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Wildlife Research

Supplementary Material

Animal welfare outcomes of professional vehicle-based shooting of peri-urban rusa deer in Australia

Jordan O. Hampton[A,B,F,*], *Darryl I. MacKenzie*[C] and *David M. Forsyth*[D,E]

[A]Ecotone Wildlife, PO Box 76, Inverloch, Vic. 3096, Australia

[B]Harry Butler Institute, Murdoch University, 90 South Street, WA 6150, Australia

[C]Proteus, PO Box 7, Outram 9062, New Zealand

[D]Vertebrate Pest Research Unit, NSW Department of Primary Industries, 1447 Forest Road, Orange, NSW 2800, Australia

[E]School of Biological, Earth and Environmental Sciences, University of New South Wales, Sydney, NSW 2052, Australia

[F]Present address: Faculty of Veterinary and Agricultural Sciences, University of Melbourne, Parkville, Vic. 3052, Australia

*Correspondence to: Email: jordan.hampton@unimelb.edu.au

Table S1. Summary of model selection procedure for probability of a shot hitting a deer (p_H) during vehicle-based professional shooting of peri-urban rusa deer (*Cervus timorensis*) in Australia, 2018–2019. Presented is the relative difference in AIC (ΔAIC), the AIC model weight (*w*), twice the negative log-likelihood value ($-2ll$) and number of parameters in the model (*NPar*). The 'Constant' model assumes p_H is constant for all shots. For all models, the structure for the other components was p_K(Shooter + Distance + PNWS) and p_E(NWS). Abbreviations are given in Table 2 of the manuscript: PNWS = previous number of wounding shots, NWS = number of wounding shots.

Model	ΔAIC	*w*	$-2ll$	*NPar*
Shooter + PNWS	0.00	0.34	222.66	13
PNWS	0.63	0.25	229.28	10
Shooter + Distance + PNWS	1.94	0.13	222.59	14
Distance + PNWS	2.68	0.09	229.34	11
Constant	3.08	0.07	233.74	9
Shooter	3.46	0.06	228.11	12
Distance	5.03	0.03	233.69	10
Shooter + Distance	5.41	0.02	228.06	13

Table S2. Model selection summary for analysis of the probability of a shot killing a deer given it hit the deer (p_K) during vehicle-based professional shooting of peri-urban rusa deer (*Cervus timorensis*) in Australia, 2018–2019. Presented is the relative difference in AIC (ΔAIC), the AIC model weight (*w*), twice the negative log-likelihood value ($-2ll$) and number of parameters in the model (*NPar*). The 'Constant' model assumes p_K is constant for all shots. For all models, the structure for the other components was p_H(Shooter + Distance + PNWS) and p_E(NWS).

Model	ΔAIC	*w*	$-2ll$	*NPar*
Constant	0.00	0.23	229.96	9
Shooter	0.00	0.23	223.96	12
Shooter + Distance	0.74	0.16	222.70	13
Distance	1.39	0.11	229.35	10
PNWS	1.93	0.09	229.89	10
Shooter + PNWS	1.94	0.09	223.90	13
Shooter + Distance + PNWS	2.63	0.06	222.59	14
Distance + PNWS	3.32	0.04	229.27	11

Table S3. Summary of model selection procedure for probability of a deer escaping after being shot at (p_E) during vehicle-based professional shooting of peri-urban rusa deer (*Cervus timorensis*) in Australia, 2018–2019. It was assumed $p_E = 1$ for all deer that were missed on the first shot. Presented is the relative difference in AIC (ΔAIC), the AIC model weight (*w*), twice the negative log-likelihood value ($-2ll$) and number of parameters in the model (*NPar*). The 'Constant' model assumes p_K is constant for all shots. For both models, the structure for the other components was p_H(Shooter + Distance + PNWS) and p_K(Shooter + Distance + PNWS)

Model	ΔAIC	*w*	$-2ll$	*NPar*
Constant	0.00	0.72	222.74	13
PNWS	1.86	0.28	222.59	14

Table S4. Summed AIC model weights (s_x) and evidence ratios (ER_x) for each predictor variable considered in the modelling of p_H during vehicle-based professional shooting of peri-urban rusa deer (*Cervus timorensis*) in Australia, 2018–2019.

Predictor	s_x	ER_x
PNWS	0.81	4.40
Shooter	0.56	1.26
Distance	0.27	0.37

Table S5. Summed AIC model weights (s_x) and evidence ratios (ER_x) for each predictor variable considered in the modelling of p_K during vehicle-based professional shooting of peri-urban rusa deer (*Cervus timorensis*) in eastern Australia, 2018–2019.

Predictor	s_x	ER_x
Shooter	0.53	1.13
Distance	0.37	0.60
PNWS	0.28	0.38

Table S6. Summed AIC model weights (s_x) and evidence ratios (ER_x) for the predictor variable considered in the modelling of p_E during vehicle-based professional shooting of peri-urban rusa deer (*Cervus timorensis*) in eastern Australia, 2018–2019.

Predictor	s_x	ER_x
PNWS	0.28	0.40