

The necessity of political will in fungal conservation: the case of Greece

Stephanos Diamandis

NAGREF-Forest Research Institute, 570 06 Vassilika, Thessaloniki, Greece (e-mail: diamandi@fri.gr)

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Abstract. The need for conservation of fungi in Europe has arisen after it was found in several countries that hundreds of fungal species have become extinct. Although Greece is located at the southernmost end of Europe in the Eastern Mediterranean, in a climatic zone characterized by long periods of drought, its mycota appear quite rich and unique. In recent years, Greek and also foreign companies have been picking enormous quantities of edible mushrooms from restricted geographical regions on a commercial level. There is no legislation as yet to monitor this new activity and to certify the mushrooms that are consumed by the public. After studying this situation, a technical committee submitted a proposal in 2007 for legislation to be introduced in order to protect the public from possible mushroom poisoning and also to regulate mushroom picking in an effort to conserve the fungal biodiversity. Sadly, the proposal has not been forwarded accordingly, the reason being “it was opposed by commercial interests”. It is concluded that in addition to having an integrated and sound scientific proposal on the subject, political will is also necessary.

Key words: conservation, legislation, mycota

Introduction

Although Greece is located at the southernmost end of Europe in the Eastern Mediterranean, in a climatic zone characterized by long periods of drought, its mycota appear quite rich and unique in endemic species. A great variety of ecosystems, from the coastline to the high mountains, create habitats which host a remarkable number of fungal species. Over 3,000 species of macromycetes have been recorded up to now. The number of recorded micromycetes, however, is still rather limited and restricted to pathogenic species which are dealt with mainly by plant pathologists.

People in the countryside have always picked edible mushrooms for their own consumption. Greece has five mycological societies that have a few hundred members each. These societies contribute significantly to the study of macromycetes and to the promotion of mushroom loving but not much towards the conservation of mushrooms. It has been stated that mushroom picking by amateurs does not threaten fungal species (Arnolds 1988). What is most

worrying, however, in Greece is that in recent years Greek and also foreign companies have been picking enormous quantities of mushrooms from restricted geographical regions on the commercial level. The Forest Service, as the accepted authority responsible for the management of this natural resource, stands unable to monitor this new activity because of a lack of legislation. Wild mushrooms are sold in shops and served in restaurants in certain parts of the country without any previous certification. Mushroom poisoning incidents are frequent, especially among emigrant pickers.

Loss of habitats is a major issue in conservation of species. Their protection can be achieved only if there is an integrated, long term environmental policy expressed by the state that also relies on education and sensitivity of the population. Hedgerows in agricultural areas, for instance, play an important role as oases of biodiversity. In certain agricultural areas of the country, farming procedures such as burning of cereal straw in order to clear the fields before plowing has resulted in the disappearance of hedgerows. The burning of vast agricultural areas is surely a waste of biomass which

could be exploited in more useful ways and also contributes to CO₂ emission in the environment. None of the involved Ministries, such as the Ministry of Environment and the Ministry of Rural Development, appear to have any plans to straighten out this agricultural malpractice which has serious negative consequences to conservation of biodiversity.

Of course, many other reasons such as urbanization of the coastal strip, various types of pollution such as atmospheric chemical emissions, pollutants from heavy industry and acid precipitation, and the commercialization of species of fauna and flora, to mention only a few, threaten biodiversity worldwide.

The need for conservation of fungi in Europe has arisen after it was found that hundreds of fungal species in several countries have become extinct. The International Union of Nature Conservation (IUCN) has introduced globally accepted criteria and encourages the production of Red Lists of threatened species, which are increasingly important instruments in national and international nature conservation (Gärdenfors 2005). International conventions which are signed by governments should force them to take action to ensure sustainability and conservation. Such commitments, however, should be verified by international authorities.

Fungal conservation in Greece on the government level, so far, has been entirely neglected. Greece, Ireland and Iceland are the only countries in the EU, and probably in the whole of Europe, which do not have Red Lists of threatened fungi (Senn-Irlet *et al.*, unpubl.). Paradoxically, the smooth function of any ecosystem is related to these small organisms. Soil fertility, for instance, depends on bacteria for nitrogen fixation, and recycling of nutrients from organic matter depends mainly on fungi. Such important processes sustain all agricultural and forest productivity. Furthermore, the good survival and growth of many plants and trees relies on mycorrhizal fungi. Foresters, ecologists and managers recognize that forest productivity, recovery and the stability of forest ecosystems depend on organisms and processes below the ground (Amaranthus 1998). Ectomycorrhizal fungi can improve water and nutrient uptake by trees. They are able to produce enzymes that increase phosphorus and nitrogen availability, protect against root pathogens and environmental extremes and also maintain soil structure and forest food webs (Trappe & Fogel 1977; Amaranthus 1998).

