THE GOULANDRIS NATURAL HISTORY MUSEUM
GREEK BIOTOPE/WETLAND CENTRE

Prospects and Progress of the National Wetlands Inventory in Greece

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Contribution from EKBY to the XXXV th Meeting of the IWRB.
Executive Board Meeting and Technical Workshops, 12-19 November 1992,
St. Petersburg, Florida, USA.

November 1992

PROSPECTS AND PROGRESS OF THE NATIONAL WETLANDS INVENTORY IN GREECE

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ABSTRACT

In 1992, the Greek Biotope/Wetland Centre undertook a project to design and conduct an inventory of Greek wetlands. The reasons for initiating this effort were: a) to monitor the status and trends of Greek wetlands, b) to be able to widely disseminate scientific information on the characteristics and area of Greek wetlands, and c) to support, protect and conserve these important resources.

The long term goal is to develop a comprehensive database concerning the number, area, functions, and important characteristics of Greek wetlands, as well as the pressures threatening them. It was clear that this database had to be compatible with other databases worldwide. Thus the Ramsar Convention's Wetland Information Sheet was used as a basis, being subsequently modified and simplified to meet local requirements.

The aim of the first phase of the project, in 1992, was to obtain information from people involved with Greek wetlands. The aim of the second phase is to formate this information in to a publishable form. The Ministries of Environment and Agriculture and the nature oriented Non-Governmental Organizations (NGO) of Greece are the main networks through which raw data are being collected. Care was taken to make the questionnaire relatively simple and easy to be answered through these networks.

In the second phase, a committee of wetland scientists appointed by the Greek Wetland Centre will cross-check the reliability of the raw data and subsequently complete a detailed data sheet for each site. The same committee will also draw general conclusions and assist in the drafting of a report on the status of Greek Wetlands in 1992.

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INTRODUCTION

A reliable record which accurately inventorizes the abiotic and biotic characteristics of the nation's wetlands does not exist in Greece, despite a few noteworthy and commendable efforts which attempted to document Greek wetlands in a systematic manner.

Efforts to record Greek lakes and rivers of significant size were made many years ago by the Army Geographical Service, and the results have been published recently by the Greek National Statistical Service (1987). The first document which includes 115 wetlands of very variable size and importance was made by Dorikos (1981). This document, despite the fact that it contains only raw data provided mostly by non-specialists without any subsequent checking by professionals, remains a very useful source of information.

Efforts to register biotopes which include some important wetlands have been published by Hallmann (1982), and by the CORINE project (Commission of the European Communities 1988). Other studies which include ecologically important wetlands, mainly from an ornithological point of view, have been conducted by Handrinos (1987), Jerrentrup et al. (1988), Kourteli and Economou (1990), and the participants of a workshop held in Thessaloniki in 1989 (Gerakis, ed. 1990). Geomorphological data for the deltas of the larger rivers of Greece are given by Psilovikos (1990). In addition, data for specific wetlands are given by Economidou (1981), Pergantis (1988), Malakou (1990), and Magioris (1990). Probably the most extensive list (with regard to number) of Greek wetlands was compiled by Tsiouris and Gerakis (1991), but the fact it was based on data provided by the above studies and personal communications made the authors suggest that the reliability of their list needed to be thoroughly checked by a specific project.

It is obvious from this literature review that verification of the total number and precise location of Greek wetlands will require much further work. Also, with the exception of the eleven Ramsar sites, plus a few other large wetlands, there is very little information on characteristics, functions, values, and threats. No systematic attempt has been made to build on Dorikos' (1981) effort, and thus a gap remains in the Greek literature on this subject. The same is true for the threats on Greek wetlands. Before 1992, more or less regular reports on threats were available only for the Evros Delta, the Nestos Delta, the Axios-Loudias-Aliakmon Delta, Lake Mikri Prespa, the Gulf of Amvrakikos and the Mesolonghi Lagoon. A collective effort to assess threats and changes was made during a workshop in Thessaloniki in 1989 (Gerakis 1990). A national review of the status of the Greek wetlands was prepared by Papayannis (1989) based mainly on the Ramsar Sites, while other reports (e.g. Malakou et. al. 1988) referred only to regional wetlands. Other recent ongoing studies contain precise and up-to-date first hand information on ecological changes and threats on large wetlands (e.g. Pyrovetsi 1990). No published document lists all the agencies and persons who are working in the field of wetland conservation.

From the above, it became clear that along with the establishment of the Greek Biotope/Wetland Centre, a consistent and a long term effort should be undertaken not only to fill the existing gaps, but also to both generate and disseminate scientific information on the characteristics and area of the nation's wetlands. This information should present to a wide audience of decision makers, scientists, and the public, the whole biological and economic capital that Greek wetlands represent and provide arguments for their wise use.

