impact on ensuring habitat availability and reducing predation. Despite what some would believe, duck hunters are not the enemy of ducks!

FGA believes that with seasonal conditions in Victoria right now as good as they are – there should be no requirement to modify the 2023 season length or bag, and we look forward to a timely announcement of any modifications intended to be made to the legislated duck season in 2023.

Geelong Duck Rescue

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Submission for the proposed 2023 recreational duck shooting season

Geelong Duck Rescue

Our organisation was established in 2010 in response to the concerns of local residents and visitors for the welfare of native waterbirds and other wildlife in the Geelong and Western Victoria Region. Whilst Geelong Duck Rescue (GDR) has been in existence only 13 years, individual members have been involved in wildlife rescue and rehabilitation for much longer.

GDR has sought to work with other community groups, authorities, residents, local council, local government,) veterinarians and other wildlife rescue groups to protect and assist wounded wildlife and to monitor for illegal activities including (but not limited to) shooting before and after legal times, shooting protected and non-game species, harvesting above daily bag limits, and cruelty offences.

Members of GDR have a comprehensive knowledge of wetlands and waterways in the Geelong region gained through many hours spent both during, and outside of, the 'season'. The continuity of time spent in one area also allows for a unique comparative perspective on water levels, bird numbers, climatic conditions and shooter behaviour over the years.

We thank you for this opportunity to provide our submission for consideration during discussion of the proposed 2023 recreational duck shooting season.

Introduction

Geelong Duck Rescue does not support the recreational duck shooting season in Victoria (or elsewhere), due to the inherent cruelty of the activity. However, this

submission will not be addressing this point; it will instead focus on considerations for the decision-making process regarding calling a duck season in Victoria for 2023.

We will address the declining bird numbers in our state and across Eastern Australia, the accuracy of the Interim Harvest Model and the reliability of the methodology used for data collection to support decision-making. We will also discuss the impacts of recent floods across Victoria, considerations around climate change and biodiversity and supporting 'one health' policies. Finally, we will consider the ability of authorities to adequately monitor duck shooting across Victoria and the impacts of restricting access to wetlands and waterways across the state on regional communities, who are desperate to welcome back tourism dollars after the COVID-19-restriction years.

We believe it is irresponsible to hold a 2023 recreational duck shooting season in Victoria. It risks the long-term viability of duck populations, increases the risks of biodiversity loss, and has negative impacts on already struggling regional communities. We therefore recommend that the Game Management Authority (GMA) supports a moratorium on the 2023 duck season.

Interim Harvest Model (Klassen/Kingsford)

The Interim Harvest Model (IHM) is a new 'tool' to guide and inform decision making, that claims to be 'a conceptually simple management framework'[1] dealing with a topic that is anything but simple.

In fact, from their own description of the background of the modelling[2], the Klassen/Kingsford IHM appears to be nothing more than a political tool to cater to the desires of shooters, and to make the calling of a duck season (despite declining numbers of water birds) 'defensible'[3]

Considerations when assessing the accuracy and usefulness of the IHM

"Firstly, there is a need to reiterate that all proxies, as well as estimates of water in the landscape are prone to error. Also, the decisions in relation to setting of annual duck hunting regulations and seasons may be influenced by a range of factors. Thus, we should caution against naively expecting highly clear-cut patterns of index values for the various bag-limit categories."[4]

1. The GMA has a vested interest in creating and using a model that will bias towards finding justifications for calling a season, as the GMA draw their

[1] https://www.regionalvictoriansotds.com/_files/ugd/3f2134_d717d9463a69459ca0247d4427702dec.pdf
[2] https://www.regionalvictoriansotds.com/_files/ugd/3f2134_d717d9463a69459ca0247d4427702dec.pdf
[3] https://www.regionalvictoriansotds.com/_files/ugd/3f2134_d717d9463a69459ca0247d4427702dec.pdf
[4] https://www.regionalvictoriansotds.com/_files/ugd/3f2134_d717d9463a69459ca0247d4427702dec.pdf

continued existence and therefore employment, from the continuation of the activities of recreational shooting. It follows that advice from the organisation of the viability of a season cannot be trusted if that body's viability is intrinsically tied to perpetuating the activity.

The IHM has only been in existence since 2021 and is therefore largely untried and untested. The model has not been reviewed by any independent panels, nor has it been peer reviewed. It has only been vetted by organisations who have a vested interest in promoting recreational duck shooting.

2. The indices used make sweeping generalisations across the state and make no allowances for the vast differences in climatic and environmental conditions that affect waterbirds within different regions of the state.

3. The IHM never recommends cancelling a duck season, which should be one of the potential recommended outcomes if the purpose was to genuinely consider waterbird populations and breeding, now and in the future. At best, it recommends a bag limit of 1, therefore this is not a model to guide decision making on whether a duck season should occur, it is a highly biased model used to justify a decision on how many ducks can be killed daily.

4. There is no recognition that climate change has affected breeding cycles and therefore the recreational duck shooting season can occur at a time when there are many young birds who become orphaned when their parents are shot, which has longer term implications for waterbird populations (as occurred in 2010)

5. Relying on data from hunting bag collections on opening weekend[5] provides neither useful nor accurate data. More shooters are out on opening weekend then other weekends, authorised officers are only present at a handful of locations, of those locations with multitudes of entry and exit points only a handful of bags are checked. No authorised officers are present on the water to check and count the numbers of birds shot, killed and not retrieved, nor those shot, injured and not retrieved. In short, data from shooters' bags on opening weekends provides a contextless snapshot of an unknown portion of birds shot at an unknown portion of wetlands and counted by a known number of officers.

6. Relying on water surface area at certain wetlands ignores that different species of ducks prefer different depths of water therefore total surface area without depth analysis does not provide accurate data on duck populations, nor expected breeding habits. There is also no collection of data on types of water, e.g. creeks, rivers, dams, lakes which is also a consideration for waterbird populations and breeding.

[5] https://www.gma.vic.gov.au/__data/assets/pdf_file/0009/907245/Using-duck-proxies-and-surface-water-to-inform-hunting-arrangements-for-2023-FINAL.pdf

7. Considering the ‘unseasonable weather’ enjoyed by Victorians, using water surface estimates from 1 or 2 years ago and applying monthly shifts seems pseudo-science at best.

8. Using an ‘upward correction’ to increase the values because the NSW aerial bird counts showed a lower than average population[6] is nonsensical. The count was lower than average because bird numbers are in decline, and fabricating ‘correction factors’ to massage the numbers to a level more in line with advocating for a recreational duck season is bordering on deceitful.

9. The predicted/observed aerial survey counts in Victoria and NSW as well as the game count in Victoria, attempt to fit a linear relationship graph to data in a way that would be mocked by any legitimate statistician. Earlier it was admitted that ‘linear modelling’ of bag counts provided no ‘meaningful insight’[7], this admission needs to be extended for the remainder of this data.

10. The modelling only considers 40 ‘priority’ wetlands. Considering that the number of ‘common’ recreational duck shooting locations is greater than ten times that number, and that duck shooting also occurs on private land, this minimal representation is not sufficient to allow accurate modelling to occur.

11. The IHM does not differentiate between species, nor populations abundance of species, therefore comparing years where no game birds were restricted from being shot with years where species were exempt from being hunted skews the data for certain species and provides an uneven and inaccurate comparison of data from different years.

12. The social, economic and ecological costs and benefits are not considered in this model, yet the impacts on these are tremendous and should not be ignored in decision making.

13. *“We advocate that the model here presented be used as a tool to inform decision making for hunting arrangements; it should not be used to set hunting arrangements without due diligence”*[8]
    There is no one actually performing due diligence, and no mention of this as a consideration.

[6] https://www.gma.vic.gov.au/__data/assets/pdf_file/0009/907245/Using-duck-proxies-and-surface-water-to-inform-hunting-arrangements-for-2023-FINAL.pdf

[7] https://www.regionalvictoriansotds.com/_files/ugd/3f2134_d717d9463a69459ca0247d4427702dec.pdf

[8] https://www.regionalvictoriansotds.com/_files/ugd/3f2134_d717d9463a69459ca0247d4427702dec.pdf

14. The IHM concedes that the model is based on past data, does not consider drastic changes to influencing circumstances, recognises that there are many variables not adequately addressed, and in short bends over backwards to describe itself as indicative only and to present excuses in advance if they 'got it wrong'. How can this be used by a guide to inform our government's decision making with any degree of accuracy or confidence?

Eastern Australian Waterbird Aerial Survey 2022

The 'Eastern Australian Waterbird Survey', (also known as the 'Kingsford Survey') conducted annually since 1983 by a team associated with the UNSW Sydney, "*provides one the few quantitative, large scale biodiversity datasets that can monitor changes in the distribution and abundance of 50 waterbird species, including threatened species, and the health of rivers and wetlands."*[9]

The survey is conducted to high standards of scientific research using a consistent methodology, at the same time of year, across the same areas, and implementing a consistent counting and reporting process. Data accuracy is therefore of a high calibre and provides a strong basis for comparison and the evaluation of trends.

Duck numbers are in Decline

"Despite two successive La Niña years three major indices for waterbirds (total abundance, number of species breeding and wetland area index) continued to show significant declines over time"[10]

(Aerial Survey of Waterbirds in Eastern Australia - October 2022 Annual Summary Report J.L. Porter, R.T. Kingsford2 , R. Francis, K. Brandis and A.Ahern)

"Most game species of ducks had abundances well below long term averages, in some cases by an order of magnitude; six out of eight species continued to show significant long term declines *(OLS regression at p=0.05; variables 4th root or log transformed where appropriate Table 3). Grey Teal declined from the previous year. Australian Wood Duck was the only species above (slightly) the long term average. Some duck species declined in abundance compared to 2021 – Grey Teal, Pink-eared Duck and Hardhead."*[11]

(Aerial Survey of Waterbirds in Eastern Australia - October 2022 Annual Summary Report J.L. Porter, R.T. Kingsford2 , R. Francis, K. Brandis and A.Ahern)

Duck numbers are in decline in Victoria. This is indisputable. The scientific waterbird surveys support this fact, the observations of birdwatchers and wildlife rescuers support

[9] https://www.ecosystem.unsw.edu.au/research-projects/rivers-and-wetlands/waterbirds/eastern-australian-waterbird-survey

[10] https://cdn.revolutionise.com.au/news/j5to2cffggldmbix.pdf

[11] https://cdn.revolutionise.com.au/news/j5to2cffggldmbix.pdf

this fact, and even duck shooters support this fact. Most importantly, our most scientifically conducted, reliable and accurate study, the Aerial Survey of Waterbirds in Eastern Australia, supports this (Table 3)[12]

Table 3. Trends in abundances of game species from the Eastern Australian Waterbird Aerial Survey (1983-2022).

Species	Trend	Regression all years	Trend	Regression 1983-84 omitted
Pacific black duck	decline	r^2=0.32, p<0.001	decline	r^2=0.21, p=0.004
Australasian shoveler	decline	r^2=0.54, p<0.001	decline	r^2=0.49, p<0.001
Chestnut teal	decline	r^2=0.11, p=0.035	no trend	r^2=0.08, p=0.083
Grey teal	decline	r^2=0.26, p=0.001	decline	r^2=0.16, p=0.014
Hardhead	no trend	r^2=0.06, p=0.118	no trend	r^2=0.03, p=0.275
Mountain duck	decline	r^2=0.35, p<0.001	decline	r^2=0.28, p=0.001
Pink-eared duck	no trend	r^2=0.12, p=0.032	no trend	r^2=0.09, p=0.074
Australian Wood duck	decline	r^2=0.19, p=0.005	no trend	r^2=0.08, p=0.091

Therefore, to actively seek to kill **more** birds in a population already in decline, for no purpose other than the recreational pursuit of a few, makes no sense and is not at all in line with community expectations.

Duck shooting no longer has a social licence with a Roy Morgan poll indicating that 75 percent of people want this activity banned.

In 2021, The Arthur Rylah report indicated that numbers of pink-eared ducks and blue-winged shoveler ducks were too low to allow any 'robust' analysis.[13] In 2022, the Aerial Survey of Waterbirds in Eastern Australia showed a further decline in the abundance of pink-eared ducks. If a duck shooting season is held in 2023 (against all logic, common sense and consideration for duck populations), the only responsible course of action in regard to these specific species is to remove them from the game bird list for 2023.

Additionally, the GMA's 'Considerations for the 2023 duck season' states that Grey teal represented 18% of birds killed in 2021, the third highest species, and the Eastern Australian Waterbird Aerial Survey in 2022 subsequently shows the grey teal population to be in decline. Drawing a linear relationship between those 2 facts would be a more

[12] https://cdn.revolutionise.com.au/news/j5to2cffggldmbix.pdf

[13] https://www.ari.vic.gov.au/__data/assets/pdf_file/0029/519239/ARI-Technical-Report-325-Abundance-estimates-of-game-ducks-in-Victoria-2020-aerial-survey.pdf

valid conclusion then the many other linear relationships modelled throughout this process.

Victorian game duck abundance survey

"Total waterbird abundance in 2021 (n=95,306) decreased from 2020 and remains well below average: the 3rd lowest in 39 years."

(Aerial Survey of Waterbirds in Eastern Australia - October 2021 Annual Summary Report J.L. Porter, R.T. Kingsford2 , R. Francis and K. Brandis)

"Total waterbird abundance in 2022 (...) remained well below the long term average: the 11th lowest in 40 years."

(Aerial Survey of Waterbirds in Eastern Australia - October 2022 Annual Summary Report J.L. Porter, R.T. Kingsford2 , R. Francis, K. Brandis and A.Ahern)

The Kingsford survey has been conducted since 1983 and is accepted and highly regarded within the scientific community, as stated previously.

Coincidentally, after a number of years where results show declining bird numbers which have affected the length, and permitted bag limit of the recreational duck shooting season in Victoria, the GMA have decided to conduct their own aerial bird surveys. This appears to be a case of 'if you don't like the data, find new data that you do like'. Placing continued reliance on the GMA to provide advice indicates the Government is only seeking to justify a decision they have already made and it weakens the credibility of public institutions as a result.

"Helicopter counts of randomly selected farm dams were conducted throughout the NSW Riverina in June 2022 to determine waterfowl abundance in order to set annual crop damage mitigation destruction quotas. Unlike other years, large dams, wastewater ponds, wetlands and channels were not surveyed in 2022, which may have affected results". Game duck numbers decreased from the previous year by 16%[14]

Even when the area surveyed is smaller, missing many areas of duck habitat, includes whistling ducks which is not a game species in Victoria, and is conducted by those with a vested interest in reading higher duck numbers, the number of waterbirds is STILL shown to be in decline.

These surveys are not expected to release their results until Feb-March, after advice is provided to the Minister regarding calling a 2023 recreational duck season. They were conducted over broken periods of time due to floods in 2022, therefore there is no continuity or consistency in the results, and by their own admission have been shown as

[14] file:///O:/Tucker%20Rd%20-%20DISPENSARY/NATALIE/GDR-Geeolong%20Duck%20Rescue/2023%20season/2023-Duck-season-considerations-Final%20gma.pdf

'compromising the data obtained' Yet they are still considered by GMA when they make their recommendation for the 2023 duck season.

Using the GMA counts to inform decision making makes a mockery of any pretence that there is any scientific rigour in the decision making process when determining whether to hold a recreational duck shooting season. It is the commonly held belief by our membership, and parts of the broader community, that the only reason the GMA has opted to conduct its own aerial surveys is that it was continually embarrassed by the Kingsford report and sought 'alternative facts' to better support its agenda of continuing a duck shooting season against the scientific advice.

"The 2022 game duck abundance index was the 3rd lowest recorded in 40 years and is at 25% of the long-term average".[15]

(Considerations for the 2023 duck season Current as at 20 December 2022 - GMA p22)

And GMA STILL recommended a recreational duck shooting season!

Climate change and Environmental considerations

The Anthropocene climate change has brought multiple new and varied threats that disproportionately impact water systems. Climate change is a reality that the State Government has accepted and holds to be central to policy and decision making. It must therefore be acknowledged that when a species is identified as being under pressure, as with the long-term decline of water bird numbers and the complex threats to ducks imposed by climate change, it is irrational to place any further pressure on those species for the sake of a recreational shooting season.

The Bureau of Meteorology has released long-term forecasts indicating that the La Nina weather system is likely to slacken and transition to an El Nino effect in the coming 12-24 months[16], bringing with it a potential for some of the more severe levels of droughts Australia has seen[17]. Such conditions are incredibly punishing to the survival of native waterbirds. To pursue a recreational shooting season knowing that this is the likely future is deeply irresponsible. It smacks of a cavalier attitude of 'better kill some ducks now before they're all gone' rather than anything approaching sustainability.

Case Study

[15] file:///O:/Tucker%20Rd%20-%20DISPENSARY/NATALIE/GDR-Geeolong%20Duck%20Rescue/2023%20season/2023-Duck-season-considerations-Final%20gma.pdf

[16] http://www.bom.gov.au/climate/enso/

[17] http://www.bom.gov.au/climate/ocean/outlooks/#region=NINO34

In 2010, warmer than usual weather led to many ducks having a second clutch of ducklings, coinciding with the start of the recreational duck season. Despite common knowledge of this occurrence and attempts to request this be taken into consideration during decision-making, the duck season proceeded with a bag limit of 5 waterbirds, plus 3 additional wood ducks. The early weeks of the season were devastating as parent ducks were shot, and orphaned ducklings were left unable to fend for themselves. Wildlife rescuers worked around the clock to try and rescue ducklings and get them to care but sadly, many didn't survive.

Floods

"The 2022 eastern Australia floods were one of the continent's highest on record in some places, from February to November, primarily in south east Queensland, northern coastal New South Wales, the Central Coast and parts of Sydney"[18]

The extensive floods during 2022 can have unpredictable impacts on waterbird populations. Flooding can cause black water[19] which impacts water quality, marine life, water oxygen levels, and algae growth and prevalence. This in turn affects accessibility and viability of food sources[20] both in the water on the reduced amount of land, water depth and breeding suitability and safety and stability of nesting.

