BIRD OBSERVATIONS AT ZURICH AIRPORT

by Bruno Bruderer, Switzerland

Abstract

During the years 1971, 1972 and 1973 hobby-ornithologists among the airport personnel (meteorologists, firemen, policemen and others) have collected data on the distribution of the most hazardous bird species within the confines of Zurich Airport. The data gathered by these non-specialists in a fairly unsystematic way have furnished a heterogeneous sample. It is the aim of the present paper to show possibilities of evaluation, presentation and use of such data.

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Introduction

Bird censuses revealing the number, species and distribution of birds on an airfield serve for decisions about the methods to keep these birds away. In order to get a regular survey over all seasons one ought to employ a biologist (a half day job would be enough for two airfields not too far away from each other). However, it is often difficult to get the money or the appropriate man for such a job, and one is obliged to work with hobby-ornithologists among the airport personnel. Observations by firemen, policemen, meteorologists and others with changing schedule and intensity of their work cannot be as systematic as professional observations. The resulting data are occasional in time and space. The question is, if and how we can evaluate and use such heterogeneous material.

Since this problem may arise in different countries, the present paper tries to show the limits and possibilities of treating such incomplete data.

Methods and material

An instruction course for people interested in bird observations at Zurich Airport was held in early 1971. During this half day course a booklet summarizing the aims and the methods of observation and depicting the most important bird species was distributed. Exercises in filling out report forms were carried out.

The report forms contained on one side a map of the airport, on which the way of the excursion or the surveyed area as well as the location of the observed birds could be indicated. On the other side of the form the time of observation, meteorological conditions, groundcover, the number, species, and behaviour of the birds were asked.

At the end of 1973 more than 300 report forms with an average of 10 observations were available. Some of them contained excursions covering the whole airfield, some represented a series of excursions in one or two sectors of

the airfield during a week. Usually there were single excursions in one sector (cf. Fig. 1a). A few contributions comprised single reports on conspicuous birds or flocks. So the chance for a large bird or flock to be reported was somewhat higher than that of smaller ones, and the number of "excursions" is not absolutely identical for all the species (cf. the total number of excursions indicated in the upper right-hand corner of the distribution maps). The number of excursion indicated in the graph for the pheasant corresponds practically to the basic number of excursions without additional observations (the difference to the other species is obviously small).

The aims to be attained :

1) to show graphically the distribution and flock size of the most hazardous species

2) to show the seasonal changes in this distribution

3) to explain, if possible, distributions and seasonal fluctuations with respect to the habitat

4) the first ideas for the project also included the description of fluctuations throughout the day and under different meteorological conditions. However, this is only possible, provided that an equal number of data is available for the times and situations to be described.

   This point was excluded as soon as we knew that the observations could not be executed on a regular schedule.

Presentation of data (requirements and possibilities)

1) Horizontal distribution on a limited number of easily legible maps (for the most important species)

   Possibilities :

   a) Indication of the preferred areas and the three most frequent flock sizes (in numbers) within these areas (no exact locations, but estimation of the average number of birds present)

   b) Signatures for three categories of flock sizes at correct location (no indication of the number of birds present at a certain time)

   We chose possibility b), plus an indication of the average number of birds present (in an additional graph in the upper right-hand corner of each map).

2) Seasonal fluctuations in number and distribution of birds :

Possibilities :

a) Provided that equal data are available for the four seasons and for all sectors, a map for each season would be the best.

b) If the excursions are unequally distributed over the year, it is necessary to indicate the number of excursions per season; and if the different parts of the airport are unequally covered, the number of excursions per sector must be indicated.

Forced by the quality of the data we had to decide for possibility b). The solution chosen is explained in Fig. 1a :

- The area of the airport was divided into five sectors (A to E) according to the areas usually treated as a unit by the observers.
- For each sector (in each season) the number of excursions is indicated as points.
- Below the number of excursions the percentage of positive statements is given (5 points indicating that on 25 % of the excursions the species in question was observed).
- The columns represent the three most frequent numbers of individuals observed in the sector referred to. The thickness of the upper limit of the two to three elements of a column indicates how often numbers of the corresponding size have been observed.

3) Correlation with habitat (cf. Fig. 2c)

Bird data of three years had been pooled together, therefore, by necessity the habitat data have been pooled as well.

The extension of grassland (hatched) was fairly constant; the same was true for some of the cereal areas (coarse points). In certain areas the cereals alternated with roots or legumes (fine points).

Results

The number of points for the excursions shows that autumn has the best coverage of observations; B was the most visited sector, while sector E was not very attractive. These differences in mind, it is evident that we should consult the distribution maps always in connection with the

graphs showing average numbers of birds present, number of excursions, and percentage of excursions with observations of the species in question.

