

The Pigeon Genetics Newsletter, News, Views & Comments.
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June Roses , segue to this Month's main Topic, the Rose wing or Agate.
(a small ,medium, or large circular cluster of pure white feathers usually close to the wing butt on the shield.)

This is a topic that has presented both the amateur and the expert with a problem that seems impossible to solve! That being -just what is it that causes some birds to express a cluster of white feathers on the shoulder of the wing shield and very little of any white elsewhere on the bird?

The fact is that there are a number of answers that are not in any way related. There are several different types of these white markings in Pigeons. First we must separate the different phenotypes. Then we can start to sort out the genetic differences.

Rob Grogan Breeder / first four photos .



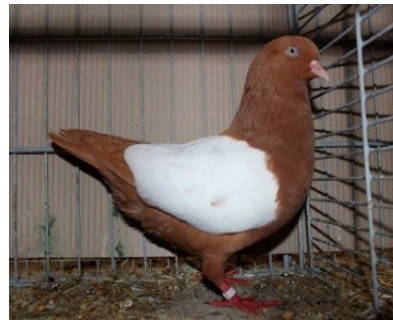
Levi Photo



Joe Power - breeder



Mick Bassett - photo.

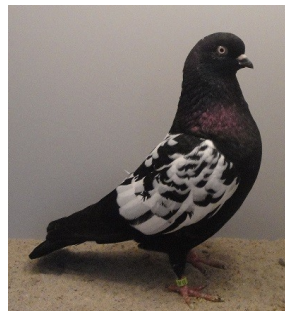


Painting from **Fulton**.

Tom DeMunnik -breeder

Raza Toor- breeder.

Bassett Photo.



Black Print Grizzle white side progression often mistaken for Tiger grizzles...

Tiger look-alikes that genetically are Print Grizzle with spread blue/BLACK., and recessive red (e).



Bassett.

The general phenotype appears to be basically the same in all birds in that White Mottling expresses on the shields and in varying amounts in other areas of the overall plumage. In some cases we can readily recognize the influence of familiar genes such as "print Grizzle" and "Undergrizzle". There are whiteside or nearly so whiteside phenotypes that some breeders believe have been caused by the presence of an elusive whitening/ de-pigmenting gene referred to as an "enabler" gene. This gene would enable the 'moult to white', or disable the ability of the base pigment to resist moult to white , (whichever way you want to consider its action), so that it becomes possible with plucking and selection , to create a phenotype of a solid coloured bird with the shields only, pure white.

One would have to examine what takes place at a molecular level to detect just what parameters are involved that lead to the various de-pigmenting expressions and why they have this effect particularly on the shield area. That work has never been conducted.

If one of the 'grizzle' genes is involved , then the young almost certainly will NOT be solid red or black in the nest. Almost certainly the 'grizzled' bird will continue to moult in more white feathers with age, and almost certainly such a bird will express a considerable amount of white feathers on the head, neck , and breast areas, especially in the homozygous state..

The "Enabler" gene seems to only apply to recessive red specimens and the young will be born solid red to the first moult. Then the whitening gene kicks in with that first moult to create a rose wing, a mottle wing , or a Whiteside phenotype.

The Black whiteside is a 'horse of a different colour' , in that a grizzle gene is always involved. The enabler gene even when introduced via a cross of a Red whiteside to a Black does not express on the black offspring. Black whitesides are slightly grizzled in the nest and moult out to various stages of mottled wings. They are never solid black in the nest in the same way recessive reds are solid red in the nest .

Tom DeMunnik has been working with several breeds over the past three years to try to finally reach conclusive results that will allow breeders to follow a set sequence of steps to produce perfectly marked whitesides in either base colour. I originally believed the popular opinion that "TIGER grizzle" was a key

factor in the blacks, but then took the stand that it was "PRINT GRIZZLE". Tom on the other hand believes that he has shown that Classical Grizzle is the key trait, but does not differentiate between Classical and Print Grizzle..

Grizzle is not involved in any recessive red whitesides that are fledged as solid red then mottle out.

The grizzle genes will always ensure that more white continues to moult in such that the head, neck, breast, underbody, back and even the flights and rump may have scattered white feathers. This makes it impossible to maintain a whiteside phenotype, and in the case of "AGATES", would allow too much white to be expressed and this will eventually adversely affect some of the other components in the Almond breeding family. If (Pr^G)*, or (G) grizzle is present, some partially white feathers can be found.

