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### More Toes than Most

Why do some cats have more toes than others? Depending which side of the Pond you live, it's to be bred out or celebrated says ELIZABETH PERRY.

Tiger has an amazing 27 toes. At just nine months old this cutest of kittens, owned by Gareth Ukrainetz, from Leduc in Alberta, Canada, has been officially recognised by Guinness World Records as the 'Cat with the most toes'. Tiger has seven toes on each front foot, and seven on her left hind foot, but only six toes on her right hind foot. Most cats have five toes on the front paws (four toes and one dew claw) and four on each of the hind paws, a total of 18. Tiger has beaten the previous record holder, Twinkle Toes, owned by Gloria Boensch of Birch Run, Michigan. The three-year-old female has a mere 25 toes. Tiger was born with a condition called polydactyly (Greek for 'Many fingers'), which is a fairly common mutation in the domestic feline world.

Many toes Polydactyly has affected cats for hundreds of years but was only scientifically recognised in the mid-1800s. It is an inherited condition in which a dominant gene causes extra toes to be formed on one or more feet. Though the condition varies from animal to animal, it will always affect the front feet and sometimes the back feet as well. The abnormality may simply be an enlargement of the inside digit into a thumb, (known as a 'Omitted cat'), or there may be up to three extra 'Oentire' toes on the paw. In general, polydactyl cats are not disabled and have no problems in walking, climbing or jumping and balance. Because the extra toes are a different length, the cat is unable to strop the additional claw and it can grow so long that it may actually grow into the paw pad. Owners must therefore clip the claws regularly. If there is a persistent problem, the toe may be declawed by a vet, one of the few circumstances where the operation is allowed in the UK. If two extra toes are fused together the nail bed will also be fused. This leads to the growth of one 'Osuperclaw', which is much stronger and thicker than normal, making it more lethal for furniture and human flesh! The claw may twist as it grows and become ingrown. When an extra toe causes repeated problems, it can be removed in a simple operation.

### Hemingway Cats

Writer Ernest Hemingway, a great cat lover, had polydactyl cats among the 50 or so that shared his island. One, Princess Six Toes, became famous and appeared in the 'New York Times' and other American magazines. Because of this, multi-toed cats are often referred to as Hemingway cats. Other famous polydactyl cats include President Teddy Roosevelt's cat, Slippers. There is a high incidence of polydactyl cats along the United States' east coast. At one time, 40 per cent of the original Maine Coon population in New England were polydactyl. This led to claims that the cats developed extra toes to act as snowshoes! The most likely explanation is that polydactyl cats were considered lucky (probably because their large paws meant they were good mousers) and often taken on as ships' cats. When many of the seamen settled along the US coast their cats remained as well. There is also a high incidence of polydactyl cats in south-west England, perhaps for the same reason.

## No Show

Polydactyly is generally seen as a fault in show cats and was bred out of Maine Coons, yet in the US efforts are being made to reinstate the condition for both Maine Coon and Pixie-Bob breeds. New breeds are also being developed that include multi-toes as part of the breed standard, such as the Hemingway Sphynx, a hairless polydactyl cat. In the UK, polydactyly is seen as a breed fault. Frances Peace, secretary of the Governing Council of the Cat Fancy (GCCF) says: "Additional toes are on our standard list of defects. Though polydactyl cats can be shown, they would not receive a certificate or a first prize. Our list of defects applies to all standards of breed. I cannot think that it's a feature that benefits the cat," she added. Penny Bydlinski, general secretary of FIFe, (the worldwide cat show/breed body) reveals why multi-toed cats are banned at Cat Association shows. "To allow such abnormalities would encourage inbreeding in pedigree cats," she explains. "It is a fault and polydactyl cats are not allowed to be shown."

## Personal Experience

Jane Burton, one of the UK's top animal photographers, has helped with research into polydactyly in cats. "I was given a rescue moggy in 1993 who was a polydactyl cat and had 26 toes. I liked her and I decided to mate her with a Burmese cross. The kittens were Burmese lookalikes and around half of them were born with extra toes. Jane continued breeding from her polydactyl cats and kept records of family trees, which she passed onto researcher Dr Susan Long at Bristol Vet School. "I tried mating two polydactyl cats and their kittens varied with what extra toes they had," she explains, "though none of the kittens I bred had as many as the original female. I didn't notice any problems with the polydactyl cats, but somebody I rehomed one to did say that the cat caught his feet on the covers of the furniture." Unfortunately, after four years, Jane was persuaded to part with her last polydactyl female, putting an end to her breeding programme.

## The Genetics

Dr Susan Long is a senior lecturer in reproduction at Bristol Vet School and is director of the course in genetics. After conducting research into polydactyly, she is able to explain how it is passed on through the generations. "The simplest assumption, in the absence of other evidence, is that the mutation originally occurred in one cat and was passed down through its offspring. "Polydactyly is caused by an autosomal dominant gene. Through research we know that if one parent carries one copy of the gene and the other parent has none, the inherited genes are heterozygous and half the kittens will be born with polydactyly. If one parent has two copies of the gene (passed down by one copy from each grandparent) the genes are homozygous and all the kittens will be born with polydactyly. "It's actually a very interesting gene," enthuses Dr Long. "Because there are various manifestations in the way the toes are formed, how many and on which feet, this suggests it's a main simple gene with variable expression."