In order to show how to read the graphs, we will discuss the first species (Corvus corone, fig. 1b) in detail, while for the following species we only emphasize the principal facts.

Carrion crow (Corvus corone, Fig. 1b)

The distribution map shows five main features :

- large flocks on the grassland to the north of the main runway
- medium flocks on the arable land along the main runway
- medium flocks (combined with small flocks and single birds) at the end of each runway
- many observations of single birds or small groups, especially in sector B
- more observations in sector B than in others (caused by the preference of a very active observer for this sector).

The total number of excursions shows :

- a bad coverage of sectors A and E in winter and spring, a good coverage of A and B in summer, and all sectors with a good sample in autumn.

The percentage of excursions with positive statement shows :

- Crows are usually seen on more than 50 % of the excursions (only buzzards have a higher chance to be observed).

The columns indicate :

- crows are usually present as pairs (or singly)
- another large number of observations refers to groups of 5 to 20 birds
- in spring there are only small groups present
- beginning in late summer and as a usual feature in autumn there are flocks of 20 to 80 birds
- occasionally there are large flocks (concentrated during winter in sector D).

Explanation with respect to habitat and special comments of the observers :

- in spring there is a territorial pair at the end of each runway and two or three pairs along the main runway. Towards the end of May the young

appeared in addition to the adults and some of the families joined each other (groups of 5 to 20 birds !) The central part of the main runway is preferred because of woodlands on both sides;

- in summer and autumn there is a certain influx of birds from the surroundings especially during harvest periods or when recently ploughed fields offer additional food supply;
- large flocks invade the airfield when food supply is exceptional with respect to the surroundings; that is especially in winter, when natural fertilizer is brought out (sector D !).

Ringnecked Pheasant (Phasianus colchicus, Fig. 1c)

Most observations are concentrated in sectors B and C; the species is not regularly observed. During spring and summer, single birds or very small groups; in autumn and winter, groups of 3 to 10, rarely more birds are observed.

The preference for sectors B and C is caused by woodlands and bushes coming close to the airfield or both sides.

Common Buzzard (Buteo buteo, Fig. 1d)

The Common Buzzard occurs all over the airport area and throughout the year in comparable numbers (1 to 3 individuals per sector, rarely 5 or more). Its regular occurrence is due to a good population of mice (which attracts also a lot of owls). The concentration of points in sector B is rather due to a large number of excursions than to a denser population of buzzards.

Lapwing (Vanellus vanellus, Fig. 2a)

30 to 40 pairs of Lapwings are breeding in the arable land around the central crossing of the runways. Sheep grazing on the grassland improves the food supply to the north of the airfield and the marsh areas NE and SW of the airport are additional feeding places. The undisturbed area of the airport is used as a resting and moulting place : in autumn and early winter, a total of 200 to 300 individuals occurs in the airport area.

Ducks (anatidae, Fig. 2b)

Ducks are not regular visitors of the airfield.

During summer there are only single pairs feeding in the wettest areas

(sectors B and D). The same sectors are preferred in the other seasons; when the grassland or the empty fields are wet by rain or melting snow, flocks of more than 50 birds may occur, in winter even more than 100.

Black-headed Gull (Larus ridibundus, Fig. 2 d)

In spite of the high number of collisions between aircrafts and gulls at Zurich Airport (cf. Bruderer 1972 and Bruderer 1978), gulls do not regularly occur on the airfield. Less than 50 % of the excursions show the presence of gulls. However, when they are present they build up large flocks and they are more prone to fly up when an aircraft approaches than crows. Most of the large flocks were observed in autumn and winter in the sectors A, B and D. Grassland with natural fertilizer, recently ploughed or harvested fields are preferred.

Conclusions

According to these results, natural fertilizers and sheep grazing have been forbidden within the confines of the airport. Cultivation of cereals will be reduced as far as long-term contracts with the farmers allow, and scaring methods for gulls are in use.

Other proposals were : to shoot as many pheasants as possible, to control the mice population, and to drain the wet areas.

