

The Pigeon Genetics Newsletter, News, Views & Comments.
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(Founded by Dr. Willard .F. Hollander)

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Here is Part 3 in a series of Issues on the Ringneck dove by Hein Van Grouw in the UK. This will be the third last Issue of "The Pigeon Genetics Newsletter" News , Views, and Comments. I had a computer crash today and by some sort of miracle, it came back together for me this evening after a day of frantic attempts that failed. A friend Dave Blake did a Quick Assist to no avail. I am mailing this out tonight as I cannot be certain I will have the computer again after this.

The December Issue will be the very last Issue and will be a mix of various topics to finish out the year.

Thank You to each and every one of you who have been supportive , some since back when Dr. Gibson was still the Editor.

A very big thanks to all of you who wrote to give your vote of appreciation and Best Wishes!

The following text has been written from an European perspective and has been published earlier in episodes in the English magazine *Cage & Aviary Birds*. The text is slightly adapted for this Newsletter, and some additional information has been added. All photos by the author.



I'm keeping Ringneck doves, known as Barbary doves in the UK, for more than 45 years now and have investigated the inheritance of all mutations available to me in those years.

Hein van Grouw, October 2025

DOVE GENETIC, PART 3.

Isabella, a forgotten colour in the Barbary dove (Rosy, symbol ry)

In the 1950s the Isabella mutation was discovered in Ohio, United States of Amerika. This trait first occurred in combination with Blond and is called Peach in America and Blond-isabel in Europe. After removing the Blond mutation by crossing in wild-coloured stock, the Isabella mutation was then also bred in its basic form, called Rosy in America but simply Isabel in Europe. The mutation was imported into the Netherlands in the early 1980s, and as Isabella is causing a clear and striking colour difference from the commonly available Blond, it soon became a highly desired variety among breeders in Europe. Nowadays Isabella seems to be forgotten, since newer mutation have become more popular.



The name Isabella for the mutation was given to the first Blond-isabel doves coming into Europe. Among the doves in the first imports were also birds with Isabella in its basic form, but at the time these were thought to be a different mutation.

Photo 46: Isabel Barbary dove, cock. This is the Isabella-mutation in its basic form, without any other mutations involved. Among the doves in the first imports in the 1980 were also birds in its basic form, but at the time these were thought to be a different mutation.



Blond-isabel (Peach) is pale yellowish-brown—*isabelline*— all-over, whilst Isabel (Rosy) is warm reddish-brown with a strong purplish hue on the head and breast. The term *isabelline* for a pale yellowish-brown colour, according to a popular legend, comes from Isabella I queen of Castile (Spain). During the siege of Granada, which started in April 1491, Isabella is claimed to have vowed not

Photo 47: *Blond-isabel (Peach) Barbary dove, hen. When the first doves arrived in Europe this pale yellowish-brown colour was given the name isabel, after the colour of queen Isabella 1 of Castile her dirty underwear.*

to change her underwear until the siege was over, expecting a quick victory for her husband Ferdinand II King of Aragon (Spain). Since the siege lasted 8 months, it is claimed that her white underwear in that interval had discoloured to pale yellowish-brown, the colour of a Blond-isabel Barbary dove....

The plumage colour of the Barbary dove is the result of eumelanin and phaeomelanin (see also July 2025 Newsletter). The black neck ring, the primaries and the dark tail markings contain eumelanin only, and the rest of the plumage gets its colour from the combination of both pigments. The pinkish-purple hue on the head and breast, found in many pigeon and dove species, is also the result of both melanins, but mainly phaeomelanin. The mutation *Isabella* in the Barbary dove only affects the eumelanin, whilst the



phaeomelanin remains unaffected. Due to the reduction of the eumelanin the remaining phaeomelanin more clearly shows, resulting in the deep pink-purple head and breast plumage, and the bright reddish-brown wing coverts. The primaries, which contain eumelanin only, are lighter, but the neck ring and tail markings don't show visibly the effect of the mutation due to the high concentration of eumelanin.

