

Red fox: characteristics, environment and habits



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The red fox is portrayed as a sly, cunning creature and has been symbolised in folklore across the world for centuries. They remain an important factor in English culture primarily due to humans hunting foxes with gun dogs. In other countries such as North America they majorly contributed to the fur trade (Sillero-Zubiri, Hoffmann and Macdonald, 2004). The reason foxes are represented as devious and crafty animals down to their appearance and their ability to continue to exist in most environments.

Urban and rural environments differ in a number of ways. Urban environments present a number of challenges to animals such as household predators (ref), human interaction (ref) and complicated landscapes (ref). There are also some advantages to living in an urban area, for example the abundance of easily accessible food (ref) and man-made shelters (ref). In recent years notably in England the rate of urban environments encroaching into rural is increasing leading to a significant impact on wildlife. In order to survive in an urban environment animals must make adaptations to their behaviour and in some cases their morphology (ref). Some animals are better at adapting than others; rodents are perhaps one of the better known examples. If animals cannot make these adaptations in areas where their environment is depleting, their species will become under threat from extinction. The red fox is clearly successful in coping with these ever-changing environments and this is attributable to their ability to make adaptations. One such adaptation and arguably the most important is behaviour (Natural England, 2007).

In order for any predator to be successful and exploit a range of diverse environments it must be able to locate prey on a regular basis. The red fox's

diet is enormously varied due to its coverage across so many different habitats. Unsurprisingly while they are classified as carnivores, they appear to be taking on a more omnivores' style diet. (Natural England 2007). The red fox has also presented food preferences but is generally inclined to take the most readily available foods. (Scott 1955).

Environment is a key aspect in the variation of the red fox's diet. Today the red fox exists in Rural, urban and suburban environments in this country and there is a large variety of food available to them. Red foxes will prey on a range of birds, small mammals, insects and other invertebrates. They will also eat fruit and vegetables which account for about one fourth of the foxes diet, although it cannot sustain the red fox as well as meat would. (Natural England 2007 and Zimen 1980). One of the most suitable habitats for a fox is one that has a high density of small mammals such as rabbits, hares and voles. These animals are easy for the fox to catch and provide enough energy and substance to sustain a red fox (Zimen 1980). An environment that lacks this kind of prey would in theory be an unsuitable place for a fox to survive.

However there are countless examples in this country and across the world of foxes that are living in habitats where small mammals are a fairly minute part of their diet and yet they are still thriving. (Zimen 1980). Foxes living in urban environments have a comparatively different diet to those living in rural habitats. These foxes have a few different food sources which are arguably easier to obtain than hunting small mammals. The prime example of this is anthropogenic food which is in abundance in many urban environments due to the population of humans. (Harris and Baker 2001). The <https://assignbuster.com/red-fox-characteristics-environment-and-habits/>

red fox can scavenge an array of discarded meat and other food whilst using minimal energy in the process. Other food sources such as carrion, fruits and even pets mean that the red fox can successfully live in this tough concrete jungle without its natural diet. (MacDonald and Sillero-Zubiri 2004). The food that the foxes scavenge also attracts some of their natural prey in rural areas giving them ample opportunity to hunt live prey.

However it cannot be assumed that urban foxes will eat the same food in all urban environments, their diet is highly variable (Luniak 2004). A scientific study comparing the diet of the red fox in Bristol City Centre and Central London has revealed how a location change can cause dietary variation. Professor Steven Harris of Bristol University discovered that although these two places are alike and provide very similar food, the foxes consume different quantities of these foods.

This proves that red foxes are opportunistic and will literally eat whatever they can find in order to stay alive. According to wildlife biologist Marsha Sovada with the U. S. Geological Survey's Northern Prairie Wildlife Research Center in North Dakota,

“ Red foxes will eat anything-insects, birds, mammals, sunflower seeds. With such a catholic diet, the animals are virtually guaranteed ample food, opportunistically feeding on whatever's out there.” (Taylor 2001).