Additionally, the recent floods follow a period of years of drought, which also negatively impacts food sources, habitat, migration patterns and breeding habits for water birds.

Whilst difficult to quantify, acknowledging that floods may have an unknown impact on bird numbers for a number of years is imperative.

Enforcement

Each year the GMA has the responsibility for enforcing the Wildlife Act and the regulations as relates to the duck shooting season. Each year since the inception of the GMA, the agency has been critically understaffed rendering them unable to competently attend to, and police, the vast majority of shooting locations. With fewer than 20 of their own enforcement officers and several hundred, if not thousands of sites, there is no pretence that the officers are going to attend anything more than a fraction of sites where shooting may occur.

Additionally, the majority of wetlands available to recreational duck shooting are not observable from the waterline due to the vegetation concealing the duck shooters and

[18] https://cdn.revolutionise.com.au/news/j5to2cffggldmbix.pdf

[19] https://www.abc.net.au/news/2022-10-25/murray-darling-water-quality-warning/101572858

[20] https://www.australiangeographic.com.au/topics/wildlife/2022/03/what-are-the-effects-on-wildlife-during-flooding-and-how-can-you-help/

any potential offences they may be enacting. The vast majority of authorised officers witnessed by our members do not even attend the wetlands dressed to go into the water to seek out offences, some are not even qualified to do so as the use of wetland wading gear is an additional qualification. Many officers do not even exit their cars. The authorised officers we have generally encountered have relied almost solely on information and evidence of wrong-doing from volunteer members of the public.

In instances where the GMA have recruited additional support from other enforcement agencies including Victoria Police, Fisheries and Parks Victoria, these officers have been demonstrably under-trained and are inexperienced in the full range of potential offences for which they need to observe.

If GMA is to have any legitimacy as an enforcement agency, it must commit to staffing and training their enforcement team adequately so as to properly police a significant number of wetlands throughout the entire season. However, this would entail a significant cost which would be better spent on conservation.

In past years, enforcement officers have disclosed to Geelong Duck Rescue that their maximum shift time ends earlier than the close of legal shooting time. This has left no enforcement officers available at all during peak times of shooting, such as the closing hours of the first day of the season, when a large number of offences occur. This has been allowed to happen as all the staff were rostered on for the opening morning of the season. We understand that recently GMA have sought to correct that problem somewhat but the fact remains that a legal shooting period in a day is often longer than that of the officers' shifts so that staggering work shifts becomes a necessary technique which cannot be realistically achieved with such an understaffed team.

The critical point in the staffing issues of the GMA is that all duck shooters are keenly aware of the limits of the GMA's abilities and they can, and frequently do, take full advantage of the knowledge that they are very unlikely to ever be caught in the commission of an offence.

It has also come to the attention of Geelong Duck Rescue that the GMA do not even have a reliable database of all the legitimate shooting locations across Victoria, let alone a full knowledge of possible private lands to which their responsibility also extends. The public would expect that the enforcement authority responsible for regulating an activity in which firearms are principally involved should at least have a thorough knowledge of where that activity could occur. The maps made available online are acknowledged to be incomplete and rife with errors. Duck shooters cannot comply with the law when the information provided to them by the GMA is faulty in the first place.

Furthermore, the vast number of alleged offences by duck shooters witnessed by community volunteers and duly reported to GMA with evidence provided, receive no attention or follow-up from officers.

In the Pegasus report of 2017[21] , it noted that enforcement was significantly biased in this way, but it appears that no real change has occurred within the agency in the intervening time. In order for the GMA to attempt to regain public trust they must be seen to be actively pursuing cases fairly and a much greater degree of effort in community collaboration and trust-building is required.

GMA Bias

The Game Management Authority has not existed without controversy. The 2017 Pegasus Report[22] discusses the implications of GMA promoting hunting (Pegasus Economics 2017). GMA has been criticised for being 'neither impartial nor independent' (Pegasus Economics 2017). The current *Game Hunting in Victoria: A manual for responsible and sustainable hunting*[23] from 2018 discusses the economical and social benefits of hunting, showing a bias towards the promotion of the hunting (GMA 2018).

As an organisation paid to monitor compliance of the season, it is in the best interests of the GMA to continue to hold duck shooting seasons because they are financially dependent on it. This is a clear conflict of interest. This bias should prevent the GMA from having the ability to make recommendations based on their own research.

Community gun safety and duck shooting

Urban areas are expanding and encroaching upon game reserves and other nature areas where duck shooting occurs, making the safety of residents and visitors of paramount concern to everyone. This is especially worrying in areas such as Geelong where housing estates such as Armstrong Creek, (which will house tens of thousands of residents when complete), are closer than 2 kilometres from where recreational duck shooting takes place. Considering that there is no boundary for where shooting 'finishes' until you reach the Barwon Heads Rd, shooting may occur within the range of vehicles, as well as local community facilities.

Recreational firearm use does not belong in proximity to residential living, shopping centres, schools and sporting grounds, all of which exist in abundance surrounding the Lake Connewarre wetlands. The vast majority of residents are unaware that shooting is

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[21] https://8c4b987c-4d72-4044-ac79-99bcaca78791.filesusr.com/ugd/b097cb_97d51dc5a28a4c9e992c231ee0e9cf1e.pdf

[22] https://www.gma.vic.gov.au/__data/assets/pdf_file/0011/481682/Assessment-of-the-GMAs-compliance-and.pdf

[23] https://www.gma.vic.gov.au/__data/assets/pdf_file/0010/499096/Game-Hunting-in-Victoria-2nd-edition.pdf

permitted so close to their homes or community hubs and can become alarmed when hearing gunshots. Continuing to allow firearms to be discharged so close to highly populated and actively used areas is a recipe for disaster that could easily be avoided.

If these wetlands are going to be used for duck shooting, then adequate signage aimed at warning the community that duck shooting is taking place in the area, and of the potential dangers, should be placed at every entrance to the wetlands which is in close proximity to populated areas. At present, there is no signage which indicates that people are restricted from entering the wetlands, yet they can be fined if they do so.

Regional Victorian Tourism

The past two years have had unprecedented impacts on all businesses, communities and individuals. Populations who have been significantly affected by the COVID-19 imposed lockdowns and restricted travel are our regional towns and communities, many of whom rely heavily on tourism for jobs and financial stability.

"In the six months ending June 2020, total visitors to and within Victoria was 30.7 million, a decline of 19.9 million visitors (-39%) compared to the same period in 2019. Total visitor spend in Victoria over this period experienced a deeper decline (-43%, or down $7.0 billion) to $9.3 billion."[24]

Eco-tourism was on the rise pre-pandemic, across the general population, who were looking to lessen their environmental footprint whilst travelling[25]. This value should be considered when making decisions about who can access our natural environment and when.

Many of our outdoor pursuits revolve around the tranquillity of water. Swimming and kayaking require healthy, clean bodies of water. Birdwatching and wildlife watching depend upon the presence of established wetlands where birds reside or migrate to, or where wildlife visits regularly.

The economic value of birdwatching is often overlooked, however studies have shown this to be significant contributor to tourism[26]. The construction of raised boardwalks, bird hides and viewpoints in wetland and natural areas, can provide substantial recreation opportunities for many people, not just birdwatchers, and building all-access pathways creates equal opportunity for all to enjoy the region.

Unfortunately, a duck shooting season creates an environment where the locals, visitors and tourists are prevented from taking part in these nature activities and pursuits.

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[24] https://business.vic.gov.au/__data/assets/pdf_file/0003/1984620/Coronavirus-COVID-19-impact-on-Victorias-Visitor-Economy-released-April-2021.pdf

[25] https://www.nielsen.com/au/en/insights/article/2019/eco-tourism-is-not-just-for-greenies/

[26] https://www.responsibletravel.org/wp-content/uploads/sites/213/2021/03/market-analysis-bird-based-tourism.pdf

Access to wetlands and waterways is restricted for 3 months of the year (if a 'full' duck season is held) for those who don't hold the relevant duck shooting and firearms licences.

According to the GMA's 'Considerations for the 2023 duck season' document, this means that the '23,098 *Game Licence holders endorsed to hunt duck in 2021*' (down from 24,330 last year) have free reign for their recreational activities, which leaves the remaining 99.654% of Victoria's population[27] unable to freely and safely access public nature areas.

The challenges of COVID-19 lockdowns and high case numbers, has also changed how we use our recreation time. People feel more comfortable, 'safer' and are more likely to meet outside rather than in a confined space. Additionally after many months of people's movements being restricted, or being confined to their homes in isolation, there is a strong desire for many to return to nature and to spend time away from crowded, urban environments. Supporting the physical and mental health of individuals and the struggling communities in which they will spend time and tourism dollars is vitally important and we also have an obligation to support regional Victoria to the best of our ability. This means opening regions to all Victorians and interstate visitors and not restricting our public areas only to those who wish to shoot ducks.

Recommendations

1. The 2023 recreational duck shooting season should not proceed. The GMA should advise the Minister that the season in 2023 is unsustainable and inappropriate in the eyes of the community.

2. Consider the protocol used for data collection of bird numbers, breeding abundance and wetland conditions and only accept data collected by methods which would stand up to the scrutiny of the scientific community for acceptability/accuracy.

3. Consider that GMA aerial surveys should be used only as supplementary data to the Kingsford report, until such a time as a legitimate and respectable methodology is developed and publicly disclosed and the surveys have built up a history of data to show trends comparable to the Kingsford report..

4. Consider the long-term implications on biodiversity from removing significant numbers of native waterbirds from local populations.

[27] https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/latest-release

5. The Victorian Government must commission a follow up review of the GMA by Pegasus Economics, to determine if the issues identified in 2017 have been adequately addressed and corrected.

6. GMA should provide a detailed response to how they have addressed each issue and how they are planning to tackle any unresolved problems and over what time frame. Responses must be reviewed by an independent panel of experts and a report submitted to the Minister.

7. Develop an independent panel of experts and community stakeholders to provide advice and recommendations to the government regarding duck shooting as GMA have a clear conflict of interest.

8. Employ and adequately train and resource a far larger enforcement team capable of monitoring the wetlands across the state to meet community expectations.

9. Pledge to support tourism and local economies across regional Victoria by supporting and promoting tourism opportunities which include and benefit all of the population.

10. Implement a review of the Interim Harvest Model to be conducted by a panel of independent experts in the field. Subject the model to the rigorous of a peer review.

In the event that the season does go ahead against our recommendations, the following applies:

11. The season should be significantly reduced in length, to a maximum of 4 weeks.

12. The Blue-Winged Shoveler should remain a prohibited species as it has for the past few years, due to its ongoing low numbers.

13. The Hardhead duck should remain a prohibited species as it was in 2022, due to its ongoing low numbers.

14. The Pink-Eared Duck should be added to the prohibited species list due to low numbers.

15. Each game species must be given a significantly reduced bag limit (especially the 5 game birds recognised by GMA as experiencing ‘long-term declines”) as well as having a reduced daily bag limit overall. Each of the game species is acknowledged to be under pressure.

16. Any designated hunting area that is now within 2km of a major community facility, such as shopping centres, schools, sports grounds and community halls, should be closed to shooting for the duration of the season. This particularly applies in the case of Connewarre wetlands in Geelong.

17. Install adequate warning signs at all locations where shooting is allowed.

Conclusion

Duck shooting in Victoria has lost its social licence with surveys indicating that over 75 percent of people want this activity banned. Wildlife is in serious decline especially in Australia and we should be protecting our native species, not killing them for “sport” Nature tourism has been shown to be much more economically viable than any monetary benefit related to duck shooting.

If the duck shooting season does go ahead, despite clear evidence that it should not, then significant restraints must be placed upon the season and GMA must undergo a serious review of their functioning and their method of conducting aerial surveys as well as a review of their reliance on untested modelling to guide their recommendations.

We believe it is irresponsible to hold a 2023 recreational duck shooting season in Victoria. It risks the long-term viability of duck populations, increases the risks to humans and animals from the loss of biodiversity and the increased risk of zoonotic diseases and has negative impacts on already struggling regional communities. Wetlands are being destroyed and illegal shooting of waterbirds is pervasive throughout Victoria. We therefore recommend that the Game Management Authority (GMA) supports a moratorium on the 2023 duck season.

Critically, the Minister’s decision about whether to hold a duck shooting season should be based upon recommendations from an independent body with no financial interest in the outcome due to the clear conflict of interest that exists when the GMA are responsible for this recommendation.

Mr. Simon Toop

Director Strategy and Research

Game Management Authority

121 Exhibition Street

MELBOURNE VIC

3000

Honker Hunters would like the Game Management Authority and relevant ministers to evaluate and consider the following factors for the 2023 duck Hunting Season.

We open with the statement from DR Richard Kingsford of the NSW national parks and wildlife services.

On the question of the impact of shooting on wetlands ecology, he is more certain.

“Duck hunting is (NOT) a major conservation issue.

“It may impact a local area but overall, migration dilutes out any of these effects”

The recommendation process is debated every year.

Why is there set times and dates for a recommendation process when duck hunting has no impact according to Dr Kingsford.

Why do stake holders need to recommend a season alongside Game Management Authority when a season is defined and written in legislation.

The process should remain the same unless extreme circumstances prevail.

Email – Honkerhunters@outlook.com.au

SUMMARY

There is an abundance of waterfowl across private property in Victoria.

Private dams, Private farmland, adjacent rivers, and creeks running through private land.

Each and every year we believe beyond reasonable doubt populations and the abundance of waterfowl are missed during annual waterfowl counts and observations.

The Areas observed included wetlands, lakes, flooded farm paddocks, flooded private dams, low lying surface rainwater.

Major flooding and recent rainfall across Victoria has contributed and increased breeding activity.

Water levels across Victoria, New South Wales, South Australia are above average.

We have provided an observation and key factors.

FACTORS and CONSIDERATION

· The contradiction from the IHM and AHM report released is disputable and controversial. When conditions are far better and extremely different in the lead up to the observations the model has produced the same result from previous years with the proposal of 4 birds. We can only assume its result is an assumption and not fact.

· The Devastation the Wood duck and Mountain duck have on farmers crops in and out of a Waterfowl season.

· The two species are labelled a (pest) within the farming districts for the state of Victoria. Effective hunting can control the species during a season relieving local councils from permit allocations, time, and other resources. Therefore, an increase in the daily limit should be implemented.

· Climate models suggest La Nina will persist until late January to early February. La Nina events increase the chance of above average rainfall across much of northern and eastern Australia during summer.

· Official Bureau of meteorology figures showed rain and temperature records have been broken in Victoria this year. Every month has shown extraordinary results across all states and territories.

· Victoria received its highest ever spring rainfall since records began in 1900. For the state as a whole, rainfall was 95% above the 1961-1990 spring average.

· The current trend of waterfowl observations only includes a very small percentage of Wetlands rivers and creeks and do not include private dams or farmland in Victoria.

SAFETY AND RISK

The regulation States - Game hunters in Victoria face a range of regulations.

It is, therefore, important that the proposed Regulations impose the lowest possible burden on hunters. (1975Act)

Public safety laws are in place for a reason and the minister must agree too along with the Game Management Authority provide a safe environment for duck hunters to undertake their legal recreation under the (1975Act)

The final recommendation to the minister should highlight the importance to protect hunters from activists.

It should ensure the Game Management Authority is backed by the minister and has the resources to act in accordance with the regulations act.

At this time, it is our belief and high opinion enforcement is beyond lacking and is not being adhered to at all.

Activists need to be controlled or there needs to be another law implemented to control the risk. The current distance and time allocation needs to be altered to ensure safety to all hunters.
The confrontations from activists, harassment and hindering have heightened in such a way there is potential for an accident or incident.

This issue needs to be addressed immediately.

EXPLOITATION

The firearms regulations state “firearms fit for use are” - and should be used in accordance.

Activists are gaining a licence and passing a W.I.T test to break the law and harass and hinder hunters on wetlands. They are not acquiring a licence for a valid reason.
This blatant ignorance from activists has gone on for far too long and needs to be addressed immediately. Wildlife (Game) Regulations 2012

OBSERVATION

Southern Victoria, Western Victoria, Northwest Victoria
The observation included private properties and general meetings with landowners to gain access for observation.

We travelled main roads, accessed private property, and detoured when possible to pinpoint private water over the region.

Starting point Geelong - Observation over consecutive Weekends – Saturday / Sunday
(2 Observers) on occasions 2 vehicles

TRAVEL AREA- Geelong, Modewarre, Winchelsea, Birregurra, Colac, Ondit, Beeac, Cressy, Berrybank, Lismore, Derrinallum, Bookaar, Camperdown.

TRAVEL AREA - Freshwater creek, Torquay, Breamlea, Ocean Grove, Mannerim, Swan Bay, Bellarine, Clifton Springs, Curlewis, Geelong – Corio Bay, Avalon, Point Wilson, Little River, Balliang
Note – high volume of Grey teal in Corio Bay.

TRAVEL AREA - Rokewood, Skipton, Tatyoon, Ararat, Stawell, Dadswell's bridge, Wonwoondah, Nurrabiel, Toolondo

TRAVEL AREA - West Toolondo, South Toolondo, Telangatuk East, Kanagulk, Balmoral, Cavendish, Croxton east Mortlake, Terang

TRAVEL OBSERVATION.
In travel observations we determined there is an abundance of all 8 game species. Grey teal and pacific black duck were predominant across lakes and wetlands.

Pink ear duck were in big mobs across some lakes in the south travel.
Shoveler ducks were widespread across lakes in pairs and mobs of 5-8 in some cases. They became more predominant in and around lakes with increased habitat. Hard head ducks were spread through the major lakes and wetlands as well as large farm dams.

Wood ducks were extremely predominant on most farm dams. In some cases the dams were overcrowded with clutches of ducklings.
Mountain ducks congregated in massive mobs on wetlands and water within close proximity to farm crops but remained apparent on most wetlands while observing. The South west and north West region had a very high concentration.

KEY FACTORS

- The Season arrangements and announcement is delivered far too late and should be brought forward to accommodate retailers and hunters.