Acknowledgments

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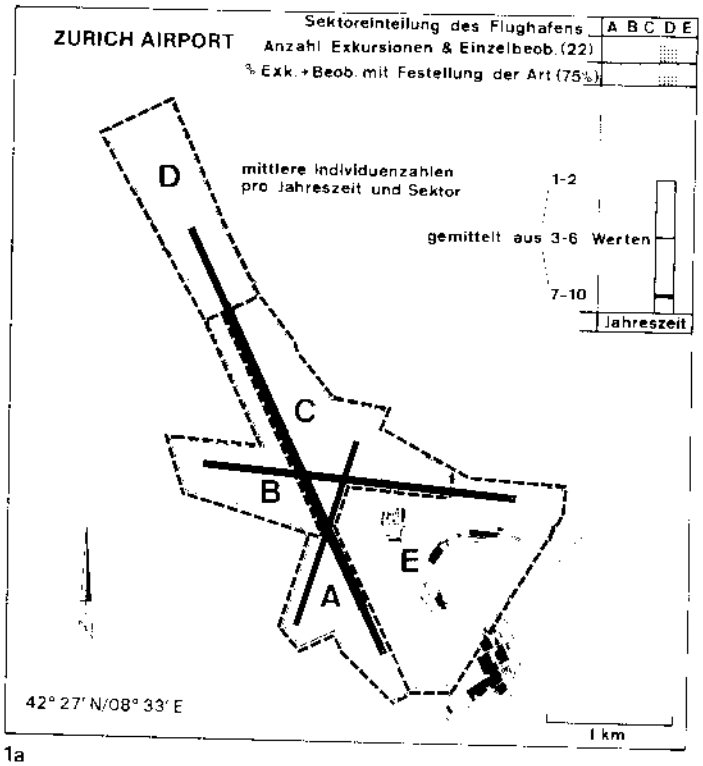
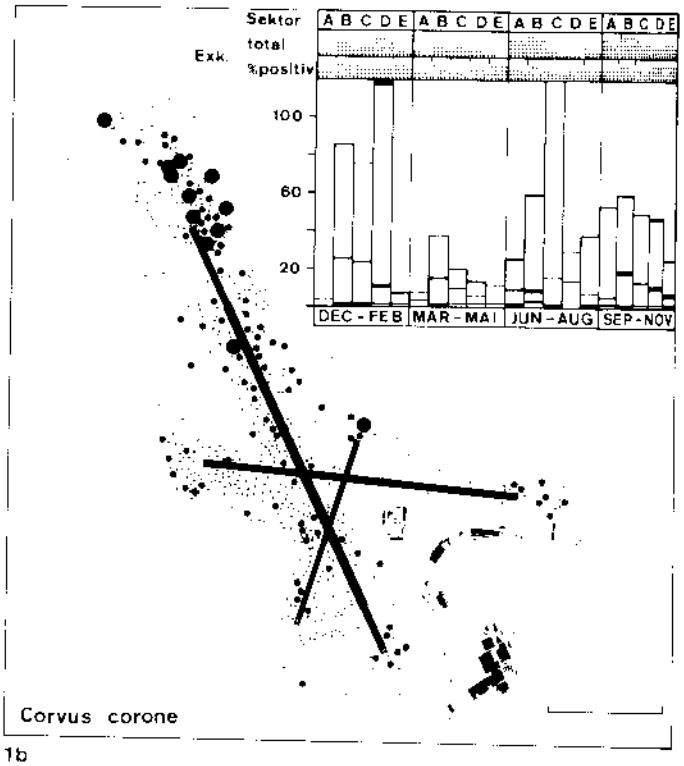


1a



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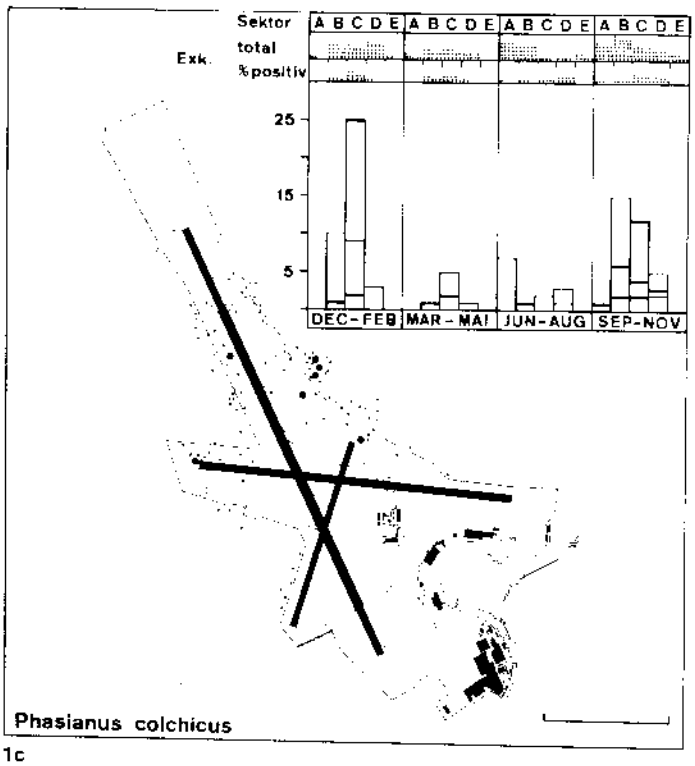

