

## Assessment of waterbirds deposited at Treasury Place following the opening week of the 2023 duck season

### Background and summary

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The attached spreadsheet provides an assessment of waterbirds collected and left by animal welfare activists at 1 Treasury Place, Melbourne, on 2 May 2023 following the first week of the 2023 Victorian duck season.

The primary purpose of the assessment was to determine the number of birds carrying embedded shotgun pellets as an indicator of shooting being the cause of death. Protected waterbirds found not to contain embedded pellets were examined in greater detail to identify any signs of tissue damage consistent with gunshot wounds, as shotgun pellets can pass through the body and therefore would not appear in radiographs (x-rays).

Assessment of birds was conducted at the Benalla office of the Department of Jobs, Skills, Industry and Regions on Wednesday 10 May 2023 by staff of the Game Management Authority. With the exception of badly decomposed animals, Agriculture Victoria veterinarians took swabs for avian influenza and disposed of the birds (incineration) on 18 May 2023. The attached spreadsheet provides data with a link to a radiograph of each individual animal.

The table below summarises the findings:

<b>Total no. birds examined</b>		<b>88</b>
	Total game	72 (82%)
	Total non-game	16 (18%)
<b>Total no. carrying embedded pellets</b>		<b>47 (53%)</b>
	Total game	42 (89%)
	Total non-game	5 (11%)
<b>No. non-game birds not carrying pellets (nine) that showed signs of gunshot injury (e.g. tissue damage)</b>		<b>0</b>

- Of the 88 waterbirds presented and examined, 47 (53%) were found to be carrying embedded shotgun pellets and 41 (47%) were not.
- Of those 47 birds inflicted with shotgun pellets, 42 (89%) were game ducks and five (11%) were non-game species.
- With the exception of two birds, all non-game birds found without embedded shotgun pellets were defeathered in order to identify evidence of tissue damage consistent with that of shotgun pellet wounds. None of the nine birds showed signs of shotgun pellet-related tissue damage.
- Assessments of radiographs and visual inspections were not conducted by veterinarians. The state of decay in some specimens made assessment difficult and, in some cases, definitively establishing a cause of death by shooting was not possible.

## Findings

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### Species totals

A total of 88 waterbirds (game and non-game) were presented by animal welfare activists. These can be categorised into game duck, non-game (protected) duck and other non-game waterbird (protected) species as follows:

- 72 game-ducks, consisting of Australian wood duck (7), Pink-eared duck (17), Grey teal (39), Chestnut teal (1) and Pacific black duck (8).
- 8 non-game ducks<sup>1</sup>, consisting of Hardhead (2), Freckled duck (1) and Australasian shoveler (5)
- 8 other non-game waterbirds, consisting of Darter (1), Hoary-headed grebe (3), Moorhen (1) and Eurasian coot (3)

Only game species may be hunted during the prescribed open season. Non-game ducks and other non-game waterbirds are protected and must not be hunted. Therefore, of the total 88 dead waterbirds presented, 72 (82%) were game ducks and 16 (18%) were protected species not available to hunting.

### Radiography procedure

Each animal was placed in a plastic tub on a 25 x 30cm digital x-ray plate (Exprimer EVS 2430) and radiographed with an Atomscope TR9020B portable veterinary x-ray unit suspended on a surveyor's tripod. Settings of 68 kV and 1.05 mAs, with a focal distance of approximately 50cm, were used. Radiography was performed on ducks in a frozen or semi-frozen state. This made the uniform orientation of each animal impossible. Where possible, each animal was positioned on the plate in a dorso-ventral location but this varied. The freezing position and rigour meant that some of the extremities of the larger bird species occasionally extended beyond the x-ray plate. Each digital image was immediately viewed and, if necessary, subsequent radiographs were taken to confirm the presence or absence of embedded shotgun pellets.

### Number of birds with embedded shot

Radiography revealed that 47 (53%) of the 88 waterbirds contained embedded shot pellets and 41 (47%) did not.

These can be classified into game-duck, non-game duck and other waterbird species as follows:

- 42 out of 72 game-ducks (58%) were shown to contain embedded shotgun pellets. This consisted of 6 out of 7 Australian wood ducks, 10 out of 17 Pink-eared ducks, 17 out of 39 Grey teal, 1 out of 1 Chestnut teal and 8 out of 8 Pacific black ducks.
- 4 out of 8 non-game ducks which consisted of 1 out of 2 Hardhead, 1 out of 1 Freckled duck and 2 out of 5 Australasian shoveler.