- The season should **not be altered** as per legislation unless there is proven evidence of extreme circumstances.

- The Australian (Blue-winged shoveler duck) should not be deemed protected as we found they were visible on every wetland visited. There should be no concern about the conservation status especially this year in 2022 when conditions and habitat have risen and rejuvenated the population beyond previous years. They have not been degraded in any way proving the (Blue-Wing shoveler) not to be under threat and should remain on the game list to be hunted.

- The latest indicators that form the decision model are contradicting.

  In previous years indices were lower than the current conditions. At present the conditions are far better and water volume is at higher level. It has produced a lower point score. The final score has still resulted in 4 birds.
  It does not consider the dispersion of birds in the source data.

  Richard Kingsford states in the (2022 EAWS 18Dec)
  "There is no surprise that there is so much water that the waterbirds are literally thin on the water"
  As Richards states they are thin because the water is spread far and wide.
  How can there be an accurate figure?
  How can it be accurate when the total states water including wetlands, lakes, and private water observations are not covered?
  The result is missing valuable data from lakes, rivers, dams, and creeks that are not observed.

- The (EAWS) Eastern Australian Waterbird Survey is a major misleading factor. The Game Management Authority should not rely heavily upon its findings. Unfortunately, from previous history there has been Missing statistics and flawed observations which has led to an incorrect conclusion when a waterfowl season is determined.
  Some observations only include a proportion (>50%) counted and is digitally audio recorded as an **"estimate"**
  You cannot correctly identify a bird species flying an aircraft that is flown at a height and an average speed of 167km within 150m off the shoreline.

Key Factors continued

- We are aware and conscious of wounding rates when hunting and do agree on hunter education. We agree Game Management Authority will be the most effective provider of information on education to all hunters.

  However, until there is a clear indicator by using radiography (x-ray technology) on live caught ducks then we must assume there is not enough clear evidence to provide any results. At this time, we would like to high light the statistics to be incorrect as the results are only gauged from out in the field. In most cases the observation comes from anti-hunting groups and activist retrieving downed birds illegally or legally recovered.

- **The current waterfowl observations need to consider the possibility of the abundance of waterfowl being missed.** It fails to see the majority of waterfowl birds on the areas listed below.

- Dams- Water.viv.gov.au. Environment, land, water, and planning Victoria estimates there are approximately 450,000 dams across Victoria.

- Together Victoria's dams have an estimated total storage capacity of about 13,4000,000 megalitres. The size of our dams range from major storage dams to privately owned farm dams. The smaller privately-owned dams are the most common type of dam in Victoria.

- Some consist of a small swimming pool size on farms or lifestyle properties but still hold major value to the economy and our way of life.

- Creeks There are approximately 85,000 kilometres of rivers, streams, and creeks in Victoria according to Travel Victoria. As well as providing for people and the lifeblood of the environment the possibility of habitat for waterfowl is extraordinary.

- Agricultural land area is about 50 per cent of the total land area in Victoria.

- Approximately 40 per cent (4.6 million hectares) is used for cropping, and 54per cent (6.2 million hectares) is used for grazing, with the remainder used for forestry and conservation purposes.

IMMEDIATE REVIEW

Season Announcement
The legislative season should be announced before (mid – December). The process and delay is unsatisfactory as late arrangements impact the Victorian economy.

Economy
The current trend is not providing enough time for retailers to order and receive stock in preparation for the following season. In addition, the late announcement impacts hunters as they too can not plan holidays or organize time off.

The economic contribution of recreational hunting in Victoria is outstanding before and during a season. The benefits to Victoria's economy needs to be addressed and highlighted to ensure the state recovers from the downturn of the covid-19 impact and moves the state forward into the future.
Delayed arrangements, reduction in season length and a low daily bird limit only deters hunters from participation. Duck hunting contributes the second largest contribution followed by deer hunting at an estimate of 65milion.

Modifications
The minister should **(only**) alter or modify a season if the conditions are proven to be (extreme). The season should be as written in legislation – 10 birds, all 8 species with the season to start on the 3rd weekend in March unless proven beyond reasonable doubt it needs to be altered.
The season should not be altered unless these extreme conditions are proven. In previous years there has been alterations to a standard season. On more than one occasion data and relevant information has not been presented resulting in a modified season length and daily limit.
The current wet weather conditions and previous floods contributing to breeding events fall well above a standard year.
Therefor there should be no modifications to the legislative season.

The Adaptive Harvest Model or Interim Model

The IHM and or AHM is not legislation so until its proven it should not determine the season. As it stands the process is defective.
If the model were to be successful and accurate in these conditions of 2022/2023 the conclusion would result in more than 10 birds to be taken on a daily basis.

As per media release on Game management website -The full season was determined based on harvest modelling by 2 experts in waterfowl ecology and population dynamics Professors Klaassen and Kingsford.
How can the model be accurate when it relies on a flight survey that only fly's 10 survey bands with only 3 crossing of Victoria.
One transact only partially covers the coast down south while the other partially covers the north.

It misses and does (NOT) cover most major wetlands or high concentrated waterfowl areas. So why is this heavily relied upon to determine the season.

CONCLUSION

The 2023 waterfowl season for Victoria will be more than sustainable

The season should remain at what is written in legislation

10 birds - Including - 2 Blue-Wing shoveler

The current conditions are above average and there is no need for change as per legislation.

We observed Mountain Ducks feeding on established and harvested crops.

There were Extremely high volumes of Mountain duck in close proximity to crops.

We observed Mountain ducks moving from lakes and wetlands into farmland.

We observed an abundance of Mountain duck, Wood duck, Pacific Black duck, Grey teal on large dams within Private property.

Water levels and habitat on private property are above average.

Breeding is still active.

Wetlands observed were holding good numbers of species. Grey teal were predominant especially Corio Bay area Geelong.

We located all 8 game species.

We see merit in increasing the daily limit to include extra numbers of Mountain duck and Wood duck.

Farmers would like to highlight wood duck and Mountain duck are pests.

Farmers and private landowners are continually viewing the 2 species grazing on freshly sown crops during the general preparation periods in March and April. They continue to move in and out decimate the crop.

HONKER HUNTERS RECOMMEND

OPENING WEEKEND

Honker Hunters agree to help ease the pressure of the opening weekend by authorising a

Start **time 8.00am** for all of Victoria

However, hunters should not be punished due to lack of resources and challenges the Game Management face on an opening weekend.

The minister should aid and assist financial support for the weekend to help enforce compliance from anti-hunting groups and hunters.

Therefore: Daily limit for opening weekend of 10 birds

Including - 2 Blue wing shoveler

Opening to be Saturday – 3rd weekend as per legislation

THE REMAINDER OF THE SEASON

As per legislation –

A Full-length season of 12 weeks - all 8 game species to be hunted
Daily bag limit of 10 Birds
Including 2 – Blue Winged Shoveler

Opening to be on the 3rd Saturday in March as written in legislation.
Time zones to be re-introduced across Victoria.

To review and apply the bag limit to include an additional 2 birds. (Wood duck and or Mountain Duck)

The additional numbers included in the daily limit takes into consideration the concerns of farmers. Many farmers have labelled these 2 birds as pests over many districts.

We as hunters rely on the Game Management Authority to administer game management within Victoria.

The Game management Authority should not be considering arguments or recommendations from anti-hunting groups on a regulatory season that is written in legislation.

These groups should have no insight or value to determine a waterfowl season.

The decision for the 2023 waterfowl season should be based on facts and relevant data available. It should not be politically influenced.

The game Management Authority should **not** rely heavily on the Eastern Australian Water Bird survey. **The process is flawed and inaccurate and should not be used to determine a waterfowl season.**

Honker Hunters would like to thank you for your time and consideration.

Yours faithfully

Honker Hunters Australia

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Submission to Game Management Authority re Recreational Shooting of Native Duck & Quail 2023

By Regional Victorians Opposed to Duck Shooting Inc.

Introduction

Regional Victorians Opposed to Duck Shooting Inc (RVOTDS) is calling for the 2023 duck and quail shooting seasons to be completely closed based on:

1. **Alarming continued and long-term decline of game ducks.**
2. **Continued lack of breeding in game ducks.**
3. **Disturbing decline in Stubble Quail abundance.**
4. **Significant adverse impacts of hunting on protected species, and regional communities – not yet adequately investigated by GMA.**

The proposed season of 4 birds a day for a full season length is not a solution because:

- a reduced bag limit is impossible to monitor given the thousands of waterways open to shooters, and
- it requires significant costs to taxpayers for law enforcement, and
- it results in significant adverse impacts to protected species, nearby families, farmers and other recreational users and
- last season's reduced bag limit and full length have not provided bird populations the opportunity to recover

GMA's representation of the Kingsford/Klaassen AHM model as a basis for its recommendations is flawed. We discuss this on page 18 of this submission.

Closing the 2023 shooting season - which is GMA's duty to recommend - is the only sensible and appropriate way to allow the birds a chance to recover, and the regulator a chance to conduct overdue due diligence studies of social / economic impacts to community.

Background

The GMA Act states that it is a function of the GMA to:

- S6 (g): promote sustainability in game hunting, and
- S6 (i) to make recommendations to relevant Ministers in relation to - iii) declaring **public land open or closed** to game hunting, **open and closed seasons**.
- S6 (h): monitor, conduct research and analyse the environmental, social and economic impacts of game hunting. S8A requires the GMA to have regard to (b) the principle of triple bottom line assessment, which means an assessment of all the economic, social, and environmental costs and benefits, taking into account externalities and (e) the principle of stakeholder engagement and community participation, which means taking into account the

interests of stakeholders and members of the local community.

- S8 (1) of the Act requires GMA to perform its functions, (unless otherwise directed by the Minister in which case such directives must be published in GMA's Annual Report).

GMA appears to continually fail to perform its functions as stated under the Act. It is also failing to enhance public confidence in its regulatory performance.

GMA has not once closed a duck or quail shooting season despite presiding over the worst environmental conditions ever recorded and continued alarming declines in bird indices. Previous governments cancelled duck shooting seasons in 2003, 2007 and 2008 for less dire circumstances.

GMA has refused to close wetlands despite community pleas, petitions and council requests. This is despite there being so many thousands of public waterways open to shooters they can't possibly be monitored. Nowhere in the GMA Act, nor any other relevant legislation, does it state that GMA cannot close wetlands to shooting due to impacts on the community.

GMA refuse to close wetlands even when they are aware of threatened species present (refer comment from Hamilton Field Naturalists Club page 9)

Sadly, it appears the GMA is more concerned with finding ways of showing shooting is sustainable despite science showing it isn't, than performing its functions under the Act. We note key staff at GMA have been long-time holders of recreational bird shooting licences themselves, with strong links to hunt clubs whose key staff are in turn owners of gun stores.

RVOTDS, is a not for profit association which incorporated in 2018, with over 5800 supporters, and represents those who live and work around regional waterways adversely impacted by recreational bird shooting. Around one in four Victorians now live in regional areas. No risk assessments, no desk top studies regarding proximity of shooting areas to homes, no consultations with communities near shooting areas, have ever been conducted (other than at two wetlands in Mildura in 2019 which were subsequently closed to shooting for safety reasons).

In all of our submissions and communications to GMA, RVOTDS has provided significant evidence of adverse social / economic impacts of hunting to regional communities and protected / threatened species. We do so again in this submission.

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Continued Alarming Declines in Game Duck Abundance and Breeding Calls for Season Close

The most robust, long-term objective dataset available regarding the health of game duck populations, is the annual East Australian Aerial Waterbird Survey (EAAWS). It shows a continued alarming trend of decline in duck abundance – now just 25% of the long-term average.

- "*Most game species of ducks had abundances well below long-term averages, in some cases by order of magnitude; six out of eight species continued to show significant long-term declines. ..Some duck species declined in abundance compared to 2021 – Grey Teal, Pink-eared Duck and Hardhead" – p3. 2022 EAAWS Summary Report.* (Note that the 2021 EAAWS showed game ducks had fallen 58% since the preceding year.)

It also shows that despite two consecutive La Ninas, game ducks are not breeding.

- "*Five species comprised 96% of the total breeding recorded… straw-necked ibis, Australian pelican, Royal Spoonbill, Whiskered tern, and egrets." – p3. 2022 EAAWS Summary Report.*

In the case of game ducks, obviously it can no longer be said that abundance or breeding is directly related to rainfall because ongoing declines the last few years have proven they aren't. Experts have cautioned this for some time now, for example:

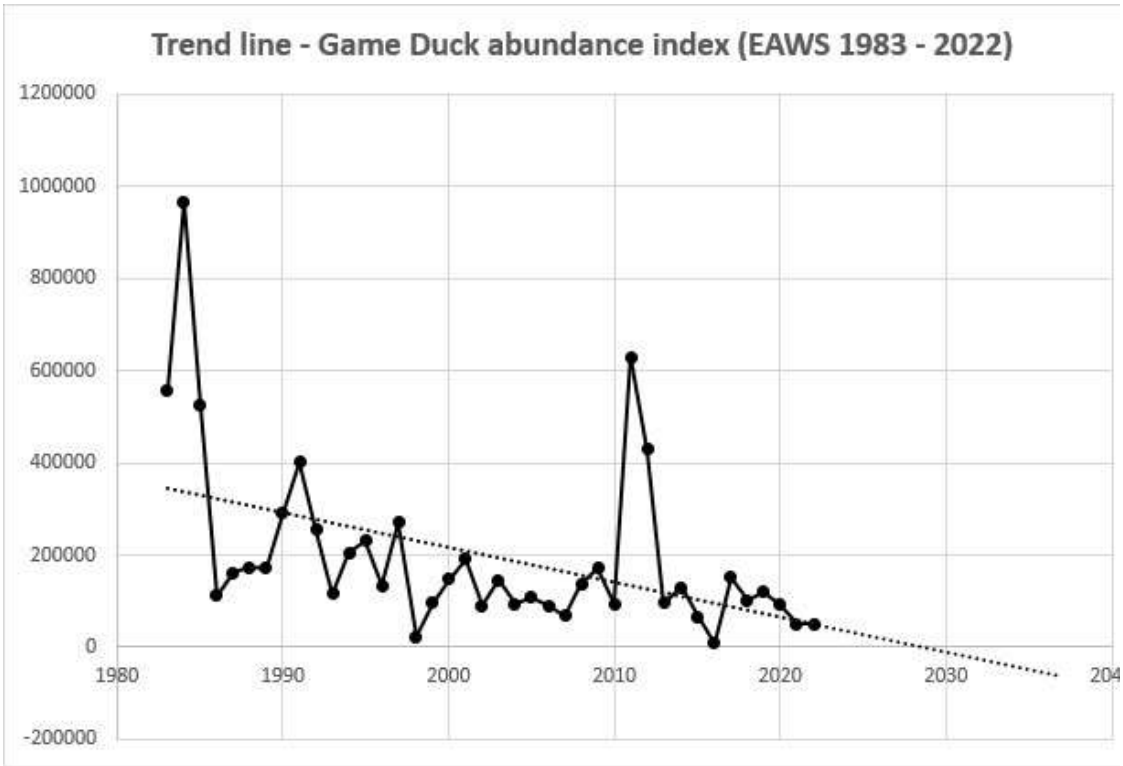
> *"Bearing in mind that at the best of times, only 25 per cent of any avian species ever breed in a given year, it is predictable that the number of breeding events will decline this year. It can thus be expected that breeding success of the surviving birds will diminish, even if conditions should remain reasonably good"*
>
> - Gisela Kaplan, Prof. of Animal Behaviour, PhD (Vet Sc.), The Weekly Times, Feb 2021.

Whether due to impacts of climate change not yet fully understood, reduction in insects, build-up of toxic lead which inhibits breeding[1], mismanagement of waterflows, failure to protect breeding pairs in previous year's shoots, it is clear that something is adversely impacting game duck populations. On current trajectories game ducks will be extinct on or before 2030 (refer graph).

Hunting remnant populations when there is little breeding activity, is neither sustainable nor responsible.

Duck populations must be given the opportunity to bounce back, and that means a break from recreational shooting.

[1] Ornitholoogy – Foundation, Analysis and Application p 812



On current trajectories, game ducks will be extinct by 2030.

Comment from one of our key Alliance Partners, Humane Society International:

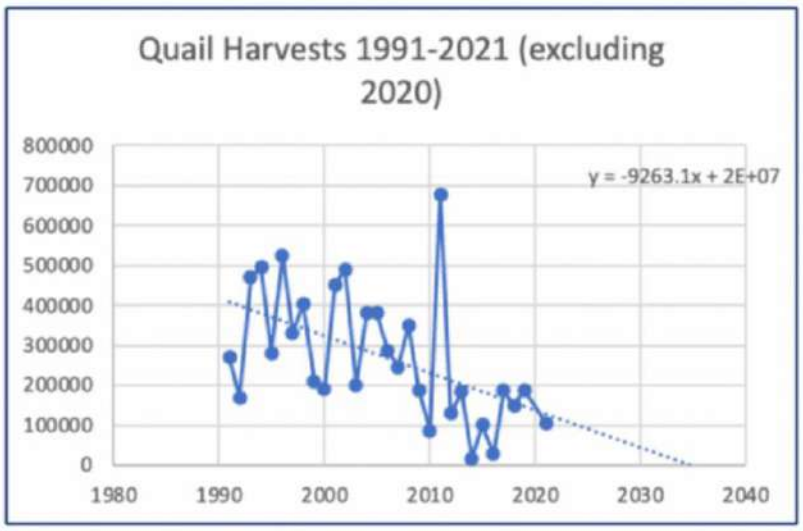
Humane Society International (HSI) Australia is strongly opposed to Victoria's duck hunting season proceeding in 2023. In addition to welfare concerns for the hundreds of thousands of birds likely to be shot, a 2023 duck hunting season would place additional conservation pressure on struggling populations. The 2021 Eastern Australia Waterbird Survey (EAWS) showed that the total index of waterbird abundance decreased by 41% (the third lowest in 39 years). Game duck abundance index displayed an even worse decline with a 58% decrease resulting in the third lowest score in 39 years.

