

HELLENIC ZOOLOGICAL SOCIETY

**5TH INTERNATIONAL CONGRESS
ON THE ZOOGEOGRAPHY AND ECOLOGY OF GREECE
AND ADJACENT REGIONS**

BOOK OF ABSTRACTS



IRAKLION, CRETE, April 1990

HELLENIC ZOOLOGICAL SOCIETY

5th INTERNATIONAL CONGRESS ON THE ZOOGEOGRAPHY AND ECOLOGY OF
GREECE AND ADJACENT REGIONS, Iraklion, Crete, April 1990

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WATER MITES (HYDRACHNELLAE AND LIMNOHALACARIDAE) OF GREECE:
AN UPDATE.

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PROASELLUS COXALIS (DOLLFUS, 1892) (CRUSTACEA, ISOPODA, ASELLIDAE)
IN GREECE AND ADJACENT REGION.

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ABSTRACT

Proasellus coxalis, a perimediterranean polytypic species, is known from Greece with 4 subspecies, all inhabiting epigeal freshwater habitats of the Ionian area.

In the present paper we investigate the variability of this species with a new approach based on the multivariate analysis of quantitative continuous variables. In fact the taxonomy of this species is still in a chaotic state owing to the use of traditional diagnostic characters that often do not allow to ascribe different populations to any subspecies nor point out relationships among them.

Populations under study come from the Ionian area (Plataria; Zante Is.: Proasellus coxalis versluysi cfr.) and the Aegean area (Tilos Is.; Karpathos Is.); populations from Israel (Proasellus coxalis coxalis) are taken for comparison with topotypes.

The method proposed allowed to discriminate populations under study and to reveal relationships among them. Populations from Aegean area appear more closely related to Israelian than to Ionian populations. Moreover, the population from Tilos Is. results differentiated to an higher degree.

ABSTRACT

During research on the fauna of water mites from the Mediterranean basin, six species were collected in Greece, three of which are new for the Greek-fauna. The water mites-fauna of this country has been investigated by few authors (Viets, 1950; Sthepanides, 1948, 1971; Davids, 1976; Bader, 1983). After our study, the species collected (listed in the paper), now amount to 45. Our knowledge of the geographical distribution of water mites in Greece is limited and therefore further research is needed.

ENDANGERED BIOTOPES OF FRESHWATER DECAPOD CRUSTACEA IN GREECE

by

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Abstract

The Rivercrabs in the mediterranean area are inhabitants of a lot of Islands. In the greece and aegean region there are three species, but local different forms on every island.

Especially these subspecies and nations are endangered by human activities, as catching for eating, but much more by pollution in intensive agraric cultivated regions, and by taking off water

Protection should be discussed.

FAUCHEUSE ROTATIVE VERTICALE POUR PRELEVEMENTS
QUANTITATIFS D' ALGUES LIBRES ET DE FAUNE
(GASTEROPODES PULMONÉS) D'EAU DOUCE.

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Casabianca (1974) était la première qui a construit un appareil permettant, en milieu lagunaire (sans apporter au milieu de perturbation appréciable) d'effectuer des prélèvements quantitatifs d'algues libres et de faune par unité de surface en vue d'évaluations quantitatives ultérieures en volume donné.

Personne jusqu'à aujourd'hui n'a fait la production secondaire des gastéropodes pulmonés d'eau douce par rapport au volume d'eau. Il y a seulement des études faites sur la production de quelques pulmonés d'eau douce par rapport à une surface (Mann, 1964, Eckblad, 1973, Boerger, 1975). Pour cette raison nous avons essayé en modifiant l'appareil de Casabianca d'effectuer des prélèvements quantitatifs dans différentes profondeurs du lac Kerkini (Grèce du Nord).

On a fabriqué donc un appareil plus large, n'excédant pas le poids maximum accepté (10kg).

L'appareil a été modifié de celui de Casabianca aux points suivants:

1. L'appareil a une surface de 400 cm², au lieu de 100 cm², (sachant que c'est la meilleure taille pour le milieu considéré selon la méthode de Healy (*in* Cancela da Fonseca, 1965) et une hauteur de 20 cm correspondant au 8 litres d'eau.

2. On a remplacé le couvercle pivotant par un couvercle tranchant et pivotant, ayant des trous, qui coupe la base de végétaux.

3. La broche de guidage est posée avec le tige du couvercle dans le glissière de guidage que supporte le cylindre extérieur.

4. Pour avoir un volume d'eau précise les trous de la paroi supérieure du cylindre intérieur et extérieur n'existent pas et ces trous se trouvent au couvercle amovible, plus haut cité.

5. Enfin, on connaît la profondeur où les prélèvements sont faits par une règle marquée sur le tube du cylindre extérieur portant à son extrémité une poignée.

Les modifications faites étaient essentielles pour respecter les divers impératifs imposés par le milieu considéré et les animaux étudiés. De plus, son transport ne pose pas de problème et son utilisation aussi bien que son démontage pour l'entretien est facile et assure la sécurité de l'utilisateur.

Contribution to the study of biology of *Bithynia tentaculata*
(Prosobranchia Gastropoda) and *Physa acuta* (Pulmonata Gastropoda)
in lake Kerkini (N. Greece).

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Kerkini lake is an extensive shallow freshwater reservoir created to supply the Serres plain (N. Greece) with irrigation water from Strymonas river.

This lake is included in the Ramsar wetlands of Greece. It is an important breeding area for rare and endangered waterbird species. The malacofauna of the area is not known but constitutes one of the mainest levels in the food chain of the fauna of the lake and especially the gastropods constitute the main intermediate hosts of trematodes and nematodes plentiful in this lake because of cattle-rearing (some of which are very dangerous for the human health). The study of the biology and ecology of those gastropods would contribute:

- to the general knowledge of the fauna of this area,
- to the knowledge of the life cycles of these gastropods. Possibly irrigation, overfishing or water pollution may affect their life cycles, and
- to the possibility of controlling the gastropods' populations and minimizing the parasite's effects.

The malacofauna of this lake is represented mainly by gastropods (prosobranchs and pulmonates) and bivalves. From the gastropods the most important in density are *Bithynia tentaculata* and *Physa acuta*. Otherwise exist *Viviparus viviparus*, *Valvata piscinalis*, *Lymnaea stagnalis*, *Lymnaea auricularia*, *Planorbis* sp., *Ancylus* sp.

The relative growth of H (height of the shell) in relation to D (largest shell diameter) of *B. tentaculata* and *P. acuta* are studied. It is found that in both species H is positively related to D and that growth rate in young and adult snails differs: *B. tentaculata* changes the form of its shell when H \geq 1.99 mm and *P. acuta* when H \geq 8.1 mm which may be related to the changes in the genitalia as the snails mature.

A PRELIMINARY INVESTIGATION ON FRESHWATER FAUNA OF
GÜKÇEADA ISLAND

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ABSTRACT

This work has been undertaken to determine the freshwater fauna (especially freshwater fishes) inhabiting the inland water of Gökçeada Island.

Gökçeada Island is one of the largest island of Turkey and located at Northern Aegean Sea.

In our investigation, we could not find any freshwater fish except *Cyprinus carpio* which has been introduced during the period 1981-1984 in three reservoirs (Zeytinliköy Dam, Dereköy Pool and Şahinkaya Pool).

Freshwater fauna of Gökçeada Island is composed mainly of Rotifera, Cladocera, Copepoda, Ostracoda, Isopoda, Anostraca, Hirudinea, Oligochaeta, Gastropoda, Ephemeroptera, Trichoptera, Diptera, Pisces, Amphibia and Reptilia groups.

ZOOPLANKTON (METAZOA) OF LAKE MARMARA (TURKEY)

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ABSTRACT

This research has been undertaken to determine the zooplanktonic fauna of Lake Marmara.

Lake Marmara is at a distance of 100 kms in the eastern part of İzmir province. It is an alluvial dam lake at an altitude of 75 m with an area of 45 km² and maximum depth of 3.50 m.

Zooplankton samples were collected from ten stations of differing characteristics at monthly intervals for a one year period with a zooplankton net of 60 µm mesh size. The specimens were fixed in 4% formaldehyde.

The zooplanktonic organisms of Lake Marmara belong mainly to the Rotifera, Cladocera, Copepoda and Ostracoda. A total of 33 species have been identified in the lake, comprised of 18 species of rotifers, 10 species of cladocerans, 4 species of copepods and 1 species of ostracod.

THE FRESHWATER FISHES FROM EASTERN MEDITERRANEAN ISLANDS

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SUMMARY

During the last 5 years, the freshwater fish fauna of several eastern Mediterranean islands (Lesvos, Samos, Rhodos, Crete, Cefalonia, Itaca, Kerkira, Krk) was investigated. The species distribution and composition and, in several cases, the safety status were analyzed. Among the recognized species there are three interesting records of cyprinids (primary freshwater fishes): Phoxinus phoxinus from Krk island in Dalmatia; Leuciscus cephalus from Samos (Greece) and a possibly new species of Leuciscus from Lesvos (Greece). A total of about 15 species were found either in brackish or freshwater environments. Among them there are 5 species of primary freshwater fishes. The presence of these forms (unable to cross sea-branches) in continental islands might be explained by means of river connections that occurred when islands were joined to the mainland. This happened at every marked lowering of the sea level, namely at every Pleistocene glacial-maxima event.

The safety status of island populations of freshwater fishes is very poor. Nearly all species are endangered and some of them are already vanished (i.e. L. cephalus from Kerkira). The principal reasons of fish decline are the reductions (or dry up) of streams by pumping waters for agriculture and tourism uses; pollution caused by discharge of human waste and release of refuse from olive and grapes workings.

HEAVY HUMAN INTERFERENCE ON THE ZOOGEOGRAPHY OF FRESHWATER FISHES IN ITALY

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Human interference on distribution of animals and plants is known since ever. Freshwater fishes were also involved and at least since Roman time there are documented introduction of esotic species.

Since the first half of last century, the experimental (or accidental) introduction and acclimatization of esotic commercial species suddenly increased. In Italy, about 20 esotic species become now acclimatized in public waters and others are supplied by regular restocking.

Since about 25 years ago, an other practice take place: stocking of native fishes between different river basin at national level. By this habit, nearly all native species were handled and extensively displaced from one to another river basin in whole Italy.

The original species distribution and composition in rivers of the two main natural ichthyogeographic districts of Italy (Padano-venetian and Tusco-latium), are now radically changed: rivers of central Italy (e.g. Tiber and Arno) are progressively missing their Tusco-latium identity to assume a new padano-venetian one as result of acclimatization of species or conspecific populations transplanted from northern Italy.

The species transfaunation was the principal source of zoogeographic and genetic pollution, massive cases of etero-specific hybridization and local reduction or extinction of native species.

ZOOGEOGRAPHICAL RELATIONS BETWEEN THE SUBTERRANEAN FAUNA
OF AMPHIPODA OF GREECE AND YUGOSLAVIA (Fam. BOGIDIELLIDAE).

The subterranean fauna of Amphipoda (Crustacea, Malacostraca) from Greece and Yugoslavia is very rich and highly endemic, presented by numerous species, among them the members of the family Bogidiellidae.

The very close taxonomic and zoogeographical relationships between both faunas is discussed , including the recently discovered and described a new species of the family Bogidiellidae from Greece and Yugoslavia.

Distribution and Biogeography of the subterranean Coleoptera (Insecta) in
Northeastern Greece

Recent investigations of the endogean and troglobitic fauna of N.E. Greece made evident the high biogeographical interest of that area. Until 1980, the few available data on the subterranean beetles of the region Eastern of Thessaloniki dated back to the explorations of Phalakro Oros ("Boz Dag") near Drama by Leo Weirather fifty years before: in this mountain, three species of Duvalius (subgen. Paraduvalius) are sympatric in caves and at high altitude, e.g. D. (P.) sydowi Jeannel, 1930, D. (P.) pruinosus Jeannel, 1936, and D. (P.) philippensis Jeannel, 1936 (Carabidae, Trechini). Moreover, Winklerites weiratheri G. Müller, 1934 (Carabidae, Bembidiini), Speluncarius rumelicus (G. Müller, 1934), S. seticeps (G. Müller, 1934), Laemostenus (Actenipus) plasoni thracicus G. Müller, 1931 (Carabidae, Pterostichinae), and Bathyscia thracica Jeannel, 1934 (Cholevidae, Bathysciinae), all endogean fauna in forest soil and in subterranean superficial environment, were known from the same massif.

