

WORLD WIDE FUND FOR NATURE - WWF GREECE
HELLENIC ORNITHOLOGICAL SOCIETY
SOCIETY FOR THE PROTECTION OF PRESPA

NATIONAL ACTION PLAN
FOR THE LESSER WHITE-FRONTED GOOSE
***(Anser erythropus* Linnaeus, 1758)**

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THESSALONIKI 1999

PREAMBLE

The relationship of Man with geese has its roots in ancient times. Man domesticated certain species of geese in ancient times and today, in a number of areas, they are still being used as domestic animals or fed for their meat and eggs. In ancient Greece, the goose had become domestic long before the hen, whereas in Egypt, it had become domestic at least 4,000 years ago. Moreover, in ancient Egypt, the goose was a sacred bird. Men eat their meat, though not their eggs, which were thought to have symbolic power. There are several examples where the geese provided the source of inspiration for many artists, while numerous legends or folk myths (particularly in North American countries but also in Greece) are directly related to them. Certain species are quoted in the work of ancient historians and authors (Pollard 1997).

Today the geese continue to be connected with man and except for the purely economic relationship, they constitute an item for recreation (they are found in several gardens and parks, especially in northern Europe). Moreover, the geese are among the most numerous game species. In the United States solely, almost two millions of geese are shot every year (half of which belong to the species *Branta canadensis*) (Martin 1987). In certain areas, such as in Cree, Canada, the presence of waterfowl and mainly of geese, defines many of the local social activities, contributes significantly to the local economy (through hunting and management actions for the maintenance of the bird population) and has infiltrated into local traditions and customs (Scott 1987).

Nevertheless, apart from the “positive” relationship between man and geese, in the areas where the goose populations are high, problems do exist. The geese often feed in the crops, causing a variable degree of damage to the production. Of course, the main reason for the use of crop land as feeding ground by the geese, is the very shrinkage of the natural areas and range land, which was gradually converted to agricultural land. For the resolution of this issue, government bodies and NGOs are already collaborating in countries of northern Europe and in America (Moser & Kalden 1991).

Today, 15 different species of geese from the genera *Anser* and *Branta* (sub-family Anserinae - branch Anserini) occur worldwide. The remaining genera of the Anserini branch are: *Cygnus* (with six species) and *Coscoroba* (with 1 species) (del Hoyo et al. 1992). Today in the Palearctic, there is a total of 13 species of geese of the genera *Anser* and *Branta* (nine and four species respectively) out of which, one, *Branta canadensis*, has been introduced in Europe from the New World during the 17th century.

In Greece, six species of geese have been recorded, four species of the genus *Anser* and two of the genus *Branta* (Handrinos & Akriotis 1996). Apart from the Greylag Goose (*Anser*

anser) no other species breeds in our country. Their breeding sites are mainly in northern Europe, Scandinavia and Russia. They come to Greece around wintertime, and their populations fluctuate with regard to their composition, but also to the weather conditions that prevail in Europe. The greatest wintering number of geese in Greece was recorded in 1969, when a total of 41,021 individuals were counted, most of which were White-fronted Geese (Handrinos 1991). Although their distribution in the past was wide and included northern, central and western Greece, today it has been restricted to Macedonia and Thrace (Handrinos 1991).

Even though in general the populations of all goose species in the Palaearctic seem to remain stable or in some cases to be increasing, three species appear to face severe problems. The Lesser White-fronted Goose, the Red-breasted Goose (*Branta ruficollis*) and the species *Anser cygnoides* (species of the Eastern Palaearctic). From these species, the Lesser White-fronted Goose has the lowest populations and seems to face the most severe problems (Madsen et al. 1996).

In order to tackle this situation, immediate but also very specific measures must be taken for the conservation of the Lesser White-fronted Goose in the breeding sites, but also in the wintering or staging sites. In this framework, the Swedish hunters with the support of WWF Sweden, already since 1979, are carrying out a project for the re-introduction of the Lesser White-fronted Goose in their country, in order to achieve the establishment of a breeding population which will winter in safe areas. Using individuals of the species *Branta leucopsis* as “parents”, until 1989, they set free a total of 172 juveniles, many of which were later found in Holland (von Essen, 1991, 1999). A similar project is conducted since 1985 by researchers from WWF Finland and since 1989, every year, an average of 16 juveniles are set free near the natural breeding sites of the Lesser White-fronted Goose (Markkola et al. 1999). It must be stated, however, that the research and effort for the conservation of the Lesser White-fronted Goose started earlier, around 1983, when WWF Finland organised a working group for the species. This group was gradually enlarged and today includes representatives from the Ministry for Environment, regional environmental centres, the Ornithological Society of Finland, the Forest Service, the hunting federation, but also large group of volunteers. It is remarkable that this group constitutes the adviser of the Min. for Environment with regard to the Lesser White-fronted Goose’s conservation and protection affairs in Finland (Tolvanen et al. 1998). Moreover, since 1997 the respective conservation actions in Finland are co-financed by the European union. Apart from the Finish, also the Norwegians with the Norwegian Ornithological Society, since 1987, financially supported by national, regional and even local resources, have started a project for the inventory of the population of the Lesser White-fronted

Goose. This project gradually spread beyond the borders of that country, and several exploratory expeditions have already been performed in almost every country where the species migrates or winters. The results of this project were very enlightening in relation to the route followed by the Lesser White-fronted Geese from their breeding sites to their wintering sites and vice versa. In addition, the major problems faced the species along this route were identified and in most countries, certain efforts have already started for their resolution. A result of this action was the legal protection of the species or of certain areas where it lives, in almost all countries where it breeds, winters, or crosses (Heredia et al. 1996). Nevertheless, several areas still remain to be designated under some protection status. The research groups of Norway and Finland, recently joined their “forces” for the more effective assessment of the Lesser White-fronted Goose status in the Western Palaearctic (Tolvanen et al. 1999).

In parallel, in the framework of the attempt of Birdlife International (whose partner in Greece is the Hellenic Ornithological Society) for the conservation of the endangered species of avifauna in Europe, International Action Plans for 23 species including the Lesser White-fronted Goose, were prepared (Heredia et al. 1996). The International Action Plan for the Lesser White-fronted Goose was prepared by the International Working Group for the Lesser White-fronted Goose which was founded in 1995 (as part of the Expert Group for Geese of Wetlands International) and it comprises of the actions that must take place in almost every country where the species lives, in order to protect it effectively and remove it from the list of threatened species. Therefore, the National Action Plan for the Lesser White-fronted Goose in Greece (output of a three-year project for the species, see Introduction) constitutes part of the more general attempt to protect this species. Moreover, it is worth saying that this is the second Action Plan prepared for a bird species in Greece.

