

THE PROBLEM OF BLACK-HEADED GULLS (LARUS RIDIBUNDUS)
BREEDING NEAR AIRPORTS.

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SUMMARY

Experiments with colour marking of Black-headed Gulls breeding on the island Saltholm 5 km east of Copenhagen Airport show that (1) the locally breeding gulls frequently visit the airport during the breeding season, (2) the radius of the feeding range is about 20 km (sometimes perhaps 40 km), (3) the scarcity of alternative feeding grounds within short distance of the colonies makes the airport a valuable feeding place, and (4) adults as well as juveniles tend to leave the breeding range soon after the end of the breeding season.

It seems likely that an increase of the breeding population during the last three years has caused a corresponding increase during the breeding season in the number of Black-headed Gulls occurring in the airport.

The effect of population control on the risk of strikes with Black-headed Gulls in the airport is discussed.

INTRODUCTION

A large number of Black-headed Gulls (*Larus ridibundus*) breed within distances of 5 and 15 km of Copenhagen Airport. There is a similar situation at Ålborg Airport in northern Jutland and probably also at other airports in Europe. These locally breeding gulls may influence the bird strike risk of the airports. In fact, studies on Herring Gulls (*L. argentatus*) breeding near Copenhagen Airport have shown that the large breeding population has great influence on the occurrence of Herring Gulls in the airport and it seems that a reduction of the population has reduced the strike rate significantly (Christensen et al. 1982, Lind & Glennung 1984).

The present paper describes the movements of a colour-marked breeding population of Black-headed Gulls on the island Saltholm near Copenhagen Airport and discusses the influence of the size of the breeding population on the bird strike risk in the airport.

BACKGROUND

Saltholm is an island in Øresund, approximately 5 km east of Copenhagen Airport. Since 1970 the Herring Gull population on the island has been reduced from about 40,000 pairs till about 9,000 pairs. Probably as a consequence of this the population of the Black-headed Gull has increased from only a few pairs in 1979 to 2,800 pairs in 1985. The majority breeds on the southern part of the island, i.e., on the part closest to the airport. In order to trace the movements of the Black-headed Gulls to their feeding areas 513 adult gulls were caught on their nests during the period May 13 - June 4, 1985. They were dyed with a solution of Rhodamin B in propyl alcohol on the breast and back and then released. The red colour was visible at a long distance and it did not seem to interfere with the breeding and social behavior of the birds. Unfortunately the breeding activity of the birds was greatly disturbed by foxes during the last two weeks of June, and therefore no young could be marked. The field work was carried out by Benni Hansen and Jesper Hansen from the university, and Jan Egerod, Jørgen Hagen and Jan Rasmussen from the airport.

The public was informed about the colour marking project in newspapers, periodicals and radio programs and asked to report observations of red gulls. Special efforts were made to get reports on the coloured gulls from the airport. A total of 1,164 observations were reported.

