

Roman ANDRZEJEWSKI

Spotty Mutation of the Wild Boar *Sus scrofa* Linnaeus, 1758

A mutation characterized by the white-cream coloured coat with black spots was observed in a wild boar population. The frequency of occurrence of this mutation in young wild boars amounted to 1 for every 38.6 animals with normal coat colour. By means of controlled breeding it was demonstrated that the spotty coat occurs in the homozygotes in respect of this trait, and normal coat colour dominates over spotty coat. Spotty individuals are characterized by a high mortality during the first year of life.

1. INTRODUCTION

The wild boars of spotty coat occur rarely in natural populations and are regarded as the result of crossing of the wild boar with the farm pig. Hunters are encouraged of shooting out such individuals to prevent spreading of the gene of spotty coat in a population (Boback, 1957; Haber, 1968).

While carrying out ecological studies on wild boars in the Kampinoski National Park near Warsaw in the years 1966—1971 the occurrence of individuals with cream-coloured coat and black spots was ascertained in this population. Since: (1) the method of breeding of farm pigs in the neighbourhood of Kampinoski National Park gives very small chances of a contact between boars and wild sows, (2) copulation between a wild sow and a boar might occur only when the latter would be present in the forest during oestrus of wild sows, (3) such a male should be allowed to copulate with wild sows, but it is known that wild boars are then very aggressive and protect wild sows of their own herd from other males. For this reason the crosses between wild boars and farm pigs can be almost excluded, and the spotty trait must be maintained in a natural way in the examined population.

The present study was aimed at the explanation of mechanism of inheritance of the spotty trait, as well as the determination of the fre-

quency of its occurrence in the population and establishing the fate of the spotty individuals.

2. STUDY AREA AND METHOD OF INVESTIGATIONS

The Kampinoski National Park includes the area of ca 22 thousand ha of forests belonging mainly to the following phytosociological associations: *Vaccinio myrtilli-Pinetum*, Kobendza 1930, *Pino-Quercetum*, Kozł. 1925, *Tilio-Carpinetum* T. Traczyk 1962, and *Carici elongatae-Alnetum* (W. Koch 1926) R. Tx Bodeaux 1955. Detailed investigations on the wild boar population were carried out mainly on the of 2.5 thousand ha in the eastern part of the Park, not isolated from the neighbourhood and providing environmental conditions particularly suitable for these animals.

The investigations were carried out mainly by two methods: (1) captures of wild boars into 6 live-traps arranged regularly in the study area, (2) observations of wild boars at 6 selected places, by means of coigns of vantage suitably adapted for scientific studies.

The captures were continued during the whole period of studies setting the live-traps for 2—6 days every week. The captured wild boars were individually labelled with numbered earmarks and coloured clips, which were well visible by means of a binocular from the distance of approximately 50 m. The intensity of trapping caused that all the wild boars born in a given year in the study area were captured for the first time in a period from May till July, hence in the age of 1.5 to 4 months. Subsequently these animals were recaptured many times during their life. By employing the method of material elaboration known as »calendar of trappings« (Andrzejewski, 1969) the obtained data allowed not only to determine the number of animals born in a given year (neglecting mortality between birth and second month of life on the average), but also to follow the process of disappearance of these animals from the study area, in the first year of life mainly due to mortality, and in following years also due to migration.

The observatory points were localized either in the vicinity of traps or independently of them. The observations were carried out from dusk till midnight with a variable intensity; in a period of high population density of wild boars (years 1967—1969) once weekly. The animals were prebaited with oats to the place of observations. This caused a high penetration of the area by wild boars and give a high efficiency of observations (many herds of wild boars observed during one night). The data deriving from the observations supplemented the data obtained by trapping, especially in respect of composition of individual herds, litter size, etc.

Additionally some wild boars were reared in suitably fenced pens 200 m² in area, built in the forest. On this way it was possible to obtain the offspring from definite pairs of wild boars assembled from individuals captured in the study area or reared in pens. This method permitted the determination of the principles of inheritance of the spotty trait in wild boars.

