

HEALTH AND WELFARE IN SWEDISH GAME BIRD REARING

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SUMMARY

Rearing of game birds is a common practice in many European countries, and they constitute a large part of avian prey of hunters in these countries. In Sweden the size of the game bird rearing is partly unknown. The aim of the present study was to survey the extent of and the health and welfare of the game bird rearing in Sweden.

Keywords game birds, pheasant, mallard, grey partridge, animal health, animal welfare,

INTRODUCTION

Rearing of game birds is a common practice in many European countries, and they constitute a large part of avian prey of hunters in these countries. It is e.g. reported that more than 1.5 million birds are released in Denmark annually and that these birds represent 1/3 of the hunters' prey. The main species for rearing are pheasants (*Phasianus* spp.), mallards (*Anas platyrhynchos*) and grey partridge (*Perdix perdix*), but there is also some rearing of quail (*Coturnix coturnix*), capercaillie (*Tetrao urogallus*) and black grouse (*Tetrao tetrix*). In Sweden the size of the game bird rearing is partly unknown. The lack of legislation in this area, concerns about the health and welfare of the game birds during rearing and outbreaks of avian influenza in countries around the world, make it important to collect more information about these activities. The aim of the present study was to survey the extent of and the health and welfare of the game bird rearing in Sweden.

MATERIAL AND METHODS

A questionnaire was sent to all rearers who are registered by governmental authorities in Sweden, approximately 90. The questionnaire contained e.g. questions about number of adult birds and chickens at the facility, about housing, feeding and management routines of the birds, what kind of diseases and other problems there might be and if there were problems with predators at the setting out area.

RESULTS

The majority of Swedish game bird rearers were found in the southern part of the country. The survey was answered by 72%. There were answers from 61 rearers of pheasant, mallard or grey partridge; 43 from pheasant rearers, 34 from mallard rearers and 27 from grey partridge rearers.

Of these, 30 kept one species, 19 kept two species and 12 kept three species. The main purpose of rearing as stated by the rearers is presented in Table 1. More than one answer was possible.

Table 1. Main purposes of game bird rearing

	Hunting	Dog training	Reinf.wild population
Pheasant	31	11	19
Mallard	28	3	13
Grey p.	11	15	7

Pheasant

Of 37 facilities there was one (3%) from the middle of the 19th century, one (3%) from the 1960, 7 (19%) from the 1900–1940, 5 (14%) from the 1970–1980 and 23 (62%) from the 1990–2000.

Two rearers bought a total of 16,000 Swedish eggs. No one imported pheasant eggs. Twelve rearers bought 11,900 Swedish pheasant chicks. Breeding pheasants were kept at 25 facilities during breeding season and at 11 facilities during the rest of the year. The total number of breeding birds was 8179 during the breeding season and 2488 during the rest of the year. The median number of birds at each facility was 300 (min 23, max 700) during breeding season and 200 (min 23, max 600) during the rest of the year. The breeding pheasants were collected through purchase, catching wild birds and/or recruitment from own birds. A total number of 131,225 pheasant chicks were held at 33 facilities (median 4,000, min 50, max 12,000).

Median stocking density for breeding birds was 0,45 animals/m² (min 0,06, max 6,5, n=20). The corresponding number for chicks was 5 animals/m² (min 0,479, max 48, n=26). Twenty six rearers had environmental enrichment for their breeding birds and 35 for their chickens. For breeding birds, vegetation was mentioned in 24 cases and perches in 21 cases. The corresponding numbers for chicks were 29 and 27, respectively. Other things mentioned were straw bundles and sandpits. The breeding birds were fed commercial feed in all cases but one, where they got wheat, barley, oats and corn (n=24). The chicks were fed commercial feed, of which pheasant feed and turkey feed were mentioned. Twelve flocks (50%) of the breeding birds were given supplement to their feed, mostly egg- or seashell. Fourteen rearers gave supplement to the chicks, mostly chopped, boiled eggs. In addition, multivitamins and vegetation were mentioned for both adults and chickens.

Symptoms of gapeworm infection (*Syngamus trachea*) were reported in 21 facilities (n=36) with a prevalence of 5–70% (n=13). Diarrhoea was reported in nine facilities with a prevalence of 0,5–20% (n=6). Symptoms of respiratory disease and foot injury were each reported from one facility, prevalence 1% and 0,5% respectively (n= 34 and n=35 respectively). No one reported incidence of eye infection or increased mortality. Pecking occurred in 13 of 34 facilities with a prevalence of 0,01–10% (n=10). Of 35 answering, 30 used preventative measures against pecking. Anti-pecking device was used in 26 cases, some in combination with enriched environment. Other preventative measures that were mentioned were enriched environment, relocation of the pecker and some salt in the drinking water. Anthelmintics were used preventative and/or as treatment by 27 rearers. Fenbendazol and febantel were the medications used. Antibiotics (e.g. tetracyclines) were used preventative and/or as treatment by nine rearers. Coccidiostats (e.g. sulfaclozin) were used preventative and/or as treatment by 28 rearers. Production records were kept by 21 pheasant breeders and mortality was registered by 14, otherwise the records varied in content. Median

mortality was 1,45% (min 0, max 5, n=22,) among breeding birds and 5% (min 0,6, max 10, n=31) among chickens.

