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Preliminary List of Amphibians and Reptiles of the Mediterranean Region, Known or Considered to be Threatened

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PRELIMINARY LIST OF AMPHIBIANS AND REPTILES OF THE MEDITERRANEAN REGION, KNOWN OR CONSIDERED TO BE THREATENED

BY

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INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

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INTRODUCTION

Information base:

These data were compiled through literature research and personal correspondence with various specialists throughout the area covered. Full references are given in each case.

It is evident that there are great gaps in knowledge and information, especially from the following countries:

Albania, Algeria, Cyprus, Egypt, Greece, Lebanon, Libya, Malta, Monaco, Syria, Tunisia, Turkey, Yugoslavia.

Present situation:

The conservation situation of many species considered in this report looks bleak. One species especially threatened is the marine turtle;this species does not only suffer from the destruction of the beaches where it lays its eggs, but also by the pursuit of its shell for the tourist industry.

Several species of snakes are also threatened by persecution. The status of the various amphibian species is threatened at least at the regional level owing to the heavy pollution of their breeding ponds.

Action required:

The establishment of as many reserves as possible for mammals and birds in a large diversity of habitats will also be beneficial to amphibians and reptiles. Besides these general reserves, the establishment of specific reserves are necessary and can only be achieved by taking into account local scientific advice.

The beaches used by the marine turtle during the egg-laying season need to be closed during this particular period, and the eggs need to be protected until the young are hatched.

By far the most important action is the education of the people living in the area and the tourists who visit it. Enforcement of existing international conventions, such as CITES, for the international trade in live tortoises and souvenirs made of turtle-shell from the countries of origin.

As influences of the various pesticides and herbicides on amphibians and reptiles are not understood, applied research is necessary to acquire a better understanding of the obvious decline of some insectivorous lizard species.

CONCLUSION

Almost all species of amphibians and reptiles are under some kind of threat, either from the destruction of their habitats, influence of misuse of biocides or because they are killed for the luxury food industry, tourist souvenirs or owing to superstitious beliefs.

Education of the general public and the decision makers is most important;the setting up of specific reserves essential.

Legal protection alone is not sufficient, however existing conventions such as CITES must be enforced.

R.E. Honegger
April 1980

THREATENED AMPHIBIANS AND REPTILES IN MARINE AND COASTAL AREAS OF THE MEDITERRANEAN AND EUROPEAN LISTS OF THREATENED TAXA

1. AMPHIBIANS AND REPTILES CONSIDERED TO BE THREATENED THROUGHOUT THEIR RANGE

I	Salamandrina terdigitata Spectacled salamander Italy	(Lacépède, 1788) mountainsides and nearby streams
I	Mertensiella luschani Lycian salamander Turkey	(Steindachner, 1891) mountain streams
V	Proteus anguinus Olm Yugoslavia, Italy	Laurenti 1768 underground water system in Karst-formation
E	Discoglossus nigriventer Israel painted frog Israel	Mendelssohn & Steinitz, 1943 freshwater swamp
I	Alytes obstetricans boscai Iberian midwife toad Spain	Lataste 1879 gravel pits and other freshwater systems
I	Pelobates cultripes European spade-foot toad France, Spain	(Cuvier 1829) sandy soils; various types of freshwater bodies
E	Pelobates fuscus insubricus Italian spade-foot toad Italy	Cornalia 1873 freshwater ponds with vegetation, sandy soils
I	Pelobates syriacus Eastern spade-foot toad Israel, Syria, Turkey	Boettger, 1889 freshwater situations
I	Testudo hermanni hermanni Eastern Hermann's tortoise Albania, Greece, Italy, Turkey, Yugoslavia	Gmelin 1889 coastal forests and alluvial plains

R	Testudo hermanni robertmertensi Western Hermann's tortoise France, Italy, Spain	Wermuth 1952 coastal and littoral sandy plains; dry hills near freshwater
V	Testudo marginata Marginated tortoise Greece (Italy: Sardinia = introduced)	Schoepff 1782 forested hilly areas, often near freshwater situations
V	Testudo graeca graeca Mediterranean spur-thighed tortoise Algeria, Italy, Libya, Morocco, Spain, Tunisia, Turkey	Linnaeus 1758 dry, sunny areas
V	Caretta caretta Loggerhead turtle Cyprus, Israel, Italy, Greece, Turkey	(Linnaeus 1758) marine littoral; nests on surf-swept beaches
E	Chelonia mydas mydas Green turtle Cyprus, Israel, Turkey	(Linnaeus 1758) feeds in deep sea areas; nests on surf-swept beaches
E	Eretmochelys imbricata Hawksbill turtle	(Linnaeus 1766) oceanic; no nesting beaches known in Mediterranean
E	Lepidochelys kempi Kemp's ridley	(German 1880) oceanic; no nesting beaches known in the Mediterranean
E	Dermochelys coriacea Leathery turtle Italy	(Linnaeus 1766) oceanic; nests on surf-swept beaches
E	Podarcis filfolensis filfolensis Filfola wall lizard Malta	(Bedriaga 1876) small, flat-topped oceanic island with vegetation

E.	Podarcis lilfordi lilfordi Aire-Island lizard	(Gunther 1874) rocky places on small oceanic island
	Spain	
E	Podarcis lilfordi rodriquezi Ratas-Island lizard	(L. Muller 1927) small oceanic island
	Spain	
E	Podarcis muralis muellerlorenzi La Scuola wall lizard	(Taddei 1949) small island with low vegetation
	Italy	
R	Podarcis sicula coerulea Faraglione rock lizard	(Eimer 1872) small rocky island with numerous fissures and crevices
	Italy	
E	Podarcis sicula sanctistephani San Stephano lizard	(Mertens 1926) small oceanic island
	Italy	
V	Natrix natrix cetti Sardinian grass snake	Gené 1838 dense vegetation in vicinity of clear freshwater; also open grasslands
	Italy	
V	Vipera lebetina schweizeri Schweizer's Lebetina viper or Cyclades bunt-nosed viper	Werner 1935 dry river beds with adjacent vegetation and rocky outcrops
I	Vipera ursinii Orsini's or meadow viper	(Bonaparte 1835) grasslands, in mountain situations with dense admixture of juniper
	France, Italy, Yugoslavia	

II. AMPHIBIANS AND REPTILES CONSIDERED TO BE THREATENED WITHIN THEIR MEDITERRANEAN RANGE

I	Rana esculenta complex Green or edible frogs	Linnaeus 1758 almost all freshwater situations
	Albania, France, Greece, Italy, Monaco, Morocco, Spain, Tunisia, Turkey, Yugoslavia	
V	Mauremys caspica leprosa Spanish stripe-necked terrapin	(Schweigger 1812) fresh and brackish water with dense vegetation
	Algeria, Morocco, Spain, Tunisia	
I	Mauremys caspica rivulata East Mediterranean stripe-necked Terrapin	(Valenciennes 1833) fresh and brackish water with dense vegetation
	Albania, Cyprus, Greece, Israel, Lebanon, Syria, Turkey, Yugoslavia	
V	Emys orbicularis European pond terrapin	(Linnaeus, 1758) sunny ponds and slow-moving brooks with dense vegetation
	Albania, Algeria, Cyprus, France, Greece, Italy, Morocco, Spain, Tunisia, Turkey, Yugoslavia	
E	Chamaeleo chamaeleon Mediterranean chameleon	(Linnaeus 1758) forests, woodlands and scrub vegetation
	Algeria, Cyprus*, Egypt, Greece*, Israel, Italy*, Libya, Morocco, Spain*, Tunisia, Turkey	
	*) introduced populations	
I	Lacerta lepida lepida Ocellated lizard	Daudin 1802 coastal pine woods, dry bush and dunes associated with freshwater
	France, Italy, Spain	