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<sup>1</sup> Note: Hardhead and Australasian Shoveler are declared 'game' under the *Wildlife Act 1975* and may be hunted under the *Wildlife (Game) Regulations 2012*. Under an instrument of the *Wildlife Act 1975*, these species were prohibited from hunting for the 2023 duck season due to their recent listing as threatened species under the *Flora and Fauna Guarantee Act 1988*.

- 1 out of 8 other non-game waterbirds which consisted of 0 out of 1 Darter, 0 out of 3 Hoary-headed grebes, 0 out of 1 Moorhen and 1 out of 3 Eurasian coot.

Therefore, of the 47 waterbirds found to be containing embedded shotgun pellets, 42 (89%) were game ducks and 5 (11%) were protected species.

### **Physical state and animal assessment**

Despite the birds being refrigerated while transported from Melbourne to Benalla and subsequently frozen, there was a wide variation in the level of decomposition between specimens. Many birds were intact and appeared to have been recently deceased or had been preserved at low temperatures prior to being deposited at Treasury Place.

Other specimens, particularly the Darter, two of the Australasian shovelers and one of the Grebes, were highly decayed/physically degraded, making an assessment of the timing of death and any injuries (outside of the determination of the presence or absence of embedded shotgun pellets) difficult.

### **Additional animal assessment**

As these animals had been transported to Treasury Place stored collectively in containers and again stored and transported collectively before being frozen en masse, there was a degree of contamination between individuals and species. For example, it was often impossible to assess whether blood on the feathers was from its wounds (if any) or from another individual it had come into contact with. Some birds had suffered severe tissue trauma with missing skin/feathers, protruding broken bones and broken necks; injuries inconsistent with gunshot wounds with the exception of protruding broken bones (especially wing and leg) which can occur following pellet strike.

There is the possibility that shotgun pellets may have passed through the animal and failed to be retained within the body or extremities. With the exception of the Darter and a Grebe which were in a state of advanced decomposition, the remaining nine non-game birds found not to contain embedded shotgun pellets were subsequently defeathered (plucked). They were then assessed for the presence of wounds in order to identify whether those birds had been shot and may have experienced through-body shots.

Of the nine plucked non-game birds, none (0) were found to have any obvious wounds consistent with shotgun pellet injury. There were, however, several birds that had sustained tissue damage, were missing skin or had severe bruising, the cause of which is unknown. Many of these individuals were in varying states of decomposition, making an accurate assessment difficult.

### **Considerations**

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There are several key points to consider from this assessment:

- 1) Some of the individual birds assessed were well preserved whilst others were in various stages of decay. This made comparisons of trauma within and between species difficult.

- 2) There is the potential that shotgun pellets may pass through a shot animal in addition to shot being retained within limbs or the body cavity. Plucking selected animals identified as not containing shotgun pellets to detect evidence of gunshot wounds provided a secondary assessment, but is not absolutely conclusive. Further examination failed to find evidence to confirm shooting as a cause of death.
- 3) Radiography showed that almost half (47%) of the waterbirds examined did not contain embedded pellets. Some had sustained what appeared to be injuries not consistent with being hit by shotgun pellets. Predation and collisions with vehicles/structures are possibilities, but it was not possible to provide a conclusive outcome for these individuals.
- 4) Assessments of radiographs and visual inspections were not conducted by veterinarians. Radiographs were the primary tool used to identify evidence of shooting mortality. Obvious skeletal damage has also been noted in the attached spreadsheet. Radiographs may provide a source of additional information/assessment if considered necessary.
- 5) Visual assessments were only conducted on those protected birds found not to be carrying embedded pellets. Therefore, not all birds were subject to further visual assessment.
- 6) This was a preliminary and not exhaustive assessment of the cause of death of these birds. Death by shooting could be inferred by the presence of embedded pellets, however, game ducks are known to survive being shot and may carry embedded pellets for the remainder of their life. Other sources of mortality may have been the cause of death. Autopsies conducted by trained and experienced experts would be necessary to determine the actual cause of death.

