

**BIRMAN BREED ADVISORY**  
**COMMITTEE**

**RECOMMENDED BREEDING  
POLICY FOR THE BIRMAN CAT -  
BREED NUMBER 13c**



***INDEX***

## ***INTRODUCTION:***

This breeding policy accompanies and supplements the Birman Registration Policy and should be read in conjunction with that document.

The aim of this breeding policy is to give advice and guidance to ensure breeders observe what is considered “best practice” in breeding Birmans. The over-riding objective is to improve the Birman cat, working to meet all aspects of the Standard of Points, which describes the ideal for all of the recognised colours in the Birman, whilst ensuring the overall health of the individual cats, which should be the prime concern of all breeders.

The Birman is one of the cat fancy’s oldest and most popular breeds. It is known for its laid-back, affectionate personality and is generally regarded as a good choice for a dependable family pet. It has a distinctive look combining a silky long coat with a colourpoint pattern in a range of colours. Its special feature is its white feet, caused by the unique gloving gene.

## ***AIMS:***

***The aims of the Breeding Policy are as follows:***

- a) To encourage the breeding of Birmans which conform as closely as possible to the GCCF Standard of Points.
- b) To promote the breeding of Birmans with sound conformation, good temperament, good health and free from deleterious alleles or defects known to be heritable traits.
- c) To accomplish the development of Birmans over the full range of colours from 13c1 to 13c20 without causing either the deterioration of, or effecting the introduction of undesirable alleles or defects into the breeding stock of, other varieties of pedigree cat (e.g. the white gloving gene).
- d) To further the health, welfare and care of Birman Cats at all times, in keeping with their role as domesticated companion cats.

## ***ORIGINS AND HISTORY:***

The Birman originates in Burma, although it is not similar to the Burmese breed. To avoid confusion between the two the Birman is sometimes referred to as the Sacred Birman or the Sacred Cat of Burma. The breed’s history is more closely linked to the Siamese, although the two breeds developed along vastly different paths.

Birmans first came to France in 1919 although there are conflicting stories about their arrival. It seems that an Englishman and a Frenchman, Major Gordon Russell and his friend August Pavie, were given a pair to thank them for their part in protecting the priests and sacred temples of the Khmer people during the Brahmin Uprising. The cats were a male and a female named Madalpour and Sita and records say that they were brought to France by a rich American called Mr Vanderbilt. Sadly Madalpour died during the long boat journey, but Sita arrived well in Nice and came into the possession of an Austrian woman, Mrs Thadde Hadisch, who lived there. Just one of the kittens survived, a well-marked female named Poupee (the French word for doll).

At this time pedigree records were seldom kept, genetics were little understood and breed standards had not been formalised. There were several similar types of cat from the Far East being imported and kept in France, including Siamese and Birman and other cats referred to as Laotians and Khmer cats. The white toes, still seen today in street cats from Burma and Thailand, which were present on the Birman were also seen on many Siamese, but were eventually bred out as a fault in that breed. The Laotians were much like early Siamese and the Khmers were longhaired colourpoint cats without white toes. In the absence of any suitable males Sita and Poupee had to be mated to these other related varieties, and so the Birman breed was slowly built up and established. A formal cat registry was set up in France in 1925 and pedigrees were recorded.

The breed would have continued to go from strength to strength if it had not been for the outbreak of war in 1939. By the end of the war the breed had almost been destroyed and was again just down to two cats: Orloff and Xenia de Kaabaa, both belonging to Mr Baudoin-Crevoisier. A new programme of outcrossing was undertaken to save the breed, including matings to various cats including Siamese, Persian type longhairs and French domestic cats. It was at this time that the regular seal point variety was joined by the blue points. The breed was once again re-established and standardised and gained popularity.

During the 1960s the Birman was exported from France, arriving in the USA and in 1965 in the UK. Mrs Elsie Fisher had encountered Birman at a cat show in Paris and she and her friend Margaret Richards arranged to import a seal point male, Nouky de Mon Reve, and two blue point females, Orlamonde de Khlaramour and Osaka de Lugh. The breed was granted championship status immediately and Nouky and Osaka soon gained their titles. The first litter of Birman in the UK was born in July 1966 and contained no less than eight kittens.