During the last ten years, researches by the authors and other students in several different massifs have revealed the occurrence of many new genera and species. In Mt. Vermio (Véria), the first "true" Duvalius was discovered, D. vermionensis Casale, 1983, and the exceptional troglobitic Elladoherpon inopinatum Casale, 1983, the only leptodiroid Bathysciinae in Greece, close to the Yugoslavian genera Leptostagus Z. Karaman, 1954 and Petkovskiella Guéorguiev, 1976. In Mt. Pangaio (Kavala), a second true Duvalius, e.g. D. milenae Casale, 1983, a new Paraduvalius, D. (P.) germanae Casale & Vigna, 1990, Laemostenus (Actenipus) plasoni etontii Casale, 1988 (present also in a cave near Zigos), and the Cholevidae Panqaeniola casalei Etonti & Etonti, 1985 and Albaniola casalei Giachino, 1989, the Staphylinid beetle Baptolinus casalei Bordoni, 1987 (the only endogean species of the genus) and Chaetonvx binaghi Mariani, 1946, a blind Scarabaeidae only previously known from Mt. Athos. From Mt. Ori Vrondu Duvalius (Paraduvalius) glabellus Etonti & Etonti, 1982 (Carabidae), from a cave near Maronia Maroniella heroni Casale & Giachino, 1985, from Gerakas near Xanthi Bureschiana thracica Giachino, 1989, and from Mt. Menikion Albaniola giachinoi Etonti, 1989 (Cholevidae) were described. Finally, Duvalius (Paraduvalius) ioannidisi n. sp. from Maras cave (Drama), Winklerites lagrecai n. sp. from Mt. Menikion (Drama) (Carabidae), Albaniola macedonica n. sp. , Bathyscia mimetica n.sp. and Bathyscia lekanica n.sp. from Mt. Lekani (Kavala), Bathyscia macedonica n.sp. and Bathyscia kiparidisi n.sp. from Prasinada (Drama), Bathyscia jeanneli n.sp. from Mt. Menikion (Drama)(Cholevidae) are being described at the moment by Casale, Giachino and M. Etonti.

Until now, five main zoogeographical aspects result from the study of this fauna, e.g.: 1) The oldest colonization of the subterranean environment by elements of "North Aegean", dinaric origin (genus Elladoherpon); 2) A penetration from the Rhodopes of elements which reach here their southern limit of distribution (Paraduvalius spp., L.(Actenipus) plasoni s. lato, Bathyscia spp., Bureschiana spp.); 3) A penetration of Western elements which reach here their Eastern limit of distribution (Duvalius of the krueperi group, Albaniola spp.); 4) A function of the region as transitional area for Northern or Western elements which have close in the Anatolian Peninsula (Speluncarius s. lato, Albaniola related to genera as Karadeniziella Casale & Giachino); 5) The function of these isolated massifs as centres of intensive speciation by vicariance for some genera or subgenera, as demonstrated by the high number of related species of Paraduvalius and Bathyscia (sometimes syntopic) in a very small area.

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Subterranean terrestrial Isopods from Crete (Crustacea, Isopoda, Oniscidea)

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Abstract

In Crete 17 species of terrestrial Isopods belonging to 12 genera are known from 44 different caves. Among them 11 have been collected in the island exclusively in caves. The data are both from literature and from bulky material collected in 25 of the 44 caves.

First data on the occurrence of Oniscidean species are furnished for 10 of the 44 caves. Moreover the number of species known for some caves is enriched.

The distribution in the island and the general distribution of the species at present known only from caves is discussed in relationship with the paleogeographic history of the South Aegean Island Arc.

Particularly new data regarding the distribution of Trichoniscus cavernicola Vandel, 1957 are reported for other Aegean islands. The analysis of morphological characters (also studied in SEM) shows a remarkable stability between different populations.

As regards Schizidium perplexum (Vandel, 1957), endemic from the Eastern part of Crete, differential morphological characters are noticed for the population of Spilion Milatos cave.

Finally Cordioniscus cfr. beroni Vandel, 1968 is reported from Dragonada cave (Dragonada Island, North East of Crete), showing differential characters from the type, known only from Kamilari cave.

Cave management: AN OTHER ASPECT OF THE CAVE PROTECTION DURING ITS TOURISTIC DEVELOPMENT

by

Joan Iliopoulou-Georgudaki

It is known the procedure of a cave formation as well as that of stalactites and stalagmites (speleothemes).

What is not widely known is the contribution of some biological reactions in the formation and conservation of the speleothemes.

Thus, the various formations of CaCO_3 can be disintegrated under the influence of gas like H_2S , CO_2 , NH_3 or of sulfuric and phosphoric solutions. These gas and solutions can be produced by the biological cycle of the cave living organisms.

So, the keeping of the biological equilibrium in the interior of the cave is quite necessary. For this purpose it must be approximately firm the parameters like T° , RH and if there are waters, Ph and dissolved O_2 .

The greater disturbances in a visited cave are provoked by: a) the material for the construction of the corridors; b) the lighting of the cave; c) the presence of the visitors.

The utilization of concrete must be avoided because of, during its solidification, it releases gas which changes the pH of the waters and consequently the conditions of the water living animals as well as the whole atmosphere of the cave. More preferable material are flats of concrete which have constructed out of the cave, while the better of all are those from steel.

The lighting by common lamps must be replaced by those of monochromatic lamps of low pressure Na or the high pressure lamps Hg.

On the other hand we can estimate the maximum number of visitors in order to avoid the increase of the cave temperature by the thermal radiation which every man send out. For this purpose we estimate the thermal energy which the air can absorb up the time unit by the formula: $E = Cp \cdot p \cdot V \cdot \Delta T / \Delta t$. Continuously, knowing the mean of a man sending out thermal energy we calculate the number of the visitors which will provoke the minimum temperature change.

Finally a monitoring system of the cave environment by thermo-hydrographs and thermal anemometers is indispensable for the cave conservation.

The differentiation of the genus Helix Linnaeus 1758 (Gastropoda, Pulmonata) in the central and south Aegean region.

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The genus Helix Linnaeus 1758 includes the larger land snails in Greece. Approximately 12 species are distributed in Greece. Seven of them (H.aspersa, H.aperta, H.figulina, H.nucula, H.cincta, H.godetiana and H.valentini) are found in the region of central and south Aegean. Apart from the bibliographic data, their distribution was completed by studying the collections of Riedel, Wiktor, Mylonas and Vardinoyannis.

H.godetiana is endemic of the central Aegean islands having a restricted distribution. All the others are widely distributed. The wide distribution of H.aspersa, H.aperta and H.nucula is attributed to the influence of man. The distribution of H.figulina and H.cincta in this area presents clear limits. Based on the above distributions we can state the following:

1. In Crete only anhupechurous species are found.
2. The area, that includes the central and east Cyclades, the island of Astypalea and the small islands east and south of them, is characterized by the distribution of H.godetiana. The species H.valentini is found only in the east Aegean islands.
3. The species H.rigulina and H.cincta are distributed in the surrounding mainland and the nearby islands, but H.figulina also extends its distribution in the islands of central Aegean.

We attempted to combine these distributions with the palaeogeographic data.

Breeding seasons among helicids (Gastropoda, Pulmonata) in Greece.

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Breeding seasons for land snails are usually limited by severe conditions: the extended dryness and the extreme high or low temperatures. Seasonality of the favourable conditions leads to a close synchronization of the life activities.

In Greece, the mediterranean climate is differentiated mainly toward a northern-southern direction. In the south there are two distinguishable periods: An extended dry and warm season with temperatures up to 35 C, usually from May to October and a temperate wet one. In the north, the warm season is reduced from June to August and is not so dry, whilst the wet season is divided by a cold period. Accordingly a synchronization of life activities is expected mostly in the south.

Our investigations among different helicid species in the south, suprisingly indicated two distinct breeding seasons: A first one in Autumn where the majority of the specimens and species copulate and a second one, in the last month of the wet period. All species comprising this second group are endemic and strongly differentiated in the south.

Different explanations on this peculiarity are discussed.

Aspects on the natural history of the genus Albinaria
(Gastropoda, Pulmonata).

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During the last five years many scientists focused their interest on the differentiation of the genus Albinaria, in the Aegean region. This interest arose by the necessity of a contemporary and natural classification of the genus. However, the lack of ecological and biological observations is a considerable obstacle toward this direction.

In this work our field and laboratory observations, on the aestivation habits, awakening and copulation ethology in different populations and species of the Aegean, are presented.

1. Aestivation : a. Some individuals mainly adults, start their aestivation period from February though weather conditions are still favourable. b. Aestivation is obligatory for all the populations of the genus no matter of their geographical position. It begins at the end of spring (April, May) and ends with the first autumn rainfalls. c. There is a great variability concerning the place and mode of aestivation. Some populations aestivate on the surface of the rocks, straight under sunlight, some others on the tree branches and others under stones or in the soil.

2. Awakening in the field is related with the place of aestivation. In the laboratory we observed differences of awakening among the different populations of the same species and also among the individuals of the same population.

3. Copulation is the first activity for every individual after awakening. Both in the field and laboratory, the individuals copulate with their nearest congeneric neighbour no matter of the species. In the laboratory the copulation frequencies among individuals of different species are fortuitous.

Morphological differentiation in Albinaria populations
(Gastropoda, Clausilidae) from the Aegean region. II

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The taxonomic status in the genus Albinaria as well as other relative genera has been revised for several times following different opinions of many taxonomists.

Mainly shell characters, like the internal and external form and armature of the last whorl and aperture, are used.

Ayoutanti et al. (1987 and in this congress) after an extensive electrophoretic study constructed a dendrogram for 31 different populations which coincides a lot with geography, palaeogeography and the existing taxonomy.

Our first attempt to construct a dendrogram for 18 of the above populations based on 36 different quantitative characters showed no relation with geography, the existing taxonomy and the presented tree by Ayoutanti et al.

In this work a further study has been made by using 18 quantitative and 10 qualitative characters for 23 populations. Dendrograms constructed :

- a: by all characters,
- b: by non related characters,
- c: by groups of correlated characters and
- d: by all quantitative characters

showed no or very small consensus with that of electrophoretic data. On the contrary the tree constructed by using only the qualitative characters is close enough to that of electrophoretic data.

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Geographic structure of the genus *Albinaria* in the Aegean region as revealed by electrophoretic genetic data

31 natural populations belonging to different species and subspecies of the genus *Albinaria* have been studied electrophoretically and the genotypes of the individuals were identified for 27 loci. Gene frequencies permitted to estimate genetic distances between populations and were used for constructing a phylogenetic tree. This tree displayed several geographic characteristics ;in general the clustering agreed well with the current morphological taxonomy. The main pattern shown has been interpreted to derive from the existence in a remote past of an arc uniting the Peloponnesus, Crete and Asia Minor.

A.AYOUTANTI, C.B.KRIMBAS, A.PAPATHANASOPOULOU and S.MYLONAS:

Inbreeding and population structure of taxa of the genus *Albinaria* in the Aegean region.

An electrophoretic study of the polymorphism of 27 loci was accomplished for 31 natural populations of the genus *Albinaria* in the Cyclades, east Aegean islands and in eastern continental Greece. Genotype frequencies often departed from panmixia in the direction of inbreeding. The inbreeding coefficient F was estimated for every population by a method inspired from the maximum likelihood approach. These estimates varied between 0.058 and 0.440 in different populations, their mean being 0.200 ± 0.093 . However, populations were heterogeneous in F . Three different mechanisms were discussed: inbreeding due to the subdivision of every population in smaller panmictic units (Wahlund effect), self fertilization, and matings between parents. In an attempt to estimate the order of magnitude of the area occupied by the panmictic unit we have arrived to a value of 50 m^2 .

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SUMMARY

of the following communication submitted to be read on the 5th International Congress on the Zoogeography and Ecology of Greece and Adjacent Regions, Iraklio, Crete, April 1990:

SOME OBSERVATIONS ON INSULAR FAUNAS OF THE SOUTHERN AEGAEAN

The soil fauna of the Santorini archipelago and the Karpathos archipelago is treated. New data on composition and species numbers are provided and discussed.

A comparison of the species numbers of Santorini island with those of Kasos island questions the contention that Santorini has an impoverished flora and fauna due to the volcanic catastrophe 3600 years ago.

The terrestrial isopodsfauna of the Karpathos archipelago is analysed concerning its evidence for the phenomena extinction, immigration and turnover on islands.

