

# ~ Understanding the Silver Bengal ~

By Joshua Dabbs of Rowan Bengals

## Introduction:

The silver color was introduced into the Bengal breed in the late 1990's by Judy Sugden (Eeyaa) by breeding an American Shorthair (ASH) to a Bengal. It was from this early cross that a handful of breeders (Linda Evans of Silvergene, and the late Earl Shropshire of Starbengal) began to pioneer the color into what it has developed into today. However since these early days, there has been much confusion amongst the Bengal community as to how the silver color should be bred. Though there have been many articles written, there has not been a strong doctrine in which breeders can rely upon to help teach each other how to improve the silver.

Despite silver is a dominant trait, there are more factors involved in breeding silver than simple inheritance. To this end, we could take a few moments in the hopes of bettering our understanding of the silver and how they should be bred. When breeding silvers, there are three basic rules we should follow:

1. Always select away from tarnish;
2. Always breed silver to silver;
3. Always select for contrast.

To further understand why each of these rules are important, let's go over them and explain a bit about each.

## 1. Tarnish: What is it and what causes it?

Genetically, the silver isn't an actual color as much as it can be considered a color modifier. The silver's inhibitor gene filters the production of warm pigment on a cats' coat while leaving black pigment. With only black pigment present on the coat, the end result is often creates a cooler tone or monochromatic version of the same color. But the inhibitor gene isn't always

able to filter out all warm pigment. These trace amounts of warm pigment are what we refer to as “tarnish”, yellow/red pigment on the face, back, legs and throughout the coat. As example of both tarnished and untarnished silvers, please compare the photos of a tarnished silver marble (CH Rowan Valhalla - picture 1) and untarnished silver spotted (QGC Rowan Valkyrie – picture 2).



Picture 1: the tarnished silver (photo by Helmi Flick)    Picture 2: the untarnished silver (photo by Helmi Flick)

But now that we know what tarnish is, we now have to ask ourselves what causes it and how to do we prevent it?

## 1.2. Causes of Tarnish and how to prevent it:

From the start of the Bengal breed, many breeders sought to lock in deep red pigmentation into the breed and they were successful. These warm tones were a result of rufous polygenes which are thought to have been carried over from the Abyssinians used early on. But beautiful as these warm tones are in browns, they have a negative impact on the silver coloration. The increase in warm pigment present in a cat’s coat results in the inhibitor gene not being able to filter out all warm tones and so more is present on the coat.

Nevertheless, with so much of the Bengal breed being warm toned, eliminating tarnish from the silver is no easy task. To do this, the silver Bengal must be bred silver to silver for generations on all sides of the pedigree while selecting away from warm tones. Through this process we eliminate residual rufous polygenes and ultimately lock in two copies of the

inhibitor gene. Yet the silver color is still relatively new and undeveloped in the breed so there are only a handful of silver breeders and bloodlines that have been able to accomplish this so far. In the coming years, we all must educate ourselves and work to change this if we are to improve the Silver Bengal.

### 1.2.1. Breeding silvers to non sivers:

Breeding silver-to-silver is always going to be the best option, but there are times when we're left with no alternatives but to breed to non-silvers. Still, over time there have been several misconceptions created which have perpetuated even now. Let's go over each issue now to clear up some of this confusion.

### 1.2.2. Breeding silvers to cool browns or snows:

Given that there are no other silvers to breed to, choosing to breed to a cooler toned brown can be a viable alternative, but only in the short term. The same is true for a good snow bloodline, as most are bred for cooler tones and higher contrast. Below are examples of each: a cool brown marbled (FelisLudens Laris – pic. 3) and a constricted mink marbled (RW SGC SouthLynn Vanilla Fudge Ripple – pic. 4).



Picture 3: the cool brown (photo by Silvia Pratta – courtesy of Adriana Kei of FelisLudens)



Picture 4: the contrasted seal mink (photo by Preston Smith – courtesy of Priscila South of SouthLynn)

These types of combinations are more common than silver-to-silver pairings in the breed. Even though these crosses do prove helpful at adding genetic diversity and other desired traits, they also introduce negative traits such as poorer coat quality and tarnish. This can ultimately degrade the silver color and even more so in successive generations of silver to non-silver pairings. For this reason, we should always plan to pair offspring from silver to non-silver pairings back to other silver lines to breed out whatever negative traits may have been introduced.

### 1.3. Can the charcoal and the snow can get rid of tarnish?

This is actually a relatively common misconception and quite an easy one to clear up. Just ask yourself, if you were to take a tarnished silver (pic. 5a) and put either a white mask (pic. 5b) or black mask (pic. 5c) on them would they still be tarnished under the mask?



