

Assemblages of non-breeding Ravens *Corvus corax* LINNAEUS, 1758, in Wielkopolska (W Poland) in the period of recolonisation of this region

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Abstract. In the period of recolonisation of the Wielkopolska region by the Raven, flocks of juvenile birds started appearing a few years later with respect to the increase in the size of the breeding population. Most often the flocks were observed at the turn of the winter and spring or in the summer and autumn. The most often seen flocks ranged from 21-40 individuals. The flocks of non-breeding birds were foraging mostly in arable fields and at waste dumping sites of slaughterhouses. Only in these rich of food sites, flocks of over 100 individuals were observed.

Keywords: Raven, non-breeding flocks, foraging places.

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I. INTRODUCTION

Since the beginning of the Wielkoposka region recolonisation by the Raven, in the 1950's, (BEDNORZ 1991), the observations of flocks of young birds unable to reproduce have been expected. The young leave their family groups in the first summer of their life (SCHEVEN 1955, HAURI 1958, GOETHE 1961, SÖMMER 1991) and join their peers as well as one- and two-year old birds forming greater flocks moving to places abundant in food (PRILL 1983). As has been proven by the study of ringed birds, they do not fly far and only exceptionally cover distances over 100 km (GLUTZ & BAUER 1993). Therefore, at least part of the young hatched in Wielkopolska should stay in the region. In this paper I am concerned with providing answers to the following questions:

- What is the relationship between the rate of formation of non-breeding birds and the increase in the size of the local breeding population?
- Do the number and size of the flock change in one year?
- Is there any optimum size of non-breeding birds flock?
- Which habitats do they prefer as foraging places?

II. STUDY AREA AND METHODS

The Wielkopolska region occupies an area of about 40 000 km² and is dominated by agricultural landscape, often with numerous infield tree groups. Forests occupy about 25% of the region area and are highly non-uniformly distributed, mainly in the northern and western parts of the region. The agricultural landscape is mainly composed of arable fields, the cultivated crops are mostly cereals, less popular are rape and root plants. Meadows and pastures are met most often in the river valleys and around the lakes.

Because of the scarcity of Ravens in Wielkopolska, in the first phase of recolonisation of the region, up to 1994, each breeding pair and flocks of non-breeding birds were carefully noted. The information was collected in the "Kartoteka Ptaków Wielkopolski" (Record of Birds in the Wielkopolska Region). I am much grateful to all observers for having given me free access to it. From 1980-1991 the observations were carried out by approximately 180 people, in the last two years the number of observers, mostly amateurs, has increased to over 240. Since 1980-1991 the number of observers were more or less the same, the data from this period are comparable and they have been the basis of this analysis. In order to separate the spring and summer family flocks, only uniform flocks of young non-breeding Ravens greater than 8 birds have been taken into regard. The same procedure has been assumed earlier by COOMBES (1948).

III. RESULTS

The first flock of 20 non-breeding Ravens was spotted in the Wielkopolska Region on the 1st of August in 1969 (A. DREWNIK). At that time the size of the breeding population was very small and amounted to 40-50 pairs (BEDNORZ 1991). At the first stage of recolonisation, despite a constant growth of the breeding population, flocks of non-breeding birds were seen very rarely and not every year (Fig. 1).

Their presence has become regular since 1984, it means a few years later than the increase in the breeding population, which way especially well-pronounced at the turn of the 70s and the 80s (BEDNORZ 1991). A rapid increase in the frequency of meeting non-breeding flocks of Ravens has been noted since 1993 (Fig. 1), when the number of breeding pairs in the region exceeded 500 (GLUTZ & BAUER 1993) and the number of Ravens in the forests had begun to stabilise (BEDNORZ 1997). This significant increase in the number of observations of flocks of non-breeding birds was

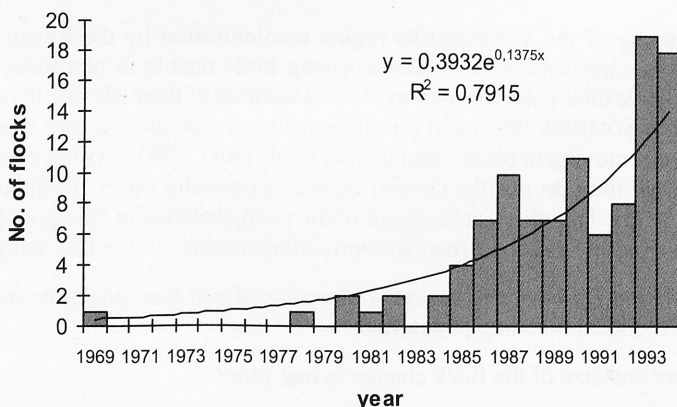


Fig. 1. The time distribution of meetings of flocks of non-breeding Ravens in Wielkopolska up to 1994.

more synchronised with the increase in the size of the breeding population. It cannot be excluded that this result (Fig. 1) could also have been influenced by an increase of the number of field observers.

