"Water buffalo (*Bubalus bubalis*) grazing as a method of restoring wet meadows at Lake Mikri Prespa (a Greek Ramsar Wetland)"

Yannis Kazoglou, Society for the Protection of Prespa, 53077 Agios Germanos, Greece, y.kazoglou@spp.gr

June 2005

Introduction

Lake Mikri Prespa is a Wetland of International Importance located on the frontiers of Greece and Albania. Its surface area in Greece is 43.5 km^2 (47.4 km^2 in total), of which 6 km^2 are covered by reedbeds dominated by reeds (*Phragmites australis*) with *Typha angustifolia*. During recent decades, lack of traditional management, such as grazing, cutting and burning in the littoral zone, has led to the expansion of the reedbeds towards the wet meadow areas of the lakeshore. These are meadows covered by low-growing herbaceous plant species on soils which are periodically flooded or saturated with water for part of the year. Wet meadows play an important role in the lake ecosystem because they are used as spawning grounds for phytophilous and litho-phytophilous fish species, as feeding grounds by water birds, support large numbers of invertebrate organisms and are utilised by amphibians, reptiles and mammals. Their existence depends on the frequency, timing and type of management of the littoral vegetation and on the management of water levels. The total wet meadow area at Lake Mikri Prespa radically decreased from 129 ha in 1945 to 89 ha in 1989 and was down to only 33 ha in 2000. The Society for the Protection (SPP) is a locally-based non governmental organization, which was established in 1991 and one of its main objectives is the restoration and maintenance of wet meadows at the littoral zone. The aim of the present work is to briefly present the activities that have taken place towards the attainment of that target with emphasis on the use of water buffaloes as a management tool.

Activities

For the SPP, the period 1991-1996 was the preparatory phase for the implementation of onsite measures. In these initial efforts and until today, the SPP received substantial assistance by its member organisations (including WWF-Greece, the Station biologique de la Tour du Valat and the Royal Society for the Protection of Birds).

From 1997 to 2001, the SPP accomplished the following actions:

- An experiment with 5 adult water buffaloes grazing on a littoral site dominated by reeds. Buffaloes, as well as summer cutting, proved to be very efficient in controlling high emergent helophytes to the benefit of wet meadow-dependent fauna.
- Production of a management plan for the restoration and management of wet meadows (the only one of its kind that has been officially approved by the relevant forestry services).
- Production of a study on the determination of the fluctuation of the water level of Lake Mikri Prespa (its objective was to find a water level fluctuation scenario that maximizes the surface area of wet meadows while minimizing the loss of low-laying farmland area in the coastal zone). This document is accompanied by detailed topographical maps and provides consistent information on the amount of areas of wet meadows existing under three different water level maxima in relation to the farmland negatively affected by the same water level conditions.
- Preparation of a project proposal, which was supported by the Municipality of Prespa, the Regional Administration of Western Macedonia, the Ministries of Agriculture and the

Environment, submitted for funding to the European Commission in September 2001 in the framework of the LIFE Nature project.

The proposal was approved with the project titled "Conservation of Priority Bird Species at Lake Mikri Prespa, Greece" and its implementation started in July 2002 with the following main actions:

- Compilation of a hydro-geological and technical study for the re-construction of the sluice connecting the two Prespa Lakes and of a management plan for the operation of the new sluice (*actions already accomplished*).
- Construction of a new sluice to efficiently control the water level (*already accomplished*).
- Management of the reedbed vegetation by grazing (40 buffaloes and 70 cattle) and cutting aiming at tripling the wet meadows surface area (*ongoing activities*).
- Monitoring of the vegetation at the managed sites (*ongoing activity*).
- Monitoring the bird use of the managed sites and recording of Dalmatian pelican and Pygmy cormorant colonies (*ongoing activities*).
- Public awareness, wardening, dissemination of results and networking with other LIFE Nature projects implemented at Greek Ramsar sites (*ongoing activities*).

Results and thoughts for future activities

Based on the (so far) available data from the vegetation monitoring program, it was proved that buffalo grazing is significantly (with statistically important differences) more effective than the two other methods used for controlling reed structural characteristics (density, height and basal diameter) [a) summer cutting of reeds followed by grazing and b) summer cutting of reeds followed by autumn cutting]. Moreover, buffalo grazing creates diverse micro-habitats of vital importance for birds, amphibians, fish and other aquatic fauna. Very recently, through the SPP bird monitoring program, the re-breeding of Glossy Ibises (*Plegadis falcinellus*) after 35 years was confirmed. The birds were often seen feeding in grazed sites and their re-breeding in Prespa may well be related to the ongoing restoration of wet meadows. Thus, it is evident that the management of wet meadows at Lake Mikri Prespa must be continued and expanded primarily by means of practicing well-monitored buffalo grazing.

The SPP is currently organizing the near-future activities, as the LIFE project approaches its end (June 2006). The preservation of water buffaloes in the area is of priority for many reasons:

- Continuation of conservation management of the littoral zone by means of well-implemented stock-breeding. The benefits of this action affect wildlife at the global level, namely the recently established Trans-boundary Prespa Park (including the Prespa areas in Albania, Greece and the FYR of Macedonia).
- Production of high quality products of increasing market demand, an action that could potentially cover (fully or partially) the cost of the nature conservation management program.
- Differentiation of local stock-breeding practices in an area where sheep and goats breeding, as well as cattle-breeding in the mountainous regions are the main practises.
- Cultural purposes (buffaloes were present at Prespa until the mid '60s and, as in most wetland areas of central and northern Greece, were the most reliable companions of the inhabitants).