V	Coluber hippocrepis Horsehoe whip snake	Algeria, Italy, Morocco, Spain, Tunisia	Linnaeus 1758 dry areas and rocky places. Sometimes close to human settlements (in Sardinia, swampy areas in alluvial plains less than 100 m a.s.l.)
I	Coronella austriaca Smooth snake	Albania, France, Greece, Italy, Spain, Turkey, Yugoslavia	Laurenti 1768 open forest, dry areas with hedges, heaths and occasionally sphagnum-bog

1. A M P H I B I A

Salamandrina terdigitata (Lacépède 1788) — Order Caudata

Spectacled salamander
Salamandrine à lunettes — Family Salamandridae

Status Indeterminate.

Distribution Western slopes of Apennines from Liguria to Calabria (Thorn 1968).

Population Decreasing south of Campania (ibid.).

Habitat Well-wooded mountainsides with luxuriant undergrowth bordering clear streams; up to 1300 m.

Reason for decline Undetermined.

Conservation measures taken None.

Conservation measures proposed None at the moment.

Mertensiella luschani (Steindachner 1891) — Order Caudata

Lycian or Luschan's salamander
Salamandre de Lycie — Family Salamandridae

Status Indeterminate.

Distribution Lycian region of south-western Turkey, between Antalya and Fethiye; and the south-east Aegean Islands Kárpathos, Sária and Kásos (Mertensiella luschani helverseni Pieper 1963).

Population No data.

Habitat In and around small seasonal mountain springs and streams at about 600 m a.s.l.

Reason for decline Undetermined.

Conservation measures taken None.

Conservation measures proposed None at the moment.

Remarks Arnold & Burton (1978) place this species in the genus Salamandra.

Proteus anguinus Laurenti 1768

Order Caudata

Family Proteidae

Olm
Protée, Olm

Status Vulnerable.

Distribution Underground waters of north-east Adriatic coastlands, near Trieste in Italy and in Yugoslavia south to Montenegro (Mertens & Wermuth 1960). Introduced in or before 1885 to the Parolini grotto, Vicenza (Hotz in litt. 1972).

Population Declining throughout its range.

Habitat Underground waters with a constant low temperature of between 6°C (winter) and 9°C (summer), in karstic formations.

Reason for decline Increasing water pollution (Bruno 1973 b); systematic collecting (Yugoslavia) for so-called scientific use; and occasional large-scale collection by farmers for use as pig-food (van Wijngaarden 1976, pers. comm.).

Conservation measures taken The species has nominally had protection in Slovenia (Yugoslavia) since 1949. Newly discovered populations will not be publicized, to hamper collectors (Bruno loc. cit.).

Conservation measures proposed Establishment of reserves in the Trieste karst zone (Bruno, Dolce, Sauli & Veber 1973).

Alytes obstetricans boscai Lataste 1879

Order Salientia

Family Discoglossidae

Midwife toad
Alyte accoucheur

Status Indeterminate.

Distribution Portugal, Spain (Mertens & Wermuth 1960); also France, Benelux countries and West Germany (Arnold & Burton 1978).

Habitat Gravel- and clay-pits; also cattle-ponds etc.

Reason for decline Habitat destruction; pollution (insecticides, herbicides, etc.); increasing disturbance by tourists (Honegger 1977).

Conservation measures taken None.

Conservation measures proposed Setting aside enough suitable habitat to ensure survival of this and other species; education of the public.

Discoglossus nigriventer Mendelssohn & Steinitz 1943 Order Salientia

Israel painted frog or Israel discoglossus Family Discoglossidae
Discoglosse d'Israël

Status Endangered, probably extinct. Since the species was discovered in 1940, only 5 specimens have been recorded (1) and none were found on a recent visit to the type locality (H. Mendelssohn in litt. 1978).

Distribution Assuming the species still exists, presumably as before, viz. the eastern shore of Lake Huleh, northern Israel, (1) and possibly adjacent parts of Syria (2 and Mendelssohn loc. cit.).

Population If still existent must be very small.

Habitat Freshwater swamp.

Reason for decline (or extinction) Drainage of much of the swamp habitat (2) and further changes in the ecology due to cattle no longer being grazed in the area (Mendelssohn loc. cit.).

Conservation measures taken Protected by an ordinance for Protection of Amphibians and Reptiles (2).

Conservation measures proposed None at present practicable.

Breeding potential in captivity Unknown.

Remarks The habitat of the species is in a closed area where conservation measures cannot be applied (Y.L. Werner in litt.). D. nigriventer is in competition with Rana ridibunda (Mendelssohn loc. cit.).

References

1. Mendelssohn H. & Steinitz, H. 1943. A new frog from Palestine. Copeia 231-233.

2. Steinitz, H. 1955. Occurrence of Discoglossus nigriventer in Israel. Bull. Res. Cons. Israel 5B(2:B).

Pelobates cultripes (Cuvier 1829) Order Salientia

Western spadefoot toad Family Pelobatidae
Pélobate cultripède

Status Indeterminate.

Distribution Southern France and Iberian Peninsula, where it is more abundant along the Mediterranean and southern coast (Mertens & Wermuth 1960; Salvador 1974).

Population Considered to be decreasing along entire Mediterranean sector of its range.

Habitat Sandy soils are favoured by this semi-fossorial species; the larvae haunt a variety of water-bodies.

Reason for decline Habitat alterations (draining of marshlands, destruction of ponds and waterways); intensification of agriculture; and overuse of biocides (Petit & Knoepffler 1959; Fretey 1975).

Conservation measures taken None.

Conservation measures proposed Several fresh-water wetland areas should be set aside as refuges for this and other similarly endangered amphibians and the use of biocides strictly limited in areas where they occur (Fretey, in litt. 1976).

Pelobates fuscus insubricus Cornalia 1873 Order Salientia

Italian spadefoot toad Family Pelobatidae
Pélobate d'Italie

Status Endangered (Honegger 1975).

Distribution The Italian subspecies is restricted to the floodplains of the river Po and perhaps lowland parts of Canton Tessin (Ticino), southern Switzerland (Bruno, Burattini & Casale 1974).

Population Formerly more abundant: c. 1880 about 50 breeding ponds were known in Italy, by 1941 only 31 and by 1970 only 3, of which only one is safe (Bruno et al., op. cit.). Almost certainly extinct in Switzerland (Hotz pers. com.).