Further cats were imported in the following years to bring in new breeding lines. Then during the 1970s a group of breeders started some experimental outcrossing to introduce new colours to the breed. In 1974 Elizabeth Brigliadori (Shwechinthe) and Shirley Wilson-Smith (Mandessa) bred the first Chocolate and Lilac Point Birman, although it took many years to fully establish the varieties. Then in 1975 Margaret Richards bred the first Red Points: Mei Hua Firefly and Mei Hua Firebird. Finally in the 1980s the first Tabby Points were bred by Pam Healey (Sibir) and Shirley and Chris Stanton (Julipaul), with Julipaul Enrico and Julipaul Esmeralda being the first seen out at cat shows.

#### ***BIRMAN TYPE:***

Birman are long, large and well-boned cats, of good substance for their age, with thick-set legs of medium length and short, strong paws. They have a strong broad and rounded head with medium sized ears that are spaced well apart. Their nose is medium in length with no "stop" but with a slight dip to the profile. The cheeks are full and round, tapering to a strong, well developed muzzle. The chin should be full and well developed. Their eyes are almost round but not bold, blue in colour, the deeper the blue the better.

***THE BIRMAN COAT:***

Birmans have long silky fur with a full ruff around the neck and a medium length bushy tail, in proportion to their body. There may be a slight curl to the fur on the cat's underside.



***THE BIRMAN PATTERN:***

The distinguishing appearance of the Birman cat arises from the Himalayan or colourpoint coat pattern and the characteristic white feet, The front paws have pure white symmetrical gloves and the back paws (socks) have pure white gauntlets which taper up the back of the leg and finish just below the point of the hock.

***BIRMAN COLOURS:***

There are twenty different recognised varieties. As of the 1<sup>st</sup> June 1992 all Birman colours were granted Championship status in the following groups :-

The standard of points provides full descriptions for the various varieties.

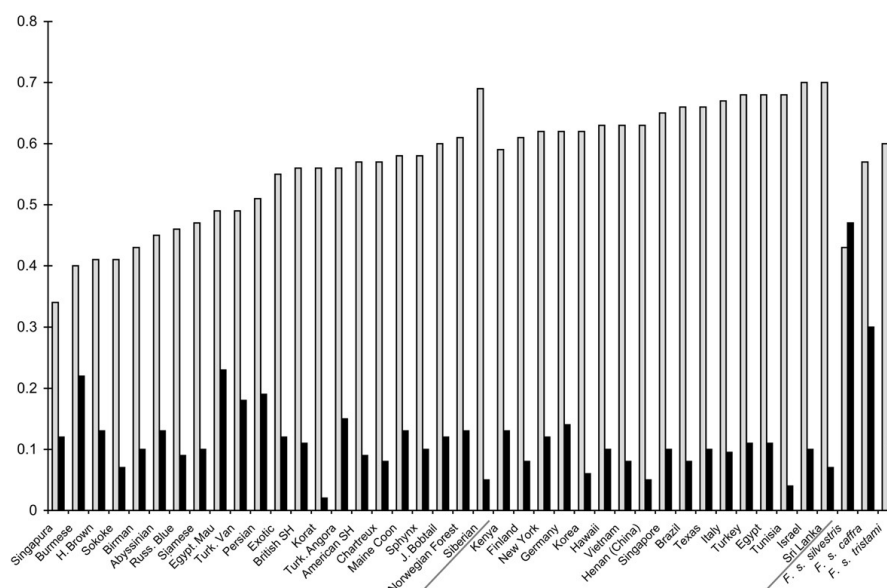
Seal, Blue, Red, Cream, Chocolate & Lilac point Birmans should have fully coloured phyltrums as appropriate to the points colour.

<http://www.birmancatclub.co.uk/phltrim.pdf>

Breed No	Colour Description	Colour Group
13c1	Seal Point	Seal and Blue Chocolates and Lilacs Red Series
13c2	Blue Point	
13c3	Chocolate Point	
13c4	Lilac Point	
13c5	Red Point	
13c6	Seal Tortie Point	
13c7	Cream Point	
13c8	Blue Cream Point	
13c9	Chocolate Tortie Point	
13c10	Lilac Cream Point	
13c11	Seal Tabby Point	Tabbies and Tortie-Tabbies
13c12	Blue Tabby Point	
13c13	Chocolate Tabby Point	
13c14	Lilac Tabby Point	
13c15	Red Tabby Point	
13c16	Seal Tortie Tabby Point	
13c17	Cream Tabby Point	
13c18	Blue Tortie Tabby Point	
13c19	Chocolate Tortie Tabby Point	
13c20	Lilac Tortie Tabby Point	

### ***THE BIRMAN GENE POOL:***

*The Ascent of Cat Breed: Genetic Evaluations of Breeds and Random-bred Populations*, by Lipinski et al has analysed numerous cat breeds to assess the diversity within each ones gene pool. The Birman has lower than average diversity and higher than average inbreeding levels. The Birman's heterozygosity is 0.42 compared to an all-breeds average of 0.58 and a breed range of 0.38 to 0.73. The Birman's average allelic richness is 2.31 compared to an all-breeds average of 2.74 and a breed range of 1.98 to 3.45.



