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Supplementary material for

Interactions between dingoes and introduced wild ungulates: concepts, evidence and knowledge gaps

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Table S1. Sources for representative body masses and maximum annual population growth rates (r_m) for the 15 ungulate taxa considered in this review

All families are in the Order Artiodactyla, except Equidae, which is in the Order Perissodactyla. Common names and taxonomy follow Jackson and Groves (2015)

Family	Common name	Genus and species	Birth mass (kg)	Adult female mass (kg)	Adult male mass (kg)	r_m
Bovidae	Feral goat	*Capra hircus*	**2.06** (Soundararajan and Sivakumar 2011)	**27** (Strahan 1995)	**40** (Strahan 1995)	**0.395–0.425** (Duncan *et al.* 2007)
Bovidae	Feral sheep	*Ovis aries*	**4.02–5.03** (Dwyer and Lawrence 2000)	**25** (Owen-Smith 1988) – **44.9** (Smithers 1983)	**35** (Owen-Smith 1988) – **67.9** (Smithers 1983)	**0.345** (Duncan *et al.* 2007)
Bovidae	Banteng	*Bos javanicus*	**30** (Buchholtz and Sambraus 1990)	**300–400** (Strahan 1995)	**550** (Strahan 1995)	**0.26** (Hone *et al*. 2010)
Bovidae	Feral cattle	*Bos taurus*	**40** (Buchholtz and Sambraus 1990)	**800** (Forsyth *et al*. 2004)	**900** (Van Dyck and Strahan 2008)	**0.26–0.54** (Duncan *et al.* 2007)
Bovidae	Swamp buffalo	*Bubalus bubalis*	**32.68** (Hossein-Zadeh *et al*. 2012)	**350** (Forsyth *et al*. 2004)	**725** (Janis 1990)	**0.33** (Duncan *et al.* 2007)

Camelidae	One-humped camel	*Camelus dromedarius*	**40** (Strahan 1995)	**450** (Forsyth *et al*. 2004)	**545** (Smithers 1983)	**0.14 (**Duncan *et al.* 2007)
Cervidae	Hog deer	*Axis porcinus*	**2.4** (Mayze and Moore 1990)	**30** (Mayze and Moore 1990) – **25** (Van Dyck and Strahan 2008)	**40** (Mayze and Moore 1990)	**0.85** (Hone *et al*. 2010)
Cervidae	Fallow deer	*Dama dama*	**4.5** (Chapman and Chapman 1975)	**47** (Forsyth *et al*. 2004) – **38** (Strahan 1995)	**67** (Forsyth *et al*. 2004) – **59** (Strahan 1995)	**0.34** (Hone *et al*. 2010)
Cervidae	Chital deer	*Axis axis*	**3–4** (Wilson and Mittermeier 2011)	**50** (Van Dyck and Strahan 2008)	**89** (Strahan 1995)	**0.76** (Hone *et al*. 2010)
Cervidae	Red deer	*Cervus elaphus*	**8–9** (Wilson and Mittermeier 2011)	**75** (Forsyth *et al*. 2004) – **92** (Van Dyck and Strahan 2008)	**119** (Forsyth *et al*. 2004) – **136–158** (Strahan 1995)	**0.191–0.38** (Forsyth *et al*. 2010)
Cervidae	Rusa deer	*Cervus timorensis*	**3–5** (Wilson and Mittermeier 2011)	**50–90** (Wilson and Mittermeier 2011)	**70–135** (Wilson and Mittermeier 2011)	**0.70** (Hone *et al*. 2010)
Cervidae	Sambar deer	*Cervus unicolor*	**5–6** (Leslie 2011)	**146** (Van Dyck and Strahan 2008)	**192** (Van Dyck and Strahan 2008)	**0.40** (Hone *et al*. 2010)
Equidae	Feral horse	*Equus caballus*	**25–30** (Bennett and	**320** (Owen-Smith	**350** (Owen-Smith	**0.24** (Duncan *et al.*

			Hoffmann 1999)	1988)	1988)	2007)
Equidae	Feral donkey	*Equus asinus*	**25** (Veronesi *et al*. 2010)	**220** (Hudson and White 1985)	**259** (Hudson and White 1985)	**0.25** (Duncan *et al.* 2007)
Suidae	Feral pig	*Sus scrofa*	**0.35–1.2** (Schmidt 1990)	**31.5** (Forsyth *et al*. 2004) – **25–110** (Strahan 1995)	**35–175** (Strahan 1995)	**0.792** (Duncan *et al.* 2007)

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Text S1. Protocols for systematically searching the literature

We conducted two searches of the literature. We first assessed the international literature on predator–prey interactions. We next assessed the literature on dingo – wild ungulate interactions in Australia.

