The **Pigeon Genetics** Newsletter

News, Views , and Comments

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June 2015 Volume 6 page 1 . Section **# (1) Beginners** .

Bronze factor .

Columba guinea , an unique wild pigeon that is one of the very few wild species that expresses a type of bronze colouration. These birds were successfully crossed with Columba livia domestica by curious Breeders over the years, with fertile offspring reported .There is ; however , no known connection with domestic genetic traits . Despite some instances of fertility in the first or even second generations , Hybrids rarely produce beyond that .

Bronze may be a Dominant , partial dominant or recessive Autosomal trait regardless of what form it takes. The dilution phase is referred to as "Sulphur" and is a yellowish tan. Bronze may be a direct , Indirect , or variable expression.

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You may see people writing about a BRONZE BASE! This does not mean that it is a Base colour pigment at the major colour locus ! There is no such thing as a Bronze Colour Base , as this trait cannot stand alone . It must express in conjunction with , and as a modifier to each of the three main Base Colours at the Major Colour Locus. Bronze plays NO role in Breed Type . Bronze is part of the pigment cells and modifies the base pigments so that we see a reddish tone that otherwise would not be present. The full story about "BRONZE " is not yet understood. In some cases there appears to be combinations of different bronze traits. In other cases it appears as if just one bronze trait is made visible on various portions of the feathers as a result of other modifier expressions . We will attempt to clarify that in this issue !

Most of the written information that has been included in this Issue has been gleaned from the years of testing and writing by Dr. Lester .P. Gibson and presented here by Bob Rodgers. Photoshopped pictures adapted by Jith Peter. Photos at the Header are : Tri Gazzi (fb) , Ts1 spread Schetti (fb) , Khabra (fb) , Lahores (Nilesh Rajput) , and Brander youngster (fb) .

Kites (Intense and dilution , bred by Stephen Scott NewBrunswick Canada) .

(IF THERE IS A MAIN BRONZE among bronzes , it seems to be what has been named **KITE BRONZE**).

{ Specific **Genetic Bronze Traits** } Brander, Lebanon, Tortoise and Tippler (Kite bronze related bronzes).

"**KITE**" : The most commonly recognized bronze is "KITE" Bronze. It is expressed primarily in the flight feathers from the base outwards toward the tips on the inner vane side of the mid-rib (rachis). It may also be seen in the base area of wing shield feathers and tail feathers. It appears more or less as an under-colour as opposed to other bronze traits except in juvenile feather where it temporarily expresses on the outer edges of feathers . In the juvenile it appears as a wash or cast of bronzing over the head , neck , and shield areas, but quickly moults away after the first moult. Birds that have this expression of bronze have become known as "Kites" and in particular saturated T-patterns with the bronze flights are referred to as kites. This is the combination used in the production of Classical Almonds in North America .

Photo edit by Jith Peter. From left to right first a Danish tumbler by Wim Halsema, and second a Berlin short-faced tumbler and third a German show tippler Photographed by Mick Bassett. All are brander bronze free from recessive red mutation.

<u>Brander</u>: This bronze is probably the most curious one in that firstly it appears to have Kite bronze as part of its expression. It was thought to be an improved Kite with other modifiers , but testing indicated that it was indeed a separate type of bronze with kite as a partner. It has been found to produce several hidden traits such as Sooty factor, Undergrizzle which seems to be closely linked to kite, and perhaps a type of pied factor enabler, possibly activated when certain combinations of Spread, T-pattern, Undergrizzle, recessive red , and Brander that has been enhanced by recessive red, come together. Brander is used with the Almond gene in Germany to create the dark "Stipper" Classical Almonds for show there . Breeding good Brander colour requires recessive red .

Classical Grizzle Brander PortugeseTumbler and self Blue /black Brander Tippler (Dan Brennan).

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Tiger grizzle Mottle Brander flying Tippler (Eddie Carlson), and Tiger grizzle Brander Tortoiseshell W.O.E. T. Undergrizzle is probably present also .

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Tippler Bronze : This trait is also very vague as it seems to involve other bronze expressions such as Brander and Kite.   Undergrizzle , Pied , & Classical Grizzle all appear to be combined in this genome and the combination causes what is referred to as PRINT grizzle . These Print grizzles with the bronze and in particular T-pattern are called Tortoiseshells . The grizzle traits , like the Almond Trait do not break down Bronze , so we see the bronze expressions if there are any deposits in the feathers .