In conclusion foxes will eat almost any food type and are true opportunistic eaters. This vastly varied diet will have a great impact on their success as a species and enables the red fox to live in almost any environment as a result (Matheson 1997 and Taylor 2001). Other canids such as the Asian Dhole

(Asiatic Wild Dog) that failed to make this adaptation in diet amongst other factors are now an endangered species (MacDonald and Sillero-Zubiri 2004).

Dhole

The red fox has a behavioural characteristic called caching that assists in the success of the species. The caching of food that the red fox cannot eat straight away is also observed in other predators such as the mountain lion that frequently stores carcasses.

Mountain Lion

The red fox has a much smaller stomach size for its body weight therefore they cannot stock up on enough to wait a long time for the next meal. This is why the red fox caches food in small holes which are usually spaced apart in different places. This particular behavioural adaptation serves a useful purpose in order to survive and it insures for times of prey shortage (Natural England 2007). The red fox also has a greatly developed memory for hoard locations which is useful when these caches can span across many territories (Sillero-Zubiri, Hoffmann and Macdonald 2004).

There is however a downside to this instinct they carry. When faced with a large quantity of favoured prey the red fox will often kill more than it could possibly eat before spoiling. A common example of this is the killing of captive birds such as hens.

This is commonly referred to as surplus killing and will only happen if there is a great amount of vulnerable prey available (Natural England 2007). This does not increase the relationship with humans resulting in efforts to trap and kill many foxes.

“ The fox probably pounces on any available source of a smell or a sound and examines what he has captured later.” (Murie 1936)

An example that illustrates the red fox's ability to swap food type is an outbreak of myxomatosis a disease which wiped out a large proportion of the rabbit population in this country in 1953. The rabbit was certainly the red foxes preferred food type at this time as they provided a fair amount of meat for an easier catch.

Hunting

Developing techniques in order to catch prey is imperative to any predator's survival since their prey is commonly mobile. Each predator will have various techniques in capturing and killing its prey (Scott 1955). Red foxes have developed a range of hunting techniques in order to catch a diverse variety of prey (Grambo 1997).

The red fox is primarily a crepuscular hunter but on occasion it will also hunt throughout the night (Especially in urban areas due to artificial lighting causing them to extend their hunting time (Fabricius 2010). They hunt around this time due to their prey being mostly active around dawn and dusk. However the red fox can hunt during the day especially when food supply is in short supply in winter. They normally hunt in solidarity but it is not unknown for them to pair up in order to take down larger prey, such as calves (Sillero-Zubiri, Hoffmann and Macdonald 2004).

The red fox has made many clever hunting adaptations in order to catch its diverse range of prey.

For insects, the fox will put little effort into the method of capturing. They will commonly just walk up to insects without any stealthily moves and eat it. This method works well for foxes and as an insect requires little substance, this easy way of killing is suitable (Grambo 1997).

For small mammals such as rodents the red fox will take on a far stealthier role. They will usually carefully walk around areas where the desired prey would be present, listening for any signs of movement. The moment the fox hears any scurrying, the red fox will launch itself straight up into the air and then pins down the victim with astonishing precision. The fox will then deliver a series of lethal bites (Harris and Baker 2001).

Red Fox Hunting Rodent

Other canids have this technique such as the coyote but generally most canids will shake their prey violently in order to kill (Sillero-Zubiri, Hoffmann and Macdonald 2004).

The most challenging prey type the red fox encounters is Rabbits, hares and other swift small mammals. Hares can achieve speeds of up to 45mph when escaping predators and rabbits will run in a zigzag motion whilst reaching speeds of 30 mph (Elert 2001). These small mammals sustain the fox much longer than insects or any other small scavenged items so they are important to the fox's diet (Zimen 1980). The red fox's hunting technique for this prey is similar to most other predators. They will stalk their prey slinking along the ground for as long as they can stay undetected readying themselves for a pursuit. As soon as the fox has been noticed a rapid chase will ensue which either will result in the prey escaping, or the fox delivering a

lethal bite to the animal's legs. In addition, the red fox can reach speeds of up to 30mph giving it a realistic chance of catching this hasty prey.

Furthermore they are able to jump 6ft high which is particularly useful when chasing rabbits and hares. (Matheson 1997 and Zimen 1980).