It is generally not desirable to have the "agate effect" in Deroys, Saturated T-Pattern Kites, or Almonds themselves. A true Agate is synonymous with pure recessive red masking Saturated T-Pattern Kite, lacking spread factor AND the stipple gene. Breeders assure that there is no spread factor (masked by recessive red), by using these specifically 'spread FREE' agates in their Classical Almond breeding programs. Saturated also suggests that other darkeners such as het., or homo Dirty (V) is present.

The only reason to avoid 'spread factor' in a Classical Almond breeding program is to prevent some of the offspring from being 'Sprinkles'. Nothing wrong with Sprinkles except that if you breed them from a family where (reddening) components are used to enhance the Classical Almond offspring, then the Sprinkles most likely will express the bronze and hetero (e) of the added phaeomelanin components which is not desirable in the Sprinkles. Sprinkles are unicoloured birds where the solid colour or the self pattern colours have been dispersed by the white break of the stipple gene.

We have observed that whenever a grizzle whitening gene is involved, the white usually advances over the entire bird in various amounts in the first one or more moults. However, we have heard breeders say that in the case of "Tippler" Bronze, it is actually the bronze that causes the whitening effect. This brings us back to the need to fully understand not only the grizzle genes but also the bronze genes. Is Tippler bronze any different than Kite bronze? Both are thought to be the bronze present in 'PRINT GRIZZLES' while Kite is the only bronze thought to be present in Classical Grizzles.

The fact that Kite and Brander appear to work together indicates that none of the "Bronze" genes are alleles.

Does Tippler bronze actually cause whitening, or does it simply loose out to the de-pigmenting effect of the Print Grizzle gene? Kite bronze does not lessen after the moult so it creates the Tortoiseshell phenotype and indicates that both Tippler bronze and Kite Bronze can be present on the same bird. If ONLY Tippler bronze is present, it will show in the nest, but be de-pigmented in the first moult to leave behind just the typical whitened Print Grizzle effect, usually most prominent on the shields.

These ideas are the issues that MUST be fine tuned by modern day breeders to ounce and for all give us the definitive answers that we seek.

* above I used the symbol (Pr^G) to indicate Print Grizzle, it has not yet been officially determined.

Below we will study various gene phenotypes starting with the (e) mutation at the Sox10 locus which is recessive red.

The unimproved recessive red - (1) **Ryan Harvey**, may show almost no strong 'red' colouration as we have discussed in past Issues. Much has been done over the years to add various modifiers to eventually arrive at the recessive red that we see at the shows today-(2)**Bassett**. White in a red Deroy (Agate?)Oriental Roller (3)**Walter Wojseinski**. (4) , (5) , (6) **Rob Grogan**.



Recessive red is a truly 'Epistatic' mutation as it masks just about everything else . The mystery gene here is the gene that causes pure white feathers to replace the red feathers in various parts of the bird particularly the wing shield. Most all recessive reds tend NOT to have good rich red pigmentation deep down into each feather so that the bird usually looks very white basally when the feathers are parted. However that has nothing to do with this mottling effect that in some Breeds in particular , is referred to as "AGATE". The name originated by breeders comparing this effect to the somewhat similar effect in some Stones and Rocks by the same name. Usually the Agate has a cluster of white feathers moult out pure white at the shoulder area of the wing shields called Rose wing or Mottle wing.



Breeders of a phenotype called 'whiteside' want their show specimens to be solid red or Black, to have ONLY the wing shields pure white , the very opposite of a "Saddle" Design. Most are of the opinion that the Whiteside is caused by the same "ENABLER" gene that causes the Rosewing and the Mottle wing phenotypes. These whitesides most often require plucking in order to maintain a clean edge to the Design markings .

Below you will see those lovely examples of whitesides in Intense recessive red and dilute recessive yellow - (7), (8), (9) **Bassett** photos, (10), (11), (12) **SV dZ Althollandischer** breeder.



(7)



(8)



(9)



(10)



(11)



(12)



(13)

The problem starts when we discover that many breeding programs of different Breeds have a variety of whitening genes that have allowed them to produce somewhat similar phenotypes when the understood rules seem to be contradicted. The above **Rob Grogan** photo (13) shows a RED AGATE in the background but ,what appears to be a Saturated T-Pattern Blue series 'agate', in the foreground. Is that possible?

