

FULL ACCOUNT FOR: Vulpes vulpes

Vulpes vulpes 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Carnivora	Canidae

vos (Dutch), red fox (English), rev (Norwegian), Rotfuchs (German), lis (Polish), Common name

raposa (Portuguese), fuchs (German), renard (French), zorro (Spanish), silver,

black or cross fox (English), lape (Lithuanian), volpe (Italian)

Synonym Canis vulpes, (Linnaeus 1758)

Similar species Vulpes vulpes

Summary The European red fox is probably responsible for declines of some small

> canids and ground-nesting birds in North America, and numerous small- and medium-sized rodents and marsupials in Australia. A programme to reduce predation pressure on native fauna within the critical weight range of 35 g to

5.5 kg in Western Australia has involved the use of 1080 fox baits.



view this species on IUCN Red List

Species Description

The red fox is a member of the family Canidae which includes wolves, jackals and coyotes. Males are slightly larger than females. Both males and females, but particularly females, have seasonal variations in body weight. Geographic and subspecies variations in size also occur. Adults have a head and body length of 570 to 740 mm, a tail length of 360 to 450 mm and weigh between 4.5 to 8.3 kilograms (Coman 1983, in Saunders et al. 1995). In general, throat and abdomen are white, lower legs and ears are black and a bushy tail is tipped in white. Three colour morphs of *V. vulpes* are recognised: red, silver/black and cross. A pale-yellowish colour morph is common on the Arabian peninsula and within native subspecies in North America.

Notes

There is a close relationship between fox and rabbit numbers (Saunders et al. 2007). When rabbit populations crash, due to drought, myxomatosis or Rabbit Calicivirus Disease (RCD), there will be a lag period until fox numbers decline and adjust to the reduced prey population. The likelihood of increased predation pressure on native wildlife over this period needs to be considered. Rabbit numbers may also be affected by foxes. Preliminary studies suggest that foxes and feral cats may slow the recovery of rabbit populations after they crash due to drought or disease. The potential role of foxes in rabbit control and the impact of foxes on native wildlife following crashes in rabbit populations needs to be clarified (Saunders et al. 2007).

Lifecycle Stages

Parturition occurs after a gestation of 51 to 53 days. Lactation lasts for approximately five weeks and weaning occurs gradually. Females can breed before one year of age, however, in areas of high density most yearlings do not produce pups. V. vulpes can live up to 9 years in the wild, although few individuals live more than 6 years. In the northern hemisphere, dispersal usually occurs from September to January.



FULL ACCOUNT FOR: Vulpes vulpes

Uses

Wild-caught V. vulpes are used in sport hunting. Foxes are also raised in farms, where they generate millions of dollars a year worldwide; for example in the EU from 2001 to 2002 fur farms generated US \$4 600 million (International Fur Trade Federation Undated). Most of the world's farmed fur is produced in Europe, accounting for 63% of fox production (EU = 47%); Finland is the world's largest producer and exporter of fox skin (International Fur Trade Federation Undated). Russia/the Baltic States and China account respectively for 11% and 27% of fox production (International Fur Trade Federation Undated).

Habitat Description

The worldwide distribution of the red fox, ranging from tundra to the desert as well as urban areas, suggests that it can survive in most sorts of environments (Saunders *et al.* 1995). The fox is probably most abundant in fragmented environments typically found in agricultural landscapes because these offer a wide variety of cover, food and den sites (Saunders *et al.* 1995). More uniform, open environments are less favoured as are heavily forested or mountainous areas. Foxes do not live entirely within closed canopy forests but can penetrate some distance into them in search of food (Jarman 1986, in Saunders *et al.* 1995). The red fox appears to be absent from areas with tropical climates, such as Asia, although the reasons for this are unclear. In Australia the fox can survive in habitats ranging from arid through to alpine as well as urban. The only limitations on distribution appear to be the presence of dingoes and the tropical climate of the northern parts of Australia (Saunders *et al.* 1995).