*Genetic diversity of breeds and random-bred populations, showing the Birman's place in relation to other breeds.*

The Birman gene pool has gone through two ‘population bottlenecks’ and outcrossing has been used each time to rebuild the breed. A diverse range of different genetic sources have contributed to the gene pool. However, the *Ascent of Cat Breeds* study still shows that the genetic make-up of the Birman is distinctly tied to South East Asia, where the breed originated. The study contains a feline phylogenetic tree, showing the degree of relatedness between different breeds. There is a natural grouping of breeds which divides all domestic cats into four distinct overarching gene pools: Asian, European, African and Mediterranean. The genetic profile of the Birman places it firmly with other cats in the Asian grouping, along with the Burmese, Siamese and Korat. The breed with the greatest proximity to the Birman is the Korat and, in spite of their physical differences, the study describes them as being ‘strongly related’ to each other.

Although the Birman gene pool is currently smaller than ideally desirable, measures are in place to protect the gene pool from shrinkage due to genetic erosion and to allow new blood to be brought in when needed. The breed does not have a closed gene pool and outcrossing is permitted, (see below). This will preserve and strengthen the health of the Birman gene pool.

### ***THE GLOVING GENE:***

The gloving gene is unique to the Birman breed and has been studied extensively by Dr Barbara Gandolfi at the Lyons’ feline genetics laboratory at UC Davis, who wrote the research paper *Off with the gloves: Mutation in KIT for the unique white spotting phenotype of Birman cats*. B Gandolfi, LH Bach, et al.

Gloving is inherited as an autosomal recessive trait, thus a cat must have two copies of the mutation in order to have the gloved white feet. This mutation is virtually fixed in Birman cats, implying all Birmans have two copies. Birman Variants from outcross matings have one copy and are therefore carriers. The mutation is found at a low frequency in certain other breeds.

A DNA test is available for the gloving gene and this can be used to confirm that a cat is homozygous for gloving, if it is a carrier or if the gene is absent. All Birmans should be homozygous for the allele. All first generation Birman Variants should be heterozygous for the allele, in other words carriers of the recessive allele.

The tests use DNA collected from buccal swabs thus avoiding invasive blood collection.

### **Results are reported as:**

N/N: Normal, cat does not have gloving.

N/G: Carrier, cat has one copy of gloving mutation.

G/G: Gloved

The gloving allele is an allele of the White Spotting gene, which has the following alleles;

s = No white spotting (wild type)

S = White Spotting

s<sup>g</sup> = Gloving



#### ***COLOUR AND PATTERN GENES IN BIRMANS:***

Genes normally come in pairs. Different variations of a gene are called alleles and a pair can either contain two alleles the same (homozygous) or two different alleles (heterozygous). When a heterozygous gene pair occurs it is the dominant allele which determines the cat's appearance. The recessive allele can be passed on to the cat's offspring. Dominant alleles are written with a capital letter and recessive alleles are written with a lower case letter.

Birman genotype should always be  $c^s c^s$ ,  $ll$ ,  $s^g s^g$ , indicating that all Birman cats have the colourpoint pattern, are longhaired and gloved.

#### **Albino Series (C, cb, cs)**

**Full Colour (C)** – the 'wild form' with no reduction of pigment

**Colourpoint (cs)** – this recessive allele produces cats with the colourpoint or Siamese pattern. The pigment in the coat is reduced and because it is thermo-sensitive it is only produced in the coldest parts of the body, or points.

This gene also causes the blue eye colour seen in Birman cats.

A solid coloured Birman Variant would be a colourpoint carrier, with  $Cc^s$  genotype.

#### **A/a Agouti or Non-agouti**

**Agouti (A)** - the natural "wild" gene that is the basis of the tabby cat. The base agouti pattern is bands of black on a yellow background; in the cat this is overlaid with one of the tabby patterns.

