

# XI. AN EFFORT TO REINTRODUCE THE LESSER WHITE-FRONTED GOOSE (*ANSER ERYTHROPUS*) INTO THE SCANDINAVIAN MOUNTAINS

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## Introduction

The strong decline of the Lesser White-fronted Goose (*Anser erythropus*) in the breeding area in Fennoscandia during the past decades has been described by *A. and M. Norderhaug* in their work "Dverggasa (*Anser erythropus*) in Fennoscandia", 1980. The present very exposed status of this species within Sweden is emphasized in PM 1295 "Fauna areas in the mountain region" 1981 by the National Swedish Environment Protection Board. My own investigations and inquiries in a couple of areas where the Lesser White fronts has been common also proved that it is now almost gone.

The reason for the disappearance of the *Anser erythropus* has not yet been established. Since 1966 it is quite protected by law. A previous illegal hunting on the moulting areas and increased disturbance within certain breeding areas might be contributing reasons for the decrease. We do not know the circumstances on the wintering areas. There are only two refindings of *Anser erythropus* banded in Sweden. One is from the northern part of Greece, the other is from Divnoje, South of Russia (between the Black Sea and the Caspian Sea).

In spite of the fact that the reasons for the disappearance of the *Anser erythropus* have not yet been made clear the Swedish Sportsmen's Association decided in 1976 to start a breeding of geese for reintroduction and thus try to build up a new stock. At the same time we should go on working on the Lesser White-fronted Goose and the circumstances that might have an effect on the stock. The Association has received economic support from WWF for this activity. The first reintroduction experiment took place in Lapland in July, 1981.

## Rebuilding of the breeding stock

During 1977 – 1979 young *Anser erythropus* have been acquired from Water-Fowl Breeding Farms in Holland, England and West Germany. At present there are about 70 breeding fowls on four different places in Sweden, most of them at the Swedish Sportsmen's Association's Institute for Wildlife management at Öster-Malma, 90 km Southwest of Stockholm. Methods for the reintroduction.

On establishing a method for the reintroduction, the method used by professor Eric Fabricius at the reintroduction of Greylag geese (*Anser anser*) and also used by the Swedish Sportsmen's Association at the reintroduction of Bean Geese (*Anser fabalis*) on earlier well-known breeding areas in the middle

of Sweden, has been of guidance. In order to give a natural growth, care and migration tradition to the released goslings the Canada Goose (*Branta canadensis*) have been used as foster-parents to both species. In short, normal proceeding is that the eggs of Canada Geese, which are breeding wild, are exchanged for eggs from Bean Geese produced at Öster-Malma. When the hatched Bean Goslings are half grown and the Canada Goose parents are moulting, the brood is caught and transported to the reintroduction areas where it is released. The goslings are imprinted in this area where they start to fly for the first time. In the autumn the brood moves to areas surrounding the south of the Baltic for wintering. The brood comes back to Öster-Malma by the beginning of April. The Canada Geese start a new breeding and drive away the young Bean Geese from last year. After a couple of days they disappear from Öster-Malma and eventually they can be seen in the area where they were released last year. These areas are about 350 km north-west of Öster-Malma.

Since 1974 about 100 *Anser fabalis* goslings have been released most of them in accordance with this method. In the summer 1978 the first breeding of these *Anser fabalis* could be proved in the reintroduction area. The fowls have been identified with the help of colour rings on their legs.

As to the *Anser erythropus* the *Branta canadensis* is considered to be too big for the little *Anser erythropus*. Furthermore, it is most likely that the *Branta canadensis* do not move south far enough for them to manage during the winter.

Still, at Skansen, the zoological park in Stockholm there is a population of about 100 Barnacle Geese (*Branta leucopsis*) which since ten years during the winter move to Holland. This has been proved thanks to reports about nine recoveries as well as observations of banded geese. During the spring they have been seen passing Schleswig-Holstein in the north of West Germany. In spite of the fact that the natural migration route of the *Anser erythropus* from Scandinavia goes in a southeast direction we have decided to try the *Branta leucopsis* as foster-parents.

