SOME ASPECTS OF THE WOODPIGEON POPULATION IN THE NETHERLANDS

by

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INTRODUCTION

Damage caused to agricultural and horticultural crops by Woodpigeons had become so serious in the Netherlands that the Minister for Agriculture and Fisheries decided in 1954 to put a premium on the shooting of these birds. It was hoped that this would make the shooting more effective. However, although up to 1961 every year ca. 142,000 Woodpigeons were shot, no distinct decrease of the population density was noted. As this measure therefore did not lead to the expected improvement of the situation, the Institute for Biological Field Research (Itbon) was asked in 1960 to study the ecology of this species.

It was decided to start this study by considering the two following important questions.

A. Is the present shooting practice as stimulated by the premium actually insufficient to reduce and finally to control the density of the population ?

B. Is the number of Woodpigeons which immigrate from abroad, large enough to be reflected in an appreciable way in the number of birds that are shot in the Netherlands ?

This paper deals with these two problems, but it reports also on our attempts to gain some insight in other factors by which the density of the Woodpigeon population may perhaps be influenced.

A. THE INFLUENCE OF THE SHOOTING PRACTICE

In the years between 1911 and 1960 more than 2,600 Woodpigeons were ringed in the Netherlands, the major part of them as nestlings. Of these 2,600 birds 230 recoveries have been reported, i.e. ca. 9 per cent (PERDECK 1962), and of these 250 recoveries 180 could be used for our purpose; the other ones were either young birds which died in the nest shortly after they had been ringed, or else birds of which no sufficient data had been reported.

As the premium on the shooting of Woodpigeons was instituted in 1954, we have divided the recoveries into two groups, viz. one covering

the period from 1911 to 1953 and one covering the period from 1954 to 1962; the first group consisted of 99 recoveries, the second of 63 (the birds which were less than two months old were left out of consideration).

In both groups the average age of the Woodpigeons appeared to be 18.4 months. This seems to prove that the increase of the shooting caused by the institution of the premium did not affect the average age of the birds.

In comparison with the average age of other game birds, e.g. some kinds of ducks, that of the Woodpigeon proves to be fairly high, at any rate for a bird which reaches sexual maturity already at the beginning of its second year. The average age of all ringed Woodpigeons which were recovered in the years between 1911 and 1963, i.e. those that were less than two months old included, proved to be nearly 17.3 months (177 birds). The average age of the ringed Woodpigeons from Scandinavia, Poland, Finland, the Baltic Provinces, Germany, Central Europe and Belgium is ca. 14 months (120 recoveries). The difference between this figure and that found for the Woodpigeons ringed in the Netherlands may be due to the fact that the pigeons from northern Europe show a stronger impulse to migrate to southern Europe; on this long route a comparatively large number of individuals will probably succumb (*cf.* Chapter C).

The next point of our program was a comparison of the survival chance of the Woodpigeons in the Netherlands before and after the institution of the premium. To this end survival curves were used. Such a survival curve shows the number of recoveries found for the various age classes. The use of these curves implies, of course, that the picture of the population which is obtained by means of the recoveries, is a trustworthy one. We will assume that the population consists at the beginning of the first year of 1,000 individuals; the population density in the following years can then be calculated by means of the recoveries. These figures are given in Table 1 and are plotted in the curves shown in Figure 1.

A comparison of the two survival curves shows that the one of the period following the institution of the premium remains everywhere below that representing the earlier period. The largest differences are found in the age clases 3, 4 and 5. This indicates that the increase of the shooting actually had some effect, but we should realize that these three age classes consist of a relatively small number of birds, and that the population as a whole consists mainly of pigeons which are one or two