Reproduction

Females reproduce only once a year. Gestation lasts 51 to 53 days with most cubs born during August and September. In Australia females are reproductively active from July to October with a peak during August in southeastern Australia (McIntosh 1963a, Ryan 1976a, in Saunders *et al.* 1995). In temperate regions breeding occurs from December to April (later in more northern latitudes). Mean litter size is four up to a maximum of about ten (Saunders *et al.* 1995). Both sexes become sexually mature from ten months of age (Saunders *et al.* 1995). Although social groups of one male and several vixens do exist, most foxes are thought to have only one mate; males may also leave their normal territory temporarily in search of other mating opportunities (Saunders *et al.* 1995).

Nutrition

Foxes prey particularly on small to medium-sized, ground-dwelling and semi-arboreal mammals, ground-nesting birds and chelid tortoises (DEWHA 2008b). Terrestrial mammals in Australia at the greatest risk are those that weigh between 35 g and 5.5 kg (*critical weight range* species), including ground-nesting birds, many of which are endangered or vulnerable (DEWHA 2008a). Although predominantly carnivorous, the fox is an opportunistic predator and scavenger with no specialised food requirements (Saunders *et al.* 1995). Foxes are omnivorous, consuming fruit, vegetables, eggs and insects, especially when they are seasonally available. Diet studies conducted in Australia show rabbits, house mice and sheep taken as carrion to be the most common food items (Saunders *et al.* 1995).



FULL ACCOUNT FOR: Vulpes vulpes

General Impacts

Reduction in native biodiversity: The damage to Australian wildlife since European settlement has been catastrophic (e.g., Salo et al. 2007). At least 20 species of Australian mammals have become extinct (Saunders et al. 1995). This represents about one half of the world's mammal extinctions in the last 200 years; a further 43 species are judged to be either endangered or vulnerable (Commonwealth Endangered Species Advisory Committee Report 1992, in Saunders et al. 1995). The causes are complex and the impact of foxes on wildlife have probably been exacerbated by habitat modification and fragmentation (Saunders et al. 1995). In Austrialia the fox has eliminated remnant populations of some native rodent and marsupial species. The best known Australian example of impact on a native species as reported by Saunders and colleagues (1995) is that of the 'Near Threatened (NT)' black-footed rock-wallaby (Petrogale lateralis), living in small, relict colonies in the wheatbelt of Western Australia. Management of local fox populations using poisoned baits resulted in a substantial increase in wallaby numbers. Another threatening process which has recently come to light is the impact of predation by foxes on native marsupials and on the 'Vulnerable (VU)' malleefowl Leipoa ocellata) (Saunders et al. 1995). For more examples of Australian fox removal studies please see Saunders et al. 1995. In North America, introduced foxes have negative impacts on many ground-nesting birds, such as ducks and grouse. In California, European red foxes have to be controlled on an annual basis to protect the nesting grounds of several endangered species of birds. European red foxes also negatively impact smaller native canids, such as the endangered San Joaquin kit foxes and subspecies of native red foxes. Competition: The impact of competition by foxes appears to be secondary to that of predation. Morris (1992) suggests foxes may compete with the chuditch or western quoll (Dasyurus geoffroii) for food in jarrah forest in Western Australia. Foxes also prey on young chuditch.

Agricultural: European red foxes are also a threat to livestock as they prey on poultry, lambs and kids. Disease Transmission: In its introduced range in Australia the fox carries no diseases of serious economic or public health significance, although recently foxes have been found to harbour the hydatid parasite (Saunders et al. 2007). Controversy still surrounds its possible role as a wild reservoir host for the rabies virus (Saunders et al. 2007). In many parts of the northern hemisphere, the fox is the main reservoir of this disease and, given the widespread distribution of foxes in Australia, the possibility of rabies developing as an established disease in fox populations cannot be dismissed (Saunders et al. 2007).