The frequency of observing flocks of non-breeding birds and the number of birds in them varied (Fig. 2). It significantly increased at the end of winter, in February and March, when adult birds are breeding, and in the end of summer – when the young leave their parents and join the already formed flocks.

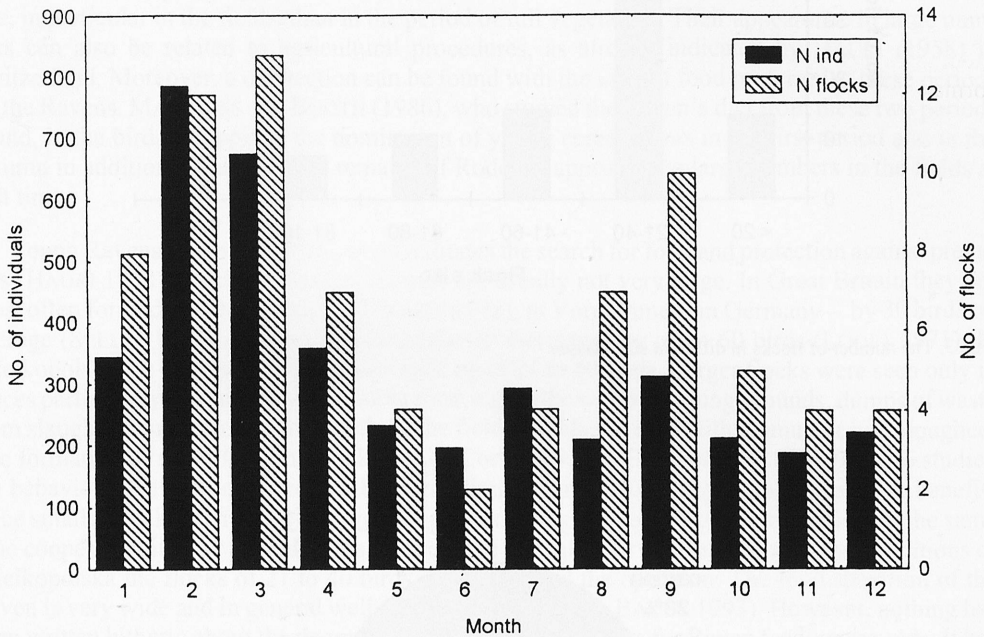


Fig. 2. The number of flocks and individuals in a year cycle.

The size of flocks seen in the feeding grounds was diverse, however, dominant were the flocks from 21 to 40 birds (Fig. 3). Large flocks were rare and the largest of app. 150 birds was seen on the 15th of June, 1989 (J. KACZMAREK) in an old gravel mine where waste from a slaughterhouse was dumped. The birds showed clear preferences in the choices of feeding habitats. Their greatest number was feeding in the arable fields (Fig. 4) during manure distribution, during plough or on freshly ploughed fields. Many birds – 28% – were feeding in communal waste dumping grounds and in the waste dumping grounds of slaughterhouses and animal farms (for animals and poultry). These two habitats were the foraging places for 74% of all birds. All large flocks were feeding in these richest of food habitats. The others were of secondary importance. Relatively the largest number of the birds (12%) were feeding on fish ponds, in particular when the ponds were emptied. They were rarely seen to feed in meadows or pastures (Fig. 4), if then only during haymaking. Exceptionally, in a number up to 40 individuals, they were spotted in forests, in felling sites and fresh forest crops.

