The Origin of Cats – How Did the Cat Become Tame and Domesticated?

Our cherished pet cats have not always been domesticated. They resemble a lot of small wild cats from Africa and Eurasia, and still retain many similarities with them. Because domestic cats are now found all over the world, including places with resident populations of small wildcat species, we are not sure precisely where, when and how the domestic cat originated, but genetic, archaeological and historical studies provide good indications.

According to the International Union for Conservation of Nature, the domestic cat is classified as a species, in Latin called Felis catus, which can be distinguished from six wild species of Felis including the European wildcat (Felis silvestris; Fig. 1.1), the African wildcat (Felis lybica, Fig. 1.2) and the Chinese mountain cat (Felis bieti). There is uncertainty about this classification, and it may change based on future research. Some texts place the domestic cat as a subspecies of Felis silvestris known as Felis silvestris catus, with the European wildcat, African wildcat and Chinese mountain cat forming other subspecies of Felis silvestris with which the domestic cat is known to interbreed. Domestic cats can also potentially interbreed with other small cat species found in Africa and Asia. They can even be crossed with certain small wildcat species found in South and Central America but, with only 36 instead of the usual 38 chromosomes, fertile offspring are unlikely.

The European wildcat has been one candidate for ancestry of the domestic cat. Resembling a large brown tabby domestic cat, the European wildcat can be found in low numbers scattered across the temperate forests of Europe and western Asia. Once widespread in Great Britain, an isolated population still exists in Scotland, although on the verge of extinction in its pure form due to hybridization with feral domestic cats. Occasional reports of big black wildcats in Scotland, called Kellas cats, have turned out to be hybrids between the European wild-cat and the domestic cat. The European wildcat is a really wild cat – timid, aggressive and solitary, and even the kittens are almost impossible to tame. These behavioural characteristics seem to be the opposite of those that would make a wildcat an obvious candidate for domestication; that is, easily tamed, sociable and functioning well in close contact with people.

The African wildcat is a more promising candidate for domestication. While there have been few studies of this species in the wild, African wildcats can be found living close to villages, and can be easily tamed if taken in as kittens. Although usually solitary, females are occasionally seen in groups with members of successive litters, as is also sometimes seen in domestic cats. The older

offspring may then assist their mother in supplying food for their younger siblings. The African wildcat typically inhabits semiarid areas and is found throughout much of Africa excluding the central Sahara and tropical rainforest. Not restricted to Africa, its range extends through the Middle East and across Asia to western China. The closely-related Chinese mountain cat is a large, blue-eyed wildcat adapted to life on the Tibetan Plateau, where it is not known for tractability. There are, however, other species of small wildcat in addition to the African wildcat that can be easily tamed.

The question arises whether domestic cats could have arisen from multiple domestication events in different parts of the world, involving more than one species of wildcat. The answer is yes and no. There is some evidence for early domestication of the mainland leopard cat, Prionailurus bengalensis, in China around 5000 years ago. However, those early domestic cats appear to have died out, as it has been discovered that the domestic cats found in China today can be traced back to African wildcats of Middle East origin. A DNA analysis of 979 wild and domestic cats from Europe, the Middle East, Africa and Asia showed that, in fact, all the tested domestic cats were derived from the African wildcat.

The analysis further indicated that they were descended from a subspecies of African wildcat found in the Fertile Crescent, the belt of land extending from the Egyptian Nile to Palestine and Mesopotamia where agriculture is believed to have originated roughly 12,000 years ago. Further research has shown that the Chinese mountain cat is not the original source of today’s domestic cats in Asia, although it has subsequently interbred with domestic cats.

The relatively new cat breed, the Bengal cat, is derived from deliberate crossing of the domestic cat with the mainland leopard cat, a trend that started in the 1960s (Fig. 1.3). Joining the Bengal cat are several other new synthetic breeds created by crossing domestic cats with other wildcat species. See Chapter 9 for discussion of ethical issues arising from this practice.

The Cat in Ancient Times

The very earliest sign of cats living with humans comes from a 9500-year-old archaeological site in Cyprus. Excavations unearthed an approximately eight-month-old cat of the African wildcat type that had been buried in its own small pit just 40 cm from a person, aligned in the same direction. Cats have never lived wild in Cyprus, so it must be humans who brought the cat to this Mediterranean island. The fact that the cat was buried intact alongside a person suggests that the person had a strong relationship with this cat. Similarly, in Israel, dogs were being buried with people 12,000 years ago.