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**Ducks Removed from Protestors at 1 Tresaury Place, Tuesday 2 May 2023**

0	Species	Total	X-Ray ID	Y(1),N(0)	# of Shot	Description of animal/physical appearance	Plucked (Y/N)	Additional Assessment
1	Australian Wood Duck	1	230510094746	1	2	Well preserved, intact.	N	
2	Australian Wood Duck	2	230510094746	1	6	Some decay but intact. Evidence of shot trauma.	N	
3	Australian Wood Duck	3	230510094746	1	6	Some decay but intact. Evidence of shot trauma.	N	
4	Australian Wood Duck	4	230510094746	0	0	Some decay but intact.	Y	No pellet wound channels discovered. Tissue damage
5	Australian Wood Duck	5	230510094746	1	1	Some decay but intact. Evidence of shot trauma.	N	
6	Australian Wood Duck	6	230510094746	1	2	Well preserved, intact.	N	
7	Australian Wood Duck	7	230510094746	1	2	Well preserved, intact.	N	
8	Pink-eared Duck	1	230510110921	1	1	Well preserved, intact.	N	
9	Pink-eared Duck	2	230510110921	1	1	Well preserved, intact.	N	
10	Pink-eared Duck	3	230510110921	1	8	Some decay but intact. Evidence of shot trauma.	N	2 different shot sizes present
11	Pink-eared Duck	4	230510110921	1	4	Well preserved, intact.	N	
12	Pink-eared Duck	5	230510110921	0	0	Some decay but intact.	N	
13	Pink-eared Duck	6	230510110921	0	0	Some decay but intact. Evidence of external trauma	N	
14	Pink-eared Duck	7	230510110921	1	1	Some decay but intact. Evidence of external trauma	N	

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15	Pink-eared Duck	8	230510110921	0	0	Some decay but intact. Evidence of external trauma	N	Leg fracture and tissue damage
16	Pink-eared Duck	9	230510110921	1	1	Well preserved, intact.	N	
17	Pink-eared Duck	10	230510110921	1	2	Well preserved, intact.	N	
18	Pink-eared Duck	11	230510110921	1	1	Some decay but intact. Evidence of external trauma	N	
19	Pink-eared Duck	12	230510110921	0	0	Well preserved, intact. Twisted neck	N	
20	Pink-eared Duck	13	230510110921	0	0	Well preserved, intact.	Y	No pellet wound channels discovered
21	Pink-eared Duck	14	230510110921	1	2	Well preserved, intact.	N	
22	Pink-eared Duck	15	230510110921	0	0	Well preserved, intact.	N	
23	Pink-eared Duck	16	230510110921	0	0	Well preserved, intact.	N	Broken wing. Evidence of shot trauma
24	Pink-eared Duck	17	230510110921	1	1	Well preserved, intact.	N	
25	Grey Teal	1	230510112233	0	0	Some decay but intact. Evidence of external trauma	N	
26	Grey Teal	2	230510112233	1	1	Well preserved, intact.	N	
27	Grey Teal	3	230510112233	1	2	Well preserved, intact.	N	
28	Grey Teal	4	230510112233	1	3	Well preserved, intact.	N	
29	Grey Teal	5	230510112233	0	0	Well preserved, intact.	N	
30	Grey Teal	6	230510112233	0	0	Some decay but intact. Evidence of external trauma	N	Neck fracture and tissue damage
31	Grey Teal	7	230510112233	0	0	Well preserved, intact.	N	
32	Grey Teal	8	230510112233	1	3	Well preserved, intact.	N	
33	Grey Teal	9	230510112233	1	2	Well preserved, intact.	N	
34	Grey Teal	10	230510112233	0	0	Well preserved, intact.	Y	No pellet wound channels discovered. Bruising

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35	Grey Teal	11	230510112233	1	1	Some decay but intact. Evidence of external trauma	N	
36	Grey Teal	12	230510112233	0	0	Well preserved, intact.	N	
37	Grey Teal	13	230510112233	0	0	Well preserved, intact.	N	
38	Grey Teal	14	230510112233	0	0	Well preserved, intact.	N	
39	Grey Teal	15	230510112233	1	1	Well preserved, intact.	N	
40	Grey Teal	16	230510112233	1	2	Well preserved, intact.	N	
41	Grey Teal	17	230510112233	1	2	Well preserved, intact.	N	
42	Grey Teal	18	230510112233	1	2	Well preserved, intact.	N	2 different sized pellets
43	Grey Teal	19	230510112233	0	0	Well preserved. Severe tissue trauma.	N	Injuries inconsistent with gunshot
44	Grey Teal	20	230510112233	0	0	Well preserved, intact.	N	
45	Grey Teal	21	230510112233	1	9	Well preserved, intact.	N	
46	Grey Teal	22	230510112233	0	0	Some decay but intact. Evidence of external trauma	N	Injuries inconsistent with gunshot
47	Grey Teal	23	230510112233	1	2	Well preserved, intact.	N	
48	Grey Teal	24	230510112233	0	0	Some decay but intact. Evidence of external trauma	N	Injuries inconsistent with gunshot
49	Grey Teal	25	230510112233	0	0	Well preserved, intact. Evidence of external trauma	N	Injuries inconsistent with gunshot
50	Grey Teal	26	230510112233	1	1	Well preserved, intact.	N	
51	Grey Teal	27	230510112233	1	3	Well preserved, intact.	N	
52	Grey Teal	28	230510112233	0	0	Well preserved, intact.	N	Possible neck fracture. Injuries inconsistent with gunshot
53	Grey Teal	29	230510112233	0	0	Some decay but intact.	N	
54	Grey Teal	30	230510112233	0	0	Well preserved, intact.	N	
55	Grey Teal	31	230510112233	1	1	Well preserved, intact.	N	