**Non- agouti or "hypermelanistic" (a)** - a recessive gene mutation that turns the original "wild" tabby cat into a self by overlaying the agouti base colour with eumelanin pigment, making the whole animal appear one solid colour, although often in certain light the underlying tabby pattern may still just be discernible.

The dominant agouti allele of this gene causes the stripes on a tabby point Birman.



### **B/b/b<sup>1</sup> Black or Chocolate or Cinnamon**

**Black (B), Chocolate (b) and Cinnamon (b<sup>1</sup>)** – three different alleles of this gene occur. Chocolate and cinnamon are both mutations of the basic black gene which modify black into dark brown or medium brown respectively.

In Birman the black allele equates to the seal point. Seal points can either be homozygous (BB) in which case they do not carry another colour, or heterozygous (Bb), whereby they carry chocolate. Cinnamon Birman are bred experimentally in other registries but not yet recognised in the GCCF.

### **D/d Non-dilute or Dilute**

**Dilute (d)** – a recessive gene which reduces and spreads out the pigment granules along the hair-shaft and turns a black to blue, chocolate to lilac, cinnamon to fawn and red to cream.

As a recessive, two cats of dilute colours can only produce kittens of dilute colours, but cats of dense or non-dilute colours can produce dense colours and if they are dilute-carriers they can also produce dilute colours.

### **O/o (O/y) Orange or Non-orange**

**Orange (O)** – this gene alters all eumelanin pigment (black and brown) from the hair fibres, replacing it with phaenmelanin, a lighter compound appearing yellow or orange depending on the density of pigment granules. The O allele is also epistatic over the non agouti genotype; that is, the agouti to non-agouti mutation does not have a discernible effect on red or cream coloured cats, resulting in these self-coloured cats displaying tabby striping independent of their genotype at this locus. This explains why you can usually see some tabby pattern on red or cream coloured non-agouti cats.

The sex-linked nature of this gene means that it is inherited on the XY chromosomes which determine gender. Males with one copy of the gene will be orange, while females with one copy will be torties and need two copies to be orange.

**DNA tests** exist for many colours and patterns and these should be used if the cat's owner or breeder wishes to clarify what the cat's colour or pattern is or to discover which colour or pattern genes the cat carries.

**Polygenes** – these are collections of genes which modify the effect of the main dominant and recessive genes above. A build up of polygenes creates a bigger effect, for example a collection of certain polygenes increases the length and density of the long-hair gene to create the Persian, and a build-up of polygenes serves to enhance the effect of the main colour genes, turning the effect of the orange gene from the sandy colour of the ginger domestic tom to the rich vibrant red of the Red Persian, British or Asian Self. In Birman polygenes are selected for to give deep blue eyes colour, good contrast between the colour of the point and the body colour and good length and density of coat.

### **BREEDING SYSTEM:**

Listed above are the main genes that help define the Birman cat through the expression of pattern, colour and coat, but of course there are a large number of other genes that together create the distinctive physical shape and confirmation which is the essence of Birman breed type.



In order to ensure the maintenance of the good Birman breed type already achieved, while allowing scope to further improve aspects of type, coat, pattern and colour, to meet the ideal described in the Standard, breeders need to have a clear, definite and well understood **breeding system**. This means the development and management of a breeding programme in which certain cats are affirmatively selected to be bred to others, for predetermined reasons. Equally important, it also means that breeders allow no matings until they have given careful consideration to the outcome. In particular three key rules must be followed:

- **Health must be the overriding consideration in any Birman breeding programme.**
- **The good and bad features of the individual cats should be assessed and weighed against each other before any mating.**
- **When planning a breeding programme, breeders must realise that doubling of the good traits in a cat also results in doubling the defects; the breeding of cats with similar faults should be avoided at all costs otherwise there is a danger of fixation.**

The prime motive is to perpetuate the Birman as a recognisable breed; to improve the quality of the breed as measured against the Standard; and also to gain success on the show bench.

The skill in breeding lies in the choice of the individual cats and how these cats may be mated with each other – these two acts should be regarded as completely separate, although interconnected.

## ***Selection***

The phenotype of the individual cat is made up of a large number of genetic characteristics of varying expression. The ideal Birman is one in which the expression of each of these characteristics is just right in the eyes of the breeder – this means that an intermediate expression will be required for some characteristics, but a more extreme expression required for others. This expression is controlled by selective breeding. However, selection by itself is not very efficient in eliminating heterozygous genotypes (the producers of variation and diversity) – it is one of the tools available, but has its limitations.