Fox Stalking meal

There is one last notable method in capturing prey that is fairly unconventional commonly referred to as 'Charming'. After spotting the desired prey, the red fox will begin playing and display odd behaviour in full view of its prey. This can result in the prey moving closer in order to see what the fox is doing. The fox will then ambush the prey when it's in close enough range. They have also been known to play dead which will attract carrion birds. This technique truly illustrates the fox's intelligence and is contrast to their otherwise sly and silent moves (Zimen 1980 and Matheson 1997).

Red Fox leaping whilst charming

Through having this varied range of hunting techniques, the red fox is able to have a wide-ranging diet. They have a tailored technique in capturing animals for each specific prey and situation. This ultimately helps the red fox become widespread as it can transfer this collection of hunting skills to different prey living in most environments.

Conclusion for diet and hunting

The process of finding food and hunting prey is imperative to any living creature's survival. The red fox has proved to be a very successful forager as they can seek out food in an array of different environments. The way in

which it exploits a wide range of foods enables the fox to do well even in areas which at a glance do not seem to provide it with the means to thrive.

Reproduction

Reproduction is fundamental for any species to be successful. Red foxes are monoestrous, they ovulate only once a year. Species that are commonly thought of as particularly abundant, such as the rabbit, have many litters per year. From this a person might assume that the red fox would have lower population numbers in comparison to the rabbit as they will only have one litter a year (Natural England 2007). A vixen on average will only have 5-6 kits a year and the infant mortality rate is reality high with only 2-3 kits surviving. However despite this they are still flourishing and this is down to several reasons.

“ Because they’re small predators with a fast reproductive rate, red foxes can dominate other species once they become abundant,” says Ron Jurek, a wildlife biologist with the California Department of Fish and Game.

The dedication of the mother to the wellbeing of her offspring is the one of the reasons for the red fox’s success (Matheson 1997). Prior to the birth of her kits, the mother will prepare a natal den that is situated close to food and water supplies. This ensures the mother has access to food resources to sustain her, without straying too far from the den site. Female foxes will spend a large amount of time searching for a den that is concealed from humans and potential predators of the offspring, such as the badger. When the vixen has given birth to her kits, she will remain with them for the first two weeks in order to keep them warm relying on her mate to bring her any

food she needs. This caring behaviour will help all of her kits to reach adulthood increasing the success of the species. An additional benefit is that the mother's milk is very rich providing a good amount of sustenance (Matheson 1997).

Nursing kits

Another key explanation for their high population is the capability of breeding at a young age. The red fox will on average reach sexual maturity at around 10 months old. In comparison to other canids such as the gray wolf that reaches sexual maturity around 2 or 3 years, this is relatively young.

Perhaps if the fox population was more stable like the gray wolf then they would not need to reproduce at such a young age (VanGinkel 2002 and Sillero-Zubiri, Hoffmann and Macdonald 2004).

The red fox has another useful behavioural characteristic which is predominantly present in urban environments which can help lower the red fox's infant mortality rate. Normally when vixen's kits have matured they will separate and search for their own territories. However young females can stay with their parents for another year. They purposely stay behind to help raise their younger siblings and provide their mother with food.

Although this altruism may not have an enormous impact on the success of the litter, the experience the vixen will gain by helping raise kits can be transferred to her own (Matheson 1997). A prime example where this behaviour is more successful is in wolves. The alpha female is the only allowed having pups and all the other females in the pack will help raise them.

Ecological adaptations- 1500

Distribution and abundance

The distribution of any predator is vital its success as a species. The vaster the distribution of a species, the more likely it is to succeed. If one environment was completely destroyed resulting in a species dying, as long as that species has colonised elsewhere it will not die out (MacDonald and Sillero-Zubiri 2004).