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Russet -tri Gazzi Modena (Dennis Weyrauch) & bronze bar Blue (Jerry Burgr).

{Genetic **Complex Bronzes** } Modena Ts1 & Ts2 ., & Cauchois Ts1 , Ts2 .

Mahogany / Ts1 : Here is one of the areas where you will read about very differing points of view . There are those who believe that there is a type of bronze once found in Modenas that was indeed different than the one we see today. It was called Modena Bronze or Mahogany (symbol Ma). However most testing has virtually dispelled that notion and has proven that the Bronze in Modenas is in fact One of the components of the Toy Stencil Complex that has been assigned the symbol (Ts1). It is a dominant autosomal gene. A second trait in the complex is the partial dominant gene (Ts2) which causes a washed out pattern of an oyster shell colour. The third trait in this complex is (ts3) a non - allelic trait which has not been found to have a specific expression on its own . It is a recessive gene that combined with either of the other traits in a pure state , or as a three way combination , causes a white pattern expression. The ts3 gene may be expressed as a green sheen on the Coarse spread areas when the other two Ts traits are not present.

Photo edit By Jith Peter. Intense and dilute Cauchois pigeons, photos from facebook.

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Cauchois Bronze : The bronze seen in this Breed may simply be Ts1, if not , it is similar. It may also be enhanced by Kite bronze... There are often lighter specimens that seem to be Ts2 plus kite and it is referred to as "Rose" colour. During testing , mixed results regarding dominance and recessivity were reported possibly due to the fact that it was difficult to say when the specimens were Ts1 plus Kite ., or Ts2 plus kite . Later testing revealed that the full Ts complex was indeed present in the Cauchois Breed.

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Photo edit by Jith Peter . Red and yellow Lebanon pigeons, photos from Facebook.

Intense red and dilute Lebanon Bronze (Roger Hansen).

Lebanon Bronze : Various schools of thought on this , the effects of this and another bronze on Ash-red T-pattern seem to be the main cause of the phenotype . (Possibility of a simple recessive trait lost in the first generation and dependent upon Dominant ash - red to express) Gibson. The Frill stencil white flights and tail band on the ash base shows that these birds are not hetero for recessive red as it has been found that ash-red het. for blue base recessive reds will have dark bluish flight feathers and tails and the white tail band will be gray.

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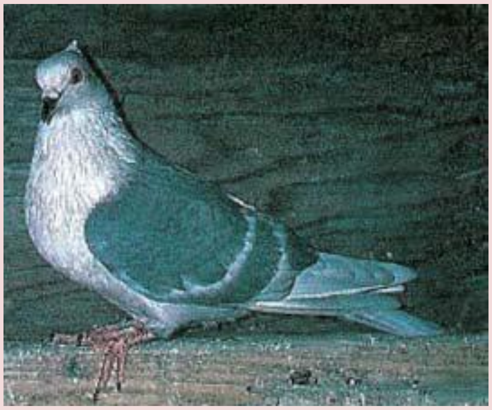

Copper Black wing Ka1 & ka2 (Link Martin) , Dom. Opal Black wing (PGNV&C Paul Gibson)

Nuremburg Lark (Lb) (Tally Mezanatto)   Ka1 Crescent only.

{Genetic **Nebulous Bronzes** } Gimpel Ka1 , ka2 , atlas , Lark Bronze (Lb) , Swift bronze (Ka1).

<u>Nebulous Bronzes</u> : (Archangel Bronze) These possibly should not be classified as actual bronze due to the fact that modifiers can change them to a silvery white over the entire feather in the clumped pigment areas (by adding Dominant Opal), unlike the other bronze traits . We find Archangel bronzing in both Dominant and recessive forms. (WE WILL DEVOTE ONE ISSUE TO THIS IN THE NEAR FUTURE).

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{ **<u>Transient bronzes</u>** : that are difficult to pin down . Roller bronze & (off-coloured blue juveniles in some Breeds).

<u>Roller Bronze:</u> This trait is very confusing as it appears to give only a faint bronzing of both the Coarse spread pattern areas and the smooth spread areas. It does not express elsewhere and is hidden by spread factor . It may only show when the birds are hetero for recessive red .
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{ Genetic **undetermined Bronze** } Specific to the Shakh Sharli , Saxon Fireback & South German Fireback Breeds

Photo edit by Jith Peter .