Above average rainfall in 2022 contributed to an increase in waterbird abundance from 2021 to 2022. Yet, long-term trends are more informative for predicting population status than year to year fluctuations and waterbird abundance remains well below the long-term average (the 11th lowest in 40 years). The 2022 game duck abundance index decreased by 2% from last year and became the third lowest recorded in 40 years (only 25% of the long-term average). Six out of the eight game duck species show long term declines in abundance.

All major EAWS indices for waterbirds including wetland area index, total abundance index, number of species breeding continue to show significant declines over time. HSI Australia urges the precautionary principle to be applied to its full extent, and asserts that the 2023 Victorian duck hunting season should be cancelled entirely.

- Dr Louise Boronyak, Humane Society International

Continued Alarming Declines in Native Stubble Quail Calls for Season Close



"Long-term harvest records can be used as a proxy to monitor abundance"

– GMA/ARI – Sept 2022

There is well founded concern for the abundance of Victorian native Stubble Quail. Government harvest records show a significant and alarming decline – refer graph above. GMA/ARI advised in September 2022, that "*long-term harvest records can be used as a proxy to monitor abundance".*

A first-ever "count" of Stubble Quail Victoria took place in early 2022. Only 101 were counted. Concerningly, this tiny number was extrapolated up to an unbelievable 3 million, with a very high "uncertainty" coefficient of variation (0.29). Dr Ramsay - the report's author - has previously stated that if this coefficient exceeds 0.15, the exercise becomes unreliable. Therefore, the estimate of 3 million quail is not able to be relied upon – which not a surprise to regional landowners who say there *"hardly any quail left".*

Since this first- ever "count", there has been unprecedented flooding in Victoria's quail habitat areas. Flooding adversely impacts quail populations (Frith and Carpenter 1980).

It is highly concerning the regulator has not seen fit to even hold a consultation regarding quail hunting. As with our "game" ducks, Stubble Quail are native to our country and ought be protected. And as with game ducks, there is clear evidence of significant population decline and significant adverse impact to threatened species and regional communities which the regulator should be concerned with. Trespassing is commonplace and landowners are particularly concerned with the risk of spreading Foot and Mouth Disease through unauthorized access to property.

There are significant risks to threatened species such as the Plains Wanderer which resembles quail, due to quail shooters not being required to pass an accuracy test, or species identification test, and the adverse impacts to people and other wildlife of toxic lead ammunition still legally used in quail shooting. The very serious issue of lead ammunition and its far-reaching consequences is discussed on page 8.

Further critical factors which support a season close for 2023

Concerningly, the below factors are not given due consideration in GMA's Season Considerations:

1. Long-term effects of climate change which are predicted to worsen.
2. Birds' unique susceptibility to climate change.
3. Threat to migratory birds already experiencing significant decline.
4. Detrimental impact to bird populations of shooting monogamous bird species.
5. Adverse impacts of lead shot which is still used legally and illegally.
6. Lack of data regarding bird species present on wetlands prior to shooting.
7. Lack of data of birds shot during duck season.
8. Impact of shooting on protected & threatened species.
9. Shooters' critical knowledge gaps as proven by recent tests.
10. Lack of social/economic impact studies of bird shooting on the wider community, including lost tourism, inability to work from home, and health & safety implications including noise pollution.

The above points are detailed as follows:

1. The long-term trend of climate change and its impact on our waterbirds is rarely if ever mentioned by GMA. The Bureau of Meteorology has warned that our country is heating more rapidly than the global average. Worsening storms and floods, longer droughts, hotter, drier summers are some of the repercussions we are already seeing as a result of a 1'C rise in average temperatures. The bureau says we are headed for an unlivable 4'C rise in the next 80 years. The consequences for our wildlife will be catastrophic. Birds are especially vulnerable (see point 2).

2. No consideration has been given by GMA to the fact that **birds are twice as vulnerable to climate change as mammals.** (Global Change Biology, Zoological Society of London – report by international scientists group based on 481 species in 987 populations around the world). With climate change set to only worsen, it is obvious our already struggling bird populations require protection from recreational shooters.

3. Shooting disturbance at Victorian waterways adversely impacts migratory birds' ability to obtain critical feed and rest prior to their long journeys along the East Asian-Australasian Flyway.

   Of the species who use the flyway, 50 are in "catastrophic" decline and Australia is under numerous International obligations to protect them (https://www.environment.gov.au/biodiversity/migratory- species/migratory-birds).

   Hunters also force ducks to decrease their foraging behaviours, which can lead to compromised animal welfare including poor body condition. This has been shown to cause a **decrease in survival rates** for migratory birds. 6 Jan 2022

   https://www.gma.vic.gov.au › assets › pdf_file › RS... PDF

   Duck hunting season 2022 - Game Management Authority

4. No consideration has been given by GMA to the ripple effect through bird species most of which form life-long pairs - in fact, 90% conduct joint parenting. (As a comparison, only 5% of mammals, including humans, pair up and raise young together.) When one of a pair is shot, it is likely any offspring won't survive and the remaining partner may never

recover. The real impact to bird populations therefore of shooting, is far larger than just the "harvest" numbers reported. Refer this article by Professor Kaplan.

5. GMA has so far turned a blind eye to the serious issue of **lead ammunition still used** legally in quail shooting and illegally in duck shooting (as reported most years). Lead is extremely toxic to ecosystems, animals and people even in tiny traces (emedicine.medscape.com/article/1174752) It is an insidious poison causing extreme suffering to animals who ingest it, such as dabbling ducks, swans and secondary predators like protected eagles. Given the decline in breeding noted the last several years, GMA should seriously consider that lead also inhibits waterbirds' breeding. Refer this short webinar by Dr. Ruth Cromie – Head of Ecosystem Health, Wildfowl and Wetlands Trust (WWT).

   GMA would be aware of the EPA analysis of a small number of Victorian wetlands in recent years and the toxic lead levels found in ducks (well above safe food guidelines) at The Heart Morass, Macleod Morass, Richardson's Lagoon and Serpentine Creek. The fact over 20% of a small number of shooting wetlands surveyed had "toxic ducks", suggests the issue is frighteningly widespread across the thousands of shooting wetlands around the state.

   According to a Department of Sustainability & Environment report (Flora and Fauna Guarantee Action Statement # 32), each ammunition cartridge holds 30-45g of lead. Multiply 30g by the average number of 175,000 shot quail each year in Victoria (GMA harvest estimates) and one gets a staggering 5 tonnes of lead potentially pumped into Victorian (including food-producing) environments each season - without even adding in the lead deposited by missed shots or used illegally in duck shooting.

   There is evidence that lead "mobilises" in moisture and enters the food chain. Also, that is inhibits milk production in cows. (Guitart and Thomas 2005, Dickerson et al 2007).

   A 2018 CSIRO study was scathing of Australia's failure to take seriously the risks to humans, animals and the environment from lead ammunition.

   GMA's own Simon Toop is well aware of the lead toxicity impacts of hunting, having been involved in the recent study. In particular the finding:

   > *"The quantity and characteristics of lead ammunition residues found suggest that predatory and scavenging wildlife and some groups of human consumers will be at risk of negative health impacts."*

GMA must cancel the duck and quail shooting seasons for this reason alone under the precautionary principle, or risk litigation for negligence.

Lead and lead toxicity – extract from "lead Toxicity in Nz Brown Teal" by Massey University NZ 2014

Lead is one of the most toxic metals known to man and can cause disease in wild animals, domestic animals and humans worldwide (Fisher et al., 2006).

The most common cause of lead toxicity encountered in wildlife is ingestion of lead shot, fishing sinkers and other sources of lead found in the environment (Hoffman et al., 2002; Davidson, 2006). The most commonly affected wild birds are waterfowl and birds of prey due to either direct ingestion of lead or indirect means such as via prey containing lead shot (Samour and Naldo, 2005; Davidson, 2006; Pain et al., 2009; Lambertucci et al., 2011). Other terrestrial birds and seabirds are also at risk due to the anthropogenic contamination of the environment with lead (Fisher et al., 2006; Pain et al., 2009).

6. **Insufficient data regarding birds including protected species present on wetlands prior to shooting.** In previous years (before GMA existed) over 500 wetlands were typically surveyed for the presence of bird species. However, neither GMA nor DELWP have been able to list, map or even estimate the number of, the thousands of waterways where unmonitored shooting is allowed, let alone monitor what may be present on them. Pre-shooting wetland checks are now far, far fewer than they used to be. The "priority bird count" is only concerned with 37. **It's fair to say the regulator has no real idea of what birds are present at the vast majority of wetlands open to shooters**. It is the epitome of irresponsibility to continue to allow shooting in these circumstances and ludicrous to suggest "sustainability" can be ensured with such a gross lack of critical data. A reasonable question may be does it even care?

> *"The GMA has consistently allowed hunting on wetlands at Lake Linlithgow, Lake Bolac and Tower Hill when many hundreds of Blue-billed ducks and scores of Freckled Duck and Shovelers were present– and even a flock of 50 Brolga on Lake Bulrush in one year. They have done that despite the birds having no other sanctuary areas to go to. We regard that as utterly irresponsible and uncaring.*
>
> *There are no safe sanctuaries for waterbirds in SW Victoria – since DELWP and the GMA are unwilling to put any wetlands permanently off-limits then there is absolutely no case for allowing any hunting on the region's wetlands. Apart from conservation and animal welfare considerations, tourists have no hope of seeing ducks and other waterbirds at close quarters on lakes or swamps while the birds can be shot at there. Birds depart when people approach closer than about 200 m."*
>
> *Secretary*
> *Hamilton Field Naturalists Club*

7. **Insufficient and unreliable data of birds shot including threatened species**.

GMA's own "Season Considerations" documents usually state "*To effectively manage game species, it is important to accurately quantify the number of animals harvested*". Yet this is never done.

Despite GMA receiving millions more in taxpayer funds, there is a gross lack of monitoring. It is simply not possible to monitor the vast number of waterways where duck shooting is allowed. Even the army would be incapable of such a massive undertaking.

While earlier regulators commonly checked shooters bags at around 60 wetlands – still far too low a number to be able to accurately estimate the impact of shooting at thousands of waterways – GMA have struggled to check a tenth of that number. We are reliably informed that no hunters' bags were checked in 2020 or 2021 due to COVID. If checks were not possible, neither should the shooting season have been.

Estimates of numbers of birds bagged by shooters are not only based on a survey of a small number of shooters then extrapolated out assuming the entire duck shooter base would be the same, but reliant on shooters' memories and honesty. Estimates do not include birds shot and left behind and do not include the ripple effect through a species of losing one of a monogamous pair. They also of course do not capture the impact on protected species.

8. Given its requirements under the Act, it is of serious concern that GMA do not care more for impacts of hunting on protected and threatened species, which are evidenced each season. Just a few examples follow:

Lake Toolondo 2016, "*The Andrews government is headed for a showdown in the courts over the illegal shooting of dozens of rare and threatened birds during the opening of duck season. The shooting occurred despite the presence of Victoria police and authorized compliance officers*". (The Age April 2016)

Box Flat 2013 "*The bodies of about 760 game ducks and 155 non-game birds were left on the water at the Box Flat flood plains near Boort. The shooting happened on opening weekend of* duck season". (ABC March 2013)

<u>Data Regarding Impact on Protected Species, Compiled by Previous Regulators</u>

The shooting of protected / threatened species has been occurring for decades. RVOTDS obtained via Freedom of Information (FOI), documentation by previous regulators which shows a sample of the protected species killed in duck shooting seasons in Victoria (sample six years to 1993).

In addition, the documentation clearly stated more than once, that partial wetland closures do not protect threatened species such as Freckled or Blue-billed Ducks. (ARI Technical Report # 135)

Year	Collected by animal welfare	Collected by CNR	Total
1988	152	152	304
1989	273	392	665
1990	374	80	454
1991	435	119	554
1992	250	94	344
1993	813	159	972

Numbers of protected species found dead at just some of the Victorian duck shooting wetlands 1988 – 1993. Note the introduction of the Waterfowl Identification Test (WIT) in 1991 made little difference.

Table 29 Number of specimens of non-game wildlife found dead around waters used for hunting during the 1993 duck open season. The data for birds collected by members of animal welfare organisations are counts made by CNR officers of birds delivered to CNR Heidelberg during the season.

Species	Collected animal welfare	Collected by CNR	Total
Freckled Duck *Stictonetta naevosa*	229	57	286
Eurasian Coot *Fulica atra*	242	35	277
Blue-billed Duck *Oxyura australis*	84	7	91
cormorant species	44	4	48
Black-tailed Native-hen *Gallinula ventralis*	0	43	43
Black Swan *Cygnus atratus*	29	14	43
Galah *Cacatua roseicapilla*	21	11	32
small grebes	19	5	24
Musk Duck *Biziura lobata*	19	1	20
Great Crested Grebe *Podiceps cristatus*	14	1	15
Australian Magpie Lark *Grallina cyanoleuca*	0	13	13
corella species	7	5	12
ibis species	8	3	11
White-faced Heron *Ardea novaehollandiae*	3	6	9
Red-necked Avocet *Recurvirostra novaehollandiae*	6	1	7
Yellow-billed Spoonbill *Platalea flavipes*	0	6	6
migratory waders	1	4	5
Australian Magpie *Gymnorhina tibicen*	0	4	4
Silver Gull *Larus novaehollandiae*	4	0	4
tern species	0	3	3
Barn Owl *Tyto alba*	0	3	3
raven species	3	0	3
Darter *Anhinga melanogaster*	2	1	3
Dusky Moorhen *Gallinula tenebrosa*	2	0	2
raptor species	1	1	2
kingfisher species	0	1	1
Noisy Miner *Manorina melanocephala*	0	1	1
Australian Pelican *Pelecanus conspicillatus*	0	1	1
Fairy Martin *Cecropis ariel*	0	1	1
Little Friarbird *Philemon citreogularis*	0	1	1
Brush-tailed Possum	0	1	1
Total	813	159	972

972 protected species found dead at several Victorian wetlands in duck shooting season 1993, including Australia's rarest native duck – the Freckled Duck, thought to be one of the world's rarest, galahs, magpies and ibis.

***Note these tables show only a fraction of the true toll on our protected species which is likely much larger because the vast majority of waterways where duck shooting is allowed are not monitored.**

Failure of GMA to Maintain Data Regarding Impact on Protected Species

According to the CEO of GMA, the numbers of protected species illegally shot each season these days are not quantified. This horrific fact is confirmed by Arthur Rylah Institute (ARI) who says regarding the risks or impacts of direct hunting mortality on non-target species:

"*That is a separate question that can only be properly addressed by gathering robust data on the rates of non-target species being killed or injured by hunters. Such data does not exist and would be extremely difficult to gather".*

– ARI 2019 "Waterbird Susceptibility to Disturbance from Hunting"

In their 2017 Hunters Bag Survey Report, ARI state that less than ten wetlands (out of thousands) were checked for wounded / un-retrieved birds. Just at these few, 18 birds were found including nine dead swans and two dead pelicans. According to their 2018 report, only one wetland was checked for wounded/ un-retrieved birds. In both the 2017 and 2018 reports, ARI's number one recommendation was that more wetlands needed to be checked and more data collated to be able to determine the impacts of hunting on waterbird populations. Yet the number of any such checks in following years is understood to be zero.

By continuing to allow recreational shooting of ducks and quail at so many waterways they can't possibly be monitored, GMA is at odds with the GMA Act, and with any attempts to enhance public confidence in its performance.

Birds left behind after duck shooting: including penguin, musk duck and pied cormorant (protected species).

Picture Kim Wormald

6. **Serious shooters' knowledge gaps** – a further risk to protected species.

According to GMA's recent knowledge surveys:

- Only 42% of hunters of all animal types got a general knowledge question on personal safety correct.
- Only 37% of duck shooters were able to correctly answer a two-part question on wounding.
- Only 20% of duck and quail shooters were able to correctly answer a three-part question on identifying game species.
- Only 13% of duck shooters correctly answered the question on dispatch of downed birds.

Further, there are no species ID tests for quail shooters, even though quail resemble the critically endangered Plains Wanderer which are the subject of a significant taxpayer funded recovery project.

7. Lack of cost-benefit analysis or social/economic impact studies on the wider community.

GMA suggest that duck shooting is of economic benefit to rural communities. This statement is highly misleading and is purely based on a small survey of shooters, answers unverified, which does not take into account the cost to Victorians of regulation and compliance, nor adverse impacts to the wider community. It is not based on a cost benefit analysis - which has never been done - and ignores:

1. the analysis by independent economists such as The Australia Institute, Dr Kirsty Jones (Monash University) and VEAC Red River Gum Investigation reports which state duck shooting is detrimental to rural economies and
2. public polls and scores of surveys and petition feedback from rural communities. Adverse impacts of bird hunting to community include:

    - Inability to work from home.
    - Inability for shift workers to sleep.
    - Noise pollution (EPA issued a safety warning about the use of gas guns which are not as loud and not used as frequently or for as long a duration as shotguns are during duck shooting.)
    - Loss of amenity.
    - Lost tourism.
    - Distress to children, stock and pets.
    - Pellets on roofs which collect water supplies.
    - Hunters trespass.
    - Safety risks of firearms in public places

GMA should close the season until they can appropriately investigate these serious issues. We discuss a few in more detail below.

Safety Risks

Consider the impacts of "coked up shooters" and campers' terrifying nights, of over 30 instances of hunting and firearms offences in a single weekend.

Accidental shootings do occur Just a couple of examples: https://newsroomodisha.com/pregnant-woman-shot-at-by-blue-duck-hunters-in-up/ & https://www.rnz.co.nz/news/national/441631/two-women-shot-and-injured-by-duck-hunters-in-central-otag

"The shooting season in its current format is completely at odds with the growth of adventure tourism. How can we possibly manage a safe tourism activity, when a shooter can come and set up on any waterway. The shooters need to be regulated to only be able to shoot in certain areas and keep very separate from other tour ventures. My question to the regulators, is "Who has the right of way" (same as any waterway) Do our paddlers need to leave the water when a shooter is present or does the shooter need to leave. You currently have no guidelines and you have no safety signage to provide a rule for right of way.