Pictures 5a, 5b, 5c: CH Rowan Valhalla (photo by Helmi Flick)

The charcoal and snow colors may mask the tarnish from being visible, but it does not actually make the tarnish go away, as both can still produce tarnished silver offspring. Although there is great beauty in both the silver charcoal and silver-snow, we should always strive to improve the silver color by continuing to lock these colors while breeding out undesirable traits such as rufous polygenes and weaker inhibitor genes.

#### **1.4. The tarnish issue when breeding silver to silver:**

When breeding silvers, the one thing we often forget is that there is more to a silver than just what we see on the surface. Parentage and background play important roles in the offspring produced. If you are choosing to breed two silvers together who both have generations of silver to brown pairings, it should be expected that you will see traits of their browns parents in their kittens. By choosing to work with established silver lines with generations of silver pairings will help eliminate much of these undesired traits.

#### **2. Contrast: it's key to the continued success of the silver, but why?**

Another incredibly important and often misunderstood aspect of the silver is contrast. Unlike that of their brown counterparts, contrast is essential to maintaining the desired appearance in silvers and should always be prioritized. However unlike many of the features in the breed which are attributed to the Asian Leopard Cat, this specific kind of contrast is not wild in origin.

In order to better to understand the importance of contrast, you can compare a contrasted silver (Rowan Sargent Argentum of LaMancha – pic. 6) from that of a faded silver (Rowan Everybody Has a Dark Side – pic.7).



Picture 6: contrasted silver



Picture 7: faded silver

Fading is something that is relatively common in many silver lines and many of us struggle to figure out the reason why. To accomplish this, we'll need to look back over the breed history.

## 2.1. Where does fading come from?

The Bengal breed was established by taking the Asian Leopard Cat and pairing them to various domestic cats for generations. The list of domestic cats that were used in these early days included a handful of moggies, Abyssinians, many Egyptian Maus, Burmese and Ocicats. Through these domestic cats used, they sought to ultimately breed out the negative traits introduced from the domestic cats such as ticking and unwanted domestic color genes while seeking to further lock in desired traits from the ALC such as pattern and body structure. Even with many of the negative traits bred out, this hodgepodge of different breeds and domestic traits caused variants in appearance which we still see in today's Bengal lines. Study over a photo (pic. 8) of the Egyptian Mau (TouchOKatz Marino Goes Long).

Although the ticking brought in from Egyptian Maus has largely been bred out from the Bengal breed, there are many Bengal lines today that possess a similar coat quality that tends to fade at maturity. The amount of fading varies between individual cats and lines. In browns, this quality of coat can often give the coat a tawny coloration or for those heavily rufoused a more pumpkin colored appeared.



Picture 8: A silver Egyptian Mau (photo by Helmi Flick - courtesy of Leslie Pool of AmazonBengals)

## 2.2. Okay, we know where fading comes from... but what about contrast?

Though contrast has long since existed in the breed, it was the American Shorthair which introduced a new quality of coat that had a lasting impact on the breed. To help illustrate, take a few moments to study over this example of the American Shorthair (DGC Russeller's Silver Dynasty of Rowan – pics. 9 and 10).



Picture 9: silver American Shorthair Classic Tabby (photo by Audra Mitchell)



Picture 10: silver American Shorthair Classic Tabby (photo by Audra Mitchell)

As demonstrated by this example, the American Shorthair's deep black markings and silvery white ground color create a very vivid expression. It was through the American Shorthair that the Bengal breed would later create cooler toned browns, a clear ground color, high degrees of contrast and black expression, and what many breeders today refer to as "goldens". Picture 11 is an example of a Brown Spotted with this coat type (QGC Sakura Midnight Sun).

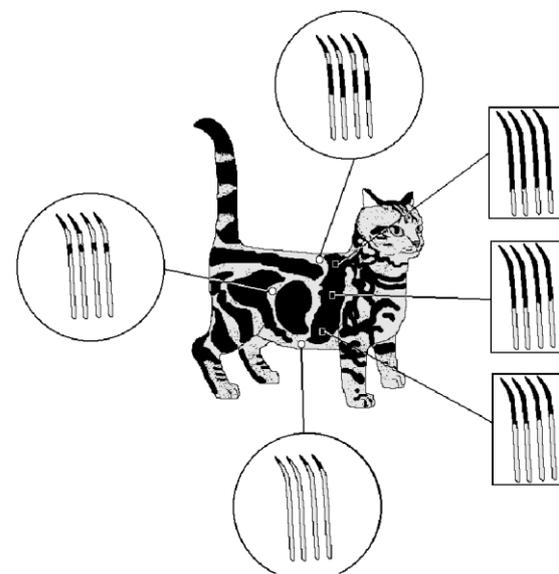


Picture 11: the golden bengal

### 2.3. How do we breed for contrast and how we identify the right kind of contrast?

Contrast itself is caused by many different factors, so it can be determined to be polygenetic. But for the contrast we are seeking to lock in for our silvers, it has proven to be a dominant trait in how it's inherited. Once contrast is lost, it cannot be produced again unless bred to another cat which possesses it.