<u>Shakh Sharli Bronze</u> : The bronze appears at the main portion of each feather which may have white tips for an effect similar to that of the Mille Fleur Bantam hen. Due to the feather structure it is most evident on the shields. There is considerable variation even within the various modifiers .

<u>Firebacks</u> : Expresses as a deep bronze on Black shields .

While the Bronze in Shakh Sharli and the Firebacks was tested and deemed to be an unique Bronze , many of today's specimens appear to be Ts1 and or Ts2 , and even possibly Brander , since Ts does not express on the Body as some of the photos below indicate .

Photos provided by Jith Peter .

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Blue Indigo photo Ryan Harvey , and typical Almond T-pattern Wes Murphy. (In) T-Pat. P.G.

{ **Residual Bronze**) left over colour of bronze genes. Revealed by Almond (St), Indigo (In), Opal (Od) , opal (o) and reduced (r).

<u>Residual Bronze</u> : By this I mean any bronze that appears on feathers anywhere on the bird as a result of another modifier breaking or rearranging base pigment cells. In every case this may actually be Kite bronze., or a recessive bronze that we normally do not see unless a specific trait exposes it for us to see . Most likely the former because we see very little evidence that there are other hidden bronze genes that are unknown.

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A modifier that actually resists the effect of **<u>some</u>** bronze factors is SPREAD factor ., and when it is combined with the (St) gene , the result is a white bird with either black ., ash ., or chocolate feathers spotted over the entire bird with little or no visible bronze. The Almond (St) gene does not completely break Kite bronze but in some cases Spread (S) seems to mask kite completely.

You will hear it said that Spread masks all bronze . That would only hold true if there was but one single bronze trait, but we know that there are many. We also know that various modifiers can play a role in helping or hindering the expression of others . However Spread does not mask Ts1 well , and may only lesson its expression by masking any kite that may be working along with Ts1.

Level 3 Advanced : Below we deal with an idea that there may to be a Bronze trait that more or less hides on blue & brown series birds , but then appears in the company of Ash-red helping to create much richer red colouring..
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Ash red Saturated T-pat. with a bronze trait. (Intense phase and dilute phase). This is the bronze expression that enhances ash-red & yellow in Capuchines , Jacobins , Lahores & Indian Fantails that Gene Hochlan found to be a recessive unnamed bronze . He said it disappears when crossed to blue/ Black, and Brown/ Chocolate, where when also combined with spread., it can produce spread birds that show pattern. Ironically it deepens the ash-red to rival the recessive red phenotype . This gene has not been studied nor isolated and named as yet .

Capuchines Hall , England ., Lahore Nilesh Rajput, Jacobin , I think post by ..Anwarul Kabir on Facebook.

(The following from a 2013 Issue of PGNV&C , Ed, Paul Gibson.)

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GENE HOCHLAN WRITES:23sept'11
Many fanciers believe that there is an actual gene that causes the "whiteside" effect on recessive red without spread.
My theory is that it is actually caused by a form of bronze that occupies primarily the wingshield area. The juvenile plumage of recessive reds covering this bronze is solid red but when they moult in the adult feathers, the wingshield becomes white to various degrees; anywhere from rosewings to full white shields; probably depending upon the pattern underneath. [Editor: I think depending upon whether gene is hetero or homo.]
Tests have been conducted by fanciers using wild type but I believe the results are deceiving since this weak form of bronze does not show very well on blue. Not only was recessive red transferred to wild type but also the bronze. The resulting percentages of wild type, recessive red and recessive red mismarked whiteside and true recessive red whiteside, in the F2s would lead one to believe that only "whiteside" was involved and not the "bronze?.
Many years ago when breeding Chinese Owl pigeons, I had recessive red whiteside appear out of nowhere. With some testing, I soon realized that certain Chinese Owls out of Minnesota were behind this whiteside phenomenon. What was different about these MN birds what that they had Jacobin in their background. The cross was made in hopes of improving the neck collar and a bronze from Jacobins was also introduced unwittingly. The bronze is barely noticeable on blue but will sow itself very similar to Lebanon bronze on Ash Red. When combined with recessive red on blue, the whiteside appears.
This same form of bronze, when combined with Blue Spread, will wash out black to the point where you can plainly see the pattern.
My observations are "theoretical" and perhaps others can add their experiences.
This pseudo-Lebanon bronze can be found in a number of breeds: Jacobins, Old Dutch Capuchines, Lahores, Indian Fantails; just to name a few.
EDITOR: Kite bronze seems to express as if it is "basal " in its concentration as opposed to Brander and Ts1 which express as if layered ove Gene, as you know, Tim Kvidera worked with rec. red whiteside and reporting on its inheritance in 1982 and gave it the symbol Ws. This probably should be listed as