### The first reintroduction experiment

During the spring 1981 three egg clutches from *Anser erythropus* have been laid under breeding *Branta leucopsis* at Skansen. In consequence of disturbances and predation only one pair managed two goslings. The brood was caught and moved to Öster-Malma when the goslings were three weeks old. Another eight *Anser erythropus* goslings which have been brought up under pinioned *Anser erythropus*, were put together with them in a cage. Four goslings were placed together with another pair of *Branta leucopsis* and their two own goslings. After a fortnight the *Branta leucopsis* parents had adopted the *Anser erythropus* goslings quite well and on 15 July, when the goslings were about five weeks old, both broods were transported to the south of Lapland, where they were released on a mountain lake area.

The group released thus consisted of one pair of *Branta leucopsis* with two foster-goslings and eight adopted nestlings. The latter pair's own goslings had been taken away. So together there were four *Branta leucopsis* and 14 *Anser erythropus* goslings.

Three days after the releasing the group was observed and well gathered. The birds were also very shy in their behaviour. The number of *Anser erythropus* goslings were at that time only ten. The decrease can be explained by the fact that, during the long transportations, two goslings got hurt and one was found dead the day after the planting out. What has happened to the birds later in the summer and autumn is not known. On some occasion they have been observed by a Lapp.

With the economic support from World Wildlife Fund, the Swedish Sportsmen's Association intent to go on with the reintroduction efforts for some years to come. In this connection I want to draw the attention of bird watchers in Scandinavia and in the middle of Europe to the fact that during winters ahead, goose families consisting of *Branta canadensis* with young *Anser fabalis* and also *Branta leucopsis* with young *Anser erythropus* may turn up.

All these geese released are banded with a numbered ring of aluminium and three colour rings in a special combination for each bird. Each colour represents a figure from 0 to 9. Should any of these birds or groups of birds be observed, I, as leader of the project, would be very grateful for a report even if the colour combinations have not been observed.

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## XII. MIGRATION OF *ANSER ERYTHROPUS* AND *BRANTA RUFICOLLIS* IN HUNGARY 1971–1980

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### Introduction

Because of its zoogeographical conditions, Hungary figures among the most important goose stations in central Europe. Early this century, northern Anser species still passed through in vast numbers. The largest traditional gathering place for *Anser erythropus* on our continent has evolved here. From the 1950s onwards, however, migrations have lost in dynamism. Regression is the most remarkable, being of almost catastrophic extent, in *A. erythropus*.

When evaluating the critical situation of *Anser erythropus*, the rate of decrease should be stated first. Information must be gathered about the breeding population from which the passing birds originate and the place where they spend the winter. Finally, for ecological evaluation it should be established whether the environmental changes at goose gathering places in Hungary can be connected with the evolving regression.

*Branta ruficollis* was a sporadic phenomenon in the one-time goose masses; in recent years, it has become somewhat more frequent. The question is whether the movement in Hungary that is becoming rather dynamic is a new phenomenon or a natural fluctuation manifesting itself within a longer period.

### Material and methods

Since the two goose species at issue represent an important problem in international waterfowl preservation, it is desirable to study in detail all data from the last ten years. For comparison of former and present-day dynamism of migration, the data on former status are derived from the studies enumerated in the references and some additional works of reference cited there in though not repeated here due to their size. For present status the author has used the statistics on Hungary compiled by the IWRB, completed with publications by *Dr. Cs. Aradi*, *Dr. G. Kovács* and *I. Farkas*; his own observations were carried out in the first place on the Kardoskút, at Nagyszénás, Csabacsüd, Biharugra and in the Hortobágy.

### Findings

#### *Anser erythropus*

Migration of *A. erythropus* follows a narrow route east of the River Tisza. In between the Danube and the Tisza this species is but a rarity and west of the Danube it has not been observed so far (*Sterbetz*, 1968). At the most significant gathering places of *A. erythropus* (the Hortobágy, Biharugra,