The National Action Plan is only a start towards the conservation of the species and not an end in itself. The implementation of the proposals possibly constitutes the most decisive and perhaps the most difficult stage towards the protection of the species. For this reason, particular consideration was attributed to the feasibility of the proposals’ implementation. That is, the ecological factors emerging from the scientific findings and research were considered in conjunction with the national and Community legislation, the international documents, but also with the social factor. The latter has proved very important in conservation planning of the Greek nature. Until today, the implementation of sound proposals concerning the conservation or management of the environment in Greece, were often greatly impeded due to the inadequate integration of the social factor.

We are hopeful that the present publication will constitute a useful tool that will be fruitfully utilised for the conservation of the Lesser White-fronted Goose in Greece. Possibly there is need for amendments and there are omissions. We nevertheless wish that, at the time of a possible review of the present edition, apart from the omissions that will have been discovered, certain actions will have already been implemented, so as they will not have to be re-included in the Action Plan.

Acknowledgements

The present publication is a collective effort and a product of co-operation among several people from the World Wide Fund for Nature - WWF Greece, the Hellenic Ornithological Society and the Society for the Protection of Prespa, who have worked in the Life - Nature II project (Ref # B4-3200/96/499) "Conservation of the Pygmy Cormorant and the Lesser White-fronted Goose in Greece". This publication is therefore an output of the said project.

Special thanks are owed to the European Commission (Directorate General XI) for the financial support of the project (in the framework of the funding protocol LIFE NATURE). We also thank the Ministries of Environment and of Agriculture, as well as the regional services, and even more so the staff of the Forest agencies in all project areas, for their valuable advice, supply of information, moral support and the spirit of creative collaboration shown by most of them.

Together with the project scientists, several volunteers from Greece and many European countries participated in the field work, such as Covadonga Caez – Rouyela Cueva, Yannis Deliolanis, Jonathan Hodge, Lefteris Kakalis, Ville Kalviainen, Speri Karabataki, Petri Lampila, as well as the students of Oulu University of Finland Jarkko Korhonen and Hanna Soikkeli. The contribution of all the above is warmly acknowledged.

Warm thanks are also owed to the wardens of the project, Vassilis Terzis and Panayotis Hatziyannidis, at Ismaris and Kerkini respectively, for their assistance in the field work.

We finally express our special gratitude to the staff and wardens of the Information Centres of the Ministry of Environment, of all sites and particularly of the Evros delta (Andreas Athanasiadis, Panayotis Malkopoulos, Eleni Makriyanni, Villi Nikolaou) for their assistance in the field work and the various useful information with which they periodically provided us.

We owe particular gratitude to the Associate Professor Dr. Vassilis Goutner (part of the research group in the Evros delta) for his comments and recommendations that contributed greatly to the improvement of the present publication.

Moreover, we owe warm thank to the researchers of the Norwegian Ornithological Society and WWF Finland for their annual project reports and the information with regard to the species in the breeding sites in Scandinavia, as well as for the slides which they kindly provided to us periodically at no cost.

A great appreciation is owed to the people who live in the areas where we worked for the interest they showed in our attempt and the willingness with which, most of the times, they gave us various information of great value to us.

WORK TEAM

The preparation of the Action Plan was performed by the participation and collaboration of all participants in the project Life - Nature II (Ref # B4-3200/96/499) “Conservation of the Pygmy Cormorant and the Lesser White-fronted Goose in Greece”, cited below in alphabetical order.

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SUMMARY

The Lesser White-fronted Goose nests along a narrow zone of the tundra, from Scandinavia up to the Bering Strait. The global population of the species is estimated to be around 25,000 – 30,000 individuals, while the estimated total breeding population is 2,750-4,600 pairs. The main breeding areas are found in central and eastern Siberia, whereas there is a small population in Scandinavia (50-60 pairs). The population that breeds in Scandinavia winters in the steppes of Hungary and in natural range fields or agricultural crops in the Balkans. The populations that breed in central Siberia winter at the coasts of the Black Sea and around the Caspian, while the population that breeds in eastern Siberia winters in China.

In Greece, the Lesser White-fronted Goose was recorded for the first time in 1859 in Attica. In recent years, most references come from Thrace (mainly the Evros delta but also from Ismaris) and lake Kerkini. The greatest number ever recorded in Greece was at the Evros delta in 1963 (1,630 individuals). The greatest number recorded recently (winter 1998-1999) was a total of 71 individuals at lake Kerkini, lake Ismaris and the Evros delta.

The Lesser White-fronted Goose nests on the ground, in hilly or upland, mainly open areas, from the end of March to early June. It lays 4-6 eggs, which it hatches for 25-28 days. The nestlings fledge at the age of 35-40 days. The breeding success (number of nestlings per pair) varies from 1.0 to 2.6.

The Lesser White-fronted Goose is a herbivorous species. It feeds in flocks together with other species of geese, mainly on herbal species in range fields near wetlands or in agricultural crops.

During the 20th century and in particular after 1950, the populations of the Lesser White-fronted Goose dropped by 90% approximately. At the breeding sites the major problems faced by the species are the degradation of their habitats and disturbance. At the wintering sites the most important problems are the transformation of marshes and natural range land into crops and illegal hunting. In Greece the main problems that the species faces are disturbance (by activities such as uncontrolled eco-tourism, etc.), the damage or degradation of its feeding sites and illegal hunting.

The Lesser White-fronted Goose is a protected species in Greece and its hunting is prohibited (as is the case for all geese). It is included in the Red Data Book of the Threatened Vertebrates of Greece, where it is characterised as “Endangered”.

The aim of the National Action Plan is the conservation of the species and of its habitats, so that its population remains stable. Its objective is the intervention in four major orientations

which refer to: a) the required policy and legislation, b) the protection of the species and its habitats, c) the monitoring and research as well as d) raising information and awareness among wetland users and the competent bodies.

The actions and activities proposed for the three wintering areas of the species in Greece are related to the needs and particularities of each area and are classified under the aforementioned orientations.

INTRODUCTION

According to the IUCN criteria, the Lesser White-fronted Goose is characterised as a “Vulnerable” species at a global scale (Collar et al. 1994). At a European scale it is also characterised as “Vulnerable” (Tucker & Heath 1994). It is included in Annex I of the Council Directive 79/409 (for the conservation of birds and their habitats), in Annex II of the Bern Convention (for the conservation of wildlife and the natural environment in Europe), as well as in Annex II of the Bonn Convention (for the conservation of migratory species that belong to the wild fauna).

The National Action Plan was based on existing data about the species from former research, but mainly upon the findings of a specific research which was performed for the species at three wetlands in the framework of the project “Conservation of the Pygmy Cormorant and the Lesser White-fronted Goose in Greece” This research included the determination of its distribution, population counts, as well as the identification of the problems faced by the species. It was funded by the European Union and implemented by three NGOs: the World Wide Fund for Nature, the Hellenic Ornithological Society and the Society for the Protection of Prespa. On the basis of the above, the project concluded with regard to the orientations, as well as the activities or the specific measures and actions that have to be undertaken at the areas where the species winters, in order for the Lesser White-fronted Goose population, at least to become stable at today’s level, or to increase in the longer term.