The international literature on predator–prey interactions is vast, and hence we limited our search to journal articles and books. The former were identified using the electronic databases 'Scopus' and 'Google Scholar', and the latter were identified using 'Google Scholar' and 'The University of Melbourne library catalogue'. We conducted a series of searches in all years for each of the 15 ungulate species listed in Table 1. For each species, we conducted searches of literature published in English, using the common and the scientific name(s) and each of the terms: 'predator', 'predation', 'dhole', 'dholes', '*Cuon alpinus*', 'African wild dog', 'African wild dogs', 'wolf', 'wolves' and '*Canis lupus*'. For sambar deer and rusa deer, we searched using the two genera '*Cervus*' and '*Rusa*'.

The search for literature on dingo – wild ungulate interactions in Australia was as comprehensive as possible, and followed a concurrent literature search on wild deer in Australia reported in Davis *et al*. (2016). We searched the electronic databases 'Scopus', 'Google Scholar', 'The University of Melbourne library catalogue' and our professional networks to identify relevant journal articles, books, reports, conference proceedings and theses. We also conducted a series of searches in all years for each of the 15 ungulate species listed in Table 1. For each species, we conducted searches of the literature published in English, using the common and the scientific name(s) and each of the terms: 'Australia', 'carrion', 'dingo', 'dingoes', 'scavenging', 'wild dog' and 'wild dogs'. For sambar deer and rusa deer, we searched using the two genera '*Cervus*' and '*Rusa*'. In addition, we conducted searches of the published literature using the term 'diet' and each of the terms 'dingo' and 'wild dog', and sourced unpublished reports and theses from reference lists therein.

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review of the impacts and management of introduced deer (Family: Cervidae) in Australia. *Wildlife Research* **43**, 515–532.

Table S2. Sources for percentage frequency occurrence (%FO) records of the 15 ungulate taxa in dingo diet

Where available, %FO data are presented per site, sampling period and/or sample type (scat and stomach). Studies used scat samples only unless stated otherwise. All families are Order: Artiodactyla, except Equidae which is Order: Perissodactyla. Common names and taxonomy follow Jackson and Groves (2015)

Family	Common name	Genus and species	%FO
Bovidae	Feral goat	*Capra hircus*	**73.0, 22.0, 0, 24.0, 0** (Allen *et al.* 1998)[1]**.** – **2.0, 0, 0, 39.0, 0** (Allen *et al.* 2012)[2]. – **0, 0, 0, 2.0, 0** (Allen *et al.* 2016)[1,2]. – **2.7, 0, 0, 0.3, 0.3, 0.7, 1.9, 0.5, 11.8** (Davis *et al.* 2015)[2]. – **2.7** (Doherty 2015). – **1.8** (Gillespie *et al.* 1990). – **0, 1.0** (Lunney *et al.* 1996)[1]. – **0, 0.3** (May 2001)[2]. – **0.8** (Mitchell and Banks 2005). – **8.1** (Paull and Date 1999). – **7.1** (Story and Lloyd 2010). – **2.1** (Whitehouse 1977).
Cervidae	Hog deer	*Axis porcinus*	**0, 0, 0, 0, 0.03, 0, 0, 0, 0** (Davis *et al.* 2015)[2].
Bovidae	Feral sheep	*Ovis aries*	**6.7** (Brown *et al.* 1988). – **0.1** (Brown and Triggs 1990). – **4.2** (Coman 1972). – **0, 0.7, 0** (Cupples *et al.* 2011)[2]. – **15.4, 14.3, 4.6, 1.3, 1.4, 0.2, 2.2, 0, 6.5** (Davis *et al.* 2015)[2]. – **8.0, 10.0** (Lunney *et al.* 1996)[1]. – **0.1, 0** (Lunney *et al.* 2002)[1]. – **4.8** (Newsome *et al.* 1983b). – **0.5** (Opie *et al.* 1990). – **9.5** (Paull and Date 1999). – **0, 0.1** (Purcell 2009)[2]. – **1.0, 0, 0** (Robertshaw and Harden 1986)[2]. – **4.0** (Stevens 1981). – **3.6** (Story and Lloyd 2010). – **0.5, 3.3, 0, 0, 19.0, 51.9** (Thomson 1992)[2,3]. – **15.8** (Wallach *et al*. 2009). – **10.0** (Westaway *et al.* 1990a). – **4.1** (Whitehouse 1977).