Habitat Ponds with abundant aquatic vegetation and sandy soils in vicinity.

Reason for decline Habitat destruction, e.g. by filling in of many ponds; adverse effects of misuse of insecticides and water pollution in Po river area (Bruno et al., op. cit.).

Conservation measures taken Nominal protection in Switzerland; creation of some private reserves for this subfossorial toad by the Italian Herpetological Society (Bruno et al., op. cit.).

Conservation measures proposed Declaration of the above-mentioned reserves as official fauna reserves under the surveillance of World Wildlife Fund (Italy) (Bruno et al., op. cit.).

Pelobates syriacus Boettger, 1889 — Order Salientia

Eastern spadefoot toad — Family Pelobatidae
Pélobate de Syrie

Status Indeterminate.

Distribution In Mediterranean region Israel, Syria, Turkey. Elsewhere sporadically distributed in eastern Transcaucasia, Georgia, southern Armenia, Nakhichevan ASSR and south-east Azerbaijan; also in eastern Balkans and Greece (Arnold & Burton 1978).

Population At best, according to counts done in 1956 in Armenia, 40 individuals per km of stream bank, but numbers now considerably reduced. No recent data from Israel, Turkey and Syria.

Habitat Banks of streams and springs in semi-arid areas of mountainous steppe. The majority of habitats in Armenia and Nakhichevan ASSR have been destroyed by desertification, the few remaining being under threat.

Reason for decline Habitat destruction.

Conservation measures taken None in the Mediterranean.

Conservation measures proposed None in Mediterranean.

References

A.G. Bannikov, in litt. 1977.

Borodin, A.M. et al. 1978. Red Data Book of USSR. Leonaya Promyshlennost, Moscow. Page 157.

Rana esculenta complex — Order Salientia

Rana esculenta Linnaeus 1758 (=e) — Family Ranidae
Rana lessonae Camerano 1882 (=l)
Rana perezi Seoane 1885 (=p)
Rana ridibunda Pallas 1771 (=r)

Green or edible frogs
Grenouilles vertes

Status Indeterminate but probably not threatened.

Distribution Spain, Balearics, France, Italy and North Africa, north to England (introduced), Sweden to c.60°N. Finland (introduced) and east via western USSR and Ukraine to Iran (Mertens & Wermuth 1960).

Population

France (=e, =1) In some areas extinct, in others decreasing (Thireau & Fretey in litt. 1976).
(=p) In Mediterranean region decreasing (Petit & Knoepffler 1959).
Italy (=1, =e and others) Widespread but decreasing (Albertini in litt. 1976).
Turkey (=r) No recent data.

Habitat Originally almost all water bodies in lowlands and hills, but preferably fresh water with aquatic and marginal vegetation and ranging from rivers and lakes (=r) to small ponds and marshes (=1).

Reason for decline Sporadic habitat destruction and pollution; commercial exploitation sometimes on the scale of massacre; ecological effects of insecticides and herbicides on habitat and food resources.

Conservation measures taken In some areas in Italy collecting of frogs is limited to a certain number of specimens per person and day (Albertini in litt. 1976).

Conservation measures proposed Setting aside of suitable habitat to ensure the survival of these and other amphibians and reptiles; education of the public in conservation matters.

Remarks There is no evidence that the trade in live green frogs (Rana esculenta, ridibunda, etc.) for human consumption originates from controlled breeding enterprises (i.e. they are all wild caught). Incomplete figures for imports into Switzerland are as follows (in kilograms):-

Year	Months	Turkey	Greece	Yugoslavia
1975	(VI-VII)	30'180	-	-
1976	(I-VII)	61'465	-	8'146
1977	(I-VII)	76'606	20'910	9'737

On the basis of an average weight of 80 grams per live frog, 10'000 kilos represents 125'000 live frogs (Dollinger 1976, 1977, 1978, in litt. 1978; Honegger 1977). It should be noted that apart from live frog imports Switzerland annually imports about 100'000 kilograms gross of prepared frog-legs from various countries (each kilogram representing c.20 frogs).

Rana latastei Boulenger 1879 Order Salientia

Italian agile frog Family Ranidae
Grenouille de Lataste

Status Indeterminate.

Distribution Possibly occurs in south-east France and north-west Yugoslavia (Arnold & Burton 1978). Otherwise, confined to northern and central Italy and southern Switzerland (Mertens & Wermuth 1960).

Population Decreasing in Italy; no recent records from Ticino, Switzerland (Bruno in litt. 1978; Brodmann 1974).

Habitat Woods, adjacent to swampy meadows.

Reason for decline Destruction of a number of the frog's habitats, e.g. by filling in of ponds; adverse effects have also been caused by misuse of insecticides and herbicides and by water pollution in Po river basin (Bruno in litt. 1978).

Conservation measures taken Nominal protection in Switzerland.

Conservation measures proposed None as yet.

2. R E P T I L I A

Mauremys caspica leprosa (Schweigger 1812) Order Testudines

Spanish stripe-necked terrapin Family Emydidae
Tortue d'Espagne

Status Vulnerable.

Distribution South-western Europe (Portugal, Spain) and north-west Africa.

Population Widespread and stable in central Portugal (Almaca in litt. 1976); in Spain threatened in Catalonia and Valencia (Martinez Rica in litt. 1977).

Habitat Fresh-water situations; sometimes in sewage plants.

Reason for decline Destruction of specimens by fishermen and collection as curios by tourists are said to be partly responsible; effects of pollution by biocides draining from treated fields are unknown.

Conservation measures taken None.

Conservation measures proposed Prevention of the river pollution in coastal zones caused by uncontrolled discharge of industrial and urban wastes (Martinez Rica loc. cit. 1977).

Mauremys caspica rivulata (Valenciennes 1833) Order Testudines

East Mediterranean stripe-necked terrapin Family Emydidae
Tortue levantine
Kaspische Sumpfschildkröte

Status Indeterminate.

Distribution South-eastern Europe (from south-west Yugoslavia, Albania, southern Bulgaria and Greece and its islands to Anatolia, Cyprus, Israel, Jordan and Syria (Wermuth & Mertens 1961).

Population The subspecies is still widespread and abundant in European Turkey and Anatolia but decreasing (Baran in litt. 1976).

Habitat Fresh and slightly brackish waters with dense vegetation.

Reason for decline In Turkey, habitat alterations and pollution (Baran loc. cit.).

Conservation measures taken None.

Conservation measures proposed Setting aside sufficient suitable habitat to ensure the survival of amphibians and reptiles; and education of the public in conservation matters.

Emys orbicularis (Linnaeus 1758) Order Testudines

European pond terrapin or water turtle Family Emydidae
Cistude, Tortue bourbeuse

Status Vulnerable.

Distribution Central and southern Europe including Corsica, Cyprus, western Asia and north-western Africa (Mertens & Wermuth 1960).