Photo 48: *Isabel silkie Barbary dove, cock. Due to the reduction of the eumelanin only the remaining phaeomelanin more clearly shows, resulting in the deep pink-purple head and breast plumage, and the bright reddish-brown wing coverts. The primaries are lighter, but due to the high concentration of eumelanin in the neck ring and tail markings, the mutation doesn't have a visible effect on these parts.*



Photo 49: Blond-isabel Barbary dove, cock. The mutation Blond in combination with Isabella causes a strong reduction in both melanins, causing nearly white primaries and a dark brown neck ring.



Photo 50 and 51: Open wings of Isabel and Blond-isabel (Blond) Barbary Dove to compare the change in pigment colour. Owing to the Isabella mutation the original blackish and greyish colours (eumelanin) are reduced, resulting in the reddish phaeomelanin showing brighter. In Combination with Blond both melanins are strongly reduced.

Isabella is recessive in inheritance, so when an Isabel-coloured dove is crossed with a non-isabel, the offspring will be non-isabel, but carrying the gene for Isabel. If these carriers are paired together, 25% ($\frac{1}{4}$) of their offspring will be Isabel again. If a carrier is paired with an Isabel, then half of the offspring (50%) will be Isabel.

Due to the recessive and sex-linked inheritance of Blond, crossings between Blond-isabel and Isabel inherit in the same way as between Blond and wild-type (see June 2024 Newsletter. Therefore, from a pair of Isabel doves, it is possible only to breed Blond-isabel if the Isabel male is also heterozygous for Blond. The Blond-isabel offspring, however, are always female. To breed a Blond-isabel male, it's necessary to pair a Blond-isabel female to a Isabel male heterozygous for Blond. From paired Blond-isabel doves, however, one can never breed an Isabel bird again.

Pied, a variable mutation in the Barbary dove (symbol pi)

The pied mutation in the Barbary dove has occurred several times in the 20th century, all in America. First recorded by Finn in 1902, in 1947 by Oscar Riddle, then 10 years later, in 1957, appearing almost simultaneously in Phoenix, Arizona and Baldwin Park, California. In the early 1980s the mutation was imported from America to the Netherlands and is now commonly present in most parts of the world. The current pied doves are all descendants of the 1957 birds.

Pied, also known as variegated in other bird species, is a form of leucism, causing white plumage mixed with normal-coloured feathers. This pied mutation in the Barbary dove is a rather odd member of the



group of mutations classified as leucism. In leucism in general white feathers are the result of the congenital and heritable absence of melanin-producing cells from some or all of the skin where they would normally provide the growing feather with melanin. It also affects the pigments in the iris but not those deeper in the eye, resulting in pied doves having dark eyes

Photo 52: Blond Pied Barbary dove, hen. Leucism mutations do affect the pigments in the iris, but not those deeper in the eye. The dark eye colour in pied doves is caused by the melanin pigment at the back of the eyeball, what is now visible through the transparent tissue of the iris.

The white pattern in normal leucism occurs already in juvenile plumage and the amount and pattern of white feathering does not change with age. In this form of leucism in Barbary dove, however, juvenile plumage is rather different from adult plumage in which the final, static, mix of white and coloured feathers occurs. Instead, juvenile plumage is a mix of white and coloured barbs giving an overall

'grizzled' appearance. Each juvenile feather is replaced by either a fully white or an entirely coloured feather in adult plumage. This form of leucism is rare in birds but is the most common form in Barbary dove.



Photo 53 and 54: Rosy Pied Barbary dove, cock. Juvenile plumage (left) is grizzled all over, and one cannot predict what the final pied pattern will be as an adult (right, same individual) after the first juvenile moult.

This pied mutation also causes an increase of phaeomelanin in the remaining coloured feathers, resulting in that these feathers being warmer, and browner coloured than in the same colour without pied. This effect is even visible in split birds. Although a non-pied bird being split for pied does not show the white feathers, overall its plumage shows more phaeomelanin colouration than a dove without the gene for pied.