e//e,Ws//+ since it is a partial dominant that only expresses on e//e. Years later, I also worked on the rec. red whiteside and concluded that Tim was right on.
You also know that for a number of years after Tim did his work, it was thought that the effect was probably some type of grizzle. That was one of the things I was checking on. I concluded that the whiteside of the rec. red was not an effect to some type of grizzle. However, at the same time I was working on the black whiteside and it is definitely the result of a grizzle. (The black whiteside effect really should be called spread whiteside since it can be produced on other spread colors than black, even spread

rec. red.) This type whiteside tends to show white on other parts of the body besides the shield and some intensive breeding is required to breed out these extra white areas. Now whether the whiteside of e//e is caused by a type of bronze or not I could not say because the whiteside effect only shows up on non-spread rec. reds. And I did not check for bronze. We realize that many times white molts in from a bronze on Toy Stencil on many of the young homo Ts complex and young bronze marked birds molt to white Ts markings. However, some Ts complex are white marked in the juvenile. Also, when testing e//e whiteside, I found that even though there is a lot of variation in the white areas, the "rose" was a stage (e//e,Ws//+) in the formation of whitewing (e//e,Ws//Ws) and usually plucking was necessary in the finished total whitewing effect.
Many e//e birds have an Undergrizzle phenotype. If the e//e bird is actually Undergrizzle, white appears in the adult in other places than the shield. There are many birds that look like they may be Undergrizzle but are not. Guess I have rambled enough.

Combinations of these Bronze traits plus Heterozygous recessive red produces the extremely red bronze traits . The base colour however , remains visible at the tips of the wings and tail bar as bronze rarely ever effects "smooth spread" areas completely.

Brander Bronze the lacks recessive red and perhaps Kite Bronze. (note typical Sooty factor).

Below : English show tipplers owned and photographed by Mick Bassett, right one is a show type (brander+heterozygous recessive red) and right one is a brander bronze lacking recessive red mutation.

From left to right two intense and two dilute cathalonian tumblers owned and photographed by Lou Alves. Photos edit Jith Peter .

No matter what traits we talk about , there will be variations and exceptions , some of which defy all reasoning. Many more years of study will eventually unravel all that is to be known. Below we can see a few examples of expressions of bronze that while completely different genetically , produce phenotypes that may appear rather similar.

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White wing Ash red archangel

Full Toy Stencil Recessive red Argent Modena .

A Turkish takla(Ice+Ka1) Photo from facebook. Photo edit Jith Peter.

Below , nice examples of Ts1 printing on spread blue (Black) .

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Barred (facebook)

T-Pattern spread (Mick Basset.

Dear Readers : Due to the very recent death of my beloved Mother who was just a few weeks shy of her 103rd Birthday ., I have not done all of the work on this Newsletter that I had originally planned , so have sent it out to you unfinished in a number of ways . Hopefully I will be back on track for the July Issue. I cannot begin to tell you how tragic this has been as she was perfectly healthy ., simply fell in the Kitchen while pushing her walker toward me . She apparently damaged the soft tissue in her spinal area, and there was nothing they could do except Morphine , which slowly kills the patient. I would not wish that on my worst enemy! She was a gentle loving woman who cared for everyone around her and loved to garden and do crafts. She never hurt a soul . I feel so much pain right now I am consumed by grief!

1st. (thuringer goldkafer), 2nd. (English show tippler), & 3rd. (Rumanian vargat whitetail) by Mick Bassett. 4th. Kabre by Muhammad Shoaib.

That is it from the Pigeon Loft until next Month ... when we talk about the Almond Family !

We will have another Issue devoted to the Bronze traits later on .