The current status of the Lesser White-fronted Goose *Anser erythropus* in Kazakhstan: monitoring, threats and conservation measures

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Abstract. Within the framework of the National Action Plan (hereafter NAP) for the globally threatened Lesser White-fronted Goose *Anser erythropus* developed in the republic of Kazakhstan between 2011 and 2012, a number of measures are planned for the forthcoming three years (2012–2014). On the basis of scientific data received on this species in the last decades, and making use of available experience from other countries, it is proposed to carry out a variety of practical activities regarding goose protection, in particular in order to reduce the negative influence of a number of anthropogenic factors upon Lesser White-fronted Goose, in particular the influence of hunting on this protected species. Considering that implementation of such plans have not previously been applied to the fauna of Kazakhstan, this NAP will serve as a model as to how to implement effective management of other species and populations in order to reduce and eliminate negative factors affecting biodiversity and habitat.

Key words: Species conservation, hunting, recreational disturbance, water regulation, poisoning

BACKGROUND

The global Lesser White-fronted Goose population has decreased rapidly since the middle of the 20th century, accompanied by a reduction in breeding range. Such a decline has been documented within all populations of this species (Morozov & Syroyechkovsky 2002). If this process is not halted in the near future, the species will probably face ultimate extinction. The main reasons for such a decline are loss of habitat and direct human persecution from hunting. Recent research shows that the Lesser White-fronted Goose nesting area has been transformed from a former continuous narrow, long strip into a current set of a few fragments, and that the population decline in the past 30 years is six- sevenfold, and that this negative trend continues (Morozov 1995, Birdlife International 2004).

In Kazakhstan, the Lesser White-fronted Goose was considered a common species during the first half of the 20th Century, regularly migrating through northern and northwest regions (Dolgushin 1960, Yerokhov et al. 2000). During the second half of the 20th century, the distribution area of this goose and its numbers were considerably reduced. Today, the main staging region during migration are the lake regions of the forest-steppe and steppe zone of Kostanaysky, Northern-Kazakhstan, Akmolinsky and Aktyubinsk areas, and to a lesser extent, lakes and reservoirs of parts Western Kazakhstan, and possibly also at sites in the Pavlodar region (Table 1).

In Kazakhstan, the Lesser White-fronted Goose is considered to be threatened with extinction. Its status in the national Red Data Book: II category is cited as "species reduced in number, with local habitats".

Four geographical subpopulations of Lesser White-fronted Geese are recognized, of which three of them represent the remnants of the formerly more extensive breeding range of this species (Ruokonen et al., 2004; Ruokonen & Lumme 2000, Jones et al. 2008): (1) Fennoscandian (wild) population - nests in the Scandinavian countries and on the Kola Peninsula in the northwest part of European Russia; (2) The main western population - nests on the Yamal peninsula and the Putorana Plateau (Taimyr), Russia; (3) The main eastern population - nests in the Russian North, to the east of the Taimyr Peninsula, and winters in China; (4) The reintroduced Swedish population with an artificially manipulated migration route to The Netherlands.

In the northern and northwestern lake and steppe regions of Kazakhstan, the whole of the main western population, and a variable proportion of the wild Scandinavian population, are concentrated within a relatively confined area. This allows for studies to be carried out on numbers, reproductive success and survival rate, as well as opportunities to undertake practical conservation activities.

Table 1. Important staging sites for Lesser White-fronted Geese in Kazakhstan.

Lake name	Latitude	Longitude
Rechnoje	54° 09' 08.6"	65° 74' 93.8"
Kamyshovoje-Zhaman	53° 57' 37.4"	65° 59' 04.8"
Alakol-Aksuat	53° 52' 54.0"	64° 44' 56.7"
Zhaksy-Zharkol	53° 49' 37.3"	65° 59' 66.1"
Bozhakol	53° 12' 73.5"	65° 91' 30.3"
Tyntygur	52° 06' 89.8"	65° 08' 46.2"
Koybagar	52° 61' 46.2"	65 °59' 67.1"
Bidayik	52° 18' 54.9"	64° 33' 19.0"
Shukyrkol	51° 33' 22.3"	62° 38' 96,5"
Batpakkol	51° 42' 45.2"	62° 64' 82.3"
Taldykol	51° 40' 98.2"	61° 96' 79.3"
Kulykol	51° 37' 52.3"	61° 86' 15.5"
Shoindykol-Zharkol	50° 46' 04"	67° 33' 05.7"
Russkyi Zharkol	50° 20' 32.3"	67° 29' 40.6"
Aike	50° 96' 97.1"	61° 57' 10.7"
Shelkar-Karashatau	50° 46' 76.2"	61° 10' 19.1"
Bolshoi Khak	53° 56' 66.7"	66° 20' 00.0"
Shagly-Teniz	50° 09' 69.7"	61° 57' 07.6"
Taiunsha	54° 13' 71.2"	70° 25' 80.8"
Alva	54° 38' 66.9"	71° 18' 52.7"
Kamyshlovo	54° 86' 44.4"	70° 22' 82.7"
Solyonoje	54° 41' 23.8"	66° 29' 05.6"
Polovinnoje	50° 84' 94.6"	70° 16' 78.3"
Sorbalyk-Maibalyk lakes system	50° 38' 65.8"	68° 93' 23.7"
Terenkol	49° 31' 72,1"	67° 28' 49.2"
Zhaltyr	49° 26' 69.4"	67° 52' 28.8"
Balykty	53° 14' 16.7"	74° 15' 00.0"