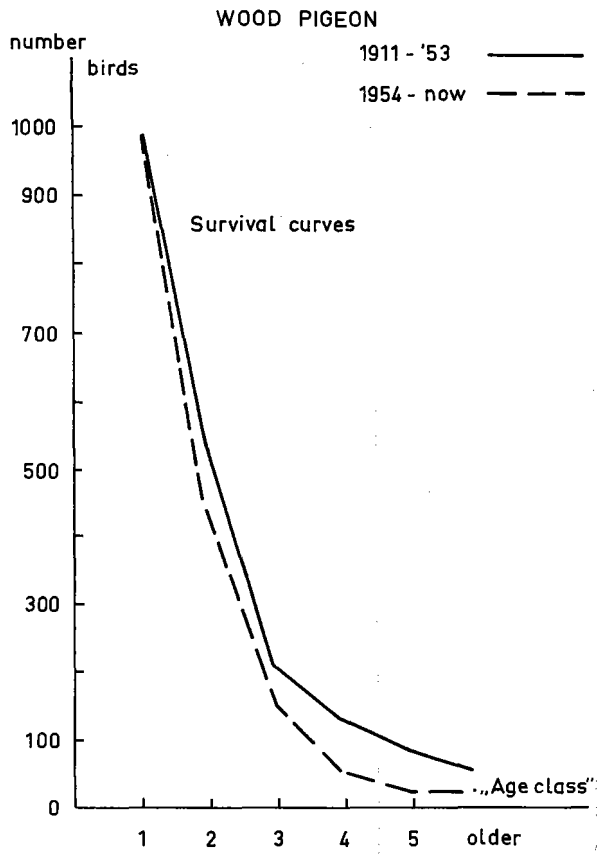

FIGURE 1. Survival curves for the periods 1911-1953 and 1954-1962, based on 113 and 66 recoveries, respectively, of Woodpigeons ringed in the Netherlands. The data used for the construction of the curves have been given in Table 1.

years old. If we apply to these differences the correlation test of KENDALL (WYVEKATE 1960), it appears, moreover, that they are non-significant.

As the figures found for the average age of the pigeons before and after the introduction of the premium are the same, and as the differences between the figures plotted in the two survival curves are not significant, we may conclude that the influence which the increase of the shooting has exercised on the population density must have been very small, if indeed it existed at all.

B. FLUCTUATIONS IN THE DENSITY OF THE POPULATION

That the increase in the shooting did not exercise a distinct influence

TABLE 1

A. SURVIVAL OF WOODPIGEONS IN THE PERIOD BEFORE 1954, BASED ON 113 RECOVERIES

Age class	Number of birds recovered	Supposed survival of		
		113 birds recovered		1000 birds
1	55			
		after 1 year	58	514
2	33			
		after 2 years	25	222
3	10			
		after 3 years	15	134
4	5			
		after 4 years	10	90
5	4			
		after 5 years	6	55
"older"	6			

B. SURVIVAL OF WOODPIGEONS IN THE PERIOD FROM 1954 TO 1962, BASED ON 66 RECOVERIES

Age class	Number of birds recovered	Supposed survival of		
		66 birds recovered		1000 birds
1	36			
		after 1 year	30	456
2	20			
		after 2 years	10	153
3	6			
		after 3 years	4	62
4	2			
		after 4 years	2	31
5	0			
		after 5 years	2	31
"older"	2			

NOTE. — For the construction of this table a total of 179 recoveries has been used, whereas for the estimation of the average age only those pigeons were taken into account which were more than two months old (162 birds). In order to base our conclusions on a number of recoveries as representative as possible, also pigeons less than two months old were used for the construction of this table.

on the average density of the population, does not mean that the latter does not fluctuate at all. Indeed, it fluctuates very distinctly from year to year. Some impression of these fluctuations may be obtained by considering the shooting results which are summarized in Table 2.

At first the premium was paid only for pigeons that were shot during the summer months, but since April 1961 it has been paid for all pigeons that were shot, no matter what time of the year. It is perhaps not superfluous to add that the shooting of Woodpigeons has never been restricted to a definite part of the year. To what extent the shooting increased because of the premium is unknown, as with regard to the number of

TABLE 2

NUMBER OF SHOT PIGEONS HANDED IN DURING THE PERIOD LASTING FROM 1954 TO THE END OF 1962, COMPARED WITH BOTH THE LENGTH OF THE PERIOD DURING WHICH THE BIRDS COULD BE HANDED IN AND WITH THE NUMBER OF HUNTERS