Adolf Riedel (Varsovie)

Différenciation et distribution géographique des Zonitidae (Gastéropodes terrestres) en Grèce

Résumé

Au cours des 10-15 dernières années, les connaissances sur la composition des espèces de Zonitidae (sensu lato) en Grèce et leur répartition ont considérablement progressé. Actuellement, de ce pays, nous connaissons 116 espèces, sans compter quelques-unes probablement nouvelles, encore non décrites. La Grèce possède une faune de Zonitidae plusieurs fois (!) plus riche du point de vue qualitatif que tout autre territoire de superficie comparable. L'endémisme de cette faune et la particularité par rapport aux pays voisins sont nettement accentués. Les espèces largement répandues ne forment que 15% de la zonitidofaune de la Grèce, tandis que 85% sont constituées par les espèces à distribution étroite et endémiques. Quarante-cinq espèces et sous-espèces, c'est-à-dire près de 75%, existent uniquement en Grèce. Six des 13 genres de Zonitidae (s.l.) grecques sont endémiques en Grèce ou y ont leur centre de différenciation et la majeure partie de leur aire: Lindbergia, Gyalina, Allaegopis, Doraegopis, Balcanodiscus et Zonites. Près de la moitié également des espèces du genre Vitrea, largement réparti, apparaît en Grèce; les $\frac{2}{3}$ sont des endémites. Par contre le genre Oxychilus, fort riche en espèces, est relativement mal représenté en Grèce, tandis que sa proportion est beaucoup plus grande dans la zonitidofaune des autres pays de la Paléarctique occidentale. - On a constaté une grande différenciation régionale de la zonitidofaune grecque, en calculant les coefficients d'affinité faunistique pour 11 régions géographiques adoptées.

THE GENUS LIGIDIUM, BRANDT (ISOPODA, ONISCIDEA)

IN GREECE. TAXONOMY AND DISTRIBUTION.

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SUMMARY

For the present study several populations of Ligidium species were examined in order to check the existing data on the taxonomy of the genus. The material used has been collected from the following locations, some of which consist new records for the genus: Mt. Athos, Mt. Pelion, Euboia (Mt. Dirfis and Mt. Ochi), Andros, Tinos, Kea, Kythnos, Samos, Mt. Aroania (Peloponnisos) and Mt. Taygetos (Peloponnisos). Also, several other locations have been investigated in order to define more accurately the limits of the distribution of the genus.

The diagnostic characters used for specific determinations were found considerably variable, except one (the structure of the apex of male pleopod endopodite 2) that can be considered as the most reliable (being conservative inside the species). According to this character the status of the known species has been revised.

The distributional pattern of the genus, after the inclusion of the new data, is discussed from a biogeographical and phylogenetic point of view. The possible interactions of historical and ecological parameters that have produced this pattern and the importance of this genus for the reconstruction of the geological history of Greek area are discussed.

Breeding patterns in some isopods from the Mediterranean and arid regions of Israel.

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All the isopod species studied so far, bred only once yearly. Two of them were proven to be semelparous. Two different species were proven to be iteroparous. Of the two semelparous species one inhabited the arid region (Hemilepistus reaumuri), whereas the other (Schizidium tiberianum), inhabited a mesic habitat in the Mediterranean region. Of the two iteroparous species one inhabited the Negev desert (Armadillo albomarginatus), whereas the other inhabited the Mediterranean oak-woodland (Armadillo officinalis). The isopods bred during different periods of the year. Several species bred during spring (Porcellio chuldaensis, Porcellio obsoletus ficulneus, Hemilepistus reaumuri, Schizidium tiberianum), whereas others during fall (Armadillo officinalis, Armadillo albomarginatus). One species, (Armadillo sp. 'brown'), bred during summer. The changes in ovarian and oocyte dimensions, and the number of oocytes were followed throughout the year. Likewise, both marsupial egg and juvenile numbers were counted. Thus the loss in oocytes and marsupial eggs could be estimated. The difference in the female's weight before and after the release of the juveniles, indicated the reproductive allocation. This ranged between 10-50% in the various species. The female's (=parental) investment in producing a single juvenile was calculated on the basis of the reproductive allocation and the size of the batch.

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Taxonomy and Distribution of the Genus *Cyrtocarenum* Ausserer, 1871 in Greece. (Araneae, Mygalomorphae).

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The order Araneae (spiders) is conveniently divided into two sub-orders: the Labidognatha and the Orthognatha. The Labidognatha, or true spiders, have a very wide distribution and are a common appearance in all countries of the world. The Orthognatha are the living representatives of a primitive breed that dominated the early spider world when it first came into existence in the late paleozoic era.

Due to their extreme secretive life-style, Orthognathe spiders have escaped largely scientific attention. The Orthognathe spider fauna of Europe is concentrated in the Southern countries of the continent and is dominated by trapdoor spiders of the families Ctenizidae and Nemesiidae (Raven, 1985).

Outstanding biological characters of these spiders are (except for their ability to escape human attention through the often perfect camouflage of their domiciles) their ability to survive adverse conditions (e.g. Main, 1978) and their very limited powers of dispersal (e.g. Decae, 1987).

Poor dispersal is believed to underlie the general pattern of species distribution in the Mediterranean area. This is characterized by relatively large numbers of closely related, albeit distinct species each exhibiting a very local distribution. Particularly in Greece, with its many isolated islands and archipelagos, spider endemism due to low dispersal capacity is a conspicuous phenomenon (Bristowe, 1935). It is therefore to be expected that a trapdoor spider genus such as *Cyrtocarenum* would show specific endemic tendencies in its Greek distribution. Early taxonomical information seemed to confirm this expectation through the description of 6 Greek *Cyrtocarenum* species and an additional one from Western Anatolia. My revision of the genus based on collections made between 1979 and 1982, led me to believe that really only two distinct species exist in the area (*C. cunicularium*, Olivier, 1811 and

C. grajum, C. Koch, 1836). Contrary to expectations these species showed no endemism but appeared to occur sympatrically over much of their respective ranges. Several explanations can of course be proposed to explain this apparently aberrant distribution of *Cyrtocarenum* in Greece.

A particularly intriguing one is that the distribution of *Cyrtocarenum* in Greece does not reflect the present configuration of mainland and archipelagos but a previously existing one. If so, the rate of evolutionary change in these trapdoor spiders would be evidently different from what is usual in spiders. To investigate this possibility, the distribution map of *Cyrtocarenum* should be projected on the geological map and be checked with paleogeographical information. The results may prove to be important in the light of improving our understanding of macro-evolutionary phenomena and fauna development. So far our knowledge of the distribution of *Cyrtocarenum* is insufficient to draw any conclusions although available data suggest a possible Eastern (e.g. Pelagonian) origin of *C. cunicularium* and Western (e.g. Pindus) origin for *C. grajum*.

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-Raven R. (1985) The Infraorder Mygalomorphae (Araneae) Cladistics and Systematics. Bull. Amer. Mus. Nat. Hist. Vol. 182 art 1: 1-180.

The mite fauna associated with the bark, twigs and leaves of apricot trees was studied in a plot during May 1987 to May 1988. The mites captured in artificial shelters adjusted to the trunk and branches of the trees during the winter were also examined.

Species richness of the bark was found to be much greater than those of twigs and leaves. Artificial shelters yielded only seven species. Sixteen species were collected exclusively from bark while the taxa *Tydeus* sp., *Lorryia* sp., *Pronematus* sp., *Tarsonemus waitei* Banks, Erythraeidae, Bdellidae, Cunaxidae and Cryptostigmata were observed in all habitats (bark, twigs and leaves). Phytoseiids *Typhlodromus coto-neastri* Wains. *T.kerkyrae* Sw.& Rag. and *Amblyseius filandicus* (Oud.) were present in both leaves and twigs while *Triophtydeus* sp. and *Tarsonemus* sp. were found in bark and twigs.

The evaluation of taxa found by using the criteria of dominance and frequency showed the most characteristic ones for each of the habitats examined.

The seasonal fluctuations in the mean numbers per 100 gr d.w. of the most dominant and frequent species were also studied. Generally there was a trend for the majority of the species found on leaves to build up high population densities during autumn.

STUDIES ON PHYTOSEIID MITES IN GREECE

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An almost nationwide survey to find out the presence and distribution of phytoseiid mites was undertaken in Greece since 1982. A great number of samples (aprox. 3.000) were examined including most of the main cultivated plants. Many uncultivated trees, shrubs and herbaceous plants were also examined.

At present a total of 30 species have been indentified while several others are considered to be new to science. Most of the species (16) belong to Typhlodromus, nine (9) to Amblyseius, three (3) to Phytoseius while each of Phytoseiulus and Iphiseius are represented by one species. In Citrus groves Amblyseius stipulatus Athias-Henr. was the most prevalent species followed by A.potentillae (Garm.) while in olive trees the most widespread species was Typhlodromus athenas Sw. and Rag. Common species of other fruit trees were Amblyseius filandicus (Ouds.), A.abberans (Ouds.) and Typhlodromus cotoneastri Wains. In gramineae Amblyseius bicaudus Wains. and A.barkeri (Hughes) were found almost everywhere those host were sampled.

Typhlodromus ervmanthii Papad. and Emman. and Typhlodromus nr peculiaris (Kolod.) were found only on Fagaceae while Typhlodromus recki Wains. was present exclusively on Labiatae.

CONSIDERATIONS TAXONOMIQUES, FAUNISTIQUES ET ZOOGEOGRAPHIQUES SUR LES
CHILOPODES DES ILES EGEENNES

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Dans ce travail on examine la faune des Chilopodes des Iles Cyclades, des Sporades septentrionales, des Sporades méridionales et de l'île de Crète. Le peuplement de ces îles n'est pas jusqu'ici profondément étudié: les données bibliographiques sont très pauvres et beaucoup d'entre elles sont assez anciennes; il faut préciser aussi que plusieurs espèces présentent des problèmes taxonomiques.

Cette étude, basée sur un catalogue de la faune de la Grèce en préparation par l'Auteur, débat d'abord la distribution des espèces avec la présentation des plus importants problèmes taxonomiques et analyse ensuite les principales composantes faunistiques du peuplement.

Les espèces des Chilopodes des Iles Egéennes sont à peu près 38 (8 Scolopendromorphes, 15 Geophilomorphes, 14 Lithobiomorphes, 1 Scutigéromorphe). Les îles mieux connues sont les Sporades méridionales (32 espèces) avec Rhodes et Kos qui sont les plus riches (20 espèces environ). Dans les Cyclades on connaît 12 espèces environ; le peuplement de Crète est relativement pauvre (20 espèces) et celui des Sporades septentrionales est mal connu (5 espèces).

La plupart des espèces sont à gravitation méditerranéenne (65 % environ; oloméditerranéennes ou E-méditerranéennes), par contre le contingent européen est pauvre (25 %) aussi bien que le W-palearctique (10 %); jusqu'à ce moment on n'a pas enregistré d'espèces endémiques.

Considérations zoogéographiques sur la faune des
Chilopodes des îles de la Mer Egée et de la Mer Ionienne

par

Z. Matic et G. Stavropoulos

Les îles de la Mer Egée et de la Mer Ionienne, extrêmement nombreuses, sont généralement éloignées du continent et parfois même entre elles, fait qui a déterminé l'apparition d'un grand nombre d'espèces endémiques, comme suite des conditions géographiques et climatiques particulières.

L'influence méditerranéenne se manifeste par la présence des espèces éléennes, méditerranéennes, adriato-dinariques, est méditerranéennes, égéennes et épirotico-ioniennes.

On connaît jusqu'à présent 69 espèces, dont 25 se trouvent sur les îles de la Mer Egée, 24 sur les îles de la Mer Ionienne et 20 sont communes pour les deux zones.

De l'ensemble des Chilopodes qui peuplent les îles éléennes, l'ordre des Géophilomorphes comprend 23 espèces, l'ordre des Scolopendromorphes 10 espèces, l'ordre des Lithobiomorphes 35 espèces et l'ordre des Scutigéromorphes 1 espèce.

Du riche peuplement des îles éléennes, qui comprend un grand nombre d'endémismes, ainsi que du peuplement méditerranéenne qui montre ici une répartition géographique tout à fait particulier, on peut déduire en tant que conclusion générale le fait que dans cette zone ont existé et existent des conditions climatiques et géographiques spécifiques, qui ont permis l'apparition de formes nouvelles imprimant à la faune de Chilopodes de la Grèce un caractère à part.

L'étude zoogéographique des Chilopodes des îles éléennes est particulièrement intéressantes, d'autant plus que les zones avoisinantes (la Grèce continentale, l'Anatolie, le nord de l'Afrique) restent encore mal connues à ce point de vue.

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Sur la répartition et l'écologie des Ephéméroptères
et des Coléoptères Elmidae du Liban méridional.

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30 stations de récolte ont été prospectées sur les bassins versants des rivières Damour, Aouali et sur le cours inférieur du Litani. La répartition de 21 espèces d'Ephéméroptères et de 9 espèces de Coléoptères Elmidae y est examinée en fonction des paramètres écologiques : altitude, température maximale et conductivité électrique de l'eau. Les affinités cénotiques les plus fortes entre ces 30 espèces sont présentées.