## ***INBREEDING:***

Inbreeding is an inclusive term covering many different breeding combinations and degrees of relationship – including the more distant, less intense. It is consistently more efficient in eliminating heterozygous (varying and diverse) genotypes and increasing homozygous (same) genotype, thereby ensuring a greater likelihood that kittens will closely resemble their parents. Used here, the term does not mean close, purposeful, inbreeding of closely related cats (brother/sister, father daughter), but rather the moderate form that results from the mating of not too distantly related (but not directly related) cats (first cousins, half brother/half sister, second cousins, etc). Some in-breeding is essential to stabilise conformation around a definite type. In-breeding is the act of mating individuals of various degrees of kinship, and if continued it produces ever increasing homogeneity in the offspring.

It is important to monitor the percentage intensity of inbreeding for any mating – use this consideration as a key part of the decision making process when considering any mating, and remember: ***“The more intense the in-breeding, the more careful must be the selection”.*** ***“Loss of innate genetic variability must not be too great”.***

The overall approach should be one of balance and moderation in the degree of inbreeding coupled with consistent selective breeding with a clear objective in mind – i.e improvement of key aspect and/or the elimination of weak traits or defective genes.

Breeding systems and practices need to operate so as to ensure the Birman gene pool contains enough variation to give scope to continue improving the breed and avoid the danger of either fixing type too quickly (before the ideal of the standard is reached) or deleterious genes being expressed and fixed in the breed. Breeders need to use acceptable levels of inbreeding to gain sufficient homogeneity to fix recognisable Birman type, but with sufficient variation to both enable improvement, and maintain health and vigour, avoiding fixation of defective genes or unwanted traits (and to ensure the elimination of anomalies).

The golden rule is that health is paramount and must be constantly and consistently monitored; any evidence of weakness or the emergence of lack of vigour must be dealt with immediately through modification of the breeding system. No cat with any evidence of health problems or lack of vigour should be used for breeding.

Breeders should also be aware that research has shown that highly inbred animals are less likely to be show winners. Although a certain level of acceptable inbreeding can help to fix desirable traits inbreeding depression can cause asymmetries and weaknesses that can be damaging to a cat’s potential show success.

**INBREEDING DEPRESSION:**

A breed, breeding line or individual can suffer from inbreeding depression when inbreeding co-efficients are raised to high levels and a loss of heterozygosity results. Inbreeding depression can result in a general loss of vigour, even if the animals in question are not suffering from specific recessive genetic diseases. A small gene pool can result in inbreeding depression in a breed. A popular and numerous breed with a small gene pool has a low 'effective population size', regardless of the numerical size of the breed's population. A popular breed with a small effective population size can be compared to an overinflated balloon.

Inbreeding depression can compromise a cat's immune system and make it less able to resist disease. A group of genes called the Major Histocompatibility Complex, or MHC plays an important role in the immune system. The way in which the genes in the MHC are inherited means that it is particularly vulnerable to inbreeding depression and a loss of genetic diversity in the MHC can impact on the health of the cat.

Inbreeding depression can manifest in different ways depending on the particular make-up of the gene pool in question. Few cases of inbreeding depression will manifest all of the signs. Although these are problems which can occur in any random-bred cat, a combination of some of these signs could well indicate a problem with inbreeding depression. A Birman breeder who is worried about inbreeding levels in their lines should consider introducing Birman cats from different lines or outcrossing to approved breeds.

Signs of inbreeding depression include slow growth rate, small adult body size, small litter size, reduced fertility, increased kitten mortality, increased prevalence of allergies, reduced ability to fight infections, physical asymmetries, especially facial, an increase in congenital abnormalities, increased prevalence of cancers, increased incidence of genetic disease, and reduced life expectancy.

**Acceptable levels for Co-efficients of Inbreeding;**

- 0 to 10 % = Low
- 10 to 20 % = Fair
- 20 to 25% = Acceptable
- 25 to 40% = High. Only to be undertaken by experienced breeders for specific reasons.
- 40%+ = Not advised

**OUTCROSSING:**

The approved outcross breed for the Birman is the Persian, in the following varieties only:

Chocolate Colourpoint 13b3	Chocolate Self 50b
Lilac Colourpoint 13b4	Lilac Self 50c
Red Colourpoint 13b5	Red Self 4
Tortie Colourpoint 13b6	Cream Self 5
Cream Colourpoint 13b7	Tortoiseshell 11
Blue-Cream Colourpoint 13b8	Blue-Cream 13
Seal Tabby Colourpoint 13b11	Brown Tabby 8
Blue Tabby Colourpoint 13b12	Red Tabby 9

All Persian cats selected for outcross purposes should hold a FAB clearance certificate, *either* issued after the cat is 10 months old, and scanned by an approved individual stating that the cat is free from PKD (Polycystic Kidney Disease), *or* issued following genetic testing at an earlier stage.