It is worth highlighting the significance of the research conducted for the species in the framework of the above project. The experience gained along its duration was valuable, not only in the research field, but even more so for the formulation of proposals and the estimation of their implementation feasibility.

The present publication, having described the status of the species providing in brief all the up-to-date information available in Greece, aims at setting the general and specific strategic objectives and orientations and at describing the specific actions required for the conservation of the species at each of the wetlands where it winters. It consists of four different parts (chapters). In the first part there is a description of the species, its population, certain aspects of its biology and ecology, the problems it faces, its protection status as well as the status of the species at the wintering sites (where there is also a reference to previous conservation actions or research about the species). The problems faced by the species were classified with regard to their significance into three categories: a) **High**: estimated to be capable of leading to a population

decrease (in Greece) by 20% in the next 20 years b) **Medium**: estimated to be capable of causing population decrease (in Greece) by a percentage lower than 20%, c) **Low**: estimated to be capable of causing population decrease locally and d) **Unknown**: when the impact of the problem on the species could not be estimated.

In the second part, the general orientations for the conservation of the species are described. In every general orientation, it was thought useful to include:

a) **The priority of the action**. This was classified into three categories with regard to its influence on the Greek population: i) High: action required to prevent population decline by more than 20% approximately during the next 20 years, ii) Medium: action required to prevent population decline lower than 20% during the next 20 years and iii) Low: action required to prevent local population decline.

b) **The timetable for implementation** was also classified into three categories with regard to the exact period when the action should be implemented. i) short-term: the action must be implemented in the next 1-3 years, ii) medium-term: the action must be implemented in the next 1-5 years and iii) long-term: the action must be implemented in the next 1-10 years. In case certain actions are already been implemented, this is quoted in the document.

c) **The implementation feasibility**, which mostly refers to the response by social bodies and local authorities to each proposal, and

d) **The management body**, which refers to the body suggested as most competent or most appropriate to implement that particular action.

It should be clarified that certain of the above categories (such as the implementation feasibility) were not constructed upon concrete measurable data and therefore are to some degree subjective, though not arbitrary. The feasibility for the implementation of proposals was estimated with regard to the reactions and the views of the different bodies and civil services, when these proposals were presented to them (during the meetings of the project's collaborators and during daily sessions where the results of the research and the proposals were presented).

In the third part, the specific actions that have to be implemented in each site are described. Each action corresponds to one (or more) general orientations, as the latter were defined in the second part.

The fourth part deals with the method of dissemination and promotion of the National Action Plan, the body responsible for the review or the supervision of its implementation and progress, as well as its timetable.

Finally, the maps of the Lesser White-fronted Goose's wintering sites are attached.

The structure of the National Action Plan for Lesser White-fronted Goose is similar to the one of the International Action Plans published by Heredia et al. (1996). Nevertheless, at certain points, adaptations were made and more information was added in order, to the judgement of the authors, to improve the overall depiction of the Action Plan.

PART I

GEOGRAPHICAL DISTRIBUTION AND POPULATION OF THE LESSER WHITE-FRONTED GOOSE

The Lesser White-fronted Goose nests at certain parts along a narrow zone of the tundra, which begins in Scandinavia and spreads along Siberia up to the Bering Strait. Even though until 1960 its global population was around 100,000 individuals, according to the most recent midwinter counts, the global population of the species does not exceed 25,000 – 30,000 individuals (Lorensten et al. 1999 in Tolvanen et al. 1999), whereas the total breeding population is believed to be around 2,750-4,600 pairs (Aarvak et al. 1997). The most important breeding sites are found in eastern Siberia (where half of the total breeding population is thought to nest) and in central Siberia (in the Taymyr peninsula, where the breeding population was estimated to reach 1,000 – 2,500 pairs, although that is probably an exaggerated number) (Tucker & Heath 1994, Scott & Rose 1996). The population that breeds in Scandinavia around the middle of the 20th century was thought to be about 10,000 individuals, but ever since that population collapsed and in 1992, the estimate dropped to only 46 - 75 pairs (Tucker & Heath 1994, Scott & Rose 1996). More recent counts record 50 - 60 pairs (30 - 40 pairs in Finland, ten pairs in Norway and ten in Sweden, five out of which belong to a re-introduced population) (von Essen et al. 1996).

The populations that breed in Scandinavia winter souther, in the steppes of Hungary and in natural range fields or agricultural crops near wetlands in the Balkans (mainly in Greece). The countries in which they stop by during migration are the ones around the Baltic (Estonia, Germany, Belarus, Finland), north of the Black Sea (Ukraine, Russia) but also further in the east up to Kazakhstan (where radio-tracked individuals were spotted, according to Scott & Rose 1996, Karvonen & Markkola 1998, Aarvak et al. 1999). The populations that breed in central Siberia (Taymyr peninsula), winter at the coasts of the Black Sea (Russia) and around the Caspian. A radio-tracked individual ended up at the west coast of the Caspian (Azerbaijan), stopping by successively in Russia and Kazakhstan (Oien et al. 1999). The population that breeds in eastern Siberia winters in China (Scott & Rose 1996, Li & Wang 1996).

The Lesser White-fronted Goose in Greece until 1996

The Lesser White-fronted Goose was first recorded in Greece in 1859 in Attica, probably at the delta of Faliro, which is the origin of the two specimens found in the University of Athens (Reiser 1905, Handrinos & Goutner 1990). The first documented reference in the beginning of the 20th century comes from the delta of Spercheios, from where two specimens of the species were collected and taken to the Museum of Sarajevo (Reiser 1905). Ever since, all references to the species' occurrence come from wetlands of northern Greece.

In the past it could be observed in central Macedonia (lake Koronia, Strymon estuary etc.) and in Thrace, whereas in recent years most records come from Thrace (mainly Evros delta but also lake Ismaris) and from lake Kerkini. There are at least 20 observations of the species in Greece, from the previous century until 1996 (Handrinos & Goutner 1990, World Wide Fund for Nature et al. 1998).