There is a liability that must be owned by the regulators when on water activities come close to shooters, firing out into the waters.

I draw your attention to places like the Cohuna Town Lagoon (where we regularly operate), this is within 2km of a town centre, and is used extensively by boaters, paddlers, fishers and even swimmers. How can you possibly add shooters into this mix for several weeks of the year. You have NO warning signs, you have no guidance and you clearly have not stipulated a right of way."

Shannon O'Brien
Managing Director
Sydney Harbour Kayaks
Murray River Adventures
Member of the NSW Transport Minister's Maritime Advisory Council Member

GMA is aware that two wetlands in Mildura were closed to duck shooters for safety reasons in 2019. Why is duck shooting allowed to occur close to residents elsewhere around the state? GMA knows that no risk assessments have occurred, not even desk-top studies to investigate proximity of shooting areas to family homes. Yet GMA has made no recommendations to close shooting wetlands despite community and council requests.

This submission again includes the voices of regional groups – those on the ground, whose lives and livelihoods are impacted by duck shooting for a quarter of each year.

Refer 2018 online survey and 2021 petition comments.

A few examples:

"Living on the Murray River trying to ski or fish during this time is dangerous"

"The effect of having shooters dressed in camouflage hiding in bushes is disturbing and that's putting it mildly"

"..shooting too close to a retirement village. Dangerous and distressing"

"Shooting native waterbirds only a few meters from my house turns my home into a warzone"

"My husband is a war veteran. After a few days I hear him saying "I just want some peace"

Adverse Impacts to Tourism

Data just released by Tourism Research Australia (TRA) shows outdoor nature activities continue to be far more popular, and generate higher economic returns, than outdoor sports.

In the year to September 2022, the number of domestic tourism visits for nature-based activities in Australia grew 13% and attracted spending of $52 billion, almost double the $29.5 billion expenditure from domestic tourism relating to outdoor sports.

Domestic tourists who birdwatched totaled 795,000, (almost double the number who visited the Great Barrier Reef), who bestowed $522 million on our economy. Bushwalking/rainforest walks, and visits to national/state parks, were also popular with domestic tourists who spent $22 billion, and $20 billion respectively.

But domestic tourism is only part of the equation. Pre-covid, three times as many international tourists (6.6 million), relished an outdoor nature activity as opposed to outdoor sport. Almost one in ten birdwatched and spent a staggering $2.6 billion, or 8% of our total international tourism revenue.

Conversely, the latest survey summary report by DJPR showed duck shooting expenditure (according to shooters) dropped 46% from 2013 to 2019*. Quail shooting expenditure fell 58%. The recent economic analysis by the Parliamentary Budget Office (PBO) put duck shooters at a potential net spend of just $4m - 10 m.

In 2021, NSW and QLD (where recreational bird shooting is banned), received the lion's share of the lucrative domestic overnight nature tourism market with $7.3 billion and $8.8 billion respectively. Victoria received just $4.4 billion.

It is ludicrous that less than half of one percent of the population who hunt ducks, have access to so many thousands of our public waterways that authorities can't estimate their number. Hunting has been shown repeatedly, to deter tourism[2]

> *"As a regional Victorian resident and tourism business owner I find it difficult to understand the continual bias towards hunters. Less than 2% of the state's population receive more support than lucrative and less damaging bird watchers and nature tourism visitors. My business was severely impacted in the 2022 duck hunting season; I closed my business after enduring weeks of unsafe shooting nearby. The More to Explore ap includes all wetlands in the state even when they are privately owned and not open to hunting. After trying for weeks to have this issue resolved, wetlands are still included on this ap designed to make it easier for hunters. I am wondering how I will manage if another duck hunting season is allowed. Why isn't the decline of water birds enough reason in itself to stop this outdated destructive pastime for a few? It has no benefit to regional Victoria, is destroying our unique wildlife and distressing regional communities."*
>
> Owner – Venus Bay Eco-Retreat

[2] The Australia Institute "Out for a Duck", Dr Kirsty Jones (Monash University), VEAC Red River Gum Investigation, UComms Poll 2021.

"It is well known in the travel industry that any form of animal hunting is anathema to most travellers and generally countries and regional centres have discovered in recent times that there is more financial benefit from 'wildlife viewing' than killing!

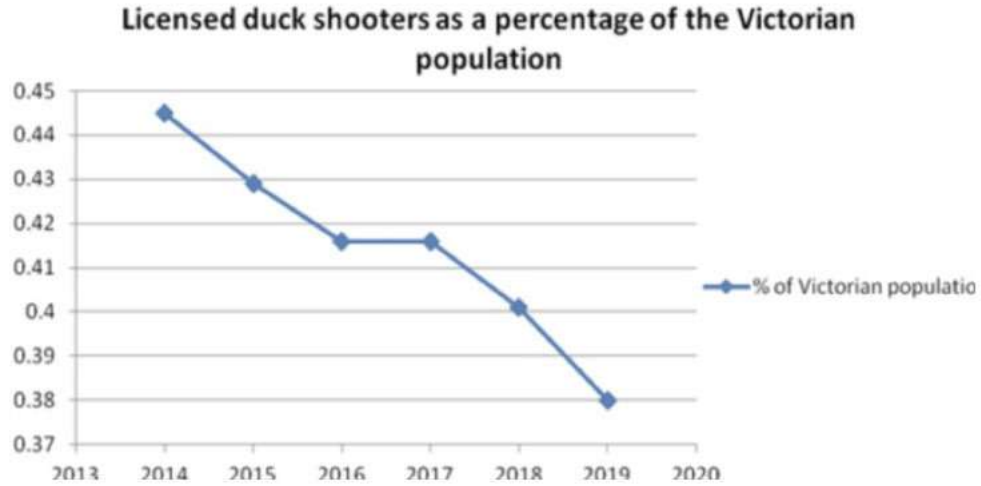
There is a worldwide travel industry movement to train staff in educating clients on 'Not riding or harming wildlife' at all and many of these so-called tourist attractions have been or are in the process of shutting down.

Regional centres would see more tourism financial benefit by changing their mindset to promoting wildlife especially as bird watching is becoming more and more popular."

Susan Kerr Travel
IATA/TIDS

Duck Shooting is Unpopular

GMA also incorrectly states duck shooting is "popular", quoting numbers of game licences issued which is misleading because the population of Victoria has boomed. The accurate measurement is the percentage of the population interested in duck or quail shooting which is tiny (less than half of 1%) and declining. Only half of that tiny number are active bird shooters.



Duck shooting, a declining pastime in which only about 8000 participants partake is not "popular", particularly when continual polls show the majority of Victorians – city and country – are opposed (UComms 2021)

Birdwatching, one of the fastest growing pastimes in the world in which over 1.4 million domestic and international participants took part in Australia in the first-year data was collected (2019), is "popular".

Sadly, the former hampers the latter.

GMA must cease incorrectly asserting that duck shooting is popular or of economic benefit to regional communities, and instead perform due diligence re the significant adverse impacts to the 99.8% of Victorians who do not shoot ducks.

In 2020, fifteen organisations including leading conservation, environment, regional and animal welfare groups provided statements / submissions to GMA calling for a season close. They were ignored.

Over 44 major business, union, environment and wildlife organisations signed on to our "Alliance" advertisement which ran in several major newspapers. They were ignored also.

In 2022, the number of First Nations Clans, business, union, environment and wildlife groups willing to publicly support our stance has grown further – now at 91. Their members and supporters number in the hundreds of thousands. It's time GMA properly considered community.

"Many wetlands across Northern Victoria receive environmental water for the promotion of aquatic ecosystems; waterfowl are an important link in the restoration of these wetlands.

The Victorian public and local communities have a significant investment, both financially and in the management of these wetlands for ecological outcomes.

Where water in these wetlands is wholly attributable to environmental water deliveries, hunting should be banned to promote multiple ecosystem outcomes.

I question the use of environmental water to facilitate hunting which in turn impacts wetland ecosystems.

Surely, we Victorians are smarter than this!"

President of Goulburn Valley Environment Group

A Word On The Interim AHM – Kingsford Klaassen Report.

As part of a 2018 election promise to hunt clubs (at least one of which is chaired by the owner of a gun store), the Victorian government now relies on a fairly recent "Adaptive Harvest Model" (AHM) to inform hunting arrangements.

It appears hunt clubs wanted this new model (funded by taxpayers, 99% of whom do not hunt), because the long-term science (EAAWS) continues to show our native duck populations are declining in abundance and breeding even in the case of significant rainfall. We are confident that if the long-term science was showing healthy duck numbers, there would have been no request from shooters for the investment into AHM.

The AHM appears to attempt to justify continued hunting in the face of damning science.

It claims "large numbers of waterfowl travel large distances". However in 2019, DPI NSW found many ducks did not travel far at all.

It also mentions the old assumption that duck populations are linked to rainfall when the last few years have proven this is not the case.

We note that GMA – whose key staff have been long-time holders of recreational bird shooting licenses themselves - represents the Kingsford/Klaassen (KK) model as the basis for its recommendations, rather inaccurately. The KK model specifically states it did *not* take into account social/economic impacts, is *not* able to make predictions at species level, and *should* be used only as a tool - not to set hunting arrangements without due diligence ("*Final Caveats*" p. 15).

To the report author's credit, it admits shortcomings including that:

- the model is "only a tool which should be used with due diligence"
- the model is "too inaccurate" to be able to predict per species
- "the number of ducks in Victoria and SE Australia is unknown"
- the model did not account for social / economic or ecological impacts
- the land-based duck count is only performed at 37 "priority" waterways (- far too small a number to be in any way an accurate state-wide estimate when there are tens of thousands of shooting waterways around Victoria.)

GMA last year recommended a record 90 day shoot. Nowhere in the AHM - nor any other documentation - can we see any recommendation for a 90 day shoot. In fact, the average season for the last 30 years has been 70 days, so where did GMA get the additional 20 days (call it three weeks) from? Did the regulator consider the costs to Victorians of law enforcement for such a length of time? Or the adverse impacts to threatened species or nearby residents?

Importantly, we also note that a 60% reduction in bag limit with a full season length, (the 2022 season allowed four birds per shooter per day) resulted in only an 18% reduction in overall harvest and therefore did not provide an opportunity for populations to recover.

Only a drastically reduced season – or better, a cancelled one – is a solution to the alarming declines in bird populations and the significant adverse impacts of shooting to community.

Conclusion

If GMA are at all concerned with sustainability, or the impacts of hunting on anyone other than a minority group of bird shooters, if it wants to encourage public confidence in its regulatory performance, it needs to recommend a 2023 season close for duck and quail shooting.

Should GMA be unwilling to take the appropriate step above, it must provide a full, clear and transparent report as to why, addressing in detail all of the issues raised in this submission. In addition, it must ensure that the only waterways open to shooters in the interim, are those few where recent (within two weeks) bird counts have taken place by an objective experienced group such as BirdLife Australia, where monitoring will occur at all times by authorities (as happens with outdoor shooting ranges normally), where residents, other recreational users, animals or stock are not within five klms, and where there is clear signage erected regarding where shooters can and cannot shoot. Any waterways where community have requested exclusion zones should obviously be closed to shooting. Finally, the shooting should be reduced to a maximum timeframe of three weeks so as not to burden taxpayers with the costs of law enforcement or lost tourism opportunities.

Regional Victorians Opposed to Duck Shooting Inc.

Attachments:
2018 survey of regional residents &
2021 Petition Comments re Closing a Public Waterway to Shooting in Central Victoria

Letters

Hunting makes no sense this season

WE cannot easily reverse a warming climate, or avoid the likelihood of more frequent and longer droughts and fire seasons. What we can change with the stroke of a pen, are the additional man-made threats such as recreational bird shooting, or we will have to take responsibility for aiding and hastening a catastrophic downturn of waterbird species.

It is often falsely believed that birds will simply "bounce back" — there are biological limits to this bouncing back because of the limited opportunities and options that birds have themselves.

Moreover, many successful breeding pairs will have become victims of past fire and drought catastrophes themselves and inexperienced birds may not have had time to acquire partners. Bearing in mind, that at the best of times only 25 per cent of any avian species ever breeds in a given year, it is predictable that the number of breeding events will decline this year.

It can thus be expected that breeding success of the surviving birds will diminish, even if conditions should remain reasonably good.

It is scandalous to allow any shooting season this year and it is particularly puzzling that the shooting season of waterfowl allows, tolerates or turns a blind eye to the shooting even of vulnerable and endangered species.

Native birds have a role to play in maintaining a healthy Australian ecosystem, healthy waterways and in control of pests. I would like to see shooters shoot clay pigeons as accomplished sportsmen and women, not as self-appointed executioners of native wildlife.

Gisela Kaplan,
Prof. of Animal
Behaviour, PhD (Vet.Sc)

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RSPCA Victoria

Duck hunting season 2023

RSPCA Victoria submission

05.01.2023

About RSPCA Victoria

RSPCA Victoria is a non-government, community-based charity that works to prevent cruelty to animals by actively promoting their care and protection. Since its establishment in 1871, and as member of RSPCA Australia (the federation of eight state and territory organisations in Australia), the RSPCA has collectively become Australia's leading animal welfare charity.

Across the state, RSPCA Victoria's community services include work undertaken by our Inspectorate, Animal Care Centres, Clinics and Education teams. RSPCA Victoria operates Animal Care Centres across Victoria, providing refuge, care and new homes where possible to more than 14,000 animals every year. Our team of Inspectors works to protect animals from cruelty, receiving more than 10,000 reports every year, prosecuting offenders and rescuing animals from dangerous situations. Our Education team contributes to prevention strategies by influencing over 8,000 young people each year about the value and importance of animals in our lives.

RSPCA Victoria works to educate the community regarding animal welfare and works with government and industry to ensure the standard of animal welfare and care continues to improve.

RSPCA policies are a collection of statements developed to improve the welfare of animals in Australia. These policies are underpinned by scientific evidence and must be agreed upon and amended by a unanimous vote from the RSPCA National Board, following a robust consultation process with each state and territory RSPCA.

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RSPCA Victoria recommendations

1. RSPCA Victoria believes duck hunting should be banned due to the inevitable suffering of native ducks.
2. Acknowledging that duck hunting is currently lawful, if it is to continue, as a matter of priority, the Waterfowl Wounding Reduction Action Plan must be implemented and monitored to determine efficacy of achieving its aims.
3. Due to the inevitable welfare impacts caused by hunter disturbance to native waterbirds, duck hunting should be banned.
4. As climate outlook data does not support sustainable duck hunting, duck hunting should cease.
5. As long-term declines in game bird species abundance have not recovered with increased habitat, duck hunting must be banned in Victoria to allow game bird populations to recover and be sustainable into the future.
6. The remake of the Wildlife (Game) Regulations 2012 provides an invaluable opportunity to ban duck hunting in Victoria.
7. As the majority of the Victorian population is extremely concerned about the animal welfare impacts of duck hunting and support a ban on duck hunting, this should be enacted to uphold community expectations.

Introduction

RSPCA Victoria appreciates the opportunity to provide a submission to the Game Management Authority (GMA) regarding our suggestions for modifications to the 2023 duck hunting season. In this submission we will outline the reasons we believe the 2023 season should be cancelled and why duck hunting should cease permanently.

RSPCA policy

The RSPCA is opposed to the hunting of any animal for sport as it causes unnecessary injury, pain, suffering, distress or death to the animals involved.

Duck welfare

Wounding

We are pleased to note that RSPCA Victoria's long expressed concerns on the lack of information on the wounding rate of ducks during the Victorian hunting season has seen the GMA investigate this issue. We note that in the draft Waterfowl Wounding Reduction Action Plan, the GMA has now acknowledged that research has revealed the wounding rate for ducks could be between 6-40%.

Surveys of water bird wounding losses in Australia were undertaken between 1953 to 1982, but no recent studies have been conducted. A study that examined the impact of hunting activity on four species of native ducks in Victoria from 1972 to 1977, reported 14% to 33% of birds were wounded but not retrieved[1]. An x-ray study of trapped live ducks in Victoria from 1957 to 1973 reported that 6% to 19% of ducks had sustained embedded shotgun pellets in their bodies from duck hunting[2].

Using the reported total harvest figure of 262,567 ducks from the 2022 season and the aforementioned wounding rate of 6-40%, would mean that between 15,700 and 105,000 ducks were wounded and not killed outright in the 2022 season. Assuming a median wounding rate of 17%, the wounding rate would be 44,636 ducks. While RSPCA Victoria would like to see no birds wounded, this current rate of wounding is unacceptably high. Wounded birds not retrieved and killed will suffer; some will eventually die from their injuries and birds with less serious injuries may survive with embedded shotgun pellets. Wounded birds can suffer from the pain and disabling effects of their injuries, from sickness due to wound infection, or from thirst or starvation. Injuries to the bill often lead to an inability to drink or eat. Wing fractures are also common and, as with other injuries, wounded birds are at a heightened risk of being attacked by a predator.

[1] Norman FI & Powell DGM (1981) 'Rates of recovery of bands, harvest patterns and estimates for black duck, chestnut teal, grey teal and mountain duck shot during Victorian open seasons, 1953-77', *Australian Wildlife Research*, 8:659-664.

[2] Norman FI (1976) 'The incidence of lead shotgun pellets in waterfowl (Anatidae and Rallidae) examined in south-eastern Australia between 1957 and 1973', *Australian Wildlife Research*, 3:61-71.

The draft Waterfowl Wounding Reduction Action Plan outlines the following causes of wounding:

- Poor shooting skills
- Shooting at birds at distances greater than 30 metres
- Hunters shooting beyond their maximum shooting skills distance or capability of technology
- Use of suboptimal load and choke choices for the species being hunted
- Shooting into flocks and sub-lethally striking non-target birds
- Dropping birds in heavy cover where they cannot be retrieved
- Failure to have an effective retrieval strategy in place, including the use of a well-trained retriever dog.

While duck hunting remains legal, it is vital that programs are undertaken in order to target the causal factors of wounding as a matter of priority.