Many other infectious diseases occur in foxes, although little is known of their incidence in Australia, or their impact on population regulation. These include mange, canine distemper, parvovirus, toxoplasmosis, canine hepatitis, tularaemia, leptospirosis, staphylococcal infections and encephalitis (Saunders *et al.* 1995). Like most carnivores that feed on a wide range of prey, foxes also carry a variety of endoparasites (Saunders *et al.* 1995). The incidence of helminth parasites, in foxes in particular, has been intensively surveyed in southeastern Australia because of their potential transmission to domestic animals (Saunders *et al.* 1995).



FULL ACCOUNT FOR: Vulpes vulpes

Management Info

An analysis by Salo and colleagues (2007) has confirmed that introduced predators generally have detrimental impacts on populations of native species. Impacts on prey are much greater in Australia than in other parts of the world. Since the early days of European settlement in Australia, control of predators has been attempted using a variety of methods, including shooting, trapping, fencing and poisoning (Rolls 1969, in Glen *et al.* 2007). Control of urban foxes also presents a problem, as conventional lethal techniques (e.g., shooting, poisoning and trapping) cannot be used in built up areas. Efforts are now directed towards mitigating the impact of the fox using baits to deliver vaccines or poisons or to regulate fertility (Armstrong 2004; Marks *et al.* 1996; Vos 2003). The ongoing costs of fox control are high. To aerially bait approximately 35 000 square kilometers/year costs approximately \$1.3 million (Saunders & McLeod 2007, in DEWHA 2008b). Exclusion fencing costs up to \$10 000/km (DEWHA 2008b).

<u>Preventative Measures</u>: Fox scats are surprisingly persistent in the field and sufficient DNA is contained within scats for 100% accuracy in species identification, even after three months of weathering. DNA-based species identification is robust, no matter what method is used to extract DNA (Berry *et al.* 2007). DNA extraction with the commercial kit was the most costly (about AU\$6.0, Euro 3.6, US\$4.4 per sample in consumables) and time-consuming aspect of scat processing (compared with less than AU\$0.10 per sample for chelex). Use of a cheaper and more straightforward extraction protocol places fewer constraints on the number of scats that could be processed.

<u>Physical</u>: Exclusion fencing is used to protect areas of high conservation value (Algar & Smith 1998, in Robley *et al.* 2007). It has proven to be a valuable tool in aiding the re-introduction of species to areas from which they have been previously eliminated by feral animals such as foxes (Robley *et al.* 2007). Results from fencing trials by Robley and colleagues (2007) indicate that fences should be 1.8 m high, have an overhang that is at least 600 mm in circumference that is curved or shaped in such a way that prevents animals climbing over from underneath, and have an apron with a mesh hard enough to prevent foxes chewing through. Electric fencing is not required.

Chemical: In Australia the fox is most commonly managed by setting baits impregnated with 1080 (sodium fluoroacetate) poison (Gentle *et al.* 2007). Fox numbers are controlled by laying dried meat baits containing the poison 1080 (sodium monofluroacetate) at least four times per year. The poison is a naturally occuring substance found in native plants called gastrolobiums or 'poison peas'. While native animals have evolved with these plants and have a high tolerance to the poison, introduced animals do not. Baits consist either of fresh or dried meat, offal, chicken eggs or commercial mixtures (Saunders & McLeod 2007, in Glen *et al.* 2007). Baiting is the only method currently available for predator control that can be used successfully over broad areas (Gentle 2005, in Glen *et al.* 2007). However, the long-term effectiveness of such control campaigns is likely to be limited due to the ability of foxes to disperse over considerable distances and to swiftly recolonise areas (Gentle *et al.* 2007). In southeastern Australia, baiting for foxes by landholders is encouraged by state government agencies. However, for reasons including bait caching and bait degradation, current baiting practices may not always be efficient or effective (Gentle *et al.* 2007). Managers should adopt a approach which seeks to minimise potential risk to non-target individuals, while clarifying population-level effects through continued research (Glen *et al.* 2007).