Initially our intent was to have three different projects: a) to document all Greek wetlands and their characteristics in 1992, b) to evaluate the status of Greek wetlands, and c) to list all positive actions taking place in Greek wetlands. Soon we realized that it was preferable to combine all these projects into one. This way people

would have to answer only one questionnaire, and also the compilation of the results would be more efficient.

The goals of this database that the Greek Wetland Centre intends to establish should both suit the requirements posed by the Greek conditions and answer the specific questions that will help the Centre to better fulfil its mission, that is to help arrest and reverse the loss and degradation of the Greek wetlands. The aims of this project on Greek wetlands are: a) to inventorize all existing and lost wetlands b) to list all characteristics, functions, values, threats, and positive conservation actions, and c) to create a concise database of the above.

MATERIALS AND PROCEDURES

The procedure which was followed in order to carry out this project consists of seven basic steps. Each step is associated with a timetable and budget. The seven steps are: a) design of questionnaire, b) distribution of questionnaires, c) return of questionnaires, d) check and compilation of the questionnaires by a team of experts, e) construction of a database, f) input of data to the database, and g) preparation, publication and distribution of the final report on the inventory of Greek wetlands.

The first step was the design of the questionnaire in relation to the aims of the project. The questionnaire was designed on the assumption that the people who would answer it were not experts in this field. Thus, the questionnaire (Table 1) had to meet five requirements: a) to be easily understood, b) to be easily answered, c) to easily transfer data to other questionnaires used at an international level, d) to be as little time consuming to complete as possible, and e) to be formatted in such a way that data input to a database will be relatively easy. To meet requirements (a) and (b) the questionnaire had to be simple. For example, the wetland classification system used was a simple one. Data on the flora and fauna were asked only when they were easily available. The size of the questionnaire was not to exceed four pages in order to avoid invoking negative feelings in the recipients in relation to the amount of time invested. Instructions to the recipients were restricted to only those which were absolutely necessary.

People can relate more easily to potential uses, which can be expressed as values, than to functions. Thus, in this questionnaire we decided to ask people to report the values of wetlands and then to separately list those values which are being utilized through different intensities of uses today. From the latter it is possible to extract information on changes in resource use.

The next requirement for the design of the questionnaire was for the results to be easily transferable to other questionnaires, such as the one used by the Ramsar Bureau, in order to assist the Ministry of Environment in updating the information which it is required to provide periodically to the Ramsar Database.

As a result, we decided to use the Ramsar Wetland Information Sheet as the basis for constructing our own data sheet. Due to our requirements, this questionnaire had to be a simpler and shorter version of the Ramsar questionnaire, and, at the same time, able to answer the questions set by the goals of the project. The questionnaire was designed keeping in mind that the compiled answers would be inserted into a database. Thus, the questions were formatted in such a way that they could not only be easily answered, but also so that the process of digitizing the data would not be very laborious.

As previously mentioned, one of the aims of the project was to list all positive conservation actions taking place in Greek wetlands. The pertinent question was intended to register all positive actions (and their initiators) which are taking place or envisaged to take place at each wetland. This information can be used in helping to coordinate efforts undertaken by different public or private agencies or individuals. Through such coordination, which can only be achieved after all such actions and their initiators, have been documented, it is possible both to strengthen the actions taken to protect wetlands, thus multiplying the output of the Greek Biotope/Wetland Centre and to avoid wasteful duplication of efforts.

The second step taken in this project was to properly distribute the questionnaire to the relevant agencies and persons. It was preferable to have answers from more than one source for each site in order to assess the reliability of the results. At the same time, we aimed to establish collaboration with two active groups of people, namely the public administration officials and the Greek NGOs. Thus, the Centre cooperated very closely with the Ministries of Environment and Agriculture. The

Centre also used the lines of communication with the NGOs which were established by its office of Public Awareness and Education. The questionnaire was distributed to all Greek NGOs and to all the regional officers of the Ministries of Environment and Agriculture. The distribution to the regional officers of the Ministry of Environment was accompanied by a covering letter from the Ministry's headquarters advising them to promptly reply to the questionnaire. This letter was very useful indeed because it provided a means for the Centre to officially contract all the officers from the Ministry of Environment who are working in the Prefectures, thus establishing a valuable network; these officers were informed of the Centre's operation. In addition, the Centre constantly keeps in touch with both Greek NGOs and regional officers from the Ministry of Environment in order to ensure the proper return of the questionnaires.

The filled questionnaires will be cross-checked before data inputting by a team consisting of eight wetland scientists who have specific experience in the different regions of Greece.

The database should meet four requirements: a) compatible with other databases, b) user friendly, c) concise, and d) suitable to communicate with Geographical Information Systems (G.I.S.).