In Greece the Lesser White-fronted Geese are observed from October till March (Goutner et al. 1988, Handrinos & Akriotis 1996). Normally, they are firstly seen in Kerkini and later on at lake Ismaris and Evros delta. The most important observation of the species in Greece was in 1963, when 1,630 individuals were recorded at the Evros delta. Ever since their population has started to drop. In 1973, 480 individuals were recorded and 116 were observed in 1988 (Goutner et al. 1988, Handrinos 1991, Handrinos 1992). During January in the years 1974 and 1984, 40 and 70 individuals were counted respectively at lake Ismaris, whereas in 1989, only two individuals were observed in the same period of the year (Handrinos & Akriotis 1997, Hellenic Ornithological Society 1994, Handrinos & Goutner 1990). Among the most recent observations of the Lesser White-fronted Goose in Kerkini was in 1988 when, 26 individuals were recorded during the mid-winter counts (Hellenic Ornithological Society 1994, Handrinos & Goutner 1990). In Kerkini, the Lesser White-fronted Geese seem to be arriving around October (Nazirides, unpublished data). In early November 1995, among a flock of 44 Lesser White-fronted Geese which arrived in Kerkini, there was one bearing a coloured ring and radio transmitter (one out of the five Lesser White-fronted Geese which were radio-tracked in Norway and Finland). This individual remained in Kerkini for about two weeks and consequently it moved on towards the Evros delta, where it stayed until mid – February 1996. Later on, it was spotted in its breeding site in Norway (Aarvak et al. 1996, 1999). The same individuals was tracked again in Kerkini in November 1996 before returning once more to its breeding site (Aarvak et al. 1999).

In an older time, in 1956, another Lesser White-fronted Goose ringed in Sweden, was found in Greece (Macedonia, Handrinos & Akriotis 1996). This is an indication that the

Lesser White-fronted Geese that winter in Greece belong to the population that breeds in Scandinavia.

The Lesser White-fronted Goose in Greece during the period 1997-1999

Research results in Greece between 1997 and 1999 and information on the mobility of the Scandinavian population, indicate that they do not fly over to Greece every year. In the beginning of the wintering period 1996-1997, 44 individuals were traced in Kerkini and this was the only record of the species at that period (Nazirides, unpublished data, Aarvak et al. 1999). Of course, it is possible that some individuals may have skipped the eye of the observers, who could have mistaken the birds' identity in case they mixed with other species, particularly White – fronted Geese (as it usually happens).

During the next winter (1997-1998), no Lesser White-fronted Geese were observed in Greece. According to the data from the movement of radio – tracked individuals, they bred in northern Europe. The southeast point that they reached was lake Shabla in Bulgaria where, in February 1998, three Lesser White-fronted Goose individuals coexisted with White – fronted and Red – breasted Geese in a flock of about 18.000 geese (Petkov et al. 1999).

During winter 1998-1999 the Lesser White-fronted Geese appeared at first in lake Kerkini, in mid – October (Figure 1). Out of the 18 individuals that arrived, five were juveniles. That flock remained in the area until the 21st of October 1998. On the 27th of October, another flock of 31 individuals arrived in the area (out of which six were juveniles) while on the 8th of November, more Lesser White-fronted Geese arrived, raising the population of the area to a total of 40 (out of which 7 were juveniles). From there, it appears that they headed eastwards to lake Ismaris and the Evros delta. In Kerkini, Lesser White-fronted Geese reappeared around January (29 and 43 individuals on the 2nd and 30th of January respectively). In the Evros delta, 15 to 35 individuals in total remained for a long period (from December to mid – March approximately) whereas in Ismaris (at least 42 individuals) seem to have stayed for a rather short period of time (from 6 to 27 January 1999) (World Wide Fund for Nature et al. 1999). Moreover, on the 10th of February 1999, a total of 17 Lesser White-fronted Goose individuals were recorded within a flock of approximately 1,000 White-fronted Geese in the eastern part of the Nestos delta. That was the first record of the Lesser White-fronted Goose in that area after 1968 (Handrinos & Goutner 1990).

In most cases, the Lesser White-fronted Geese were feeding in flocks together with the White-fronted Geese. In rare cases they were observed together with Greylag or Red – breasted Geese, whereas even more rarely they were seen to feed on their own.

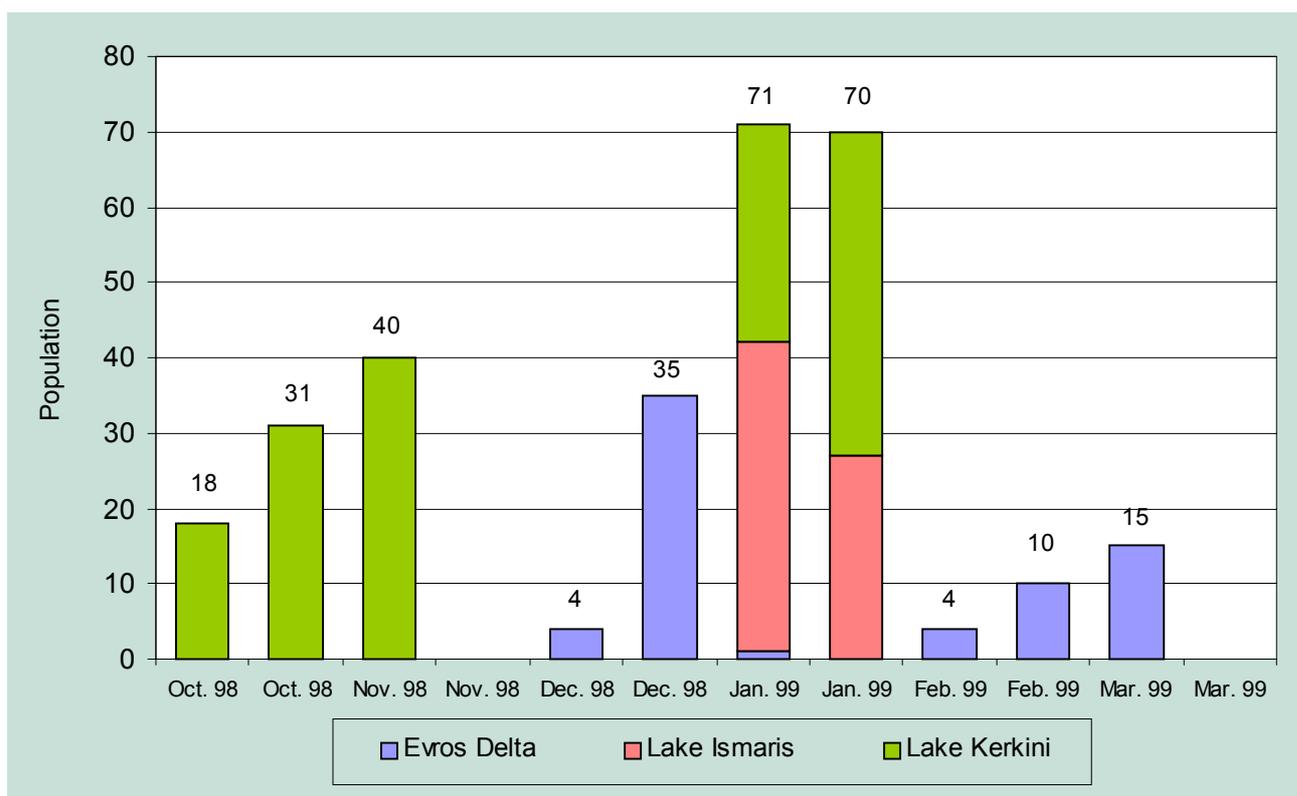


Figure 1. The number of the Lesser White-fronted Goose individuals recorded in Greece during the wintering period 1998-1999. The numbers shown are the highest total counts within each fortnight of the respective month.