Fertility regulators include cabergoline, a dopamine agonist that has previously been demonstrated to have an abortifacient effect in cats (*Felis catus*) and dogs (*Canis familiaris*) (see Marks *et al.* 1996). Marks and colleagues (1996) report that the chemical is palatable to foxes and easily incorporated into a non-poisonous bait. The incidence of cubs was significantly lower in treatment dens than in the controls.

Vos (2003) reports that as a result of oral vaccination of foxes rabies has almost been completely eradicated from Western and Central Europe.

Pathway

Introduced for sport hunting purposes in Australia and USA

Principal source:



FULL ACCOUNT FOR: Vulpes vulpes

Compiler: IUCN SSC Invasive Species Specialist Group

Updates with support from the Overseas Territories Environmental Programme (OTEP) project XOT603, a joint project with the Cayman Islands Government - Department of Environment

Review: Jan F. Kamler, Wildlife Conservation Research Unit.\ Oxford University UK

Pubblication date: 2010-07-29

ALIEN RANGE

[14] AUSTRALIA[14] CANADA[1] ISLE OF MAN[1] MEXICO

[1] NORTH AMERICA [49] UNITED STATES

Red List assessed species 125: EX = 6; CR = 22; EN = 30; VU = 20; NT = 24; DD = 3; LC = 20;

Acanthophis rugosus **LC** Anser erythropus **VU** Antechinomys laniger LC Ardeotis australis NT Bettongia lesueur NT Bettongia gaimardi NT Bettongia penicillata CR **Burhinus grallarius NT Burramys parvus CR** Caloprymnus campestris EX Caretta caretta EN Chaeropus ecaudatus EX Chlamydotis undulata VU Dasyornis brachypterus EN Dasyornis broadbenti LC Dasyurus geoffroii NT Dasyurus maculatus **NT** Dasyurus viverrinus NT Echiopsis curta NT Elusor macrurus EN **Euastacus armatus DD** Euastacus australasiensis LC

Euastacus balanesis EN **Euastacus bidawalis EN Euastacus bindal CR** Euastacus bispinosus VU **Euastacus brachythorax EN** Euastacus clarkae CR Euastacus claytoni EN **Euastacus crassus EN** Euastacus dalagarbe CR Euastacus dharawalus CR **Euastacus diversus EN** Euastacus eungella CR Euastacus fleckeri EN Euastacus gamilaroi CR Euastacus girurmulayn CR Euastacus gumar EN Euastacus guruhgi CR **Euastacus guwinus CR Euastacus hirsutus EN Euastacus hystricosus EN** Euastacus jagabar CR **Euastacus jagara CR Euastacus maccai EN** Euastacus maidae CR Euastacus mirangudjin CR **Euastacus monteithorum CR Euastacus pilosus EN Euastacus polysetosus EN**

Euastacus pilosus EN
Euastacus rieki EN
Euastacus simplex VU
Euastacus sulcatus VU
Euastacus urospinosus EN
Euastacus wiowuru NT
Euastacus yarreansis VU
Heleioporus australiacus VU
Euastacus polysetosus EN
Euastacus setosus CR
Euastacus spinichelatus EN
Euastacus sultoni VU
Euastacus valentulus LC
Euastacus yarreansis CR
Euastacus yarreansis VU
Heleioporus australiacus VU

Lagorchestes asomatus EX
Lagorchestes hirsutus VU
Leipoa ocellata VU
Litoria raniformis EN
Macropus eugenii LC
Macropus parma NT
Macrotis lagotis VU
Macrotis leucura EX



FULL ACCOUNT FOR: Vulpes vulpes

Mastacomys fuscus NT
Neophema chrysogaster CR
Notoryctes typhlops DD
Onychogalea fraenata EN
Onychogalea unguifera LC
Pedionomus torquatus EN
Perameles bougainville EN
Perameles gunnii NT
Petrogale penicillata NT
Petrogale xanthopus NT
Phascogale calura NT
Plectrophenax hyperboreus NT
Polytelis alexandrae NT

