**Mustela furo**

**System:** Terrestrial

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**Common name**
fitch (English, Canada), ferret (English), New Zealand fitch (English, New Zealand)

**Synonym**
*Mustela putorius furo*
*Martes furo*, (Linnaeus)
*Putorius putorius furo*, L.

**Similar species**

**Summary**

Mustela furo (ferret) is the domesticated form of the European polecat (Mustela putorius). It has been introduced to many parts of the world where it threatens native prey species, particularly ground nesting and flightless birds. Mustela furo are also a wildlife vector for bovine tuberculosis.

[View this species on IUCN Red List](http://www.iucngisd.org/gisd/species.php?sc=886)

**Species Description**

*Mustela furo* (ferrets) are sexually dimorphic. Male ferrets weigh between 1000g and 2000g, and females between 600g and 900g (Landcare Research 2005). They have a long and slender body which is 48cm to 56cm long (including the tail). They have large canine teeth (34 teeth in total). Each paw has a set of five non-retractable claws (Duda 2003). Ferrets have three basic colour variations: dark (similar to the polecat), white under fur with brownish guard hairs (referred to as sandy or pastel), and all white (albino). All three of these variations are found in New Zealand (Jeffares 1986). Current research shows that in Europe, wildtype colour variations are more common in populations that have been feral for several generations.
Notes
Ferret is the name given to the domesticated animal derived from the albino form of the polecat. There is some debate as to whether the ferret was derived from the western European polecat (*Mustela putorius*) or the eastern European steppe polecat (*M. eversmannii*), or is a hybrid of both (DOC, 2005; Corbett and Ovenden, 1980; Howes, 1980; Hvass, 1961; King, 1990; Mathews, 1982). Ferrets were first known in Palestine some 1000 years BC, used for fighting rodents and hunting rabbits, and they have been known in Europe since at least the Middle Ages (Kowalski, 1976). Ferrets are sometimes considered to be the same biological species as the western polecat (*M. putorius*), and they do interbreed in the wild. These hybrids are sometimes indistinguishable from the wild polecat (Corbett and Ovenden, 1980; Howes, 1980). Some authorities also consider the ferret to be a subspecies of *M. putorius*, *M. putorius furo* (King, 1990). As domestic ferrets have been selectively bred in captivity for hundreds of years for qualities of docility and tameness, their capacity to survive in the wild may be limited to some degree (Poole, 1972; in Davison et al. 1999). However, pet ferrets and farmed ferrets do escape, and while some may be unable to survive in the wild, there are always some which are able to adapt (DOC, 2005).

Lifecycle Stages
In New Zealand, young *Mustela furo* (ferrets) emerge from the nest in the first two weeks of January, and dispersal occurs in early to mid-March (Byrom 2002). Large influxes of juveniles are therefore observed in late summer and autumn. Juvenile ferrets will move a median distance of 5km from their natal site, with no sex-specific differences in dispersal (Byrom 2002). The life expectancy of juvenile ferrets is estimated to be 1.3 years (Caley and Morriss In Press; in Clapperton 2001). Ferrets live for about two to four years in the wild (Landcare Research 2005), while ferrets in captivity can live for 8-14 years (King 1990).

Uses
Ferrets (*Mustela furo*) were originally domesticated for the hunting of rodents and rabbits in Europe (Jurek, 1998). Since the 1970s, they have begun to gain in popularity as pets in the USA and around the world (Wenker and Christen, 2002; Jurek, 1998). They also have a limited history as fur farmed animals in the USA (Jurek, 1998) and in New Zealand (DOC, 1999), and in recent decades have been used as research animals in the medical field, such as influenza research (Jurek, 1998).
Habitat Description
The native habitat of *Mustela furo* (ferrets) is forested and semi-forested areas near water sources (Duda, 2003). In Europe they are found in dune systems with large rabbit populations. In New Zealand, they are generally found in grasslands, scrub, pasture land, riverbeds, forest fringes and urban and suburban areas (Landcare Research 2005; Atkinson 2001; DOC 2005; Duda 2003). Recent reports indicate that ferrets may be penetrating into deep forest land in some locations (DOC 2005). Den sites can be found in gorse, dense scrub, rabbit holes, buildings, rubbish piles, and haybarns (Ragg 1998; Jeffares 1986). These are often shared with other ferrets which may increase the transmission of bovine tuberculosis (Ragg 1998). Dispersing juvenile ferrets have been found under low-growing shrubs and in overgrown stream channels and river banks (Ragg 1998).