Population Rather uncertain due to effects of accidental or deliberate introductions, but the following reports have been received:-
Cyprus: decreasing (Leontiades in litt.1976).
France: occurs south of Angers-Lons le Saunier line but only common in ponds and small lakes of La Brenne, Alpes Maritimes, Var, Gironde and Charente-Maritime; also in Corsica, between Cattarina and Calvi, Biguglia marsh and near Porto-Vecchio (Lambert 1967). In the Camargue becoming rare (Hoffmann 1959) and equally so along the rest of the Mediterranean coast (Petit & Knoepffler 1959).
Italy: localized in Po valley, coastal Toscana and Lazio region and rare in Sicily but frequent in Sardinia; populations and numbers tending to decline (Bruno 1973a).
Spain: widely distributed, most abundant in central areas, but disappearing from many suitable localities (Martinez Rica in litt. 1977).
Portugal: few, localized and decreasing (C. Almaca in litt. 1976).

Habitat Sunny ponds and slow-moving brooks with dense vegetation.

Reasons for decline In historic times this species was widely used as a lenten food (Hotz, pers. comm.); Portuguese fishermen still consider terrapins as harmful to fish, their eggs and fry, so persecute them; and they are also accidentally drowned in fish-nets and traps. During anti-malaria campaigns in southern Europe, 'waste' wetlands were drained. Surviving terrapins suffer greatly from such habitat destruction (draining, filling-in of ponds, etc.) throughout the Mediterranean littoral zone and also from increasing pollution by industries, tourist developments and intensive use of herbicides and insecticides which destroy their food resources. Collecting for the pet trade and for use

as laboratory animals also reduces wild stocks (Bruno 1973a; Bruno et al. 1974).

Conservation measures taken In France a project under the auspices of the Société herpétologique is now studying this species and its conservation. In Italy, it is still found in a few reserves and re-introduction elsewhere is under consideration (Bruno in litt. 1976).

Conservation measures proposed Extension of protection to other countries; enforcement of existing protective legislation; more reserves for this and other aquatic species; and reducing numbers captured for the pet trade and laboratories. In France the last intact habitat (ponds and small lakes in the La Brenne region) should be declared by the Government as a "reserve intégrale". Further studies on the terrapin's reproductive cycle are needed for better understanding of its requirements.

Testudo graeca graeca Linnaeus 1758 — Order Testudines

Mediterranean spur-thighed tortoise — Family Testudinidae
Tortue mauresque

Status Vulnerable.

Distribution Southern Spain and Balearic Islands (Mertens & Wermuth 1960; Salvador 1974); introduced to southern France and probably Sardinia (Fretey 1975; Tortonese & Lanza 1968); coasts of Sicily and Calabria in south Italy (Arnold & Burton 1978); and also Corsica (Mertens 1957); and North Africa from Morocco east to Cyrenaica (Wermuth & Mertens 1967).

Populations In Spain, due to the trade in this species, distribution is no longer limited to the south and the Balearic Islands, and it is occasionally found throughout the country. In its original area the few isolated colonies, in Murcia-Almeria, La Mancha and the Coto de Doñana, are decreasing in size (J. Mellado in litt. 1976). Additional specimens were brought to the Coto de Doñana reserve from the Rif in Morocco (Valverde 1967). Occasionally seen along the south coast of France where accidentally introduced.

Habitat Dry, sunny places with grass or bushy vegetation; dunes and slacks covered by rushes, grass and pines but only sparse undergrowth in damper hollows; dry scrub areas dominated by Halimium, Genista, Rubus spp. Erica arborea and Pteridium with scattered Quercus suber (Mountfort 1958; Valverde 1958).

Reason for decline Changes to habitat; capture for pet trade; human consumption in parts of southern Spain (Valverde 1961).

Conservation measures taken Legal protection in Spain and particularly in the Coto de Doñana (A. Salvador & J. Mellado in litt. 1976); re-introduction into certain Spanish localities (Valverde 1967); inclusion in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Conservation measures proposed Stricter enforcement of the law; establishment of a special reserve in the Murcia region (J. Mellado loc. cit.); monitoring of the trade in the species.

Testudo graeca ibera Pallas 1814 — Order Testudines

Eastern spur-thighed tortoise — Family Testudinidae
La tortue orientale

Status Vulnerable.

Distribution Eastern Balkans (Romania, Bulgaria and Yugoslavian Macedonia), Greece south to Euboea, the whole of Turkey (Eiselt & Spitzenberger 1967), and the parts of Asia Minor, Caucasian region of the USSR and Iran (Wermuth & Mertens 1961; Radovanovic 1964).

Populations Decreasing in Cyprus (Leontiades in litt. 1976); abundant and widespread in Turkey (Baran in litt. 1976) despite commercial collecting (Lambert 197

Habitat Hills with low vegetation, lightly cultivated regions adjacent to scrubland, incl. cornfields, vineyards, etc. (Lambert in litt. 1975).

Reason for decline In Turkey, wholesale capture for the pet trade since 1975 (Lambert 1979); killing by tractors in the more developed areas, particularly during ploughing for cereal crops.

Conservation measures taken The subspecies has been listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Conservation measures proposed Creation of reserves with sufficient suitable habitat for reptiles and amphibians; proper control of the annual off-take, which has been between 200'000 and 400'000, mostly emanating from the vicinity of Istanbul.

Testudo hermanni hermanni Gmelin 1889 — Order Testudines

Eastern Hermann's tortoise — Family Testudinidae
Tortue d'Hermann, Tortue de terre grecque

Status Indeterminate.

Distribution Italy, Yugoslavia, Albania, Greece (including many islands), Cyprus, Turkey (only European part), Bulgaria and south-west Romania (Wermuth & Mertens 1961; Arnold & Burton 1978).

Populations Decreasing in Italy (Bruno in litt. 1976); in Turkey in Europe still at quite high density (Eiselt & Spitzenberger 1967) or c.3 per hectare (Lambert 1977); and in Dalmatian region of Yugoslavia declining (Bruno 1973a), but still locally abundant (Mattison 1976, pers. comm.).

Habitat Quercus coccifera coastal woodlands and lightly cultivated alluvial floodplains.

Reason for decline In Sardinia, often killed by feral dogs and shepherds or caught by bush-fires; on Elba its extreme rarity is thought to be connected with the density of black rats (Rattus rattus) (Stemmler, 1968b); in European

Turkey, wholesale exploitation by the pet trade since 1975 (R.S.P.C.A. 1978); and in general a combination of habitat destruction and commercial collecting. In Yugoslavia, especially, the excessive collecting (Honegger 1969, 1974a) has made it impossible to assess current distribution accurately; about 30'000 a year were imported by the U.K in the decade 1965-1975 (D.O.E. reports).

Conservation measures taken Included in several of Italian nature reserves; listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Conservation measures proposed More reserves; captive breeding programme (known to breed well in captivity in open enclosures and suitable climate).

Testudo hermanni robertmertensi Wermuth 1952 Order Testudines

Western Hermann's Tortoise Family Testudinidae
Tortue d'Hermann de France

Status Rare.

Distribution Eastern Spain (Valencia), Balearic Islands, southern France, Corsica, Sardinia, Pianosa Island (south of Elba) and Toscana (Wermuth & Mertens, 1961; Stemmler 1968a; Salvador 1974); also Sicily (Bruno 1970).