Under the above gloomy conditions for fungal conservation in Greece, it seems that immediate action should be taken on three levels:

1. Mycologists should intensify recording the mycota of Greece, create distribution maps and carry out red listing of threatened species by using IUCN criteria. Based on the above fundamental work, a proposal should be submitted for further action. This is purely the scientific part of the procedure aiming toward conservation.
2. The government should introduce legislation in order to protect the public from possible mushroom poisoning and also to conserve fungal biodiversity before any major disturbance in species and populations occurs. Any such

proposal should be based on scientific data generated nationally and also on international experience.

The appropriate authorities should apply measures for the conservation of the red listed species.

3. On that line, a committee was nominated in 2007 to work on a basic proposal and submit it to the Ministry of Environment for further processing before sending it to the Greek parliament for a final vote. Unfortunately, although the study-proposal was submitted before the end of 2007, it still has not been evaluated and forwarded accordingly, the reason given being "it was opposed by commercial interests".

The content of the proposal in brief

The proposal is based on the Polish and German systems applied for edible mushroom certification. From the financial point of view, it is self supporting and does not need special infrastructure as does the Spanish (Andalusia) system.

The State Forest Service is proposed as the authority to manage mushrooms for the simple reason that the majority of them, by far, grow on forest land and are part of the forest ecosystems.

A short course of training is proposed for those wishing to be professional edible mushroom inspectors. This training will follow a short, approximately 120-hour course which will include basic knowledge on Mycology, Botany, Soil science, Meteorology as well as field training to familiarize the students with carpophores of edible macromycetes. After successful examinations, the students will be awarded a certificate qualifying them as mushroom inspectors. The number of candidates per district will depend upon the interest expressed and the quantities of edible mushrooms picked in each of them.

In their districts, the inspectors will be invited by the local governments to organize short, 6-hour evening seminars in each municipality on mushroom picking which is open to the local public. The seminars will emphasize the importance of fungi in the ecosystem and the need for their conservation. They will teach identification of favorite edible species and also the most dangerous poisonous mushrooms along with the correct way to pick and preserve edible mushrooms. The seminars will also include two field trips for practical training. All those attending will be given a certificate authorizing them as mushroom pickers. Mushroom pickers who intend to pick mushrooms for their own consumption will be issued an annual license by paying a small symbolic fee to the Forest Service whereas professional pickers will be issued their license at a little higher cost. Such training is expected to minimize the risk of mushroom poisoning which is not rare in Greece and increase understanding about conservation of fungi and their habitats.

Private companies which intend to pick mushrooms in a certain area will have to submit an application to the local Forest Service office. The file will also include the geographical

boundaries of the area, the species of fungi to be picked, the quantity, the time period and the names of the professional pickers. The authority will approve the quantity according to the existing data on the capacity of the area and the operation will be monitored by forest rangers. Companies which have picked a certain quantity of edible mushrooms will invite the local mushroom inspectors to inspect and certify the produce. Inspectors will be paid individually by the companies. The certified produce, accompanied by the appropriate documents and safe for the public, will be channeled to the market. This whole process will be supported scientifically by the Universities and Research Institutes dealing with the study of the Greek mycota.

The study-proposal is accompanied by a list of edible species which have been recorded in Greece and are of commercial interest. Each species is described in detail and is accompanied by a photograph. Amateur mushroom pickers should be allowed to pick a total of 3 kg of mushrooms per day.

Unfortunately, the restrictions imposed by the study-proposal were in conflict with private interests and, as a result, the proposal has been halted somewhere in the administrative channels.

It is a general rule that private interests look only to the present and the promotion of their own personal goals. They fail to see future consequences to their actions. It is the duty of the state authorities, with the help of scientists, to look further into the future, create infrastructure and propose measures for conservation. If governments cannot enact appropriate legislation, then biodiversity and sustainability are under threat.

Finally, a clear proposal is cited for immediate Red Listing of threatened species of fungi before the newly developed conditions make things irreversible.

Discussion and conclusion

Greece has been a member of the European Council for the Conservation of Fungi (ECCF) for many years. The foundation of the European Mycological Association (EMA) in 2003 awarded ECCF a major conservation role in Europe

and a platform to intensify its activities. In Greece over the last 20 years there has been increasing interest mainly in edible mushrooms, as seen from the five Mycological societies which have been created. It is unjustifiable for a country famous for its natural environment and its biodiversity to lack a national data base and a Red List of its mycota.

So far the study of fungi is restricted to the personal work of individual mycologists who keep their own data bases. They represent the country in international organizations and inform the national authorities involved in environmental issues. The entire process, however, should start from the top. The Ministry of Environment should have its long term policy on conservation, find its scientists and assign the creation of a national data base and then a Red List. Therefore, it is not surprising that Greece has been left behind its EU partners. Action should be taken right away by policies and not rely on individuals. It is time to express political will and, as a first step, to evaluate and further process the study-proposal which has already been submitted. It is apparent that in addition to having an integrated, sound scientific proposal on conservation, it is necessary to also have political will.

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