

Are Anne Ellis's "Odd Yellow" Monks Really Lemons?

By – Tim Kvidera, February, 2013

Anne Ellis has been periodically producing very light tan colored Monks since getting a black Monk in the late 1980's. She initially referred to these sports as being "odd yellows." Upon seeing the Ron Huntley/Larry Davis article published in the Purebred Pigeon, "Extreme Dilute" pp 8 – 13, May/June 2007, regarding lemon (extreme dilute) Homers she was struck by the similarity in coloration between the photos of lemons and her "odd yellows" and thought they might be the same thing. This was reinforced when she read Drew Lobenstein's article on creating lemon Fantails, January/February 2009 Purebred Pigeon, pp 77 - 78.

In 2009 Anne Ellis sent two of her "odd yellow" Monks to Tim Kvidera for evaluation as to what may be the genetic cause for the coloration. A review of Ellis's breeding records found that her initial "odd yellow" was produced from a father/daughter mating of black Monks in 1988.

She has continued to produce "odd yellows" periodically over the years when using cock birds produced by "odd yellow" hens. Over the years she has introduced Monks from other lofts and even some from Europe. She has continued to occasionally produce more "odd yellows." They have been bred by ash yellow, silver and blue cocks in addition to the original black cock, with each of the former having a known "odd yellow" mother. Many of the "odd yellow" hens had mothers with no recent pedigree connection to their mate, lessening the probability of an autosomal recessive being the causative agent. The original black Monk cock was a purchase of unknown heritage. Anne has only produced "odd yellow" hens. The only previous time she paired an "odd yellow" hen to a cock known to produce "odd yellows" was in 1995. That mating resulted in an "odd yellow" but that bird was never sexed, or bred from.

Being Monk-marked and white barred there is little concentration of color on these "odd yellows" to evaluate. They are a very light tan neck, body and wing shield with white heads, flights, tail and muffs. The only "dark" area is a thin khaki shaded edge to the white bars. See the photo below.



An example of an "odd yellow" Ellis Monk hen, muffs not fully molted in photo by Ellis

Review of Anne's breeding records suggested that the "odd yellow" was probably caused by a sex-linked gene.

During the 2009 breeding season Tim Kvidera paired these two "odd yellow" hens to total outcrosses in an effort to determine what color they were and whether the expression was caused by an allele of a known sex-linked gene.

What color are Ellis "odd yellows?" - One of the hens was mated to a brown barless Racing Homer. Only one egg was laid. It resulted in a reasonably well marked blue white bar Monk-marked partially muffed young cock. Therefore the tan colored "odd yellow" hen is breeding as a blue pigeon. This finding was independently duplicated by Ellis.



Pair #1 Brown barless Homer X Ellis "odd yellow" Monk Photo: Kvidera



F1 cock from Pair #1 Photo: Kvidera

In 2010 the F1 blue white bar Monk marked cock (known to be heterozygous brown) from pair #1 was mated to a blue bar Flying Tippler and then a blue bar Racing Homer resulting in eight youngsters - four blue bar cocks, one blue bar hen and three "odd yellow" hens. One of the "odd yellow" hens was a bit darker in shade indicating that it may have been a crossover brown "odd yellow" while the other two were likely blue "odd yellows." Barkel lemon has been found to be darker in color when on brown pigmented birds than it is on wild type (blue) birds.

Is Ellis "odd yellow" a dilute allele? - Barkel lemon as found in Racing Homers has been demonstrated by Larry Davis and others to be an allele of dilute and more recessive than dilute. One of the Ellis "odd yellow" hens was paired in 2010 to a Barkel lemon Racing Homer. The Ellis "odd yellow" hen only laid one egg during the season. But it hatched resulting in a lemon looking youngster which unfortunately died about fledging time. Necropsy disclosed that it was a cock bird. This suggests that Barkel lemon and Ellis "odd yellow" are at least alleles, if not the same mutant.

The other Ellis "odd yellow" hen was mated to a gold blackwing Archangel (gold = pale gimple bronze, blackwing = saturated CT pattern with lots of color intensifying modifiers, pale is known to be a dilute allele). This pairing produced three pale youngsters, all three being varying penetration of the heterozygous Monk toy stencil with partially white heads, white flights and mostly white leggings. One had a totally colored, barred tail; one mixed colored and white tail; and one had an all white tail. Other than being dirty pale, none of the colored tail feathers show any lightening basally or in the terminal bar. All had gold crop crescents indicative of hetero gimple. Two of these youngsters matured into cock birds. Pale cocks out of a pale cock X "odd yellow" hen indicates that the "odd yellow" is caused by a sex-linked gene which is allelic to and more recessive than pale.



Pair #2 Gold blackwing Archangel X Ellis "odd yellow" Photo: Kvidera



F1 youngsters from Pair #2, hen center between two cocks Photo: Kvidera

The F1 youngsters from pair #2 (gold blackwing Archangel X Ellis "odd yellow") were used to produce F2 youngsters, and backcross to "odd yellow" youngsters.