The red fox is the most prevalent of all the predators on earth spanning across nearly the entire Holarctic region. They live in 83 countries in five continents covering 70 million sq-km and are the only canid to do so (Luniak 2004). In fact the only place the red fox does not exist is tropical Islands, Australasian Islands, Madagascar and Malta. They are only present in Australia because man introduced them there. The reason they are absent from these places is although they are fairly strong swimmers, there is a vast amount of water to cross in order to settle there and they have not made it. This is a tremendous achievement for any predator and the only other predator that comes close to this is the grey wolf. They of course no longer exist in this country due to hunting to extinction and major loss of habitat. This furthers the point of the fox is successful as they were faced with remarkably similar circumstances, and continue to exist. The red fox has encountered many extermination efforts and ever increasing natural habitat loss and yet still covers most of its original range. The map below illustrates the areas in which the red fox inhabits (Zimen 1980 and Luniak 2004).

The current population of the red fox in England today is very difficult to determine. Dr Johnathan Reynolds of the Game and Conservancy Trust states:

“ Foxes have been on the increase in urban areas since the 1940s when they first started colonising towns and cities but we have also had a number of setbacks in the population because of the mange and other diseases. At the moment it is difficult to say what the overall picture is.” (Gray 2009)

The last official estimate of the red fox in 1995 found there to be 240. 000 living across the U. K. This figure is likely to have increased as their behavior is changing allowing them to live closer and closer to humans (Gray 2009 and Luniak 2004).

Habitat

One of the reasons why the red fox is so successful is ability to live all almost any habitat. They thrive in habitats from extreme examples such as tundra and desert to the more commonly associated woodland, scrub, farmland and urban environments (Luniak 2004). Below illustrates just how different these habitats can be:

This capability of living in different habitats is a security against any landscape destruction. If for example the whole of England became a purely urban environment, the likely hood of the red fox surviving is high given their current urbanisation ability (Harris and Baker 2001). Other predators that struggle to cope with loss of habitat and fail to make adaptations are under threat of extinction. An example of this is the case of the critically endangered Darwin fox.

The Darwin fox lives just off the west coast of Chile on Chiloé Island and mainland Chile. It covers the least geographical range of all the canids and is one of the most endangered. The main reason why they are on the brink of extinction is their lack of adaptations made to survive. They live in a unique island temperate forest which does not exist anywhere else. Loss of habitat means loss of prey resulting in them simply dying out as opposed to adapting and finding new sources of food and habitat (Sillero-Zubiri, Hoffmann and Macdonald 2004).

Territory and range

They have adapted their territory range to suit the need of the area.

Like most predators, red foxes are territorial and in order for an individual fox to survive it needs to establish its own territory. Each territory provides shelter and adequate food for a species to live on. A predator's territory size can differ in every habitat. It tends to be directly correlated to the amount of food available and good quality denning sites (Natural England, 2007). The red fox population extends across various different environments. For this reason there is enormous variation in territory size. In a typical rural environment in England, the fox's territory size is around two to six square kilometres. In contrast an urban fox's territory size is approximately half a square kilometre. The red fox has reduced its territory size significantly in urban environments. There are several reasons for this change such as their territory becoming bound by the road and other large urban obstacles. There are also space limitations due to a lack of green areas compared to their rural cousin. A bonus for a red fox living in an urban environment means they do not have to travel too far to find their next meal. This leads to many

urban foxes living a sedentary life thus having a smaller territory (Luniak, 2004).

Red foxes have also developed a reasonably relaxed approach to living in close range to another territory in urban environments. The red fox will have two small territories, one that provides shelter which is defended against any intruders. The other is where hunting and foraging will take place and tends to overlap with other foxes territories. This tolerance has a positive impact on the fox population as it allows foxes to live successfully in built up urban landscapes (Natural England, 2007 and Luniak, 2004). A researcher at Bristol University, Ellie Whittaker said

‘ The animals move around a lot geographically and in a lot of cities the population of foxes is absolutely exploding’ (Gray 2009).

The red fox has clearly managed to establish a life alongside humans in these difficult urban environments.

The red fox will like most predators, mark their territory to preserve borders. Although this seems very defensive behaviour it serves a useful purpose.

Red fox scent marking

‘ Red foxes communicate with facial expressions, vocalisations and scent marking’ (Luniak, 2004).

This is one of the main ways the red fox communicates and in actual fact helps reduce aggressive clashes between foxes. It is uncommon for foxes to fight resulting in injury when another fox strays into its territory. This means

there is a very low mortality rate from foxes killing each other increasing the success of the species (Matheson 1997).