Year	Number of birds shot	Length of shooting period	Number of hunters	Number of birds shot per man per week
1954	139,683	23 weeks	3670	1.65
1955	148,038	32 weeks	3454	1.33
1956	98,488	26 weeks	2602	1.45
1957	122,061	26 weeks	2422	1.93
1958	80,992	23 weeks	2239	1.57
1959	163,690	24 weeks	3097	2.20
1960	174,556	25 weeks	3046	2.29
1961	263,169	37 weeks	3359	2.11
1962	282,560	52 weeks	3074	1.77

birds that were shot before the introduction of the premium, no figures are available. However, it seems plausible to assume that the shooting did increase.

In how far do the figures for the shooting, supply information with regard to the fluctuations in the density of the population ? It seems to me that we may arrive at an estimation of the latter if the factors which influence the number of birds shot, are taken into account. These factors are:

1. The number of people who claimed the premium for the birds they had shot. This number has been recorded from year to year in the official lists of the Ministery for Agriculture and Fisheries.

2. The number of times the hunters on the average go shooting. In the group of hunters of whom we obtained information, this was nearly the same in the successive years.

3. The number of pigeons which come within shooting distance. This number depends upon the number of hunters and the frequency with which they go shooting, the population density of the Woodpigeon, and the length of the period during which the shooting takes place, in this case the length of the period during which the premium was paid (the length of this period is known).

4. The average number of times the hunter hits the mark. It seems allowed to assume that the shooting proficiency of the hunter does not change from year to year.

The population density mentioned sub 3 may therefore be estimated

from the total number of Woodpigeons that have been shot if the other factors mentioned above are taken into consideration; the latter are either constant or measurable. The population density which is found in this way for the various years is, of course, only a relative one. In order to obtain absolute values, the absolute population density that was present in at least one of the years, should be known, but for our purpose alsolute figures are irrelevant.

However, one reserve should be made. In order to check the number of pigeons that had been shot, some parts of the latter had to be handed in, but these parts were not the same during the whole period, and especially in the first years some cheating was not excluded. However, there seems to be no reason to assume that the amount of cheating will ever have exercised a serious influence on the total number of birds that were registered as shot.

In table II the required data are given together with the estimated result, viz. the "number of pigeons shot per man per week". These figures have also been plotted in the form of a curve which is reproduced in Figure 2. The changes in density appear to be of the kind which is to be expected in a normally fluctuating population. In the two years following 1958 an increase in density is noticeable, but in the next years there is once more a decrease. The form of the curve suggests a regularly undulating movement (*cf.* DOUDE VAN TROOSTWIJK, in the press).

FIGURE 2. Relative density of the Woodpigeon population in the Netherlands, based on Table 2.

Nothing points in the direction of a steady state; neither is there an increase or a decrease in a definite direction. It is therefore not proved that the increase of the number of birds that were shot since the introduction of the premium, did cause a decrease in the density of the population.

As since 1961 the premium is paid also for birds that are shot in the winter, it might be argued that Woodpigeons immigrated from abroad must have been represented too among the birds that were shot. However, in the next chapter we will show that the immigration is so small that it may be left out of consideration.

C. The migration of the Woodpigeon

Foreign Woodpigeons might pass through the Netherlands when they are migrating in autumn and in spring, and as they would find here an abundance of food, they might be tempted to stay instead of returning to their original breeding places the following summer. It is conceivable therefore that the indigenous Woodpigeons which were shot in the preceding season would be replaced by foreign ones. In order to estimate the probability of such a replacement, it is essential that we know something of the migratory movements of the European Woodpigeons.

To begin with we will consider the migratory movements of the indigenous Woodpigeons. The normal action radius of the Woodpigeon as a nesting bird may be estimated at ca. 20 km (12.5 miles). Of the number of Woodpigeons (older than two months) that were ringed in the Netherlands 102 (i.e. 64%) were recovered within this limit, whereas 57 (i.e. 36%) were recovered at a distance of more than 20 km from the place where they were ringed. It looks therefore as if only one third of the population passes the boundary of their home region. Only 40 pigeons (i.e. 25%) were recovered outside the Netherlands, viz. 28 in Belgium, 8 in France, 2 in England, 1 in Denmark and 1 in Germany. Only a small part of the total number has migrated therefore in the direction of the large wintering centre of the European Woodpigeon, viz. to the southwestern part of France.