RSPCA Victoria recommendations:

1. RSPCA Victoria believes duck hunting should be banned due to the inevitable suffering of native ducks.
2. Acknowledging that duck hunting is currently lawful, if it is to continue, as a matter of priority, the Waterfowl Wounding Reduction Action Plan must be implemented and monitored to determine efficacy of achieving its aims.

Disturbance from hunters

A study by McDuie et. al (2021) found that ducks are dramatically impacted by anthropogenic disturbance in several ways. The researchers found that while ducks adjust to disturbance relatively quickly, this is due to substantial behavioural modifications that detrimentally affect their ability to obtain sufficient food[3]. The highest disturbance generally caused ducks to remain in sanctuaries and forego daytime foraging, but they also amended movement patterns to avoid the more moderate disturbance of humans moving about the wetland landscape by foot or boat, both of which had the effect of increased nocturnal movement/foraging. Persistent modification of natural movement patterns impacts species ecology producing physiological, behavioural, management and conservation implications.

The indirect effects on duck welfare from recreational hunter disturbance need to be recognised and addressed.

RSPCA Victoria recommendation:

3. Due to the inevitable welfare impacts caused by hunter disturbance to native waterbirds, duck hunting should be banned.

[3] McDuie F et al. (2021) 'Informing wetland management with waterfowl movement and sanctuary use responses to human-induced disturbance', *Journal of Environmental Management*, 297.

Climate outlook

Over the past 22 years, rainfall in Victoria has been very much below average (see figure 1) and decreased by approximately 10 per cent during the cool season months (April to October)[4]. Rainfall in the cool season months is important as it is when peak streamflow occurs in most catchments, and it is more effective than warm-season rainfall in generating runoff[5]. Runoff is essential in the creation and maintenance of waterbird habitat as it affects water availability in the wetlands and sustains the health of riverine systems. It is projected that Australia's future climate will comprise of further decreases in cool season rainfall and longer periods of drought on average across many regions of southern and eastern Australia[6]. This outlook suggests that hunting will not be sustainable into the future due to ducks' reliance on long term rather than short term rainfall.

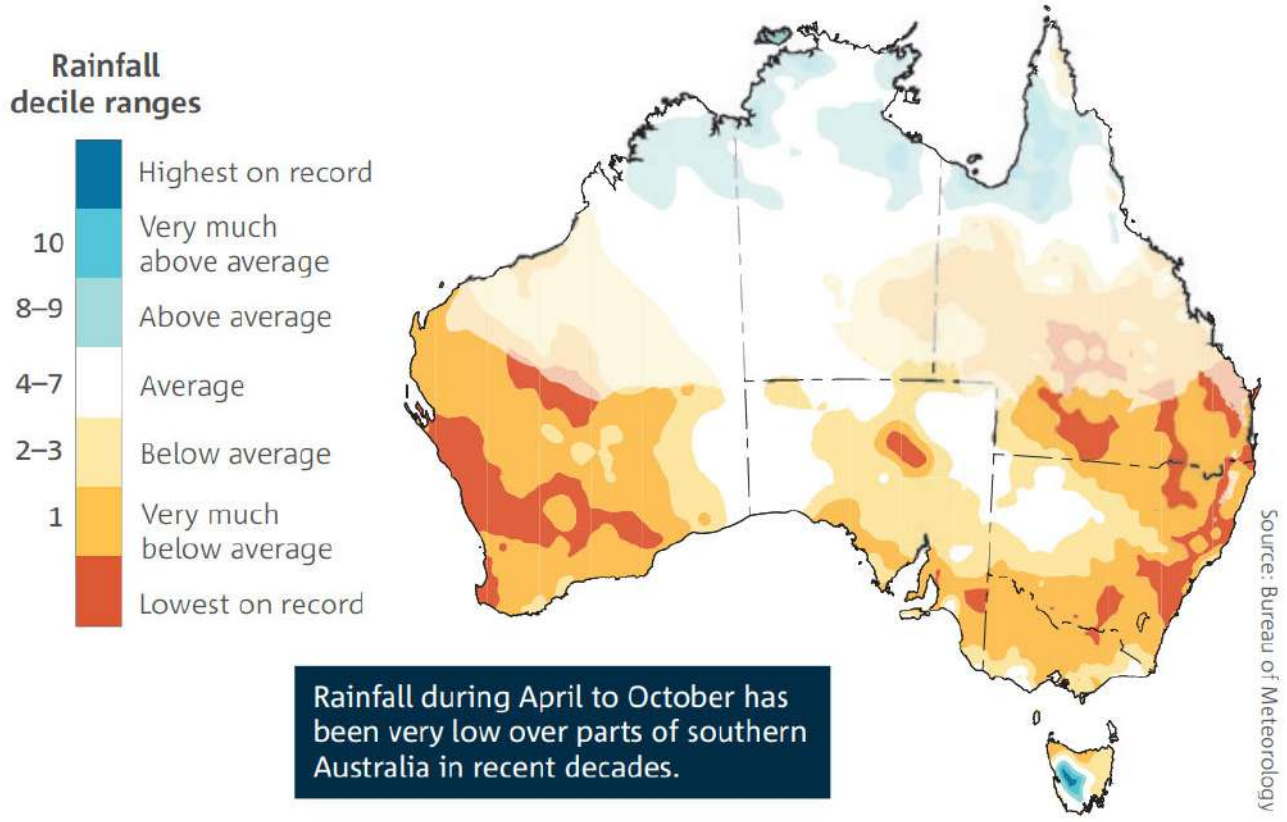

Figure 1 - April to October rainfall deciles for the past 22 years (2000-21). Map shows averages compared to all years from 1900.

RSPCA Victoria recommendation:

4. As climate outlook data does not support sustainable duck hunting, duck hunting should cease.

[4] CSIRO & Bureau of Meteorology (2022) 'State of the climate 2022', *Canberra: Commonwealth of Australia*, http://www.bom.gov.au/state-of-the-climate/2022/documents/2022-state-of-the-climate-web.pdf, accessed 24 Nov. 2022.
[5] Ibid.
[6] Ibid.

Game bird abundance

RSPCA Victoria continues to be concerned by the data provided in the Aerial Survey of Waterbirds in Eastern Australia each year, which demonstrates the dire conditions that wetland birds, and in particular, game birds are facing. Specifically, from the Aerial Survey of Waterbirds 2022 report[7], we are concerned to note:

- Despite two successive La Niña years three major indices for waterbirds (total abundance, number of species breeding and wetland area index) continued to show significant declines over time.
- Total waterbird abundance in 2022 increased significantly from 2021 but still remained well below the long-term average, the 11th lowest in 40 years.
- 75% of total waterbird abundance was concentrated in a small number of wetlands; two of these wetlands supported more than 120,000 waterbirds representing 65% of the total abundance, both of which occur in the Murray-Darling Basin. These wetlands generally supported large breeding aggregations and high species diversity. Conversely around 41% of surveyed wetlands supported no waterbirds (includes wetlands that were dry).
- Duck abundance is well below the long term average (see figure 2), with some species of game duck abundances below average by an order of magnitude. Six out of eight species continued to show significant long term declines. Australian Wood Duck was the only species slightly above the long-term average. Some duck species declined in abundance compared to 2021 including the Grey Teal, Pink-eared Duck and Hardhead.

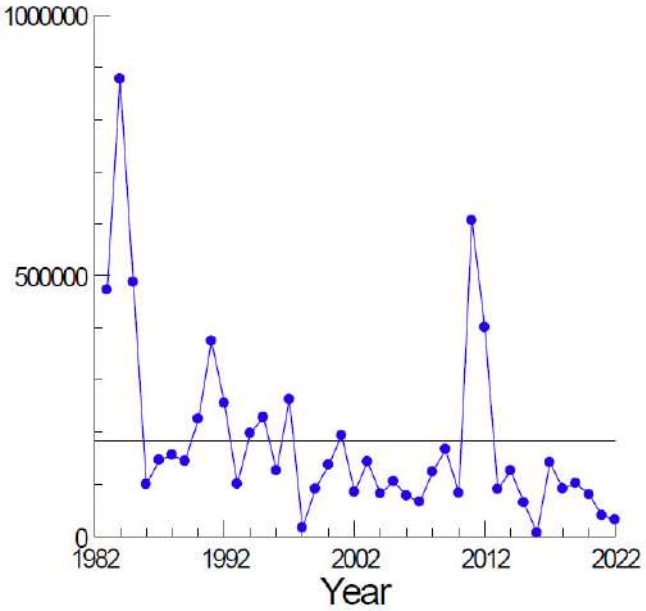

Figure 2 - Changes in duck abundance over time in the Eastern Australian Waterbird Aerial Survey (1983-2022); horizontal line shows long-term average

[7] Porter JL et al. (2022) 'Aerial Survey of Waterbirds in Eastern Australia – October 2022 Annual Summary Report', *University of New South Wales, Sydney*.

We are very concerned to note that while there has been an increase in available habitat (i.e. in the Murray-Darling Basin) we have continued to see a decline in game duck abundance and the additional impact that hunting in these environments would have in terms of significant losses of birds. As outlined in the GMA considerations document[8], habitat availability and game duck abundance have a positive relationship; however, the Aerial Survey of Waterbirds in Eastern Australia results show this is not the case. We are concerned that, despite successive years with La Niña conditions and an increase in species richness and species abundance, the increases are not in game species and therefore game duck species remain at risk.

We continue to be concerned that as there has not been a recovery in species abundance levels over a number of years, this could be an indicator of the beginning of a crisis in native game duck populations. The lack of waterbird species in many wetlands may signify that the population cannot sustainably support hunting as they are unable to return to regular abundance levels in those areas. In addition, waterbirds are very sensitive indicators of the health of entire wetland systems, because they are responsive to flow and the health of their environment, and the scarcity of waterbirds may denote greater issues with the ecosystem.

A range of unknown variables could be impacting the waterbird population numbers and therefore more research needs to be conducted to understand the decreasing trends, which will require sufficient time to be performed. The absence of waterbirds from many wetlands may suggest that there are variables negatively affecting the welfare of waterbirds and their likelihood for breeding. The welfare of other animal species that rely on waterbird populations may also be affected. Until the causes that are driving the reduction of waterbird populations are properly understood, we recommend that duck hunting should cease. The sustainability of duck populations is clearly at peril and anything that further impacts populations, such as duck hunting, must be avoided.

We note that in the 'Using duck proxies and surface water to inform hunting arrangements for 2023'[9] document, it is recommended to have a daily bag limit of four ducks. This limit may be deemed low by hunters, considering the higher rainfall that has been experienced recently. However, based on the information ducks respond to long term rainfall deficiencies rather than recent rainfall, as duck counts have only shown low to moderate numbers. As mentioned above our view is that any negative impact on native waterbird populations must be avoided and no duck hunting season should occur to allow duck populations to recover.

In 2021, RSPCA Victoria made a submission to the Department of Jobs, Precincts and Regions review of the Wildlife (Game) Regulations 2012 which included a recommendation to remove the Blue-winged Shoveler (Australasian Shoveler) from the game list due to a continuing decline in numbers. Further supporting this removal, the Blue-winged Shoveler has been prohibited from hunting since 2015 and have been restricted most years since 1963. The most recent Eastern Australian Waterbird Aerial Survey shows that the number of Blue-winged Shovelers still remain well below the long-term average and therefore they should not be hunted in 2023. We believe that the Blue-winged Shoveler should no longer be listed as a game species and are concerned to note

[8] Game Management Authority (2022) 'Considerations for the 2023 duck season'.

[9] Klaassen M (2022) 'Using duck proxies and surface water to inform hunting arrangements for 2023'.

that as the review of the regulations have been delayed by 12 months, Blue-winged Shovelers remain on the game species list.

Based on current game bird abundance data, we believe that it is not possible to undertake a sustainable hunting season in 2023 and that duck hunting must be banned in Victoria to allow game bird populations to recover and be sustainable into the future.

RSPCA Victoria recommendations:

5. As long-term declines in game bird species abundance have not recovered with increased habitat, duck hunting must be banned in Victoria to allow game bird populations to recover and be sustainable into the future.
6. The remake of the Wildlife (Game) Regulations 2012 provides an invaluable opportunity to ban duck hunting in Victoria.

Community opposition to duck hunting

There are 6.5 million people living in Victoria[10] and according to the GMA, in 2022 there were only 23,098 licensed duck hunters. Of those, it was estimated that only 11,549 actually hunted in 2022. This means that only 0.17% of the Victorian population are actively participating in duck hunting.

RSPCA Victoria engaged market research firm, Kantar, to assess Victorian's attitudes towards duck hunting. These findings span from all data collection from August 2019 to November 2022. In total, n=6,034 Victorians were surveyed throughout this period, with representative quotas set on age, gender and location.

This survey found that overall opposition to duck hunting remains high, with two in three Victorians (66%) stating that they oppose the activity (see figure 3). Of metropolitan residents 68% are opposed to duck hunting, while 61% oppose it in regional Victoria. Only one in twenty Victorians have or had an interest in participating in duck hunting, with barely 3% considering participation and 6% who had previously participated. A recent study also showed that there has been a decline in the numbers of active Victorian duck hunters by approximately 10% between 2009 and 2019[11].

[10] 2021 Census Community Profiles, https://www.abs.gov.au/census/find-census-data/community-profiles/2021/2, accessed 13 Dec. 2022.

[11] Moloney PD et al. (2022) 'Bayesian modelling reveals differences in long-term trends in the harvest of native and introduced species by recreational hunters in Australia', *Wildlife Research*.

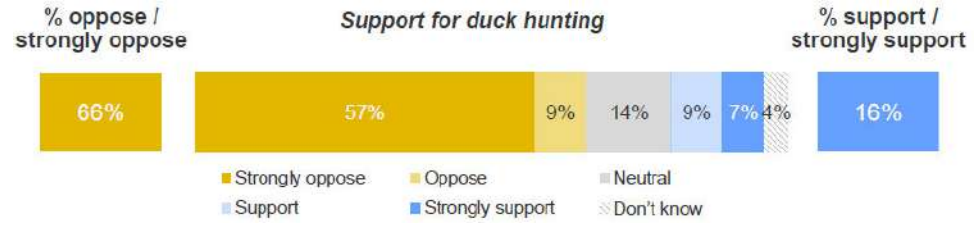

Figure 3 - Victorian's opposition/support for duck hunting

Two-thirds of Victorians (67%) are either *very* or *extremely* concerned about the long-term injuries to ducks who survive being shot and more than three in five (62%) are concerned with other non-game animals being shot by duck hunters (see figure 4).

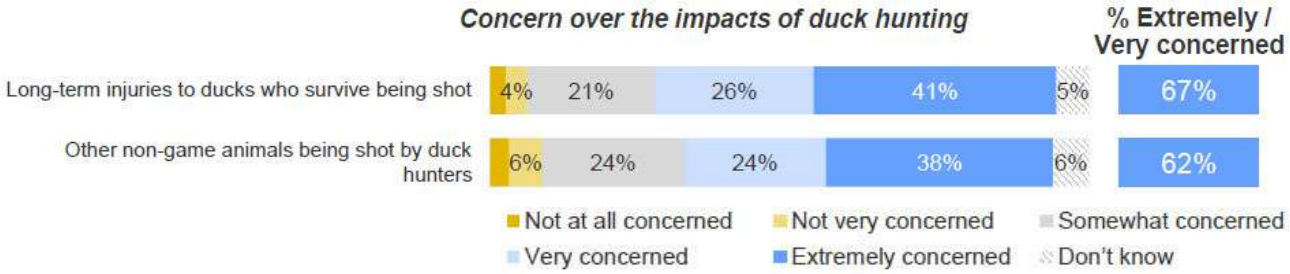

Figure 4 – Victorian's concerns over the impacts of duck hunting - % extremely/very concerned

This survey data continues to show that the animal welfare effects caused by duck hunting does not align with community sentiment and concerns – in particular Victorians are extremely concerned about those ducks that are wounded and not killed outright thereby subject to long-term injuries and suffering. It is therefore imperative that community expectations regarding the animal welfare impacts of native ducks are met and that duck hunting is banned in Victoria.

RSPCA Victoria recommendation:

7. As the majority of the Victorian population is extremely concerned about the animal welfare impacts of duck hunting and support a ban on duck hunting, this should be enacted to uphold community expectations.

RSPCA Victoria

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3 Burwood Highway Burwood East VIC 3151

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05.01.23

Dear Simon

Duck season submission.

VDHA recommends that a full length season of 10 birds including all species including no more than two blue wing .

Commencing on the traditional third weekend in March and terminating on the Queens birthday weekend.

Taking into consideration the phenomenal flooding events throughout Victoria have led to the best multiple breeding events and a massive Increase in birds available for harvest any environmental conditions that would affect the gazetted duck season simply do not exist.

Considering the IAHM dataset used by the GMA is inconsistent year by year the VDHA reject this process out of hand the reasoning behind is this.

The GMA relies heavily on the EAWS to assist setting of the duck season noting that the author of the EAWS has stated that the survey should not be used to set The annual Duck season.

The AWS no longer reflects real-time conditions on the ground in Vic as significant flooding had not reached the terminal water bodies from when the study was undertaken.

The GMA recommendation of 4 birds per Hunter per day translates into four birds for Hunter per day multiplied by the number of days in the season of 90 days.

This would reflect the an environmentally sustainable number of 360 birds per hunter/license per season would be an acceptable Harvest per year.

If adopted VDHA would recommend that the number of birds taken per Hunter should be cumulative of this number and Hunter should be able to either spread this out over the entire season of four birds per day thereby hunting every day or take this number over a series of reduced hunting opportunities not exceeding 20 bird per day or not exceeding 360 for the season which would be a reasonable and sustainable harvest. At the hunters option and regulated by the GMA.

Announcement of the season should be in a reasonable time frame in order for participants to organise time off work and hunting supplies to order stock for the season in advance.