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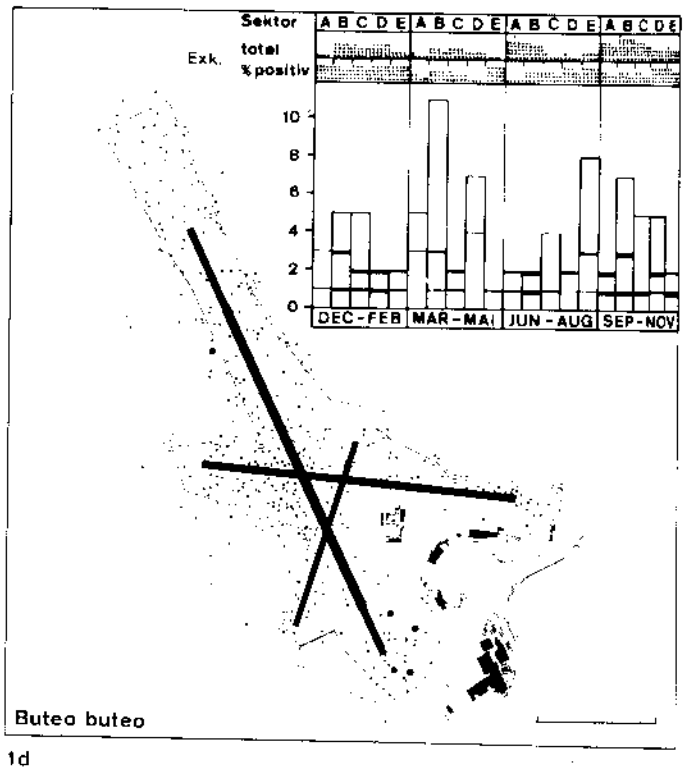
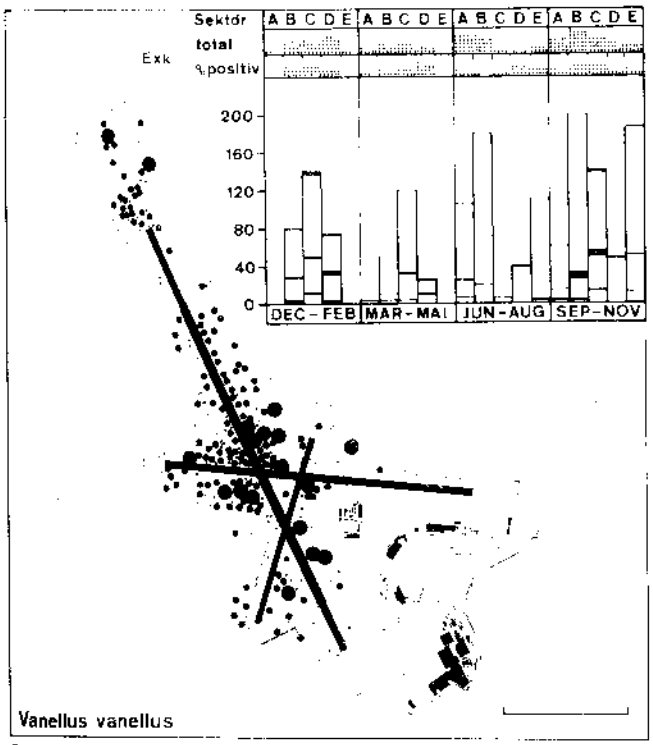


1d

Fig. 1 : a) observation sectors in the airport area; explanation of signatures for number of excursions, percentage of positive statements, average number of birds present (cf. text); b) distribution of Carrion Crow; c) Pheasant; d) Common Buzzard.