How this specific kind of contrast is identified is by looking at the fur. On a contrasted silver, if we were to look at the darkest parts of the fur we would see a single band of black pigment covering 2/3 of the hair shaft <sup>1</sup> giving the markings a vivid black coloration (pic. 11a and 11b) On a faded silver we see a different kind of banding, at the darkest parts of the fur we see two bands of black pigment covering less than 1/4 of the hair shaft giving the overall coat a less black and more faded gray appearance (pic 12).



Picture 11a: hairbanding



Picture 11b



Picture 12

## 2.4 Fade x Contrast:

Though there are breeders out there who find these softer colored silvers visually appealing, these kinds of silvers have proven to be more difficult and less predictable to breed often

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<sup>1</sup> <http://my.net-link.net/~cwjohnso/genetics/shadedfin2.html>

producing even lighter markings or “muddy” colors. But more importantly, the Bengal standard writes that “contrast with ground color must be extreme, giving distinct pattern and sharp edges” indicating that these kinds of silvers are less desirable than contrasted silvers.

### 2.5. The impact of ticking in the silvers contrast:

While in faded silvers ticking causes a “salt-and-pepper” look to the overall coat which is considered undesirable, the same is not true for contrasted silvers. Due to the broader band of pigment the ticking causes a darker ground color without drowning out the black expression in their markings. In years past many have referred to these kinds of silvers as “cold silvers” (pic. 13), their darker ground color proves to be more forgiving of trace amounts of tarnish which can be beneficial. It can be seen at Spotselotica Leora of FelisLudens.



Picture 13: a cold silver (photo courtesy of Cissy van Sas of Spotselotica)

### 3. Outcrossing: Is there a purpose?

Due to both the restrictive nature of the silver color and only having one major silver outcross support the color in the breed’s short history, today’s silvers are facing the challenge of an ever-shrinking gene pool. A diminished gene pool will result in higher occurrences of health issues and defects. Though some breeders have chosen to outcross their silvers to other colors within the breed, too many generations of these pairings result in an increasing amount

of tarnish and fading so they often prove a less desirable choice to pair developed silver lines to. It is for this reason that many breeders have started to consider outcrossing to established silver breeds as well as other sources.

Whilst as much of the Bengal breed has not outcrossed since the 1990's, there is much for today's breeders to learn about what all is involved. In TICA, just like when crossing a Bengal to an Asian Leopard Cat, it takes four generations (A0N, B0N, C0N & SBT) before the line is once again eligible for championship status. However one thing that many have realized is that two of the same generation (A0N x A0N) can be paired together and produce the next generation (B0N) so with a guided and educated hand we may be able to create new silver outcrosses that will have much genetic diversity that the breed can benefit from.

### 3.1. Which breed should we use to outcross and bring in new silver bloodlines?

The first instinct of many is to choose the silver breed which has the most similar body and head-type to the Bengal, but there is often more to consider about an outcross than type alone. As many silver Bengals struggle with locking in contrast, choosing to breed to a contrasted silver classic tabby American Shorthair or British Shorthair would prove more beneficial than that of a ticked or faded silver in another breed. For this reason, some have chosen to strategically pair two separate outcrosses together. Here are two examples of A0N outcrosses: ASH Outcross - Rowan Gallifrey Dynasty of Felis Ludens (pic. 14) and Egyptian Mau Outcross - Amazonbengals Silver Aeon of Rowan (pic 15).



Picture 14: AoN – American Shorthair Outcross



Picture 15: AoN – Egyptian Mau Outcross (photo by Helmi Flick)

### 3.2. What about using the Asian Leopard Cat as an outcross for silvers?

Since many of the features which we are wanting to further lock into the silver are domestic in origin, the Asian Leopard Cat alone is not the most ideal outcross. Breeding a faded and tarnished silver to an ALC will not yield untarnished and contrasted silver kittens. But the ALC can be used strategically to improve type and structure on an early outcross if capable breeders have access to both an outcross line and ALC or EG line.

#### Closing:

The beauty of the silver Bengal is something that we as breeders strive to achieve and improve upon, but doing so is not an easy task. It is with dedication, understanding and passion that we are able to move this striking color ever closer toward perfection. As we continue to further educate ourselves, we should look forward to the evolution of this majestic color.

Thank you everyone for taking the time to read over this lengthy explanation. I am hopeful that this information will be used to improve the breed I love. A special thanks to my beloved wife Helen for helping edit and Adriana Kei for her wonderful work with editing, formatting, photos and photo-editing skills.

I wish you all the best.

**Joshua Dabbs**

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