Colourpoint Persians have an advantage due to the fact that they are ‘pointed’ cats as opposed to ‘self’ cats or ‘all over patterned’ cats such as the Tabbies. All offspring from a mating of a Birman to a Colourpoint Persian will be colourpoint.

Progeny from such matings are registered as Birman Variants until they conform to correct Birman appearance. When the outcross breed no longer appears on a three generation pedigree the kittens can be placed on the supplementary register and shown. When the Birman Variants no longer appear on the three generation pedigree the kittens are placed on the full register.

When undertaking an outcross mating the breeder’s primary objective should be to expand the Birman gene pool, so they should plan how the offspring could be used for breeding in order to retain the new blood gained. A secondary objective can be the introduction of a specific colour to a breeding line, but health issues should always take precedence over colour choice.

The type of the Persian is obviously not the same as ideal Birman type and therefore the first generation kittens from an outcross mating may have intermediate type. Breeding cats with ancestors with differing type yields more variability and less consistency in the type of the kittens and this affect can last for two or three generations. In order to make a distinction between Birman cats which are close descendants from outcrosses the full register is reserved only for Birman cats with three preceding generations of Birman to Birman breeding (i.e. parents, grandparents and great grandparents).

Breeders should choose cats for outcrossing which have type suitable for breeding in a Birman breeding programme. The best Persians to use for outcrossing may not be the best examples of their own breed and Birman breeders should never chose to use a Persian based on its show success. A more ‘open-faced’ Persian with a nose which is longer than average for its breed is preferable.

Breeders should understand that developing an outcross line requires a commitment to selecting those kittens with the most desirable features for future breeding. Careful consideration should be given to the good and poor features of both cats when deciding which mating to undertake.

It is recommended that the progeny from outcross matings that are not required for Birman breeding, should be placed on the Non-Active Register and neutered to avoid the introduction of the gloving gene into other varieties of pedigree cat. This also applies to kittens other than those of Birman type and/or pattern, arising from matings within the breeding programmes.

In the future if further outcross options were desired to give greater diversity the BAC could approve other carefully selected breeds, such as the Thai Blue Point, Snowshoe Variant with no white spotting and the Colourpoint Ragdoll with no white spotting. No cat with white

spotting should ever be used in a Birman breeding programme because of the unique allele present at this locus in the Birman breed. DNA testing can be used in a Birman outcrossing programme to ensure that correct genotype at this locus is achieved.

In order to ensure, as far as possible, that the presence of any white spotting gene is eliminated at the first cross stage (F1), it is strongly recommended that cats for breeding purposes should be selected at this stage only without any white on the feet at all. If the second cross (F2) is a mating to a Birman, gloves and gauntlets of some shape or form, should be obtained on 50% of the progeny as a statistical average.

Some of the early outcrosses to introduce different colours were Siamese and non-pedigree cats. However, these are not now permitted. No other breeds should appear in Birman pedigrees other than those approved by the BAC. It is imperative that Birmans are not mated to cats with white spotting, or to cats with the inhibitor gene (i.e. silver or smoke) as this would be wholly undesirable.

Associated with these guidelines is the parallel requirement that the health and well-being of these cats, including the careful placement of kittens in suitable permanent homes, is to be of paramount importance at all times. The placing of kittens/cats in homes on 'breeding terms' is to be discouraged.

#### ***GENETIC ANOMALIES:***

The problem of the genetic anomaly is something of which all breeders should be aware – this is not to suggest that such anomalies are common but the cat must be expected to have its quota of defects just as are found in other animals. The GCCF Standard List of Withholding Faults for all breeds lists all of the major faults commonly seen in cats. The faults which Birman breeders should be vigilant for and which have been observed in the Birman breed are;

All cats used for breeding should exhibit sound conformation, vigorous reproductive ability, good temperament and be free from harmful alleles or defects known to be heritable traits such as:

- Polydactyly
- Squints (strabismus)
- Nystagmus
- Epibulbar dermoids (dermoid cysts)
- Protruding sternum (xiphisternum)
- Hernias
- Cerebellar ataxia (wobbly kittens)
- Ataxia (head tilts)
- Epilepsy
- Heart defects

The Feline Advisory Bureau lists the following conditions as present in Birmans;

### **Congenital Hypotrichosis (Hairlessness) with Thymic Aplasia**

Rare recessive genetic disease whereby kittens are born hairless with immune deficiency. Affected lines should be neutered.

