

Ocicat and Aztec Breed Advisory Committee

# Breeding Policy for the Ocicat and Aztec



Gold Olympian Thickthorn Lottie *(Back)*  
and Grand Premier Thickthorn Leonard *(Front)*

*Owned and Exhibited by Steve Whiting*

*Original photography by Robert Fox*

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## Introduction

The aim of this breeding policy is to give advice and guidance to breeders to enable them to observe what is considered "best practice" in breeding Ocicat and Aztec cats.

The over-riding factor should always be to maintain health, and preserve the unique qualities of these stunning breeds, type, coat colour, pattern, conformation and temperament, which make them sought after both for showing and as wonderful family pets.

*The breeding policy accompanies and supplements the Registration Policies and should be read in conjunction with those documents.*



## Origin of the Breeds

In 1950, Virginia Daly of the Dalai Cattery in Berkley, Michigan produced ACFA's first Red point Siamese female Grand Champion. She also produced the grandmother of the first all-American Flame point Himalayan kitten by crossing a Red Persian and a Siamese. Her innovative approach to breeding continued and along the way she took up a challenge from another breeder to produce an Abyssinian pointed Siamese.

In attempting this challenge Daly mated a Seal point Siamese female named Tomboy Patter, to a ruddy (usual) Abyssinian champion named Dalai Deta Tim of Selene. Their kittens looked (phenotypically) like Abyssinians but, Daly reasoned, on the inside she had a genotypic full house: they ought to be carrying the Siamese point pattern. She took a female from this litter and mated her to a Champion Chocolate point Siamese.

A year later Dalai She, a female from this litter, was mated to another Chocolate Point, Champion Whitehead Elegante Sun (Sunny). The result was a litter as varied as the colours in a rainbow, as the new litter contained a mixture of kittens; black, chestnut, seal point, chocolate point, lynx point and both mackerel and classic tabbies. There was also an unexpected kitten nestling amongst the others which had dazzling golden spots on an ivory coloured background (golden would now be known as chocolate). This astonishing kitten was named Tonga, and Mrs Daly's daughter thought this little kitten looked so much like the spotted wild Ocelot, that she chose the name Ocicat for the new breed.

Daly didn't consider the possibility that Tonga might herald a new breed when she sold him for ten dollars with a neuter agreement to Thomas Brown, a medical student. A short time later she read an article by Dr Clyde Keeler of Georgia University, describing the extinct Egyptian Spotted Fishing Cat, which he hoped someone would try to reincarnate. Realising then what Tonga might represent, Mrs Daly wrote to Dr Keeler describing what she had just sold as a pet kitten to be neutered. Dr Keeler suggested that Tonga be left entire and bred back to his mother. This planned mating never took place as Tonga was never available when his mother Dalai She was in season, consequently a repeat mating was done between Tonga's father Sunny and Dalai She, and from this mating the second Ocicat, Dalai Dotson was born.

*Original Source of Breed History by Kate Bynum*

*Right: Fun and interesting article about Tonga printed in THE BLADE: Toledo, Ohio, Wednesday, September 8, 1965*

### May Be Unique

## Rare Feline Big Problem For Owners

### Egypt Fishing Cat Likes Steak, Tires Of Bachelor Life

DETROIT, Sept. 8 (AP) — Tonga, believed by his owners to be the only known Egyptian spotted fishing cat in the world, is no angler—he prefers steak.

Because he may be the only member of a breed which became extinct more than 2,000 years ago, Tonga has it easy. But he has complicated the lives of his owners, the Thomas Browns of Detroit.

The troubles began a year ago when the Browns fell in love with "a polka-dot kitten with big ears" in a batch raised by a suburban Berkeley cat breeder.

Mr. Brown, who is studying for a degree in medicine at Wayne State University, and Mrs. Brown, a nurse at Woman's Hospital, began reading cat breeders' magazines.

One of the first articles they read was by one of the leading animal geneticists in America, Dr. Clyde Keeler, describing the Egyptian cat whose statue stands in many museums.

#### Cross-Breeding Urged

"Keeler was urging breeders to cross pure-bred Abyssinians with Siamese in the hope this long-lost breed might be reincarnated," Mrs. Brown said.

The Browns sent pictures of Tonga to Dr. Keeler, who "got pretty excited when he checked with other geneticists and discovered that Tonga was an Egyptian spotted fisher."

Dr. Keeler wrote that he nearly fainted when he read we were planning on having our cat neutered," Mrs. Brown said.

Tonga the kitten became Tonga the cat. It's pretty hard to find a mate when you're the only Egyptian spotted fisher in the world, so Tonga did a lot of yowling—so much that the neighbors complained.

"So the first thing we had to do was buy a home for our cat," Mrs. Brown said. The Browns moved from their apartment to a suburban house. Then Mrs. Brown discovered that she is allergic to cats.

"I took shots and I have to wear a mask when I feed or pet him," she said.

#### Out Prowling

Then there's the threat of having him disappear into the world of mere alley cats.

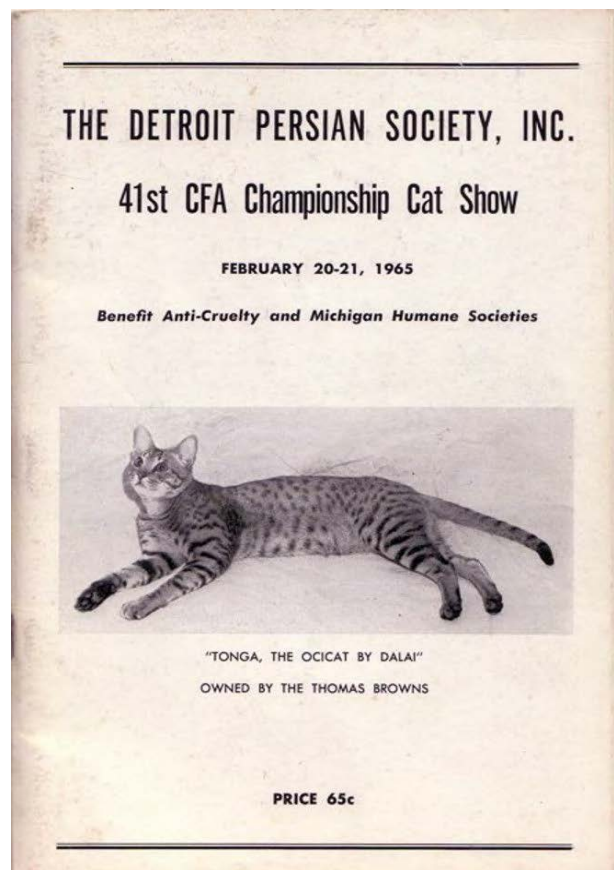
"He got restless and escaped from the house a week ago," Mrs. Brown said, still shaken. "We offered a \$25 reward and all the neighborhood children took off on the search before we found him sleeping in a garage just two doors away."