Ferrets are largely nocturnal. In the high country, their home range averages 80 hectares, whereas in the lowlands, male home ranges average 30 hectares, and females 12 hectares. Ferrets are also strong swimmers, and will readily cross waterways to new areas (Landcare Research 2005).

Reproduction
*Mustela furo* (ferrets) are polygynous, iteroparous, sexual, viviparous and altricial. (Duda 2003). Male domestic ferrets go into rut between December and July, and females go into heat between March and August. Males are ready to breed when they develop a discoloured, yellowish undercoat, caused by an increase in the oil production of the skin glands. A female in estrous is identifiable by a swollen pink vulva due to an increase in estrogen. Healthy domestic ferrets can have up to three successful litters per year, and up to 15 kits. Gestation length is about 42 days, and there are eight weeks of parental care. Female kits will then reach sexual maturity at six months old (Kaytee 2001, Schilling 2000; in Duda, 2003). Unlike some other mustelids, ferrets do not show delayed implantation (Hinds *et al.* 2000).

In New Zealand, ferrets reproduce between August and January, producing up to nine young from two litters (Lamming, 1984; in Hinds *et al.* 2000), although usually only one litter (P. Cowan, pers. comm.; in Hinds *et al.* 2000). Juveniles disperse at three months, and sexual maturity is reached between eight and twelve months (Landcare Research, 2005).

Nutrition
In New Zealand, rabbits are the main food of *Mustela furo* (ferrets), and are thought to be the main factor determining where ferrets are found and in what numbers. They also eat native bird species, even when rabbits are plentiful (DOC 2005), and will also prey on hares, possums, bird eggs, lizards, hedgehogs, frogs, eels and invertebrates. They will scavenge the carcasses of other ferrets, hedgehogs, cats and possums. In the Scottish Isles they have also been observed scavenging on lamb carcasses. Diet varies with food availability, and male ferrets eat more rabbits than do females. Ferrets are capable of switching to other prey when rabbit numbers are controlled (Landcare Research 2005). Ferrets in New Zealand forests tend to have more rats in their diet, and no birds (Clapperton 2001). Some seasonal variation in diet has also been observed. Rabbits and hares will dominate in summer, and rodents in autumn and winter. Birds are eaten year round, but more in spring and summer (King 1990).
General Impacts

In their introduced range, ferrets (*Mustela furo*) threaten a variety of native wildlife, for example, ground nesting and flightless birds in New Zealand (DOC 2005; Norbury 2001; Clapperton 2001). They have also contributed to the decline of seabird populations on the Azores (Pitta Groz *et al.* 2002), and reduced bird populations in the Scottish isles (Lever 1985; Corbett and Southern 1977). Ferrets are also a known vector for bovine tuberculosis (*Mycobacterium bovis*), which is present in reservoir populations in the introduced brushtail possum (*Trichosurus vulpecula*) in New Zealand (de Lisle *et al.* 2002). Bovine tuberculosis can be transmitted by direct contact or via contamination of pasture and food (Ragg 1998). In Europe ferrets are sympatric with wild polecats and there is a danger of hybridisation (Davison *et al.* 1999).
Management Info

Preventative: Trials have been carried out in New Zealand to attempt to condition ferrets to avoid prey species, such as native birds, but initial results have been disappointing (G. Norbury, pers. comm.; in Parkes and Murphy, 2004).

Physical: Ferret control has traditionally been done by trapping in New Zealand, using meat (eg. rabbit) as a lure. However, this can be labour-intensive, time-consuming and costly (Spurr et al., 2005). Traps can also be baited with an artificial scent lure (Clapperton, 2001). Ferrets are known to be less easily trapped in spring, and culling in autumn gives more success than culling in spring (G. Norbury, unpubl.; in Barlow and Norbury, 2001). Landcare Research (2005) state that setting traps near vegetation cover, rabbit sign or other animal tracks improved capture rates, while Young (1998; in Clapperton, 2001) found that ferrets were most often caught in traps set close to waterways.