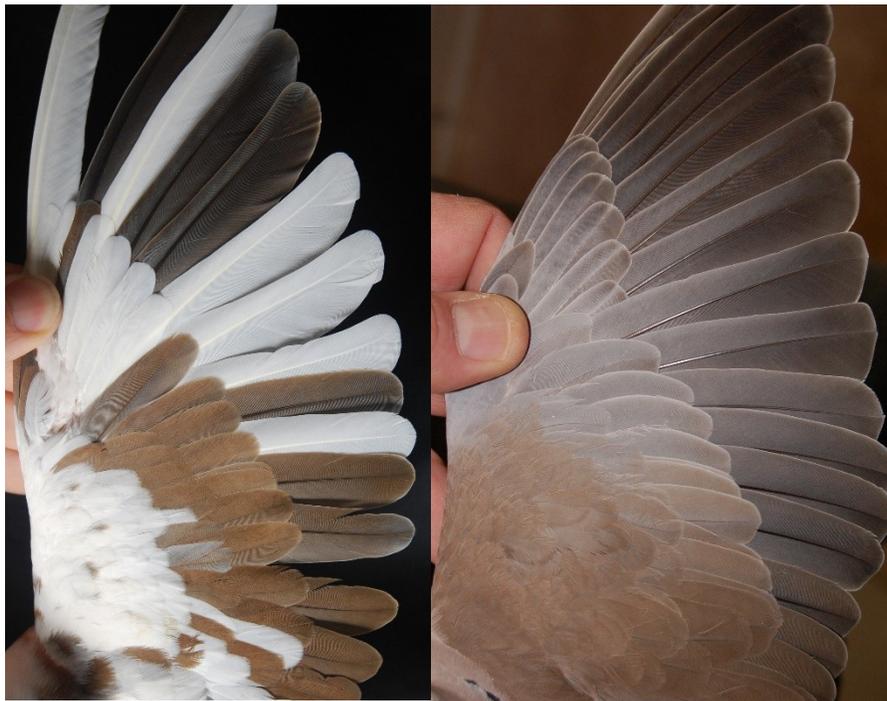


Photo 55 and 56: Open wings of Wild-colour pied (left) en Wild-colour (right) to compare the change in pigment. The pied mutation also increases the amount of phaeomelanin in the coloured feathers, resulting in these being browner in colour than those in the same non-pied colour.

The inheritance is autosomal and recessive, so a pied crossed with a non-pied results in non-pied offspring only. This offspring, obviously, is split for pied, and crossed together 25% of their offspring will be pied again. And a split-bird crossed with a pied results in 50% pied youngsters again.

Different patterns

The pattern of white and coloured feathers cannot be predicted from the juvenile plumage, and the



youngsters from the same parents can be all totally different. By selective breeding a stock of doves producing a pattern what is a bit more stable in inheritance can be achieved, but due to the nature of the mutation a fully stable heritable pied pattern is not possible. For the show a random 50/50 pattern, giving a mottled effect, is ideal but most doves will not meet that requirement.

Photo 57: Blond Pied Barbary dove, cock. Its pattern is close to the desired random 50/50 white and coloured feathers but, to make it perfect, a few coloured primaries would be required.

Some pied doves have remarkable more coloured than white feathers, what always roughly occurs in the same pattern; white head, chest, belly, and a spot of white feathers on the wing shield, whilst the



rest of the plumage is fully coloured. It appears that this pattern as such is heritable, and it may be caused by a different allele of the pied mutation.

Photo 58: Blond pied Barbary dove, hen. Some pied doves have remarkable more coloured than white feathers, what always roughly occurs in the same pattern. It appears that this pattern as such is heritable, and it may be caused by a different allele of the pied mutation.