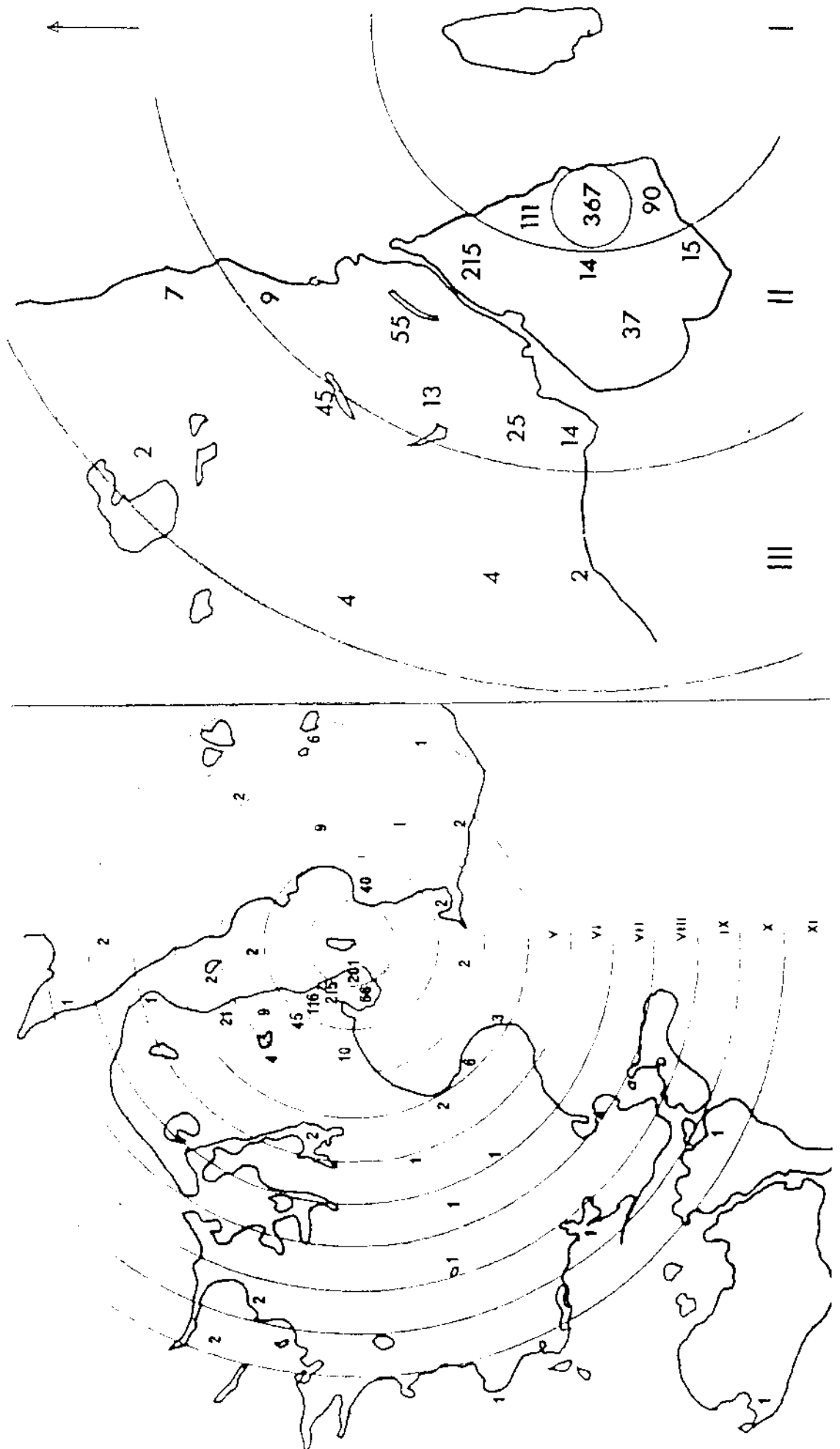
In a pilot project in 1984, 81 adults and 266 juveniles were colour marked and 156 observations were reported.

The bird scaring personnel of the airport has for many years made estimations of the number of (usually unspecified) gulls present on the grass areas several times a day. The daily maximum figures are used for demonstrating changes in gull numbers since 1980.

RESULTS

The geographic distribution of the 1985 observations of coloured Black-headed Gulls is shown in Figure 1. In 1984 the distribution was largely the same. The relatively large number of

FIGURE 1. The geographical distribution of the observations of marked Black-headed Gulls 1985. The figures are number of birds observed. The distance between the limits of the concentric regions, with the breeding colonies on Saltholm in the centre, is 10 km. On the map to the left observations from the airport are omitted.



observations from the airport, totally 367, is partly due to the high reporting intensity here. Occurrences on the Swedish side of the Øresund are probably underrepresented in the material. Observations on the behaviour of the birds in the colonies and analyses of radar films from May 1984 indicate that about 1/4th of the population feeds east of Saltholm. Most of the observations of marked gulls were made in the part of the Copenhagen area closest to Saltholm and thus in the area where the airport is situated. When excluding the observations in the airport 80% were made within a distance of 20 km from the breeding place and 95% within a 40 km distance (Fig. 2).

The frequency of reported observations decreased very fast during the latter half of June and was low in July (Fig. 3). In the airport there was a maximum frequency in the first half of June, and after the middle of June very few marked gulls were seen on the grass areas, whereas they still occurred in other places, among buildings, in hangar areas, etc. (Fig. 4).

Far-distance observations were made during the whole recording period, among others in Jutland and the Netherlands in June. A few marked birds were reported from breeding colonies in the Copenhagen and Malmø areas.

In 1984 marked gulls, adults as well as juveniles, were observed more frequently during July than in 1985. In the 1st and 2nd half of June 20 and 40 observations, respectively (adults only), and per half month from July to mid-September 38, 68, 3, 0, and 2, respectively (adults and juveniles). Also in 1984 far-distance observations occurred during the whole reporting period.