Chemical: Spurr et al. (2005) found that 1080 and diphacinone would be suitable poisons for ferret control. Diphacinone has an advantage in that it can be used without a license, is less hazardous than 1080, and has an antidote (Vitamin K). Ogilvie et al. (1996; in Spurr et al., 2005) have identified a fish-paste bait which is palatable to wild ferrets, and a bait station readily used by ferrets, but which excludes larger non-target species such as dogs and cats. PestOff(R) Ferret Paste (Animal Control Products Ltd, Wanganui, New Zealand) is a fish-based cat-food containing preservatives and 0.03% diphacinone, developed by Landcare Research New Zealand for ferret control (Spurr, 1999). Landcare Research (2005) discovered that poison baits were most effective when laid in late summer, autumn and early winter. Ferrets are susceptible to secondary poisoning through scavenging carcasses of animals such as possums killed by brodifacoum or other toxins (Clapperton and Byrom, 2005).

Biological: There is some interest in developing the canine distemper virus as a potential form of biological control (O'Keefe, 1995; R. Peebles, pers. comm., in Clapperton, 2001).

Integrated management: Ferret populations recover quickly from control operations, mostly due to reinvasion from outside areas. A reduction in ferret numbers will also increase the survival chances of the remaining ferrets. This means that ongoing control is required to maintain ferret numbers at a low level to protect vulnerable species (Landcare Research, 2005). Byrom (2002) suggests that the most effective time for ferret control is following dispersal of juveniles (late autumn in New Zealand). Young ferrets have been observed to move up to 45 km from their home territory, and are more likely to colonise areas that had had predator control the previous spring. It is suggested that predator control be carried out in autumn rather than spring (Landcare Research, 2005).

Please follow this link to read more on the management of ferrets (Mustela furo) compiled by the ISSG.

Pathway

There are concerns that the popularity of pet ferrets is widening their distribution in New Zealand (DOC, 1999). Mustela furo (ferrets) were introduced to New Zealand in an attempt to control the rabbit population (Atkinson, 2001). Mustela furo (ferrets) reached the Scottish isles, Sardinia and Sicily after escaping from domestic populations (Corbett and Ovenden, 1980). Mustela furo (ferrets) spread into previously ferret-free areas in New Zealand when ferrets were released or escaped from fur farms (DOC, 1999).
FULL ACCOUNT FOR: *Mustela furo*


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**ALIEN RANGE**

| [1] NETHERLANDS | [63] NEW ZEALAND |
| [15] UNITED KINGDOM | [9] UNITED STATES |
| [1] WESTERN EUROPE |

**Red List assessed species 19:** CR = 1; EN = 7; VU = 7; NT = 3; DD = 1;

- *Anas chlorotis* EN
- *Aptyeryx haastii* VU
- *Diomedea epomophora* VU
- *Himantopus novaehollandiae* CR
- *Larus bulleri* EN
- *Naultinus gemmeus* NT
- *Nestor meridionalis* EN
- *Oligosoma otagense* EN
- *Plectrophenax hyperboreus* NT
- *Sterna albostriata* EN
- *Aptyeryx australis* VU
- *Cyanoramphus unicolor* VU
- *Gallirallus australis* VU
- *Hymenolaimus malacorhynchos* EN
- *Megadyptes antipodes* EN
- *Naultinus manukanus* DD
- *Oligosoma acrinasum* NT
- *Phalacrocorax chalconotus* VU
- *Poliocephalus rufopectus* VU

**BIBLIOGRAPHY**

49 references found for *Mustela furo*

**Management information**

doi:10.1017/S0030605309990743

**Summary:** Available from: http://www.lacerta.de/AS/Bibliografie/BIB_5107.pdf [Accessed 30 April 2011]

**Australian Quarantine and Inspection Service, 2000. Importation of ferrets into Australia, import risk analysis - draft report.**

**Summary:** This AQIS document provides a risk assessment for the importation of ferrets into Australia.


**Summary:** This article presents the findings of a study into the population dynamics of ferrets in semi-arid habitats of New Zealand, with suggestions for management.