### **Shaking/trembling kittens**

A number of litters of Birman kittens have been seen that tremble and shake from the time they start moving around the kitting bed at about 10 days old, get progressively worse through weaning, but then recover completely from 12 weeks onwards. Affected kittens need to be held still so they can eat effectively. The cause is unknown, however kittens with this syndrome can be treated by administering vitamin drops (Abidec or similar) at a dilution of 1 part to 2 parts cooled boiled water twice a day. This can alleviate the condition within a few days, which does not return after weaning onto solids. Early weaning of these kittens with and mix of baby rice and formula kitten milk is advisable.

### **Raised urea/creatinine concentrations**

Many young Birman cats are found to have unexpectedly increased urea and/or creatinine concentrations in their blood, indicating possible kidney dysfunction. Occasionally, young Birman cats (<2 years of age) develop renal failure, with clinical signs developing shortly after routine neutering. A prospective survey of healthy Birman cats found that ~80% of cats <6 months of age had blood creatinine concentrations above the reference range, while only 35% of the adults had raised creatinine concentrations. The reason(s) for this finding remain unclear. While it could reflect sub-clinical renal (kidney) disease, the vast majority of affected cats **do not** go on to develop renal failure at a young age. It therefore seems appropriate to suggest that evidence of azotaemia (raised creatinine concentrations) in an otherwise healthy Birman cat should not be over-interpreted as evidence of severe or progressive renal disease. It would however, seem sensible to monitor affected cats, to perform additional tests of renal function (serum urea levels, urine specific gravity and urine protein to creatinine ratio), and to consider the possibility of renal dysfunction when undertaking anaesthesia, surgery or treatment with drugs that can potentially harm kidneys in cats of this breed.

*Ref: Gunn-Moore, D A, Dodkin, S.J. & Sparkes, A.H. An unexpected high prevalence of azotaemia in Birman cats. (2002) Journal of Feline Medicine and Surgery 4, 165 – 166 (letter)*

Corneal dermoids, congenital cataracts, spongiform degeneration, axonopathy, congenital portosystemic shunt, haemophilia and Pelger-Huet anomaly have all been observed at least once in Birmans but are all rare.

### **BLOOD TYPING:**

Both blood type A and blood type B are present in the Birman breed.

The recommended method for blood type testing is the DNA test and the blood test for blood type should not normally be used.

DNA testing is less intrusive for the cat and provides more detailed information as it can give the following results:

- Type A (homozygous for dominant A)
- Type A (heterozygous, i.e. carrying the gene for B)
- Type B (homozygous for recessive B)
- Type AB (Rare third blood group)

The blood test to determine blood type is the less favourable option of the two because 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.

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. NI can occur when a B type female is mated to an A type male.

NI occurs because kittens whose blood type is incompatible with their mother's can absorb antibodies against their own red blood cells from their mother's milk for several hours after birth. NI can be avoided by only mating together cats of compatible blood types. Experienced breeders with a very good reason for carrying out a mating between cats of incompatible blood types can avoid NI by preventing the kittens from suckling during the critical period after birth; during these hours supplementary feeding with kitten formula is required to prevent hunger, distress and dehydration. More advice on this and a table calculating the risks between blood groups can be found here <http://www.sandswbirmancatclub.co.uk/NEWWWEBSITE/breedersadvice.html>

#### ***EVALUATING KITTENS:***

Breeders should make rational decisions on which kittens to retain for future breeding, or allow on the active register, based on a range of different factors. Animal breeding scientists use evaluation systems to calculate Estimated Breeding Values, or EBVs for animals. Cat breeders can use similar methods in a less formal way in order to evaluate kittens and make comparisons which can help to inform decisions.

There is a risk that breeders will make selections based on too limited a range of factors. The following should be taken into consideration;

- Closeness to the standard of points
- Number and severity of faults
- Temperament
- Health
- Development
- Co-efficient of Inbreeding
- Generational Level
- Parental/familial breeding history
- Fit with breeder's breeding goals
- Breeder's intuition

Breeding evaluation score-sheets are available for breeders to use to make assessments of their kittens.