If we arrange the directions in which the migrations took place in two groups, viz. one comprising the directions to the N, NE, NW and E, which we will indicate with the symbol "N", and another one comprising the directions to the S, SE, SW and W, indicated by the symbol "S", we arrive at the schema reproduced in Table 3.

In summer as well as in winter a tendency to fly in a southern direction is noticeable.

TABLE 3

FLYING DIRECTION OF WOODPIGEONS OF ALL AGES WHICH WERE RECOVERED AT A DISTANCE OF MORE THAN 20 KM FROM HOME

Direction	Season	
	Summer (April-Sept.)	Winter (Oct.-March)
N	2	9
S	8	45

Among the English Woodpigeons the tendency to migrate is, according to ASH (1956), most strongly developed in birds which are one year old. In the Netherlands we arrived at the same conclusion. In the age group of 2 to 12 months 75 of the ringed birds were recovered and 45% of this group were found to have flown further than 20 km from home. Of a group of 82 Woodpigeons which were more than one year old, 31% flew further than 20 km. However, this difference is according to the 5% limit of the χ^2 test not entirely significant.

Our observations lead to the conclusion that in the Netherlands the Woodpigeon behaves mainly as a stationary bird, but that migration is not altogether excluded. This migration is not due to the severity of the winter, and it is very irregular.

An entirely different picture is obtained if we study the migration of the Woodpigeons from northern Europe in autumn and spring. The further the nesting areas are situated to the North, the stronger is the tendency to leave these areas in the autumn. In order to give an impression of this situation we have collected the available data in Table 4.

From Norway, Sweden, Finland and the Baltic Provinces together 90 recoveries are known, 11 of which (i.e. 12%) were made in the home country. In Denmark the percentage of recoveries made in the country itself is 63, in Belgium 82, in the Netherlands, as we have seen already, 75.

The tendency to migrate is therefore in the Woodpigeons of the countries to the North and East of the Baltic Sea considerably stronger than it is in those which are living in the countries to the South and Southwest of the latter.

The results of the ringing experiments carried out in western Germany have not yet been published, but Dr. F. GOETHE from the *Vogelwarte Helgoland* had the kindness to communicate the most important data to me by letter. Of the Woodpigeons that were ringed in western Germany

TABLE 4

RECOVERIES OF WOODPIGEONS RINGED IN VARIOUS COUNTRIES

	Where ringed						
Where recovered	Norway	Sweden	Finland	Baltic Provinces	Denmark	Belgium	Nether-lands
Norway	?	—	—	—	—	—	—
Sweden	—	9	—	—	1	—	—
Finland	—	—	1	—	—	—	—
Baltic Provinces	—	—	—	1	—	—	—
Denmark	—	1	—	—	18	—	1
Germany	—	3	2	1	1	—	1
Netherlands	—	2	—	—	1	2	118
Belgium	—	3	—	1	1	22	28
Great Britain	—	—	—	—	—	—	2
Ireland	—	—	—	—	1	—	—
France	1	28	14	11	4	4	8
Spain/Portugal	—	4	2	4	1	—	—
Italy	—	—	—	1	—	—	—
Czechoslovakia	—	—	—	1	—	—	—

and which travelled over a fairly long distance, 61% were recovered in southwestern Europe. However, the total percentage of the birds which travelled over a fairly long distance, was but small, and we obtained the impression that in western Germany, just as in the Netherlands, Denmark and Belgium, migration in the proper sense is but rare.

