

Trying to Understand the Inheritance of colored-tailed White Pigeons

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Introduction

The reason for this paper is to make available the data collected in breeding tests involving the Mane Pigeon (or Schmalkalden Moorhead) and recessive white Racing Homer. Trying to understand the inheritance of white plumage is fraught with difficulties. In Wendell M. Levi's book, "Encyclopedia Of Pigeon Breeds" there are some pied patterns that are specific for a given breed, e.g., Magpie, Lahore, Helmet, Nun, Mane Pigeon and other Moorhead types. Mismarked examples occur, (e.g., colored wings/back in Mane Pigeons) and constant selection is required. Whether it is the instability and/or variability of the gene(s) that control these pied patterns has not been fully established. Of particular interest is that Levi fails to include "white" in the list of colors for these breeds but white is included in breeds that are saddle-marked, tail-marked, and other pied markings.

The initial goal of these tests, from 2005 to 2012, was to determine if a tail-marked or colored-tailed white plumage was the results of a single gene. The data from my tests did not confirm that to be true. Instead, the data indicates that the "tail-marked" white plumage is the result of at least two genes. More breeding data is needed.

Some History

As a boy in the early 1950's I had a free flying flock of mixed pigeon breeds. A white King cock X black Nun hen mating produced one white offspring with a mostly black tail. Later, the Nun hen disappeared and her tail-marked daughter mated with her white King sire and they produced another tail-marked young.

Many years later (1983) facilitated by a friend I acquired a black Mane Pigeon (also called Schmalkalden Moorhead) cock from John Epperson of Alba, Missouri with the condition that I would return it after a test mating - which I did. When mated to a non-pied (self) bluebar Racing Homer hen six (6) F1's (five pied and one **solid black**) were produced. The results suggested that the white in the Mane Pigeon had variable dominance to wildtype. Those that were pied displayed variable amounts of white in their primary flights, lower wing shield, vent and rump. One (707-D) approached the black head and tail expression of the Mane Pigeon sire, (**Fig. 1**).



Figure 1. # 707-D, F1 from Mane Pigeon cock X self Bluebar Racing Homer hen.

Breeding Results from February 2005 to October 2012

Explanations below are to help better understand this report.

- All matings were bred in individual coops.
- Disregard the year on all NPA, AU & IF seamless bands.
- “Tail-marked” indicates a variable colored tail on a mostly white plumage.
- “ext” indicates varying amounts of color extended to body & wings (not head).
- Disclosure of mane, crest, neck partings and foot feathering is of lesser priority.
- Amount of foot feathering varied, e.g., slipper, featherless, and was always white.
- Most offspring were disposed of before sexual maturity.



Figure 2. Tail-marked” F1 cock from Pair 1454.



Figure 3. Female Mane Pigeon (daughter) band number NPA-83-ZL-384

In February 2005 a gift pair of Mane Pigeons, from Joe Higginbotham of Carthage, Missouri produced one Mane Pigeon daughter (NPA-83-ZL-384). Later the old Mane Pigeon hen (NPA-02-HC-786) paired to a recessive white ($d//+$, z^{wh}/z^{wh}) Racing Homer cock in Pair 1454 produced three F1 cocks, all tail-marked, (Fig. 2). (Table 1.)

A tail-marked F1 cock (1454-C) was mated to the Mane Pigeon daughter (Fig. 3) in Pair 1465 and produced six B1's, (Fig 4). All six had colored tails - as follows:

- B was a dilute hen marked like a Mane Pigeon but with some color in wing shields.
- E had a colored face.
- D & H had colored face flecks.
- C & F were all white except the tail but C had two solid white outer rectrices.



Figure 4. Five of six offspring, B, C, D, E, & F, from Pair 1465 - (H not shown).

Table 1. A list of 14 matings with tabulations of the number offspring and their plumage color. Birds from given matings are color-coded, e.g., pairings involving birds from Pair 1454 are “blue”, from 1524 are red, etc. Birds with various amounts of color extended on their body and wings (not head) are labeled with ext.

Pair No.	Sire	Dam	Tail-Marked	All White	Self	Pied (Self?) w/white in some flights and/or rump	Total
1454	Rec. White Homer AU-98-RG-3479	Mane Pigeon NPA-02-HC-786	3 A,B,C	0	0	0	3
1465	F1 Tail-marked 1454-C	Mane Pigeon NPA-83-ZL-384	6 (1 <u>ext</u>)	0	0	0	6
1478	F1 Tail-marked 1454-A	Rec. White Homer IF-01-NAS-2238	3	1	0	0	4
1497	F1 Tail-marked 1454-A	Web-lethal Tpn T-748	0	0	2 A,B	2	4
1524	F1 Tail-marked 1454-A	Dilute Check 1497-B	2 F,G	1	1	2	6
1504	F1 Tail-marked 1454-C	Dilute Check 1497-A	1	4	5	2	12
1537	F1 Tail-marked 1454-C	Tail-marked 1524-F	4 (2 <u>ext</u>) A,H	0	0	0	4
1547	Tail-marked 1524-G	Dilute Check Figurita NPA-83-DJ-337	0	0	3	3	6
1552	Tail-marked 1524-G	<u>ext</u> Tail-marked 1537-A	2 (2 <u>ext</u>) B,J	3	0	0	5
1564	Tail-marked 1537-H	Tail-marked 1524-F	2	2	0	0	4
1583	Tail-marked 1524-G	<u>ext</u> Tail-marked 1552-J	9 (2 <u>ext</u>)	0	0	0	9
1593	F1 Tail-marked 1454-C	<u>ext</u> Tail-marked 1552-B	8 (5 <u>ext</u>)	0	0	0	8
1617	Rec. White Homer AU-98-RG-3479	<u>ext</u> Tail-marked 1552-B	7	0	0	0	7
1618	Rec. White Homer AU-87-TEXAS-0687	<u>ext</u> Tail-marked 1552-J	2	0	0	0	2