AUCHENORRHYNCHA (HOMOPTERA) COLLECTED IN LIGHT - TRAPS IN CRETE

By S. DROSOPOULOS

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About 80 species of leafhoppers and planthoppers were collected in light - traps from April-September in 1977 and 1978. The material sent to the author by Dr. H. Malicky is the first one collected by this method from Greece. It contains 3 new records for Greece and a lot of other interesting species. Since the material has been collected in regular intervals, it will be the first time that we will know about the phenology of so many species. Phenological data of all species are entirely lacking from the whole mediterranean region. A brief zoogeographic analysis of these species is presented as well.

The island of Crete is situated in the eastern part of the Mediterranean Sea, on the south-west coast of the Balkan Peninsula. It is separated from the mainland by the Cretan Channel and is bounded to the north by the Aegean Sea. The island is situated in the eastern part of the Mediterranean Sea, on the south-west coast of the Balkan Peninsula. It is separated from the mainland by the Cretan Channel and is bounded to the north by the Aegean Sea. The island is situated in the eastern part of the Mediterranean Sea, on the south-west coast of the Balkan Peninsula. It is separated from the mainland by the Cretan Channel and is bounded to the north by the Aegean Sea.

Summary: The present paper reports on the collection of Auchenorrhyncha in light-traps on the island of Crete (Greece) during the years 1977 and 1978.

Key words: Auchenorrhyncha, light-traps, Crete, Greece, 1977, 1978.

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A b s t r a c t

Heteroptera of the Island of Crete VIII:
Phenology of two light-trap collections.

by
E. Heiss, H. Günther, Ch. Rieger, H. Malicky

A b s t r a c t: The knowledge of the Heteroptera-fauna of the Island of Crete has been considerably improved in the last 15 years with the publication of new data by JOSIFOV, HEISS, HEISS et al. and CARAPEZZA, reaching a number of 353 species (JOSIFOV 1986). Most of the material was collected on short trips with touristic background and therefore no sufficient data were available for the study of phenology, life-cycles etc.

During his investigation of the Trichoptera-fauna, one of the authors (HM) installed light-traps at Sisses and Kastellakia in northern Crete which were run for a period of two years between 1977 and 1979. The results of the study of the material collected in the traps are presented here.

The total number of the trapped species is 105, about 30% of those known to date. Its composition reflects the expected different flight activities of heteropteran families, dominated by Miridae (60%) and followed by Lygaeidae (18%) and Pentatomidae (6,7%), while the percentage of other groups (Anthocoridae, Reduviidae, Coreidae, Rhopalidae, Cydnidae) ranges from 0,9 to 4%. There were no aquatic species caught.

Surprisingly 33 species or 31,4% constitute new records for the island. Phenological aspects, seasonal changes in composition and life-cycles are discussed and shown in diagrams.

The Balkan Peninsula occupies an area of 520 000 km². It is bordered on the north by the rivers Danube and Sava, on the south by the Mediterranean sea, on the east and south east by the Black and Aegean seas and on the west by the Adriatic and Ionian seas. Five mountain ranges dominate the area, Dinaric, Sarsko-Pindski, Carpathian, Balkan and Rodopian. The climate is continental and mountain inland, and mediterranean on the coast. The Balkan Peninsula, with various hydrology, provides a wide range of different types of breeding places for mosquitoes. For administrative, practical and financial reasons, we chose characteristic breeding sites for mosquitoes on the Balkan, within the territory of Yugoslavia. The zoogeographical analysis is based on the comparison of listed species for the chosen sites, differences in the origin of formation, elevations factors, ecological conditions and percent of salt in the water. In the discussion, the mosquito fauna data from the other countries on the Balkan Peninsula, are included. The above mentioned factors, and the transition from the middle-european to mediterranean mosquito fauna are represented.

TITRE

Premières données faunistiques et biogéographiques sur les
Simulies de Turquie (Diptera, Simuliidae).

ABSTRACT

Dans ce travail, les auteurs donnent une liste de Simuliidae récoltés dans plusieurs réseaux hydrographiques de Turquie. Les plupart des espèces sont citées pour la première fois. L'étude biogéographique prouve qu'il s'agit principalement d'une faune est-paléarctique. Les éléments d'origine orientale sont représentés par le sous-genre Wilhelmia.

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GENERAL ASPECT OF BUPRESTID BEETLES
FAUNA OF TURKEY (COLLOPTERA:BUPRESTIDAE)

Niyazi LODOS^X

Serdar TEZCAN^X

Although there have been considerable number of papers published, there is no real comprehensive work especially inventory one about given the whole picture of the Buprestid fauna of Turkey. As a matter of fact, it is impossible to give the necessary data of the species level which are accumulated in our IPM system. This paper is rather a review, based on the previous books, catalogues, research papers as well as our departmental material to exhibit the diversity, richness and zoogeographical distribution about the Buprestid fauna of Turkey. This study showed that there are 35 genera with 386 species occur in Turkey. Zoogeographical analysis showed that about 25 % species are endemic (with 91 species). The others belong to the Palearctic, European, Asiatic, Mediterranean and Holarctic regions and also subregions.

Sawflies sensu lato of the island of Crete (Insecta: Hymenoptera,
Symphyta)

by

Wolfgang Schedl (Innsbruck, Austria)

Abstract: The author gives a review of the present knowledge of the sawfly fauna of the eumediterranean island of Crete. The findings of the first stage of entomological research at the end of the 19th century are supplemented with those of the last 30 years and with findings of the author in April/May 1980. At the present 26 species belonging to 6 families are known from Crete, most of them are collected 200 - 2000 m above the sea level: Xyelidae (1 species), Orussidae (2), Argidae (3), Cimbicidae (1), Tenthredinidae (15) and Cephidae (4). Three or more (?) species of Tenthredinidae are endemic for the island. Some species of the Tenthredinidae, especially Nematinae, wait for taxonomical clarification. of special biological and zoogeographical interest are the two species of Orussidae. Finally the Symphyta fauna of Crete is compared with those of Cyprus and the Baleares Islands.

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SOCIALLY PARASITIC ANTS OF GREECE

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Among a world total of 10-12.000 described ant species about 200 are known to live as social parasites in dependence upon other, free-living species (cf. list in Hölldobler & Wilson 1990). For the Balkan peninsula, Agosti & Collingwood (1987) list 319 ant species, for Greece north of the Gulf of Korinthos 174, among them 15 parasitic species in Greece, and 25 for all the area. A few species have been added since. The Mediterranean countries are rich in social parasites, and nearly all major genera consisting of or comprising parasitic species in this area are represented in Greece: *Formicoxenus*, *Sifolinia*, *Chalepoxenus*, *Epimyrma*, *Myrmoxenus*, *Anergates*, *Strongylognathus*, *Bothriomyrmex*, *Plagiolepis*, *Lasius*, *Formica*, and *Polyergus*. *Harpagoxenus* and *Doronomyrmex*, with predominantly Alpine and boreal ranges, occur in northern Yugoslavia.

Among the new records some are particularly interesting: In Crete populations of *Epimyrma kraussei* have been found with the worker caste lacking, whilst a few E.-workers are present in most colonies of all other populations studied as yet (Buschinger 1989). *Strongylognathus* cf. *insularis* was found in Crete having two host species (*Tetramorium lucidulum* and *T. semilaeve*) simultaneously within one nest, the first record of this kind, despite in other slave-making ants it is a common phenomenon. And some evidence was found of parasitic relations between *Tetramorium* species which as yet were believed to be independent.

With respect to socially parasitic ants, Greece is hitherto poorly investigated. The existence of such ants, on the other hand, is a good indicator for natural or near-natural, long-term stable conditions, and thus for ecologically valuable sites which deserve protection.

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The enigmatic genus *Proscolia*,
its distribution and phylogenetic relationships (Insecta, Hymenoptera)

Till Osten

Zusammenfassung

Die beiden Fundplätze von *Proscolia spectator* Day in Griechenland werden beschrieben. Die Lebensräume werden miteinander verglichen. Auf die Bedeutung alter, verfallener Ruinen als Zuflucht für spezielle Tier- und Pflanzenarten und deren Schutz wird hingewiesen. Der mögliche Lebenszyklus von *P.spectator* wird erwähnt. Die unterschiedlichen Auffassungen der phylogenetischen Zuordnung von *P.spectator* wird diskutiert.

Summary

Both localities for *Proscolia spectator* Day in Greece are described. The environments are compared with each other. The importance of old, decayed buildings as refuges for special animal and plantspecies and their protection are pointed out. The suggested lifecycle of *P.spectator* is mentioned. The different opinions about the phylogenetic relationships of *P.spectator* are discussed.

A Comparative Study of the Ant Fauna of Five Greek Islands

by

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ABSTRACT

The Ant fauna (Hymenoptera, Formicidae) of 5 Greek islands - Santorini, Karpathos, Xios, Kephallonia and Zante is compared. A total of 70 species are listed from brief collecting visits to these islands in 1982, 1986 and 1988. First records for the islands include *Solenopsis geminata* (Fabr.) a subtropical tramp species, *Strongylognathus dalmaticus* Baroni Urbani parasitic on *Tetramorium punicum* and *Bothriomyrmex gibbus* Soudék usually associated with *Tapinoma* species.

Key words Ants (Formicidae), Greek Islands, Faunistics

Greek and neighbouring populations of *Apis mellifera* L.
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The Mdh-1 allele distribution was used as a tool to define the genetic pattern of honeybees from mainland Greece and Aegean islands (Kriti, Naxos, Rhodos, Limnos, Samos). The presence of Mdh-1-S allele in mainland Greece honeybees shows a close genetic correlation between these populations and Carniolan and Italian ones, where this allele is common. In particular the Northern area of Greece appears to be a transition zone between *A.m. cecropia* and *A.m. carnica*. Kriti and Aegean island populations, lacking the Mdh-1-S allele, can be regarded as an homogeneous group, genetically separated from mainland Greece ones: this agrees with the morphometric data of RUTTNER (1980), who described Kriti honeybees as a separate subspecies, *A.m. adami*. The fact that the Mdh-1-F allele is almost fixed evidences a correlation between Aegean and Sicilian honeybees and the presence of a rare allele, Mdh-F1, in some Aegean populations suggests a common phylogenetic origin between them and Sicilian and Calabrian bees (ancient Magna Graecia).

Lepidoptera (Papilionoidea, Hesperioidea) in the southern Peloponissos, Greece, May 1988.

D.E. Gaskin¹ and E.A. Littler².

ABSTRACT

About 50 species of Papilionoidea and Hesperioidea were recorded during counts at 20 different localities in the southern Peloponissos between May 13-25 1988. The area surveyed covered southern Messinia and southern Lakonia, from Pílos to Monemvasσία, through Kalamáta and the central Taígetos, and southwards along both coasts of the Máni. The highest species counts were made on a stretch of small side road in the Taígetos at about 1400m (34), and on the eastern side of Mistra (31). The highest numbers of butterflies, as opposed to numbers of species, were noted in moist semi-cultivated areas just east of Kalamáta, *Maniola jurtina* being exceeding abundant. The literature relating to the butterflies of the Peloponissos is briefly reviewed. That Greece retains a relatively rich butterfly fauna can probably in part be ascribed to the retention of traditional agricultural practices in many parts of the country. This can be expected to change rapidly following entry to the E.E.C. in 1992. Changes in agricultural regimes in continental Europe and the U.K. seem to be correlated with frequently precipitous declines in butterfly abundance and diversity. It is very important that collection of distributional data on butterflies in Greece be intensified because conservation efforts will certainly be necessary, and these can only be demanded when comparative information on deleterious changes can be documented. Loss of diverse habitats would seem, from current research, to be by far the most important problem in all countries.

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A STUDY ON SOME ARTHROPODS OF ECONOMIC IMPORTANCE
IN ALFALFA PLANTATION IN Co. BOIOTIA, GREECE.

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A study on the biology and seasonal fluctuations in the popula-
tion on three curculionid and an eriophyid species was undertaken
in a three-years alfalfa plantation, during the period April 1986
- March 1987.

Apion pisi started migrating from alfalfa early in the summer while
the population reached to zero level from the mid July onwards.

The aestivation took place out of the cultivation out adults re-
turned at about the beginning of October and started to reproduce.

Hypera variabilis was also found to estivate out of alfalfa planta-
tion. It was completely absent from mid June to end of November.