Avoidance behaviour and risk taking

A red fox mistakenly sneaking into a lion enclosure

Every animal has a flight distance and it is a fundamental behavioural trait, especially for animals that are preyed on. Flight distances vary greatly depending on the species and the environment they are living in. However the purpose it serves never changes. The key function of a flight distance is to keep an individual animal alive by running from a potential threat.

(Luniak, 2004)

A prime example of an animal that lacked any form of flight distance was the Dodo. The Dodo lived contented on the island of Mauritius until humans discovered the island in 1505. Whilst the explorers were there, they discovered this effortless source of food that would literally walk up to them without hesitation. The main reason the Dodo became extinct was their trusting towards every living creature. Up to the point humans invaded their island, they had no predators, therefore had not developed the flight mechanism that would have arguably saved their species (Maas, 2008).

3d model of a Dodo

Consequently an animal with a short or nonexistent flight distance has an increased risk of being caught by a predator, resulting in a decline in the species or in the Dodos case, extinction. On the other hand an animal with too long a flight distant is in danger of a failing population due to the disturbance that fleeing frequently can cause. This constant running effects

breeding, foraging and other behaviour vital to a species survival (Moller, 2008).

The red fox has no real natural predator in this country other than badgers that occasionally kill young kits. The only predatorial threat they face on a daily basis is humans. In order for any species to co- exist amongst humans, they must develop a degree of tameness toward people or they will not survive in an urban environment (Luniak, 2004). The red fox is under threat from humans in both rural and urban environments and has adapted its flight distance to suit environment.

From organised hunts to the odd disgruntled farmer the red fox has faced danger from man for centuries in rural landscapes. The red fox has adapted well to the threat if humans in rural environments. Wildlife journalist Keith Broomfield has studied the red fox for years and comments on the rural fox:

“ Here is a shy and careful animal, skirting around farmhouses and villages, making only the occasional foray to raid a hen house or sniff around for rats and mice in a farmyard during the dead of night. Disturb a country fox during the course of a walk, and in a blur of russet he will be gone (Broomfield, 2010).”

They have still maintained the correct flight distances for living in rural areas as the threat they face are still prevalent.

In urban environments

By reducing their flight distance in urban environments they have managed to settle and live amongst humans successfully. They may even be becoming too complacent in some areas (Luniak, 2004).

Red fox photographed on the London underground.

They are not quick enough when it comes to traffic.

Wildlife journalist Keith Broomfield wrote

“ When I first started to watch Edinburgh foxes in the mid-1970s. They were still quite shy then but now it is not uncommon to watch them nonchalantly trotting along the pavements of Glasgow or Edinburgh, unfazed by meeting a human (Broomfield, 2010).”

Morphology

The red fox is indisputably the easiest of all fox species to identify due to its unique markings and colour (Luniak, 2004). Its iconic rusty red coat, black legs and ears and white belly and tail tip are suitable for camouflage in a forest at night. They can keep well hidden as they sneak through the trees and vegetation. There are many colour variants which can vary from red to copper enabling them to live in other biomes such as sandy desert and open country. (Matheson, 1997).

The red foxes kits will come out of the burrow a sandy brown colour. This camouflage helps protect the young from any predators especially in countries where they are hunted by lynx, wolves and other predators.

Red fox cubs blending into their surroundings.

The ability to blend in to their surroundings is especially beneficial when capturing prey and enables them to get closer to their victim undetected (Zimen, 1980).

Red Fox example in camouflage

However a significant proportion of the fox population live in urban environments (Grambo, 1997). This camouflage is not suited for urban landscapes and unlike other species they have not adapted in anyway physically in order to live in urban environments. Fortunately the red fox does not rely on camouflage alone in order to survive (Luniak, 2004).

Red Fox in Urban environment

The red fox has a surprisingly misleading appearance. Its red fur consists of long hairs which bulk out the form of the red fox. The red fox is approximately half the weight of other canids this size. This is owing to very light bones in comparison to dogs and a stomach only half the size of most canids.