

## The colour variations in Gouldian Finches

article by : Pascal H.

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The fact that every part of the Gouldian finch's body, varies in colours independently, has been approved and agreed upon since the start of the mutations. And this is probably, the cause of the multiple variations we find in the phenotypes of Gouldians, nowadays.

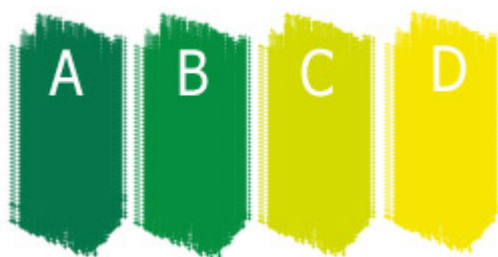
It is true that chest colours are independent from head colours, and of course back colours also vary regardless of other mutations.

But what is less obvious, is the close intermingling of mutations and the links they form as they interact while present in the same bird...

This is not a genetic inheritance article nor do I claim it to be, it is just a simple explanation of the colours you would expect to see in a Gouldian finch. The pictures are made simple more like paint samples to give a visual imprint of what I am explaining.

Here below I will first describe the colour of the back in Gouldians I then will explain head colour variations, to finish up with the chest variations.

I have used melanin and carotenoid as colour pigments in this article, because it is intended to be simple for beginners, but to be more accurate, you have two melanin pigments in the Gouldian finch: eumelanin (black) and phaeomelanin (brown), and also two carotenoids: lutein (yellow) and astaxantine (red). But the use of melanin and carotenoid could also apply so here it is:



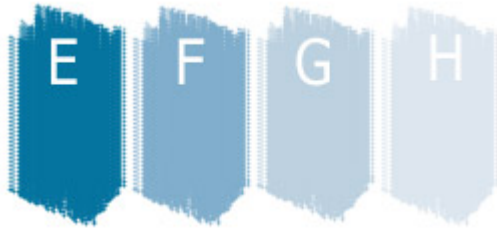
### Back colours:

**A:** this is the wild colour in Gouldians, it is made of yellow pigment, and the melanin that make the blue (the blue is not a pigment but is reflected by the feather's infrastructure in the presence of melanin)

**B:** this is the back colour of a dilute Gouldian, in this mutation, the melanin is reduced and therefore the green in the back is lighter. This happens because there is less black in the feather, which makes less blue reflect, and thus the colour tends toward yellowish green.

**C:** this is also the colour of a dilute, a white breasted (an example of mutation interaction). White breast in dilute birds, reduces the melanin (phaeomelanin) even more, up to 75%, the same phenomenon occurs but at a larger scale, less melanin, less blue, leading to a greenish yellow.

**D:** here, the melanin is completely lost. This is a yellow bird. The blue has totally vanished, therefore only yellow pigments in the back shows up.



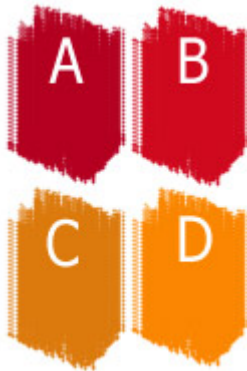
**E:** this is the blue phase, all the yellow is lost and only the reflected blue shows up in the back colour.

**F:** In the pastel birds, yellow is completely lost, and also a portion of the melanin, which results in lighter shade

of blue.

**G:** This is another pastel, but with white chest, resulting in greater reduction of melanin, therefore of blue. And as yellow is not present, this very light shade of blue remains.

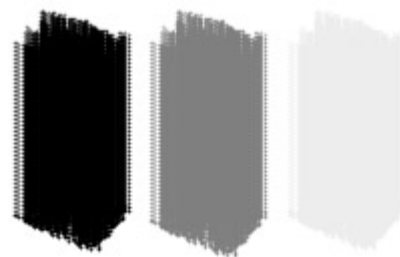
**H:** This is the silver phase, a total loss of yellow and also of melanin, only about five percent of blue remains. Had this bird been white chest, the back colour would have been snowy white.



**Head colours:**

The red and yellow Head colours in Gouldians are rather stable and only subtle variations occur while interacting with other mutations.

The carotenoid pigment which makes the head colour, has an under layer of melanin which makes the colour a bit dark in the wild form (A, B). But when a bird is white breast the melanin underneath the colour is reduced, therefore the red and yellow are more radiant (C, D).



The black head colour in Gouldians, varies noticeably and this is how black head colour looks like in the classic bird, then the dilute and finally in the yellow birds. Notice that these head colour apply even if the previous birds were also blue factor.



On the other hand, the red or yellow head colour of the Gouldian would dramatically change in the presence of the blue mutation. Following, you will find the colour a red head blue would have, and then a yellow head then a double yellow factor blue bird (silver).



**The chest colour variation:**

Until now, five distinct chest colour variations has been established, in order of dominance here they are: Purple, Lilac, Blue, Pink (rare) and White.