3. RESULTS

Coat colour of spotty wild boars. The general appearance of spotty boars does not differ from those with normal coat colour. The newborns

show almost white bristles with a cream shade. The spots are entirely black. The stripes characteristic for young wild boars with normal coat cannot be distinguished in the colour of bristles in spotty individuals, but they are visible when the animals stand under a suitable degree against sun rays. This indicates that the bristles of the stripes are arranged in a different way. Older animals assume more cream-coloured shade, but this may be modified to grey due to the adherence of mud, resin, etc. The spots remain black although they may contain single cream-coloured bristles.

Investigations in the terrain. During trappings 425 wild boars born in the study area were registered. Among them 11 spotty individuals were found. Hence the mean frequency of birth of the spotty animal amounts to 1 for 38.6 wild boars with normal coat colour, assuming that the mortality of spotty individuals from birth till 4th month of life (the latest moment of the first capture of newborns) is identical with that of wild boars with normal coat colour (this assumption may not be true).

The spotty wild boars were observed in 5 litters, always jointly with the individuals showing normal coat colour. Out of these 11 spotty animals 3 were captured for rearing. From the remaining 8 individuals only one survived for more than one year, as indicated by subsequent trappings and observations. Thus it appears that in comparison with the wild boars with normal coat colour, in which the mortality during the first year of life in the examined population amounts to 21%, the life span of spotty wild boars is relatively short.

Investigations of the breeding stock. The captured spotty wild boars were identified as one boar and two sows. After this boar and from both sows 17 newborns were obtained in 3 litters. All the obtained animals were spotty. During further breeding the two sows were crossed with a boar showing normal coat colour and deriving from the population living outside the Kampinoski National Park. In two litters 13 newborns were obtained jointly, all showing normal coat colour. Subsequently, after reciprocal crossing of the F_1 generation one litter was obtained: it consisted of 2 individuals with normal coat colour and 2 spotty individuals.

4. DISCUSSION

Lack of possibility of crossing between wild boars and farm pigs in the population of the Kampinoski National Park does not provide the final answer to the problem whether the occurrence in this population of white individuals with black spots is due to such crossing in a pre-

historic period, or whether this is a mutation naturally occurring in wild boar populations (and due to this man could easily obtain white varieties of farm pigs).

In effect of crossing between wild boars reared in pens it was possible to conclude that the spotty trait occurs in homozygotic individuals in respect of genes responsible for this coat colour, since all the offspring of spotty parents are always spotty. The offspring of the parents, of which one is spotty and other has normal coat colour, shows normal coat colour, hence in heterozygotes normal colour dominates over spotty trait. The crosses between heterozygotes give normal and spotty individuals.

At the observed frequency of occurrence of homozygotic spotty individuals in the examined population it can be supposed that the heterozygotes constitute over 20% of all individuals in this population. Taking into consideration the fact that spotty individuals show low survival, and that they differ in physiological respect as demonstrated for this stock by Myrcha & Jezierski (1972), it can be assumed that the gene of the spotty trait is maintained in the population by the offspring of heterozygotic individuals. Such individuals may be stronger in physiological respect than spotty individuals, and even than homozygotes with normal coat colour. Verification of this hypothesis may eventually be a subject of further investigations.

A broad range of interpopulation migrations of wild boars (Andrzejewski, 1970) permits to suppose that the spotty trait cannot be limited to the population living in the Kampinoski National Park. High mortality of spotty individuals and difficulties of observations of wild boars immediately after birth may explain the fact that number of observations of spotty wild boars in other populations is rather low. Since the maintenance of the spotty trait in a population occurs mainly by the heterozygotic individuals optically indistinguishable from homozygotes with normal coat colour, the recommendation for hunters to shoot out spotty individuals is without significant effect on the elimination of this trait from the population, the more so that such individuals are eliminated by natural mortality.

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ŁACIATA MUTACJA DZIKA *SUS SCROFA* LINNAEUS, 1758

Streszczenie

W populacji dzika zaobserwowano mutację odznaczającą się sierścią o barwie biało-kremowej w czarne łaty. Stwierdzono częstość występowania tej mutacji u warchlaków, która wynosi 1 na 38,6 dzików normalnie ubarwionych. Na drodze hodowli wykazano, że ubarwienie łaciate występuje u homozygot w zakresie genów tej barwy, ubarwienie normalne dominuje nad łaciatym. Osobniki łaciate odznaczają się wysoką śmiertelnością w pierwszym roku życia.