#### ***MENTORING:***

All new Birman breeders should start under the guidance of a mentor, who is an experienced breeder and has already bred a number of litters of Birman cats. This is especially important for novice breeders with little or no prior experience of cat breeding, but support should also be available to breeders who may have experience of other breeds but are new to the Birman



breed. If a new breeder does not have a mentoring relationship with the breeder of their cat a mentor will be identified through one of the clubs represented on the Birman BAC.

All breeders are strongly recommended to participate in ongoing education and development about cat breeding through participation in appropriate discussion forums, seminars and cat clubs.

***BREEDING GUIDANCE:***

The selection of Birman cats to be used for breeding purposes should be very strict, particularly so in the case of stud cats. Preference should be given to those individuals which conform most nearly to the GCCF Standard of Points with particular emphasis on overall balance and quality, type, characteristic coat pattern and white gloves and gauntlets. Excessively dark coats or general lack of contrast is undesirable. Shading in Birmans is not something that should be considered a fault – the undercoat should be white. The mask should have ‘tracer lines’ between the mask and the ears and the mask should not continue between the ears over the head – this ‘hooding’ is not a desirable trait.

In kittens of all colours, the points (face, ears, tail and legs) are typically less extensive than in adults, particularly so in those of the chocolate series and red series. On reaching maturity, as adult cats, the points are dense in colour and clearly defined with a full mask which covers the entire face including the whisker pads, and which is connected to the ears by tracing. In Tabby Pointed Birmans, the markings should be well defined on a pale ground.

It is recommended that cats with a Persian or Siamese type head or with any evidence of white spotting (white areas on the body, other than the gloves and gauntlets) should not be bred from. In addition, it is recommended that cats that exhibit behavioural or skeletal abnormalities (spinal deformations or any abnormality of the bone structure of the tail) should not be bred from.

***BAC RECOMMENDATIONS:***

The BAC recommends that breeders re-read this breeding policy, as well as the general GCCF Breeding Policy, the Birman Registration Policy, the Birman Standard of Points at least once a year.

Breeders will be encouraged to take advantage of any relevant official scheme, which may be devised by the BAC to test the soundness of the Birman breed.

It is recommended where the colour of a cat is in question a DNA test, (where such a test exists), be arranged.

Birman breeders are encouraged to work closely with other like-minded breeders to improve the Birman breed whilst maintaining a diverse gene pool.

The BAC would also advise breeders that by importing a Birman from another registry there is a possibility that the pedigree may be the result of a non-GCCF approved outcrossing programme. If you are considering doing this then contact the Birman BAC for advice and guidance.

The BAC further recommends that any breeder wishing to import any Birman onto the GCCF register (either from overseas or from another registry within the UK), obtains a copy of the

pedigree and forwards this to the BAC for checking before agreeing to purchase the cat/kitten if they are in any doubt about whether it complies with the current registration policy.

Please note that any cat or kitten found to not conform to the GCCF Birman Registration policy may, together with any registered progeny, be transferred to the GCCF Reference Register with no progression.

Breeders are urged to observe the GCCF Code of Ethics and the recommendations of the GCCF, and the advice of their own veterinary surgeons regarding cat welfare, the importance of neutering, health, inoculations etc.

The BAC recommends that breeders should think carefully before selling any Birman cats on the active register, taking into consideration the purchaser's experience, and that no kitten should be sold on the active register to a breeder new to the breed without ensuring that a mentoring relationship is in place, either with the breeder of the kitten or another suitably experienced breeder.

Breeders are urged to observe the recommendations of the GCCF, and the advice of their own veterinary surgeons regarding cat welfare, the importance of neutering, health, inoculations and FELV and FIV testing.

For further reading on cat genetics and breeding practices breeders are advised to refer to: "Robinson's Genetics for Cat Breeders & Veterinarians" by Vella, Shelton, McGonagle and Stanglein, published by Butterworth & Heinemann.

## **Gallery**

<http://www.birmancatclub.co.uk/clrgallery.htm>



Birman cat clubs

<http://www.birmancatclub.co.uk/> The Birman Cat Club

<http://www.sandswbirmancatclub.co.uk/index.html> Southern and South Western BCC

<http://www.birmancatuk.co.uk/> Seal and Blue Point BCC

<http://www.northernbirman.co.uk/> Northern BCC

Acknowledgements

Thanks to Mrs Jennifer Nutley and Mr Mick Bridge for comments and photos