Kardoskút, Nagyszénás and Csabacsüd) in the years preceding the 1950s the late autumn peak of the northern Anser species numbered altogether some 800 000 birds (literature on the subject in Sterbetz, 1967, 1972 as well as author's own investigations). The Hortobágy was the most significant station where, according to hunting statistics, 12 000 to 14 000 geese were shot annually in the period from 1934 to 1938. The bag consisted of about 80% *Anser albifrons*, with 6 to 8% *A. erythropus*. Earlier shooting lists showed a similar tendency, with only small deviations (*Szomjas G.*, 1928, *Szomjas L.*, 1926, *Graefel*, 1934). This division, however, does not offer a true picture since by autumn, before the hunting in the Hortobágy, the first waves of *A. erythropus* migration have already passed through. Findings by *Tarján* (1926, 1931) and *Nagy* (1938) based on continuous observations seem more probable; they put the share of *A. erythropus* in the goose masses of the Hortobágy at about 10 to 15% in general. My own counts, carried out between 1947 and 1951 at Nagyszénás, Biharugra and in the Hortobágy yielded similar results. This diagnosis is valid for other goose gathering-places with the character of the Hortobágy, in eastern Hungary. On this basis, about 80 000 to 120 000 *A. erythropus* could be reckoned with in Hungary in the decades before the regression. This enormous concentration disappeared almost overnight in the 1950s. At the beginning of counts for the IWRB in 1967, they numbered about 5000, then decreased slowly to the present status as shown in detail below.

Hortobágy 47° 37' N 21° 05' E

- 1971: 19 Mar. a few, 2 Apr. 3, 14 Oct. 25;  
 1972: 26 Feb. a few, 27 Feb. 40, 1 Mar. 150, 5 Mar. 300–500, 10 Mar. 150–200, 12 Mar. 40, 16 Mar. 7, 21 Mar. 20, 14 Oct. 20;  
 1973: 14 Oct. 380;  
 1974: 16 Mar. 60, 15 Nov. 200;  
 1975: 15 Oct. 30, 17 Nov. 200–250;  
 1976: no observation all year;  
 1977: 21 Mar. 100–150, 23 Mar. 20–25, 16 Oct. 39, 13 Nov. 146;  
 1978: 12 Mar. 150, 15 Oct. 150, 19 Nov. 115, 17 Dec. 300;  
 1979: 11 Feb. 40, 15 Mar. 100, 15 Oct. 320, 15 Dec. 200;  
 1980: 17 Feb. 8, 16 Mar. 8, 9 Sep. 3500–4000, 12 Sep. 300, 19 Sep. only a few, 12 Oct. 18, 16 Nov. 36;

Biharugra 46° 58' N 29° 36' E

- 1971–1976: ?  
 1977: 16 Oct. 36;  
 1978: 15 Oct. 11, 17 Dec. 1100;  
 1979: 11 Feb. 16, 15 Dec. 120;  
 1980: 17 Feb. 1, 16 Mar. 2, 12 Oct. 19, 16 Oct. 19, 16 Nov. 36;

Kardoskút – Békéssámson 46° 30' N 20° 28' E

- 1971: 14 Feb. 5, 16 Oct. 30, 21 Oct. 150, 1 Nov. 20, 13 Nov. 2000, 12 Dec. 15;  
 1972: 14 Jan. 30, 13 Feb. 1000, 12 Mar. 40, 28 Oct. 500, 11 Nov. 300, 15–17 Dec. 5000 each day;  
 1973: 17 Mar. 2000, 1 Nov. 1000;  
 1974: 17 Feb. 80, 26–27–28 Feb. daily 5000, 2 Nov. 1000, 18 Dec. 2000;  
 1975: 14 Aug. 1, 25 Nov. 100, 4 Dec. 500, 17 Dec. 15;

1976: 16 Oct. 300;  
 1977: 16 Oct. 312, 13 Nov. 150;  
 1978: 12 Mar. 150, 15 Oct. 200, 29 Oct. 12, 19 Nov. 70, 17 Dec. 1250;  
 1979: 11 Feb. 25, 15 Mar. 200, 15 Oct. 7, 15 Dec. 1300;  
 1980: 17 Feb. 11, 16 Mar. 10, 12 Oct. 11, 16 Nov. 22;  
           Szabadkígyós 46° 36' N 21° 06' E  
 1978: 12 Mar. 200  
           Tótkomlós – Pitvaros 46° 25' N 20° 44' E  
 1972: 15 Jan. 70  
           Szegedi-Fehértó 46° 15' N 20° 10' E  
 1979: 15 Dec. 11

To summarize the data of ten years: in January there has been an aggregate of 30 (2 observations), in February 6226 (14 observations), in March 4067 (20 observations), in April 3 (1 observation), in August 1 (1 observation), in September 4300 (3 observations), in October 2721 (22 observations), in November 7041 (14 observations), and in December 11 811 (14 observations).