Populations One of the last refuges for this subspecies is in the south of France (Var), also Pyrenées Orientales or Roussillon and in Corsica; and it has disappeared from other areas where once common (Dumont 1974). The population on Corsica was probably introduced (Mertens 1957) and there is said to be a thriving one in northern France, in the Forest of Cinglay (Calvados), as a result of an introduction prior to 1939 (Fretey in litt. 1976). In Spain, where once confined to the east (Valencia) and the Balearic Islands, now spread by the trade all over the country (Mellado in litt. 1976).

Habitat Sandy coastal plains, including some forested or bushy areas; dry hills near fresh water.

Reason for decline Habitat destruction and reduction of numbers below the density necessary for a viable population mainly as a result of annual bush-fires (Petit & Knoepffler 1959); large scale capture for the pet trade and as toys for children; increasing impact of tourist traffic, contributing to the habitat destruction along entire Mediterranean littoral zone (Fretey in litt. 1976).

Conservation measures taken Nominal legal protection in Spain (A. Salvador in litt. 1976), where a small research programme on this species is under way in the Centro Biologico del Sur (J. Mellado in litt. 1976); it is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Conservation measures proposed Creation of strict biological reserves in the Maures and the Esterel mountains, in the Balearics and in Corsica is indispensable (Dumont 1974; A. Salvador in litt. 1976); enforcement of the existing laws; prevention of forest fires and general education of the public; re-introduction into some island reserves (J. Fretey in litt. 1976); and more information on the volume of the trade in the subspecies.

Testudo marginata Schoepff 1782 — Order Testudines

Marginated tortoise — Family Testudinidae
Tortue grecque

Status Vulnerable.

Distribution From southern Greece (Peloponnisos) north to Mt. Olympus; introduced in Sardinia (Wermuth & Mertens 1961); probably recently introduced in vicinity of Tombolo, Livorno Province (Tortonese & Lanza 1968) and into Corsica (Mertens 1957).

Populations Status in Greece unknown, in Sardinia stable (Albertini in litt. 1976).

Habitat Forested hilly areas, often near fresh water.

Reason for decline In Greece often killed by bush-fires and by shepherds (there is a superstition that its bite is venomous, Stemmler 1957); locally overcollected and now almost vanished around Corinth. Relatively large numbers, often all adults, are exported and under pressure from the pet trade (possibly collected in error instead of Testudo h. hermanni (Burton & Lambert 1977).

Conservation measures taken In Sardinia none; listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Conservation measures proposed Collection should be made illegal and export controlled; survey of the status (including volume of trade) and the biology of this, the largest European Testudo, urgently required, to ascertain sound conservation measures.

Caretta caretta caretta (Linnaeus 1758) — Order Testudines

Loggerhead turtle — Family Cheloniidae
Caouanne

Status Vulnerable (Honegger 1975)

Distribution Mediterranean, Black Sea, Atlantic, Pacific and Indian Oceans (Wermuth & Mertens 1961).

Populations (Mediterranean region)
France Probably the only sea turtle breeding on the Corsican coast (Fretey 1975; Dumont 1974), though no egg-laying has been observed since 1932 (Bruno 1973a). Systematically collected in large numbers, especially by Cote d'Azur fishermen (Petit & Knoepffler 1959).
Greece Said to nest on the beaches of Corfu and other Ionian islands (Mertens 1961; Kirchshofer in litt. 1976).
Turkey Solitary nests are found on south Anatolian beaches but are frequently destroyed by dogs (Klemmer in litt. 1977)
Italy Nesting activity recorded on beaches in Toscana (Foce dell'Ombrone, Torre dell'Uccellina), Lazio (Castel Porziano), Puglia (Vieste, until 1965 when beach habitat was altered by man), Bosco Pineto near Taranto, Sicily (Macconi di Gela), Sardinia (Sinis, Gulf of Oristano and Rio Piscinas zone, (Bruno 1969a).

Spain Accidental on Mediterranean coast (Salvador 1974).
Israel Nesting reported on beaches around Akhziv (Gelb 1978).

Habitat Oceanic, breeding on surf-swept beaches.

Reason for decline Habitat destruction; alteration of beaches to make them attractive to tourists; collection of small specimens to manufacture tourist souvenirs (Thireau & Fretey in litt. 1976). According to Argano (1978) about 2000 Caretta caretta and Chelonia mydas are killed annually along the Spanish coast for sale to tourists.

Conservation measures taken Listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. In Cyprus sea turtles and their eggs are nominally protected by the Fisheries law, Cap. 135 (Leontiades in litt. 1976) and a hatchery was set up in 1978 (A. Demetropoulos in litt. 1978).

Conservation measures proposed Setting aside of Mediterranean breeding beaches as nature reserves and strict ban on capture of nesting females (Thireau & Fretey in litt. 1976).

Chelonia mydas mydas (Linnaeus 1758) Order Testudines

Green turtle
Tortue verte, Tortue franche Family Cheloniidae

Status Endangered (Honegger 1975)

Distribution Mediterranean, occasionally Black Sea, Atlantic, Pacific and Indian Oceans (Wermuth & Mertens 1961). Relatively rare occurrence in European waters is partly due to the fact that this species prefers warmer waters, living and breeding mainly in tropical regions.

Populations (in Europe) Only occasionally recorded in Mediterranean, Adriatic and Black Sea: in Turkey, a breeding beach is known in the Yamurtalik lagoon south-east of Adana (Hirsch in litt. 1975) and, in Israel, nesting of a few Chelonia mydas has been reported on beaches around Akhziv (Gelb 1978).

Habitat Oceanic. This turtle makes long, little understood migrations between nesting beaches and the areas of submarine vegetation where most of its life is spent.

Reason for decline (Mediterranean region) In Turkey, up to 1200 specimens, the majority females, are collected annually near the breeding beaches (Hirsch in litt. 1975); in Spain, Argano (1978) says that c.2000 Caretta caretta and Chelonia mydas are killed annually for tourist-trade purposes.

Conservation measures taken Laws protecting nesting sites, egg-laying females or all adult Green Turtles are proliferating but not always strictly enforced. The species is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. In Cyprus, sea turtles and their eggs are nominally protected by the Fisheries law, Cap. 135 (Leontiades in litt. 1976) and a hatchery to improve breeding success was set up in 1978 (Demetropoulos in litt. 1978).

Conservation measures proposed Complete protection for the nesting site near Adana (Turkey). The species cannot support continued exploitation at its breeding grounds or by international commerce but only, at most, local subsistence harvesting of the diminishing stocks, provided that the turtles are captured at sea so that the off-take is shared by both sexes and by immatures as well as adults (IUCN Marine Turtle Specialist Group 1975).

Eretmochelys imbricata imbricata (Linnaeus 1766) Order Testudines

Hawksbill Family Cheloniidae
Tortue imbriquée, Tortue à écaille, Caret

Status Endangered (Honegger 1975).

Distribution Mediterranean, Atlantic, Pacific and Indian Oceans (Wermuth & Mertens 1961).