Its population densities were lower than of A.pisi

Sitona lineatus did not enter summer diapause. It was more preva-
lent in the layer of debris at the soil than on the aerial part

of the plants. Eriophyes medicaginis reached high population densi-
ties during the more cooler and humid period of the year. Its popu-
lation densities were greater than in the previous two years.

ENVIRONMENTAL FACTORS THAT INFLUENCE THE PHENOLOGY OF PREDATORS IN THE ORGA-
NIC HORIZON OF A MEDITERRANEAN PINE FOREST

Radea Kanella

(Section of Ecology and Taxonomy, Depart. of Biology, University of Athens)

Summary

The densities (ind/m^2) of predators such as Araneae, Lithobiomorpha, Geofilomorpha and Pseudoscorpionida and the corresponding ones of their po-
tential prey i.e. Isopoda, Thysanoptera, Psocoptera, adults and larves Di-
ptera, Acari and Collembola were estimated in four types of the organic ho-
rizon (Ao) in a typical Mediterranean pine forest with *Pinus halepensis* Mill
(Scopelos, N. Sporades). The sampling was done in monthly intervals from Au-
gust 1985 to September 1986 and the arthropods were extracted from the sam-
ples in a Berlese-Tullgren apparatus.

The water content and the mass of accumulated dead organic matter in
the four types of Ao were also estimated.

The results were statistically analysed by using non parametric tests
(Spearman rank correlation coefficient (rs), Kendall partial rank correla-
tion coefficient (rxy.z)).

The densities of predators are correlated (in statistical significant
degree) with: a) the values of climatological factors, b) the density of some
groups of potential prey and c) the water content of some types of the Ao.
Statistical significant correlation is not observed between the density of
predators and the mass of accumulated dead matter in the forest floor.

BIRD SPECIES NEW TO GREECE: 1969-1979.

George I. Handrinos.

Since the publication of "Aves", as part of the "Catalogus Faunae Graeciae", in 1969 and its two supplements, in 1971 and 1973, our knowledge on the distribution status of many bird species has been greatly advanced.

During these 20 years, 23 new bird species have been recorded in Greece, thus increasing the list of avian species to 406.

These 23 species belong to 23 families and are mainly passerines and waterbirds. The greatest majority of them are of W.Palaearctic origin, involving however some African and Asiatic birds, whereas 4 of them come from the Nearctic region.

This paper presents, in a summary form, the details of the occurrence of each species in Greece, with notes on their ecology and zoogeographical origin.

Title: The breeding of the Gull-billed Tern
(*Gelochelidon nilotica*) in western Greece.

by: Pergantis P., V. Goutner, G. Handrinos and
T. Akriotis.

ABSTRACT

Most of the European tern species are threatened due to loss of favourable habitats. The Gull-billed Tern is considered as one of the most threatened ones due basically to its foraging specializations.

Western Greek wetlands and especially Messolonghi used 20-30 years before to hold big colonies of this species.

Extensive drainage which took place in late 60's and early 70's induced remarkable decrease of its breeding populations.

Nowadays data, from this work, about its breeding, show a partial recovery of its breeding populations especially in the Messolonghi wetland area. It appears, thus, as if that species has partially re-adapted to the newly formed conditions.

This work also examines special requirements for the future conservation of this vulnerable species.

The latest colonizations of new birds in Sardinia

by Attilio MOCCI DEMARTIS (*)

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SUMMARY

At 1957, when BEZZEL was exploiting the few ornithological studies made episodically from 1835 in Sardinia, he tried to reassemble an avifaunistic outline of the island. However his work, in spite of the intrinsic value of recapitulation, showed still some gaps, on account of excessive dilution in the time of the precedent observations. Then some species of birds, cited by BEZZEL in his work, were resulted at 1957 already departed or very rare and unfindable, since related to remote dates.

After this work, the reflowering of a new ornithology in Sardinia, the reborned passion for this subject among the young men too, and the increased number of observers, allowed to reconstruct the general avifaunistic situation, by enlarging the geographic covering network and by gathering the colonisation of new species, previously thought absent.

Other faunistic lists have been made, whose the latest is that of MASSA & SCHENK (1980). In this work 111 species have been declared certainly nesting (75 as "resident breeding" and 36 as "summer breeding"), 11 as

"immigrated" until that year, and 7 as "departed". But in addition to these 122 breeding species, other 5 were added until today: Plegadis falcinellus, Bubulcus ibis, Spatula clypeata, Pica pica, Hyppolais pallida. Also, among the 14 species, declared uncertain by MASSA & SCHENK until the 1980, other three have been confirmed as nesting birds (Aythya nyroca, Alcedo atthis, Hydrobates pelagicus); and three has been sight during the summer season, but without any certain proof of nesting (Ardea cinerea, Ardeola ralloides, Hirundo daurica).

At last, it needs underline that in addition to some important events of winter nesting, found in Sardinia for the Porphyrio porphyrio and for Tyto alba, many new species have been found in this season, they point out some wintering areal changes (Upupa epops, Emberiza hortulana), or new migrating flow (Ciconia ciconia, Grus grus, etc.), or next possibilities of nesting in Sardinia, as the Remiz pendulinus has had in Spain.

RECENT SITUATION AND CHANGES OF POPULATIONS OF DIURNAL AND NOCTURNAL BIRDS OF PREY IN PRESPA NATIONAL PARK, W. MACEDONIA (GREECE).

By Jionjos Catsadorakis

Twenty seven diurnal and five nocturnal raptor species have been observed in the greek area of Prespa and its immediate vicinity since 1935. Seven species were recorded in 1983-89 for the first time in the framework of this study. In the same period and relative to the past:

- Four species are observed no more in the area (Aquila heliaca, Milvus migrans, Falco naumanni, Gyps fulvus).
- Three species have ceased breeding but are still observed (Haliaeetus albicilla, Hieraaetus pennatus, Falco peregrinus).
- Two species have shown an apparent decline (Circus aeruginosus, Asio otus).
- Buteo buteo has increased and Fernis apivorous nested once.

Except the Egyptian vulture, all species that in the early '70s were nesting at 1 pair have become extinct. Habitat changes seem to have played the more important role for the changes in raptor populations of Prespa. In general, larger, rarer and specialized species decreased and medium-small sized generalists increased, benefiting from habitat change and human activities.

Title: The decline of the Lesser Kestrel (*Falco naumanni*) in Aetolia, Western Greece.

by: Roussopoulos J. and P. Pergantis.

ABSTRACT

The Lesser Kestrel is considered as one of the most dramatically declined European raptor species, in the last decades. Such a decline has appeared in most Southern European countries including Greece. After relative research, the basic factor induced such a decline appeared to be the intensive use of pesticides in agriculture. The present work show however that, in addition to the factor above, nesting site loss and direct mortality from shooting are two other important factors which nowadays play a detrimental negative role on the small marginal populations which still exist in few sites in the above area. This work also shows how dramatic the decline of this species' nesting populations has been, in that area, in the last decades.

SEASONAL VARIATION OF THE FEEDING HABITS OF BARN OWL, TYTO ALBA ALBA
SCCOPOLI 1969, IN HYMETTUS MOUNTAIN, ATTICA, GREECE

By Gregory L. Tsunis, Achilles Dimitropoulos.

Summary

The present study summarizes the results of examining and classifying bone remains of mammals and birds, as these were found in IOI pellets of Barn Owls. The locality from where the pellets have been collected is a site known as Korakovouni in a suburban area, at the foothills of Hymettus Mountain, Attica, Greece.

Collections were made in a four season pattern, and the most important results have been the following:

In winter, of a total 21 pellets collected, the remains of 35 specimens of mammals and birds have been counted. Of these, 26 were small mammals (71.3% rodents, 2.8% shrews) and 25.9% passerine birds.

The percentages of mammals (74.1%) and birds (25.9) comprise 17.1 Apodemus mystacinus, 17.1 Apodemus sylvaticus, 37.1 Mus musculus, 2.8 Crocidura russula, 14.2 Passer domesticus, 2.8 Carduelis chloris, 2.8 Fringilla coelebs, 2.8 Turdus merula and 2.8 Sturnus vulgaris;

The commonest mammal was Mus musculus and the commonest bird was Passer domesticus. It is remarkable that, during winter, the corpse of a Little Owl was found under the nest site, with the soft parts of the body eaten by the Barn Owls.

In spring, of a total 21 pellets, the remains of 29 specimens of mammals and birds have been counted. Of these, 24 were small mammals and 5 birds. The percentages of mammals (82.5%) and birds (17.5%) comprise 20.6 Apodemus mystacinus, 13.7 Apodemus sylvaticus, 48.2 Mus musculus, 13.7 Passer domesticus and 3.4 Turdus merula. During this period, whole leaves of Quercus coccifera were found in pellets.

In summer, of a total 37 pellets, the remains of 62 specimens of mammals and birds have been counted. Of these, 55 were mammals and 7 birds.

The percentages of mammals (88.6%) and birds (11.2%) comprise 16.1 Apodemus mystacinus, 14.5 Apodemus sylvaticus, 51.6 Mus musculus, 6.4 Crocidura russula, 11.2 Passer domesticus. Leaves of Quercus coccifera and exoskeletons of Cetonia aurata have also been found.

In autumn, of a total 22 pellets, the remains of 33 specimens of mammals and birds have been counted. Of these, 30 were small mammals and 3 birds. The percentages of mammals 91% and birds 9% comprise 18.1 Apodemus mystacinus, 24.2 Apodemus sylvaticus, 48.4 Mus musculus and 9% Passer domesticus.

It is clearly seen from the analyses, that the commonest mammal Mus musculus, and the commonest bird, Passer domesticus, are characteristic of suburban area and Barn Owls prey opportunistically on them.

THE AVIFAUNA OF THE CYCLADES, GREECE.

(A General Overview)

By St. N. Magioris.

SUMMARY.

Since the 19th century the Cyclades complex, a group of 30 main islands situated almost in the centre of the Aegean sea, concentrated the interest of many scientists. In fact, it must not be forgotten that the region as a whole is one of a great interest to zoologists in general and to botanists as well.

Almost all of the islands have been visited by observers and many papers have been published about the avifauna. Since 1840 with the observations of Fiedler, until today, 278 bird species have been recorded. The island of Naxos is the most thoroughly studied, while the islands of Andros, Tinos, Syros, Sifnos, Milos, Paros, Santorini and Heraclia are also studied satisfactorily. Finally, there are some fragmented observations from the other islands.

The record of the different bird species, the seasonal occurrence, the distribution and the abundance, the breeding status as well as the spring and autumn migration are the main subjects of the publications. Because so many papers have been written over a period of 150 years, we endeavoured to concentrate the related bibliography as well as the main results and conclusions.

Erchard (1858), was the first who tried to provide some data about the seasonal occurrence in the Cyclades and it was proved that much of these data are the same today. Many observers have made references to the distribution on the islands in general, and to the abundance in some cases. The most systematic results, concerning the passerine birds are provided by Watson (1964) and Simberloff (1986). During the last century Kruper (1863), worked on the breeding birds on Naxos and Watson (1964), on the breeding passerines in the Cyclades. Recently, the breeding status of the total of the bird species which were recorded on the islands was studied by Malakou (1983) and Magioris (1987, '88, '89). While we have sufficient data for the spring migration the same does not happen with autumn migration. We have only 3 works, those of Erchard (1858), Casement (1966) and Magioris (1987), as well as some restricted references from other observers.

From all these results and conclusions which are available until today concerning on the Cyclades Avifauna, we can argue that we already have a well grounded knowledge of the subject. However, under the present circumstances of the degradation of the environment and the destruction of some biotopes, especially the wetlands, research must not stop in order to maintain a complete picture.

ON THE AVIFAUNA OF SAMARIA NATIONAL PARK (CRETE, GREECE).

By Jiorjos Catsadorakis

For more than 5 weeks I had been conducting bird censuses in Samaria gorge, White Mountains, Crete. A slightly modified IPA point count method was used, to overcome difficulties posed by the geomorphology of the gorge. Although I had, a priori, divided the long dimension of the gorge in 4 sectors according to the relief and vegetation, cluster analysis of the results of the bird censuses showed that birds identify only 3. The habitat around Samaria village is not "recognised" as a discrete ecotone but is shared by species of woodland and species associated with rock faces.

These two categories of birds prevail along the gorge, with birds of phrygana and maquis at its lower side. Wren and Chaffinch are the dominant birds at all stations, but while Wren is relatively evenly distributed at all habitats, Chaffinch is especially abundant around Samaria village due apparently to increased tourist activities.

AN INTRODUCTION TO THE AVIFAUNA OF THE LAKES OF WESTERN MACEDONIA (GREECE).