In the period from 1971 to 1980 the average number observed yearly was only 3620, i.e. a decrease of 95 to 97% as compared to the masses before the regression! At present, *A. erythropus* only represents 1 to 2% of the total of *Anser species* passing through the Hortobágy, Biharugra and Kardoskút in invasion years. Otherwise it remains below 1%, behind *Anser albifrons* which is dominant with 90% and *Anser fabalis* and *Anser anser* sharing the remaining part. Even if concrete figures from the past are disregarded, because of possibilities of error in calculation, it is beyond question that 30 to 40 years ago, *A. erythropus* passed through eastern Hungary in masses that could be expressed in tens of thousands, whereas nowadays only an insignificant fraction of this figure is recorded.

It seems open to objection that under these conditions the bird can be hunted. This possibility, however, is of no practical significance from the aspect of conservation. The goose bag in Hungary has been about 4000 to 6000 in recent years, and merely one or two *A. erythropus* are met sporadically in the bag. In dawn and twilight hunting this species is hard to recognize in the mixed goose flocks, especially if not observed by a practised ornithologist. Therefore, no better protection would be provided for it by game laws.

From time to time "invasion" periods are noticed in the migration of *A. erythropus* in Hungary, indicating the existing state of the population. Such invasions occurred in 1898, 1907, 1911, 1916, 1920, 1922, 1930, 1935, 1945, 1949, 1969, 1972, 1974 and 1980 (Sterbetz, 1968). The autumn migration divides into two clearly separable phases. The first wave arrives late in September or early in October and should the food conditions be unfavourable, quickly passes on. The second wave arrives in November and these flocks hold on until snowfall. The origin and final destination of the route through Hungary have not been determined by ringing data.

To study their ecological requirements, the author analysed the stomach contents of 100 *A. erythropus* (Sterbetz, 1978a). In every one of the specimens examined, juvenile vegetative residues of the natural steppe vegetation of a *Festuca pseudovina* association were dominating. Part of the insignificant quantity of seed food presumably got into the digestive system second-

arily through grazing. Simultaneously with these studies of *A. erythropus*, stomach contents of 175 *Anser fabalis* and 260 *Anser albifrons* were also examined. In these two species, since the time maize has been harvested in Hungary with heavy duty machinery, maize residues left over on the stubble fields dominate in a remarkable way in the autumn and winter food of both *A. albifrons* and *A. fabalis*. These geese stray for months within a radius of 50 to 70 km and feed exclusively on maize seeds (Sterbetz, 1979). *A. erythropus*, on the other hand, does not exploit this food boom, but in a conservative way persists in the natural *Festuca* lowland plain environment. Accordingly, its scope of movement is small, barely 5 to 6 km. In rainy autumn periods, when young grass is available in abundance, it remains for a long while. But in drought conditions, it quickly moves on. In spring, feeding conditions are always favourable, but for hormonal reasons the pace of migration is fast at that time. The author has evaluated the choice of feeding sites on the basis of 177 observations. In 67% of the cases, the birds were in an environment of natural *Graminea* vegetation, in 17% on fields of young grain and in a further 16% of cases, the birds stayed on water. In addition to the special food requirements, another ecological requirement is a lowland plain of the steppe type.

In Hungary, *A. erythropus* chooses feeding and roosting places only on extensive open grassy lowland plains, on natron lakes and on lowland fish-pond system units larger than 200 to 300 ha. It does not stay on reedy deep-water lakes nor on shallows, on stagnant or forest lakes.