A total number of 94,279 pheasants were released from 38 facilities in 2005 (median 2,000, min 50, max 6,500).

Mallard

Of 27 facilities two (7%) were started between 1900–1940, one (4%) in the 1950ies, 6 (22%) in the 1970–80ies and 18 (67%) between 1990–2000.

Nine rearers bought a total of 73,900 Swedish and 16,000 Danish eggs, and fifteen rearers bought 69,600 Swedish ducklings. Breeding mallards were kept at 7 facilities during breeding season and at 6 facilities during the rest of the year. The total number of breeding birds was 4000 during the breeding season and 3020 during the rest of the year. The median number of birds at each facility was 400 during both breeding season and the rest of the year (min 100, max 1000 and min 120, max 1000, respectively). The breeding mallards were collected through purchase, catching wild birds and/or recruitment from own birds. A total number of 151,400 ducklings were held at 24 facilities (median 4,000, min 200, max 30,000).

Median stocking density for breeding birds was 0,665 animals/m² (min 0,17, max 1,33, n=4). The corresponding number for ducklings was 5 animals/m² (min 1,33, max 55, n=19). Seven rearers had environmental enrichment for their breeding birds and 26 for their chickens. Vegetation was mentioned in 4 cases for breeding birds and in 14 cases for ducklings. Other things mentioned were egg nests, water and straw bundles for breeding birds and sand for ducklings. Twenty six rearers answered that the mallards had access to water for swimming. All breeding birds and ducklings were fed commercial feed (n=7 and n= 28, respectively). Four flocks of the breeding birds were given supplement, consisting of egg- or seashell and/or vegetation. Three rearers gave supplement, consisting of seashell, grass, gravel and/or multivitamin, to the ducklings.

Respiratory disease, eye infection, foot injuries and hysteria were each reported from one facility (n=28 in all four). The prevalence of respiratory disease was not stated. The other had prevalences of 0,5%, 2% and 0,5% respectively. No one reported incidence of diarrhoea or increased mortality in the facility. No rearer reported occurrence of pecking. Five used preventative measures against pecking in the way of enriched environment and feeding in several places. One breeder used anthelmintics with fenbendazol (n=29). Antibiotics and coccidiostats were not used by anyone (n=29 and n=28 respectively). Production records were kept by 19 mallard breeders and mortality was registered by 9, otherwise the records varied in content. Median mortality was 2% (min 0, max 5, n=6) among breeding birds and 1,5% (min 0,4, max 10, n=26) among ducklings.

A total number of 87,014 mallards were released from 31 facilities in 2005 (median 2,000, min 50, max 10,000).

Grey partridge

Of 22 facilities two (9%) were started between 1900–1940, 5 (23%) in the 1970–1980ies and 15 (68%) between 1990–2000.

Two rearers bought a total of 500 Swedish eggs and 8000 Danish eggs (n=19). Nine rearers bought 3750 Swedish grey partridge chicks. Breeding partridges were kept at 10 facilities both during breeding season and during the rest of the year. The total number of breeding birds was 3834 during the breeding season and 3265 during the rest of the year. The median number of birds

at each facility was 220 (min 20, max 1600) during breeding season and 250 (min 20, max 1000) during the rest of the year. The breeding partridges were in all cases collected through own recruitment. A total number of 29,725 grey partridge chicks were held at 15 facilities (median 1,250, min 125, max 6,000).

Median stocking density for breeding birds was 2 animals/m² (min 0,8, max 9,4, n=8). The corresponding number for chicks was 4,1 animals/m² (min 0,95, max 31, n=16). Nine rearers had environmental enrichment for their breeding birds and 18 for their chickens. Breeding birds had vegetation or sand in five cases and a combination of vegetation and sand in two cases. Vegetation was mentioned in 15 cases and sand in 7 cases for chickens. Other things mentioned for chickens were perches, straw, wood shavings and gravel. Both breeding birds and chickens were fed commercial feed (n=9 and n= 20 respectively), and for chickens pheasant feed and turkey feed were mentioned by 6 and 7 respectively. Five of the flocks of breeding birds were given supplement to their feed, mostly egg- or seashell. Nine rearers gave supplement consisting of chopped, boiled eggs, eggshell, ant egg, vitamins and/or gravel to the chicks.