Rule #1 an Agate is fledged solid recessive red and moults to some pure white feathers mainly on the shield at the first moult and can have that white progress to other areas in subsequent moults.

So, Lets take a closer look at this Saturated T-Pattern blue series bird. It has tarnishing of bronze along with the white areas. This is typical of a Tortoiseshell. This can be caused by Kite and/or Brander bronze.

Perhaps we can get a much better idea of what takes place if we observe a number of phenotypes that involve PRINT GRIZZLE. I realize that behind the scenes out there in the Pigeon World , there are people

saying that there is no such thing as a Print Grizzle gene, but rather it is just a combination of Classical Grizzle , Tippler Bronze , and Pied factor. However no one has produced anything at all to refute what I have been contributing on this subject. I have shown that Print Grizzle is a separate gene from (G) & (G^T)

Below we start with a Typical Pure Brander Bronze -(14) **Layne Gardner** photo, **Dan Brennan** breeder and then add Print Grizzle to give the typical Tortoiseshell Phenotype. These are NOT Agates ! - (15) **Bassett** photo & (16) **Layne Gardner** photo, **Eddie Carlson** Breeder.



(14)



(15)



(16)

Likewise we have below a Print Grizzle KITE Bronze Blue series T-Pattern Tortoiseshell phenotype -(17) **Bassett** photo, not an Agate, and then Print Grizzles , a Dun (spread dilute Black) and a Sulphur dilute Sat.T-Pattern Blue series - (18) **Rob Grogan** Breeder , also not Agates. These birds either lack Tippler bronze or it actually is the key to the whitening as **Tom** has suggested. Undergrizzle may play a role in some phenotypes .



(17)

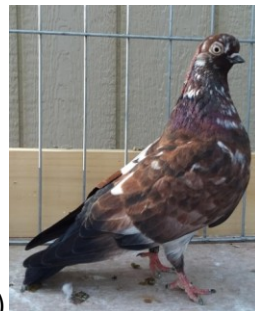


(18)

(19)**Rob Grogan** and (20) **Lou Alves**, are also Print Grizzle T-Pattern birds , dilution and Intence respectively.



(19)



(20)

The Indian Khaal Guldar is an unique Breed that is both a Pied factor bird and an unknown whitening shield trait, that is fledged as a single colour bird with white areas. Some but not all moult in Brander Bronze with the first moult to adult feather. This is an extremely unique and beautiful Breed. The actual genome is not yet known. The breed is rare enough that it is considerably inbred and deformed feet with extra toes (T-Polydactyly) are rather common. The shield in this breed is quite often completely white. You can see by the old bird in photo (4) that the bronzing of the flights is either a separate gene or the Brander did not manifest in the shield, he may also be hetero (e) and Kite. Recessive red Guldar can also have the Bronze on the shield resembling recessive red feathers or be clear winged.