Populations No recent records from the Mediterranean coasts of Italy or France (Fretey 1975; Tortonese & Lanza 1968).

Habitat Oceanic; hard bottom inshore waters.

Reason for decline Not assessed; presumably excessive exploitation and disturbance.

Conservation measures taken Listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Conservation measures proposed A strong campaign to depopularize "tortoise-shell", get countries to declare sale and use of hawksbill products illegal and urge the public to refrain from buying polished shells and stuffed hawksbills (Honegger 1975).

Lepidochelys kempi (Garman 1880) Order Testudines

Kemp's Ridley Family Cheloniidae
Tortue olivâtre de Kemp, Tortue de Kemp

Status Endangered (Honegger 1975).

Distribution Atlantic Ocean (mainly Gulf of Mexico), rarely the Mediterranean (Wermuth & Mertens 1961).

Population No information from Mediterranean where the species has seldom been encountered (Brongersma 1968; Tortonese & Lanza 1968).

Habitat Inshore; this species forages on shallow bottom but is occasionally carried by currents into open ocean.

Reason for decline Accidental capture.

Conservation measures taken Listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Conservation measures proposed Public education.

Dermochelys coriacea (Linnaeus 1766) Order Testudines

Leathery turtle, Luth, Leatherback Family Dermochelyidae
Tortue luth

Status Endangered (Honegger 1975).

Distribution Mediterranean, Atlantic, Pacific and Indian Oceans (Wermuth & Mertens 1961). In Mediterranean, including Adriatic, occasionally recorded (Bruno 1970), with a single presumably exceptional breeding record near Macconi de Gela on the south-east coast of Sicily (Bruno 1969a).

Habitat Oceanic; this species makes long, little understood migrations.

Reason for decline Not assessed; presumably excessive exploitation and disturbance.

Conservation measures taken Listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Conservation measures proposed Immediate protection of the Gela breeding beach, the only one known in Europe (Bruno 1969a).

Chamaeleo chamaeleon (Linnaeus 1758) Order Squamata/Sauria

Mediterranean chameleon Family Chamaeleonidae
Caméléon

Status Endangered.

Distribution Southern Spain (introduced to Canary Islands), Sicily (Bruno 1970), southern and western Anatolia, Crete (introduced?), Chios, Samos, Cyprus (introduced) and North Africa; also western Asia (Mertens & Wermuth 1960).

Populations In Spain two declining isolated relict populations of the nominate race are known from near Cadiz and Malaga, respectively (Mellado & A. Salvador in litt. 1976).

Habitat Pinewoods of the coastal belt in Spain and up to 1700m a.s.l. in Morocco.

Reason for decline Habitat destruction, partly through development of tourist resorts; overcollecting both by amateurs and professional collectors.

Conservation measures taken Listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora; also nominally protected by law in Spain (Arito 1973).

Conservation measures proposed Better law enforcement; more reserves; and education of the public.

Lacerta lepida lepida Daudin 1802 — Order Squamata/Sauria

Ocellated lizard
Lézard ocellé — Family Lacertidae

Status (nominate subspecies) Indeterminate.

Distribution Liguria (Italy), southern France (incl. Iles d'Hyères) and Iberian peninsula (Mertens & Wermuth 1960).

Populations Declining in the Mediterranean region of France (Petit & Knoepffler, 1959) and also in Italy, where probably extinct in Portofino peninsula (Bruno in litt. 1976; Bruno 1973a).

Habitat Dry, bushy areas, sometimes bordering cultivated zones and often associated with water.

Reason for decline Habitat destruction, wanton killing and collecting for the pet trade; misuse of herbicides and insecticides may well have adversely affected its food supplies.

Conservation measures taken None.

Conservation measures proposed Reservation of the very localised habitat of the relict populations of this lizard in Italy (Bruno in litt. 1976).

Podarcis filfolensis filfolensis (Bedriaga 1876) — Order Squamata/Sauria

Filfola wall lizard
Lézard de Filfola — Family Lacertidae

Status Endangered.

Distribution The nominate race is confined to Filfla (Filfola) Island, 18 km south of Malta (Mertens & Wermuth 1960).

Population About 3'000 specimens of all age-groups in an area of about 2,34 ha (Lanfranco in litt. 1968). Possibly now extinct (Bruno in litt. 1978).

Habitat Small, flat-topped oceanic island.

Reason for decline Use of the island for target practice by British Navy.

Conservation measures taken Declaration of Filfla as a nature reserve was under consideration (Saliba & Bannister in litt. 1974) but outcome unknown.

Conservation measures proposed Habitat protection and education of the public, both essential if this island form is to be saved.

Podarcis lilfordi lilfordi (Günther 1874) — Order Squamata/Sauria

Aire-Island lizard
Lézard de l'île Ayre — Family Lacertidae

Status Endangered (Salvador in litt. 1976).

Distribution Aire Island, off south-east coast of Menorca, Balearics.

Population No data.

Habitat Rocky island.

Reason for decline Overcollection by professional herpetologists and for the pet trade.

Conservation measures taken None

Conservation measures proposed Legal protection of suitable habitat supported by education of the public.

Podarcis lilfordi rodriquezi (L. Müller 1927) Order Squamata/Sauria

Ratas-Island lizard Family Lacertidae
Lézard de l'île de Ratas

Status Endangered, probably extinct (Salvador in litt. 1976).

Distribution Ratas Island, Mahón Bay, Menorca, Balearics.

Population Probably extinct

Habitat Small rocky islet.

Reason for decline Destruction of habitat in the course of developing Puerto de Mahón (Salvador in litt. 1976).

Conservation measures taken None

Conservation measures proposed If there is a remote chance that the species survives, protection of what is left of its habitat combined with education of the public.

Podarcis muralis muellerlorenzi (Taddei 1949) Order Squamata/Sauria

La Scuola wall lizard Family Lacertidae
Lézard des murailles de l'île La Scuola

Status Endangered.

Distribution Islet off north point of Pianosa Island, to the south of Elba (Mertens & Wermuth 1960).

Habitat Small islet with low vegetation.

Population Sparse and probably decreasing in its isolated habitat (Bruno in litt. 1976).

Reason for decline Possibly overcollection.

Conservation measures taken None

Conservation measures proposed Setting aside of the island as a reserve (Bruno in litt. 1976).

Podarcis sicula coerulea (Eimer 1872) Order Squamata/Sauria

Faraglione wall lizard
Lézard de Faraglione Family Lacertidae

Status Rare.

Distribution Faraglione rock (central and outer), immediately south of the eastern end of Capri (Mertens & Wermuth 1960).

Population Small and decreasing (Bruno in litt. 1976).

Habitat Rocky island with plenty of fissures and crevices.

Reason for decline Overcollecting for the pet and tourist trade by professionals and amateurs. This lizard, in which the males are a beautiful blue in colour, fetches about 25'000 to 30'000 lire per specimen. It may also be threatened by the rats (Rattus sp.) which inhabit the rock but this is not yet proved (Mertens 1952a).

Conservation measures taken None.