Following our personal communication with Mr. Tim Jones (IWRB/Ramsar Liaison Officer), our initial plans were to use DBase (DB III) to insert the compiled data from the questionnaire. We soon realized that the fields provided by DB III were too small to input answers from some of the questions. In addition, DB III does not allow the questions to be written in Greek and thus the second requirement (user friendly) could not be met. Thus, we decided to custom-make a database in "clipper", which can accept Greek (and thus would be user friendly) and at the same time is fully compatible with both DB III and G.I.S. Another factor which was taken into

consideration when we constructed the database was to be able to quantify some of the results in order to be able to draw some conclusions on the status of wetlands. Thus, wherever a ranking scale was given in the questionnaire, numbers were assigned to these scales so that results could be summed in order to obtain an indication of the magnitude of the parameter under question at national level.

RESULTS

Despite the fact that there was delay in the return of questionnaires, the return rate so far has been satisfactory. The collaboration with both the Ministry of Environment and the Ministry of Agriculture was excellent and the Centre has had the opportunity through this project to establish two valuable networks within the public administration, which can significantly contribute to the cause of wetland conservation. The response of the Greek NGOs was positive (although variable), the questionnaire providing them with an opportunity to thoroughly investigate the wetlands situated within their areas of operation. Overall, the establishment of Government agency and NGO networks, and the improved communication of these bodies through the Centre, are major contributions from this project towards wetland conservation in Greece.

The most up-to-date information on Greek wetlands has started to accumulate at the Centre's library in both written and computerized forms. This provides all interested government agencies, NGOs individuals and for the first time with such a useful facility where they can have easy, user-friendly access to all this information.

Finally, all this information will provide the Greek Wetland Centre an overview of the wetland situation which can be used to: a) review and revise curent wetland conservation and priorities, b) develop coordinated initiatives on conservation of wetlands, c) plan the specific actions required at each wetland to avoid any further losses or degradation, d) review the specific reasons which caused adverse effects on wetlands, e) identify existing gaps in the available information and set priorities for research and actions, and f) monitor the extent of wetland changes in Greece.

FUTURE DEVELOPMENTS

A subproject to digitize existing information using G.I.S. started as a pilot study in November 1992. As a first approach, all the wetlands of Greece will be classified in the same manner as in the questionnaire, and their geographical coordinates will be depicted on a base map, which includes the administrative boundaries of Greece. The wetlands will be presented on the map as dots whose size is proportional to wetland area. Furthermore, the eleven Ramsar sites and their representative area maps will be presented on the same base map. Finally, one Ramsar site will be selected for which different levels of data will be digitized. The final step of the subproject will be to set the specifications to the format of a management plan which will be carried out with the help of G.I.S. This pilot project has been initiated in collaboration with the Greek Association of Land Surveyors. The feasibility of starting a large project on the mapping of Greek wetlands will be examined.

There are plans to develop more detailed inventories for special groups of wetlands types. Thus, in addition to the eleven Ramsar sites, a more elaborate inventory may be conducted for a) salt works of Greece, b) wetlands with potential for restoration, and c) wetlands from mining activities.

The relationship of this project to other projects executed either by the Centre (i.e. monitoring of wetlands) or by other international agencies (e.g. the Ramsar Bureau), such as the CEC MedWet project, is being considered. Regarding the interface between this and other projects run by the Centre, we see this project as being a pivotal point which both receives and transmits information. For instance, the monitoring project can plan its activities based on the information provided by the inventory project, including decisions on the frequency of the field data acquisition. The collaboration with the IWRB and Ramsar Bureau has been close and will

REFERENCES

Commission of European Communities (CEC). 1988. CORINE biotopes: Greece. Jan. 1988. CEC DG IX. 174 p.

Dorikos, S. 1981. Basic wetlands of Greece. Ministry of Coordination. Service for Physical Planning and Environment. Athens. 400 pp. (in Greek).

National Statistical Service of Greece. 1987. Statistical yearbook of Greece. Athens.

Hallmann, B. 1982. Important bird areas of the European Community (Preliminary list of important bird areas in Greece). International Council for Bird Preservation.

Handrinos, G. 1987. Inventory of wetlands of international importance in Greece. Report to IWRB. Hellenic Ornithol. Soc., Athens.

Heliotis, F.D. 1988. An inventory and review of the wetland resources of Greece. Wetlands 8:15-31.

Jerrentrup, H., M. Gaethlich, A.H. Joensen, H. Nohr, and S. Brogger - Jensen. 1988. Urgent action plan to safeguard three endangered bird species in Greece and EC. Rep. to CEC-DG XI. Copenhagen.

Kourteli, C., and A. Economou. 1990. Concise description of the ecologically more important Greek wetlands. pp. 231-254. In P.A. Gerakis (ed.). Conservation and management of Greek wetlands. Proceedings of the Workshop held in Thessaloniki, Greece, 17-21 April, 1989. WWF, IUCN, Lab. of Ecology Aristotle University. Thessaloniki, Greece.