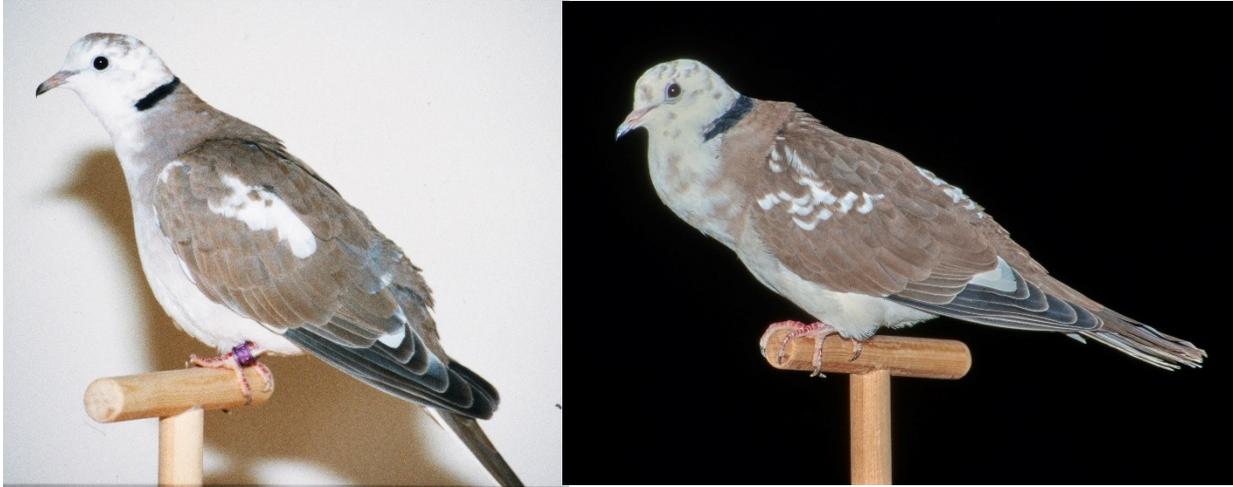


Photo 59 and 60: Wild-colour pied Barbary doves, hen (left) and cock (right). Some pied doves have remarkable more coloured than white feathers, what always roughly occurs in the same pattern. It appears that this pattern as such is heritable, and it may be caused by a different allele of the pied mutation.