The area in the Middle East where the domestic cat originated is considered the cradle of civilization, where people gave up their hunter-gatherer lifestyle and began to cultivate the soil. Mice and other small rodents lived well on the stores of cereals that humans cultivated and harvested. These prey animals attracted wildcats that had spotted a rich food source. The humans no doubt welcomed this unexpected help. The cats and the people enjoyed a mutual benefit. It is likely that those cats that thrived and reproduced the most in human settlements were those that were the least fearful of people and the most willing to tolerate the proximity of livestock, dogs and

other cats. Over generations, this natural selection for tameness and sociability would have led to the genetic divergence of domestic cats from their wild ancestors. These cats were friendly and funny, and interacting with them in kittenhood would have further accentuated their friendliness. It is no surprise that some cats became pets, enjoying the care and protection of their owners even when they grew old and were no longer efficient mousers.

From the above, we can see that rather than humans ‘domesticating’ the cat, cats essentially domesticated themselves. While domestic cats are typically smaller than the African wildcat, and have a smaller brain, they are quite adept at training their owners to be their obedient servants. It suffices to scratch on the wall by the door to have the owner rushing to open the door. In Chapter 10, we shall see how we can easily train cats to avoid any unwanted behaviour. This allows us to live with them in harmony, continuing a close association that began at least 10,000 years ago.

The divine cat

The ancient Egyptians worshipped cats and kept many in captivity. A 4000-year-old wall painting in the tomb of Baqet III depicts a cat facing a rat, indicating that the cat was valued as a rat catcher. Where The Bengal cat has become a popular breed in North America and Europe in recent decades. It is derived from crossing the mainland leopard cat with domestic shorthair cats.

Where rats are found, it is not surprising that they attract snakes who eat them. The cat is also good at killing small snakes, as a source of prey or perhaps because snakes pose a threat to their kittens. This was probably known to the Egyptians 3500–4000 years ago when they carved ‘magic knives’ of ivory, decorated with cat figures to repel venomous snakes.

The Egyptians had many gods. In one myth, the sun god Ra, in the guise of a great tomcat, slays the serpent god Apophis. Around 3200–3500 years ago, cats were associated with the goddess Hathor, especially when she presented herself as Nebethetepet. This goddess represented sexual energy, and the association with the cat may relate to the fact that female cats can mate multiple times and bear offspring with different fathers in a single litter.

The most famous cat god was Bastet, who was associated with fertility, birth, protection and care of children. Initially, she was depicted with a lion head but about 2700–3000 years ago, this was replaced by a cat head signifying a more friendly deity.

Many cats were kept in temples and sacrificed in the name of Bastet. Veneration of Bastet centred on the city of Bubastis in the south-eastern Nile delta but eventually spread throughout Egypt. The famous Greek historian Herodotus described the Bastet cult when he travelled in Egypt c.450 bce. He recounted that festival worshippers at the temple of Bubastis arrived from miles around bearing cat mummies as offerings. When a family cat died, the people of the house shaved off their eyebrows to show their grief. Rich cat owners embalmed their dead cats and buried them in special cat cemeteries with bronze statuettes of cats as grave monuments. In some cases, a cat mummy was buried together with a human mummy. If someone happened to kill a cat, there was great concern. This was considered a serious crime and cat murderers risked lynching. Herodotus also described incidences where male cats killed kittens. This would have caused their mother to come into heat, allowing her to be mated by the infanticidal male. Today, infanticide by males is a

recognized phenomenon in the behavioural ecology of many species, and it is especially well known in lions. It is reported occasionally in feral domestic cats. Herodotus can thus be regarded as one of the first cat ethologists.

The Cat Spreads Out

As a result of the domestic cat being so useful, it was forbidden to export cats from ancient Egypt. Special agents were sent out to buy back and bring home cats that had been illegally exported. However, cats gradually spread out from the Fertile Crescent along trade routes. Various archaeological and historical sources show that domestic cats existed in the Indus Valley 4500–5000 years ago, in the Minoan culture of Crete 3100–3500 years ago and in Greece and southern Italy around 2500 years ago. The Greeks and Romans used ferrets and weasels to catch mice and rats, which initially limited the need for cats. However, the value of cats caught on and, with the expansion of the Roman Empire, cats spread through Europe, including England, where they are first described around 350 ce.