In the airport a general increase in the number of gulls has taken place in the months April-July during the last years, whereas the changes in number from year to year in March and August-October have been rather variable. Most days the Black-headed Gull was the more frequent species, only when large numbers of gulls occurred (more than 500) there usually was a majority of Herring Gulls. Reports from the bird scaring personnel strongly indicate that the increasing gull numbers are mainly due to an increase in the number of Black-headed Gulls.

Figure 5 compares the recent development in gull numbers in the airport during the breeding season with the development of the gull populations on Saltholm. It can be seen that the increasing gull numbers in the airport are nicely correlated with the growth of the colonies of Black-headed Gulls.

Table 1 shows the frequency of gull strikes in the airport 1978-85; in about half the cases the birds were collected for species identification. As can be seen the number of strikes vary from year to year without showing any tendency to either increase or decrease.

FIGURE 2. The frequency distribution of observations of marked gulls in the regions I-XI, i.e. the distance from the breeding place. The upper part of the first column represents observations in the airport.

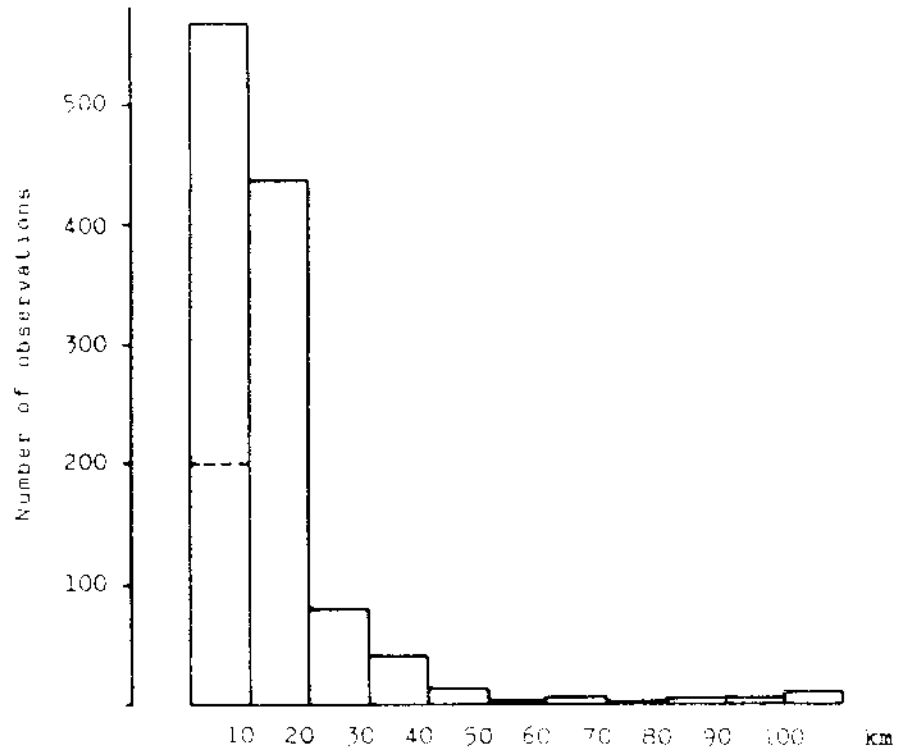


FIGURE 3. The reporting frequency of marked gulls per half month periods. The frequency (f) is calculated on basis of numbers of observations (n), marked gulls (m) and days in the period (d),