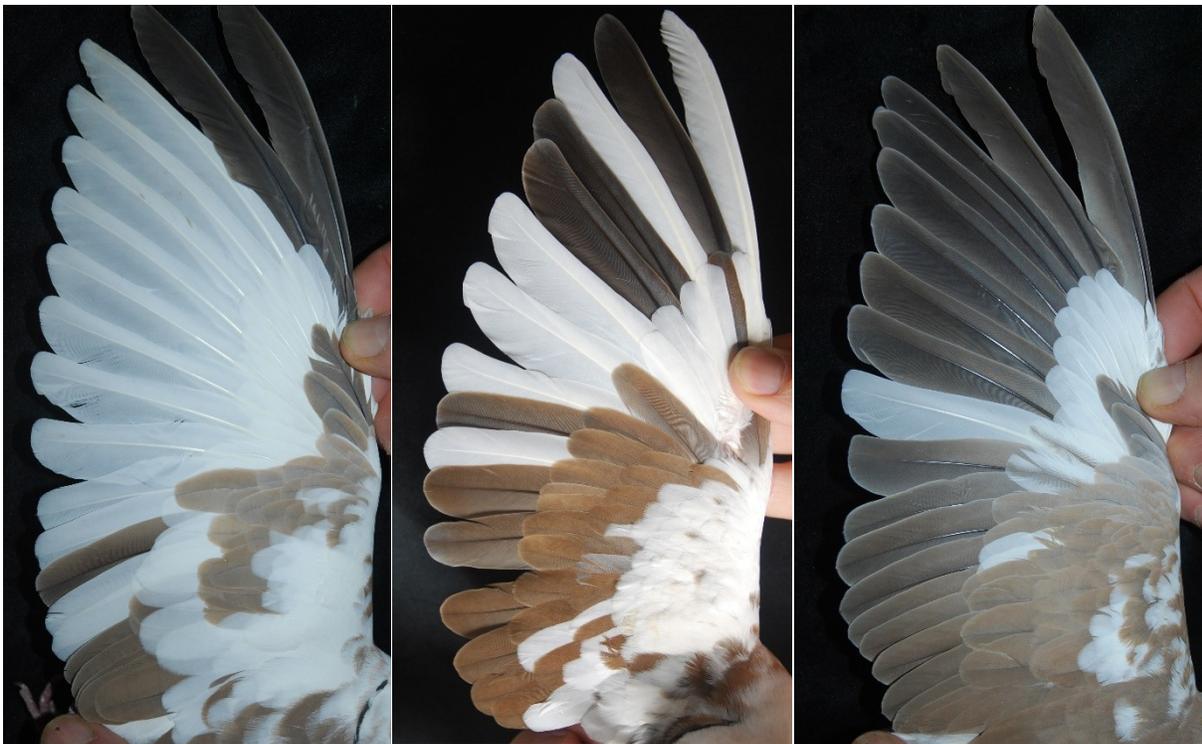


Photo 61, 62 and 63: Open wings of Wild-colour pied Barbary doves, to demonstrate the variable number of white feathers as a result of the pi-mutation in each individual.

The Black-eyed White is a pied dove without any coloured feathers left. Breeding these is only for the dedicated breeder with a lot of patience, as it is a long process of selection to finally breed a fully white bird. And even the fully white ones often still have a pigmented bill tip what ruins the appearance. The



Americans have chosen the simple way of breeding a white dove with dark eyes, what they call Bull-eyed White. Their bull-eyed whites are, in fact, a combination of Pied and sex-linked White (ino). As, despite the name, the mutation White causes a light cream-coloured plumage, these 'pied-whites' are not fully white, and in daylight the cream-coloured feathers are clearly visible next to the true white feathers.

Photo 64: Black-eyed white Barbary dove, hen. The Black-eyed White is genetically a Pied dove but without any coloured feathers left.

Also, as White (Ino) doves have reddish eyes, in combination with Pied the eye colour will be dark plumb coloured instead. So, all in all, the American Bull-eyed White Barbary dove is not at all what a proper Black-eyed White dove should be. There is an easy way of breeding the latter though, what I discovered by accident, and what I shall reveal in the next Newsletter.

Another Pied (no symbol)

In Eastern Europe, probably in the 1970s, a different pied mutation occurred, which was given the meaningless name 'Californian' by the German fancier A. Münst. It is a different form of leucism in



which the pattern of coloured and white feathers is already present in the juvenile plumage. Also, the coloured and white feathers are divided in more solid patches. In general, the head, breast and underparts are white, and the upperparts fully coloured. Californians occur with coloured primaries or with white primaries. The inheritance is autosomal recessive, but not much more research is done on their genetics so far.

Photo 65: Blond Californian with white primaries Barbary dove, cock.



Photo 66 and 67: Blond Californian with coloured primaries Barbary dove, hen (left) and juvenile (right).

This mutation is not present in America as far as I am aware, and is very rare in Europe. Sadly, Californian was crossed in ignorance with normal pied resulting in pied doves carrying both genes. These doves can only be identified in their juvenile plumage, as the pied pattern caused by Californian is already visible as white feathers. The parts of the plumage which would be fully coloured in Californian are now grizzled, due to the presence of normal pied. After the moult these parts will gain white feathers, but how many is impossible to tell. As adults these combination birds cannot be distinguished from pure normal pied doves and therefore, sadly, it is likely that Californian as a distinct mutation will disappear.



Photo 68 and 69: Wing of a juvenile Barbary dove which is both Californian and Pied, and the wing of the same dove as an adult. The three white outer primaries in the juvenile plumage are the result of Californian. The parts of the plumage which would be fully coloured in Californian are now grizzled, due to the presence of normal pied. After the moult these parts will gain white feathers, but how many is impossible to tell. As adults these combination birds cannot be distinguished from pure normal Pied doves.