Conservation measures proposed Setting aside suitable habitat combined with education of the public.

Podarcis sicula sanctistephani (Mertens 1926) Order Squamata/Sauria

San Stefano lizard
Lézard de San Stefano Family Lacertidae

Status Endangered, believed extinct (Mertens 1965).

Distribution San Stefano Island, near Ventotene island, 75 km due west of Naples (Mertens & Wermuth 1960).

Population Almost certainly extinct.

Habitat Oceanic island of 0,3 sq. km in extent.

Reason for decline Possibly caused either by predation by feral cats and snakes (Coluber viridiflavus carbonarius) or by the evolution of a genetic strain with limited reproductive potential or by an epidemic wiping out most of the small population and the few survivors interbreeding with the nominate race Podarcis sicula sicula, of which some specimens were introduced accidentally, or by a combination of these causes (Mertens 1965). At any rate it seems clear that the subspecies sanctistephani has in effect been replaced on the island by nominate sicula.

Conservation measures taken The island is under the jurisdiction of the Italian Ministero di Giustizia in Rome and not readily accessible.

Conservation measures proposed None necessary.

Coluber hippocrepis Linnaeus 1758 — Order Squamata/Serpentes

Horseshoe whip snake
Couleuvre fer-à-cheval — Family Colubridae

Status Vulnerable (only Sardinian population assessed).

Distribution North-west Africa, Iberian peninsula, Sardinia (introduced) and Pantelleria (Bruno & Hotz 1976).

Populations In Sardinia known from 14 localities in the south-west of the island (Bruno & Hotz ibid.).

Habitat In Sardinia usually swampy areas or Mediterranean macchia, mostly situated in alluvial plains below 100 m a.s.l.

Reason for decline Destruction of habitat, brought about in Sardinia mainly by industrialisation and tourist development; in the 19th century overcollection for scientific purposes was also a factor.

Conservation measures taken None

Conservation measures proposed Urgent legislation to create a system of regional reserves (Cassola & Tassi 1973).

Coronella austriaca Laurenti 1768 — Order Squamata/Serpentes

Smooth snake
Couleuvre lisse, Coronelle — Family Colubridae

Status Indeterminate.

Distribution Central and southern Europe (including Sicily and Peloponnisos and, in the north, southern England, Scandinavia and USSR), east to western Asia (Mertens & Wermuth 1960).

Populations The south of France population noted as becoming rare (Naulleau 1973).

Habitat Open forest, dry areas with hedges, heaths and occasionally sphagnum-bogs, abandoned quarries.

Reason for decline Habitat destruction (incl. changes brought about by monoculture); burning. Indirect influence of insecticides on food (lizards as well as insects); overcollecting and killing by ignorant people.

Conservation measures taken None known in Mediterranean region.

Conservation measures proposed Conservation of habitats.

Natrix natrix cetti Gene 1838 — Order Squamata/Serpentes

Sardinian grass or ringed snake — Family Colubridae
Couleuvre à collier de la Sardaigne

Status Vulnerable.

Distribution Sardinia (Mertens & Wermuth 1960).

Populations Scattered, with very low density. Formerly more widespread though decreasing in size.

Habitat Normally, dense vegetation in vicinity of clear fresh water; occasionally, open grasslands.

Reason for decline Swampland 'improvement' followed by intensive mosquito-control, in course of anti-malaria campaigns (Bruno 1973a). Natrix natrix cetti is apparently more sensitive than Natrix maura to the effects of such measures (Bruno in litt. 1976).

Conservation measures taken None known.

Conservation measures proposed Establishment of more regional nature reserves suited to the needs of this and other species of lower vertebrates, e.g. on Monte Lumbara (Cassola & Tassi 1973; Bruno in litt. 1976).

Vipera lebetina schweizeri Werner 1935 — Order Squamata/Serpentes

Schweizer's Lebetina or Cyclades blunt-nosed viper — Family Viperidae
Vipère des Cyclades

Status Vulnerable.

Distribution Certain of the Kikladhes (Cyclades) Islands, viz. Milos, Kimolos, Poliaigos, Sifnos and possibly Kithnos (Klemmer 1963).

Population Total estimated at between 3'000 to 5'000 (Kratzer in litt. 1974).

Habitat Dry river beds, with adjacent vegetation, and rocky outcrops.

Reason for decline The Department of Agriculture offers a bounty for each specimen killed and in 1971/72 at least 1'500 to 2'000 were paid out by the office concerned on Milos (Kratzer in litt. 1974). The official decree issued by the Prefecture of the Cyclades at Hermoupolis, through the Inspectorate of Forests, on 14 July 1976, set the bounty at 30 drachmas for each viper killed.

Conservation measures taken None; the reverse, as noted above.

Conservation measures proposed Abandonment of the bounty system, which has the additional disadvantage that non-venomous island forms, such as the endemic grass snake Natrix natrix schweizeri and even lizards, are killed by mistake (Honegger 1974a, 1975a, 1977).

Vipera ursinii (Bonaparte 1835) Order Squamata/Serpentes

Orsini's or meadow viper Family Viperidae
Vipère d'Orsini

Status Indeterminate (except as specified in 'Population' section).

Distribution Europe (south-east France, central Italy, Austria, Hungary, Romania, western Yugoslavia, Albania and Bulgaria) eastwards to Asia Minor, northern Iran and USSR (Central Asia) (Arnold & Burton 1978).

Populations In Mediterranean region small and scattered. Those on Krk Island (Yugoslavia) and in the Abruzzi (Italy) appear to be declining (Bruno in litt. 1978); those in southern France (Montagne de Lure, Basses Alpes, Mont Ventoux and Monts de Vaucluse) are endangered (Fretey 1975).

Habitat Montane grasslands at 1'400 m a.s.l. upwards, usually associated with juniper thickets; on Krk Island also grasslands.

Reason for decline Habitat destruction; increasing tourist activity leading to wanton killing (Bruno in litt. 1976); and effects of overuse of biocides, which destroys the food of this mainly insectivorous snake.

Conservation measures taken Several small populations are within the Abruzzo National Park boundaries (Bruno 1971).

Conservation measures proposed Education of visitors to the Abruzzo Park and adjacent areas; extension of boundaries to include several more areas of biological interest (Bruno in litt. 1976). The French Herpetological Society has prepared a project for reserves in certain parts of the viper's range, where its presence would be advertised so that tourists do not kill it by mistake (Fretey in litt. 1976). Although it will be very difficult to persuade the French public of the necessity to protect a viper, saving of this highly interesting and placid species is a most urgent conservation problem.

Conservation measures proposed None known.

Remarks A few specimens have bred under captive conditions.

Reference

Mertens, R. 1967 Ueber Lachesis libanotica und den Status von Vipera bornmuelleri. Seck. biol. 48(3): 153-159.

References

Argano, R. 1978 Annual report WWF project 1474: Marine turtles - West Central Mediterranean. Mim. report. WWF Morges.

Arito, L.B. 1973 El libro de las especies protegidas. Instituto para la conservacion de la naturalezza. Icona.

