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FEATURES

ON THE LEGAL STATUS CONCERNING THE PROTECTION OF AMPHIBIANS AND REPTILES IN GREECE

It is a well known fact that human populations can greatly influence the populations of amphibians and reptiles. For the last 15 years European research has verified that there has been a dramatic decline in amphibian populations, which varies in different ecosystems (Honegger 1978). According to Stumpel & Podlousky (1984) the amphibians and reptiles have a small radius of action, and accordingly, a smaller habitat. This implies that even small-scale human activities can influence these habitats on a large scale.

Amphibians and reptiles are exposed to a wide variety of threats, such as modern agriculture, drainage and flooding and road construction. In addition, chemical pollution of water and soil have negatively affected many species (Heusser 1974; Wermuth 1975; Berger 1987). In response to this, a series of laws and international treaties has been developed to protect certain amphibians and reptiles. This paper presents the legal status of amphibians and reptiles in Greece. Some proposals concerning the improvement and more effective applicability of the existing laws are also presented.

The Greek fauna includes 16 amphibian and 52 reptilian species (Sofianidou 1980, 1988) (Table 1). Greece is considered to have one of the richer herpetofaunal assemblies in Europe due to the large number of species as well as the large populations. However, the destruction of biotopes, as well as the uncontrolled collection and trade of some species, have created many problems (Asimakopoulou 1989).

For the last 15 years, the Greek government has tried to renew the legal status concerning the protection of the environment. The main law for the protection of nature is the N.1650/86. According to it, protected species can be designated by competent ministers. However, amphibians and reptiles are not protected under this law. More comprehensive protection is given by the presidential order 67/80 (Φ.Ε.Κ. Α/23/30-1-81) "for the Protection of the Indigenous Flora and Wild Fauna." It includes 10 amphibians and 38 reptiles (Table 1). Special care is given to marine turtles. Presidential order 617/80 (Φ.Ε.Κ. Α' 163/18-7-80) gives protection to three species: *Caretta caretta*, *Chelonia mydas* and *Dermochelys coriacea*. Two ministerial orders concerning *Caretta caretta* were also published as a result of public pressure: 88208/3723 (Φ.Ε.Κ. Δ' 37/29-1-87) and 18670/777/29-2-88 (Φ.Ε.Κ. Β' 137/10-3-88). These decisions protect the egg-laying beaches in Zakynthos Island.

In addition to these national laws, the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 19-9-83) was signed by Greece and has the power of law after 1-10-83 [law N.1335 (Φ.Ε.Κ. Α'32/14-3-83)]. European Parliament has also published two rules enforced in Greece, as well as in the other countries of European Economic Community (E. E. C.) Rule 3626/82 is for the international trade of endangered species, while rule 3418/83 establishes some procedural matters concerning the application of the former rule. In the appendices of these two rules 9 species are included, which belong to Greek herpetofauna: 3 tortoises, 1 lizard, 3 marine turtles and 1 snake (Table 1).

It is worth mentioning the Ramsar Convention (Convention on Wetlands of International Importance) held at Ramsar, Iran on 2-2-71. In Greece, it is in power, since 1974, with the law N.191/19-11-74 (Φ.Ε.Κ. 350/Α/74). According to this law 13 Greek wetlands of international

interest are protected. This represents an additional, indirect but essential legal protection to the populations of amphibians and reptiles inhabiting these wetlands.

A notable point is that, with the exception of the ministerial decisions for *Caretta caretta*, the laws are much too general. They also do not cover an important part of the Greek herpetofauna. Species that have been classified by the Conservation Committee of S.E.H. as "threatened" (Stumpel & Podlousky 1984) are not included in the appendices of the laws. But the most serious problem is that the laws are not enforced except on some occasions concerning *Caretta caretta* when the laws worked only under the pressure of public opinion. *Caretta caretta* is the most famous reptile species in Greece today and its conservation problems are well known, thanks to the members of "Sea Turtle Protection Society" (Margaritoulis D. 1982, Venisellou E.L. 1987, Arianoutsou M. 1988).

The main reason for this ineffectuality of

laws comes from the lack of information among people, state services and civil authorities. So, the collection of all species for scientific purposes is completely uncontrolled. This happens even in areas with special protection status, such as the national parks and the wetlands included in the Ramsar Convention. It is also a very common phenomenon that tourists collect tortoises for pets or for human consumption and that frogs are taken for the delicatessen trade.

It is also worth mentioning the remarkable and profitable trade in frogs for food in Greece. Every year large quantities of frog legs, fresh or canned, are exported to Western Europe. The collection concerns the species *Rana ridibunda*, *Rana epeirotica* and their hybrids and takes place by agreement of the ministers of Agriculture and commerce. For example, in 1988 the E4/2597/91 3/23-5-88 decision was published which allowed the collection and exportation of 70 tonnes of frogs during the period 1-6-88—31-10-88. The mass of each collected specimen was supposed to be at least 80 g. But the restrictions were very difficult to enforce because of the poor control by the services of Ministry of Agriculture.

From time to time, licences have been also given for collection of small numbers of the tortoises *Testudo graeca* and *Testudo hermani*. Two cases of illegal collection and exportation of these species have been reported. These specimens were returned to Greece thanks to the efforts of customs of Holland.