It may also prove to be of importance to study the relation between the localities at which the Woodpigeons of northern Europe were recovered and the months in which this happened. Table 5 shows that southwestern France, Spain and Portugal form together a large wintering area. A small part of the Baltic Woodpigeons seem to follow a route which is situated somewhat further to the East (two recoveries, from Italy and from Czechoslovakia, resp.). The main migration routes are shown in Figure 3 (*cf.* MURTON 1961). Three conclusions may be drawn from Table 5 and Figure 3. In the first place, that the Woodpigeons from northern Europe reach their wintering area already in October; secondly, that the pigeons travel in an almost straight line, and that they show no inclination to deviate from this line; and thirdly, that there is a slight spreading over the remaining part of western Europe, but that this is observed mainly during winter and spring, not in the autumn.

It is worth mentioning that in the Netherlands during the autumn several times, though at irregular intervals, large flocks of Woodpigeons have been observed. These flocks varied in size from a few hundreds

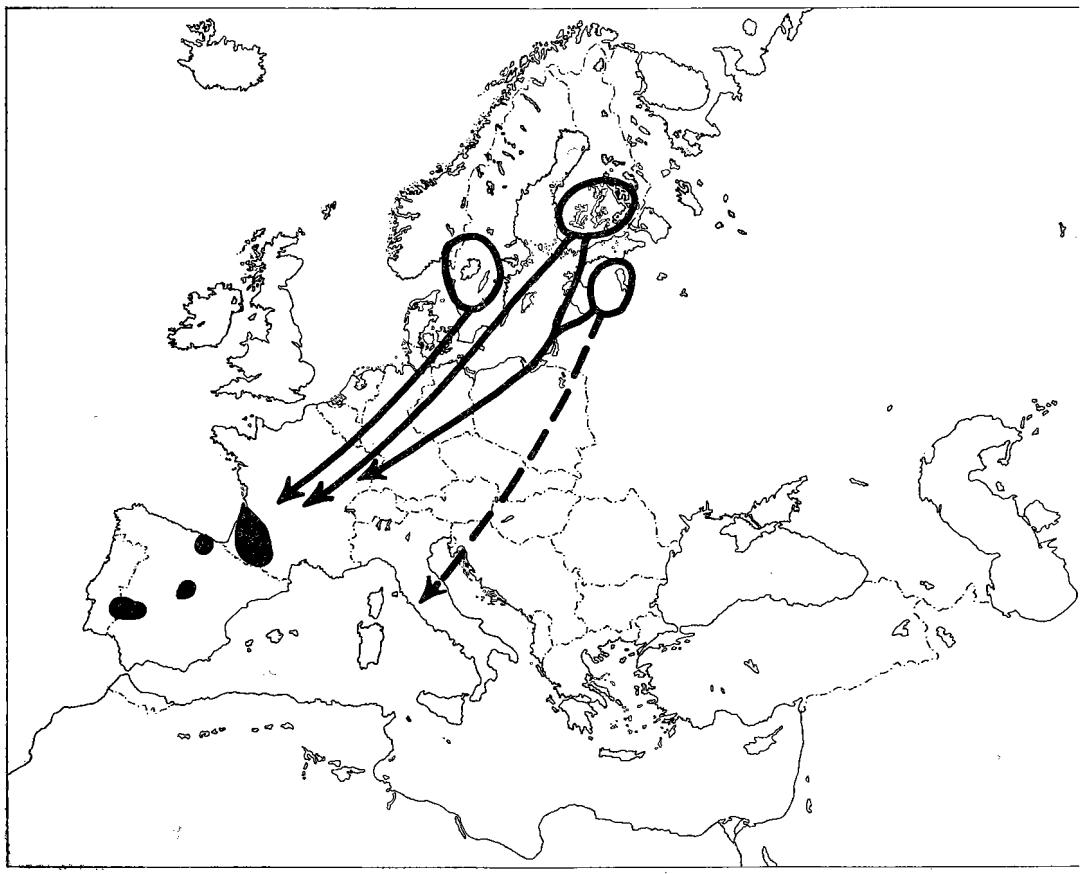

FIGURE 3. Possible migration routes of Woodpigeons ringed in Scandinavia, Finland an the Baltic Provinces.
Circles: Main ringing areas *Arrows*: Migration routes
Black spots: Wintering areas *Broken arrow*: Eastern route of Baltic Woodpigeons.

to several thousands of birds (TAAPKEN 1960 and 1962, and the author's own observations). However, it seems unlikely that these flocks would consist of immigrants from northern Europe, as the number of recoveries of Scandinavian Woodpigeons is very small (2). Moreover, a proper migration of Woodpigeons has never been recorded from the Netherlands, although in this country already for a long time due attention has been paid to the migration of all kinds of birds in autumn and in spring.