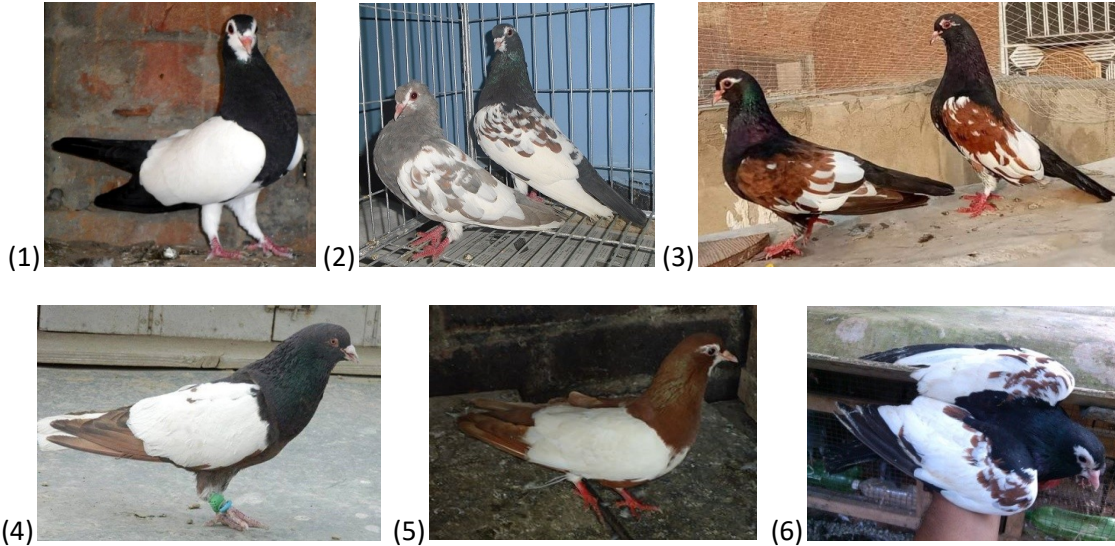
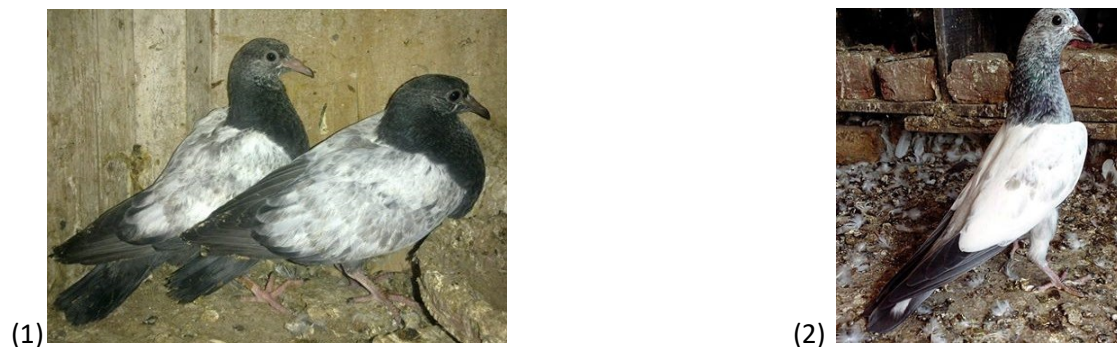


Photo (1) Shirazi Pigeons. Photo (2) Shoibal Sabbir. Photo (3) Malik Hamza. Photo (4) Shirazi Pigeons. Photo (5) Khan Pigeons. Photo (6) Jith Peter.

My observation of the "PRINT GRIZZLES" in the High Flyer Breeds of the Middle East and surrounding Countries gives me to believe that through very selective breeding and strong INBREEDING, a number of different phenotypes have been created within the Print Grizzle trait itself. One such phenotype is a near perfect whiteside, and also a whitewing form available in any base pigment colouring. Some specimens retain head and neck peppering. Below are youngsters showing the progression of the whiteside form. I believe that this is the basis for our Black whitesides. Photos: (1) Ebic Sasi. (2) Rahul Sahay.



Below a solid black -**Bassett** photo, a Mottle wing - **Bassett**, and a black white side -**Tom Demunnik**



(22)



(23)



(24)

A Pseudo "Whitewing" can be created by selecting for a dominant white flight trait such as seen in the two photos below with Spread blue/Black., and recessive red.



Photos by breeder **Naqui Shah**.

The larks as seen below are examples of a whitewing that expresses as a white shield in the barless with a Pied factor being involved. These are dilute blue (silver) barless with and without a blue/silver tail..



(1)



(2)

(1) **Syed Ovais Bilgrami**. (2) **By Mick Bassett**.

Archangels : ash-Reds Barless Pale phase, and Bar pattern Intense phase. This applies to ash-reds only and is not possible in the other two base pigments Black/blue or Chocolate/brown.



Bassett Photos

So we have had a look at the array of different genes and their phenotypes that whiten the shield areas in various ways. Each is rather unique and none can be well explained without having a much more in depth molecular level study.

The Agate must be a pure recessive red , but contrary to some writings , I do not believe that just any solid recessive red can correctly be referred to as a 'whole colour Agate' regardless of whether it masks spread factor or not! Agates must show some white after the first moult having been solid red in the nest. One possibility for the moult to white seems to be that some strains actually have Print Grizzle in their genome. The other possibility is that when certain components are amassed together one covering the other such as recessive red masking a Saturated T-Pattern that has been darkened by an unknown gene or group of genes, the result is a blocking of pigment from expressing in some mature feathers.