Ice cream for the young posse cost more than the \$25 offered as a reward.

The Browns also must get Tonga ready for exhibitions, write articles for the cat magazines, and send out hundreds of pictures of their celebrity.

They are currently running ads in cat magazines for a chocolate-point Siamese lady cat with the proper ancestry to become Tonga's mate.

The late Jane Martinke, a Cat Fanciers' Association (CFA, the largest cat registration body in the USA) judge, took a fancy to Tonga at the 1966 Persian Society Show. Daly suspected that Martinke may have played a part in bringing the Ocicat to the attention of the CFA at a Board meeting in September 1966. From this initial registration the Ocicat started having its numbers recorded, but there was an error in the breed definition, as it was listed as being made up of Abyssinian and American Shorthair, which of course was not the right combination. This error was highlighted and reviewed by the board, and as a few Ocicats had already been registered it was agreed to simply add the Siamese. This final combination was a blessing in disguise, allowing breeders to use the American Shorthair and thereby adding size, muscle and the spectacular silver colours to the Ocicat.



In the late '60s Daly took her ailing aunt into her home and care, and her plans for the Ocicat had to be put on hold. When things got going again, an application for provisional status was made in 1981, this sadly failed as while the merits of the breed were appreciated, the application could not meet the required number of breeders. It was for this reason that provisional status was not gained shortly after registration in 1966, but instead had to wait until a further successful application in 1986. With provisional status came the change that only the Abyssinian should be used for further outcross, with Siamese and American Shorthair no longer permitted.

The Ocicat was on exhibition in the Miscellaneous Classes until gaining Provisional status in May 1986. Ocicat breeders were enthusiastic, dedicating their weekends to showing in all regions, and the Ocicat's popularity in the Cat Fancy grew at an unbelievable speed. Championship status was granted by CFA the next year, in May 1987. The Ocicat had officially arrived in the USA and has continued to flourish since that time.

*Original reference for the History written by Kate Bynum*

### **The Ocicat in the UK**

The Ocicat was first seen in the UK in 1988 when Catoninetail Mr Smith and Catoninetail Miss Jones were imported from a cattery in USA. A further four followed in 1989. These were the first of around 33 imported cats (up to 2015) brought to the UK since that time, allowing breeders to work with as varied a gene pool as possible within this relatively small breed. Several outcross matings have also been done to the wonderful Abyssinian in this time: taking advantage of this permitted way to increase genetic diversity.

On arrival in the UK, the Ocicat was admired for its look of the wild, but without the wild blood, as well as its wonderful temperament and intelligence. This admiration united a small group of breeders who worked hard to introduce the breed to the UK. It is a tribute to their hard work and diligence that they achieved preliminary recognition for the Ocicat with the GCCF in June 1997.

Breeders successfully established a uniform type from the diversity that was shown initially, and improved the spotting pattern considerably at this early stage. The Ocicat was later promoted to Provisional status in June 2002 and finally achieved Full Championship status in 2006. It had been a long path for the Ocicat to achieve Championship status in the USA and this was indeed echoed in the UK. This was largely due to the Ocicat remaining a fairly small breed in the UK, leading to difficulties in achieving the required number of exhibits to meet the rules for each stage of breed progression.



The GCCF Breed Advisory Committee (BAC) for the Ocicat was formed in 1999. The BAC was represented by The Ocicat Club and another constituent club supporting the Ocicat at that time which has since dissolved. The Ocicat Club is at this time the sole constituent club supporting the BAC, which is currently aided and headed by an independent Chair and Secretary.

### **The Aztec in the UK**

As can be seen from the history of the Ocicat, the classic pattern of the Aztec has existed since the beginning, so they share the same origins. Classic patterned kittens were usually sold as pets rather than used for breeding, although a few were used in breeding programmes outside UK as breeders felt that their use improved the spotting. While allowed in breeding, they were never eligible to be shown; as an Ocicat can ONLY be spotted, so only spotted cats were allowed on the show bench.

In New Zealand the classic pattern of the Ocicat was recognised by two different registries, one calling it a Jungala and the other a Classicat. These were originally registered as new breeds rather than a new pattern of the Ocicat. This was due to the worldwide description of the Ocicat breed: being that of a spotted cat. Whilst New Zealand have since amalgamated the breeds yet still allow the classic pattern to be shown, it remains that most registration bodies register a classic patterned Ocicat as an AOV (Any Other Variety), or unrecognised variety of Ocicat, meaning it cannot be shown.

In the UK a small number of classic kittens had been born over the years but had all gone as neutered pets. The first of these in the UK died in February 2015, just short of 18 years of age. It was not until a litter was born early in 2007 where one of the two classic patterned females caught the eye of a breeder, who requested the kitten be registered active as a potential breeding queen. This request received consent and support, and set the ball rolling.

With the agreement and support of The Ocicat Club and BAC a group of breeders agreed

to seek recognition of this beautiful pattern with GCCF as a new breed. Worldwide research showed that there was strong feeling to keep the Ocicat breed as a spotted breed, and it was out of respect and total agreement with this that UK breeders chose this option. This path started with application for Preliminary Recognition which was approved in October 2008 under the breed name of Ocicat Classic. This meant they could be shown for Merit Certificates as soon as it was practical for Show Managers to include them in their Show schedules. The first Show where this became possible was the Short Hair Cat Society Show on January 10th 2009. Shortly after this two Aztec studs were imported, one from the States and the other from Europe.

The next stage was Provisional Recognition which was approved at the Council Meeting of GCCF in February 2011. The final achievement came with the promotion to Full Championship status in June 2013. The first show where they became eligible to compete for Championship Certificates alongside the Ocicat was at The Ocicat Club Show held in October 2013.