Phaeo, the most popular mutation in the Barbary dove

The Phaeo-mutation in the Barbary dove has gained popularity rapidly after it was first discovered and appears nowadays even be more common than Blond or Ino. It has its roots in former Czechoslovakia where in the 1970s it was discovered by the German fancier A. Münst. The mutation first occurred in combination with Blond and Münst named the resulting colour 'Orange'. In 1981 'Orange' Barbary doves were imported into the US where, after introducing the wild-colour, the Phaeo-mutation became available in its original form, and was called Tangerine.



The name Phaeo used for this mutation in Europe is because the mutation reduces the eumelanin (black and grey) but does not affect the phaeomelanin (reddish-brown), so the plumage colour is determined by the latter pigment only. Doves with the basic (single) mutation are often referred to as Wild-colour Phaeo, to distinguish it from other varieties which are in combination with other mutations like Blond-Phaeo (Orange) or Ino-Phaeo (Pink). In fact, to refer to the colour rather than the mutation, the name Phaeo is only used for doves who are homozygous for the mutation. In homozygous form no eumelanin (black, grey) at all is present, and Phaeo-doves therefore have white neck rings, white flight and tail feathers and the brown parts show more reddish-brown due to the absence of the overlaying grey.

Photo 70: Phaeo Barbary dove, cock. Due to the mutation the eumelanin is fully absent, and only the phaeomelanin remains in the plumage, and therefor all originally black parts of the plumage, like the tail and flight feathers, and the neck ring, are white. As naturally the phaeomelanin is more present along the feather edges, parts of the plumage in Phaeo-doves, like the back, shoulders and tail coverts are 'laced' with a white feather centre and a brown edge.

As naturally the phaeomelanin is more present along the feather edges, parts of the plumage in Phaeo-doves, like the back, shoulders and tail coverts are 'laced' with a white feather centre and a brown edge. Therefor in the US they call it Tangerine Pearled. Generally, hens have more phaeomelanin than cocks, so is easier to breed a perfectly 'laced' hen as the cocks easily become too white with not enough phaeomelanin left.



Photo 71, 72 and 73: Open wings of Phaeo Barbary doves. Left (71) a cock and middle (72) a hen. Generally, hens have more phaeomelanin than cocks, so is easier to breed a perfectly 'laced' hen (73) as the cocks easily become too white with not enough phaeomelanin left.

Phaeo is partial dominant in its inheritance, meaning that heterozygous birds differ in appearance from homozygous ones. As described above, the plumage of the homozygous doves is lacking all eumelanin,



leaving the phaeomelanin only. In the heterozygous doves however, as they have only one gene for the mutation, the eumelanin is reduced and not fully absent. All originally black parts of the plumage, like the tail and flight feathers, and the neck ring, are grey in the heterozygous Phaeo dove. Breeders in Europe often call them 'Grey-necks' to distinguish these heterozygous doves from the homozygous Phaeo, which has a 'white neck'. The Americans refer to them as Tangerine.

Photo 74: Grey-neck (heterozygous phaeo) Barbary dove, cock. As the eumelanin is only reduced and not fully absent, all originally black parts of the plumage, like the tail and flight feathers, and the neck ring, are grey. Grey-necks do not show the 'lacing' as present in homozygous Phaeos.

So, when a Phaeo-coloured dove (no eumelanin) is crossed with a non-Phaeo (with eumelanin), all the offspring will be Grey-neck (heterozygous Phaeo, so with reduced eumelanin). Due to the partial-dominant nature of the mutation, Grey-necks never breed true and paired together, 25% of their offspring will be non-Phaeo (eumelanin, black neck ring) again, 50% Grey-neck (reduced eumelanin) and 25% Phaeo (no eumelanin, white neck ring). Grey-neck paired with non-Phaeo will produce both Grey-neck and non-Phaeo in equal numbers. Grey-neck paired with Phaeo results in half of the offspring (50%) being Grey-neck, and the other half Phaeo.

To be continued