For the reasons given above it seems highly improbable that a large number of Woodpigeons from northern Europe would reach the

TABLE 5

COUNTRY AND MONTH IN WHICH WOODPIGEONS RINGED IN NORWAY, SWEDEN, FINLAND AND THE BALTIC PROVINCES WERE RECOVERED

	Denmark	Germany	Netherlands	Belgium	France	Spain	Portugal	country where ringed[1])
August	—	—	—	1	—	—	—	2
September	—	—	—	—	—	1	—	—
October	—	1	—	—	34	3	—	—
November	—	1	1	1	9	—	—	—
December	—	—	—	—	1	—	—	—
January	—	—	1	—	3	1	1	—
February	—	1	—	—	2	—	1	—
March	—	3	—	1	5	1	—	—
April	—	—	—	—	2	—	—	—
May	—	—	—	—	—	—	—	—
June	—	—	—	—	—	—	—	—
July	—	—	—	—	—	—	—	1

[1]) To this group belong also 8 recoveries made during the summer in Sweden, the exact dates of which being unknown.

Netherlands. The only countries from where immigrants may be expected are apparently Germany and Denmark. But even in this case the evidence is but scanty, for only one Danish Woodpigeon has been recovered in the Netherlands; this bird was shot in February. Whether this pigeon would have stayed here permanently, is, of course, unknown. From the information I obtained from Germany with regard to the number of birds that were ringed, I arrived at the conclusion that the percentage of birds ringed in western Germany and recovered in the Netherlands is but 2.5 (12 birds), which is a very small fraction. From five of these recoveries all necessary data are available. These birds were recovered in the period from October to December; but in these cases too it is, of course, impossible to say whether they would have stayed in this country or whether they were merely birds of passage. At any rate, if there really was a regular immigration of Woodpigeons from abroad, we would have to expect a much larger number of recoveries.

There is still another aspect of this problem which deserves our attention. As there are no natural boundaries between western Germany, the Netherlands and Belgium in the form of mountain chains or seas, and as the climate of these countries is in the main the same, the Woodpigeons found in these parts probably form a single population. We may therefore expect a certain amount of interchange, especially during the autumn, when these birds assemble into large flocks. This interchange can most frequently be expected along the border, and it is therefore

no wonder that 11 out of 12 recoveries of German Woodpigeons were actually made in the eastern part of the Netherlands (Fig. 4).

It must therefore be regarded as improbable that Scandinavian Woodpigeons would spend the winter in the Netherlands or that they would establish themselves here. Moreover, as the population density of the Woodpigeon in Scandinavia is but small (MURTON 1961), the effect which such occasional settlements would exercise on the density of the population in the Netherlands would be negligible. However, an immigration from Germany cannot be entirely excluded, although this too would be one on a small scale only.

FIGURE 4. Recoveries in the Netherlands of Woodpigeons ringed abroad.
● Recoveries from Germany + Recoveries from Sweden
× Recovery from Denmark

D. MORTALITY

In order to estimate the fluctuations in the population density of the Woodpigeons in the Netherlands use was made of the number of pigeons that were shot in the successive years. The conclusion at which we did arrive already, was that the density of the population is influenced neither by the present amount of shooting nor by migratory movements. We will have to find out therefore by what other factors the fluctuations in the density of the population may be caused.

During spring, summer and the first part of the autumn there is no lack of food, but in the course of the autumn the food supply decreases, except in years with a large production of beech nuts and acorns.