INFORMATION ON THE BIOLOGY AND ECOLOGY OF THE LESSER WHITE-FRONTED GOOSE

The Lesser White-fronted Goose is the smallest in size species of the sub-family Anserinae of the order Anseriformes (body length 53-66 cm, weight 1,300-2,300 gr, del Hoyo et al. 1992).

It nests in hilly or upland, mainly open areas (where grassland or sparse shrubland predominate) at an altitude up to 700 m. It nests on the ground. It begins to nest in late May – early June. It lays 4-6 eggs, which it incubates for 25-28 ημέρες. The hatchlings fledge at the age of 35-40 days. The Lesser White-fronted Geese start to breed at the age of two years (more rarely at two) (Cramp & Simmons 1977, del Hoyo et al. 1992, Scott & Rose 1996). The breeding success (number of nestlings per pair, counted during autumn) from 1994 to 1996 fluctuated from 1.0 to 2.6 (Aarvak et al. 1996).

After the end of the breeding process, the Lesser White-fronted Geese gather at remote areas (not far from their breeding sites) to moult. Moulting occurs around July – August and lasts for about 25 days. During this period the birds are unable to fly. The non-breeding individuals moult earlier (Scott & Rose 1996, Aarvak et al. 1997).

After the breeding process and moulting are completed, around August and until September, the Lesser White-fronted Geese begin to move southwards to their wintering areas. They return to their breeding areas again around May until early June.

The Lesser White-fronted Goose is a herbivorous species. It mainly feeds on herbaceous, Graminea species (*Festuca rubra*, *Puccinellia* spp. *Agrostis* spp.) range land near wetlands (mostly inland but also in coastal saltmarshes) or in crops, in flocks together with other goose species (Niemela & Markkola 1998). In the past, when at its main wintering areas (particularly in central Europe) there were extensive steppes, the species used to feed there. Today, the largest part of those steppes has been converted to farmed land and the Lesser White-fronted Geese keep on using these same areas, feeding mostly on the crops (Tucker & Heath 1994, Scott & Rose 1996).

The principal feeding sites of the species in Greece are the range fields (in all sites) and the fields with cereal crops (particularly at lake Ismaris).

After sunset, the Lesser White-fronted Geese, together with the other goose species, gather in the roosting sites, which they will leave before dawn. The roosting sites in the Evros

delta and in lake Kerkini are relatively close to the feeding sites, whereas in Ismaris, the birds roost in the lake (World Wide Fund for Nature et al. 1999).

CONSERVATION PROBLEMS AND CONSTRAINTS

During the 20th century and particularly after 1950, the Lesser White-fronted Goose populations dropped by approximately 90% and this decline keeps on until today (Heredia et al. 1996). Even though the reasons for this serious decline are not yet fully known, they are thought to be mainly due to human interventions. The fragmentation of the breeding areas may possibly lead to the extinction of the species in other areas as well (Heredia et al. 1996). In the breeding areas, the degradation of habitats and disturbance are among the major problems faced by the species. In the wintering areas, the major problems are the conversion of marshes and natural range fields into crops, and illegal hunting. Predation by foxes in the breeding sites, is one of the natural causes for the species' population decline (Tucker & Heath 1994).

In Greece, human interventions which have caused the degradation or damage of a number of wetlands, are probably the cause of the species' distribution restriction to three or four wetlands in our country. The major problems the Lesser White-fronted Goose is facing in Greece are the following:

1. Disturbance

It is caused mainly by:

- Access to the feeding sites of the Lesser White-fronted Goose by visitors who wish to observe the birds at a short distance. This problem is particularly severe in the Evros delta (World Wide Fund for Nature et al. 1999).
- The deliberate disturbance by farmers when they see geese feeding on crops. This problem is particularly intense at lake Ismaris (World Wide Fund for Nature et al. 1999).
- Illegal hunting, exercised near the species' feeding sites. This problem is particularly intense at lake Ismaris but also at the rest of the areas when the Lesser White-fronted Geese move outside the protected zones (World Wide Fund for Nature et al. 1999).

SIGNIFICANCE OF THE PROBLEM: HIGH

2. Restriction of the foraging sites

The restriction of the feeding sites is due mainly to activities such as:

- Conversion of marshes into crop fields. Marsh areas in the north-eastern part of Ismaris were reclaimed for agriculture in the past.
- Drainage of wetland parts. There are plans to drain a large part of the flooded area east of Vistonis (the works are in progress). This area constitutes a feeding site for geese and possibly for the Lesser White-fronted Goose
- Replacement of the cereals by other, more economically beneficial crops. The shrinkage of the cereal crops has restricted the alternative feeding sites (since the species primarily feeds in natural range fields and alternatively in cereal crops). Moreover, the greater damage caused by the geese in the remaining wheat fields, raises the understandable reaction of the farmers against the geese. This problem is particularly intense at the Ismaris area (World Wide Fund for Nature et al. 1999).

SIGNIFICANCE OF THE PROBLEM: HIGH

3. Illegal hunting

Even though there are no registered incidents of Lesser White-fronted Goose illegal hunting in Greece, it is very possible that such incidents do accidentally occur. This estimate emerges from the fact that the Lesser White-fronted Geese feed or move together with other goose species and their discrimination from a distance is very difficult.

SIGNIFICANCE OF THE PROBLEM: UNKNOWN

PROTECTION STATUS OF THE SPECIES IN GREECE

- It is considered as a specially protected species according to the Decision 414985/85 (GG 757 B/19-12-1985) of the Ministry for Agriculture “Management measures for the wild avifauna”. This decision was taken in alignment of the Greek legislation to the Community Directive 79/409 “for the conservation of birds and their habitats”. The thereafter amendments of the Directive 79/409 (91/244/EEC of 6-3-1991) but also the consequent adaptations of the Greek legislation, include the species (GG 1188 B/31-12-1996). Since 1993 until today, hunting of all goose species¹ is prohibited altogether according to the annual hunting regulations issued by the Ministry for Agriculture in the framework of the aforementioned legislation (as well as of other proposals or recommendations).

- It is included in Annex II (strictly protected species) of Law 1335/83 “for the conservation of wildlife and natural environment of Europe” (or Bern Convention).

- It is included in the Red Data Book of threatened Vertebrates of Greece, where it is characterised as Endangered species of the E2 category (the dangers threatening the species of this category are not, at least presently, immediate) (Handrinos 1992).