Potorous longipes EN
Pseudemoia pagenstecheri LC

Pseudocheirus occidentalis VU
Pseudomys higginsi LC
Pseudomys occidentalis LC
Pseudomys shortridgei NT
Sminthopsis dolichura LC
Sminthopsis psammophila EN

Sterna albifrons LC
Sterna nereis VU
Thinornis rubricollis NT
Turnix melanogaster VU

Myrmecobius fasciatus EN Notoryctes caurinus **DD** Numenius tahitiensis VU Onychogalea lunata EX Parantechinus apicalis EN Pelecanoides garnotii EN Perameles eremiana EX Petrogale lateralis NT Petrogale rothschildi LC Pezoporus occidentalis CR Phascogale tapoatafa NT Podiceps cristatus LC Potorous gilbertii CR Potorous tridactylus LC Pseudemydura umbrina CR Pseudomys fumeus EN

Pseudomys novaehollandiae VU
Pseudomys oralis VU
Setonix brachyurus VU
Sminthopsis douglasi NT
Spheniscus magellanicus NT
Sterna dougalii LC
Strophurus taenicauda NT

Thylogale billardierii LC

BIBLIOGRAPHY

53 references found for Vulpes vulpes

Managment information

Armstrong, R. 2004. Baiting operations: Western Shield review, Conservation Science Western Australia 5(2): 31-50.

Summary: Available from: http://www.dec.wa.gov.au/images/stories/nature/science/cswa/v5n2/31-50.pdf [Accessed 24 January 2010] Berry, O., S.D. Sarre, L. Farrington & N. Aitken. 2007. Faecal DNA detection of invasive species: the case of feral foxes in Tasmania, *Wildlife Research 34*: 1-7.

Berry, O., S.D. Sarre, L. Farrington & N. Aitken. 2007. Faecal DNA detection of invasive species: the case of feral foxes in Tasmania, Wildlife Research 34: 1-7.

Summary: Available from: http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1043&context=nwrcinvasive [Accessed 24 January 2010]

Bomford, M., 2003. Risk Assessment for the Import and Keeping of Exotic Vertebrates in Australia. Bureau of Rural Sciences, Canberra.

Summary: Available from: http://www.feral.org.au/wp-content/uploads/2010/03/PC12803.pdf [Accessed August 19 2010]
Department of the Environment, Water, Heritage and the Arts (DEWHA) 2008a. Background document for the threat abatement plan for predation by the European red fox. DEWHA: Canberra.

Summary: Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/pubs/tap-cat-background.pdf [Accessed 24 January 2010]

Department of the Environment, Water, Heritage and the Arts (DEWHA) (2008a). Background document for the threat abatement plan for predation by the European red fox. DEWHA: Canberra.

Department of the Environment, Water, Heritage and the Arts (DEWHA) (2008b). Threat abatement plan for predation by the European red fox. DEWHA: Canberra.

Department of the Environment, Water, Heritage and the Arts (DEWHA) 2008b. Threat abatement plan for predation by the European red fox. DEWHA: Canberra.

Summary: Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/pubs/tap-fox-report.pdf [Accessed 24 January 2010]

Ebbert and Byrd., 2002. Eradications of invasive species to restore natural biological diversity on Alaska Maritime National Wildlife Refuge. In *Turning the tide: the eradication of invasive species:* 102-109. Veitch, C.R. and Clout, M.N.(eds). IUCN SSC Invasive Species Specialist Group. IUCN. Gland. Switzerland and Cambridge. UK.

Summary: Eradication case study in Turning the tide: the eradication of invasive species.

Enhanced Fox Management Program, 2004. Department of Sustainability and Environment, Victoria.

Foxes, 2004 NSW National Parks and Wildlife Service.

