

*Mustela erminea* [简体中文](#) [正體中文](#)

**System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Carnivora	Mustelidae

**Common name** Hermelin (German), short-tailed weasel (English, USA), Grosswiesel (German), stoat (English), ermine (English), hermine (French), short-tailed weasel (English), ermine (English, Canada, Eurasia)

### Synonym

**Similar species** *Mustela nivalis*

### Summary

*Mustela erminea* (the stoat) is an intelligent, versatile predator specialising in small mammals and birds. It is fearless in attacking animals larger than itself and adapted to surviving periodic shortages by storage of surplus kills. In New Zealand it is responsible for a significant amount of damage to populations of native species.



[view this species on IUCN Red List](#)

### Species Description

The stoat (*Mustela erminea*) has the typical mustelid shape: a long thin body, a smooth, pointed head, short legs, and five toes on each foot, furred between the pads. The claws are sharp and non-retractile. The ears are short, rounded, and set almost flat into the fur. The eyes are round, black and slightly protruding; the whiskers are very long, and the muzzle is black and dog-like. The body fur is short, normally chestnut brown on the head and back, and white or cream (sometimes shading to yellow or even to apricot) on the underside. The tail is much longer than the extended hind legs, and always tipped with a conspicuous tuft of long black hair, which may be bristled out into a 'bottlebrush' at moments of great excitement (taken from King and Murphy, 2005).

### Lifecycle Stages

Female stoats (*Mustela erminea*) have extreme juvenile precocity, mated as nestlings but do not produce the young until following season. Males mature at 10-11 months. Limited to a single litter a year, but in optimal conditions it can be large (10-13 young born). Average life span < 12 months in both sexes, because juvenile mortality can be very high, but those that survive their first year survival have a good chance of living 2-3 years.

### Uses

Stoats (*Mustela erminea*) have been used to exterminate pest rodents and rabbits on small islands with few alternative prey (King 1989), but only in certain conditions which are hard to meet. Belief that they could control rabbits was the reason for bringing them to New Zealand, but the islands were too large and alternative prey too abundant (King, 2005).

Stoats were formerly an important source of white fur (ermine) harvested by trappers in Russia and Canada.

## Habitat Description

Stoats (*Mustela erminea*) are found anywhere they can find prey from beaches to above the treeline. They are found in all types of forest, grassland, agricultural land, dunes, scrubland and tundra. They are vulnerable to predation from other mammals and raptors so they tend to stick to cover in open country. In alpine areas stoats may spend most of their time in runs and burrows below the snow, this helps provide insulation against extremes in air temperature. Stoats do not avoid human settlements and can occasionally be seen in villages and suburban gardens (King, 1983; King and Murphy, 2005).

## Reproduction

Placental, with 9-10 month compulsory delay in implantation which divides gestation into two, 2-week periods in different calendar years. Ovulation induced by coitus; ovulation rate averages 8-10 every year, range 1-18, but litter size cut down by progressive intra-uterine mortality when food scarce, to zero in extreme conditions (King *et al.* 2003). Stoats of both sexes must survive to about 14 months old to leave surviving offspring.

## Nutrition

Stoats (*Mustela erminea*) are specialist predators of small, warm-blooded vertebrates, preferably mammals of the size of rabbits or water voles and smaller. In the native range different rodents are taken at different times of the year (King, 1983). The most frequently eaten prey of stoats in New Zealand are birds, feral house mice, lagomorphs (rabbits and hares, not distinguishable from small remains), rats, possums, and insects (mostly weta of the genera *Hemideina*, *Hemiandrus* and *Gymnoplectrum*). Minor items include lizards (mostly *Leiopisma* and *Hoplodactylus*), fish, crayfish (*Paranephrops*), carrion, and rubbish. This general pattern is clear from natural surveys of gut contents backed up by field observations (taken from King and Murphy, 2005).