The BAC subsequently found that the original chosen breed name of Ocicat Classic was causing unnecessary complications in the UK with registrations and show administration, and was not helping to make it clear both at home and abroad that this breed had been distinguished as a new breed which was unique from the Ocicat. A subsequent application was made for a change of name of this fledgling breed to alleviate any further complications. Therefore a change of name to Aztec was submitted to the GCCF Board in April 2015 and it is hoped that once the necessary alterations have been made to the breed documents this name change would be put to council for approval.



*The Aztec breed should now have all it needs to enable it to flourish alongside the Ocicat in the UK.*



***Cuddle time for an Ocicat and an Aztec***  
*The cat on the left is Black Silver, the other is Cinnamon*

## Colour and Pattern

The registration policy is maintained by the BAC and states what breeds can be used in the breeding of any specified breed, what colours are allowed, and how all cats of the breed, including variants or cats of unrecognised colours or patterns, are registered. The GCCF holds copies of the current official policies which are available to download.

### An Ocicat and Aztec cat can exhibit twelve different coat colours:

Three solid (dominant) colours = B Tawny (Black), Chocolate and Cinnamon  
 Three dilute versions of these three = Blue, Lilac and Fawn respectively  
 Six silver variations of all the above = Black Silver, Chocolate Silver, Cinnamon Silver, Blue Silver, Lilac Silver and Fawn Silver.

### GCCF Breed Codes

All GCCF breeds are denoted by a three letter code. This code is then followed by the colour code (which is universal for all breeds). The table on the right gives the codes for the individual colours. The GCCF code system is called GEMS.

The breed code is always used to describe the colour of the cat, but when registering Variants of any breed: the letter "v" is added at the end of the code to denote it is a Variant rather than a full specimen of the breed. Variant registration is covered later in this section, but always refer to the Registration Policy for full details of how to register Variants.

OCICAT	COLOUR	AZTEC
OCI n	Tawny (Black)	AZT n
OCI b	Chocolate	AZT b
OCI o	Cinnamon	AZT o
OCI a	Blue (dilute of Black)	AZT a
OCI c	Lilac (dilute of Chocolate)	AZT c
OCI p	Fawn (dilute of Cinnamon)	AZT p
OCI ns	Black Silver	AZT ns
OCI bs	Chocolate Silver	AZT bs
OCI os	Cinnamon Silver	AZT os
OCI as	Blue Silver	AZT as
OCI cs	Lilac Silver	AZT cs
OCI ps	Fawn Silver	AZT ps

## Pattern

For full registration and exhibition the Ocicat can only be spotted while the Aztec can only be classic tabby. All Ocicat and Aztec kittens are born with their pattern, although the pattern can undergo minor changes as the cat develops, it can never change to a different pattern. However there are more possible patterns or markings that can crop up, these are explained in more detail here:

### Spotted Pattern

The spotted agouti pattern of the Ocicat should follow the basic layout of the classic tabby pattern. The spotted pattern is detailed and intricate, and is described in the Standard of Points for the breed. One distinctive feature of the spotting on an Ocicat is the "bull's eye" pattern on the side of the cat, this should be a single spot circled by a ring of other spots.

The Bull's eye pattern is the key indicator that the spots basically follow the classic tabby pattern: if the spots were joined up, they would make the oyster marking on the side of a classic tabby. The classic tabby pattern is the most recessive of the tabby patterns broken into spots by a modifier gene. *Note on Kittens – The spine line can appear quite solid on some kittens, this usually breaks into spots as the kitten matures*

### **Classic Tabby Pattern**

This is the agouti pattern of the Aztec and is primarily a legacy from the American Shorthair breed used in the origins of the breeds. As previously mentioned it is also the blueprint that the Ocicat spotting pattern should follow. The pattern is detailed and is described in the Standard of Points for the Aztec. The classic markings include butterfly markings on the shoulders and an oyster on the side of the cat. The classic tabby pattern is the most recessive of the tabby patterns, so must be passed on by both parents to be seen in the offspring.

### **Ticked Tabby**

A ticked tabby Ocicat or Aztec Variant is the result of a mating to an Abyssinian. The first generation offspring of these matings are called F1's and are genetically capable of producing offspring of the pattern of the Ocicat or Aztec used in the mating. The F1 hybrid kittens will be agouti ticked tabby which look most like an Abyssinian, except that they would be likely to show faint breakthrough tabby markings such as necklaces, leg barring, tail stripes and even tiny mottled spots on the body.

*Note on Kittens: The breakthrough tabby markings usually become more evident as the kitten matures.*

### **Unrecognised Colours, Patterns or Traits**

From their varied heritage, it is possible for the Ocicat and Aztec to show unrecognised traits in colour, pattern, coat length etc. The Registration Policy for each breed allows for the registration of known unrecognised traits, often with no-progression: meaning the cat cannot be used for breeding because of the exhibited trait. It is important to identify and register any offspring with an unrecognised trait properly as it might be of relevance for future breeding plans. For example it might be a trait that breeders consider important to avoid, which might warrant further discussion by the BAC. It might equally be true that an expressed trait highlights a slightly different genetic make up to most examples of the breed, which might be considered as a potential breeding cat for that reason. In effect there is the potential that an unrecognised trait could be selected by an experienced breeder as an "in-house" outcross to help breed diversity.

### **Mackerel Pattern**

The Mackerel pattern is still an agouti pattern which is then modified into spots, but it is incorrect for the Ocicat standard. The Mackerel tabby pattern is dominant over the recessive Classic tabby pattern that should be seen on the Ocicat. If observed on an Ocicat, the spots would be arranged in vertical bands along the side of the cat, resembling the look of the stripes on the Mackerel fish which gives the pattern its' name: such a cat would be missing the Bull's eye pattern. Mackerel pattern cats are possible, and should be avoided in breeding programmes if encountered.



## Solid Pattern

While not technically a pattern the solid cat should actually not exhibit a pattern at all, and would appear as a single coloured (or self) cat. A faint pattern can sometimes be seen and is referred to as a "ghost" pattern. This is similar to the faint markings that can sometimes be seen on a Black Panther, which is the solid counterpart of the Leopard. Clearly there is more at work here than is currently known of cat coat genetics, as a Solid (or self) cat would expect to be non-agouti, meaning the hair shaft would all be one colour. Yet for faint pattern to be seen the cat must have some agouti banding. When the hair is stroked backwards so the roots can be seen, the colour of the hair shaft should be more or less the same from the root to the tip. Solid coloured examples have been seen very rarely in the UK.