Arnold, E. N., and Burton, J.A. 1978 A field guide to the reptiles and amphibians of Britain and Europe. London.

Brodmann, P. 1974 Der italienische Frosch, Rana latastei, Boulenger 1879. Aquaria 21,3:40-43.

Bruno, S. 1969 a Tartarughe marine nel mediterraneo. "WWF" Roma. 2,4:12-13.

Bruno, S. 1970 Anfibi e rettili di Sicilia. Accad. Gioenia Sci. nat. Catania, (7), 2:1-144.

Bruno, S. 1973 a Gli anfibi e i rettili dell'Appennino abruzzese con particolare riferimento alle specie del Parco Nazionale d'Abruzzo. Lav. Soc. ital. Biogeogr. (N.S.) 2 (1971): 697-783, Siena.

Bruno, S. 1973 b Problemi di conservazione nel campo dell'erpetologia. Bari.

Bruno, S., E. Buratini and A. Casale 1974 Il Rospo bruno del Cornalia. Pelobates fuscus insubricus Cornalia 1873 (Amphibia, Anura, Pelobatidae), Bari.

Bruno, S., S. Dolce, G. Sauli, and M. Veber 1973 Introduzione ad uno studio sugli anfibi e rettili del Carso Triestino. Atti Mus. civ. Stor. nat. Trieste 28,2:485-576.

Bruno, S., and H. Hotz 1976 Coluber hippocrepis auf der Insel Sardinien (Reptilia, Serpentes, Colubridae). Salamandra, 12,2:69-86.

Cassola, F., and F. Tassi 1973 Proposta per un sistema di Parchi e Riserve Naturali in Sardegna. Boll. Soc. sarda Sci. nat., 7,13:1-83.

Department of the Environment	1966 - 1977	Reports of the advisory committee to the Animals Act, 1964 (Restriction of Importation) and on the implementation of the convention on international trade in endangered species of wild fauna and flora in the United Kingdom.
Dollinger, P.	1976	First annual report to the International Secretariat on the management of the Convention on International Trade in Endangered Species of Wild Fauna and Flora in Switzerland, Year 1975. Swiss Federal Veterinary Office.
Dollinger, P.	1977	Second annual report to the International Secretariat on the management of the Convention on International Trade in Endangered Species of Wild Fauna and Flora in Switzerland, Year 1976. Swiss Federal Veterinary Office.
Dollinger, P.	1978	Third annual report to the International Secretariat on the management of the Convention on International Trade in Endangered Species of Wild Fauna and Flora in Switzerland, Year 1977. Swiss Federal Veterinary Office.
Dumont, M.	1974	Les chéloniens de France. Leur avenir, leur protection. Le Courier de la Nature, 33:224-227.
Eiselt, J., and F. Spitzenberger	1967	Ergebnisse zoologischer Sammelreisen in der Türkei: Testudines. Ann. Naturhistor. Mus. Wien 70, 357-378.
Fretey, J.	1975	Guide des reptiles et batraciens de France. Hatier, Paris.
Gelb, Y.	1978	The Akhziv field study center of the S.P.N.I. Israel-Land and Nature-Summer edition 1978: 160.
Honegger, R.E.	1975	Red Data Book, Vol. III: Amphibia & Reptilia. IUCN, Morges.
Honegger, R.E.	1977	Study on threatened amphibians and reptiles in Europe, Strasbourg.

Klemmer, K. 1963 Liste der rezenten Giftschlangen in Marburg Behringwerk Mitt. Die Giftschlangen der Erde.

Kramer, E. 1961 Variation, Sexualdimorphismus, Wachstum und Taxonomie von Vipera ursinii (Bonaparte, 1835) und Vipera kaznakovi Nikolskij, 1909. Rev. suisse zool., 68,4: 627-725.

Lambert, M.R.K. 1967 Some observations on the herpetofauna of Corsica. Brit. J. Herpetol. 3, 303-306.

Lambert, M.R.K. 1977 Tortoises in Turkey, a preliminary investigation - a sequel to "Tortoise drain in Morocco" (1969). Typescript. 12 pp. An unpublished report circulated to the R.S.P.C.A., Horsham, Sussex; the Fauna Preservation Society, London and the World Wildlife Fund (B.N.A.), London.

Lambert, M.R.K. 1979 Trade and the Mediterranean tortoises. Oryx 15 (1): 81-82.

Mertens, R. 1957 Die Amphibien und Reptilien Korsikas. Senckenbergiana biol., 38, 3/4: 175-192.

Mertens, R and Wermuth H. 1960 Die Amphibien und Reptilen Europas. Frankfurt.

Mountfort, G. 1958 Portrait of a wilderness. The story of the Coto Doñana expeditions. London: Hutchinson.

Naulleau, G. 1973 Les serpents de France (Colubridés-Vipéridés). Rev. français d'Aquariol., 73.

Petit, G., and P.M. Knoepffler 1959 Sur la disparition des amphibiens et des reptiles méditerranéens. In 7th Tech. Meeting, IUCN, Athènes: 50-53.

Radovanović, M. 1964 Die Verbreitung der Amphibien und Reptilien in Jugoslawien. Senckenbergiana biol. 45:553-561.

Royal Society for the Prevention of Cruelty to Animals 1978 A report on the tortoise trade - Istanbul to U.K. Typescript. 5 pp + Appendices A-C. Unpublished.

Risch, J. P. 1978 Les tortues terrestres paléarctiques (Testudo spp.) en France: présence à l'état sauvage, maintien et reproduction en captivité, protection. Bull. Soc. zool. France. (in press)

Salvador, A. 1974 Guia de los anfibios y reptiles españoles. Inst. Nacion. Conserv. Natural., Madrid.

Schreiber, E. 1912 Herpetologia europaea. 2. Ed. Jena.

Stemmler, O. 1957 Schildkröten in Griechenland. Z. Vivaristik, 3, 11:167-176.

Stemmler, O. 1968 a Zur Kenntnis von Testudo hermanni im tyrrhenischen Gebiet.

Stemmler, O. 1968 b Herpetologische Beobachtungen auf den Inseln Elba, Topi, Ortano, Palmajola, Cerboli und dem Monte Massoncello (Italien). Rev. suisse zool., 75,4: 883-926.

Thorn, R. 1968 Les Salamandres d'Europe, d'Asie et d'Afrique du Nord. Lechevalier, Paris.

Tortonese, E., and B. Lanza 1968 Pesci, Anfibi e Rettili. Piccola Fauna Italiana. Martello, Milano.

Trutnau, L. 1975 Europäische Amphibien und Reptilien. Belser, Stuttgart.

Valverde, J.A. 1958 An ecological sketch of the Coto Doñana. British Birds 51, 1-23.

Valverde, J.A. 1959 La protection de la faune en Espagne: Ses problèmes. In 7th Tech. Meeting, IUCN, Athènes: 31-43.

Valverde, J.A. 1967 Estructura de una communedad de vertebrados terrestres. Monogr. Estac. biol. Doñana 1, 1-219.

Wermuth, H., and R. Mertens 1961 Schildkröten Krokodile Brückenechsen, Stuttgart.