¹ It must be stated that Greece is the only country where hunting of all goose species is completely prohibited. This decision was taken to protect the Lesser White-fronted Goose from accidental killings because its discrimination from a distance, and among the other goose species with which it feeds, is difficult.

LEGAL STATUS, STATUS OF THE SPECIES AND ACTIONS IMPLEMENTED FOR THE CONSERVATION OF THE SPECIES AT ITS PRINCIPAL WINTERING AREAS

EVROS DELTA

Legal status ²

- Wetland of International Importance (Ramsar Convention). L.A. 191/74, GG 350 A/19-11-1974.
- Special Protection Area (Directive 79/409EC for the conservation of birds and their habitats). Ministerial Decision 414985/1985, GG 757 B/ 19-12-1985.
- Site of Community Importance (Directive 92/43/EC for the conservation of natural habitats as well as of wild fauna and flora - NATURA 2000 Network). Ministerial decision GG 1289 B/28-12-98.
- Game refuge (part of the wetland, surface area of 46.000 stremmata). Decision of the Minister for Agriculture 79081/2926/2-8-1991. GG 674/B/91
- For the area there has been issued a Joint Ministerial Decision “Measures for the protection of wetlands and natural formations in the estuary of river Evros and its wider area”. JMD 8586/1838, GG 376 B/27-4-1998.

In addition: Important Bird Area for Greece (Hellenic Ornithological Society 1994).

Important sites for the species

Foraging: The range fields around Drana lagoon and the rural areas at the western part of the delta (World Wide Fund for Nature et al. 1999).

Roosting: The range fields at the north-eastern part of the Drana lagoon (World Wide Fund for Nature et al. 1999).

Actions for the conservation and protection of the species

1. Additional food supply to the geese (wheat and corn) during the heavy snowfalls during winter 1999.
2. Actions to inform local authorities and raise public awareness about the species (Dimitriou 1999):

² More general regulations and laws, which refer to environmental protection and are valid for the entire country, are not included. The same stands for all sites described hereafter.

- organisation of 1-day informative conferences
 - publication of informative leaflet and poster
 - preparation of educational material for schools
 - construction and placement in the area, of informative and warning sign posts
3. Publication of a poster with a distribution map and information on the species in the framework of the project “Conservation of the Slender-billed Curlew and the Lesser White-fronted Goose in Greece” (Goutner et al. 1988).

Research

Goutner V., G. Handrinos & S. Kazantzidis 1988, Handrinos & Goutner 1990.

LAKE ISMARIS

Legal status

- Wetland of International Importance (Ramsar Convention). L.A. 191/74, GG 350 A/19-11-1974.
- Special Protection Area (Directive 79/409EC for the conservation of birds and their habitats). Ministerial Decision 414985/1985, GG 757 B/ 19-12-1985.
- Site of Community Importance (Directive 92/43/EC for the conservation of natural habitats as well as of wild fauna and flora - NATURA 2000 Network). Ministerial decision GG 1289 B/28-12-98.
- Game refuge (part of the wetland). GG 130 B/12-2-1979.
- Lake Ismaris and the Rhodopi lagoons are included in the National Park of Eastern Macedonia – Thrace. There has been issued a Joint Ministerial Decision “Designation of the wetlands of the Nestos delta, lake Vistonis, lake Ismaris and their wider area, as a Park”. JMD 5796/96, GG 854 B/16-9-1996.

In addition: Important Bird Area for Greece (Hellenic Ornithological Society 1994).

Important sites for the species

Foraging: The range fields at the north-eastern part of lake Ismaris and the rural areas of the wider area up to the eastern part of lake Vistonis (World Wide Fund for Nature et al. 1999).

Roosting: Lake Ismaris (World Wide Fund for Nature et al. 1999).

Actions for the conservation and protection of the species

Actions to inform local authorities and raise public awareness about the species (Dimitriou 1999):

- organisation of 1-day informative conferences
- publication of informative leaflet and poster
- preparation of educational material for schools
- construction and placement in the area, of informative and warning sign posts

Research

Handrinos & Goutner 1990.

LAKE KERKINI

Legal status

- Wetland of International Importance (Ramsar Convention). L.A. 191/74, GG 350 A/19-11-1974.
- Special Protection Area (Directive 79/409EC for the conservation of birds and their habitats). Ministerial Decision 414985/1985, GG 757 B/ 19-12-1985.
- Site of Community Importance (Directive 92/43/EC for the conservation of natural habitats as well as of wild fauna and flora - NATURA 2000 Network). Ministerial Decision GG 1289 B/28-12-98.
- Game refuge. GG 1060 B/3-12-97.
- For the area there has been issued a Joint Ministerial Decision “Measures to protect the wetland of artificial lake Kerkini and its wider area”. JMD 66272/25-6-1993, GG 493 B/7-7-1993. Revision: JMD 66231/2051/3-3-1996, GG 259 B/19-4-1996.

In addition: Important Bird Area for Greece (Hellenic Ornithological Society 1994).

Important sites for the species

Foraging: The range fields in the north, north-eastern part of the lake (World Wide Fund for Nature et al. 1999).

Roosting: The range fields in the north-eastern part of the lake (World Wide Fund for Nature et al. 1999).

Actions for the conservation and protection of the species

Actions to inform local authorities and raise public awareness about the species (Dimitriou 1999):

- organisation of 1-day informative conferences
- publication of informative leaflet and poster
- preparation of educational material for schools
- construction and placement in the area, of informative and warning sign posts

Research

Handrinos & Goutner 1990.

PART II

AIM OF THE NATIONAL ACTION PLAN

The aim of the National Action Plan is, in the short run the maintenance of the Lesser White-fronted Goose population in Greece at least at today's level and, in the long run (in combination with the conservation actions in the other countries), the increase of its population.

OBJECTIVE OF THE NATIONAL ACTION PLAN

The objective of the National Action Plan is the intervention and action in the following sectors:

1. Policy and legislation

1.1 Promotion or encouragement of a policy in favour of the Lesser White-fronted Goose in Greece.

1.1.1. To safeguard that the economic activities developed in wetlands where the Lesser White-fronted Goose winters, are conducted in a way which will not affect the species adversely.

Several economic activities exercised in wetlands (such as crop and animal farming) are often performed in a way that affects the species' conservation negatively. The competent civil services must take control over these activities, by issuing specifications or guidance, taking into account the needs, but also the particularities of each area and of the species. In those areas where the legislation already exists but is violated, the enforcement and control mechanism must be activated more efficiently.

Priority: High

Timetable: Short-term

Feasibility: Medium

Implementation agency: Ministry for Environment, Ministry for Agriculture, Regional services (Forest agencies), Local government

1.1.2. To safeguard that the recreational activities taking place in wetlands where the Lesser White-fronted Goose winters, are conducted in a way which will not affect the species adversely.