Of the four offspring produced in Pair No. 1478, (**Table 1**) involving an F1 tail-marked cock 1454-A and a recessive white hen, three were tail-marked and one was solid white - the expected 3:1 ratio for recessive white. The same F1 cock 1454-A paired to an unrelated web-lethal (wl/.) T-pattern hen (1497) produced four offspring - two non-pied dilute check hens (A & B) and two blues with pied flights. Dilute check hen 1497-A was paired with an F1 cock 1454-C in Pair 1524 and dilute check hen 1497-B was paired with her F1 sire in Pair 1504. These two pair produced a total of 18 offspring: 3 tail-marked, 5 solid white, 6 self and 4 near self with a few white flights. Both mating produced solid white offspring confirming that the dilute hens were heterozygous for recessive white (z^{wh}/z^{wh}).



Figure 5. Tail-marked hen 1552-B with much extended color on inner wings, back, head and upper breast.



Figure 6. One of three more typical tail-marked young 1593-E had five tail-marked siblings with extended color on body.

Excluding 1465-E backcrosses, the first two birds to occur with extended color on their body were from Pair 1537. Color was limited to the upper wings, back and head specking in both birds. One of these, a hen 1537-A paired with 1524-G tail-marked cock (Pair 1552) produced five offspring: four tail-marked - two of which displayed an increased in extended body color (B & J – both hens), and three solid white offspring. These two hens 1552-B (**Fig 5.**) & 1552-J were paired with tail-marked cocks (1583 & 1593) and produced a total of 17 offspring, nine of which had extended body color – none were solid white. These two hens were later paired with recessive white cocks (1517 & 1518) and produced a total of nine offspring - all tail-marked **without** extended body color and none were solid white.

The only pairings that failed to produce tail-marked or solid white offspring involved unrelated self-color birds (1497 & 1547).

Discussion, Comments and Summation

The term “tail-marked” is generally understood to mean a white plumage with a colored tail but the amount of color in the tail can vary from a dark band across the distal end of a white tail to a full colored tail with colored tail coverts. Of the 49 birds classified as tail-marked in this report 35 were typically tail-marked – some having colored feathers around their face and head, 14 had extended color on their body. All of the 10 pairings (1478, 504, 1524, 1537, 1552, 1564, 1583, 1593, 1617, 1618) involving at least one recessive white and at least one typical or extended tail-marked parent in this line of birds produced tail-marked offspring of which five pairings (1478, 504, 1524, 1552, 1564) produced solid white offspring. Though the numbers were small there seems to be some evidence that the tail-marked pied plumage in pigeons is heterozygous for recessive white (z^{wh}/z^{wh}). My research did not establish that tail-marked X tail-marked pairings breed true.

The black tail and black head on a white plumage in the Mane Pigeon appears to be a stable attainable pied pattern. John Epperson had 150+ Mane Pigeons that were all similarly marked.

Their pied pattern is the result of either a directional selection of one gene's variability or is comprised of two or more pied factors. The white-sided bird in Figure 1 indicates partial dominance of white in the Mane Pigeon which blocks the pigmentation on the wings and body of the bird but allowing color on the head and tail. In 1552-B (Fig.5) and 1465-B (Fig. 4) color begins to return to the wings and body.

Reviewing the data in this study generated more questions than conclusions. Would it have been possible to produce self-colored birds by continuous selection of birds with extended body color? Could any of the solid white birds produced be the result of compounded white factors instead of from homozygous recessive white (z^{wh}/z^{wh})? Could the possible existence of any pied factors be sex-linked?

The Mane Pigeons stock used to start this project was not vigorous or fecund. The male died before a reciprocal cross could be made to a recessive white hen. There were no F1 females produced therefore no F2's were produced. Would F2's have provided better breeding data?

The three adult F1 cocks from Pair 1454 displayed noticeable partings in their neck feathers. There were no other record entries or recollections of crests or neck feather partings except in Pair 1465 backcrosses; however, all but a few were disposed of prior to molting in of adult plumage. Most were slipper footed with a few examples of muffs and featherless feet.

Of the 49 colored tailed birds produced "**none**" were self-colored (or approaching a self with only a few white flights) and eleven (11) were solid white. It is difficult to ignore the possibility of allelism of recessive white and a pied factor/gene in the Mane Pigeon.

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