More than Ten Primaries at the Domestic Pigeon

Koen Joris and Axel Sell

Pigeons usually have ten primaries. Exceptions occur, with large pigeon breeds more often than ten, and in small breeds fewer than ten primaries in some individuals are observed. Although the phenomenon has already been mentioned in the literature at Darwin's time, no genetic investigations have so far been made, apart from reports of sporadic observations.

In the official organ RÖK of the breeders' association of pets January 2017 a comprehensive study based on about 500 observations was devoted to this question.

Photos from RÖK Freude mit Kleintierzucht, January 2017, pp. 8-11.

In the most comprehensive book 'Pigeons' from Levi it is assumed that it is a dominant feature. Probably because of reports from breeders that they got from supernumeraries besides some young with normal ten primaries also some with more than that. This is to be expected with a dominant feature from a heterozygous pigeon. However, it is also the result of recessive features when there are heterozygous potential partners present in a loft. A simple recessive feature it is not, however, because there were too many reports from the breeders, according to which supernumerairies mated with each other produced some wild-type ones with 10 primaries. Given the frequency of such observations this could not be

attributed to the incidence of impregnation as in non-individual cages. A large-scale investigation, which could also reveal more complex relationships, was thus overdue. Koen Joris from Belgium has accepted this challenge. After extensive records with several hundred observations in his loft, one could already conclude that the previous explanations were insufficient and that at least two in isolation recessive factors had to work together in order to achieve more than ten primaries. The new hypotheses resulting from the analysis of the data from the racing homer project were tested by intersections with fancy pigeons from a breed and strain were supernumerairies did not appear in the past, Gold-Bluewing Gimpel. The empirical results of the Gimpel crosses in the F_1, F_2 and backcrosses had the best fit with a 3-factor model. Three factors sn1, sn2 and sn3, which if standing alone are recessive, have to act together. However, only two of them have to be homozygous, which explains the occurrence of wild-type young from a pair of supernumerairies. For those interested in color genetics the crosses are a fine example of how gimpel bronze and the factor pale responsible for the gold are reproduced in the grandchildren.

Goldfarbenes Jungweibchen aus der zweiten Generation F_2

Eines der Altpaare und Jungtiere der F_1 aus der Gimpelkreuzung

Photos from RÖK, Freude mit Kleintierzucht, January 2017, pp. 8-11.

What does it mean for breeding in respect to primary numbers? If you like to have a strain of supernumerairies, you will be able to get one easily through selection. However, it is not to be expected that the flight performance would be appreciably improved in racing homers. Otherwise, the feature would have long been established in the selection for performance. In his youth, the co-author occasionally had a pigeon with more than 10 primaries at one or both sides among his racing pigeons; they were no better and no worse than the others, and have disappeared during time without trace.

In breeds in which the trait is undesirable, it should be avoided in any case to use a supernumerary in the breeding stock. Even if the direct offspring does not show the

characteristic, they will give the genes for that trait to their offspring, and the characteristic will reappear in later generations. Whoever has the characteristic only in some lines, which are breedably dispensable, should exclude them as far as possible from further breeding. The cessation of the feature by testing stock birds by test mating to exclude carriers of the trait, is much more difficult in this case than for simple recessive characteristics. With progress in molecular genetics that might become easier.

Photo of an '11-penner' from the backcross of a F_1 to a supernumerary homer

A big thanks from the authors to the editors of the Magazine of the Austrian Pet Association, which made the relatively large contribution possible, including the documentation of the most important data. Thus interested parties can match their own experiences with our data and make use of the data also in their own investigations of this and similar topics.

Literature:

Joris, Koen, and Axel Sell, Überschwingigkeit bei Haustauben, RÖK Freude mit Kleintierzucht, January 2017, pp. 8-11.

Levi, Wendell M., The Pigeon, 1. ed. 1941, reprinted with changes and additions 1963, reprinted 1969, Levi Publishing Company, Sumter

Sell, Axel, Pigeon Genetics. Applied Genetics in the Domestic Pigeon, Achim 2012.