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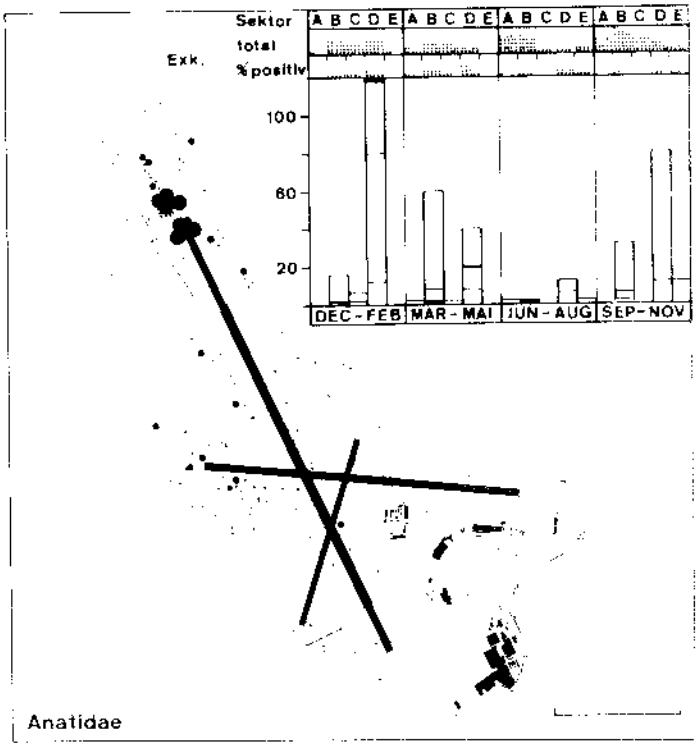

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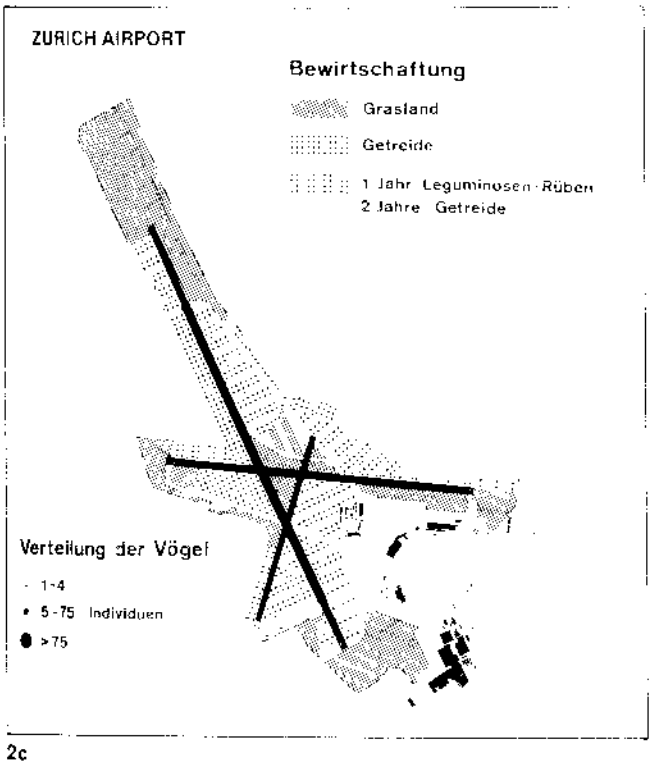

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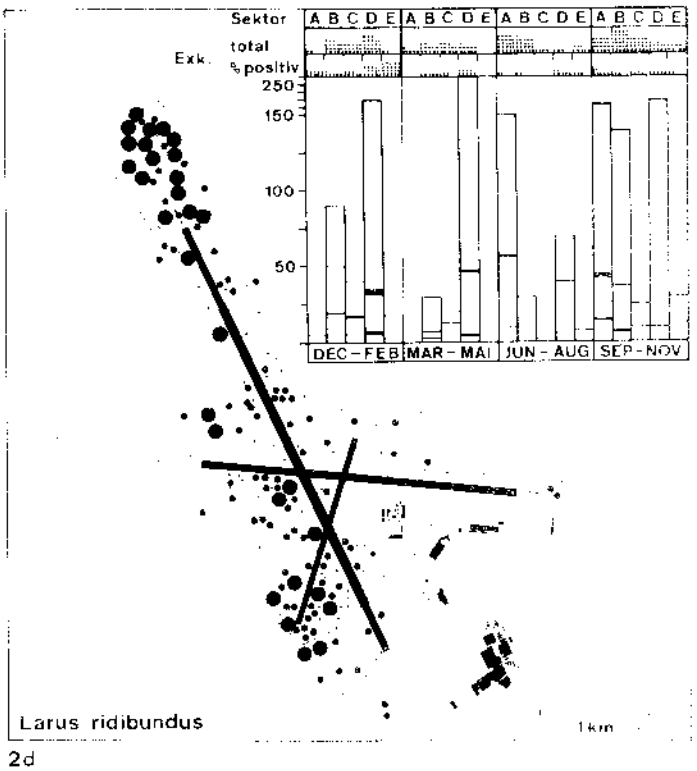

2d

Fig. 2 : a) Distribution of Lapwings; b) Ducks; d) Black-headed Gulls; c) use of land on the airfield during the years 1971-1973 (further explanation, see text).