

5.2 Grey wolf
Canis lupus Linnaeus, 1758
 Least Concern (2004)

L.D. Mech and L. Boitani

Other names

English: timber wolf, tundra wolf, plains wolf, Mexican wolf, Arctic wolf; **Albanian:** ujku; **Croatian:** vuk; **Czech:** vlk; **Danish and Norwegian:** ulv; **Dutch:** wolf; **Estonian:** hunt, susi; **Faeroese:** ulvur, fjallaúvur; **Finnish:** susi; **French:** loup; **German:** wolf; **Hungarian:** farkas; **Icelandic:** úlfur; **Italian:** lupo; **Latvian:** vilks; **Lithuanian:** vilkas; **Maltese:** lupu; **Polish:** wilk; **Portuguese:** lobo; **Romanian:** lup; **Russian:** wilk; **Slovakian:** vlk dravý; **Slovenian:** volk; **Spanish:** lobo; **Swedish:** varg; **Turkish:** kurt; **Indigenous names:** Arapaho: haqihana; Caddo: tasha; Navaho: mai-coh; Nunamiut: amaguk (USA).

Taxonomy

Canis lupus Linnaeus, 1758. Syst. Nat., 10th ed., 1:39. Type locality: “Europæ sylvis, etjam frigidioribus”; restricted by Thomas (1911) to “Sweden”.

Two recent proposals have been made for major taxonomic changes in the grey wolf in North America: Nowak (1995) presented data reducing the 24 North American subspecies to five; and Wilson *et al.* (2000), using molecular genetics data, proposed that wolves in eastern North America had evolved in North America contrary to wolves elsewhere that evolved in Eurasia and spread to North America. The authors proposed the name *Canis lycaon* for the wolf that they believe evolved in North America.

Chromosome number: 2n=78 (Wayne 1993).

Note: The Wolf Specialist Group has not taken a position on whether *Canis aureus lupaster* is a grey wolf (see Ferguson 1981), or whether *Canis lycaon* (Wilson *et al.* 2000) is valid.

Description

The grey wolf is the largest wild canid weighing up to 62kg (Table 5.2.1). General appearance and proportions are not unlike a large German shepherd dog except legs longer,

Table 5.2.1 Body measurements for the grey wolf. Wolf body measurements vary greatly. Examples from Wrangel, Alaska, USA (Young and Goldman 1944:454).	
HB+T male	1,650mm
HB+T female	1,585mm
T male	453mm
T female	435mm
HF male	298mm
HF female	279mm



Flurik List

Adult female Mexican wolf. San Cayetano breeding facility, Mexico State, Mexico, 1992.

feet larger, ears shorter, eyes slanted, tail curled, and winter fur longer and bushier, and with chin tufts in winter. Fur is thick and usually mottled grey, but can vary from nearly pure white, red, or brown to black. Dental formula 3/3-1/1-4/4-2/3=42.

Subspecies See Nowak (1995) for maps and measurements of seven Eurasian and five North American subspecies:

- *C. l. albus* (northern Russia)
- *C. l. arctos* (Canadian High Arctic)
- *C. l. baileyi* (Mexico, south-western USA)
- *C. l. communis* (central Russia)
- *C. l. cubanensis* (east central Asia)
- *C. l. hattai* (Hokkaido, Japan)
- *C. l. hodophilax* (Honshu, Japan)
- *C. l. lupus* (Europe, Asia)
- *C. l. lycaon* (south-eastern Canada, north-eastern USA)
- *C. l. nubilis* (central USA, east-central Canada)
- *C. l. occidentalis* (Alaska, north-western Canada)
- *C. l. pallipes* (Middle East, south-western Asia)

Similar species Red wolf (*C. rufus*): slightly smaller than *C. lupus*. Coyote (*C. latrans*): about one-third to one-half size of *C. lupus*. Golden jackal (*C. aureus*): about one-third size of *C. lupus*.

Distribution

Historical distribution Originally, the wolf was the world's most widely distributed mammal, living throughout the northern hemisphere north of 15°N latitude in North America and 12°N in India. It has become extinct in much of Western Europe (Boitani 1995), in Mexico and much of the USA (Mech 1970).

Current distribution Present distribution is more restricted; wolves occur primarily in wilderness and remote areas, especially in Canada, Alaska and northern USA, Europe, and Asia from about 75°N to 12°N (Figure 5.2.1).