$$f = \frac{n \times 100}{m \times d}$$

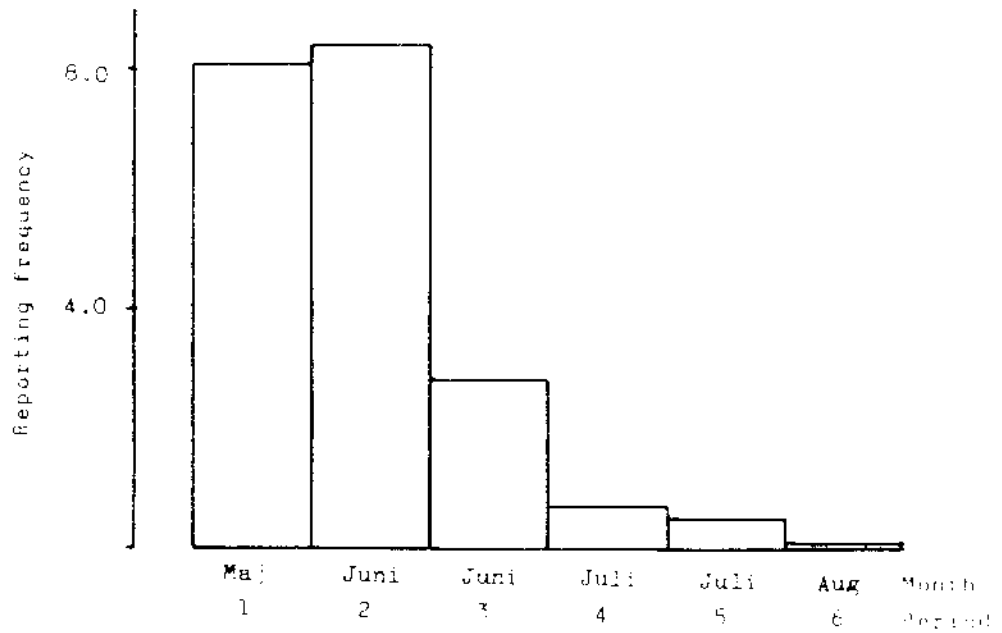


FIGURE 4. The reporting frequency of marked gulls in the airport. To the left reports from the airport area exclusive of the grass areas along the runways and to the right only reports made by the bird scaring personnel on the grass areas.

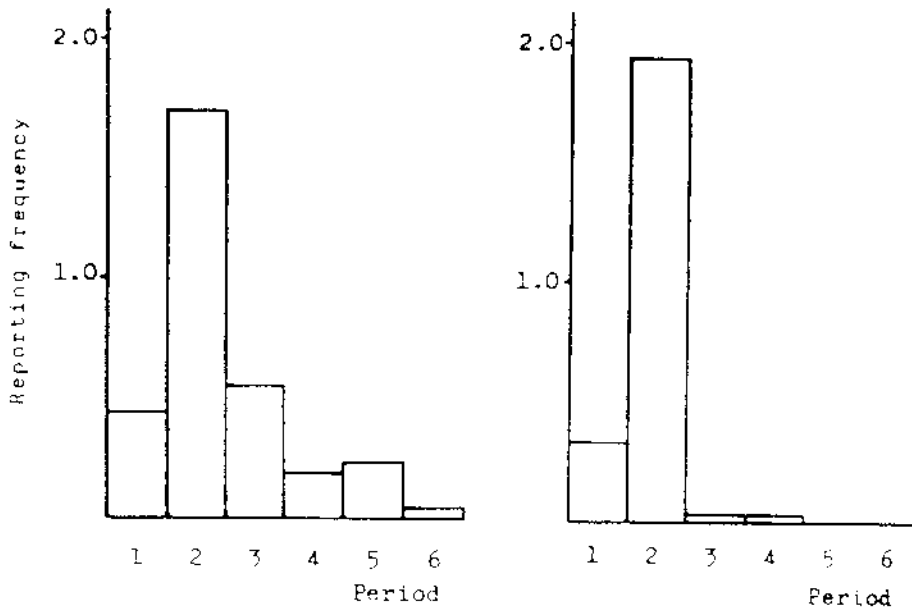


FIGURE 5. The development during the years 1980-85 of the gull frequency in the airport in April-June measured by the mean number of days per month with maximum number of gulls ≥ 100 (●) and ≥ 200 (○) and of the breeding populations of Black-headed Gulls (□) and Herring Gulls (■) on Saltholm.

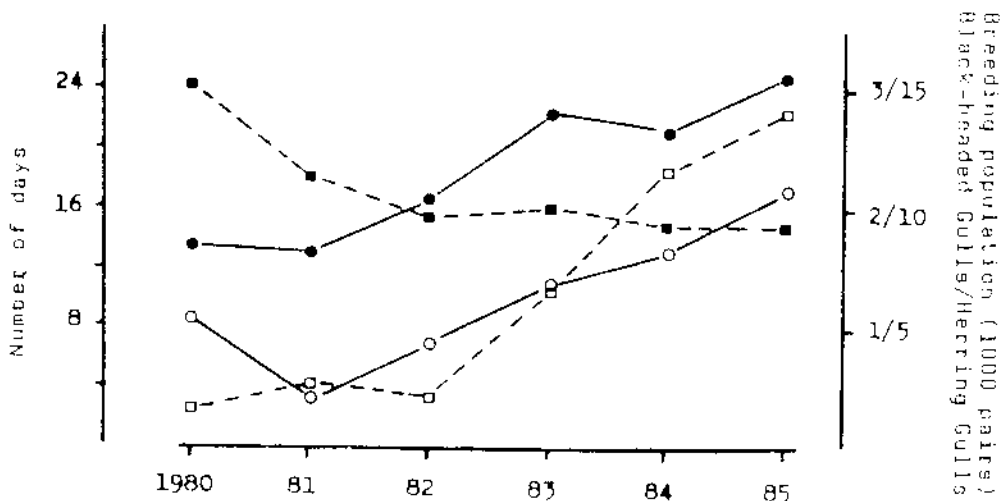


TABLE 1. The number of recorded gull strikes in the airport 1978-85.