Summary: Impact and management information.

Foxes in Tasmania - A Grave Threat to Our Wildlife, 2004. Department of Primary Industries, Water & Environment, Australia.

Summary: Management plan, Tasmania.



FULL ACCOUNT FOR: Vulpes vulpes

Gentle, M.N., G.R. Saunders & C.R. Dickman. 2007. Poisoning for production: how effective is fox baiting in south-eastern Australia?, *Mammal Review*.

Gentle, M.N., G.R. Saunders & C.R. Dickman. 2007. Poisoning for production: how effective is fox baiting in south-eastern Australia?, Mammal Review.

Summary: Available from: http://era.deedi.qld.gov.au/866/ [Accessed 24 January 2010]

Glen, A.S., M.N. Gentle & C.R. Dickman. 2007. Non-target impacts of poison baiting for predator control in Australia, *Mammal Review*. Glen, A.S., M.N. Gentle & C.R. Dickman. 2007. Non-target impacts of poison baiting for predator control in Australia, Mammal Review.

Summary: Available from: http://era.deedi.qld.gov.au/871/ [Accessed 24 January 2010]

IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4.

Summary: The IUCN Red List of Threatened Species provides taxonomic, conservation status and distribution information on taxa that have been globally evaluated using the IUCN Red List Categories and Criteria. This system is designed to determine the relative risk of extinction, and the main purpose of the IUCN Red List is to catalogue and highlight those taxa that are facing a higher risk of global extinction (i.e. those listed as Critically Endangered, Endangered and Vulnerable). The IUCN Red List also includes information on taxa that are categorized as Extinct or Extinct in the Wild; on taxa that cannot be evaluated because of insufficient information (i.e. are Data Deficient); and on taxa that are either close to meeting the threatened thresholds or that would be threatened were it not for an ongoing taxon-specific conservation programme (i.e. are Near Threatened).

Available from: http://www.iucnredlist.org/ [Accessed 25 May 2011]

IUCN/SSC Invasive Species Specialist Group (ISSG)., 2010. A Compilation of Information Sources for Conservation Managers.

Summary: This compilation of information sources can be sorted on keywords for example: Baits & Lures, Non Target Species, Eradication, Monitoring, Risk Assessment, Weeds, Herbicides etc. This compilation is at present in Excel format, this will be web-enabled as a searchable database shortly. This version of the database has been developed by the IUCN SSC ISSG as part of an Overseas Territories Environmental Programme funded project XOT603 in partnership with the Cayman Islands Government - Department of Environment. The compilation is a work under progress, the ISSG will manage, maintain and enhance the database with current and newly published information, reports, journal articles etc.

Kirkpatrick, Win; Amanda Page and Marion Massam, September 2008, Red Fox (Vulpes vulpes) risk assessment for Australia. Department of Agriculture and Food, Western Australia.

Summary: Models for assessing the risk that exotic vertebrates could establish in Australia have been developed for mammals, birds (Bomford 2003; Bomford 2006, 2008), reptiles and amphibians (Bomford 2006, 2008; Bomford *et al.* 2005). These Risk Assessment models have been further explored by Western Australia Department of Agriculture & Food (DAFWA) to confirm that they reasonably predict public safety, establishment and pest risks across a full range of exotic species and risk levels. Mammals and birds were assessed for the pest risk they pose if introduced to Australia, by calculating Vertebrate Pests Committee (VPC) Threat Categories. These categories incorporate risk of establishing populations in the wild, risk of causing public harm, and risk of becoming a pest (eg causing agricultural damage, competing with native fauna, etc). The 7-factor Australian Bird and Mammal Model was used for these assessments.

Marks, C.A., Nijk, M., Gigliotti, F., Busuana, F. & Short, R.V. 1996. Preliminary field assessment of a cabergoline baiting campaign for reproductive control of the red fox *Vulpes vulpes*, *Wildlife Research 23*: 161-168.