Range countries Afghanistan, Albania, Armenia, Azerbaijan, Belarus, Bhutan, Bosnia Herzegovina, Bulgaria, Canada, China, Croatia, Czech Republic, Denmark (Greenland), Estonia, Finland, France, Germany, Georgia, Greece, Hungary, India, Iran, Iraq, Israel, Italy, Jordan, Kazakhstan, Korea, Kyrgyzstan, Latvia, Lebanon, Lithuania, Macedonia, Mexico, Moldova, Mongolia, Montenegro, Myanmar, Nepal, Norway, Oman, Pakistan, Poland, Portugal, Romania, Russia, Saudi Arabia, Slovakia, Slovenia, Spain, Sweden, Syria, Tajikistan, Turkey, Turkmenistan, Uzbekistan, Ukraine, United Arab Emirates, United States of America, Yemen, Yugoslavia (Montenegro, Kosovo and Serbia) (Mivart 1890; Ognev 1931; Pocock 1935; Young and Goldman 1944; Mech 1970, 1974; Mech and Boitani 2003).

Relative abundance

Because of the diversity in climate, topography, vegetation, human settlement and development of wolf range, wolf populations in various parts of the original range vary from extinct to relatively pristine. Wolf densities vary from about 1/12km² to 1/120km².

Estimated populations/relative abundance and population trends Details are provided below on subspecies present, population status, approximate numbers, the percentage of former range occupied at present, main prey (where known), legal status, and cause of decline. Countries (provinces, states or regions whenever appropriate) are listed by geographical region and roughly follow a west to east and north to south order.

North America (Nearctic)

- *Alaska (USA)*: Subspecies: *C. l. occidentalis*. Status: Fully viable, about 6,000. Former range occupied: 100%. Main prey: Moose, caribou, sheep, deer, beaver, goat. Legal status: Animals are hunted and trapped in limited seasons with bag limits. Some control work, enforcement active.
- *British Columbia (Canada)*: Subspecies: *C. l. occidentalis*, *C. l. nubilus*. Status: Fully viable, about 8,000. Range occupied: 80%. Main prey: Moose, caribou, sheep, deer, beaver, goat, elk. Legal status: Game species, furbearer, no closed season.
- *Yukon Territory (Canada)*: Subspecies: *C. l. occidentalis*. Status: Fully viable, about 4,500. Range

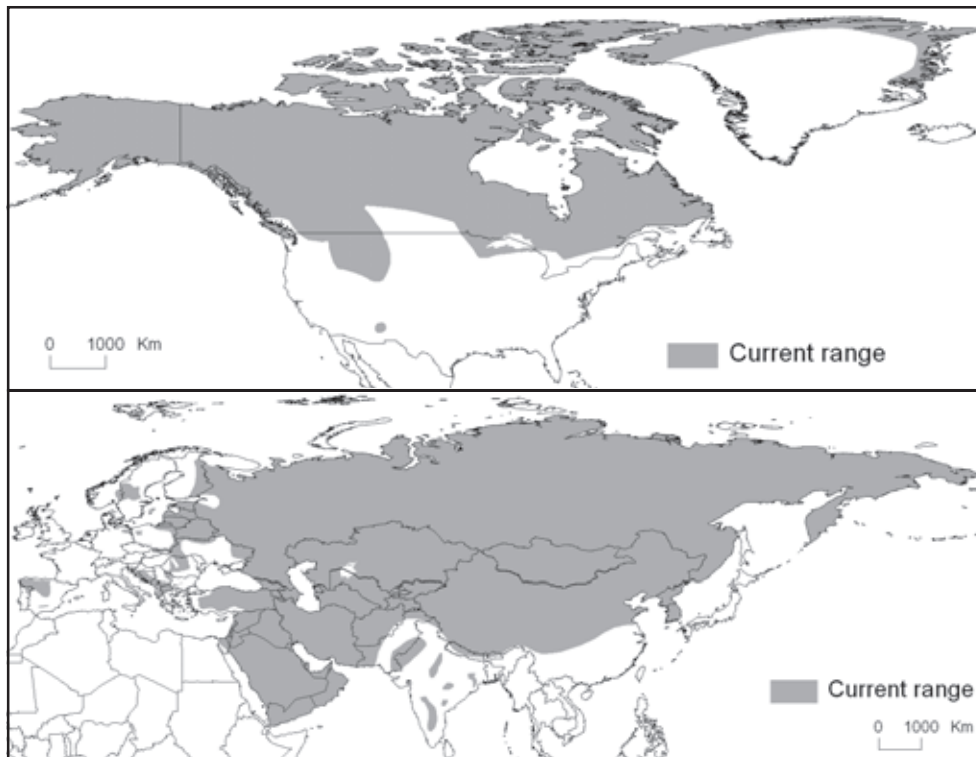


Figure 5.2.1. Current distribution of the grey wolf.