## General Impacts

Introduced to New Zealand later than most other introduced predators (King 1984), after serious damage to native birds had already been done, stoats (*Mustela erminea*) contributed to the collective toll, especially in more remote areas of South Island (King and Murphy, 2005). *M. erminea* has been shown to be responsible for catastrophic losses of kiwi chicks in most years (see [Apteryx australis](#); [Apteryx haastii](#); [Apteryx mantelli](#); and [Apteryx owenii](#) in IUCN Red List of Threatened Species) (Basse *et al.* 1999), and of hole-nesting forest birds in southern beech forests during periodic mouse irruptions (O'Donnell 1996). Once kiwi chicks reach a weight of around 800g they are able to defend themselves against stoats (McLennan *et al.* 2004) so kiwi nurseries have been set up where kiwi chicks are translocated to areas with heavy stoat control until they become large enough to defend themselves against stoats. Cost of research and management of stoats in New Zealand runs into millions of dollars a year.

## Management Info

**Preventative measures:** Risk Assessment models for assessing the risk that exotic vertebrates could establish in Australia have been further explored by the 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.

The [Risk assessment for the Stoat \(\*Mustela erminea\*\)](#), has been assigned a VPC Threat Category of **EXTREME**. 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.

Trapping is widely used to remove stoats (*M. erminea*) from game estates in UK and conservation reserves in New Zealand. Trapping is effective when very intense, but is rapidly countered by immigration (McDonald & Harris 2002). Leg-hold traps are still legal for the moment, but likely to be banned in the foreseeable future; the first humane trap, the "Fenn", developed in UK in the 1950s, was better but does not meet current standards. New, more humane traps, are being developed. There are no poisons currently registered for use against stoats, but they are often killed by secondary poisoning after operations targeting possums and rats.

Please follow this link to read more on the [management of stoats compiled by the ISSG](#).

## Pathway

*Mustela erminea* were introduced to Terschelling Is. (Netherlands) to control water voles (*Arvicola terrestris*), which are now extinct on that island (Van Wijngaarden *et al.* 1961). *Mustela erminea* were originally transported to rabbit-infested pastures in New Zealand for rabbit control.

**Principal source:** King, C. M. 1989: The natural history of weasels and stoats;  
King, C.M. and Murphy, E.C. 2005. Stoat . In: The Handbook of New Zealand Mammals (ed C.M. King) pp. 261-287. Oxford University Press, Auckland.

