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## *Vulpes vulpes*

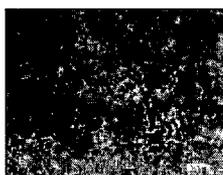
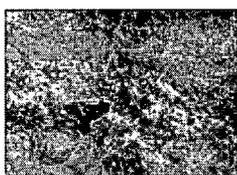
(red fox)

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By David L. Fox

### Geographic Range

Kingdom: Animalia  
 Phylum: Chordata  
 Subphylum: Vertebrata  
 Class: Mammalia  
 Order: Carnivora  
 Family: Canidae  
 Genus: *Vulpes*  
 Species: ***Vulpes vulpes***  
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Red foxes are native to the Nearctic, Palearctic, Oriental, and Ethiopian regions, and have been introduced to areas with the Australian region. Red foxes are found throughout Canada, Alaska, almost all of the contiguous United States, all of Europe and Britain, and almost all of Asia, including Japan. There are also several populations in North Africa. They are the most widely distributed wild carnivores in the world. Red foxes were introduced into Australia in the nineteenth century.

### Biogeographic Regions:

nearctic [Q](#) (native [Q](#)); palearctic [Q](#) (native [Q](#)); oriental [Q](#) (native [Q](#)); ethiopian [Q](#) (native [Q](#)); australian [Q](#) (introduced [Q](#)).

### Other Geographic Terms:

holarctic [Q](#).

### Habitat

Red foxes utilize a wide range of habitats including forest, tundra, prairie, and farmland. They prefer habitats with a diversity of vegetation types and are increasingly encountered in suburban areas.

**These animals are found in the following types of habitat:**

temperate ☞; terrestrial ☞.

**Terrestrial Biomes:**

savanna or grassland ☞; chaparral ☞; forest ☞; scrub forest ☞; mountains ☞.

**Other:**

suburban ☞; agricultural ☞; riparian ☞.

**Physical Description****Mass**3 to 7 kg  
(6.6 to 15.4 lbs)**Length**827 to 1097 mm  
(32.56 to 43.19 in)

Coloration of red foxes ranges from pale yellowish red to deep reddish brown on the upper parts and white, ashy or slaty on the underside. The lower part of the legs is usually black and the tail usually has a white or black tip. Two color variants commonly occur. The cross fox has reddish brown fur and has a black stripe down its back and another across its shoulders. The silver fox ranges from strong silver to nearly black and is the most prized by furriers. These variants are about 25% and 10% of the species, respectively. Red foxes, like many other canids, have tail glands. In *Vulpes vulpes* this gland is located 75 mm above the root of the tail on its upper surface and lies within the dermis and subcutaneous tissue. The eyes of mature animals are yellow. The nose is dark brown or black. The dental formula is  $3/3 \ 1/1 \ 4/4 \ 2/3$ . The tooth row is more than half the length of the skull. The premolars are simple and pointed, with the exception of the carnassialized upper fourth premolar. The molar structure emphasizes crushing. The manus has 5 claws and the pes 4 claws. The first digit, or dew claw, is rudimentary but clawed and does not contact the ground.

**Some key physical features:**

endothermic ☞; homoiothermic; bilateral symmetry ☞.

**Sexual dimorphism:** ☞male larger.**Reproduction**

Red foxes are generally monogamous.

**Mating systems:**

monogamous ☞; cooperative breeder ☞.

**Breeding interval**

Red foxes breed once yearly.

**Breeding season**

Breeding season varies from region to region but usually begins in December or January in the south, January to February in the central regions, and February to April in the north.

**Number of offspring**

1 to 13; avg. 5

**Gestation period**

56 days (high); avg. 52 days

**Time to weaning**

56 to 70 days

**Age at sexual or reproductive maturity (female)**

10 months (average)

**Age at sexual or reproductive maturity (male)**

10 months (average)

The annual estrous period of female red foxes last from 1 to 6 days. Ovulation is spontaneous and does not require copulation to occur. The exact time of estrous and breeding varies across the broad geographic range of the species: December-January in the south, January-February in the central regions, and February-April in the north. Males will fight during the breeding season. Males have a cycle of fecundity, with full spermatogenesis only occurring from November to March. Females may mate with a number of males but will establish a partnership with only one male. Copulation usually lasts 15 or 20 minutes and is often accompanied by a vocal clamor. Implantation of the fertilized egg occurs between 10 and 14 days after a successful mating. Just before and for a time after giving birth the female remains in or around the den. The male partner will provision his mate with food but does not go into the maternity den. Gestation is typically between 51 and 53 days but can be as short as 49 days or as long as 56 days. Litters vary in size from 1 to 13 pups with an average of 5. Birth weight is between 50 and 150 g. The pups are born blind but open their eyes 9 to 14 days after birth. Pups leave the den 4 or 5 weeks after birth and are fully weaned by 8 to 10 weeks. Mother and pups remain together until the autumn after the birth. Sexual maturity is reached by 10 months.