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- occupied: 100%. Main prey: Moose, caribou, sheep, deer, beaver, goat, elk. Legal status: Game species, furbearer, no closed season.
- *North-west Territories and Nunavut (Canada)*: Subspecies: *C. l. arctos*, *C. l. nubilus*, *C. l. occidentalis*. Status: Fully viable, about 10,000. Range occupied: 100%. Main prey: Moose, caribou, musk oxen, sheep, beaver, goat. Legal status: Furbearer.
 - *Greenland (Denmark)*: Subspecies: *C. l. arctos*. Status: Threatened, lingering at 50? Range occupied: Unknown. Main prey: Musk oxen, lemmings, arctic hares. Legal status: Unknown. Cause of decline: Persecution.
 - *Alberta (Canada)*: Subspecies: *C. l. occidentalis*. Status: Fully viable, about 4,000. Range occupied: 80%. Main prey: Moose, caribou, sheep, deer, beaver, goat, elk, bison. Legal status: Furbearer.
 - *Saskatchewan (Canada)*: Subspecies: *C. l. occidentalis*, *C. l. nubilus*. Status: Fully viable, about 4,300. Range occupied: 70%. Main prey: Moose, elk, deer, beaver, bison, caribou. Legal status: Furbearer.
 - *Manitoba (Canada)*: Subspecies: *C. l. occidentalis*, *C. l. nubilus*. Status: Fully viable, about 5,000. Range occupied: 50%. Main prey: Moose, elk, deer, beaver, caribou. Legal status: Furbearer.
 - *Ontario (Canada)*: Subspecies: *C. l. lycaon*, *C. l. nubilus* (but see Taxonomy). Status: Fully viable, <8,500. Range occupied: 80%. Main prey: Moose, deer, caribou, beaver. Legal status: Furbearer.
 - *Quebec (Canada)*: Subspecies: *C. l. lycaon*, *C. l. nubilus* (but see Taxonomy). Status: Fully viable, number unknown but probably thousands. Range occupied: 80%. Main prey: Moose, deer, caribou, beaver. Legal status: Furbearer.
 - *Labrador (Canada)*: Subspecies: *C. l. nubilus*. Status: Fully viable, 1,000–5,000. Range occupied: 95%. Main prey: Moose, caribou, beaver, musk oxen, hares. Legal status: Furbearer.
 - *Newfoundland (Canada)*: Subspecies: *C. l. nubilus*, extinct since 1911.
 - *North-western USA*: Subspecies: *C. l. occidentalis* (reintroduced in Wyoming and Idaho). Status: Increasing, about 400, Endangered. Range occupied: 20%. Main prey: Elk, moose, sheep, goats, deer, beaver. Legal status: Full protection, except for government reactive depredation control.
 - *Minnesota (USA)*: Subspecies: *C. l. nubilus* (but see Taxonomy). Status: Viable, about 2,600. Range occupied: 40%. Main prey: Deer, moose, beaver. Legal status: Full protection, except for reactive government depredation control.
 - *Michigan and Wisconsin (USA)*: Subspecies: *C. l. nubilus* (but see Taxonomy). Status: Increasing, about 400. Range occupied: 25%. Main prey: Deer, beaver, moose. Legal status: Full protection.
 - *South-western USA*: Subspecies: *C. l. baileyi*. Status: Reintroduced (about 25 in 2000). Range occupied: <5%. Main prey: Deer, elk, livestock. Legal status: Full protection. Cause of decline: Persecution, habitat destruction.
 - *Mexico*: Subspecies: *C. l. baileyi*. Status: Highly endangered. Possibly lone wolves or pairs, <10. Range occupied: <10%. Main prey: Livestock. Legal status: Full protection, but not enforced. Cause of decline: Persecution, habitat destruction.
- Europe (Palaeartic)**
- *Norway*: Subspecies: *C. l. lupus*. Status: About 20. Range occupied: 5%. Main prey: Ungulates and livestock. Legal status: Protected. Threat: Culling.
 - *Sweden*: Subspecies: *C. l. lupus*. Status: Increasing, about 100. Range occupied: 20%. Main prey: Ungulates. Legal status: Protected.
 - *Finland*: Subspecies: *C. l. lupus*. Status: About 100. Range occupied: 20%. Main prey: Ungulates and livestock. Legal status: Partial protection.
 - *Estonia, Latvia, Lithuania*: Subspecies: *C. l. lupus*. Status: Viable, about 2,000, stable. Range occupied: 75%. Main prey: Ungulates and livestock. Legal status: Hunted as game species. Threat: Overhunting, habitat destruction.
 - *Russia (Europe), Belarus, Ukraine*: Subspecies: *C. l. lupus*, *C. l. albus*. Status: Fully viable, about 20,000. Range occupied: 60%. Main prey: Ungulates, livestock. Legal status: Reduction and control even in nature reserves. Cause of decline: Persecution, habitat destruction.
 - *Poland*: Subspecies: *C. l. lupus*. Status: Viable, about 600. Range occupied: 50%. Main prey: Moose, roe deer, red deer, wild boar, mufflon. Legal status: Protected. Threat: Persecution, habitat destruction.
 - *Czech Republic*: Subspecies: *C. l. lupus*. Status: Increasing, 20. Range occupied: 5%. Main prey: Ungulates and livestock. Legal status: Protected. Threat: Persecution.
 - *Slovakia*: Subspecies: *C. l. lupus*. Status: Stable, 350–400. Range occupied: 50%. Main prey: Roe deer, red deer, wild boar. Legal status: Protected. Cause of decline: Persecution, habitat destruction.
 - *Hungary*: Subspecies: *C. l. lupus*. Status: Stable, <50. Range occupied: 5%. Main prey: Unknown. Legal status: Protected. Threat: Habitat suitability.
 - *Romania*: Subspecies: *C. l. lupus*. Status: Increasing, 2,500. Range occupied: 80%. Main prey: Roe deer, red deer, wild boar, livestock. Legal status: Protected.
 - *Bulgaria*: Subspecies: *C. l. lupus*. Status: Increasing, 800–1,000. Range occupied: 40%. Legal status: Game species. Main prey: Roe deer, red deer, wild boar.
 - *Greece*: Subspecies: *C. l. lupus*. Status: In decline, >500. Range occupied: 50%. Main prey: Deer, wild boar,