Active research and actions towards conservation of the Lesser White-fronted Goose in Kazakhstan began in 1996, when, for the first time, national and foreign experts jointly surveyed a number of important lakes in the Kostanay region. The results of this expedition were detailed in a report (Tolvanen & Pynnönen 1998). In this report, data on large concentrations at these lakes and adjacent grain fields, and on the proportion lost during goose hunting, were provided. After which, similar research in this region proceeded. As a result, data collected up until the year 2000 allowed specialists at the Institute of Zoology of Kazakh National Academy of Sciences to prepare and address to Kazakhstan Government the scientific justification for inclusion of the Lesser White-fronted Goose on the country's list of specially protected species. Public hearings were carried out during the same period, and data about the status of populations of this goose in both in Kazakhstan and on a global scale were included within the preparation of National Strategy and the Action Plan on Biodiversity Conservation in Kazakhstan. Together with the partners WWF-Finland and BirdLife Norway, a series of information material (booklets, posters, and badges) about the threat status and distribution in northern and central regions of the republic were prepared and distributed. As a result, a government resolution was made on 10 April 2002, to include the Lesser White-fronted Goose on the Red List of Kazakhstan.

Observations of Lesser White-fronted Goose migrating populations and their habitats during the autumn period in the territory of Kostanay, Northern Kazakhstan, Akmolynsk and Aktyubinsk regions, proceeded during the subsequent period. On the basis of data gathered, the main objectives towards conservation of the Lesser White-fronted Goose were formulated, in particular conservation of the western and Fennoscandian populations.

THREATS TO LESSER WHITE-FRONTED GEESE IN KAZAKHSTAN

Hunting

Negative factors influencing Lesser White-fronted Goose survival rate include hunting, predation, loss of nesting habitats, and loss of habitats in staging and wintering areas (Jones et al. 2008). Of these, hunting is recognized as the most important cause of mortality and

a major threat which it is necessary to eliminate with efforts of each country affected. Loss and degradation of suitable habitats are also considered important, but secondary to the threat to survival of adult birds (Jones et al. 2008). Three of the above factors are of relevance to the situation in Kazakhstan.

Hunting is the most serious factor limiting any possible increase in Lesser White-fronted Goose numbers. In Kazakhstan hunting for geese is especially popular in regions along the main flyways in the north, the northwest and the west of the country. Among these the North Kazakhstan, Kostanay, Akmolinsk, and Aktyubinsk regions, as well as separate areas of the Pavlodar and Atyrausky regions are especially subjected to intensive geese hunting. Data (both published and otherwise) regarding numbers shot in the Kostanaysky area are available. In the past, according to various estimates, the annual hunting bag ranged from 18000 to 66000 reported bagged geese (Solomatin 1968, Solomatin 1971). Today, there are around 10000 hunters in the area, both local as well as visitors. A poll of the most skilled hunters showed that usually during a period of 2–3 hours of morning hunting between 1–3 geese are shot, and during successful periods the quantity reaches 8–10 birds, although such large totals are seldom. In former times, local hunters traditionally shot several tens of geese during the autumn hunting season, which they then froze and used as food during the winter period. Today such a practice is seldom. Annual surveys of hunter's bags in the period 1996–2001 revealed that between 1 and 3 Lesser white-fronted Geese were shot for every hundred Greylag *Anser anser* and/or Greater White-fronted Goose *Anser albifrons*. By comparison, in the case of hunters in the Arkalyksky area of Kostanay region, one Lesser White-fronted Goose was shot for every 20–30 Greylag and/or Greater White-front killed. The total number of Lesser White-fronted Goose using lakes in the Kostanaysky region is imprecisely known. Species proportions in hunter's bags were 74% Greater White-fronted Goose, 22.1% Greylag Goose and 3.9% Lesser White-fronted Goose (Aarvak et al. 2012). Tolvanen et al. (1996) reported high proportions of Lesser White-fronted Goose in mixed flocks of geese, although these high proportions are only reached when birds are concentrated during periods of drought. For example in 2010–2011 there was little water at key reservoirs in the western part of the region and the proportion of Lesser White-fronted Geese together with Red-breasted Geese *Branta ruficollis* was at least 60% of the total geese present. At that time a high number of these two threatened species may well have been shot. In addition to the traditional autumn hunting, some Lesser White-fronted Geese are also shot during spring (Aarvak et al. 2012).