This does not happen with recessive reds that mask spread factor , but it does with birds that mask Saturated T-Pattern. No careful tests have been done to determine if it happens on recessive reds that mask Spread that in turn masks Saturated T-Pattern. I am not aware of any tests involving just Dark check (C^{ADk}) or T-Pattern (C^{AT}).

Another anomaly is that birds that have the partial Dominant Baldhead Design gene plus recessive red will rarely stay solid red on the shields . These birds will mottle out and usually mask spread factor. There is a completely dominant Baldhead gene such as found in the Trumpeter Breeds and recessive reds with this gene do not mottle out. Some such reds such as in Monks and some other breeds have proven to be Ash not recessive red - Photo **Gulf Farm**.



The "ENABLER" gene may just be the interaction of some of these genes, OR it may well be a separate gene unto itself that has never been isolated. However so far no known tests have been conducted to established if it is possible to produce a solid recessive red from any two agate phenotypes, and likewise no test matings have been done to see if any solid reds from Almond breeding ever produce an agate. I strongly suggest that the results of both would prove negative.

Obviously the Enabler gene is not a recessive gene and it has been assigned a symbol in Germany with a capitol E as "En" to designate a dominant gene. This being the case , as we know , a dominant gene only expresses IF it is present, as it cannot be carried hidden. Recessive reds that are solid therefore cannot have the enabler gene as it is not expressed and therefore they cannot be considered as AGATES , solid or otherwise.

Breeders of Whiteside recessive reds will tell you that mating two well marked whitesides will not ensure well marked offspring. They dip back into the mottles to control the amount of white, otherwise the shield marking over runs the desired contours and the white extends more and more.



Photo **Gulf Farm**.

Another whitening phenotype is the Argent that is seen in the Modena and a few other breeds. The Adult may have a near white shield while the rest of the bird is either a solid Black or Red , OR a self patterned bird. The genome is Toy Stencil. The darker the bird , the more likely the shield will appear near pure white. However it is not a whiteside. The full complex of the Ts family is required in order to achieve this phenotype and it is also very difficult to maintain the whitening strictly to the shield area. This is due to the genetic traits involved . Next Issue we will "TRACK THE MODIFIERS" . By tracking the presence of the various modifiers and which genetic traits require which modifiers in order to express, so we can develop a much better understanding of what to expect from each mating.

YOU can help contribute to the final analysis by reporting some of the things that you have experienced when working with recessive reds and yellows that are solid colour in the nest then moult in some white feathers.

- (1) Do you think that one of the known grizzle traits is causing the moult to white ?
- (2) Do you think a bronze gene is responsible for the moult to white?
- (3) Do you think an Enabler gene that does not express unless accompanied by recessive red is the cause?
- (4) Do you think it is the reaction when recessive red masks some of the darker genes along with T-pattern ?
- (5) Or do you have an entirely different explanation as to why colour pigments are shut off to some feathers particularly in the shields?

Please let us know - you may send me a message in Chat , or email me at Bob_rodgers556@hotmail.com

I would love to hear your thoughts and ideas and with your permission add them to a future Newsletter.

In closing this the June 2022 Issue I leave you with some beautiful photos of Whitesides and Agates.



Facebook post by King Pigeons.



Facebook Post by SV dZ Althollandischer



Recessive red whiteside **Dick Ans Hamer**



a group of Black whiteside youngsters bred by **Tom Ah Demunnik** .

That is it folks for June , in the July issue we will play with TRACKING DOWN THE MODIFIERS , so until then be safe , be wise , and behave ! Remember we got into Pigeon to keep us out of trouble !

I would like to introduce you to my Mother , as most of you barely know me let alone anything about my family. My Father LeRoy Francis passed away at only age 67. I have two older sisters and one younger sister. We were raised near Halifax Nova Scotia Canada.



On May 26th. 2015 Elsie Lillian Cole Rodgers passed away at age 103 , in her last days she told me that she wished that she could be remembered forever, but was concerned that she had never done anything for which to be remembered. Like so many Mothers she devoted her entire adult life to making certain that her four children and her Husband , were cared for no matter how unwell she felt. She always seemed to have the answers! Through poverty and very difficult times Both of my Parents were always there for us. I loved them then as I love them now . They will NEVER be forgotten for their sacrifices and devotion to us but they most certainly are missed every Day!

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