- chamois, livestock. Legal status: Partial protection. Cause of decline: Persecution, habitat destruction.
- *Former Yugoslav Federation*: Subspecies: *C. l. lupus*. Status: Stable, about 500. Range occupied: 55%. Main prey: Deer, wild boar, livestock. Legal status: Partial protection. Threat: Persecution, habitat destruction.
 - *Croatia and Slovenia*: Subspecies: *C. l. lupus*. Status: 150–200. Range occupied: 30%. Main prey: Ungulates and livestock. Legal status: Fully protected. Threat: Illegal persecution.
 - *Albania*: Subspecies: *C. l. lupus*. Status: 250. Range occupied: 50%. Main prey: Deer and wild boar, livestock. Legal status: Hunted as game species. Cause of decline: Overhunting.
 - *Former Yugoslav Republic of Macedonia*: Subspecies: *C. l. lupus*. Status: Viable, about 1,000. Range occupied: 75%. Main prey: Ungulates and livestock. Legal status: Hunted. Cause of decline: Persecution, habitat destruction.
 - *Bosnia Herzegovina*: Subspecies: *C. l. lupus*. Status: Stable?, about 500. Range occupied: 50%. Main prey: Ungulates and livestock. Legal status: Hunted as game species. Threat: Persecution, habitat destruction.
 - *Spain*: Subspecies: *C. l. lupus*. Status: Increasing, 2,000. Range occupied: 30%. Main prey: Livestock, roe deer, wild boar. Legal status: Partial protection. Threat: Persecution, habitat destruction.
 - *Portugal*: Subspecies: *C. l. lupus*. Status: Stable, lingering, low population density, 200–300. Range occupied: 20%. Main prey: Livestock, roe deer, wild boar. Legal status: Protected. Threat: Persecution, habitat destruction.
 - *France*: Subspecies: *C. l. lupus*. Status: Increasing, about 30. Range occupied: 5%. Main prey: Ungulates and livestock. Legal status: Protected. Threat: Persecution.
 - *Italy*: Subspecies: *C. l. lupus*. Status: Increasing, 500 individuals. Threatened. Range occupied: 25%. Main prey: Wild boar, deer, livestock, garbage. Legal status: Full protection, not enforced. Threat: Persecution.