**Compiler:** IUCN/SSC Invasive Species Specialist Group (ISSG)

## Review:

**Publication date:** 2010-05-26

## ALIEN RANGE

[1] DENMARK

[1] NETHERLANDS

[11] NEW ZEALAND

**Red List assessed species 41: CR = 3; EN = 14; VU = 14; NT = 9; DD = 1;**

[Anarhynchus frontalis](#) **VU**

[Anas chlorotis](#) **EN**

[Apteryx australis](#) **VU**

[Apteryx haastii](#) **VU**

[Apteryx mantelli](#) **EN**

[Apteryx owenii](#) **NT**

[Callaeas cinereus](#) **EN**

[Charadrius obscurus](#) **EN**

[Cyanoramphus auriceps](#) **NT**

[Cyanoramphus malherbi](#) **CR**

[Cyanoramphus novaezelandiae](#) **VU**

[Cyanoramphus unicolor](#) **VU**

[Diomedea sanfordi](#) **EN**

[Eudiptes pachyrhynchus](#) **VU**

[Falco novaeseelandiae](#) **NT**

[Gallirallus australis](#) **VU**

[Hemiphaga novaeseelandiae](#) **NT**

[Himantopus novaezelandiae](#) **CR**

[Hymenolaimus malacorhynchus](#) **EN**

[Lanius newtoni](#) **CR**

[Larus bulleri](#) **EN**

[Leiopelma hochstetteri](#) **VU**

[Leiopelma pakeka](#) **VU**

[Megadyptes antipodes](#) **EN**



# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Mustela erminea*

[Mohoua ochrocephala](#) EN

[Naultinus gemmeus](#) NT

[Nestor meridionalis](#) EN

[Oligosoma acrinasum](#) NT

[Phalacrocorax chalconotus](#) VU

[Plectrophenax hyperboreus](#) NT

[Porphyrio hochstetteri](#) EN

[Puffinus huttoni](#) EN

[Xenicus gilviventris](#) VU

[Mystacina tuberculata](#) VU

[Naultinus manukanus](#) DD

[Nestor notabilis](#) VU

[Oligosoma otagense](#) EN

[Philesturnus carunculatus](#) NT

[Poliiocephalus rufopectus](#) VU

[Puffinus griseus](#) NT

[Sterna albostrata](#) EN

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[Agnew, D. 2003. Invasive Aliens Species Management in the Fiordland National Park World Heritage Area \(New Zealand\). In: De Poorter, M. \(Ed.\). 2003. Aliens \(17\): 32-33.](#)

**Summary:** Aliens is the bi-annual newsletter of the IUCN SSC Invasive Species Specialist Group (ISSG). Its role is to put researchers, managers and/or practitioners in contact with each other and to publish information and news of alien invasive species and issues.

[Basse, B.; McLennan, J. A.; Wake, G. C. 1999: Analysis of the impact of stoats, \*Mustela erminea\*, on northern brown kiwi, \*Apteryx mantelli\*, in New Zealand. Wildlife Research 26: 227-237.](#)

**Summary:** Impacts of stoats on Kiwi in New Zealand.

[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]

[Christie, J.E., D.J. Brown, I. Westbrooke and E.C. Murphy., 2009. Environmental predictors of stoat \(\*Mustela erminea\*\) and ship rat \(\*Rattus rattus\*\) capture success. DOC Research & Development Series 305. Published by Publishing Team Department of Conservation PO Box 10420, The Terrace Wellington 6143, New Zealand](#)

**Summary:** Abstract: The association between capture success of stoats (*Mustela erminea*) and ship rats (*Rattus rattus*) and landscape-scale environmental predictors was explored using trapping data from three stoat control areas located in podocarp/broadleaved forest in New Zealand. Stoat capture success was higher at trap sites where a rat was also captured at the same trap or a stoat was captured at a neighbouring trap. Drier trap sites with good soil drainage and increased proximity to the operational trapping boundary were also associated with increased stoat capture. Rat capture success was higher at trap sites where a rat had been captured at a neighbouring trap, and at trap sites that were on steeper ground, more easterly facing and within forest habitat. Trap sites with generally poor soil conditions, i.e. sites with lower soil calcium levels and wetter sites with poor drainage, and increasing distance from the forest edge were also associated with increased rat capture. There were highly variable relationships between rat and stoat capture and landscape-scale environmental predictors between the three stoat control areas. This could be due to differing topography, but also to the highly correlated nature of many of the topographic, climate and habitat predictors. Further research specifically designed to separate these effects should focus on the variables identified as common between all stoat control areas in this study. Additional investigations of whether rats captured in double trap sets act as additional bait for stoats would have practical benefits for stoat control areas. The variability of the results emphasises the importance of ensuring that traps are abundant and widespread in stoat control operations.

[Clapperton, B.K. and Day, T.D. 2001. Cost-effectiveness of exclusion fencing for stoat and other pest control compared with conventional control, Department of Conservation Science Internal Series 14. Department of Conservation: Wellington.](#)

**Summary:** Available from: <http://www.doc.govt.nz/templates/page.aspx?id=39160> [Accessed 20 March 2007]

[Clapperton, B.K., Robbins, L., Porter, R.E.R. and Tallentire, K. 2006. Testing the Attractiveness, Palatability and Longevity of Stoat Lure and Bait Formulations, Department of Conservation Research and Development Series 241. Department of Conservation: Wellington.](#)

**Summary:** Available from: <http://www.doc.govt.nz/upload/documents/science-and-technical/drds241.pdf> [Accessed 20 March 2007]