Yours sincerely
Kev Gommers
VDHA Secretary

CONSIDERATIONS FOR THE 2023 DUCK SEASON

Wildlife Victoria Response

January 2023

WILDLIFE VICTORIA

Summary

Wildlife Victoria understands that the Game Management Authority ("GMA") is seeking any additional data or input in response to the *Considerations for the 2023 Duck Season* document dated 20 December 2022.

Wildlife Victoria accordingly provides input.

About Wildlife Victoria

Wildlife Victoria is a not-for-profit organisation that has provided the Victorian public with a statewide wildlife emergency response service for 35 years. The organisation's staffing consists of a head office, centralised 24/7 phone-based Emergency Response Service, and in field wildlife veterinarians and veterinary nurses together with a statewide network of over 1,200 trained wildlife rescue volunteers.

In 2022, Wildlife Victoria responded to over 110,000 calls for help from the Victorian public for sick, injured and orphaned wildlife and assisted 62,000 animals across 410 species. Wildlife Victoria's Emergency Response Service is staffed 24/7, 365 days a year and is experiencing a consistent 15% year on year increase in demand for services.

In addition to our wildlife operational response, through our education and advocacy programs Wildlife Victoria helps wildlife by providing people with the knowledge and skills they need for peaceful and positive co-existence with wildlife, and facilitating positive community attitudes toward wildlife.

Wildlife Victoria's Position

We note that the GMA has articulated it understands Wildlife Victoria's position and this is acknowledged. Wildlife Victoria nevertheless confirms our position which is that Wildlife Victoria is opposed to duck hunting in any form and calls for its immediate and permanent end.

Wildlife Victoria also highlights the long-term decline in water bird numbers, and the negative impact duck shooting has on other wildlife residing in the shooting areas.

Wildlife Victoria also urges the GMA to consider the negative impact on domestic and international tourism, and the damage duck hunting has on Victoria's cultural and environmental reputation.

Considerations

Legislative Considerations

Wildlife Victoria requests that the GMA consider the aspects of the *Plan for Victoria's new animal care and protection laws* issued by the Victorian Government Department of Jobs, Precincts and Regions for consultation in September 2022. These proposed laws are in line with growing community concern over the treatment of wildlife species that are already under threat from climate change, urbanisation and habitat fragmentation.

"The Objectives of the new laws would recognise that animals have the capacity to feel, perceive their environment, and to have positive and negative experiences like pleasure and pain – that is, that animals are sentient."[1] 'Animals' covered by the new laws include ducks.

Considering the well understood and well documented pain that being shot causes, Wildlife Victoria asks that the GMA consider the viability of the strategic positioning of the continuation of duck hunting within this soon to be new frame of reference.

Wildlife Victoria asks that the GMA provide documentation of the processes they will be using to build their strategic case for the continuation of duck hunting within this changed legislative and cultural environment.

In addition, Wildlife Victoria asks that the GMA consider a reduction in bag limits and the duration of duck hunting season to an eventual phasing out of duck hunting by 2025 to reflect the government's understanding of the continued change in community expectations and the ongoing decline in community support for duck hunting as reflected in the proposed new legislation.

Community Expectations

Duck hunting popularity and support has long been in decline, with now only approximately 11,549 shooters taking part in last year's duck hunting season,[2] while an RSPCA survey states that 68% of Victorians want an end to duck hunting.[3]

"The research also showed that 69% of people were interested in visiting parts of regional Victoria, with more than half (54%) preferring to visit a location where duck hunting does not occur."[4]

Figures in the *Out for a Duck* report show even less support, quoting that 87% of Victorians support a ban on duck hunting.[5] This lack of support for duck hunting reflects a mainstream rejection of the cruelty inflicted on ducks through duck hunting. It also reflects the community view that cruelty to animals is unacceptable which is outlined in the new animal care and protection laws currently under consideration in Victoria:

"An act of cruelty would be primarily defined in the new laws as any act or omission that causes or is likely to cause unreasonable harm, pain or distress to an animal. Harm, pain or distress could be mental, as well as physical, and include experiences such as hunger, stress and fear."[6]

Wildlife Victoria asks the GMA to consider that the Victorian public does not support duck hunting, and by continuing to pursue this unpopular project the GMA is, on balance, damaging the Victorian government's relationship with the Victorian public. Wildlife Victoria asks the GMA to consider that

[1] Plan for Victoria's new animal care and protection laws Victorian Government Department of Jobs, Precincts and Regions September 2022
[2] https://rspcavic.org/rspca-urges-leaders-to-cancel-2022-duck-hunting-and-protect-our-native-ducks/
[3] https://rspcavic.org/rspca-urges-leaders-to-cancel-2022-duck-hunting-and-protect-our-native-ducks/
[4] https://rspcavic.org/rspca-urges-leaders-to-cancel-2022-duck-hunting-and-protect-our-native-ducks/
[5] Out for a Duck An analysis of the economics of duck hunting in Victoria September 14, 2012 by Rod Campbell, Richard Denniss and David Baker
[6] Plan for Victoria's new animal care and protection laws Victorian Government Department of Jobs, Precincts and Regions September 2022

continuing duck hunting regardless of public opinion undermines the public's confidence in the government and reduces public trust in both the government and the GMA.

In addition, Wildlife Victoria asks the GMA to outline its process for considering the above factors in its recommendations for duck hunting.

Economic Benefit

The most recent report published by the government is the *Economic contribution of recreational hunting in Victoria*[7] report published in June 2020. It is based on data derived from a survey of game licence holders in Victoria. The figures in the report cannot be verified and there is no cost-benefit analysis in the report.

The lack of any publicly available documents that report on the true economic benefits of duck hunting leads Wildlife Victoria to believe that there are limited to no economic benefits. In contrast, the economic benefits of birdwatching and wildlife tourism are well documented and provide compelling evidence for ending duck hunting. The 2012 report "Out for a duck - An analysis of the economics of duck hunting in Victoria" by the Australia Institute provides the following summary:

"Summary

- Less than half of one per cent of Victorians are active duck hunters, while 87 per cent support a ban on duck hunting. Three per cent of respondents to our survey had participated in duck hunting and intend to do so again.
- Claims that duck hunting – or any recreational hunting – contributes significantly to the economy of Victoria are false. They assume that without hunting any related expenditure would be lost to Victoria. On the contrary, our survey shows that if duck hunters were prevented from hunting ducks they would go fishing, hunt other species, or go camping. There would be no impact on expenditure in Victoria from a duck hunting ban.
- Revenue from non-hunting tourism is far more important to Victoria's economy. In fact, more than half of survey respondents would be less likely to holiday in an area with duck hunting.
- Most Victorians are willing to pay for improvements in animal welfare.
- Thirty per cent of respondents are willing to pay to end duck hunting.

The non-monetary benefits of ending duck hunting and the improvement in welfare of the non-duck hunting public, are far greater than the non-monetary losses that hunters would incur from a ban. We estimate this benefit of banning duck hunting at around $60 million per year."[8]

Wildlife Victoria asks the GMA to consider the negative economic impact duck hunting has on Victorian tourism. Wildlife Victoria asks the GMA to consider undertaking an immediate and comprehensive

[7] https://djsir.vic.gov.au/__data/assets/word_doc/0009/1948707/v.4Economic-contribution-of-recreational-hunting-in-Victoria-accessible.docx

[8] Out for a Duck An analysis of the economics of duck hunting in Victoria September 14, 2012 by Rod Campbell, Richard Denniss and David Baker

review of the economic, environmental, and reputational cost to the Victorian public for the GMA to administer the duck hunting program.

In light of current data available, Wildlife Victoria asks the GMA to consider a reduction in duration of duck hunting season to an eventual phasing out of duck hunting by 2025 reflecting that the GMA understands the negative impact duck hunting has on the Victorian tourism industry and that a continuation of duck hunting into the future will continue to cause harm to the tourism industry that is not outweighed by the benefits of duck hunting.

Compliance and Enforcement Capability

Wildlife Victoria refers to the *Assessment of the GMA's compliance and enforcement function* conducted by Pegasus Economics in 2017. This assessment documented that the GMA had deep structural and operational problems rendering it largely ineffectual.

"The GMA's inability to ensure compliance with the hunting laws has seriously undermined its credibility as an independent and effective regulator and raises questions about the integrity and sustainability of the regulatory regime."[9]

Wildlife Victoria has not been supplied with any documentation of the implementation of the structural or operational changes recommended in the report, and as such maintains the view upheld in the report that the GMA may not be an effective regulatory body.

The report highlighted that the GMA was not capable of enforcing the specific requirements around licensing, species identification, bag limits, or reporting required during the duck hunting season.

To further support the assessment review's findings and Wildlife Victoria's understanding that little to no change has been implemented, Wildlife Victoria has evidence of widespread shooting of ducks that are excluded from the allowed species list.[10]

Given the importance of compliance and enforcement to ensure adequate protections for threatened and endangered waterbirds, Wildlife Victoria requests that the 2023 duck hunting and any future season are paused to enable the GMA to address and implement the recommendations of the report, and that any changes that are implemented are communicated to Wildlife Victoria to satisfy that the concerns and recommendations raised in the report have been addressed.

In particular Wildlife Victoria seeks clarification from the GMA on the processes they will implement to ensure hunter compliance with the duck hunting shooter requirements. Wildlife Victoria seeks clarification on the GMA's process for deciding the number of duck hunting locations given its lack of capacity to adequately monitor all locations.

Wildlife Victoria also calls on the GMA to consider the long-term implications of using the same small group of survey and data contractors on the integrity and independence of the reports supplied by the contractors. Wildlife Victoria requests the provision of process documents outlining the GMA's

[9] Assessment of the GMAs compliance and enforcement functions 2017 Pegasus Economics 2017

[10] "'Terrible tragedy unfolding' Threatened species gunned down during duck season" Michael Dahlstrom Yahoo News Australia 17 March 2022

management of conflict of interests for externally contracted services, along with the tendering process documents for external contractors, reporting requirements, and selection processes.

Ducks left injured or dead in field

Wildlife Victoria has documented in-field evidence of widespread hunter non-compliance of the requirement to retrieve dead or injured animals while hunting. It is acknowledged by the GMA that it is currently logistically impossible for the GMA to ensure compliance of this requirement in field.

"Some of these ducks will be killed outright. Some will be wounded, brought down and killed on retrieval. Many others will be crippled or wounded and will die within a few hours or days. Some will suffer prolonged pain before they die."[11]

Ducks treated by Wildlife Victoria at Lake Bael Bael 16-18 March 2022:

Species	Record Count
Duck, Grey Teal	10
Shoveler, Australasian	3
Swan, Black	2
Duck, Pink-eared	2
Duck, Pacific Black	2
Duck, Hardhead	1
Coot, Eurasian	1
Total	21

In all cases any birds alive were euthanised given the severity of their injuries, and all other birds examined which had been left in field were x-rayed and shown to have gunshot pellets inside their bodies or gunshot wounds.

Threatened and endangered species

Wildlife Victoria has documented in-field evidence of widespread hunter non-compliance of shooting only the listed game ducks.

"Among the dead are blue-winged shovelers and a hardhead, species which the state government has this year explicitly warned are "listed as threatened due to declining populations"."[12]

It is currently logistically impossible for the GMA to ensure compliance of this requirement in field, and the occurrence of species being moved off the hunting list and being placed straight onto the threatened list raises serious concerns as to the veracity of the survey data and the processes used by the GMA in consideration of species selection.

[11] https://kb.rspca.org.au/knowledge-base/what-is-the-rspcas-view-on-duck-hunting/

[12] "'Terrible tragedy unfolding' Threatened species gunned down during duck season" Michael Dahlstrom Yahoo News Australia 17 March 2022

Wildlife Victoria asks that the GMA provide information about the process the GMA uses to check the veracity of the survey data used in its considerations.

Wildlife Victoria Data

Over the last five years, Wildlife Victoria has tended to 11,468 ducks across Victoria.

Species	Record Count
Duck, General	5338
Duck, Wood	2831
Duck, Pacific Black	2786
Duck, Muscovy	184
Duck, Chestnut Teal	70
Duck, Mallard	59
Duck, Grey Teal	52
Duck, Australian Shelduck (Mountain)	36
Duck, Teal - Unidentified	29
Duck, Pekin	19
Duck, Musk	15
Shelduck, Australian	12
Duck, Hardhead	12
Duck, Pink-eared	8
Duck, Freckled	7
Duck, Blue-billed	7
Duck, Maned	3
Total	11468

Wildlife Victoria has detailed data sets on location and species of ducks throughout Victoria. Wildlife Victoria requests that the GMA develops a process to request and use Wildlife Victoria's data in its consideration for setting bag limits, locations and season durations.

Ecosystem and biodiversity impacts

Last season Wildlife Victoria witnessed the impact of duck shooting on many species beyond the ducks targeted by shooters. Wildlife Victoria witnessed the loss of a new generation of swans as brooding swans abandoned their nests and eggs in response to loud and unrelenting gun shots. None of the impacts of duck shooting on surrounding wildlife is quantified in the supplied reports.

Amenity impacts

There has been no data supplied by the GMA regarding the impact of duck hunting on people living in proximity to duck hunting locations. With an increase in people living and working in regional Victoria in recent years, and the expansion of residential developments into areas closer to duck hunting locations, the impact of duck hunting on local residents must now be considered by the GMA.

Wildlife Victoria receives increasing reports from members of the public concerned about the negative impact of duck hunting, not only on wildlife, but also on their personal amenity. People are unable to work and sleep, they are worried for their safety on their own property, and their pets and farm animals are distressed for extended periods.

Wildlife Victoria Resource Management

There is significant workload placed on Wildlife Victoria due to the impacts of duck hunting. Wildlife Victoria is already under increasing public pressure to do more for our wildlife, and duck hunting creates an unnecessary drag on resources. Wildlife Victoria is experiencing an increase in calls for help of 15% year on year for all wildlife, with climate change, habitat destruction and habitat fragmentation being the main causes for wildlife suffering. This year Wildlife Victoria will spend time and resources educating the public and media about the impacts of duck hunting, and why Wildlife Victoria is seeking an end to it. Wildlife Victoria will also spend time speaking with state and local governments, and many other stakeholder organisations.

If Wildlife Victoria were no longer needed to treat ducks in the field or advocate for duck welfare, Wildlife Victoria would be able to reallocate these resources to provide greater outcomes for other wildlife that desperately need support to survive.

Wildlife Victoria spends more than $7M p.a. on wildlife veterinary services and operational costs associated with provision of an on call wildlife emergency response.

The services provided by Wildlife Victoria to the GMA and police in field during duck hunting season are of significant value to the GMA and wildlife. Wildlife Victoria is on site during duck hunting season providing veterinary care to injured animals, accurately identifying species, and providing radiographs, veterinary case notes and other useful information to authorised officers helping them to ensure compliance with hunting standards. This collegial and valuable service is provided at no cost to the GMA, however Wildlife Victoria asks that the cost of providing this service is considered in the overall cost of running the duck hunting season.

Recommended actions:

1. The GMA recommend an immediate and ongoing cancellation of duck hunting.

If the above recommendation is not adopted by the GMA, Wildlife Victoria have further suggestions for urgent consideration

2. Reduction in the duration of duck hunting season to an eventual phasing out of duck hunting by 2025 to reflect that the government understands the continued change in community expectations and the ongoing decline in community support for duck hunting.
3. An immediate and comprehensive review of the economic, environmental, and reputational cost to the Victorian public for the GMA to administer the duck hunting program.
4. Reduction in duration of duck hunting season to an eventual phasing out of duck hunting by 2025 to reflect that the government understands the negative impact duck hunting has on the Victorian tourism industry.
5. Immediate government review into the role, scope and purpose of the GMA.

6. Immediate public review of external survey contractors, audit of associated risks, and conflict of interest registers.
7. Immediate review of hunter species identification testing, and species listing processes.
8. An immediate review of duck shooter requirements, including a new requirement that duck shooters wear a body cam while hunting, and that footage must be submitted to the GMA for audit.
9. An immediate review of the impact of duck hunting on surrounding wildlife with remediation recommendations.
10. An immediate survey of duck hunting sites providing population data for residential areas within gunshot hearing range, with a commitment to reducing duck hunting sites in populated areas and restricting shooting to locations that are able to be properly monitored.

Conclusion

It is well beyond the time to end duck hunting in Victoria. Recreational duck shooting was banned in Western Australia in 1990, NSW in 1995 and in Queensland in 2005. With the long-term decline in water bird numbers, widespread public condemnation of duck shooting, the inability for the GMA to properly oversee the program, the economic and reputational cost to the Victorian public, and the needless cruelty inflicted on the ducks, Wildlife Victoria renews its calls for the immediate and permanent end to duck shooting in Victoria.