Several recreational activities exercised at wetlands, such as hunting and ecotourism, are often performed in a way that hinders the conservation of the species. The negative impact mostly relates to the disturbance that these activities cause to the feeding and roosting sites. The competent civil services and the local government must take control over these activities, by issuing specifications or guidance, taking into account the needs, but also the particularities of each area and of the species. In those areas where the legislation already exists but is violated, the enforcement and control mechanism must be activated more efficiently.

Priority: High

Timetable: Short-term

Feasibility: Medium

Implementation agency: Ministry for Environment, Ministry for Agriculture, Regional services (Forest agencies), Local government

1.1.3. Creation of a mechanism for the registration and estimation of the damage that is possibly caused by the geese to the agricultural production (particularly of cereal crops) and in cases of documented damage, establishment of compensation, at least for the farmers whose crop land is within protection zones.

This measure is thought to reduce the motive for persecution or illegal hunting of the geese whenever they are seen in the wheat fields, thereby decreasing the incidents of illegal hunting and the possibilities for Lesser White-fronted Goose killings. In case of significant crop damage, certain measures could be taken to prevent the use of those areas by the geese (of the crops included in protection zones), but only after specific research and if it proves necessary.

Priority: Medium

Timetable: Medium-term

Feasibility: Low

Implementation agency: Ministry for Agriculture, Ministry for Environment, NGOs

1.1.4. Utilisation of the opportunities provided by the agri-environmental measures of the Common Agricultural Policy (CAP) of the European Union for the management of habitats which constitute foraging sites for the species, in a way that is beneficial to it.

In the framework of the CAP, there are measures aiming at the protection of particularly important habitats of the NATURA 2000 as well as of their important wild fauna and flora. The utilisation of the said opportunities could be extended to Lesser White-fronted Goose wintering areas. The implementation of these measures will confer benefits to other species of the avifauna as well.

Priority: Medium

Timetable: Medium-term

Feasibility: Medium

Implementation agency: Ministry for Agriculture, Ministry for Environment, Local government

1.2. Development of collaboration with neighbouring countries of the Balkans, in view of the joint research and conservation of the species.

The effective protection of the Lesser White-fronted Goose requires coordinated action among the countries. The collaboration, in particular with Balkan countries (particularly with Bulgaria and Romania), would greatly improve knowledge on the species, but also on the problems it faces within its wider distribution range, thereby enhancing the opportunities for a more effective intervention for its conservation.

Priority: Medium

Timetable: Medium-term

Feasibility: Medium

Implementation agency: NGOs in co-operation with government bodies

1.3. Establishment of a mechanism for provision of consultation and information exchange between state services and NGOs.

The operation of such a mechanism is estimated to bring multiple benefits, not only to the Lesser White-fronted Goose, but also for other issues related to the fauna and to wetlands. The timely information exchange through this mechanism will be able to prevent actions or decisions that may be detrimental to the Lesser White-fronted Goose or its habitats.

Priority: Medium

Timetable: Long-term

Feasibility: Medium

Implementation agency: Ministry for Environment, Ministry for Agriculture, NGOs

2. Conservation of the species and of its habitats

2.1. *Promotion of the management of range fields of wetlands in a way which will favour the Lesser White-fronted Goose.*

Range management in wetlands is often carried out with the sole consideration of the animal farming requirements. In many cases, this may lead to their degradation as ecosystems or even as habitats for the fauna, and mostly for the avifauna. In wetlands which host geese and the Lesser White-fronted Goose, range fields constitute their most important feeding sites. The integrated management of these ecosystems (which will account for the needs of the Lesser White-fronted Goose) will constitute an important step towards the maintenance of their populations in those areas.

Priority: High

Timetable: Short-term

Feasibility: Medium

Implementation agency: Ministry for Agriculture, Ministry for Environment

2.2. *Restoration of the species' habitats which were subjected to damage or degradation due to human activities.*

Several foraging habitats of the Lesser White-fronted Goose, in particular the periodically flooded areas, have been degraded during the last years. The prevention of any further damage or degradation of wetland areas must constitute a prerequisite in development planning by the competent services. In case that wetland degradation does occur, the necessary restoration measures should be taken immediately.

Priority: Medium

Timetable: Medium-term

Feasibility: Low

Implementation agency: NGOs, Ministry for Environment, Ministry for Agriculture, Regional services (Forest agencies)

2.3. *Intensification of the effort to restrict activities such as illegal hunting and uncontrolled tourism at the species' wintering sites.*

The encouragement of the competent government services (forest service), of the hunting clubs, but also of the local government for a more intense wardening of the sensitive areas, is expected to restrict the incidents of disturbance or illegal hunting of the species.

Priority: High

Timetable: Short-term

Feasibility: Medium

Implementation agency: Ministry for Environment (Information Centres), Ministry for Agriculture, Regional services (Forest agencies), Local government, Hunting Clubs

2.4. Undertaking of emergency measures, such as food supply in case of extreme weather conditions (e.g. heavy snowfalls covering the ground for a long period of time).

Food supply to the geese is one of the measures recommended for the maintenance of the goose population in a certain area, in case of extreme weather conditions. This measure will favour all goose species. The forest services, in collaboration with hunting clubs or NGOs, already implement this measure occasionally.

Priority: Medium

Timetable: Short-term

Feasibility: High

Implementation agency: Ministry for Environment (Information Centres), Regional services (Forest agencies), NGOs, Hunting Clubs

3. Monitoring and research

3.1. Monitoring of the wintering population.

The fluctuations of the Lesser White-fronted Goose populations in Greece depend on several factors, in both its wintering and its foraging sites. Since the trend of the recorded population in Greece appears to be descending, there is a great need for its population to be monitored in the wintering areas and at regular time intervals.

Priority: High

Timetable: Medium-term

Feasibility: High

Implementation agency: NGOs, Ministry for Environment (Information Centres) in collaboration with NGOs

3.2. Regular monitoring of the human activities as well as of the ecological change in the species' wintering sites.

The monitoring of the state of wetlands constitutes one of the major requirements for the direct and effective intervention, wherever a problem is identified. Already, through the Programme Agreements of the Ministry for Environment for the wetlands, at the places where Information Centres are in operation, the projects for the monitoring and

identification of problems, seem to begin to show results, at least in a number of areas. Nevertheless, encouragement is needed to improve efficiency. The collaboration with expert scientists is believed to substantially enhance the effectiveness of these projects.

Priority: High

Timetable: Medium-term

Feasibility: Medium

Implementation agency: Ministry for Environment (Information Centres), NGOs

3.3. Research on the feeding ecology of the Lesser White-fronted Goose.

Research on the feeding ecology of the Lesser White-fronted Goose in its wintering sites in Greece, will provide very useful data on its biology and ecology, which can be utilised for a more effective conservation of the species.