Symptoms of gapeworm were seen in 11 facilities (n=19) with a prevalence of 5–100% (n=7). Diarrhoea was seen in four facilities with a prevalence of 3–20% (n=19). Three facilities had episodes of hysteria with a prevalence of 0,5–4% (n=19). Symptoms of respiratory disease and foot injury were each reported from one facility, prevalence of 2% and 0,1% respectively (n= 20 on both). No one reported incidence of eye infection or increased mortality (n=20 on both). Pecking occurred in 8 of 20 facilities with a prevalence of 2–50% (n=5). Of 20 answering, 18 used preventative measures against pecking. Anti-pecking device was used in 15 cases, some in combination with enriched environment. Three used enriched environment as preventative measurement (of which two did not have pecking problems). Anthelmintics were used preventative and/or as treatment by 16 rearers. Fenbendazol and febantel were the medications used. Antibiotics (e.g. tetracyclines) were used preventative and/or as treatment by 5 rearers. Coccidiostats (e.g. sulfaclozin) were used preventative and/or as treatment by 10 rearers. Production records were kept by 14 breeders of grey partridge and mortality was registered by 9, otherwise the records varied in content. Median mortality was 1,25% (min 0, max 5, n=8) among breeding birds and 4,5% (min 0, max 15, n=18) among chickens.

A total number of 11,553 grey partridges were released from 19 facilities in 2005 (median 400, min 35, max 3,500).

DISCUSSION AND CONCLUSION

Through clearer information about anonymity in the questionnaire, the number of answers could have been higher.

About 60–70% of the facilities were from the 1990–2000. One reason is probably new methods of dog training, which is evident for rearers of partridge, where the main purpose of rearing mainly was dog training.

A higher proportion of pheasant rearers kept breeding birds compared to rearers of mallards and grey partridges. On the other hand, most of the rearers that kept breeding mallards and partridges kept them all year round. The collection of birds was mostly through catching wild birds for pheasants and mallards, but only through own recruitment for partridge. Because of the increased risk of transmission of avian influenza from wild birds to domestic poultry, it is according to the Swedish National Board of Agriculture (SJV) since 2006 prohibited catching wild mallards. Number of purchased eggs and ducklings were much higher for mallards than the

corresponding numbers for pheasants and partridge. Although the number of buyers was not correspondingly larger which points at a larger purchase per rearer. This was also shown as there are fewer rearers of mallard but higher total number of birds, compared to pheasant. The number of rearers and the number of birds varied substantially between the three species. The rearers of mallards were nine *more* than the rearers of partridge and had 120,000 more birds, while they (mallards) were nine *less* than pheasant rearers, but had 20,000 more birds.

The stocking densities showed large variation, and this was probably because some stated the minimum stocking density (when the chickens had access to the whole area with breeding house, roofed outdoor area and the outdoor run) while others stated the maximum stocking density (when the chicks only had access to the breeding house). The stated maximum densities were higher than in the Swedish recommendation (Anonymous (2007a) for breeding birds of all three species and for ducklings. Cain (1984) has shown that feather pecking among pheasants was significantly reduced by increasing floor space per bird. Also environmental enrichment is important to prevent problems with pecking. What kind and what amount of environmental enrichment varied in and between species.

Almost all birds were given commercial feed. In the wild, pheasants and grey partridge chicks eat a diet mostly containing invertebrates. Commercial feeds are often low in fiber content but well balanced in nutrients, easy to use and the chickens grow fast (Liukkonen-Anttila, T, Putaala, A. and Hissa, R. 2002). However, studies have shown that galliform birds fed an artificial diet have shorter intestines than wild birds (Moss, R. 1972). It is suggested by Liukkonen-Anttila, T, Putaala, A. and Hissa, R. (2002) that gut morphology may affect the survival of the bird if reared for release into the wild, and it is therefore suggested to supplement the feed to grey partridge chicks with invertebrates during their first weeks of life. In our study, about 40% of pheasant chicks and 50% of grey partridge chicks were given supplement to the feed.

Mallards were in general healthy and sparsely medicated in this study. The most common diseases among pheasants and partridges were gapeworm and diarrhoea, which affected about 60% and about 25% respectively. Gapeworm is introduced through wild birds, and when the infection is established it is mainly spread through earth worm (Anonymous 2007b). The symptoms are respiratory problems and weakness, and it can be fatal through suffocation. Although it was common among the rearers in this study to use prophylactic or therapeutic medication against gapeworm, there is no registered drug for this in Sweden at the moment. Fenbendazol, used by rearers in this study, can be effective, but if there are many immature worms, and there is continued exposure, clinical relapse may occur, requiring a second treatment (Lister, S. 1993).

Around 50–60% of rearers kept records of their animals. Following the registration there is a requirement of keeping records of the animals.

In total, 192,846 game birds were released in 2005 by the game bird rearers in this study. In comparison, it was estimated that 1,5 million game birds were released in Denmark in 2004 (Clausen B. 2004) and that 40 million pheasants are released in England annually (Anonymous undated)

From the survey relevant facilities were selected for on-farm investigation. At these visits birds were clinically scored and management and environmental factors registered. These visits take place in May-June 2007.

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