North and Central Asia (Palearctic)

- *Former USSR*: Subspecies: *C. l. lupus*, *C. l. albus*. Status: Fully viable, about 50,000. Range occupied: 75%. Main prey: Ungulates and livestock. Legal status: Reduction and control even in nature reserves. Threat: Persecution, habitat destruction.
- *Turkmenistan*: Subspecies: *C. l. lupus*. Status: Viable, >1,000. Range occupied: 85%. Main prey: Ungulates and livestock. Legal status: Reduction and control even in nature reserves. Threat: Active persecution, habitat destruction.
- *Mongolia*: Subspecies: *C. l. lupus*. Status: Viable, possible decline, >10,000. Range occupied: 100%. Main prey: Livestock, saiga. Legal status: Extermination efforts active.
- *China*: Subspecies: *C. l. lupus*. Status: Stable, about 6,000. Range occupied: 20%. Main prey: Saiga, other ungulates, livestock. Legal status: Protected but no enforcement. Threat: Persecution, habitat destruction, extermination efforts active.

Middle East (Palearctic)

- *Egypt (Sinai)*: Subspecies: *C. l. pallipes*. Status: Highly endangered, 30?. Range occupied: 90%. Main prey: Hares, livestock. Legal status: No protection. Cause of decline: Persecution.
- *Turkey*: Subspecies: *C. l. lupus*, *C. l. pallipes*. Status: Viable, but in decline. 5,000–10,000. Range occupied: 75% of former range. Main prey: Livestock, wild boar, brown hare. Legal status: No protection. Cause of decline: Persecution, poisoning.
- *Lebanon*: Subspecies: Unknown. Status: Highly endangered. Lone wolves or pairs, >10.. Range occupied: Unknown. Main prey: Garbage, carrion. Legal status: No protection. Cause of decline: Persecution.
- *Syria*: Subspecies: *C. l. lupus*, *C. l. pallipes*. Status: Highly threatened. Lingering, low population density, 200–300? Range occupied: 10%. Main prey: Livestock, carrion, small wildlife. Legal status: No protection. Threat: Persecution.
- *Jordan*: Subspecies: Unknown. Status: Highly threatened. Lingering, low population density, 200? Range occupied: 90%. Legal status: No protection. Main prey: Unknown. Threat: Persecution.
- *Israel*: Subspecies: *C. l. pallipes*, *C. l. arabs*. Status: Highly threatened. Lingering, low population density, 150–200. Range occupied: 60%. Main prey: Hares, livestock, carrion. Legal status: Full protection. Cause of decline: Habitat destruction.
- *Saudi Arabia, United Arab Emirates, Oman, Yemen*: Subspecies: *C. l. pallipes*. Status: In decline, 500–600. Range occupied: 75%. Main prey: Garbage, carrion, livestock. Legal status: No protection. Threat: Persecution.
- *Iraq*: Subspecies: Unknown. Status: Unknown. Range occupied: Unknown. Main prey: Unknown. Legal status: Unknown. Cause of decline: Unknown.
- *Iran*: Subspecies: *C. l. pallipes*. Status: Viable >1,000. Range occupied: 80%. Main prey: Gazelle, mountain sheep, livestock, wild boar, deer, *Capra* sp. Legal status: Game species. Threat: Persecution.
- *Afghanistan*: Subspecies: *C. l. pallipes*. Status: Viable, suspected decline, 1,000? Range occupied: 90%. Main prey: Unknown. Legal status: Unknown.

South Asia – south of the Himalaya (Oriental)

- *Pakistan*: Subspecies: *C. l. pallipes*. Status: Declining, 200. Range occupied: 10%. Main prey: Livestock, gazelle. Legal status: Protected, no enforcement. Cause of decline: Active persecution.