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56	Grey Teal	32	230510112233	0	0	Well preserved, intact. Evidence of external trauma	N	
57	Grey Teal	33	230510112233	0	0	Well preserved, intact.	N	
58	Grey Teal	34	230510112233	0	0	Well preserved, intact.	N	
59	Grey Teal	35	230510112233	1	2	Well preserved, intact.	N	
60	Grey Teal	36	230510112233	1	1	Well preserved, intact.	N	
61	Grey Teal	37	230510112233	0	0	Well preserved, intact.	N	
62	Grey Teal	38	230510112233	0	0	Well preserved, intact.	N	
63	Grey Teal	39	230510112233	0	0	Well preserved, intact.	N	
64	Chestnut Teal	1	230510114225	1	2	Well preserved, intact.	N	
65	Pacific Black Duck	1	230510114355	1	4	Some decay but intact. Evidence of external trauma	N	2 different shot sizes in radiograph
66	Pacific Black Duck	2	230510114355	1	2	Some decay but intact. Evidence of external trauma	N	
67	Pacific Black Duck	3	230510114355	1	4	Well preserved, intact. Evidence of external trauma	N	Possible bismuth shot
68	Pacific Black Duck	4	230510114355	1	2	Some decay but intact. Evidence of external trauma	N	
69	Pacific Black Duck	5	230510114355	1	1	Some decay but intact.	N	
70	Pacific Black Duck	6	230510114355	1	8	Well preserved, intact. Evidence of external trauma	N	Pellet placement indicative of lethal shot
71	Pacific Black Duck	7	230510114355	1	2	Well preserved, intact.	N	

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72	Pacific Black Duck	8	230510114355	1	3	Some decay but intact. Evidence of external trauma	N	
73	Hardhead	1	230510115708	0	0	Well preserved, intact.	Y	Neck fractures. No pellet wound channels discovered
74	Hardhead	2	230510115708	1	2	Some decay but intact. Evidence of external trauma	N	Evidence of multiple wound channels
75	Darter	1	230510115914	0	0	Advanced state of decomposition.	N	No assessment possible
76	Freckled Duck	1	23051020020	1	1	Well preserved, intact.	Y	Head wound. No other wound channels found.
77	Eurasian Coot	1	230510120259	0	0	Some decay but intact. Evidence of external trauma	Y	Neck fractures. No pellet wound channels discovered
78	Eurasian Coot	2	230510120259	0	0	Well preserved, intact.	Y	No pellet wound channels discovered
79	Eurasian Coot	3	230510120259	1	2	Well preserved, intact.	Y	Several wound channels present
80	Hoary-headed Grebe	1	230510120636	0	0	Some decay but intact. Evidence of external trauma	Y	No pellet wound channels discovered
81	Hoary-headed Grebe	2	230510120636	0	0	Some decay but intact.	Y	No pellet wound channels discovered
82	Hoary-headed Grebe	3	230510120636	0	0	Advanced state of decomposition.	N	Neck abnormality. No pellet wound channels discovered
83	Moorhen	1	230510120855	0	0	Some decay but intact.	Y	Neck fracture. No pellet wound channels discovered
84	Australasian Shoveler	1	230510121037	1	1	Advanced state of decomposition. Dismembered.	N	Several shot wounds present
85	Australasian Shoveler	2	230510121037	0	0	Some decay but intact.	Y	No pellet wound channels discovered. Bruising

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86	Australasian Shoveler	3	230510121037	0	0	Well preserved, intact. Evidence of external trauma	Y	No pellet wound channels discovered. Tissue damage
87	Australasian Shoveler	4	230510121037	1	2	Well preserved, intact. Evidence of external trauma	Y	Several shot wounds present
88	Australasian Shoveler	5	230510121037	0	0	Advanced decay but physically intact.	Y	No pellet wound channels discovered. Bruising

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