Marks, C.A., Nijk, M., Gigliotti, F., Busuana, F. & Short, R.V. 1996. Preliminary field assessment of a cabergoline baiting campaign for reproductive control of the red fox *Vulpes vulpes*, Wildlife Research 23: 161-168.

Massam M, Kirkpatrick W and Page A., 2010. Assessment and prioritisation of risk for forty introduced animal species. Invasive Animals Cooperative Research Centre, Canberra.

Summary: This report documents work contributing to a project commissioned by the Invasive Animals Cooperative Research Centre to validate and refine risk assessment models used in decisions to import and manage introduced vertebrate species. The intent of the project was to: a) increase predictive accuracy, scientific validation and adoption of risk assessment models for the import and keeping of exotic vertebrates, and b) reduce the risk of new vertebrate pests establishing introduced populations in Australia.

Available from: http://www.feral.org.au/wp-content/uploads/2010/08/DAFWA_RA_060510.pdf [Accessed 16 March 2011]

Mosquin, Theodore, 1997. Management Guidelines for Invasive Alien Species in Canada's National Parks.

Summary: Management guidelines for all invasive species in Canada.

New South Wales (NSW) National Parks and Wildlife Service 2001. Threat Abatement Plan for Predation by the Red Fox (Vulpes vulpes). NSW National Parks and Wildlife Service, Hurstville.

Summary: Management plan for New South Wales.

Pest Animal Control CRC., undated. European red fox Vulpes vulpes feral.com.au

Summary: Available from: http://www.feral.org.au/content/species/fox.cfm [Accessed 19 February 2008]

Reynolds, J.C and Short, M., 2003. The status of foxes *Vulpes vulpes* on the Isle of Man in 1999. *Mammal Review* 33(1). 69-76

Robley, A., D. Purdey, M. Johnston, M. Lindeman, F. Busana & K. Long. 2007. Experimental trials to determine effective fence designs for feral Cat and Fox exclusion, Ecological Management & Restoration 8(3): 193-198.

Robley, A., D. Purdey, M. Johnston, M. Lindeman, F. Busana & K. Long. 2007. Experimental trials to determine effective fence designs for feral Cat and Fox exclusion, *Ecological Management & Restoration 8*(3): 193-198.

Saunders, G., B. Coman, J. Kinnear & M. Braysher. Managing Vertebrate Pests: Foxes. 1995. Bureau of Resource Sciences.

Saunders, R. Glen, Matthew N. Gentle and Christopher R. Dickman, 2010. The impacts and management of foxes *Vulpes vulpes* in Australia. Mammal Review Volume 40 Issue 3, Pages 181 - 211

SouthernArk Project, 2004. Department of Sustainability and Environment, Victoria, Australia.

Varnham, K. 2006. Non-native species in UK Overseas Territories: a review. JNCC Report 372. Peterborough: United Kingdom.

Summary: This database compiles information on alien species from British Overseas Territories.

Available from: http://www.jncc.gov.uk/page-3660 [Accessed 10 November 2009]

Vos, A. 2003. Oral Vaccination against Rabies and the Behavioural Ecology of the Red Fox (*Vulpes vulpes*), *J. Vet. Med. B* 50: 477-483. Vos, A. 2003. Oral Vaccination against Rabies and the Behavioural Ecology of the Red Fox (*Vulpes vulpes*), J. Vet. Med. B 50: 477-483. Western Shield, 2003.Department of Conservation and Land Management, Government of Western Australia.

Summary: Management plan, Western Australia.



FULL ACCOUNT FOR: Vulpes vulpes

General information

BirdLife International 2008. Polytelis alexandrae. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2 **Summary:** Available from: http://www.iucnredlist.org/apps/redlist/details/106001458/0 [Accessed 16 Januray 2012) BirdLife International 2009. Pezoporus occidentalis. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.2.