**Key reproductive features:**

iteroparous ♀; seasonal breeding ♀; gonochoric/gonochoristic/dioecious (sexes separate); sexual ♀; fertilization ♀; viviparous ♀.

Red fox males and females, and sometimes their older offspring, cooperate to care for the pups. Young remain in the den for 4 to 5 weeks, where they are cared for and nursed by their mother. They are nursed for 56 to 70 days and are provided with solid food by their parents and older siblings. The young remain with their parents at least until the fall of the year they were born in and will sometimes remain longer, especially females.

**Parental investment:**

altricial ♀; pre-fertilization (provisioning, protecting: female); pre-hatching/birth (provisioning: female, protecting: female); pre-weaning/fledging (provisioning: male, female, protecting: male, female); pre-independence (provisioning: male, female, protecting: male, female); post-independence association with parents; extended period of juvenile learning.

**Lifespan/Longevity****Longest known lifespan in captivity**

12 years (high)

**Expected lifespan in wild**

3 years (average)

Red foxes have been known to live 10 to 12 years in captivity but live on average 3 years in the wild.

## Behavior

<b>Territory Size</b> 5 to 12 km <sup>2</sup>
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Red foxes are solitary animals and do not form packs like wolves. During some parts of the year adjacent ranges may overlap somewhat, but parts may be regularly defended. In other words, *Vulpes vulpes* is at least partly territorial. Ranges are occupied by an adult male and one or two adult females with their associated young. Individuals and family groups have main earthen dens and often other emergency burrows in the home range. Dens of other animals, such as rabbits or marmots, are often taken over by foxes. Larger dens may be dug and used during the winter and during birth and rearing of the young. The same den is often used over a number of generations. Pathways throughout the home range connect the main den with other resting sites, favored hunting grounds and food storage areas. Red foxes are terrestrial and either nocturnal or crepuscular. Top speed is about 48 km/h and obstacles as high as 2 m can be leapt. In the autumn following birth, the pups of the litter will disperse to their own territories. Dispersal can be to areas as nearby as 10 km and as far away as almost 400 km. Animals remain in the same home range for life.

## Home Range

Individual adults have home ranges that vary in size depending on the quality of the habitat. In good areas ranges may be between 5 and 12 square kilometers; in poorer habitats ranges are larger, between 20 and 50 square kilometers.

### Key behaviors:

terricolous; nocturnal Q; crepuscular Q; motile Q; sedentary Q; solitary Q; territorial Q; social Q.

## Communication and Perception

Red foxes use a variety of vocalizations to communicate among themselves. They also have excellent senses of vision, smell, and touch.

### Perception channels:

tactile Q; chemical Q.

## Food Habits

Red foxes are essentially omnivores. They mostly eat rodents, eastern cottontail rabbits, insects, and fruit. They will also eat carrion. Red foxes also store food and are very good at relocating these caches. Red foxes have a characteristic manner of hunting mice. The fox stands motionless, listening and watching intently for a mouse it has detected. It then leaps high and brings the forelimbs straight down forcibly to pin the mouse to the ground. They eat between 0.5 and 1 kg of food each day.

### Primary Diet:

omnivore Q.

### Animal Foods:

birds; mammals; reptiles; carrion Q; insects; terrestrial non-insect arthropods.

### Plant Foods:

fruit.

## Predation

**Known predators**

- [eagles](#)
- [coyotes](#)
- [gray wolves](#)
- [bears](#)
- [mountain lions](#)
- [humans](#)

Most red foxes that are taken by natural predators are young pups. Pups are kept in and near a den and protected by their family to avoid this. Adult red foxes may also be attacked by [coyotes](#), [wolves](#), or other predators, but this is rarely in order to eat them. The most significant predators on red foxes are humans, who hunt foxes for their fur and kill them in large numbers as pests.

**Ecosystem Roles**

Red foxes help to control populations of their prey animals, such as rodents and rabbits. They also may disperse seeds by eating fruit.

**Economic Importance for Humans: Negative**

Red foxes are considered by many to be threats to poultry. In general, foxes hunt their natural prey, but individual foxes may learn to target domestic birds if they are not adequately protected. Foxes are known vectors for rabies and can transmit the disease to humans and other animals.

**Ways that these animals might be a problem for humans:**

injures humans (carries human disease); causes or carries domestic animal disease 

**Economic Importance for Humans: Positive**

Red foxes are important fur bearers and more are raised on farms than any other wild fur bearing mammal. Red foxes are hunted for sport, particularly in Great Britain where the hunt is traditionally an elaborate affair with dogs and mounted hunters. Red foxes also help to control populations of small rodents and rabbits and may disperse seeds.

**Ways that people benefit from these animals:**

body parts are source of valuable material; controls pest population.

**Conservation Status****IUCN Red List: [\[link\]](#):**

No special status.

**US Federal List: [\[link\]](#):**

No special status.

**CITES: [\[link\]](#):**

Appendix III.

**State of Michigan List: [\[link\]](#):**

No special status.

Three subspecies are listed in CITES appendix III. Overall, red fox populations are stable and they have expanded their range in response to human changes in habitats.

## Contributors

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