- *India*: Subspecies: *C. l. pallipes*. Status: Endangered. 1,000–2,000 in small fragmented populations. Range occupied: 20%. Main prey: Livestock, hare, deer, antelope. Legal status: Full protection, but not enforced. Cause of decline: Decreasing prey, habitat loss, persecution.
- *Nepal*: Subspecies: *C. l. lupus*. Status: Unknown. Range occupied: Unknown. Main prey: Unknown. Legal status: Unknown.
- *Bhutan*: Subspecies: *C. l. lupus*. Status: Unknown. Range occupied: Unknown. Main prey: Unknown. Legal status: Protected.

Habitat

All northern habitats where there is suitable food (Mech 1970), densities being highest where prey biomass is highest (Fuller 1989).

Food and foraging behaviour

Food Extremely variable, but the majority is large ungulates (moose, caribou, deer, elk, wild boar, etc.). Wolves will also eat smaller prey items, livestock, carrion, and garbage.

Foraging behaviour In winter, wolves hunt in packs, which are usually families, but in summer, they hunt singly, in pairs, or in small groups. Chases ranging from 100m to more than 5km are the rule, and generally wolves end up with, or tend to select, older individuals, young-of-the-year, debilitated animals, or those in otherwise poor condition (Mech and Boitani 2003). Average daily food consumption varies from 2.5–6.3kg or more per day, and kill rates vary accordingly. Wolves first attack the rump of larger prey, but the head, shoulders, flanks, or rump of smaller prey. Usually they eat most of the carcass, leaving only the larger bones and chunks of hide. When there is surplus food, wolves will cache either regurgitated chunks or large pieces (Mech and Boitani 2003).

Damage to livestock and game Wolves sometimes come into conflict with ranchers (Young and Goldman 1944; Mech 1970) and can reduce wild prey (Mech and Karns 1977).

Adaptations

The grey wolf is well adapted for cursorial predation, having long legs and thick and blocky, but flexible, feet. Year-round pair bond insures that more hunting units include at least two adults.

Social behaviour

Wolves are pack-living animals, with most packs comprising family groups. The dominant pair breeds, with any maturing females reproductively suppressed unless food is abundant. Packs include up to 36 individuals,

but smaller sizes (5–12) are more common. They occupy territories of 75–2,500km² depending on prey density, and these are maintained through howling, scent-marking, and direct killing (Mech 1970, 1974; Mech *et al.* 1998).

Reproduction and denning behaviour

Time of mating is from January to April, depending on latitude (Mech 2002). Gestation is nine weeks. Dens are in holes, caves, pits, hollow logs, etc. Litter size is 1–11 (mean=6). Duration of lactation is 8–10 weeks. Age at sexual maturity is 22–46 months, occasionally 10 months (Mech 1970, 1974).

Competition

Bears, cougars, tigers, dogs (Mech 1970; Mech and Boitani 2003).

Mortality and pathogens

Natural sources of mortality Primarily intraspecific strife and starvation.

Persecution Primarily in agricultural areas where competing with humans for domestic animals.

Hunting and trapping for fur Primarily Alaska, Canada, Russia, Kazakhstan, Mongolia.

Road kills Not significant to populations.

Pathogens and parasites Susceptible to mange, canine parvovirus, distemper, rabies.

Longevity Up to 13 years in the wild, and 16 years in captivity (Mech 1988).

Historical perspective

The primary cultural importance of the wolf has been as an enemy seen by most agricultural people as a creature to be feared, persecuted and extirpated. Some indigenous people in North America, however, respected the wolf, although they still killed it. Most cultures used its fur as parkas and clothing. Conservation measures were not taken in most areas until after about 1970 and are still lacking in most of Asia, where they mostly are unnecessary, except in parts of China and India.

Conservation status

Threats Their original worldwide range has been reduced by about one-third, primarily in developed areas of Europe, Asia, Mexico, and the United States by poisoning and deliberate persecution due to depredation on livestock. Since about 1970, legal protection, land-use changes, and rural human population shifts to cities have arrested wolf population declines and fostered natural recolonisation in parts of Western Europe and the United States, and

reintroduction in the western United States. Continued threats include competition with humans for livestock, especially in developing countries, exaggerated concern by the public concerning the threat and danger of wolves, and fragmentation of habitat, with resulting areas becoming too small for populations with long-term viability.