IV. DISCUSSION

Flocks of young non-breeding Ravens form only in the areas in which there are relatively large and stable breeding populations, although not necessarily where they breed (HAURI 1958). For in-

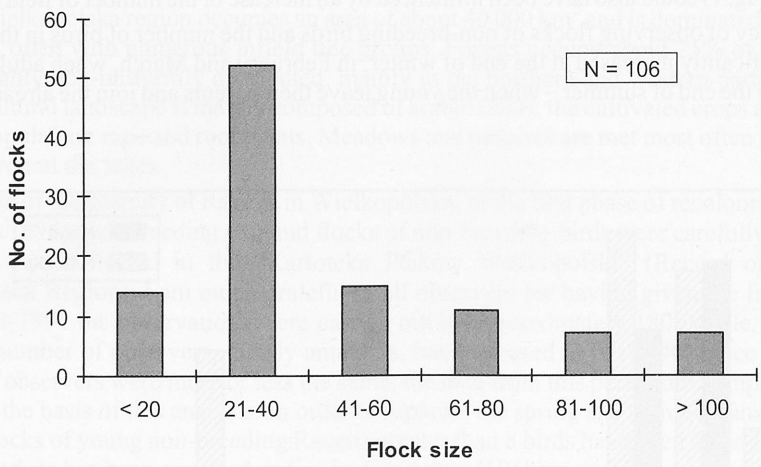


Fig. 3. The number of flocks in different size classes.

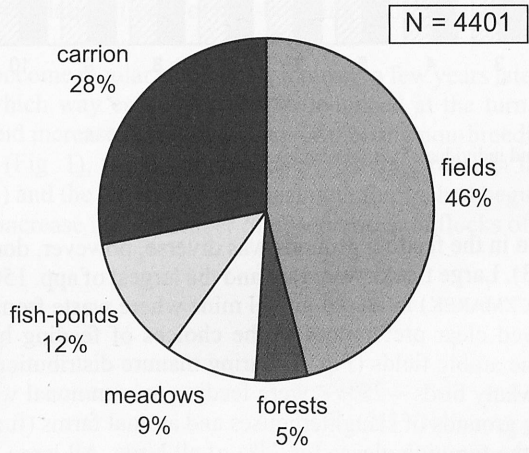


Fig. 4. Feeding grounds of flocks of non-breeding ravens.

stance in the British Isles for many decades the Raven has been a common breeding bird and the presence of flocks of young birds has been commonly observed (RATCLIFFE 1997). In Poland, at the end of the 1950s, a stable breeding population of Ravens was known only from the eastern part of the country and only there flocks of non-breeding birds were regularly noted. The number of flocks decreased father to the west, and in the western Poland, where the recolonisation had just started, no flocks of young non-breeding birds were seen (DOBROWOLSKI et al. 1962). In Wielkopolska the first flocks appeared 10-20 years later. Only since the mid 1980s they have been regularly noted and

at an increasing frequency. This happened only when a threshold of the minimum saturation of the region with breeding birds has been reached.

The frequency of meeting non-breeding flocks of Ravens within a year varied, although it considerably increased at the turn of winter and spring as well as summer and autumn. This pattern (Fig. 2), although based on a relatively small sample is not accidental. A similar situation is known from the British Isles (MYLNE 1961, RATCLIFFE 1997) where the number of observations has been much greater. There are probably a few reasons for it. Undoubtedly, at that time Ravens are easier to notice, in particular in the fields, than in the period of full vegetation. Their appearance in large numbers can also be related to agricultural procedures, as already indicated by HAURI (1958) in Switzerland. Moreover, a connection can be found with the kind of food preferred at these periods by the Ravens. MARQUISS and BOOTH (1986), who studied the Raven's diet from these two periods found, in the birds' droppings the domination of young cereal plants in the first period and in the autumn in addition to that also the remains of Rodents, appearing in large numbers in the fields at that time.