Family	Common name	Genus and species	%FO
Cervidae	Fallow deer	*Dama dama*	–
Cervidae	Chital deer	*Axis axis*	–
Suidae	Feral pig	*Sus scrofa*	**10.0, 0, 0, 0, 0, 0, 0, 3.0, 8.0, 0, 0, 0, 25.7** (Allen 2005)[1,2]. – **1.4, 0** (Allen and Gonzalez 2000)[3]. – **0.2, 0, 0, 0, 0** (Allen and Leung 2012)[2]. – **1.0, 1.0, 27.0, 0, 1.0** (Allen *et al.* 2012)[2]. – **0.4, 0, 0, 0, 0, 0** (Allen and Leung 2014)[2]. – **1.0, 1.0, 1.0, 1.0, 0** (Allen *et al.* 2016)[1,2]. – **0.04, 0** (Behrendorff *et al.* 2016)[4]. –**13.0, 12.5, 2.7, 5.0** (Brook 2013)[2]. – **2.3** (Brook and Kutt 2011). – **9.6, 19.2, 26.3, 22.2, 7.1, 0, 9.5, 5.9, 0, 0, 0, 0** (Burnett 1995)[2]. – **3.5** (Corbett 1995). – **0, 0, 0, 0.1, 0.1, 0, 0.3, 0, 1.1** (Davis *et al.* 2015)[2]. – **4.4** (Glen *et al.* 2011). – **5.6** (Loyn *et al.* 1992). – **0.5, 0.8** (Lunney *et al.* 2002)[1]. – **0.7, 0.8** (May 2001)[2]. – **0, 2.2, 0** (McKay 1994)[2]. – **4.0** (Mitchell and Banks 2005). – **4.0** (Newsome *et al.* 1983b). – **<1.0** (Pascoe *et al.* 2011). – **5.0** (Pavlov and Heise 1998). – **0.2, 0** (Purcell 2009)[2]. – **3.1** (Robinson *et al.* 1992). – **0, 0.8** (Twyford 1995)[2]. – **29.4** (Vernes 2000). – **2.9** (Vernes *et al.* 2001).
Cervidae	Rusa deer	*Cervus timorensis*	–
Cervidae	Red deer	*Cervus elaphus*	**18.0** (Finch 2012). – **3.6** (Story and Lloyd 2010).

Family	Common name	Genus and species	%FO
Cervidae	Sambar deer	*Cervus unicolor*	**0, 0, 0, 3.5, 0, 1.0, 1.9, 9.5, 0** (Davis *et al.* 2015)[2]. – **20.0** (Peel *et al.* 2005). – **0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1.1, 1.1, 1.9, 2.0, 3.2, 3.4, 4.3, 4.4, 7.0, 10.8, 12.1, 20.0, 30.4** (Forsyth *et al*. 2018).
Equidae	Feral donkey	*Equus asinus*	**0.3** (Newsome and Coman 1989).
Equidae	Feral horse	*Equus caballus*	**0.04, 0** (Behrendorff *et al.* 2016)[4]. – **0, 0, 0, 5.0** (Brook 2013)[2]. – **0, 2.0** (Byrne 2009)[2]. – **0, 1.0** (Corbett 1974)[3]. – **0, 0, 0, 0, 0, 0, 0.3, 0, 0** (Davis *et al.* 2015)[2]. – **0, 1.6** (Foulkes 2001)[2]. – **0.1, 0** (Lunney *et al.* 2002)[1]. – **1.7** (Newsome and Coman 1989). – **0, 1.3** (Newsome *et al.* 1983a)[2]. – **0.3** (Newsome *et al.* 1983b). – **0, 0.8, 0** (Newsome *et al.* 2014a)[2,4]. – **0.2** (Newsome *et al.* 2014b). – **3.2** (Parkes *et al.* 1987). – **0.2** (Triggs *et al.* 1984). – **2.7** (Westaway *et al.* 1990b).
Bovidae	Swamp buffalo	*Bubalus bubalis*	**6.0** (Corbett 1995).
Bovidae	Banteng	*Bos javanicus*	–
Camelidae	One-humped camel	*Camelus dromedarius*	**7.7, 0, 0** (Cupples *et al.* 2011)[3]. – **1.7, 4.9, 5.6** (Newsome *et al.* 2014a)[2,4]. – **3.7** (Newsome *et al.* 2014b). – **1.0** (Spencer *et al.* 2014).
Bovidae	Feral cattle	*Bos taurus*	**0, 0, 1.0, 0, 0, 2.0, 0, 1.0, 0, 0, 0, <1.0, 1.2** (Allen 2005)[1,2]. – **0.7, 0** (Allen and Gonzalez 2000)[3]. – **23.9, 44.4, 38.0, 7.2, 38.7** (Allen and Leung 2012)[2]. – **2.0, 1.0, 1.0, 0, <1.0** (Allen *et al.* 2012)[2]. – **23.9, 6.3, 38.7** (Allen