Commercial use Sustainable utilisation of fur in Canada, Alaska, and the former Soviet Union and Mongolia.

Occurrence in protected areas Occurs in many protected areas across its range.

Protection status CITES – Appendix II, except populations from Bhutan, India, Nepal and Pakistan, which are listed on Appendix I. See individual countries listed above.

Current legal protection Variable, from complete protection, well enforced, to concerted efforts to control some populations. See individual areas above.

Conservation measures taken Protected in various national parks and reserves in Canada and the United States. Extensive legal protection in many European countries; however, enforcement is variable and often non-existent. See individual areas above. Recently reintroduced to Yellowstone National Park, Idaho, and Arizona.

Occurrence in captivity

Lives and breeds well in captivity and is common in many zoological gardens.

Current or planned research projects

Several projects underway in Europe, India, Canada and the United States. See <http://www.wolf.org>

Gaps in knowledge

One of the most important questions still remaining about wolves involves the nature of their interaction with prey populations. The conditions under which wolves limit, regulate, or control their population is still open and important (Mech and Boitani 2003). Of more academic interest are questions involving wolf genetics, scent-marking behaviour, pseudopregnancy, and diseases (Mech 1995a).

Core literature

Boitani 1995; Carbyn *et al.* 1995; Harrington and Paquet 1982; Mech 1970, 1974; Mech *et al.* 1998; Mech and Boitani 2003; Nowak 1995. A list of about 2,000 references is available at <http://www.wolf.org>

Reviewers: Lu Carbyn, Christoph Promberger, Devra Kleiman. **Editors:** Claudio Sillero-Zubiri, Michael Hoffmann.

5.3 Red fox ***Vulpes vulpes* Linnaeus, 1758** **Least Concern (2004)**

D.W. Macdonald and J.C. Reynolds

Other names

English: silver fox, cross fox; **Albanian:** dhelpra; **Croatian:** lisica; **Czech:** liška obecná; **Danish:** ræv; **Dutch:** vos; **Estonian:** rebane; **Faeroese:** revur; **Finnish:** kettu; **French:** renard roux; **German:** rotfuchs; **Hungarian:** vörös róka; **Irish:** sionnach, madra rua; **Italian:** volpe rossa, volpe comune; **Latvian:** lapsa; **Lithuanian:** rudoji lapė; **Luxembourgish:** fuuss; **Maltese:** volpi; **Norwegian:** rev, rødrev; **Polish:** lis; **Portuguese:** raposa; **Romanian:** vulpe; **Russian:** Красная дисица; **Slovakian:** liška hrdzavá; **Slovenian:** lisica; **Spanish:** zorro rojo; **Swedish:** räv; **Turkish:** tilki.

Taxonomy

Vulpes vulpes Linnaeus, 1758. Syst. Nat., 10th ed., 1:40. Type locality: “Europa, Asia, Africa, antrafodiens” restricted by Thomas (1911), to “Sweden (Uppsala)”.

The North American red fox, *Vulpes fulva*, previously has been considered a separate species (as have some other putative subspecies), but is now considered conspecific with the Palaearctic *V. vulpes* (Nowak 1991). Many subspecies were described (see below) on the basis of regional variation, but these have doubtful ecological significance as evidenced by successful introductions and re-introductions around the world.

Chromosome number: The red fox has a diploid number of 34 chromosomes and 3–5 microsomes (Rausch and Rausch 1979).

Description

A medium-sized canid, and the largest fox in the genus *Vulpes* (Table 5.3.1). Muzzle slender and pointed with white on upper lip. Ears large, pointed, erect and black-backed. Pelage is reddish-brown but may vary from brown to russet red to yellowish grey. Three main colour morphs: red, silver (black with variable amount of frosting due to silver tips on guard hairs) and cross (greyish brown with long black guard hairs down back and across shoulders) (Banfield 1987; Johnson and Hersteinsson 1993). Some individuals have dark grey-black under throat and belly and the underfur of females during the breeding season may appear pink-tinged. Throat and/or chest may have white markings. Legs long and slender. Lower legs black, may be splashed with white. Tail long, thick and bushy, sometimes with white tip. Enormous geographical variation in size. Adult head and body length may range from 455–900mm, tail length from 300–555mm and body weight from 3–14kg with males generally being larger than females (Nowak 1991). The species is substantially smaller in the