	1978	1979	1980	1981	1982	1983	1984	1985
Black-headed Gull	3	2	1	3	1	7	1	2
Herring Gull	6	4	8	5	5	8	4	4
Common Gull	2	1	6	2	4	3	2	4
"Gulls"	5	11	15	4	17	10	12	11
Total	16	18	30	14	27	28	19	21

DISCUSSION

The large number of reports on marked birds gives a fairly good picture of the feeding range of the Salholm population. It extends to distances of about 20 km, and some days probably 30-40 km. It includes city and suburban as well as agricultural areas and wetlands on both sides of Øresund. The airport is certainly visited very often; it is shown directly by the high reporting frequency here and indirectly by the relatively high number of reports from Amager, the island where the airport is situated.

The rapid decrease in number of observations already in June is remarkable. It might partly be explained by waning interest in reporting observations, however, there were no obvious signs of this in 1984. Moulting in adults usually starts in July (Cramp 1983) and may gradually have reduced the colouration of the birds. Moulting might therefore explain a decrease in reported observations from about mid-July, but not in June. The main reason probably is that after having given up breeding due to disturbances in the colonies the birds very soon left the breeding range and dispersed over the country. A number of reports from distant places supports this explanation. The reason why the short-distance reports in June were not replaced by a similar number of long-distance reports in July probably is that the information about the project was poorer in other parts of the country.

The results of the 1984 study indicate that in normal years the breeding population, including the juveniles, disperses by the end of July. Ringing results in Denmark and other countries also indicate that many adults as well as juveniles move away from the breeding range rather soon after the end of the breeding season. (Salomonsen 1972).

The present results show that the grass areas in the airport are frequently used for feeding by the nearby breeding population. However, they also show that the utilization of the grass areas declined as soon as the breeding activity ceased due to disturbances in the colonies. Probably the grass areas in the airport because of the short distance from the colonies present valuable food resources when the need for food is high, i.e., when the gulls have young to feed; at other times the gulls may visit better feeding grounds at longer distances. This means that the pressure by the gulls on the airport grass areas in normal years declines already during the first half of July even if the birds are still present in the area.

In a large breeding colony of Black-headed Gulls (10,000 pairs) a few kilometers from Ålborg airport, northern Jutland, colour marking studies (using picric acid) have been carried out for the last 3 years (Junker-Hansen 1986). It seems that the gulls use the airport for feeding less frequently than they do in the Copenhagen Airport, probably because there are several alternative feeding grounds at the same or even shorter distances. Most of the gulls, like the Saltholm gulls, leave the breeding range within a month after the end of the breeding season.

We now know that the Black-headed Gulls from Saltholm frequently use the airport for feeding, and therefore it seems very likely that the increasing number of gulls in the airport during the breeding season is due to the growth of the population of Black-headed Gulls on Saltholm. It might therefore be considered to control the breeding population and thereby achieve a reduction in the gull numbers in the airport and reduce the risk of strikes with aircrafts. It should, however, be remembered, firstly, that the effect of a control program probably will be rather small outside the breeding season (August-March) and, secondly, that Black-headed Gulls from other colonies within a distance of about 20 km will still visit the airport during the breeding season. One large colony of 12,000 pairs is found approximately 15 km to the northwest of the airport.

We should expect that the more gulls in the airport, the higher is the bird strike risk (and vice versa). However, so far the number of reported strikes with Black-headed Gulls or other gulls have not increased. It may be due to inconsistent recording of strikes, but there may also be other explanations. Perhaps the present magnitude of the increase in gull numbers (e.g., from 100 to 300 per day, or from 1 day per week with 200 gulls to 3 days per week with 200 gulls) is of no significance to the strike risk. Or perhaps locally breeding individuals visiting the airport regularly and becoming accustomed to the conditions there cause relatively few bird strikes. If the latter explanations are correct, the effect of population control would be even smaller than indicated above.

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