Pair #2 F2 results:

Thirteen F2 youngsters were produced from the gold blackwing Archangel X Ellis "odd yellow" pair resulting in six pale cocks, two pale hens and five "odd yellow" hens. Two of the pale cock birds were approaching the look of dilute in the shields, but with darker neck, chest and flights than expected of dilute. See photo below of #3414. "Odd yellow" was easily recovered in the F2 generation and possibly had some effect on the color expression of the some of the F2 cocks.



#3414 F2 from Pair #2
(gold blackwing Archangel X Ellis "odd yellow" Monk)
Photo: Kvidera

Pair #2 backcross results:

A cock F1 was paired to his Ellis "odd yellow" mother and produced eight youngsters. These were two pale cocks, three "odd yellow" cocks, one pale hen and two "odd yellow" hens. One of the non-"odd yellow" young cocks appeared to be much lighter than other pale cocks, even lighter than those mentioned above from the F2 results. See photo below of #3288. Why is #3288 so much lighter than #3414? My assumption is that the F2's most likely have a good representation of the color enhancing modifiers of the Archangel genome, while the backcross to the Ellis Monk depleted them.



#3288 backcross of F1 (gold blackwing Archangel X Ellis "odd yellow" Monk) onto Ellis "odd yellow" Monk Photo: Kvidera

In 2011, Ellis "odd yellow" was paired to dilute blue (silver) Flying Tiplers. The silver cock paired to an "odd yellow" hen resulted in three silver cocks and one silver hen. An "odd yellow" cock mated to a silver hen produced only one youngster, a silver cock. Whether "odd yellow" cock to silver hen or silver cock to "odd yellow" hen the results show "odd yellow" to be an allele of dilute and recessive to it.

The results of the work with the Ellis "odd yellow" indicated that the Ellis "odd yellow" is a sex linked recessive mutant which was allelic to pale, dilute and at least allelic to, if not the same as, Barkel lemon. **But why does #3288 look to be a dilute when no dilutes were used in his portion of the project, even in a heterozygous state?**

In 2011 #3288 was paired to a copper blackwing Archangel hen. Admittedly not the traditional wild type cross. Copper as used in the Archangel fancy is the term for gimpel bronze with no mutation, i.e. it is wild type, at the dilute locus. But with word on the street being that clean, pale blues can often be hard to identify I wanted to use the shade of hetero gimpel bronze as an aiding indicator of genotype. Young cocks from this sex-linked mating would be intense and therefore the bronze should be copper, while the pale young hens would be gold bronze. Ten youngsters were

produced - six intense cocks, three pale hens and one "odd yellow" hen. The pale hens were easily identifiable. The surprise was the variety of bronze shades in the young cocks. None were as deep and rich in bronze shade as would be expected of intense coppers.

2012 was dedicated to understanding the bronze shade difference of the young cocks produced by the dilute look-a-like #3288 the previous season.

Prior to pairing them up, five of the young cocks were classified as to probable heterozygous pale versus heterozygous "odd yellow" based on a slight difference in the chest area bronze. This classification was repeated a week later blindly (without prior band number identification the second time) to verify my classifying was consistent. To date four of the five have confirmed that they are the predicted heterozygous pale or heterozygous "odd yellow" by producing either pale or "odd yellow" young hens. The fifth bird has so far made five young cocks and no hens.

Although the dilute alleles are classified as recessive when compared to wild type at the dilute locus they have demonstrated a phenotypic impact on Archangel gimpel bronze when in the heterozygous state.

Breeding results indicate that the dilute look-a-like cock, # 3288, is pale and "odd yellow" at the dilute loci. Neither he nor his young cocks have produced a dilute hen out of 31 offspring.

So why is #3288 phenotypically a dilute blue? From the above results I conclude that he looks to be dilute due to the synergistic effect of being a combination of pale and "odd yellow." "Odd yellow" severely lightens the pigment of blue to a light tan when in the homozygous or hemizygous condition. When in combination with pale, which also lightens wild type (blue) birds, "odd yellow" lightens the pale to an intermediate stage that can look to be dilute. This can be an even more convincing pseudo silver when few of the color intensifying modifiers of the Archangel are present.

Are Anne Ellis's "odd yellows" really lemon Monks? There is nothing in the breeding results to conflict with that conclusion. The "odd yellows" are blue based birds which have a color lightening mutation at the dilute locus on the sex chromosome. Is this mutation the extreme dilute of the Barkel lemon? Phenotypic appearance and Mendelian genetic breeding results are consistent with them being the same. Breeding them together produced a lemon appearing cock. Based on the work I have done with Anne Ellis's "odd yellows" I am confident and comfortable in saying that she identified in the United States an independent mutation to what Barkel found in South Africa and called lemon. Until some future gene sequencing of the dilute locus reveals otherwise, Anne Ellis has what could be called lemon Monks.