Family	Common name	Genus and species	%FO
			and Leung 2014)[2]. – **6.0, 1.0, 6.0, 2.0, 0** (Allen *et al.* 2016)[1,2]. – **28.0, 0, 10.8, 70.0** (Brook 2013)[2]. – **10.1** (Brook and Kutt 2011). – **0.2** (Brown and Triggs 1990). – **4.8** (Brown *et al.* 1987). – **<1.0, 3.0** (Brunner 1978)[2]. – **4.8, 0, 0, 11.1, 0, 23.8, 14.3, 0, 0, 0, 0, 0** (Burnett 1995)[2]. – **64.0, 56.0** (Byrne 2009)[2]. – **8.0, 2.0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0** (Claridge *et al.* 2010)[2]. – **3.0** (Coman 1972). – **13.5, 8.8, 6.7, 4.6, 6.7, 0, 38.5, 40.9, 8.7, 36.4, 7.1, 10.0** (Corbett and Newsome 1987)[1]. – **0, 11.6, 0** (Cupples *et al.* 2011)[2]. – **1.5, 0, 4.6, 1.6, 1.2, 1.2, 2.2, 0, 5.4** (Davis *et al.* 2015)[2]. – **20.1, 17.9, 14.3, 6.1, 19.8, 27.4** (Eldridge *et al.* 2002)[2]. – **0, 1.1** (Foulkes 2001)[2]. – **6.8** (Glen and Dickman 2008). – **12.0** (Glen *et al.* 2006). – **1.5** (Glen *et al.* 2011). – **22.2** (Loyn *et al.* 1992). – **5.0, 36.0** (Lunney *et al.* 1996)[1]. – **10.1, 0.8** (Lunney *et al.* 2002)[1]. – **1.7** (Macfarlane *et al.* 1987). – **7.3, 8.2** (Marsack and Campbell 1990)[3]. – **1.0, 2.3** (May 2001)[2]. – **1.7** (Newsome and Coman 1989). – **2.4** (Newsome *et al.* 1983b). – **1.7, 79.7, 3.6** (Newsome *et al.* 2014a)[2,4]. – **35.0** (Palmer 2012). – **1.0** (Pascoe *et al.* 2011). – **12.2** (Paull and Date 1999). – **19.3** (Pavey *et al.* 2008). – **0, 0.3** (Purcell 2009)[2]. – **<1.0** (Robertshaw and Harden 1985). – **10.0** (Schulz *et al.* 1987). – **3.0** (Stevens 1981). – **10.7** (Story and Lloyd 2010). – **6.4, 13.3, 30.4, 30.8, 0, 1.9** (Thomson 1992)[1,2]. – **0, 0.8** (Twyford 1995)[2]. – **4.2** (Vernes *et al.* 2001). – **1.4** (Westaway *et al.* 1990b). – **0.7** (Whitehouse 1977).

[1]FO% values are for multiple sampling periods.

[2]FO% values are for multiple sites.

[3]FO% values are for scat and stomach samples.

[4]Excluding data for free-ranging domestic dogs.

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