As with so many other animal populations the conditions prevailing during the winter are apparently for the Woodpigeons too of great importance. Similarly, apart from the scarcity of food the severity of the winter season might perhaps cause an increase of the mortality rate. During the summer too the weather conditions might be of importance, as they might influence the reproduction. In order to test the influence of these factors on the density of the population, we studied the density reached in the various years in relation to the weather conditions prevailing in the preceding summer and winter, and in relation to the amount of beech nuts and acorns produced in the preceding autumn.

In order to obtain comparable values we made use of the following subjective scales:

Winter:	mild: 3	Crop:	good: 4
	normal: 2		moderate: 3
	severe: 1		bad: 2
			failure: 1

The precipitation in the summer time was estimated by means of a scale ranging from slight (5) to abundant (1).

The necessary data were compiled from data in the *Nederlands Bosbouw Tijdschrift* and from the monthly weather surveys published by the Royal Netherlands Meteorological Institute (KNMI). In Table 6 the figures for the population density in the successive years given in Table 2 are combined with those found for the above mentioned environmental factors.

The correlation between these variables was calculated for us by Mr. M. A. J. VAN MONTFORT M.Sc.Agric., collaborator of the *Centre for Mathematics in Agriculture* at Wageningen. It is presented here in

TABLE 6

RELATIVE VALUE OF FACTORS WHICH MAY HAVE INFLUENCED THE MORTALITY AMONG THE WOODPIGEONS

Year	Density (y)	Beech nut production in preceding year (x_1)	Acorn production in preceding year (x_2)	Weather in preceding season	
				Winter (temp.) (x_3)	Summer (precip.) (x_4)
1954	1.65	3	4	2	2.5
1955	1.35	1	3	2	2
1956	1.45	1	2	1	3
1957	1.93	4	2.5	3	2
1958	1.57	2	2	2	1
1959	2.20	3.5	3	2	2
1960	2.29	2	3	3	4.5
1961	2.11	4	4	3	2
1962	1.77	1	1	3	2.5

TABLE 7

CORRELATION BETWEEN THE VARIABLES Y, x_1, x_2, x_3 AND x_4 OF TABLE 6. THE FIGURE "1" INDICATES A COMPLETE CORRELATION; 0.62 AND 0.61 ARE SIGNIFICANT WITHIN THE 5% LIMIT

	y	x_1	x_2	x_3	x_4
y	+ 1	+ 0.62	+ 0.29	+ 0.62	+ 0.37
x_1		+ 1	+ 0.61	+ 0.39	− 0.24
x_2			+ 1	+ 0.06	+ 0.06
x_3				+ 1	+ 0.15
x_4					+ 1

the form of a table showing the correlation between the various coefficients (Table 7).

This table reveals the presence of a fairly considerable correlation between the amount of beech nuts and the population density of the Woodpigeons in the following year. There is also a good correlation between the amount of beech nuts and that of acorns, which is probably due to climatic influences, but there seems to be no distinct correlation between the population density of the Woodpigeons and the amount of acorns. This is in agreement with the fact that in the crop and in the stomach of Woodpigeons acorns are much less often found than beech nuts (GASOW 1962); they are apparently a less important source of food for this bird. The winter temperatures are clearly of importance. Although the figures for the numbers of birds shot in the year 1963 were not yet available, our observations in the field seem to indicate that in this year

too the density of the Woodpigeon population was less than it had been in the previous years; this would have to be ascribed to the severity of the winter of 1962-63 and to the scarcity of food in that season. The density of the population does not seem to be affected by the amount of precipitation in the preceding summer.

It might be argued that the population densities given in Table 6 under "y" are not fully objective, and that it would have been better to express the population density as a percentage of that found in the preceding year. In that case we would have found for the years 1954 to 1962 the figures 100, 81, 109, 133, 81, 140, 104, 92 and 84, and for the correlation between the density of the population and the amount of beech nuts the value 0.58, which is but slightly less than that recorded in Table 7. For the correlation between the population density and the severity of the winter, however, a negative value would have been found. Food, therefore, is apparently of much more direct importance than cold.

Howsoever this may be, further research is required in order to decide by what factors the population density of the Woodpigeon is controlled. For the moment it looks as if the amount of food which is available during the winter, is of importance, and that the severity of the winter too may play a part.

