

Genetics of the Ringneck dove, Streptopelia risoria

V. Description of Mutants - Rosy-autosomal recessive - ry.

Rosy doves are reddish. Their head is "mauve". Thus, they give a two-toned effect of very attractive coloring. This color evidently has less of the eumelanin or dark pigment, but this needs confirmation.

Rosy was first brought to our attention in 1960 when Reed Kinzer of Lancaster, Penn. inquired of Dr. Hollander about them. Mr. Kinzer wrote on 6 Mar 61 calling them dilutes or rosy. "I got them from George Kleinpell of Cleveland, who in turn got them originally from a man in Cleveland who has nothing but this type." On 12 December 62 Kinzer sent Dr. Hollander 6 young by RR Express. They matured into 4 males and 2 females. Three of the first crosses were to the wild type dark.

Rosy was reextracted on the dark background. The first such dove was 114L in my records, a male dark rosy, $D^+ d^B$ ry ry which hatched on 14 Feb 64. Often such squabs are difficult to distinguish from blond until about 6 weeks of age when the mauve color starts to show well on the forehead.

Most fanciers first encounter rosy on the blond background. Various names were proposed besides rosy, including salmon, peach and cream. Peach finally won out, since rosy fit the dark background better and cream was a little too extreme. I suspected that cream as a name might fit a combination of ivory and rosy better. This was verified later. Moreover, the mutant should be named after the single mutant form (i.e. rosy on a dark background). Blond (= dilute) rosy is peach, which is a double mutant. Actually, different parts of a ripe peach would fit either dark or blond rosy in color.

Rosy fits a monohybrid Mendelian situation, see table 4. However, there is evidently a deficiency of rosy progeny, enough to reach significance generally when over a hundred offspring are classified. The only exceptions are with humilis species-hybrids. In all there were 2,658 progeny from 258 matings classified in tests with rosy. We have no indication that dark rosy squabs die off faster than blond rosy after hatching or vice versa. Perhaps rosy dies off faster in embryo, however, preliminary results in "Reproductive Success Indices" do not support this notion either. This could turn out to be an example of "meiotic drive" — a rare phenomenon in genetics.

There is an alternative explanation. Some rosies vary from one another in the degree of color. More specifically, some adult (dark) rosy birds are difficult to distinguish from blond without side by side comparisons. A genetic modifier seems indicated, since it "runs in families". I have tried to indicate such birds in my own records as r ry instead of ry ry. This might also fit McClintock's "controlling elements" in corn (= maize) for which she recently got the Nobel Prize. Controlling elements are also called transposons or plasmids in bacteria and they are involved in "genetic engineering". Such might explain the deficiency of rosy progeny. Wouldn't it be ironic to find such esoteric or sophisticated phenomenon in the dove fancy!

Orange

This color is pictured in color in a 1982 article by Alois Munst in "Lachtauben in vielen Farben" Geflugel-Borse (No. 23) 103:12-13. He pictures blond pied, dark, blond, and what I take to be blond ivory, dark ivory-rosy = heavy cream, and orange. Orange looks much like a peach (blond, rosy) with a whitish neck ring which I have produced more than once in my stock. This orange also has very light flights and tail (like blond rosy?).

Orange was imported into Canada about 1982 and soon thereafter into the United States. Genetic tests to differentiate orange from blond rosy evidently have not yet been made.

Interactions:

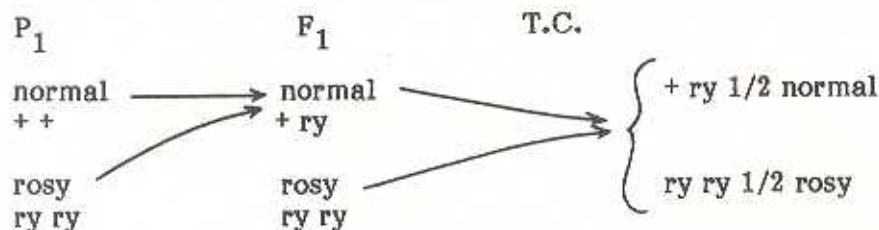
The blond rosy has already been described as "peach". White hides rosy except for the main under tail. The ventral tail feathers of white rosy doves have the eumelanin "band" much reduced over that showing in the white bird. One has to look closely to see it at all. Therefore, it was named clear white. Pied rosy is attractive, especially peach pied with patches of color (peach) and no color as expected. Ivory-rosy combination is called heavy cream, perhaps the most attractive new color to turn up in doves.

The blond-ivory-rosy (light cream) is nice too, but it is so light that novices have to look twice to notice the neck ring to distinguish it from white. Evidently the ivory mutant doesn't block all the phaeomelanin, nor the rosy block all the eumelanin as does happen in yellow-chinchilla rabbits or silver-pyle chickens to yield a mimic white. Unfortunately no one has tested ringneck doves to see if they have both melanins for sure.

Recent data has implied that rosy modifies the color of "split" blond/white males (heterozygotes) more than to the expected peach. They look similar to (mimic) cream or even blond ivory. That is, they are lighter in color than peach females. This is a possible source of confusion for color types.

Genetic Diagramming

Those who have been following my diagramming, well might be able to just substitute the gene symbol ry (or r) and diagram the same results as for the other colors. Last time for pied I gave an F₂ kind of result. So this time I'll give a testcross (T.C.):



I'm sure some of you would like to have the difference between rosy and peach diagrammed. Since it depends on the dark versus a blond background, and since these are sex-linked, we ought to wait until sex-linkage is explained a bit first.

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Table 4. Family data for the inheritance of the rosy color mutant in ringneck doves.

| Type of mating | Expected ratio | Number of matings | Sex that is rosy | Sex segregating | Number of classifiable offspring with phenotype | | | X ² | P |
|---------------------------------|----------------|-------------------|------------------|-----------------|---|------|-------|----------------|---------|
| | | | | | non-rosy (normal) | Rosy | Total | | |
| Purebred | 0:1 | 30 | both | | . | 406 | 406 | - | . |
| First crosses | 1:0 | 18 | ♂ | - | 274 | . | 274 | - | . |
| | 1:0 | 22 | ♀ | | 166 | . | 166 | - | . |
| | | 40 | | | 440 | | 440 | | |
| Testcross | 1:1 | 24 | ♀ | ♂ | 174 | 131 | 305 | 6.06* | .019 |
| | 1:1 | 17 | ♂ | ♀ | 125 | 73 | 198 | 13.66*** | .00025 |
| | | 41 | | | 299 | 204 | 503 | 17.94 | .00005 |
| <u>humilis</u> hybrids | 1:1 | 25 | ♀ | ♂ | 82 | 102 | 184 | 2.17* | .14 |
| | 1:1 | 24 | ♂ | ♀ | 158 | 120 | 278 | 5.19 | .026 |
| | | 49 | | | 240 | 222 | 462 | .70 | .41 |
| All | 1:1 | 90 | | | 539 | 426 | 965 | 13.23*** | .00026 |
| F ₂ ringneck hybrids | 3:1 | 53 | - | both | 502 | 97 | 599 | 24.78*** | .000001 |
| | 3:1 | 45 | - | both | 177 | 71 | 248 | 1.75*** | .17 |
| | | 98 | | | 679 | 168 | 847 | 12.05 | .0005 |

258 matings

2,658 classified progeny