In view of the above, it follows that there is a need to improve the legal protection of additional amphibians and reptiles in Greece, particularly those species which are included in the appendix of the Conservation Committee of S.E.H. (Stumpel & Podlousky 1984). To be more concrete, a special ministerial order with a complete list of protected amphibians and reptiles must be developed and the N.1650/86 must be activated. That ministerial order must prohibit the collection, trade and destruction of habitats of the species (except on specified occasions) and must also provide penalties for the transgressors.

There is also a strong need to inform all the relevant services (Ministries of Environment, Agriculture, Commerce and Navigation) and the civil authorities about the present laws concerning the protection of amphibians and reptiles. It is also important to alert all involved in the vacation trade that there are laws in force which protect native amphibians and reptiles and that it is illegal to take or export certain taxa.

Yet the real need remains: to make the public sensitive to these matters because public opinion is the only way to achieve strict laws and then to enforce them.

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AMPHIBIA

Salamandridae	
<i>Salamandra salamandra</i>	*
<i>Mertensiella luscani</i>	*
<i>Triturus alpestris</i>	*
<i>Triturus cristatus</i>	
<i>Triturus vulgaris</i>	*
Discoglossidae	
<i>Bombina variegata</i>	
<i>Bombina bombina</i>	
Pelobatidae	
<i>Pelobates syriacus</i>	*
Bufo	
<i>Bufo viridis</i>	*
<i>Bufo bufo</i>	*
Hylidae	
<i>Hyla arborea</i>	*
Ranidae	
<i>Rana dalmatina</i>	*
<i>Rana graeca</i>	*
<i>Rana temporaria</i>	
<i>Rana ridibunda</i>	
<i>Rana epeirotica</i>	

REPTILIA

Testudines	
Testudinidae	
<i>Testudo graeca</i>	* **
<i>Testudo hermani</i>	* **
<i>Testudo marginata</i>	* **
Emydidae	
<i>Emys orbicularis</i>	*
<i>Mauremys caspica</i>	*
Cheloniidae	
<i>Caretta caretta</i>	* **
<i>Chelonia mydas</i>	* **
Dermochelidae	
<i>Dermochelys coriacea</i>	**
Squamata	
Lacertilia	
Gekkonidae	
<i>Cyrtodactylus kotschy</i>	*
<i>Hemidactylus turcicus</i>	*
<i>Tarentola mauritanica</i>	*
Agamidae	
<i>Stellio stellio</i>	*
Chamaeleonidae	
<i>Chamaeleo chamaeleon</i>	* **

Anguidae	
<i>Anguis fragilis</i>	*
<i>Ophisaurus apodus</i>	
Lacertidae	
<i>Algyroides moreoticus</i>	*
<i>Algyroides nigropunctatus</i>	*
<i>Lacerta trilineata</i>	*
<i>Lacerta viridis</i>	*
<i>Lacerta danfordi</i>	
<i>Lacerta graeca</i>	*
<i>Lacerta praticola</i>	
<i>Ophisops elegans</i>	*
<i>Podarcis erhardii</i>	*
<i>Podarcis milensis</i>	*
<i>Podarcis muralis</i>	*
<i>Podarcis peloponnesiaca</i>	*
<i>Podarcis taurica</i>	*
Scincidae	
<i>Ablepharus kitaibeli</i>	
<i>Chalcides ocellatus</i>	*
<i>Mabuya aurata</i>	
<i>Ophiomorus punctatissimus</i>	*
Amphis	
Amphisbaenidae	
<i>Blanus strauchi</i>	
Serpentes	
Typhlopidae	
<i>Typhlops vermicularis</i>	
Boidae	
<i>Eryx jaculus</i>	**
Colubridae	
<i>Coluber gemonensis</i>	*
<i>Coluber jugularis</i>	*
<i>Coluber najadum</i>	*
<i>Coluber ravergieri</i>	
<i>Coluber austriaca</i>	*
<i>Eirenis modestus</i>	
<i>Elaphe quatuorlineata</i>	*
<i>Elaphe longissima</i>	*
<i>Elaphe situla</i>	*
<i>Malpolon monspessulanus</i>	*
<i>Teleoscopus falax</i>	*
<i>Natrix natrix</i>	*
<i>Natrix tessellata</i>	*
Viperidae	
<i>Vipera ammodytes</i>	*
<i>Vipera lebetina</i>	*
<i>Vipera xanthina</i>	
<i>Vipera berus</i>	

Table 1. List of the amphibian and reptilian species of Greece. The mark (*) shows the species included in presidential order 67/80, while the mark (**) shows those protected by E.E.C. rules.

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**ALEGRA FILIO and
ASIMAKOPOULOS BYRON**
Laboratory of Zoology
Aristotelian University
54006 Thessaloniki, Greece

HELMINTH PARASITES INDICATE PREDATOR-PREY RELATIONSHIPS IN DESMOGNATHINE SALAMANDERS

Many ecologists overlook the potential for using the presence or absence of helminth parasites as biological indicators of trophic interactions between free-living animals. Many helminth species have complex life cycles and commonly exploit food web relationships, particularly predator-prey interactions, to effect their transmission. Consequently, the presence of certain parasites can provide valuable information on the feeding habits and patterns of habitat use of their hosts. In this report I review information on larval helminth parasitism that indicates predator-prey relationships involving desmognathine salamanders in mountain streams of the southeastern United States. In addition, new data are presented relating parasite transmission dynamics to features of desmognathine ecology.

Leurognathus marmoratus, *Desmognathus quadramaculatus*, *D. monticola* and *D. ochrophaeus* form a series, inhabiting an ecological gradient spanning aquatic to terrestrial