Australian Duck Hunters & Proud

2023 Victorian Duck Season Recommendation Submission

Summary:

In November 2000, a report titled "The Scientific Panel Review of Open Seasons for Waterfowl in New South Wales" was authored by Webb, Fullagar and Kingsford and handed down. This review came to the conclusion that:

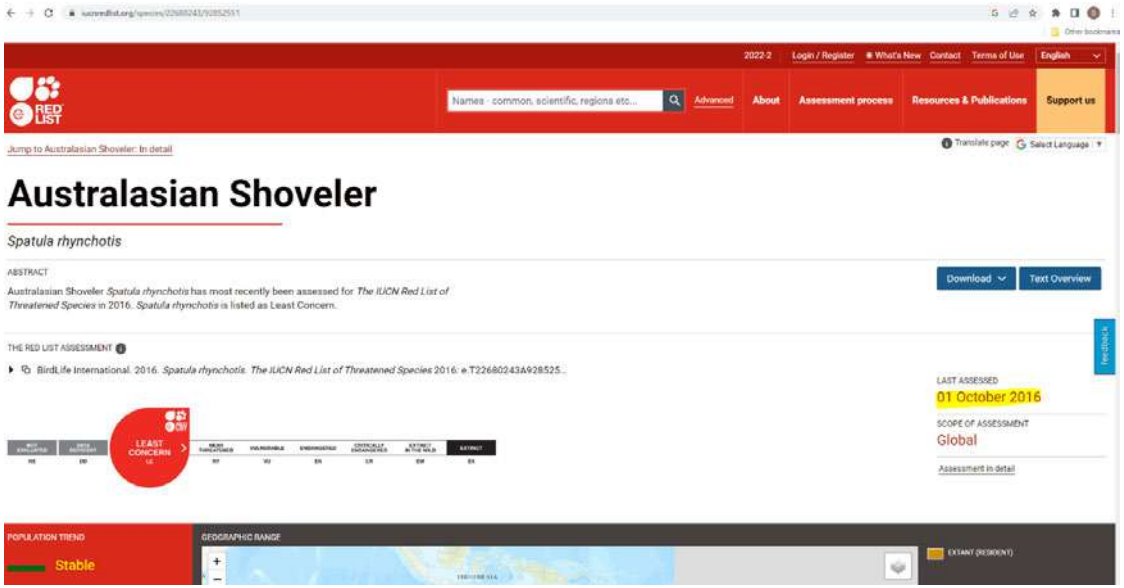
"All scientific studies available to the review indicate that hunting has no effect on waterfowl populations"

Coupled with the fact that season durations and bag limits should only be altered by the minister due to extreme environmental conditions, there is no plausible reason why in 2023, the Victorian Duck Season should be altered from the legislated conditions set out as per below:

- Season opens on the Third Saturday in March
- Season closes on the Monday of the Queens Birthday Public Holiday in June
- 10 Bird Bag Limit (of which no more than 2 can be Australasian Shoveler)

The environmental conditions in 2022/23 are extremely similar to those that existed in 2010/11 with substantial eastern seaboard flooding presenting incredible breeding opportunities for waterfowl. One key difference would be that the lead up to 2010/11 was the millennium drought, whereas the lead up to 2022/23 has seen various large scale breeding events occur on the back of substantial rains in 2016 again on the eastern seaboard, as well as several flood events since then through the Paroo, Lachlan, Cooper and Eyre Basins.

It is therefore Australian Duck Hunters and Proud's assertion that 2023 should in turn, follow 2011 in relation to season duration and bag limit above. The IUCN Red List last classified Australasian Shoveler in 2016, at which time it was classified at the lowest threat of "Least Concern".



Official Recommendation:

It is our formal recommendation that the Victorian Duck Season arrangements be announced as soon as possible and under the following conditions:

- Season Opens at 7:30am on Saturday 18th March, 2023
- Season Closes at 30 minutes after sunset on Monday 12th June, 2023
- Bag Limit of 10 Ducks per day, of which no more than 2 can be Australasian Shovelers
- Removal of the delayed start times experienced in past years
- Removal of Wednesday opening date

Concern / Question relating to IAHM:

Upon reviewing the "Relationships among duck population indices and abiotic drivers to guide annual duck harvest management Version 2, 29 November 2021" report that is on the GMA website, as well as the "Using duck proxies and surface water to inform hunting arrangements for 2023" also off the GMA website, we raise the following question:

How is it that the two tables, one year apart show different values for water surface, aerial counts and aPS for years that are past and should in theory not have changed?

We note that the difference in aPS values between 2022 and 2021 tables is an overall change in absolute values of -29. This indicates that the current indices used in Table 4 of the 2022 is much less favourable than the indices used in Table 2.

2021 Table 2

		using water surface			using aerial counts		
Year	BagLimit	iPGame	iVicC	iNSWC	tfVicC	tfNSWC	aPS
2007	0	0.53	0.48	0.50	0.43	0.20	1
2008	0	0.51	0.52	0.55	0.26	0.25	3
2003	0	0.56	0.53	0.55	0.53	0.83	5
1995	0	1.00	0.90	0.90	0.87	1.76	7
2009	2	0.40	0.39	0.42	0.30	1.34	2
2004	2	0.67	0.37	0.39	0.76	1.71	4
2020	3	0.57	0.49	0.52	0.55	0.19	2
2016	4	0.59	0.26	0.29	0.40	0.61	2
2019	5	0.52	0.32	0.34	0.86	0.47	2
2005	5	0.64	0.59	0.60	0.46	0.22	3
2015	5	0.65	0.28	0.31	0.93	0.17	3
2010	5	0.47	0.63	0.64	1.25	0.41	4
2000	5	0.74	0.56	0.58	0.32	0.93	5
2001	5	0.77	1.00	1.00	0.50	0.77	6
2002	5	0.76	0.98	0.99	0.56	0.77	7
1998	5	0.93	1.00	1.00	0.51	0.90	8
2006	7	0.62	0.49	0.51	0.83	0.19	3
2017	10	0.59	0.84	0.85	0.55	0.18	3
2018	10	0.73	0.55	0.57	1.01	0.24	5
1999	10	0.80	0.90	0.91	0.69	0.19	5
2011	10	0.78	1.84	1.82	0.35	0.88	6
1997	10	1.10	0.76	0.77	1.79	0.25	6
2014	10	0.79	0.67	0.68	0.93	0.51	6
1994	10	1.09	0.91	0.91	0.43	1.28	8
2012	10	0.98	2.16	2.12	1.74	1.08	10
1996	10	1.07	1.00	1.00	1.37	1.58	10
1991	10	1.03	1.87	1.84	1.66	2.67	10
1993	10	0.91	1.51	1.49	1.59	1.17	10
2013	10	0.91	1.48	1.47	3.00	2.95	10
1992	10	1.01	1.51	1.50	2.45	2.30	10

2022 Table 4

		using water surface			using aerial counts		
Year	BagLimit	iPGC	iVicC	iNSWC	tfVicC	tfNSWC	aPS
2007	0	0.53	0.40	0.20	0.29	0.20	1
2008	0	0.37	0.23	0.32	0.33	1.07	2
2003	0	0.59	0.49	0.47	0.85	1.36	4
1995	0	1.00	1.00	0.57	1.53	1.26	9
2004	2	0.43	0.44	0.19	0.51	0.19	1
2009	2	0.40	0.37	0.21	1.40	0.19	2
2020	3	0.48	0.70	0.58	0.26	0.71	3
2016	4	0.52	0.38	0.41	0.20	0.19	1
2015	5	0.36	0.35	0.25	0.44	0.49	0
2019	5	0.47	0.41	0.32	0.61	0.19	1
2010	5	0.19	0.70	0.28	0.39	0.70	2
2005	5	0.35	0.73	0.47	0.93	0.19	3
2000	5	0.62	0.35	0.28	0.56	0.61	3
1998	5	0.86	0.84	0.72	0.36	0.19	3
2021	5	0.66	1.00	0.57	0.31	0.32	4
2001	5	0.63	0.85	0.69	0.62	0.62	5
2002	5	0.53	0.95	1.00	0.59	0.66	7
2006	7	0.51	0.57	0.62	0.48	0.19	3
2014	10	0.32	0.69	0.35	1.04	0.19	3
2018	10	0.60	0.90	0.68	0.96	0.38	5
1997	10	0.81	0.72	0.75	0.57	0.72	5
1999	10	0.86	0.91	0.57	0.36	0.75	5
2017	10	0.74	1.04	0.71	1.13	0.19	6
1996	10	0.88	1.01	0.58	2.00	0.20	6
2011	10	0.49	2.01	1.10	1.95	0.86	7
2013	10	0.67	1.58	0.95	1.05	0.41	7
1993	10	0.87	1.63	1.11	0.48	1.02	7
1994	10	1.09	0.84	0.88	0.97	1.40	8
1992	10	0.75	2.12	1.26	1.78	0.93	9
2012	10	0.77	2.30	1.49	3.36	2.36	9
1991	10	1.12	2.04	1.30	2.75	1.83	10

Year	Difference in aPS
2007	0
2008	-1
2003	-1
1995	2
2004	-3
2009	0
2020	1
2016	-1
2015	-3
2019	-1
2010	-2
2005	0
2000	-2
1998	-5
2001	-1
2002	0
2006	0
2014	-3
2018	0
1997	-1
1999	0
2017	3
1996	-4
2011	1
2013	-3
1993	-3
1994	0
1992	-1
2012	-1
1991	0
Total	-29

I thank you for your time in reviewing and considering the notes above and would appreciate a response in relation to the question surrounding how the calculations and indices have changed between 2021 and 2022 for what is essentially the same data.

Yours Sincerely,

Sav Mangion

Australian Duck Hunters and Proud - Founder & Administrator

Game Management Authority
121 Exhibition Street, Melbourne 3000

Aussie Duck hunters would like opportunity to submit a recommendation for the 2023 Duck hunting season in Victoria. We remain committed to being part of the genuine consultation process and thank you for taking the time to review our submission below.

Duck hunting in Victoria is a legal and legitimate activity shared by tens of thousands of licence holders. Duck hunting is an industry that brings hundreds of millions of dollars in revenue to the state

It is for the following reasons that we at Aussie Duck Hunters believe the following recommendations would be beneficial to the state of Victoria:

- There is an abundance of waterfowl state-wide due to the recent excessive rain fall during the second half of 2022.

- 2020,2021,2022 have seen favourable breeding conditions for ducks across the state with increased numbers evident.

- Due to the last few years of decreased dunk hunting activity the waterfowl population has increased significantly

We would like to strongly recommend that The Eastern Australia Water Bird Survey outcomes are reviewed as we believe it is impossible to count waterfowl from a moving plane that does not even cover all of the state game reserves.

It is our opinion that there needs to be an ongoing consultation on how we deliver these results.

Due to the last few years of decreased dunk hunting activity the waterfowl population has increased significantly

Furthermore, due to the lack of Duck Hunting over the past two (2) years with COVID restrictions etc, we believe that a full season is justified and would be beneficial to the hunting community and agricultural industries across our state.

Based on the above, our recommendation is that there needs to be a clear demonstration that a bag limit of ten (10) birds and full season is achievable and how that will be determined.

Our recommendations for Duck Hunting Season 2023 are as follows:

- As per the Australian Victorian Legislation – *"The Victorian duck season is prescribed under the Wildlife (Game) Regulations 2012 to occur every year between the third Saturday in March and ending on the second Monday in June"*

- Ten (10) Bird bag limit per day is recommended

- Daily hunting times to start half hour before sunrise and end half hour after sunset

Thank you for time and consideration of this submission.

Sincerely yours,
George Coves
Aussie Duck Hunters

ATTACHMENT E: Known taxpayer support for hunting and shooting

FY	Government grants to GMA	Game licence revenue (from FOI)	Taxpayer Subsidy (= difference between previous 2 columns)	SHAP (2016-2020)	SHAP (2021-2024)	Shooting Sports Facilities Program (SSFP) grants since 2014	Lead pollution clean-up at shooting ranges	TOTAL known Taxpayer handouts to shooters
2015	4.80	2.85	1.95					
2016	4.80	2.50	2.30					
2017	5.30	2.60	2.70					
2018	5.65	3.22	2.43					
2019	6.70	3.00	3.70					
2020	7.32	2.85	4.47					
2021	9.3	0	9.3					
2022	9.1	unknown	estimate of 4m					
		TOTALS	**30.85**	**5.3**	**5.3**	**25.48**	**11**	**77.93**
	Source:	Source:				Source:	Source:	**TOTAL**
	GMA annual reports	FOI request to GMA Ref: 20-19825				https://sport.vic.gov.au/__data/assets/pdf_file/0023/182507/SSFP-Guidelines-Dec-2021.pdf, p2	Treasury Budget papers 2017-18 and 2018-19	***All amounts in $m***
	Note: no licence fees for 2021 due to COVID							

The GMA is conducting... - Game Management Authority Victoria | Facebook

Game Management Authority Victoria
15 hrs ·

The GMA is conducting research to monitor trends in wounding of game ducks from duck hunting.

596 ducks were captured and x-rayed following the 2022 duck season.

Of the 596 ducks, 3.4 per cent (20 ducks) were found with embedded pellets. This represents an index, not the actual wounding rate.

Both adult and immature (first year) ducks were captured and assessed. Immature birds had almost three times the infliction rate of adult birds. Assessing immature ducks provides a more accurate indication of the infliction rate from a single duck season.

We will continue this research, following the 2023 duck season.
Over time, this research will provide an index to monitor trends in wounding. The results will be used to assess the effectiveness of actions to reduce waterfowl wounding.

For information on how to reduce waterfowl wounding visit https://bit.ly/3yHRxbL

For more information on the Waterfowl Wounding Monitoring Program, visit: https://bit.ly/3zUlwxv

Like Comment Share

24

9 Shares

Write a comment... Post

Chris Giannis

If they were wounded they would be half dead! so they survived and are doing well those 20% are not even statistics there's nothing wrong with them meaning they can fly eat run root

10

14 hrs **Like** **Reply** **More**

Jamie Stellini

This is all about planting the seed to make a proficiency test mandatory.
I wouldn't be surprised if your mates at the $$AA are pushing it with you.
It's a shame you don't have the same concern about the minimum safe distance of protesters or hunter harassment.
You should probably remove the word 'Managment' from your name. Doesn't seem applicable really….

16

12 hrs **Like** **Reply** **More**

3 replies

Peter Mitchell

Be less wounded ducks if they brought back lead

30

14 hrs **Like** **Reply** **More**

Tim Arnold replied · 12 replies

Neil Nobby Clark

Have you started a survey of the increased distance on average between hunter and duck when activists are present.

I'm still in disbelief that a hunter can go to great effort to form a hide and spend a fortune on decoy ducks in aim to bring ducks in close for a clean humane harvest .
Then activists can come within what distance is it to the hunters.

And you really want to have a discussion about hunters wounding ducks give me strength .

24

13 hrs **Like** **Reply** **More**

Jamie Benson
596 ducks?? Didn't think you counted that many in your survey GMA. 8

13 hrs **Like** **Reply** **More**

Matthew Attard
I'm sure wind turbines wound more then 3.4%.
Are GMA going to release the stats on that and fight to ban wind turbines. 3

13 hrs **Like** **Reply** **More**

Blair Findlay
But the GMA previously quoted estimated wounding rates of 6 - 40% and as a result the minister further restricted the hunting season for 2023.

Now we are being told that the ACTUAL results from your research (which was definitely available at the time the figures I mentioned were published) is almost 50% of the MINIMUM number you stated and almost 20 times LOWER than the maximum number quoted.

It seems the GMA has a rather selective way of applying and reporting its own science...

Doesn't it...? 24

12 hrs **Like** **Reply** **More**

Charlton Vella replied · 1 reply

Russell Edwards
Stray pellets bad, catching ducks in a net and terrorizing them to put them thru an xray machine good. Apparently. 1

10 hrs **Like** **Reply** **More**

Blair Findlay
And the ducks found with pellets were alive and well?
I mean, you had to X-ray them find out they were there?

Out of curiosity, given all the concerns about ducks ingesting lead pellets back in the day, how many of the pellets were estimated to have been in the ducks through ingestion? 7

3 hrs **Like** **Reply** **More**

Ram Eskeif replied · 1 reply

Matt Cameron

Lead or steel pellets detected I wonder?? 1

12 hrs **Like** **Reply** **More**

Loz Van

where'd you find 596 to x-ray? thought GMA told government there were no ducks?

10 hrs **Like** **Reply** **More**

Neil Nobby Clark

How many are wounded in crop protection when they eat poison? 7

14 hrs **Like** **Reply** **More**

Frank Mariani

Here we go!! 3

14 hrs **Like** **Reply** **More**

David Cox

Ingested pellets from pellets fired years long past,or wounded. 7

14 hrs **Like** **Reply** **More**

Con Chrys replied · 3 replies

Frank Mariani

3.4 % wounding rate.
We are told the wounding rate is a major issue!!

14 hrs **Like** **Reply** **More**

Gerard Millar

Blair F , great comment and leaves little to doubt the science that is actual to that of the ones that make it up
I would like to see those stats made public to parliament

11 hrs **Like** **Reply** **More**

Stuart Mcdonell

The real question is how were these 596 birds "captured" what hunting grounds and who was responsible for said collection of these apparently wounded birds , is there any proof of this so called study as in photos videos of the procedures use to collate this data !!!

4

13 hrs **Like** **Reply** **More**

Stuart Mcdonell replied · 1 reply

Steven Zammit

You'd think they would of put a leg band on the birds caught for xrays, which they could run a comp for hunters who have harvested one, but it might help them, with there research, to see how far the birds have flown

4

14 hrs **Like** **Reply** **More**

Christian West

To everyone wondering how the ducks where trapped. Likely using a rocket net. Quite easy

11 hrs **Like** **Reply** **More**

Yagooga Lee replied · 1 reply

Geoff Gibbons

And what do you plan on doing with this research?

14 hrs **Like** **Reply** **More**

Con Chrys replied · 1 reply

Top fan

Yagooga Lee

Smaller birds have smaller rates so I would keep a separate rate for teal. Old field trials show much lower wounding rates in Teal, Quail rates would be even smaller. Would like to hear some ideas on why there are higher rates in New season birds. There are a lot more new season birds at the end of Summer especially in a good season with 2 clutches. That's 28 over 2 so I would guess more new season birds get shot at.

1

13 hrs **Like** **Reply** **More**

Yagooga Lee replied · 3 replies

Andrew Zervides
How did those ducks get captured? 1

14 hrs **Like** **Reply** **More**

4 replies

Top fan
Sean Fraz
Actually this seems good news for hunters only 3.4% wounding rate

13 hrs **Like** **Reply** **More**

Alan Rushworth replied · 2 replies

Bat Roberson
Was there any data on pellet size? 1

13 hrs **Like** **Reply** **More**

Bat Roberson replied · 2 replies

Danny Hanna
Have a shower you useless pricks!!
That's not Research !! Game fly in packs unfortunately a few may get hit with a pellet!
Your pockets are full from all the corruption!! 3

14 hrs **Like** **Reply** **More**

Abbas Hammoud
How about you monitor and get rid of protesters? That would reduce wounding... the dumbness they show by illegally stealing downed ducks just makes hunters shoot more...

11 hrs **Like** **Reply** **More**

View more comments…

Write a comment...

Opening weekend of SA duck-hunting season 2023, Lake George, Beachport (Crown land)

1. Illegally shot seagull with pellet wounds