Malakou, M., H. Jerrentrup, A.Kyriazi, D. Hatzantonis and E. Papayannakis. 1988. Integrated management of coastal wetlands of the Mediterranean type: Northern Greece. Report prepared for CEC (DG XI). Panorama Cultural Soc., Athens. 108 p.

Economidou, E. 1981. National project for managing coastal areas. Coastal biotopes. Vol. 1. Ministry of Coordination, National Council of Physical Planning and Environment. Athens, Greece (in Greek).

Papayannis, T. 1989. Greek wetlands: Factors of change. Proceedings of the Workshop held in Thessaloniki, Greece, 17-21 April, 1989. WWF, IUCN, Lab. of Ecology Aristotle University, Thessaloniki, Greece.

Psilovikos, A. 1990. Changes in Greek wetlands during the 20th century: The cases of Macedonian inland waters and of the river deltas of Aegean and Ionian comsts. pp. 179-205. P.A. Gerakis (ed.). Conservation and management of Greek wetlands. Proceedings of the Workshop held in Thessaloniki, Greece, 17-21 Apr., 1989. WWF, IUCN, Lab. of Ecology Aristotle University. Thessaloniki, Greece.

Pyrovetsi, Myrto D. 1990. Management and conservation of the biotopes of Dalmatian pelicans (*Pelecanus crispus*) in Northern Greece. CEC (DG XI) and Aristotle University of Thessaloniki. 145 p. + Annexes. (In Greek)

Tsiouris, S.E. and P.A. Gerakis. 1991. Wetlands of Greece: values, alterations, conservation. WWF, IUCN, Lab. of Ecology and Environmental Protection, Aristotle University. Thessaloniki, Greece. 96 p. (In Greek)

TABLE 1

THE GOULANDRIS NATURAL HISTORY MUSEUM
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Phones: (031) 471.795
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INVENTORY OF GREEK WETLANDS*

Questionnaire of wetland site

1. Date:

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2. Name, address and phone number of compiler:

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3. Name(s) of wetland:

(If known give the geographical coordinates of the centre of the designated site)

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4. Wetland type. *(Mark with X's)*

Delta	____
Freshwater lake	____
Saline lagoon	____
River/stream/creek	____
Spring	____
Marsh	____
Constructed wetland	____
Other:	____

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5. a. Location *(compass bearing and distance (in km in a straight line) of the wetland from the nearest significant town or city):*

   b. Altitude:

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6. Area (in ha): Approximate
   from..... to.....

   List your sources of estimation

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* **Please answer only those questions you know best. Attach more pages if you need more space. The answers can be typed or handwritten.**

7. Threats (*Assign with an X*):

THREATS	Big	Medium	Small	Non-existing	Unknown	Source of information and other comments
A. Pollution from:						
Municipal waste water						
Municipal solid wastes						
Industrial waste water						
Industrial solid wastes						
Farm animal wastes						
Other sources (describe)						
B. Changes due to:						
Drainage and land reclamation						
Sand extraction						
Siltation and/or soil topping						
Building of new housing facilities or expansion of old ones						
Establishment of new touristic facilities or expansion of old ones						
Diversion of surface water supplies entering the wetland						
Overpumping of ground water						
Dam and other hydraulic constructions						
Establishment of irrigation schemes and/or expansion of old ones						
Expansion of farming						
Intensive aquaculture						
Illegal hunting						
Overfishing						
Overgrazing						
Other reasons (describe)						

8. If known, list some of the species (Greek names) which exist in the wetland:

	Flora	Fauna
Rare		
Common		

9. List the most important values of the wetland for the local people and indicate those which are used today *(Mark with an X)*

Value	Scale					Intensiveness of use	
	Big	Medium	Small	Non-existing	Unknown	Intensive	Extensive
Drinking water							
Irrigation water							
Fishing							
Grazing							
Recreation							
Hunting							
Environmental education							
Others (*List them*)							

10. List the changes in resource use in the wetland area and major projects *(i.e. dams, intensive aquaculture installation, food processing plants, hotels, irrigation schemes)* which are planned for the future and the agencies involved *(public corporations, cooperatives, municipalities, private corporations)*:

11. Are any conservation measures taken or proposed for the wetland? Briefly outline your proposal.

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12. Outline map of site with the specific scale given.

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13. List all positive actions and their sponsors (CEC, NGOs, institutes, public or private corporations, individuals), which took place or are envisioned to take place in order to protect the wetland.

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14. List (only the names) of the prefecture's other wetlands.

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15. List all the prefecture's wetlands which have been drained. Which of those could be restored?

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16. List all persons and groups who have studied the wetland, especially its conservation aspects.

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17. List whatever additional information you think is relevant *(i.e. historical data, cultural and social values or other features)*