## Smoke

Smoke is a term used for a cat that looks to be one solid colour, but is in fact two colours. A smoke cat will have a lighter colour undercoat, so only when the coat is pushed backwards or parted will the lighter, silvery colour be seen. However, it can be more difficult to see if a cat is a smoke with the dilute colours as the whole hair shaft is paler. No smoke cats have been seen in the UK to date. The smoke is an expression of the silver inhibitor gene, so at least one parent needs to be silver in order to produce a smoke kitten.

## Ivory

An Ivory is a legacy from the Siamese heritage in being a pointed pattern. Due to selective breeding the pattern is seen less today than at the outset, but can and does still crop up from time to time. A pointed pattern is where the extremities of the cat exhibit darker markings than the main body of the cat: the face, tail and paws would all be the darker points. As in the Siamese breed, an Ivory kitten is usually born white with no visible markings, and later develops the characteristic points. An Ivory cat often exhibits faint or "ghost" pattern as seen on either the Ocicat or Aztec. They have Blue eyes which is not an acceptable eye colour. They can be striking and beautiful cats indeed, and occur as an infrequent reminder of the heritage of our breeds.



*A striking Ivory Variant*

*Note: An Ivory as described above is also possible without the blue eyes (any other colour), also possible with darker points (the description is the same in all other ways). It is unknown how this possibility was introduced into the lineage of the Ocicat and Aztec breeds, but is reasoned to be from the Burmese gene: which will allow eye colours other than blue, and when expressed equally alongside the Siamese gene will exhibit the Tonkinese colour restriction to create an Ivory with darker points.*

## Long Hair

The UK has not seen any long haired Ocicats or Aztecs to date, but they have cropped up in other parts of the world on occasion, so are worthy of mention. There are several cats in the origins of the Ocicat that have since been traced as carriers of the gene for long hair. This information was found from research into the Somali breed, and even suggests that

the foundation female to the Ocicat, Dalai She, had an Abyssinian grandfather who has been considered to be a carrier for long hair via Somali pedigree research. Long hair is not something that is a desirable trait in our breeds, but since the long hair tends to show later, often between 5 and 6 months of age, it is helpful to remain aware! The Long Haired gene is recessive so can be carried.

*Note: As the Long Haired possibility was not known to exist when developing the current Registration Policies, there is no provision for the registration of Long Haired Variants. Should the need arise, it will be a matter to be put to the BAC for consideration.*

### **Registering Ocicat Variants**

The first generation (F1) progeny of an Ocicat x Abyssinian mating will be registered as an Ocicat Variant using the appropriate colour code for the cat with the additional code to denote a ticked tabby e.g. A tawny ticked offspring from such a mating would be coded as OCI n 25 v (25 being the ticked tabby code).

When the F1 Ocicat Variant is mated to an Ocicat, the spotted kittens will be registered as Ocicats, the classic patterned kittens will be registered as Aztecs and all other kittens will be registered as Ocicat Variants.

### **Registering Aztec Variants**

The first generation (F1) progeny of an Aztec x Abyssinian mating will be registered as an Aztec Variant, using the appropriate colour code for the cat with the additional code to denote a ticked tabby e.g. A chocolate ticked offspring from such a mating would be coded as AZT b 25 v (25 being the ticked tabby code).

When the F1 Aztec Variant is mated to either an Ocicat or Aztec, the spotted kittens will be registered as Ocicats, the classic patterned kittens will be registered as Aztecs and all other kittens will be registered as Aztec Variants.



*A mixed litter, from left to right: Black Silver Aztec, Black Silver Ocicat, Ivory Variant and Cinnamon Silver Aztec.*



*The "ghost" pattern and blue eyes can be seen on this Ivory Variant. This is the same cat as the kitten shown on the left, illustrating how much the coat changes with maturity.*

## Genetic Guide

It is good for any breeder to have a sound general understanding of genetics in order to better understand what they are doing, and what they can select for, or against in their breeding programme. Contained in this section are some relevant terms with brief explanations.

### Basics

- Cats have 19 pairs of chromosomes.
- Each parent supplies one member of every pair.
- Along the chromosomes are genes.
- Each cat inherits two alleles of each gene: one from each parent.
- An allele can be recessive or dominant.

Listed in this guide are the main genes used to define the Ocicat and Aztec breeds through the expression of pattern, colour and coat, but of course there are a large number of other genes that together create the shape and conformation of these breeds.

*In most cases with genetic codes a Capital letter denotes dominance and a lower case letter denotes recessive.*

### General Terms

<b>Allele</b>	A specific variation of a gene.
<b>Gene</b>	A Section of DNA that controls a certain trait.
<b>Recessive</b>	A recessive allele only shows if the individual has two copies of the recessive allele e.g. the allele for cinnamon is recessive, so a cat needs two copies to be cinnamon.
<b>Dominant</b>	A dominant allele always shows, even if the individual only has one copy e.g. the allele for tawny is dominant to all other colours, so a cat only need one copy of the allele to be tawny.
<b>Heterozygous</b>	If the two alleles are different e.g. A tawny cat which carries a different colour (chocolate or cinnamon) rather than another tawny allele.
<b>Homozygous</b>	If the two alleles are the same e.g. A cinnamon cat must have two copies of that colour allele to be cinnamon.
<b>Genotype</b>	This describes the actual alleles a cat exhibits or carries (including recessives) e.g. A cinnamon cat which carries the dilute allele can produce fawn progeny.
<b>Phenotype</b>	This describes what the cat looks like e.g. A cat might look cinnamon, but be genetically tested to be chocolate.
<b>Locus</b>	(plural loci) Is the specific location of a gene (or other DNA sequence) on a chromosome.
<b>Outcross</b>	This is a mating between two cats that are not related, whether of the same breed or a different breed.
<b>Polygenes</b>	A group of non-allelic genes that together modify or influence the way another gene is expressed.