Staging sites for geese in northern and northwestern Kazakhstan are well-known to hunters, and many of the favoured sites have been visited for many years. The relatively large populations of Greylag and Greater White-fronted Geese may tolerate such high hunting pressures, but for the rare and endangered Lesser White-fronted Goose such pressure is undoubtedly disastrous. Monotypic concentrations of this goose at unprotected sites are especially vulnerable. In view of the fact that control of hunting has been weakened in recent years, coupled with the fact that several hundred geese may be shot on a single morning departure from the roosts, then it is reasonable to conclude that hunting is the single most negative factor affecting numbers of Lesser White-fronted Geese in Kazakhstan.

Water regulation regimes

The large fresh lakes with extensive grain fields within a radius of 10–20 km play a main role in formation of autumn concentration of geese in the northern part of Kazakhstan. Congregations of geese of between 100000 and 200000 birds can use such lakes for several decades. As a rule, goose concentrations on smaller lakes do not exceed 10000–15000 birds. The regular regime of drying and replenishment of water on the lakes in northern Kazakhstan have typical cycles of 7–12, and major changes in water regime lead to a redistribution of geese. One examples of this is from Lake Kulykol in Kostanay region. During the favorable water regime periods monitored in the years 1997–2001, the largest concentration of Lesser White-fronted Geese was recorded, with up to 15000 individuals, and with a total goose count for all species combined exceeding 300000. But, during the subsequent drought period between 2002 and 2007, the autumn numbers of Lesser White-fronted Geese were only in the order of 800–2000, with a total count for all geese combined not exceeding 100000 individuals (Yerokhov et al. 2007a, 2007b). However, considerable reduction of cultivated areas or the complete termination of cultivation of grain is a more significant threat to the stability of concentrations of geese that leads to a shift from traditional sites to other, less protected sites.

Poisoning

In Kazakhstan there is no rodent control using rodenticides or other poisons such as gas. Insecticides and chemical fertilizers are not stored close to grain fields. Therefore, the only potential source of poisoning is from lead shot at sites used for hunting. Thus, the incidence of poisoning of Lesser White-fronted Geese from lead shot during migration in Kazakhstan is probably very low. Current legislation forbids shooting of geese close to the edge of water-bodies, and this prevents a build-up of lead shot in ground soil at lakes.

However, at some lakes hunting of ducks and coot is permitted, and potentially Lesser White-fronted Geese could pick up lead shot if they visited such lakes. As hunters regularly move position on grain fields, an accumulation of lead shot does not occur. Besides, all grain fields are ploughed annually and any lead shot which thus was on the surface becomes covered by a layer of earth, and becomes inaccessible to geese.

Disturbance from recreation including fisheries

Although disturbance from humans is not considered as being a serious threat to Lesser White-fronted Geese in Kazakhstan, negative factors from fisheries are important in influencing the use of some lakes by Lesser White-fronted Geese. Activities are periodical following high water levels. In Kazakhstan there is a 7–12 year water-filling regime at many lakes, and the best period for fishing is 4–5 years after commencement of the filling regime. Filling of lakes in Kostanay region is not synchronous, and therefore alterations in water levels and subsequent disturbance from fisheries are of a local nature. At some of the lakes of Kostanay, North Kazakhstan and Akmolinsk regions, local people may occasionally fish during the autumn staging period. It is expected this type of recreation to become more popular.

Unfortunately, there is evidence that some fishermen take a gun with them, and potentially they may shoot at overflying geese, despite goose hunting from boats being forbidden by law.

MEASURES TO REDUCE THREATS TO LESSER WHITE-FRONTED GEESE AND THEIR HABITATS IN KAZAKHSTAN

Introduced in 2013, the NAP for the Lesser-White-fronted Goose in Kazakhstan contains a number of prime, and urgent, measures which are intended to, at first reduce, and subsequently eliminate, the main threats to the species outlined in this paper. Measures need to be implemented at key sites for Lesser White-fronted Geese in the country, at staging, roosting and feeding sites. As an initial first step, changes have been made to the hunting legislation. In addition, a public information campaign is under way, with comprehensive information for both hunters and other users in the key regions for Lesser White-fronted Geese in Kazakhstan. In such regions, local residents will also be engaged in various conservation activities for the benefit of the Lesser White-fronted Geese.

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