The cat arrives in Scandinavia

It is unclear when cats first arrived in Scandinavia, but cat bones have been found in Danish burial sites dating from about 1 to 375 ce. This suggests that cats spread north from areas of Roman occupation. However, cats remained uncommon until the Viking Age (c.850–1050 ce), when they were brought by Vikings returning home from travels to the south. In Iceland and elsewhere in Scandinavia, cat skins became a valuable commodity used to make gloves and other garments. According to a law established by the Norwegian King Magnus Lagabøte in 1274 ce, cat skins were a valid means of payment, with the skin of an adult male cat being worth three fox skins. Cats were important for controlling mice and rats both on land and on the Viking ships, but they also developed symbolic value. In Norse mythology, the goddess of fertility, Freya, was described as driving a wagon pulled by two cats (Fig. 1.5). Present-day cats in Scandinavia are often bigger than those kept by the Vikings, probably due to better nutrition and adaptation to colder climates.

Cats around the world

Based on historical records, domestic cats of Middle East origin were present in China during the Tang dynasty (618–907 ce) and in Japan in 889 ce, when Emperor Uda wrote of his joy in owning a black cat. Cats were valued for protecting silkworm cocoons from predation by rats. They are thought to have spread south and east with the early Arab maritime traders. In Madagascar, which had no indigenous wildcat species, domestic cats became the ancestors of today’s wild forest cats. This occurred through the process known as feralization, which works in the opposite direction to domestication. Over generations of natural selection, populations of domesticated animals no longer supported by people become increasingly adapted to living in the local natural habitat and revert to wildtype behaviour and colouration. However, this only happens if conditions are favourable in terms of weather, food and ability to withstand native predators.

The Vikings took cats on their travels to Greenland and may have taken them as far as Vinland (now Newfoundland), though no sign remains. Columbus also carried cats aboard his ships. Cats became established in European settlements in the Americas in the 16th to 18th centuries. Cats

were brought to Australia and New Zealand by European settlers in the late 18th century, although possibly earlier by Indonesian traders. In Australia, thousands of cats were released in the 19th century to control rabbits, native rats and infestations of mice at goldmining settlements.

How many cats are there?

Today, the cat is the most popular pet in the world based on numbers owned, with an estimated 373 million owned cats and a further 480 million stray and feral cats (in 2018). The countries with the highest numbers of cats are the USA (74.1 million) and China (53.1 million). The European Pet Food Industry (FEDIAF, 2021) estimates that there are 113 million domestic cats living in Europe, Russia and Turkey, with 26% of households owning at least one cat. There were around 22.9 million cats in Russia, 12 million in the UK and 780,000 in Norway. In the UK, cats are found in about one in four homes, and in Norway, one in five households have a cat. These are only rough estimates, and the actual numbers may be much higher. The estimates vary greatly depending on the methods used to collect the data and do not account for all cats.

The Cat Was Persecuted in the Middle Ages

As we have seen, cats were worshipped in ancient Egypt. They were also admired in Muslim countries, unlike dogs, which were considered unclean. Alas, cats were persecuted by the Christian priesthood in Europe during the Middle Ages. Cats did not conform to the dogma that animals were created to serve man – they were independent and not overly attentive to the wishes and demands of people. This was seen as evidence of their allegiance to the devil. Black cats, especially, were linked to witchcraft due to the belief that witches could transform themselves into cats at night and sneak about unseen doing the devil’s work. Single women who kept cats and did not conform to social conventions were easily accused of being witches. In England, hundreds of female cat owners were executed between 1560 and 1700 ce because of friendship with cats. When they were burnt at the stake after sham trials, their cats were often burnt with them. In France, cats could themselves be placed on trial for witchcraft. Cats were burned alive during festivals or, in Ypres, Belgium, tossed from the bell tower. In Japanese mythology, it was thought that a cat’s supernatural proclivities were signified by a long tail. To prevent kittens from becoming demons, their tails were cut off.

Perhaps an underlying biological explanation for the persecution of cats lies in their role in transmitting zoonotic diseases such as rabies and toxoplasmosis, and a periodic need to reduce cat over-population. On the other hand, any reduction in cat numbers might have facilitated the spread of Bubonic plague by flea-carrying rats. Clearly, medieval views about cats were steeped in superstition, with people burning cats for good luck while wearing their fur as a cure for rheumatism. Even today, people hold varied attitudes about the habits of cats and many cat owners struggle with their relationships with neighbours and landlords, as we address in Chapter 12.

Emergence of Cat Breeds

Even today, most domestic cats do not belong to any particular breed. They are the product of so-called random breeding by cats that have found their own mates without human intervention. These cats are termed non-pedigree cats, house cats or, in the UK, domestic short-haired cats. As with feral cats and strays (that are rarely pedigree cats), they express basic anatomical and behavioural characteristics that are not very different from those of wildcats.