Young Ravens group into flocks as it facilitates the search for food and protection against predators (HAURI 1958). Flocks of feeding Ravens are usually not very large. In Great Britain they are most often formed by 30 to 50 birds (COOMBS 1978), in Vorpommern in Germany – by 30 birds on average (SELLIN 1987), and in Schleswig (also in Germany) by up to 60 birds (LOOFT 1971). In Wielkopolska the dominant flocks were made up of 21 to 40 birds. Larger flocks were seen only in places particularly rich in easily accessible food, e.g. in the waste dumping grounds, dumps of waste from slaughterhouses, or less frequently in the fields freshly covered with manure or just ploughed. The formation of small foraging flocks by the Corvids is justified. PINOWSKI (1959), who studied the behaviour of the Rooks, proved that formation of small foraging groups brings more benefits since smaller flocks are more effective, can penetrate larger areas looking for food and at the same time cooperate with one another. This is surely the case also for the Raven and in the conditions of Wielkopolska the flocks of 21 to 40 birds are considered the optimum. The food spectrum of the Raven is very wide and in general well-recognised (GLUTZ & BAUER 1993). However, nothing has been written hitherto about the degree of use of different habitats for Raven feeding grounds. It has been established that the main foraging sites are waste dumping grounds, arable fields and meadows, in the seaside regions also the coastal area (HAURI 1958, MARQUISS & BOOTH 1986, SELLIN 1987, HUBER 1991, GLUTZ & BAUER 1993), which has been partly confirmed by the results of this study.

REFERENCES

- BEDNORZ J. 1991. Die Wiederausbreitung des Kolkrahen (*Corvus corax*) in Polen. [In:] D. GLANDT (ed.) – Der Kolkrahe (*Corvus corax*) in Mitteleuropa. Metelener Schriftenreihe Naturschutz, 2: 29-35.
- BEDNORZ J. 1997. Birds of the Wielkopolska National Park. Prace Zakł. Biol. i Ekol. Ptaków UAM, 8: 68 pp. Poznań. [In Polish with English summary].
- COOMBS R. A. H. 1948. The flocking of the Raven. Br. Birds, 41: 290-295.
- COOMBS F. 1978. The Crows. A Study of the Corvids of Europe. Batsford, London.
- DOBROWOLSKI K. A., PIELOWSKI Z., PINOWSKI J., WASILEWSKI A. 1962. Das Vorkommen des Kolkrahen (*Corvus c. corax* L.) in Polen im Zusammenhang mit seinen Arealen – und Quantitätsveränderungen in Mitteleuropa. Ekol. pol. - Seria A, 10: 375-456.
- GLUTZ U. N., BAUER K. M. 1993. Handbuch der Vögel Mitteleuropas. 13/III. AULA – Verlag Wiesbaden.
- GOTHE J. 1961. Zur Ausbreitung und zum Fortpflanzungsverhalten des Kolkrahen (*Corvus corax* L.) unter besonderer Berücksichtigung der Verhältnisse in Mecklenburg. [In:] H. SCHILDMACHER (ed.) – Beiträge zur Kenntnis deutscher Vögel: 63-129.
- HAURI R. 1958. Über Ansammlungen von Kolkrahen (*Corvus corax*) im Berner Oberland. Orn. Beob., 55: 156-168.
- HUBER B. 1991. Bildung, Alterszusammensetzung und Sozialstruktur von Gruppen nichtbrütender Kolkrahen (*Corvus corax* L.). Metelener Schriftenreihe Naturschutz, 2: 45-59.

- LOOFT V. 1971. Starke Abnahme des Brutbestandes vom Kolkraben (*Corvus corax*) im Landesteil Schleswig. *Corax*, **3** (19): 188-195.
- MARQUISS M., BOOTH C. J. 1986. The diet of Ravens *Corvus corax* in Orkney. *Bird Study*, **33**: 190-195.
- MYLNE C. K. 1961. Large flocks of Ravens at food. *Brit. Birds*, **54**: 206-207.
- PINOWSKI J. 1959. Factors influencing the number of feeding rooks (*Corvus frugilegus frugilegus* L.) in various field environments. *Ekol. pol. – Seria A*, **7**: 435-482.
- PRILL H. 1983. Zur Zerstreuung immaturer Kolkraben (*Corvus corax*) nach Wiederfinden von Hiddensee-Ringvögeln. *Ber. Vogelwarte Hiddensee*, **4**: 54-60.
- RATCLIFFE D. 1997. The Raven. T. & A. D. POYSER, London.
- SCHEVEN J. 1955. Ein Kolkrabenschwarm. *Vogelwelt*, **76**: 212-216.
- SELLIN D. 1987. Zu Bestand, Ökologie und Ethologie des Kolkraben (*Corvus corax*) im Nordosten des Bezirkes Rostock. *Vogelwelt*, **108**: 13-27.
- SÖMMER P. 1991. Der Kolkrabe (*Corvus corax* L.) im ehemaligen Ost-Berlin und Umgebung. *Metelener Schriftenreihe Naturschutz*, **2**: 17-20.