## Breed Specific Terms

- A** The dominant wild-type gene responsible for an agouti coat. An agouti coat has bands of colour on each individual hair shaft which make up the pattern of the cat.
- a** The "Non-Agouti" recessive to A above. This is responsible for solid or self coloured cats, where a cat should not exhibit a pattern as it has no banding to the hairs.
- T<sup>a</sup>** The dominant allele for the ticked tabby pattern i.e. An Abyssinian cat (*Originally coded as t<sup>a</sup>*).
- Mc** The allele code for the mackerel tabby pattern. Recessive to ticked tabby and dominant to classic tabby (*Originally coded as T*).
- mc** The allele for the classic tabby pattern (*Originally coded as t<sup>b</sup>*).
- Sp** The spotted tabby allele is a dominant modifier of mackerel and classic tabby patterns, breaking the tabby pattern into spots. However, it is not yet fully understood what varied genes or genetic modifiers create the Ocicat's spotted pattern.
- I (Inhibitor)** The dominant allele responsible for Silver. This inhibits the development of the yellow pigment in the hair shaft resulting in a silvery white base on an agouti cat. On a non-agouti cat the inhibitor removes colour from the base of the hair shaft leaving the colour in the rest of the shaft and can result in a Smoke. The non-inhibitor allele which allows full pigment expression is i. *Please note: Silver is not a colour gene, as Silver is only produced by the inhibitor.*
- L** The dominant allele for short hair coat length.
- I** The recessive allele for long hair length.

## Colours

- B** Black (Tawny) is the most dominant of the breed colours: only one copy is needed to be Black.
- b** Chocolate is the second most dominant colour: Chocolate is recessive to Black but a dominant to Cinnamon.
- b<sup>1</sup>** Cinnamon is the least dominant: Cinnamon is recessive to Chocolate and Black and requires two copies of cinnamon in order for a cat to be cinnamon.
- O** Sex-linked Red
- o** Cream is the dilute of Red

## Coat Expression

- C** The allele for full colour is dominant to the next two colour codes
- c<sup>b</sup>** The allele for the Burmese colour restriction (*co-dominant with c<sup>s</sup> if combined\**)
- c<sup>s</sup>** The allele for the Siamese (Himalayan) colour restriction (*co-dominant with c<sup>b</sup> if combined: \*expressing the Tonkinese colour restriction*)
- D** Full density in colour i.e. Tawny, Chocolate and Cinnamon
- d** Dilute density in colour i.e. Blue, Lilac and Fawn
- Rufous** Rufous Polygenes can affect the richness of the coat colour.

## Genetic Diversity

Worldwide breeding programmes have always encouraged the use of controlled outcrossing in order to expand the gene pool and maintain it at a healthy size. During the development of the Ocicat breed outcrosses took place with Siamese, American Shorthairs and Abyssinians, creating diverse foundations for the breed. Now only the Abyssinian may be used for the Ocicat and Aztec breeds, and this ongoing allowance for outcrossing will ensure that a steady trickle of new blood guards against the shrinkage that can occur in a closed gene pool.

The study, 'Variation of cats under domestication: genetic assignment of domestic cats to breeds and worldwide random-bred populations', 2012, found that the Ocicat has an average effective number of alleles of 1.78, compared to an average of 1.79 across all breeds included in the study. This compares favourably to some other breeds and indicates that it does not have low genetic diversity. Continued outcrossing to the Abyssinian breed remains both necessary and beneficial, with the genetic diversity remaining a prime focus.

Genetic diversity refers in this case to the diversity within the Ocicat and the Aztec breeds. The greater the genetic diversity within a breed, the greater that breed's chances are of long-term vigour. This is because negative traits (such as inherited diseases) can become more widespread within a population when that population is left to reproduce only with its own members.

Inbreeding depression is basically the opposite of genetic diversity, resulting in the reduced genetic vigour in a given population as a result of inbreeding, i.e. breeding of related individuals. In general, the higher the genetic variation or gene pool within a breeding population, the less likely it is to suffer from inbreeding depression. Care needs to be taken by breeders to understand the genetic make-up of the cats they are working with, in order to better understand how to maintain or improve the genetic diversity.

Any particular breed of cat is specifically bred to resemble their breed standard, so is expected to be genetically similar. This is not a problem unless the percentages of similarities become too high, as it is possible that as well as "fixing" desirable traits into a breed by making the cats more similar genetically, it can also introduce or "fix" in undesirable traits.

It is possible via pedigree analysis, to calculate how related two cats are to one another, this can give a good indication of genetically similar two cats might be when considering a mating. The calculation of how related two cats are is called the inbreeding coefficient.

The coefficient of inbreeding (COI) should be used as a helpful tool when breeders are making breeding plans. The COI is a measure of the likelihood of genetic effects due to inbreeding that could be expected based on the known pedigrees. The BAC recommends that the GCCF Breeding Policy should be read fully by all breeders, but below is a summary of some relevant points:

- *The importance of monitoring the percentage intensity of inbreeding for any mating, because of the risk of introducing or expressing detrimental factors or anomalies.*
- *Highlighting the benefit of a computer program such as "Breeder's Assistant" or*

*similar, which can automatically calculate the percentage of inbreeding for a planned mating.*

- *That a degree of inbreeding between 0% and 25% over a pedigree of at least eight generations should be regarded as acceptable.*
- *A degree of inbreeding above 25% further advice is given for proceeding with great care, and sound knowledge of the pedigrees.*

For the Ocicat and Aztec breeds, where possible the COI should be kept lower than 25% over 8 generations. Breeders are encouraged to try to select matings where the COI falls slightly over each generation, ideally always viewed over the suggested eight generations. Breeders are also encouraged to make use of the permitted outcross to the Abyssinian, and should consider working with others to make the best use of the resulting offspring.

The BAC advises breeders to learn about and understand their breed, and to seek advice and support if or when needed to enable them to make the best breeding decisions. Equally any breeder registering a kitten as a potential breeding cat should be willing to mentor and advise the new owner on the potential mates available, and to offer ongoing advice and support. If the breeder is unwilling or unable to offer mentoring then upon request the BAC will nominate a mentor.

It is a recommendation that COI percentages are included on pedigrees and on mating certificates.



**Chocolate Silver Aztec**  
AZT bs



**Cinnamon Silver Ocicat**  
OCI os



**Blue Silver Ocicat**  
OCI as



**Lilac Silver Ocicat**  
OCI cs

## Breeding Practices

### Overall Health and Well-being

The most important thing in any breeding programme is to ensure the overall breed health and well-being - to make as much use as possible of available information to maintain the required type and standard of a breed while protecting the genetic diversity and vigour above all else. The bottom line is that type can be regained more easily than health in any breed.