By Jiorjos Catsadorakis

The lakes Vegoritis, Chimaditis, Zazari, Petron, Agras and Kastoria together with Mikri and Megali Prespa, situated all in Western Macedonia constitute the largest concentration of fresh water bodies in Greece.

Apart from the two latter which are well investigated, the ornithological world of all the other is almost unknown, although of considerable importance.

This paper is aiming at giving for the first time an outline of the basic knowledge on the avifauna of these lakes. Results of bird surveys for the last 7 years are synthesized together with past references and an attempt is made to describe the most important issues and the basic patterns regarding birds, their distribution, ecology and conservation.

The two principal conclusions are: a. In terms of birds- but not only- the lakes are ecologically connected and interdependent and b. Each one, according to its unique physical characteristics, retains also a unique combination of important features for the birds, quite different from the others and despite their overall similarities.

Pergantis P. & T. Akriotis

The breeding status of terns (Sternidae) in the Amvrakikos area

Summary

A detailed survey carried out in 1989 revealed large numbers of terns of 4 species breeding on the shores and islets of Gulf of Amvrakikos and the lagoons on its periphery. Little and Common Terns (Sterna albifrons and S. hirundo) are the commonest with over 500 pairs each in many small colonies scattered throughout the area. Gull-billed Terns (Gelochelidon nilotica) occur in one colony of about 70 pairs and probably in one more colony of at least 10 pairs. The Sandwich Tern (Sterna sandvicensis) is found in only one colony of 5-15 pairs, this being one of the two known breeding sites for this species in the whole of Greece. Further species may breed but no proof was obtained in 1989. Comparisons with previous surveys made about ten years earlier show population declines in some species, accompanied by serious habitat loss in recent years, mainly in the form of destruction of marshland. Extensive destruction of feeding habitat is likely to have a grave effect on the breeding population of all species, but especially on the Gull-billed Tern which is a primarily insectivorous and terrestrial species and is very dependent on the presence of marshland near its breeding colony for feeding.

Akriotis T., G. Handrinos & G. Kondylis

Avifauna and conservation of the Spercheios Delta

Summary

The Spercheios Delta is the most important remaining wetland in eastern peninsular Greece (south of Macedonia) after the drainage of lakes Karla and Kopais. Like in all greek river deltas, most of the original habitats have been destroyed and the land turned to agriculture. Today the delta is characterised by extensive areas of Arthrocnemum saltmarsh, tidal mudflats and areas of rice-fields, all of which have always been relatively scarce in Greece or have become so in the last 50 years. It is very important as a wintering site for birds and as a stop-over place for migrants. Populations of ducks (Anatidae) exceed 10,000 in the winter and there are approximately 1,000 wintering Avocets (Recurvirostra avosetta) and over 3,000 other waders (Charadriiformes). There are large concentrations of waders and herons (Ardeidae) on migration, and raptors (Accipitriformes, Falconiformes) often reach high densities outside the breeding season. Much of the Delta is effectively protected from shooting, but there exists very little suitable nesting habitat for most species of birds, such as extensive reedbeds or undisturbed islets. This may at least partly be the cause for a relatively low total breeding population.

Title : Effects of pisciculture development on the breeding populations of the Black-winged Stilt (Himantopus himantopus) and the Collared Pratincole (Glareola pratincola) in the Amvrakikos wetland area, in western Greece.

by : Pergantis P.

ABSTRACT

The Black winged Stilt and the Collared Pratincole are two bird species which show a decline in Europe. They are basically threatened by the loss of their preferable habitats.

These species used to hold big breeding populations in the Amvrakikos extensive wetlands. Former surveys in early 80's have registered hundreds of pairs especially concentrated in certain sites of that wetland.

The present work, which is based in a very recent survey (breeding season of 1989), shows that the breeding populations of the Black-winged Stilt has decreased in the whole area by half of that in 1981 and it is almost absent from its former preferable sites where now various piscicultural units have been developed.

At those particular sites, in 1981 at least 80% of the breeding population of this species, used to nest. The breeding population of the Collared Pratincole remains rather stable but its main breeding grounds are to be flooded by the waters of the semintensive fish ponds.

Distributional records for the amphibians of the Greek part
of Rodope mountain range (west Macedonia and Thrace)

by Byron Assimakopoulos

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ON THE WETLANDS OF CRETE AND THEIR BIRDS

By Myrsini Malakou

The ornithological importance of the wetlands in Crete has been emphasized by many authors especially before 1960. After 1960, when the intensive exploitation of water resources started in Crete, the form and function of many wetlands changed drastically. As a result many bird species have come extinct and others changed their status or decreased.

The purpose of this paper is to provide information on :

- the types and the specific features of the wetlands in Crete,
- the situation of the wetlands in the past and on their changes,
- the changes and trends of the avifauna of the wetlands.

Although the wetlands of Crete have been seriously deteriorated, are still resting or/and feeding areas for many migrating bird species, especially waterfowl and raptors. Proposals for the protection of the most important wetlands of Crete are made.

Abstract.

The Greek part of Rodope mountain range is known as an ecologically important area with rich flora, avifauna and mammal fauna. However, only a few are known about amphibiofauna. This lack of data was the main reason for studying the distribution of amphibians in the area. After a research, that lasted from 1986 to 1989, 10 species were recorded.

A LIST OF AMPHIBIANS AND REPTILES OF LESVOS AND CHIOS ISLANDS,
NE AEGEAN.

By Gregory L. Tsunis, Achilles Dimitropoulos.

Summary

The 5 taxa of amphibians and the 24 taxa of reptiles known to occur in Lesvos and Chios are listed, and information about their distribution, habitat and other field notes is provided.

A detailed survey of the islands is made in order to compare the existing bibliography records with more recent data. Testudo marginata is recorded from the NE Aegean for the first time.

Eryx jaculus turcicus is recorded from Chios for the first time, Vipera xanthinai is first recorded from Oenousses, a red variety of Malpolon monspessulanus insignitus and a melanistic form of Coluber najadum have been recorded.

Information is also provided for the herpetofauna of the nearby small islands, as well as the adjacent coastline and peninsular formations of Asia Minor.

BIOGEOGRAPHY IN THE EAST AEGEAN:
HERPETOLOGICAL BASICS FOR AN ANALYSIS

by

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Abstract

The herpetology of the islands in the East Aegean was studied during the last three years. Together with data gathered from literature we enhanced our knowledge of the distribution of reptiles and amphibians in these islands. In most cases the short distance to mainland regions influences the assortment.

Subspeciation obviously took place on some of the islands; some species have been isolated on others.

Penninsular effects as a result of the refilling of the Mediterranean Sea 5 Mio years ago are discussed.

Pauperization in some assemblages after becoming islands again may be another cause for recent distribution patterns.

Human influence during the past few thousand years also changed the situation regionally.

Thermal ecology of Testudo marginata Shoenpfe, 1792 and I. hermanni Gmelin, 1789, in semi-captivity.

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SUMMARY

Testudo marginata and I. hermanni are the most common tortoises' species in Central and South Greece. I. marginata is distributed only in the Central Greek coastline (south of 40° 30' N.), in the whole of Peloponnes and in the islands of Evia, N. Sporades and various small islands in the Argo-Saronic gulf. On the other hand I. hermanni is distributed in the Balkan peninsula, Italy, Corsica, Sardinia, South France and East Spain.

In this report data of the thermal ecology of the two species are referred. The two species are eurythermic and thermoconformers. There are no significant differences between their range activity body temperatures. Their mean body temperature is 25° C.

I. marginata is active all the year, even when the air temperature is 8° C.. I. hermanni is active from March to October. During the winter it hibernates, buried in soil.

Moreover in this work the relation between thermal ecology and the distribution of these two species is studied.

Convergences on the feeding ecology of lizards in insular ecosystems in Spain and Hellas.

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SUMMARY

We describe the diet of some insular populations of lizards which are common and widespread distributed in Balearic Islands (Eastern Spain) and Aegean Islands (Greece). We studied digestive tracts from lizards which are collected during both periods of mediterranean climate (wet and dry).

The diet of these lizards is mainly composed by Insects but in some cases we found plant material in the stomachs.

Our aim is to find convergences between the feedings strategies of such populations taking into account several factors like the surface of islands, plant cover, geological age and density of population.

We discuss our results in relation to some hypothesis about the diversity of diet, distribution of species, island stories and presumed selective pressures.

Some unusual accidental herpetological finds from Cyprus and Lebanon, especially Ptyodactylus

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Some Ptyodactylus from Cyprus may be stray introductions. One Ptyodactylus from Lebanon resembles no known population in Africa nor southwestern Asia. One Causus may be a relict, an escaped specimen, or due to confusion of records.

MONITORING THE NESTING ACTIVITY OF CARETTA CARETTA ON ZAKYNTHOS
OVER SIX NESTING SEASONS (1984-1989)

By

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ABSTRACT

The loggerhead sea turtle Caretta caretta (L.) is a circumglobal species, nesting mainly in temperate regions. The main nesting areas in the Mediterranean are found in Greece and particularly on the island of Zakynthos, off the western coast of Peloponnesus.

The nesting activity of the loggerhead turtle is closely monitored on Zakynthos since 1984. This is done by surveying the beaches early in the morning and recording all adult turtle tracks, imprinted on the sand. Turtles do not lay eggs every time they come ashore and therefore each track is examined in order to determine whether the turtle had nested or not.

Although the total number of nests per season fluctuates from year to year, the distribution of nesting over the available nesting habitat is fairly stable. Preferred beaches are those having the least disturbances.

Nesting success, i.e. the percentage of emergences resulting in nests, fluctuates per season and per beach, and provides an idea of the difficulties encountered by the turtles while they attempt nesting.

Nesting density on Zakynthos is amongst the top five in the world and on a certain beach has reached more than 3 000 nests/km, probably the highest in the world. The reasons for these high densities are attributed to the human factor.

High density nesting sites must be strictly protected due to their exceptional importance to the conservation of the population.

THE PROTECTION OF CARETTA CARETTA NESTING HABITAT ON ZAKYNTHOS

By

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ABSTRACT

The island of Zakynthos, off the western coast of Peloponnesus, consists by far the main nesting area for the loggerhead sea turtle Caretta caretta in the Mediterranean.

During the last decade the disturbances on these nesting beaches have increased, mainly due to the following reasons :

- a. Tourism is considered as the best solution to the inhabitants' demands for a better income. Therefore, considerable building activity takes place in Laganas Bay, as well as all over the island, with the result that the number of tourists increase rapidly from year to year.
- b. Inhabitants and especially landowners, due to legislative measures imposed by the state that set building restrictions, view the sea turtle as an impediment to further economic gain.

A Public Awareness Programme for the tourists of Zakynthos was initiated in 1986 by the Sea Turtle Protection Society of Greece (STPS) and a new cycle for the "on site" conservation actions has started since then. Through this programme, it was enabled, for the first time in Greece, the effective presence of conservationists and the interaction with the public in a protected area. The awareness programme has a positive effect on tourists and it contributes to the conservation of the nesting areas. Less disturbance is now caused by visitors and a positive attitude towards nature conservation has been created. Some of the hotel owners have received the message of a "new direction" and the ground for the development of ecotourism is being prepared. For the first time in years, landowners of the area are asking for the establishment of a Marine Park.

The main obstacle to almost all conservation efforts is the lack of a strategy for the proper management of the protected area. Furthermore, there is a strong contradiction between the legislative measures and their enforcement. Illegal activities increase from year to year and the situation becomes more perplexed. It can be considered that Zakynthos has reached the very core of major environmental problems in Greece.

MORE RECORDS OF THE GREEN TURTLE CHELONIA MYDAS FROM GREECE

By

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ABSTRACT

The green sea turtle Chelonia mydas (L.), a circumglobal species, has established a local population which breeds in the eastern Mediterranean. However, the distribution of the species outside its breeding range is almost unknown.

In Greece, the only records are three specimens, two from Rhodes and one from Messologhi, belonging to immature or juvenile animals.

From 1986 until 1989, ten more specimens were recorded in Greece. Of these, only one belongs to a mature animal. Five of the specimens came from Lakonikos Bay, four from the Dodecanese islands and one from Messologhi.

The records indicate that Chelonia mydas in the Mediterranean, utilizes parts of Greece as feeding and, possibly, as wintering areas.