During the early stages of domestication, most cats had wildtype mackerel (striped) tabby (Fig. 1.6) or black coats that camouflaged them from wild predators when hunting at night. However, association with people facilitated the survival of cats deviating from the wildtype, such as cats with patches of white fur, a typical signature of domestication. The blotched (swirl) coat pattern referred to as classic tabby (Fig. 1.7) was first noted in domestic cats in Turkey during the early Ottoman Empire (13th century). It subsequently spread to other regions of the world although it did not become common until the 19th century. The other two tabby coat patterns, spotted (Fig. 1.8) and ticked (producing faint tabby markings), probably spread in a similar manner.

The orange coat colour is determined by a sex-linked gene on the X chromosome. So males having the orange allele on their single X chromosome are always orange, while females can be orange if both their Xs carry the orange allele or tortoiseshell (orange mixed with black or tabby) if one X chromosome carries the orange allele. It appears that the

Vikings favoured orange cats and were responsible for their dispersal along trade routes from Miklagard (today’s Istanbul) to northern Europe.

The Siamese and Persian are among the earliest known breeds, already distinct several hundred years ago. However, deliberate selective breeding of fancy breeds for specific traits only began in the 19th century when the rules of inheritance became better understood. Five breeds were exhibited at the first cat show at London’s Crystal Palace in 1871 while over 40 breeds are recognized today, with the number of breeds varying between breed registries. This number continues to rise. The defining characteristics of breeds can also differ between breed registries and be amended over time. The popularity of cat breeds varies between regions and is influenced by changing fashions and attraction of buyers to novel and unusual traits (Table 1.1). Many of the recently developed breeds have emerged as a result of selection for particular mutations, such as the hairless Sphynx, or the Ragdoll that hangs passively while being picked up.

Genetic defects can easily be propagated when selecting for specific mutations within a narrow gene pool. Therefore, it is important to ensure broad genetic diversity within the breeding population of each breed so that one can breed in a favourable direction in terms of health and behaviour. In Chapter 9 we look more closely at welfare problems that can arise as an unintended consequence of pedigree breeding.

Relationships between cat breeds

Comprehensive DNA studies show that cat breeds can be divided into four main groups based on genetic relatedness: Europe, Asia, the Mediterranean basin, and East Africa, with differences between these populations arising due to geographical separation. The American breeds cluster with the European breeds, in keeping with their European descent. Thus, the Norwegian forest cat

is closely related to the American Maine coon, but also to the Siberian cat, a type of forest cat found in Russia. Among the Asian breeds, the Siamese, Balinese and Oriental shorthair are closely related to each other and are also crossbred today, so they are considered to belong to the same gene pool.

Table 1.1. The most popular cat breeds in 2021.

Rank	The Cat Fanciers' Association registrations (international)	The Governing Council of the Cat Fancy registrations (UK)	Association of Pedigree Cat Clubs (NRR) registrations (Norway)	Cat insurance cotracts (Anicom – Japan)
1	Ragdoll	British shorthair	Maine coon	Scottish fold
2	Maine coon	Ragdoll	Siberian	Mixed-breed cat
3	Exotic shorthair	Maine coon	Ragdoll	Munchkin
4	Persian	Siamese	British shorthair	American shorthair
5	Devon rex	Burmese	Sacred Birman	Norwegian forest cat
6	British shorthair	Persian	Norwegian forest cat	Ragdoll
7	Abyssinian	Oriental shorthair	Neva masquerade	British shorthair
8	American shorthair	British longhair	Bengal	Minuet (Persian hybrid)
9	Scottish fold	Birman	Persian	Siberian
10	Sphynx	Russian	Devon rex	Bengal

Around 20 breeds are referred to as 'natural breeds' as they are thought to pre-date the cat fancy of the 19th century, having originally been derived from the local landrace cats in different regions of the world. Nowadays, some of these breeds bear relatively little genetic evidence of their historical roots, having been heavily crossed with other breeds to achieve a certain appearance. For example, based on their DNA, the Persian is placed among the European breeds along with the Exotic shorthair and Himalayan, with other relatives being the British shorthair and Scottish fold. Also found in the European group are the Abyssinian and Somali cats. These breeds are related to the hairless Sphynx cat, which is, in turn, closely related to the Devon rex. Although reputed to originate from the temples of Burma, the Sacred Birman was reconstructed in post-World War II France by crossing two remaining cats with Persian and Siamese cats.

In the Mediterranean basin group, the Egyptian mau is related to the Turkish angora while the Turkish van is more closely related to random-bred cats found in Egypt. The Sokoke falls into the East African group, being closely related to random-bred cats in Kenya.

Cat breeds can differ from each other not only in appearance but also in behaviour, as we shall see in Chapter 3.

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