#### *Branta ruficollis*

*B. ruficollis* was presumably first observed in Europe during the creative years in the Hague and Amsterdam of the Flemish painter *M. Hondecoeter* who in his paintings entitled "Lutte de paon et coq" (Museum of Fine Arts, Budapest) and "La plume flottante" (Rijks-museum, Amsterdam) depicted this bird (Sterbetz, 1978b). The first specimen verified by collection was found in the vicinity of London in 1766 (Withery et al., 1948). From this date on, *B. ruficollis* is present from time to time sporadically at the gathering places of European wild geese. In Hungary, the first record dates from 1916 and since that time a total of 948 specimens were noted in 137 occasions. These observations are discussed in comprehensive as well as complementary reports published from time to time by Vasvári (1929), Sterbetz (1962, 1967a), Sterbetz and Szijj (1968), Schmidt (1973), Sterbetz (1975a, 1976a, 1976b), Benei et al. (1978), Schmidt (1979) and Sterbetz (1981). Detailed data (some already published) from the period between 1971 to 1980 are given below.

Hortobágy 47° 37' N 21° 05' E

1972: 5 Mar. 1, 10 Mar. 4;

1976: 25 Nov. 2;

Kardoskút 46° 30' N 20° 28' E

1972: 16 Dec. 1;

1974: 28 Feb. 27, 23 Nov. 1, 15 Nov. 10;

1978: 15 Jan. 5, 15 Oct. 11, 29 Oct. 11, 6 Nov. 2, 7-8 Nov. 15, 19 Nov. 15, 17 Dec. 41;



tendency of migration in *A. erythropus* in Europe, and the recovery of a bird ringed in summer in Swedish Lapland and found in winter in Greek Macedonia (Höglund in Bauer and Glutz, 1968), it is presumably the Fenno-Scandinavian population that occurs on the gathering places in Hungary. The present-day Norwegian—Swedish—Finnish stock, however, is smaller in number than the average quantity observed in Hungary (Soikkeli, 1973, Norderhaug, 1981). Thus, there is no doubt that migratory birds also arrive from the USSR. Some old publications from the Balkans considered standard works and recent information in Timmerman et al. (1976) render it probable that geese taking the Hungarian migration route divide to go to wintering sites in Albania, Yugoslavia, Greek Macedonia, Roumania and Bulgaria.

Stomach content examinations and statistics of field observations point to the special steppe biotope requirements of *Anser erythropus* and its conservative adherence to such areas. It follows that the conditions of extensive grassy lowland plains are primary causes in the choice of pace of migration, traditional routes and gathering places.

Undoubtedly, such ecological conditions are not now available for wild geese as they were in earlier decades in Hungary. Grazing on natural salt deserts has declined in intensity and in addition to creation of nature conservation areas, meadows and pasture are being fertilized. These factors promote development of such tall rich phytocenoses that wild geese are unable to graze. The extent of the steppe environment has also diminished. These changes, however, have not yet developed to such an extent as to be considered important in interpreting the regression. In spite of the negative phenomena outlined above, Hungary still disposes of sufficient biotope for *A. erythropus* to satisfy the requirements of a considerable part of the quantities observed in the past. Therefore, assumption that regression is caused by changes in migrating traditions must be ruled out. It seems much more probable that the collapse of the numbers of this species should be ascribed to problems in the breeding sites.

### *Branta ruficollis*

Review of the 65 year-old past of movements in Hungary indicates that *Branta ruficollis* is to be found in small numbers, but appears relatively regularly in the lowland plain environment also attractive to *A. erythropus*. This continuity confirms that a migration route with rather small numbers but which has now become traditional passes through Hungary (Sterbetz and Szijj, 1968), its destination presumably being southeastern Europe. Distribution of records was not uniform earlier either. Years of absence and occurrence in fair numbers alternate. Dynamic migrations were recorded in 1916, 1919, 1921, 1930, 1934, 1935, 1936, 1964, 1965 and 1966 too (Vasvári, 1929, Sterbetz, 1962, Sterbetz and Szijj 1968).

From such a review it is too early to state that the more abundant records in recent years is related to the scattering of the Caspian wintering population. Caution is also advisable because strictly speaking, Hungary is not a goose wintering site. In normal weather from mid-December to late January the conditions are generally unsuitable. There is nevertheless no doubt that on the slightest improvement in the frosty-snowy winter conditions, geese

immediately return from the Balkans and southeastern Europe. This is why in the Carpathian basin the concepts of goose migration, wandering and wintering are difficult to distinguish.

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