E. Conclusions

The principal result which the study of the Woodpigeon population in the Netherlands has revealed, is that neither its density nor its structure are markedly influenced by the number of birds that are shot, in spite of the fact that the latter, nevertheless, is rather large. Immigration of Woodpigeons from outside the Netherlands, by which the birds that are shot during the summer, might be replaced, probably takes place on a very small scale only; and the immigrating birds, moreover, belong apparently to the same population as the indigenous ones. Howsoever this may be, there is no indication that such birds are settling here.

The population density shows fluctuations which might indicate a cycle of ca. 10 years. However, the period of which data are available, is too short to allow a definite conclusion. The fluctuations are due to environmental factors, among which the conditions prevailing during the winter season play apparently the most important part. Nothing is as yet known with regard to the influence which the weather conditions in the summer season might exercise on the propagation, nor with regard to the degree to which the population density depends upon the number of fledglings in the preceding year.

In the breeding season the number of Woodpigeons in the Netherlands may be estimated with due reserve at 750,000 to 1,000,000, and it seems clear therefore that the shooting of 150,000 birds per year can not exercise a marked influence. However, it is at this moment impossible to say what part this factor plays in the control exercised by the mortality due to natural causes. It seems likely that the population increases every year to such an extent that it exceeds the carrying capacity of the biotope, and that for this reason a large mortality rate will be found among the birds which were hatched at the end of the breeding season, particularly in winters in which food is scarce. As on this account always a large number of birds will die, the number of birds that are shot, would only be of importance if it actually caused an increase of the yearly death roll. This, however, is probably not the case, as the pigeons that are shot opened the opportunty to remain alive for an equal number of pigeons. Another circumstance which should not be overlooked is that a very large part of the population nests in villages, towns and other urban centres, where they are but little exposed to predators and where they are hardly ever shot.

Summary

1. It appears that the premium put in 1954 on the shooting of Woodpigeons did not influence the population density of this bird. The average age as well as the survival chance in the following years appeared to be the same as in the preceding years.

2. The number of birds shot in the successive years was used for estimating the fluctuations in the population density in the years from 1954 to 1962.

3. It appeared that the population density shows neither a permanent increase nor a permanent decrease.

4. The migration of the Woodpigeon in Europe was studied. It appeared that there is in the Netherlands an immigration, though on a small scale, from abroad, but the possibility that some of these immigrants would settle here, seems to be but small.

5. Among the factors by which the population density of the Woodpigeon is controlled, the amount of food and the weather conditions during the winter are probably the most important ones.

Samenvatting

Teneinde de schade die de Houtduif in Nederland toebrengt aan land- en tuinbouw te verminderen, is in 1954 vanwege het Ministerie van Landbouw en Visserij een premie ingesteld voor iedere geschoten en ingeleverde Houtduif. Aangezien deze premieregeling niet het gewenste effect had, is door het Itbon een onderzoek verricht naar de oorzaken hiervan. De resultaten worden in deze publicatie behandeld.

Uit terugmeldingen van geringde Houtduiven bleek, dat de gemiddelde leeftijd, zowel als de populatie opbouw van de Houtduif na 1954 niet significant gewijzigd is door het gestimuleerde afschot. Een analyse van afschotcijfers vanaf 1954 bracht aan het licht, dat de populatie dichtheid rond een bepaald niveau schommelt, en dat er geen tendens bestaat tot een blijvende toe- of afname van de stand. De mogelijkheid dat de in Nederland geschoten Houtduiven worden vervangen door immigratie van buitenlandse trekvogels, wordt zeer gering geacht. Bestudering van buitenlandse ringgegevens gaf te zien, dat de herfst- en voorjaarstrekwegen van Noord-Europese Houtduiven ten oosten van Nederland verlopen. Slechts een uitwisseling met Duitse Houtduiven zou op kleine schaal kunnen voorkomen.

De schommelingen in populatie dichtheid worden niet beinvloed door de huidige bejaging, maar zijn hoogstwaarschijnlijk voor een groot deel te wijten aan het weer en de voedselsituatie in de winter.

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