Summary: This plan is one of a series published by the Department of Conservation stating the Department?'s intentions for the conservation of particular plants and animals over a defined period 2002 - 2009. Predation by introduced mammals of which includes M. furo is one of the factors threatening the survival of this species.


Summary: This paper discusses in detail the behaviour of juvenile ferrets during dispersal, and also mentions some of the effects ferrets have in the South Island habitats of New Zealand.


Summary: This paper discusses the impacts of introduced mammals to islands, and presents the options for control, as well as the ecological impacts of these control methods.


Summary: New Zealand's Department of Conservation released a public discussion document which outlines the problems presented by ferrets, and gives some options for tighter controls of ferrets in New Zealand.


Summary: New Zealand's Department of Conservation website provides some general information about ferrets, including the impact they have on native wildlife.


Summary: This article gives details about the secondary poisoning of ferrets after 1080 operations.


Summary: This document reviews in detail the feasibility of using immunocontraception as a control method for stoats and other mustelids in New Zealand.


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. Jurek, R.M. 1998. A review of national and California population estimates of pet ferrets. Bird and Mammal Conservation Report, 98-09. Department of Fish and Game, Wildlife Management Division.

Summary: This paper reviews estimates of the population of pet ferrets in the USA and California from variety of sources.


Summary: New Zealand's Landcare Research website provides a wide variety of information about ferrets, from general biology to current research and management options.


Summary: This paper reviews the international literature discussing stoat control, and also draws from literature referring to mustelids in general, including ferrets.


Summary: This article discusses the impacts ferrets have on native skinks in New Zealand, and gives some recommendations for management.

Summary: This document discusses the variety of possible control methods for stoats in New Zealand.


Summary: This document outlines some of the options for poison control of mustelids in New Zealand.


Summary: This paper discusses some control alternatives to trapping for ferrets in New Zealand. It concludes that both diphacinone and 1080 provide possible suitable poisons for ferret control.


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]

General information


Summary: This paper discusses the introduction of mammals to New Zealand, and their impacts on the native flora and fauna. It also discusses some restoration models.


Summary: This article gives a great deal of information about the distribution of ferrets in New Zealand.


Summary: Update to King (1990). In depth review of literature on ferrets with a focus on the introduced range in New Zealand.


Summary: This article discusses the impacts which stoats and other introduced mammals have on the endangered Hutton’s shearwater in New Zealand.


Summary: This paper discusses the genetic relationship between feral ferrets (Mustela furo) and wild polecats (M. putorius) in the United Kingdom.


Summary: This article discusses the presence of tuberculosis in wildlife, including bovine tuberculosis in ferrets in New Zealand.


Summary: This website provides basic information about the feral ferret.


Summary: Details and quotes available from Whisson and Moore (1997).

Available from: http://www.dfg.ca.gov/hcpb/info/bm_research/bm_pdfpts/97_03.pdf [Accessed 1 September 2005]


Summary: This article discusses the decline of the sooty shearwater (Puffinus griseus) in New Zealand, and mentions some of the possible reasons for this decline.

**Summary:** 2nd edition due to be published by Oxford University Press, Melbourne, in 2005.


**Summary:** This article outlines the habitat preferences of small mammals in Pureora Forest Park, including the ferret (*Mustela furo*).


**Summary:** This paper discusses the nesting success of yellow-eyed penguins (*Megadyptes antipodes*) on farmland in the South Island of New Zealand.


**Summary:** This contribution outlined the impact which introduced predators have had on the seabird population of the Azores.


**Summary:** This paper gives detailed information about the denning behaviour of feral ferrets in the South Island of New Zealand, and the implications for the spread of bovine tuberculosis.


**Summary:** This paper discusses the identification of a range of predators, including ferrets, using bite marks.


**Summary:** Provides a comprehensive list of books and journal articles concerning the feral ferret.