Enveloppe et répartition géographique.
MORPHES DE RADIATION INITIALE ET DISTRIBUTION CONTEMPORAINE DE CHELONIA MYDAS ET LEUR CONTRIBUTION A LA PLANIFICATION DES ZONES PROTEGEES.
Le chevron est un animal adapté aux conditions de la zone méditerranéenne des chaînes européennes, les Pyrénées aux altitudes élevées.
In ce qui concerne les montagnes grecques la répartition de sa distribution contemporaine et la répartition effective de ses populations distinctes sont en fait à envisager la possibilité de protection de cet animal dans un cadre évolutif et dynamique, en analysant les facteurs qui ont influencé l'évolution de ses populations et de sa distribution.
Il faut évaluer également que les habitats et les zones compétitives ont joué un rôle à cet égard avec un caractère fluctuant, surtout en ce qui concerne les zones méditerranéennes.
La répartition de cet animal présente plusieurs caractéristiques géographiques très intéressantes, à une répartition que les auteurs ont évalué et adapté à l'égard des montagnes grecques, en analysant la répartition initiale de l'animal sur l'échelle de la répartition de cette distribution initiale à la répartition contemporaine, la répartition de l'histoire et de celle de l'écologie spatiale, dans la possibilité d'une action de la protection que le terrain lui-même a été capable d'accueillir à cet égard. Cette estimation permet une évaluation de rôle possible des divers habitats pour leur contribution dans le cadre d'une stratégie de conservation de la biodiversité.
On verra donc ici la possibilité des mécanismes de répartition et d'évolution, à la vision d'un environnement futur, des chaînes grecques.

PROBLEMS AND THREATS OF THE PINDOS (VALIA-CALDA) NATIONAL PARK.

by Gregory L. Tsunis

Summary

This work represents the great ecological importance of the area included in Valia Calda National Park, and is largely based on data regarding the flora and fauna which is found within the limits of the Park.

Several rare species of plants (Centaurea vlachorum, endemic to the area) and animals (Ursus arctos, Canis lupus, Lutra lutra) have been recorded as present in the Park.

The area has been declared a National Park in 1966, but much has to be done in the direction of enforcing the protective legislation. The most pressing threats for the survival of rare species are the uncontrolled poaching and forest cutting, road construction and excessive grazing.

THE WOLF AND ITS HABITAT IN GREECE

by

V. Hadjirvassanis

Abstract

The present status of the species and its habitat is presented, as derived from a preliminary field investigation (during 1987-88), supplemented by the existing literature. Emphasis is given on the relationship of the wolf to certain characteristics of the mountain relief and to humans. A guess estimate of 300-500 wolves seems to be more realistic than the previous estimates of 2500-3000 animals based on bounties paid before 1980. However, the abundance of wandering dogs prevent a more accurate estimate. Two major mountain regions are suggested for integrated management emphasizing the conservation of certain refuge areas and of wild ungulates, as it is impossible to conserve the wolf in densely populated Greece solely by means of isolated national parks.

Penelope et Triantafyllos Adamakopoulos.

MODELES DE RADIATION INITIALE ET DISTRIBUTION CONTEMPORAINE DU CHAMOIS ET LEUR CONTRIBUTION A LA PLANIFICATION DES ZONES PROTEGEES

Le chamois est un ongulé adapté aux conditions de la zone supérieure des chaînes européennes, des Pyrénées aux altiplans balcaniques.

En ce qui concerne les montagnes grecques, la fragmentation de sa distribution contemporaine et le faible effectif de ses populations distinctes nous engage à envisager le problème de protection de cet animal dans un cadre évolutif et dynamique, en analysant les facteurs qui ont influencé l'évolution de ses populations et de sa distribution.

Il faut d'abord considérer que les prédateurs et les espèces compétitives ont forcé le chamois à se relier avec un environnement globalement extrême et la présence de certains éléments physiques. La repartition de ces éléments physiques sur les chaînes helléniques (rendue manifeste grâce à une codification que les auteurs ont évolué et adapté à l'égard des montagnes grecques) cartographie la radiation initiale de l'animal sur celles-ci.

La regression de cette distribution initiale à la repartition contemporaine, en considération de l'histoire et du relief de chaque unité spatiale, donne la possibilité d'une estimation de la protection que le terrain lui-même a été capable d'accorder à l'espèce. Cette estimation permet une évaluation du rôle possible que les divers massifs pourront entreprendre dans le cadre d'une stratégie de conservation de la biodiversité.

On vise donc ici au maintien des mécanismes de radiation et d'évolution, à la vision d'un refonctionnement futur des chaînes grecques.

Conservation Biology of the Cretan Agrimi

Logan, G. T., J. H. Brown, Jr., T. P. Husband, M. C. Nicholson

Abstract. The Cretan wild goat, or agrimi (*Capra aegagrus cretensis*, Lydekker), is the last extant species of wild goat in Europe. This endangered animal is free ranging in the White Mountains of western Crete and has been introduced to at least two other small Greek islands: Agii Theodori (Theodorou) and Sapienza. This study was conducted to help resolve the considerable controversy regarding the systematics of *Capra aegagrus* and its subspecies. Horizontal starch gel and vertical polyacrylamide gel electrophoresis were used to examine variation of 12 proteins encoded by 16 structural loci.

Heparinized blood samples were obtained in July and September 1986 from three populations: 10 animals from the agrimi on the Wildlife Preserve of Theodorou Island; 20 domestic/agrimi hybrids from Dia Island; 7 French Alpine and Toggenburg goats at the University of Vermont, USA. Polymorphism was exhibited by only 3 of the 16 scorable loci. In the Theodorou population, none of the samples showed polymorphism. In the domestic/agrimi hybrids of Dia Island carbonic anhydrase (CAR-1) and transferrin (TRF-1) were polymorphic. At the CAR-1 locus 3 out of the 17 samples scored exhibited the 110/110 homozygote and 14 the 100/100 homozygote. At the TRF-1 locus 7 out of the 20 samples scored exhibited the 100/95 heterozygote and 13 the 100/100 homozygote. In the French Alpine and Toggenburg goats, hemoglobin (Hb-beta) was polymorphic. At the Hb-b locus, one out of seven animals exhibited the 100/65 heterozygote and six the 100/100. Heterozygosity for the Dia population was 0.022 from direct counts of heterozygotes, 0.037 from the calculated estimate, and 0.038 from Nei's unbiased estimate. Similarly, for the Vermont population heterozygosity was 0.010, 0.009, and 0.010, respectively. Assuming that our electrophoresis was of resolving power similar to that found in other studies, it appears likely that the Cretan agrimi does have a lower level of genetic variation than other bovid species, particularly among members of the Caprini tribe. A reasonable

explanation for the lack of variation found in the agrimi may be that one or more genetic bottlenecks occurred in its history. As part of the phenotypic comparison between domestic, feral, and wild goats from both Crete and Asia, molds of adult male horn cores were made of 37 specimens from the collections of three major natural history museums (Peabody Museum of Natural History, Yale University; The American Museum of Natural History, New York; and The Field Museum of Natural History, Chicago). An additional eight horn core molds were made from agrimi specimens collected in the field. Cluster analysis was used to classify all the horn core cases into subgroups by both hierarchical cluster analysis (linkage methods) and K-means analysis (splitting method). The majority of feral and domestic goats clustered separately from the wild goats. The majority of wild goats, both those that were claimed to be "pure" and those whose status was "questionable," grouped together. The goats from the Dia Island agrimi hybrid population invariably grouped closer to those of questionable status than those of pure status. The horn morphology of the agrimi resembles its Asian relatives more than its feral and domesticated relatives. The agrimi has horns which tend to turn inward, except for those hybrid animals on Dia and Agii Pandes, which are known to have interbred with domestic stock. Both morphologic and genetic analyses indicated that the agrimi had likely experienced some cultural control in the Neolithic before it colonized the mountains of Crete. From existing evidence, a hypothesis of the origin of the agrimi might be constructed: the agrimi originated from animals brought by sea from Anatolia, and had experienced some cultural control in the form of animal-keeping or loose herding. Some of these escaped or were purposely released to colonize the mountains of Crete.

Management of the Cretan Agrimi

Nicholson, M. C., T. P. Husband, J. H. Brown, Jr., G. T. Logan

Abstract. The diurnal behavior of the agrimi (*Capra aegagrus cretensis*, Lydekker) population on Theodorou Island, Crete, was studied from June to December, 1986. As a result of that and previous studies, a number of management recommendations were formulated. Temperature appears to be a critical factor affecting summer behavior; goats are less active at high temperatures. Management practices which disturb the agrimi should be carried out at times when temperatures are lowest (dawn to dusk or during the fall to winter). In addition, surveys should be conducted around the hours near dawn or dusk when both sexes are more equally represented. Females are more active during the day than males. Removal of animals from populations should be from age classes both young and old. Older individuals of both sexes may serve as custodians of traditions which are important a population's survival (ie., knowledge of escape terrain and secure areas in times of severe weather). Dominant, old males are most active at dusk; supplementary food should be placed out in the morning so that adult females and subdominant males can have an opportunity to eat. While it is important to keep agrimi numbers at or below the carrying capacity of Theodorou, about 80 individuals, it is also important to prevent the population from getting so small that inbreeding of closely related individuals occurs. Inbreeding in a very small population produces substantial decreases in body size, viability and fecundity, and frequently leads to the extinction of the population. Because it is likely that only males 8 years or older mate successfully during the rut, the effective population size on Theodorou is likely much lower than 64 animals, probably 35 or less. The agrimi is presently susceptible to catastrophe, demographic variability, and inbreeding depression, all of which could result in its eventual extinction. The agrimi should be established in other refuges with a total population not to be less than 500. New refuges must be created to assure the agrimi's survival.

Penelope et Triantafyllos Adamakopoulos.

CADRE METHODOLOGIQUE POUR LA PROTECTION DES MAMMIFERES VULNERABLES

L'espace montagnard, pourvu d'une grande diversité d'espèces, de biotopes et de successions, préserve aujourd'hui les plus importants refuges de mammifères en Europe.

L'espace montagnard grec, présente certains aspects particuliers:

- présence de lignes naturelles continues parcourant la partie continentale,
- une mosaïque de modes d'utilisation du terrain de variable intensité, durée et disposition,
- les activités économiques des populations locales s'orientent vers de nouveaux débouchés, en maintenant leur engagement dans les zones naturelles.

Il faut donc engendrer une stratégie d'utilisation des ressources naturelles encadrant l'homme et les animaux. Les études qui visent à la formulation de propositions pour la protection des grands mammifères vulnérables doivent:

- fournir des informations élaborables; les données sur les différentes espèces dans les diverses régions seront traitées sur une base méthodologique commune,
- aboutir à des modèles temporeux et spatiaux d'occupation des éléments physiques par l'homme et par l'animal et proposer la suppression des conflits qui en résultent.

By N. NIKOLETOPOULOS, B. CHONDROPOULOS and S. FRAGUEDAKIS-TSOLIS

SCIURUS ANOMALUS OF LESVOS ISLAND

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SUMMARY

It is a Rodent of family Sciuridae which is limited in Lesvos Island in Greek, Balkanian and European area. Our interest is focused:

a) on its biology, b) it's adaptation to the environment, c) structure of its skeleton when compared to *Sciurus vulgaris*, d) the development of ecosystem of Lesvos Island, where it is a member.

It is mainly fed with the several kinds of fruit such as almonds, walnut, chestnut, olives, acorns. Also some soft parts of leaves and steams are included. It usually lives round villages, where there are fruit-trees, which it likes, in big populations. Of course, it can be found in other places, too.

It is a social animal which lives in families, or in groups on the rooves of houses. It shows great adaptation to the environment. When captured it can be adapted only in young age. It learns easily. The senses of smell and hearing are especially developed.

It's movements are harch. It runs, climbs and leaps in long distances. It has characteristic movements and positions. One of its movements is to open its hands and legs and crawl on its belly for a distance. It also likes hanging from the branches of a tree with his legs and it eats at the same time.

The comparative study of its bones (humerus-femur-scapula-pelvis), with the corresponding ones of *Sciurus vulgaris* showed that there are differences, which, of course, differentiates one from the other. With its behavior burying its food to be stored. *Sciurus anomalus* attains reforestation of the environment he lives in.

Abstract

In this work the phylogenetic relationships of seven (7) rodent species belonging to the families Arvicolidae and Muridae have been studied. The definition of these relationships was made with the microcomplement fixation test (MCF) proposed by Champion et al. We used this method for the verification of the number of substitutions in the amino acid sequence of the serum albumin. The experimental results have been given in immunological distance (ID) units. One ID unit is thought to be roughly equivalent to one amino acid substitution, and in rodents 100 substitutions is estimated to take place in .55 million years.

A total of 67 individuals of the species *Microtus (Pitymys) atticus* MILLER, 1910, *Microtus (Pitymys) thomasi* BARRET & HAMILTON, 1903 and *Microtus (Microtus) epiroticus* ONDRIAS, 1966 of the family Arvicolidae, and *Mus domesticus* RUTTY, 1772, *Rattus norvegicus* (BERKENHOUT, 1769), *Apodemus flavicollis* (MELCHIOR, 1834) and *Apodemus mystacinus* (DANFORD & ALSTON, 1877) of the family Muridae were examined.