[Crouchley, D. 1994: Stoat control on Maud Island 1982-1993. Ecological Management 2: 39-45.](#)

**Summary:** Management and control of stoats in New Zealand.

[Crouchley, D; Derek Brown, Kerri-Anne Edge, Peter McMurtrie., 2007. Secretary Island Secretary Island Operational Plan: Deer Eradication Department of Conservation](#)

**Summary:** Available from:

<http://www.doc.govt.nz/upload/documents/conservation/threats-and-impacts/animal-pests/secis-deer-eradication-report.pdf> [Accessed 13 December 2007]

[Department of Conservation \(DOC\) 2007. Southland Conservancy Conservation Management Planning Series Fiordland National Park Management Plan Published by Department of Conservation New Zealand](#)

**Summary:** Available from: <http://www.doc.govt.nz/templates/MultiPageDocumentTOC.aspx?id=44161> [Accessed 11 December 2007]

[Dilks, P.J., O'Donnell, C.F.J., Elliott, J.P. and Phillipson, S.M. 1996. The Effect of Bait Type, Tunnel Design, and Trap Position on Stoat Control Operations for Conservation Management, New Zealand Journal of Zoology 23: 295-306](#)

**Summary:** Available from: <http://www.rsnz.org/publish/nzjz/1996/109.pdf> [Accessed 20 March 2007]

[Dowding, J. E.; Murphy, E. C. 2001: The impact of predation by introduced mammals on endemic shorebirds in New Zealand: a conservation perspective. Biological Conservation 99: 47-64](#)

**Summary:** Impacts of stoats on New Zealand forest birds.

[Eason, C.T and Wickstrom, M. 1997. Vertebrate Pesticide Toxicology Manual \(Poisons\): Information on Poisons Used in New Zealand as Vertebrate Pesticides \(2nd ed.\), Department of Conservation Technical Series 23. Department of Conservation: Wellington.](#)

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**Summary:** Impacts of stoat predation on New Zealand forest birds.

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**Summary:** Environment Story.

[Fitzgerald, G., Fitzgerald, N. and Wilkinson, R. 2005. Social Acceptability of Stoats and Stoat Control Methods: A Survey of the New Zealand Public, \*Science for Conservation\* 253.](#)

**Summary:** Available from: <http://www.doc.govt.nz/upload/documents/science-and-technical/sfc253.pdf> [Accessed 20 March 2007]

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**Summary:** This paper gives detailed information about how to use tracking tunnels.

[Hamilton, B. 2004. Using colour to increase stoat \(\*Mustela erminea\*\) trap catch, \*Department of Conservation Science Internal Series\* 187. \*Department of Conservation: Wellington\*.](#)

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[King, C.M. 1994. Monitoring and Control of Mustelids on Conservation Lands: Part 1: Planning and Assessing an Operation, \*Department of Conservation Technical Series No. 3. Department of Conservation: Wellington\*.](#)

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[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.

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**Summary:** Impacts of stoats on New Zealand forest birds.



[Page, Amanda; Win Kirkpatrick and Marion Massam, July 2008. Stoat \(\*Mustela erminea\*\) 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.

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## General information

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[ITIS \(Integrated Taxonomic Information System\), 2005. Online Database \*Mustela erminea\*](#)

**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=Mustela+erminea&p\\_format=&p\\_ifx=plglt&p\\_lang=](http://www.cbif.gc.ca/pls/itisca/taxastep?king=every&p_action=containing&taxa=Mustela+erminea&p_format=&p_ifx=plglt&p_lang=) [Accessed March 2005]

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**Summary:** A comprehensive description of the biology of stoats and weasels. Now out of print, but a new edition was submitted in January 2004 for publication by Cornell University Press, date not yet determined.

King, C.M. 1990. (Ed) The Handbook of New Zealand Mammals, 1st Edition. Oxford University Press, Auckland, pp 600.

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

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**Summary:** A comprehensive description of the biology of stoats and weasels.

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