### Breeding for improvement

This is of secondary importance to genetic diversity, but is of course of important consideration to breeders.

### Type

The Ocicat and Aztec breeds are noted for their "wild" appearance and are described as being of moderate type. The moderate type definition basically means nothing too extreme and should be preserved, with no extreme type breeding advised e.g. selecting for huge ears or different head shape. The head shape of the breeds is a key factor in getting the correct look. If the head is too round or too Oriental the wild look will be lost. All cats should be solid in body, rather long, with a well-muscled chest, substantial muscle and bone development and an overall elegance. The Ocicat and Aztec should be cats of substance, with broad chests, heavy bones and not at all frail. Small boned, fine built or Oriental type cats are less than ideal, as are a British head or body type.



*The shape of the head is very important for the right look. Seen here an adolescent head.*

The build and substance of potential parents should be considered carefully to see if they complement one another, or if such a pairing could improve on a less desirable type. e.g. a cat with a finer muzzle and/or weak chin mated to a cat with a very square muzzle and/or strong chin in the hope of the required improvement showing in the kittens.

In making any selection for potential breeding, look at the overall impression of the cat first and foremost. Does the cat have good and pleasing proportions between head, body and tail for example? Is the cat solid feeling and muscular? Is the muzzle broad with a definite suggestion of squareness? Is the ear set too high or too low? These are the sort of things to consider before scrutinising the Standard of Points for the finer detail.

It is important to note that as kittens mature they can become very out of balance for short periods, as some parts of them seem to grow more quickly than others! So a youngster can change a lot from week to week, and can sometimes be in the middle of a lot of changes when they are being assessed as a potential breeding cat. For this reason some breeders may choose to keep them a little longer than 13 weeks in order to see how they develop before making a final decision.

## **Coat**

The coat should be short, satiny in texture with a lustrous sheen. A close-lying and sleek coat is the ideal, with no suggestion of woolliness. It is not desirable if the coat is over long and fluffy, or coarse and greasy in any way. No white spotting or lockets should mar the coat, as this is a withholding fault in both breed standards. White is unacceptable anywhere other than around eyes, nostrils, lips, chin and upper throat (with the exception of white agouti ground in silver colours).

A kitten's coat is changeable as it matures, and each kitten may go through a "fuzzy" stage, usually before 13 weeks of age. This is a natural change as the kitten develops its adult coat, but it can be alarming when a kitten which had a lovely clear pattern suddenly looks as if the pattern is less distinct and out of focus! If you look closely you will see the reason the pattern looks fuzzy and out of focus: the coat is actually at two different lengths while the adult coat develops. The original pattern seen on the youngster will return, and the coat will again become close lying once the coat has matured and is all one length once more.

## **Colour**

History has shown that breeding silver to silver or solid to solid produces offspring with better colouring than when mixing silver and solid parents. This is because breeding a silver to a solid colour can give higher incidence of tarnish. Tarnish is undesirable and is characterised by brownish markings which detract from the silver colour of the coat. It is not known exactly what causes tarnish, although some people believe it may be linked to rufous polygenes. Tarnishing is most often seen on the face and paws of the cat, but can appear anywhere, and it should be noted that it is only truly possible to distinguish tarnishing on a black silver, as a chocolate or cinnamon silver could have coloured markings that could be mistaken for tarnishing. However any silver cat that exhibits such markings might not be selected for further breeding or showing if it detracts from the look of the cat.

Silver to silver matings over several generations have been shown to produce less tarnishing and clearer, brighter silver base coats in the cats. One silver parent mated to a solid cat can give both their solid or silver offspring a cooler version of the coat colour e.g. A chocolate cat can exhibit a (very) dark bitter chocolate colour on a pale greyish ground.

Solid to solid matings over several generations tend to produce much warmer and richer toned colours in the offspring, assumed to be from the cumulative effect of rufous polygenes e.g. The term "hot chocolate" is often used to describe a very rich warm chocolate that can sometimes be mistaken for cinnamon. It is however genetically chocolate.

Of all the possible 12 colours which can be bred in the Ocicat or the Aztec, the ideal offspring of any colour will have a good contrast between the pattern colour and ground colour with a clear distinct pattern. Poor contrast, faded pattern or heavy tarnishing should be avoided.

Breeders can utilise available DNA tests if they are unsure of the colour of a cat, or wish to know what colour is carried by the cat. While the colour is usually visually determined by the tail tip, sometimes it can be hard to tell, so if it matters to your breeding plans then



fortunately it is quick and easy to test\*.

*\*The Ocicat Club has joined a Club Scheme with Langfords Veterinary Clinic in the UK: who conduct most available DNA tests, including colour testing. A discount code can be provided by the Club if any breeder wishes to use their services.*

### **Limiting inbreeding**

Breeders should not overuse breeding cats i.e. not put too many offspring with identical or very similar pedigrees into the breeding population in any given generation. Basic breeding considerations:

- Ideally work to reduce the COI of matings over time.
- Make use of the outcross potential to the Abyssinian where possible.
- Work with other breeders in progressing an outcross mating.
- Import well researched bloodlines if able.
- Monitor carefully any health anomalies that might arise.

### **Selection of suitable matings**

Many breeders are not in a position to import cats, so need to make use of suitable available mates already resident in the UK. This can be done by working in partnership or larger groups with other breeders, or by individually approaching a breeder to discuss a potential mating with one of their cats. It is recommended by GCCF, The Ocicat Club and the BAC that agreements made between breeders on the use of breeding cats or matings be put in writing to make clear what is expected from all parties in advance.

If breeders choose to make use of the COI percentage to determine how related two cats are prior to mating: they should ideally use the GCCF recommended 8 generations where possible and read the guidance given in the GCCF Breeding Policy alongside this information. Breeders can also make use of Pedigree Software or the Ocicat database at Pawpeds ([www.pawpeds.com](http://www.pawpeds.com)), where test matings can be performed between any pedigrees that are contained in the system.