Summary: Available from: http://www.iucnredlist.org/apps/redlist/details/106001491/0 [Accessed 16 January 2012)

Churcher, C. S. 1959. The specific status of the New World red fox. Journal of Mammalogy 40: 513-520.

Summary: Concluded that New World and Old World red foxes were conspecifics. However, most New World specimens used in analyses had an Old World origin.

Dickman, C. R. 1996. Impact of exotic generalist predators on the native fauna of Australia. Wildlife Biology 2: 185-195.

Summary: Reviews the impact of introduced red foxes on native fauna in Australia

Ginsberg, J. R., and D. W. Macdonald. 1990. Foxes, wolves, jackals, and dogs: an action plan for the conservation of canids. IUCN, Gland, Switzerland.

Summary: Good review of red fox information

International Fur Trade Federation. Undated. The Socio-Economic Impact of International Fur Farming.

ITIS (Integrated Taxonomic Information System), 2005. Online Database Vulpes vulpes

Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.

Available from:

http://www.cbif.gc.ca/pls/itisca/taxastep?king=every&p_action=containing&taxa=Vulpes+vulpes&p_format=&p_ifx=plglt&p_lang=[Accessed March 2005]

Kamler, J. F., and W. B. Ballard., 2002. A review of native and nonnative red foxes in North America. *Wildlife Society Bulletin* 30:370-379. **Summary:** Reviews differences between native and introduced red foxes in North America. Also documents the spread of introduced red foxes in Canada and the U.S.A.

Lariviere, S., and M. Pasitschniak-Arts, 1996, Vulpes vulpes, Mammalian Species 537:1-11

Summary: Good review of red fox information

Lewis, J. C., K. L. Sallee, and R. T. Golightly, Jr. 1999. Introduction and range expansion of nonnative red foxes (*Vulpes vulpes*) in California. *American Midland Naturalist* 142:372-381.

Summary: Good review of introduced red foxes in California.

Macdonald, D. W. and C. Sillero-Zubiri. 2004. Biology and conservation of wild canids. Oxford University Press, UK.

Nowak, R. M. 1999. Walkers mammals of the world. 6th edition. The Johns Hopkins University Press, Baltimore.

Summary: Section on red foxes offers a good review of this species

Salo, P., E. Korpim�ki, P.B. Banks, M. Nordstr�m & C.R. Dickman. 2007. Alien predators are more dangerous than native predators to prey populations, *Proc Biol Sci. 274*(1615): 1237-1243.

Salo, P., E. Korpim�ki, P.B. Banks, M. Nordstr�m & C.R. Dickman. 2007. Alien predators are more dangerous than native predators to prey populations, Proc Biol Sci. 274 (1615): 1237-1243.

Sillero-Zubiri, C., M. Hoffman, and D. W. Macdonald (eds.). 2004. Canids: foxes, wolves, jackals and dogs. Status survey and conservation action plan. IUCN/SSC Canid Specialist Group. Gland, Switzerland and Cambridge, UK. Sillero-Zubiri, C., M. Hoffman, and D. W. Macdonald (eds.). 2004. Canids: foxes, wolves, jackals and dogs. Status survey and conservation action plan. IUCN/SSC Canid Specialist Group. Gland, Switzerland and Cambridge, UK.

Summary: Available online in PDF format at www.canids.org

Strahan, R. 1995. Mammals of Australia. Smithsonian Institution Press, Washington, D.C.

Summary: Reviews the impact of introduced red foxes on native fauna in Australia.

U.S. Fish & Wildlife Service, 1999. Threatened and Endangered Species: Aleutian Canada goose (Branta canadensis leucopareia)

Summary: Available from: http://alaska.fws.gov/media/acg/fact.pdf

Voigt, D. Ř. 1987. Red fox. Pages 379-392 in M. Novak, J. A. Baker, M. E. Obbard, and B. Mallock, editors. Wild furbearer management and conservation in North America. Ministry of Natural Resources, Ontario, Canada

Summary: Good review of red foxes in North America.