Priority: Medium

Timetable: Medium-term

Feasibility: High

Implementation agency: NGOs, Universities

3.4. Research on the hunting pressure exercised upon the geese, in the feeding or roosting sites of the Lesser White-fronted geese.

The influence of illegal hunting on geese is not known in Greece. Therefore, a specific research would depict this information clearly. Since the Greek bibliography lacks this type of research, it is argued that the results and experience that will emerge from this attempt will also prove beneficial to other bird species.

Priority: Low

Timetable: Long-term

Feasibility: Medium

Implementation agency: NGOs, Hunting clubs, Ministry for Agriculture, Regional services (Forest agencies)

3.5. Performance of a study on the management of animal farming in the wintering areas of the Lesser White-fronted Goose.

Studies of this type will increase comprehension of the animal farming affairs and of its influence on the grazing areas, which are also feeding sites for the species. These studies must account for nature conservation, and in particular, for the conservation of the geese.

Priority: Medium

Timetable: Medium-term

Feasibility: Medium

Implementation agency: Universities

4. Information and awareness

4.1. Promotion of the policy for information and awareness of wetland users (in particular of farmers), but also of decision - makers with regard to wetlands where the Lesser White-fronted Goose winters.

Priority: Medium

Timetable: Medium-term (partly under implementation)

Feasibility: High

Implementation agency: NGOs, Ministry for Environment (Information Centres)

4.2. Promotion of the policy for information, collaboration and training of the staff of the Information Centres of the Ministry for Environment (or of other similar information Centres) that are involved with guarding - protection of wetlands.

Priority: Medium

Timetable: Medium-term (partly under implementation)

Feasibility: High

Implementation agency: NGOs

PART III

PROPOSED ACTIONS AND ACTIVITIES PER AREA

EVROS DELTA

Policy and legislation

1.1.2. Establishment of specific rules for the development of ecotourism activities. 1.2./3.1. Further research on the species locally, with the co-operation of scientific agencies or NGOs from Bulgaria and Romania.

1.1.4. Examination of the possible utilisation of the opportunities provided by the Common Agricultural Policy for the implementation of measures such as the conversion of crop land into wet meadows or grazing land, decrease of the density of grazing animals etc. in the areas around or near the lagoons of Drana and Paloukia.

Conservation of the species and of its habitats

2.1./1.1.1. Range management within the delta (especially of range fields around the lagoons of Drana and Paloukia) in a way which favours the Lesser White-fronted Goose, and which will be defined after specific research. Any restriction or drainage of the range fields and the marshes of the western part of the delta (area of Antheia marshes), should never be considered.

2.3. Enhancement of the wardening in order to restrict activities such as illegal hunting.

2.4. Food supply to the geese (wheat or corn) in case of prolonged snowfalls.

Monitoring and research

3.2. Monitoring of human activities and of their impact on the foraging or resting habitats of the species.

3.3. Preparation of a study on the feeding habits of the species. 3.4. Preparation of a study on the hunting pressure exercised in the area and on the degree this pressure affects the Lesser White-fronted Goose. 3.5. Preparation of a study for the management of animal farming, which will endorse the requirements of the Lesser White-fronted Goose.

Information and public awareness

4.2. Collaboration with the staff of the Information Centre, on issues related to the supply of information about the status of the Lesser White-fronted Goose locally, to environmental quality monitoring and to the reporting of the wetland's problems to the competent services.

LAKE ISMARIS

Policy and legislation

1.1.3. Performance of a research to determine whether or not any crop damage is caused by the species and the geese in general, assessment of the possible damage and identification of a way to resolve this problem.

1.1.4. Examination of the potential utilisation of the opportunities provided by the Common Agricultural Policy, for the implementation of measures such as management of abandoned agricultural land, set - aside etc. in the areas around lake Ismaris.

Conservation of the species and of its habitats

2.2. Restoration of the wet meadows in the eastern part of lake Vistonis and rejection of any further attempt to drain them.

2.3. Prohibition of vehicle access to the eastern dyke, in order to reduce disturbance of the avifauna and particularly of the Lesser White-fronted Goose.

2.3. Enhancement of the wardening in the areas adjacent to the lake, in order to restrict illegal hunting.

Monitoring and research

3.2. Monitoring of human activities and their impact on the foraging or resting habitats of the species.

LAKE KERKINI

Policy and legislation

1.1.1./2.1. Abolishment of the plan for the elevation of the lake water level and saving of water through works for the improvement of the irrigation networks' efficiency. 1.2./3.1. Further research on the species locally, in co-operation with scientific agencies or NGOs from Bulgaria and Romania

Conservation of the species and of its habitats

2.3. Enhancement of wardening in order to restrict activities such as illegal hunting.

2.4. Food supply to the geese (corn or wheat) in case of prolonged snowfalls.

Monitoring and research

3.2. Monitoring of human activities and of their impact on the foraging or resting habitats of the species.

3.3. Preparation of a study on the feeding ecology of the species.

3.5. Preparation of a study for the management of animal farming, which will endorse the requirements of the Lesser White-fronted Goose.

Information and public awareness

4.2. Collaboration with the staff of the Information Centre, on issues related to the supply of information about the status of the Lesser White-fronted Goose locally, to environmental quality monitoring and to the reporting of the wetland's problems to the competent services.

PART IV

DISSEMINATION AND PROMOTION OF THE NATIONAL ACTION PLAN FOR THE LESSER WHITE - FRONTED GOOSE

A prerequisite for the effective implementation progress of the National Action Plan for the Lesser White-fronted Goose is its widest possible dissemination.

This publication is addressed to the civil services involved in managerial aspects of the natural environment and more specifically of wetlands, local bodies, University departments and NGOs. All the above, to a greater or lesser degree, make decisions about wetlands, implement various projects, prepare studies upon the species or more generally, upon wetlands. The integration of certain of the proposals included in the present Action Plan within future decisions or projects and activities of the above bodies, will definitely constitute an important step towards the conservation of the species. In particular, the possibility of the herein included proposals to be integrated in the imminent Presidential Decrees or other legislative regulations.

The co-operation of all involved bodies (as suggested under “Implementation agency”) is thought as particularly useful, if not necessary and is expected to play a substantial role in the effective implementation of the National Action Plan.

The implementation and progress of the National Action Plan must be systematically reviewed at least every five years. The Hellenic Ornithological Society and the World Wide Fund for Nature (WWF – Greece), are recommended as the appropriate bodies for undertaking the supervision of the implementation of the National Action Plan. It is moreover proposed that the above NGOs update the Action Plan at least every five years. In case of considerable change in the habitats of the species, which may adversely affect the wintering population in Greece, immediate response of the two aforementioned NGOs is required, in order to look through and try to resolve that problem.

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