*It is important to note that if making COI comparisons with another breeder: to make sure you are both using the same program or website over the same number of generations, or the comparison will have no relevance.*

The GCCF Breeding Policy requires the offspring from the mating of closely related cats to be placed on the non-active register, UNLESS there is a specific purpose advised by the veterinary or genetics committee, is supported by the BAC and which may also need approval by the Board. This does not exclude breeders conducting test matings of closely related cats themselves, if they deem a need to test for any genetic anomalies where a DNA test might not be available: this can be done on the proviso that the offspring are registered non-active and not used for further breeding. In this instance a close mating would be:

1. Mother to Son
2. Father to Daughter
3. Full Siblings

New breeders can obtain advice and guidance from the breed Club/s and the BAC. They

should also be able to expect ongoing support from any breeder who provided their foundation cat or cats.

### **Imported Cats and Outcross to Abyssinian**

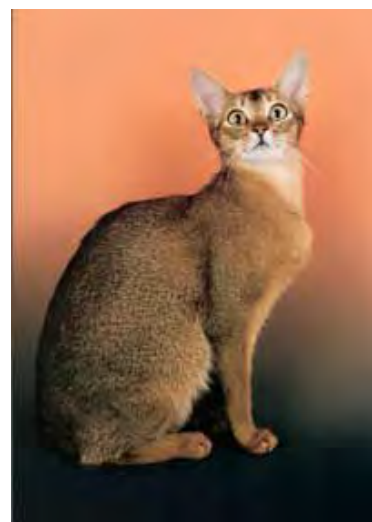
Breeders should remain mindful that imported cats or outcross to the Abyssinian can bring a healthy boost to the genetic diversity of the UK population if carefully selected.

All imports to GCCF have to meet certain requirements, but it is important to remember that in addition to this the Ocicat and Aztec Registration Policies add some breed specific requirements, so it is important to check this at the outset. For example: the Ocicat and Aztec Registration Policies require imported cats and Abyssinian cats used for outcross to be tested or deemed clear of certain genetic traits, these are outlined in the Health Section of this policy.

Generally the required breed standards worldwide are very similar to the UK standard for the Ocicat and Aztec, so dramatic variation in type is not likely to be a concern when importing.

### **Abyssinian Outcross**

The Abyssinian type is not as substantial in build as the Ocicat or Aztec, and breeders often worry about loss of type when using a different breed for an outcross mating. The type is similar enough between the two breeds and it has been proven that even a second generation kitten can be a good example of the breed it is helping to improve. It is always good practice to have a plan when embarking on an outcross programme, with an ideal to plan at least two generation for the matings you hope will take place i.e. After the initial mating to an Abyssinian, have a plan of the cat you hope to take the resulting F1 offspring to for mating, and make sure this is possible. No time is wasted on planning ahead, and having a back up plan in case of unforeseen circumstances is also advised.



The stunning ticked Abyssinian

### **Choosing which hybrid to breed on with**

All F1 kittens would normally be ticked and look (phenotypically) most like little Abyssinians\*, although some breakthrough tabby markings are often visible. Such visible markings could include leg stripes or barring, faint neck markings, or even "ghost" spots or classic pattern on the body. Generally the best way to select the best kitten or kittens to breed on with is to look at the kitten overall and select for the best temperament, boning, head type and general structure rather than focusing on the finer details of the standard which will be easier to assess in the next generation.



*A ticked F1 Ocicat x Abyssinian hybrid*

*\*When an Abyssinian owner has allowed the use of their cat for the benefit of outcross to another breed, you undertake a great responsibility on behalf of that donor breed. ALL offspring from such a mating MUST be registered as a Variant of the breed it is to become. The reason for such care is that a cat that "looks" like a breed but is in fact a hybrid, might fall into the wrong hands and be mated as if it were the breed it looks like. This could inadvertently introduce undesirable traits back into the helpful donor breed. It is therefore of great importance that breeders respect the purity of the Abyssinian breed as much as the breed or breeds they are working with.*

If the owner of the Abyssinian is willing to help you with an outcross mating, and the Aby has tested clear of the specified health issues contained in the registration policy, then you are almost good to go.

While some of the common things such as PRA and PKDef can be easily tested for and cleared before any mating takes place, unfortunately not everything can be tested for in this way. It makes sense to use an older, more established breeding Abyssinian so you can be more confident of the absence of any other known health concerns e.g. Amyloidosis which is a rare condition affecting the kidneys.

### **Sex-linked Red**

The sex linked red and cream colours are not recognised in the Ocicat or the Aztec breeds, but are possible in the Abyssinian breed. It is therefore a point of note: to not select a red or cream Abyssinian for an outcross mating. This would introduce an unrecognised colour range which could result in tortie Ocicats or Aztecs, which is not desirable as it would detract from the respective pattern of the coats. Sorrel is an acceptable colour for an Abyssinian outcross, as this equates to the cinnamon in the Ocicat and Aztec. If there is any doubt in the genetic colour of the cat it can be verified by DNA testing.

*The full registration policies can be found on the GCCF website.*



## Health Anomalies

The Health of the Ocicat and Aztec carries as much importance as the health of any other animal and should be considered with care. The soundness and improvement of the breeds depends on making educated decisions based on current knowledge and testing protocols. The Ocicat and the Aztec are not unhealthy breeds, they do however have their share of health concerns common to many breeds.

Not all health problems are genetic, some are viral, congenital or can be caused by dietary or environmental factors. All breeders should take a responsible approach to record any observations related to health. It is important that breeders keep good health records and veterinary evidence for any issues encountered, and share knowledge in a polite and considerate manner when defects or disease occur. These things are not anyone's fault, and good health management is essential for the protection and longevity of our breeds. The BAC will always review any breed relevant health information submitted, and will take appropriate action to amend breed guidelines or policies if required\*.

### Health Anomalies included in the Registration Policy

#### **Pyruvate Kinase Deficiency**

Pyruvate Kinase Deficiency (PKDef) is an inherited disease of Abyssinian and Somali cats. Pyruvate Kinase is a red blood cell enzyme important in red blood cell energy metabolism. If this enzyme is lacking, a haemolytic anaemia can result. However, the anaemia may only be mild and intermittently detectable, or may not become evident until the cat is older. A rapid severe life-threatening anaemia can also develop. The disease is inherited as an autosomal recessive trait, so only cats homozygous (two copies) for the defective gene are affected. Heterozygous (one copy) carrier cats are clinically healthy but can pass the defective gene to their offspring.

#### **Progressive Retinal Atrophy (PRA)**

##### **PRA rdAc**

In Abyssinian, Somali and Ocicat and Aztec breeds, an inherited late-onset blindness condition has been identified and is characterized by progressive degeneration of the photoreceptors (rods and cones) in the retina. This disease has been designated "rdAc". Cats affected with this form of blindness have normal vision at birth, with degeneration beginning as early as seven months of age. Vision loss progresses slowly and is variable, with most cats becoming blind by usually 3-5 years of age. There is no treatment available for the condition. This is an autosomal recessive condition, thus the disease is not associated with gender and two copies of the mutation are required for the cats to lose their vision. Carriers, cats that have one copy of the mutation, are not affected and have normal vision but could pass this on to their offspring.

##### **PRA Rdy**

A different form of blindness called "rod cone dysplasia", or "Rdy" has also been identified in Abyssinian and Somali cats. This mutation also results in a defective protein that is critical for eye development. Cats carrying one copy of this mutation have retarded development and degeneration of photoreceptor cells, which leads to early-onset blindness by 7 weeks of age. Current information suggests that the "Rdy" mutation is

restricted to the Abyssinian and Somali breeds. The "Rdy" mutation is inherited as a dominant trait. Cats that have one or two copies of the mutation will be affected. The Rdy mutation is rare.

### **\*The BAC at Work**

In 2012, the Registration Policies for the Ocicat and Aztec were altered after an imported cat was subsequently found to be a carrier for PRA rdAc. This was discovered as a direct result of co-operation between breeders, as the possible risk was first highlighted to the UK owner by European breeders. The owner of the stud carried out DNA testing and proved that the stud was indeed a carrier. Fortunately the owner had previously DNA tested all the queens which had been used with this stud for PRA, and all were clear, so could at least be certain that no offspring could actually be affected. This did not mean of course, that some offspring could not be carriers. All breeders who had offspring from the stud were notified, with all relevant cats being duly tested, as well as notification being made to the BAC. The BAC took heed of the risk posed by PRA and amended the Registration Policy as a result to support the genetic management of the breeds.

### **Other Health Anomalies reported in Ocicat and/or Aztec litters**

Umbilical Hernia - is an opening in the muscle wall where the umbilicus (belly button) is located. The hernia allows the abdominal contents to pass through the opening.

Cleft Palette - is an abnormal opening in the roof of the mouth, resulting in an opening between the nasal passages and the mouth.

### **Chest Deformity**

- Pectus Excavatum (PE) - is a congenital malformation of the sternum, in appearance, the middle of the chest appear to be flat or concave, rather than slightly convex.
- Flat Chested Kitten (FCK) - characterised by a dorsoventral flattening of the rib cage.

### **Heart Disease**

- Endocardial Fibroelastosis (EFE) - is where an elastic thickening of the endocardium (lining of the interior surface of the heart chambers) occurs.
- Hypertrophic Cardiomyopathy (HCM) - is where the heart muscle becomes thickened and eventually the heart is unable to pump blood efficiently and effectively.
- Atrial Standstill Cardiomyopathy - is distended atria with an abnormal heart rhythm characterised by absence of P waves.

It is not recommended to breed from an affected cat e.g. even if a condition such as a hernia has been surgically repaired, or a Flat Chest has naturally corrected with maturity. To breed from such a cat creates the possibility of increasing the risk of any genetic disposition being passed on and kitten health should not be compromised.

### **Blood Typing**

Blood type B appears to be very rare in the Ocicat and Aztec, and has not been seen in the UK to date. It is however, recommended that cats with blood type B should not knowingly

be introduced into any breeding programme in order to prevent the occurrence of known problems with blood type incompatibility.

Blood type incompatibility can result in a condition called Neonatal Isoerythrolysis (NI), which results in fading kittens with symptoms such as weakness, jaundice, dark-coloured urine and tissue death, particularly at the extremities, such as the tail. The condition is frequently fatal for the kittens, presenting a strong reason to work hard to avoid this issue within the UK Ocicat and Aztec population.

Abyssinians have a low incidence of blood type B, but it is known to be present in the breed. Data from Urs Giger and Margret L. Casal suggests around 14%. Breeders undertaking outcrosses to Abyssinians should be aware of this, and avoid the use of blood type B cats where possible.

<b>DNA testing can give the following results:</b>
<b>Type A</b> ( <i>homozygous for dominant A</i> )
<b>Type A</b> ( <i>heterozygous, i.e. carrying the gene for B</i> )
<b>Type B</b> ( <i>homozygous for recessive B</i> )
<b>Type AB</b> ( <i>Rare third blood group</i> )

The recommended method for blood type testing is the DNA test, as DNA testing is less intrusive for the cat and provides more detailed information.

The blood test to determine blood type is the less favourable option as it is more intrusive for the cat and it cannot differentiate between the homozygous and heterozygous forms of Type A blood. Only the DNA test can show if an A type cat carries B or not (see table).

### General Health

A veterinary study on genetics (*Introduction to Veterinary Genetics by F.W. Nichols*) says on anomalies: a normal rate is between Zero and 2.5% of offspring to show any sort of defect caused by natural variation (i.e. coincidence) in any mammal. If the percentage of kittens stillborn, defective or sick is much higher than this, genetic depression could be the cause.

On rare occasion it may be acceptable to follow veterinary scientific advice to conduct a test mating. This requires repeating a mating in which problems have occurred, in an attempt to determine if a problem is inherited or otherwise. This should only be done when absolutely necessary, with due concern given to the health and well-being of any potential offspring, as it might be considered a risk too great to take.

In general the Ocicat and Aztec have proved to be a primarily healthy breed in the UK, with only a small minority succumbing to some of the unfortunate nasties that any cat can fall victim to. With the ever growing understanding of the genetic make up of our feline friends, along with the increasing availability of DNA testing for specific issues and better knowledge of an appropriate diet: the hope is that this can only improve.



*Left: Tawny and Chocolate Ocicat kittens.*

*Right: A newborn Aztec and Ocicat already sporting their wonderful coats*





**Tawny Ocicat**  
OCI n



**Cinnamon Aztec**  
AZT o



**Lilac Ocicat**  
OCI c



**Tawny Aztec**  
AZT n



**Black Silver Ocicat**  
OCI ns



**Chocolate Ocicat**  
OCI b



**Fawn Silver Ocicat**  
OCI ps

**Fawn Ocicat**  
OCI p  
(pictured right)



**Blue Ocicat**  
OCI a