The results of this study lead us to the following conclusions:

1. It is found that the ID of *M. (P.) atticus* and *M.(P.) thomasi* is zero, a fact which confirms from biochemical point of view that *M.(P.) atticus* must be considered a synonym of *M.(P.) thomasi*.
2. The time of divergence between *M.(M.) epiroticus* and *M.(P.) thomasi* was estimated 1.5 million years ago (end of Pleiocene). Such a recent divergence corroborates the opinion based on morphological criteria according to that *Pitymys* is a subgenus of the genus *Microtus*.
3. *Apodemus flavicollis* and *Apodemus mystacinus* were separated about 2 million years ago (end of Pleiocene).
4. On the contrary to the two recently diverged taxa of the genus *Apodemus*, *Mus domesticus* and *Rattus norvegicus* were separated about 32 million years ago (Middle Oligocene). At the same time

the lineage of *Apodemus* was split from the common ancestor of *Mus* and *Rattus*.

5. According to our results the common ancestor of Arvicolidae and Muridae lived about 65 million years ago (Middle of Paleocene).

The disagreement between biochemical and paleontological data concerning the time of divergence of various rodent lineages is well known from the literature and it was observed in our results too. A possible explanation of this phenomenon is based on a) the pooriness of paleontological records and b) the difficulty of some records to be assigned to particular phylogenetic lineages because of the combination of shared derived characters. Furthermore, additional problems is arisen since some diagnostic characters of rodent taxa are often absent from the available

Cytotaxonomy and Geographical distribution of wild mice populations of genus Mus (Mammalia, Rodentia) in Greece

By E.B. GIAGIA, S.E. FRAGUEDADIS-TSOLIS, B.P. CHONDROPOULOS

Abstract

In Greece, according to the up-to-date data, two species of mouse are living: Mus domesticus Ruddy, 1772 and Mus abbotti Waterhouse, 1837. It has also been referred the distribution of the subspecies Mus domesticus praetextus Brants, 1827 in Crete. The systematic status and the geographical distribution of Mus taxa is still confused. So an extend morphological, karyological and biochemical study is in progress.

The karyological study of twelve populations from continental and insular Greece gave the following results:

1. The mice from Macedonia have chromosome number $2n=40$ all acrocentric. This result in combination with the morphological data confirms the distribution of Mus abbotti in Macedonia.
2. Mice of three examined populations from west Peloponnese present Robertsonian chromosomal polymorphism with $2n=24, 29, 30, 31, 32$. Among the different species of genus Mus this type of polymorphism has been found only in Mus domesticus. Therefore the examined populations belong to this taxon.
3. All individuals from Pireaus and Korinthos (mainland Greece) as well as from Euboea and Kos (Aegean islands) and Zakynthos (Ionian islands) have chromosome number $2n=40$ all acrocentric. According to our morphological data these specimens belong to Mus domesticus and consequently in the above regions non-Robertsonian populations of Mus domesticus are distributed.
4. In three populations from Crete we have found so far only individuals with $2n=40$ all acrocentric chromosomes. At the time being it is not clear if these individuals belong to non-Robertsonian populations of Mus domesticus or to a probable new south-eastern species Mus praetextus.

Genetic differentiation of four species of the genus Apodemus (Muridae, Rodentia) from Southern Europe.

J. Britton-Davidian, M. Vahdati, H. Croset, S. Guerassimov, and K. Triantaphyllidis

Nine populations of old-field mice from France, Spain, Italy, Bulgaria and Greece were electrophoretically analyzed for genetic variability at 21 loci. Four species within the genus Apodemus were studied: A. sylvaticus, A. flavicollis, A. agrarius and A. mystacinus. Variability parameters were found to be highest in A. sylvaticus ($P=21\%$; $H=8\%$) compared to that in the other three species which varied between 10% to 15% for the rate of polymorphism and 4% to 5% for the mean heterozygosity with the exception of A. mystacinus for which $H=12\%$ although only four individuals were studied. Of the 21 loci studied, only one (Idh-2) was monomorphic and identical in all species whereas two (Mod-1 and Np-1) were species diagnostic. Nei's distance index was used to measure genic differentiation and to generate a UPGMA phenogram. The results are in agreement with previous studies in that A. sylvaticus and A. flavicollis cluster together, and both of these with A. mystacinus. A. agrarius, on the other hand, is set well apart from the first three species, yielding a mean genetic distance of 1.279.

Morphological data were analyzed for subsamples of these species and showed that morphometric discrimination of A. sylvaticus and A. flavicollis is far from accurate. Although pelage color represents a diagnostic criterion in northern specimens of these two species, our study suggests that it is not the case in most southern populations. As yet, and except for biochemical identification, there are no reliable morphological characters which allow definite specific assignation of field specimens.

A chromosomal analysis was performed on several individuals of these different species throughout their range. Results did not reveal any particular chromosomal variability of the diploid or fundamental numbers.

On the basis of the genic differentiation data, the taxonomic division of the genus Apodemus into two groups (Sylvaemus and Apodemus) is warranted but the high level of divergence of A. agrarius to the three other species justifies, as was previously suggested, that the subgeneric subdivision be elevated to the generic level: genus (formerly subgenus) Apodemus with A. agrarius and genus (formerly subgenus) Sylvaemus with S. sylvaticus, S. flavicollis and S. mystacinus which form a genetically homogeneous group.

SUR LA REPARTITION DU ZOOPLANCTON DE LA MER EGEE ET IONNIENNE
EN UTILISANT DES METHODES D'ANALYSE MULTIVARIEE.

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La composition et la repartition du zooplancton des mers Egee et Ionienne ont ete etudiees. Deux methodes d'analyse multivariee ont ete utilisees afin de discriminer les regions et les peuplements relatifs: l'analyse hierarchique et le quadrage multidimensionnel. Ces analyses ont distingue deux groupes importants de stations, le groupe de la mer Egee et celui de la mer Ionienne. Le groupement des stations de la mer Egee doit etre attribue a l'abondance des especes Oithona plumifera, Oncaea mediterranea, Clausocalanus jobei, Clausocalanus pergens et des copepodites des genres Clausocalanus, Oithona, Calanus et Ctenocalanus. Les stations de la mer Ionienne sont caracterisees par la presence des especes Clausocalanus lividus, Corycella rostrata, Oncaea media, Corycaeus typicus, tandis que les copepodites de Clausocalanus y etaient aussi abondants. La station pres de l'ile de Samothraki a ete distinguee des deux groupes, a cause de l'extreme abondance des copepodites de Clausocalanus, Paracalanus, Ctenocalanus, Centropages, Calanus et du cladocere Evadne nordmanni. Cette discrimination pourrait etre liee aux basses valeurs de temperature et de salinite de l'eau de cette station, qui est soumise a l'influence des eaux provenants tant de la mer Noire que de la riviere Evros.

ABSTRACT

5th International Congress on the Zoogeography and Ecology
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MARINE GASTROTRICHA OF GREECE: A PRELIMINARY REPORT

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Gastrotricha are micrometazoans, many of which live between sand grains in marine beaches. Thus far they are known from seven littoral beaches in Greece, two in Attica (Loutsa and Edem, near Athens) and five in Crete (Pachia Ammos, Amnissos, Kalamaki, Georgiopolis, and Plachias). There were a mean of 7.00 (std. error = 1.23) species of gastrotrichs per beach, with 1.86 (s.e. = 0.70) in the Order Macrodsyida and 5.14 (s.e. = 0.67) in the Order Chaetonotida. Some 18 different species (5 macrodsyids and 13 chaetonotids) are known from the Attica sites, most of them coming from Loutsa Beach. Likewise, 18 different species (5 macrodsyids and 13 chaetonotids) are known from the Crete sites, most of them coming from the beach at Pachia Ammos. Combining the two areas yields a total of 30 different species (8 macrodsyids and 22 chaetonotids).

The mean number of species per beach and std. deviation are almost identical to those we found in unpolluted beaches in Italy during the summer of 1989 (Hummon, Todaro, Balsamo and Tongiorgi, 1990), but in Italy the species were more evenly divided between macrodsyids and chaetonotids. Based on all of the work done thus far in Italy, by our group as well as others, we can expect to find at least six times this many species, or ca. 180 species, before the present series of studies in Greece is completed. As of the end of 1989, only 3 of the 30 species (all chaetonotids) from Greece are new to science, but this number as well can be expected to increase before the studies are completed.

First observations on marine gastrotrichs from Sicily (Italy)

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Italian coast was begun by the working group on gastrotrichs of the University of Modena (Italy), in collaboration with Prof. W.D. Hummer of the University of Illinois, U.S.A. The research aims at an exhaustive knowledge of the Italian fauna, which allows the writing of a volume of Fauna d'Italia on the phylum Gastrotricha. Studies began in the North Tyrrhenian Sea and recently integrated and extended to numerous sites along the Italian coasts. The number of species known for Italy has been increased from 92 to more than 140: as a result of these efforts, the Italian fauna is today the best known of the Mediterranean area.

Findings on gastrotrichs from islands, until now only sporadically studied, is of particular interest, both for the study of intraspecific variability between island and mainland populations and for biogeographic correlations. A sampling trip was recently performed in Sicily, a region for which no data was available. Four locations were considered: Porto Palo (Agrigento), on the southwest coast; Favignana, a small island off Trapani; S.Vito Lo Capo, the northwestern tip of Sicily; Cefalù (Palermo) and Capo d'Orlando (Messina) on the northern coast. 27 species (14 Macrodasysids and 13 Chaetonotids), belonging to 15 genera were found, for a total of 40 records: Acanthodasys aculeatus, Dactylopadola typhle, Macrodasys caudatus, Mesodasys sp., Paraturbanella dohrni, P. telssieri, Pseudostomella sp., Ptychosomella sp., Thaumastoderma ramuliferum, Tetranchyroderna papii, Tetranchyroderna spp., Turbanella ambronensis, Aspidiophorus mediterraneus, A. paramediterraneus, Chaetonotus dispar, C. varicosquamatus, Chaetonotus spp., Halichaetonotus aculifer, H. spinosus, Halichaetonotus sp., Heterolepidoderma loricatum, Heteroxenotrichula squamosa, Xenotrichula intermedia.

The highest number of species was recorded at San Vito and Cefalù, 10 and 18 respectively, for the most part found in sublittoral samples, according to our recent observations of higher species diversity in sublittoral areas as compared to intertidal bottoms. Porto Palo and Favignana showed a lower number of species, 6 and 2 respectively. No gastrotrichs were found at Capo d'Orlando, probably due to the coarse grain size of the bottom. Of special interest was the presence of 10 undescribed species, 5 of which had recently been collected in other Tyrrhenian islands and 5 in Adriatic and Ionian Sea. All the other gastrotrich species are widely distributed along the Italian coasts.

These preliminary observations underscore the variety and interest of the Sicilian fauna, which will require more in depth research to better define its real situation.

Allozyme Variation in Eastern Mediterranean Sandhoppers

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In 1988 and 1989 two cruises were performed by the oceanographic ship of the Italian National Research Council in order to obtain faunistic and biogeographic data on the Aegean area (eastern Mediterranean Sea).

In the framework of these researches several collections were carried out of coastal and fresh-water crustacean amphipods in some islands of southern Cyclades and Sporades (Dodecanese).

Preliminary data are reported on the genetic structure of two talitrid species, Orchestia gammarellus and Talitrus saltator analysed through the electrophoresis of gene-enzyme systems.

The studied samples come from the islands of Anafi and Astipalea (Cyclades), Kos, Tilos and Karpathos (Sporades), having been collected from sandy and pebbly beaches. Also, in the island of Astipalea one sample of O. gammarellus has been collected along a small stream quite far from the sea; the latter population appears to be genetically differentiated from the conspecific ones from the seashore. As for T. saltator, a widely distributed species along the Mediterranean and the north-eastern Atlantic coasts, previous results showed the existence of high levels of genetic distance (Nei's $D = 0.40$) between Tyrrhenian and Adriatic populations. The Aegean samples appear to be genetically differentiated from both the Adriatic and Tyrrhenian populations, with distinct alleles at some loci.

The results obtained from the allozymic data are discussed on the ground of the relative role played by the ecological and historical factors in the evolution of insular species.

Macrozoobenthic assemblages of the Evros Delta
(North Aegean Sea)

by

N. Gouvis and A. Koukouras
(Department of Zoology University of Thessaloniki,
54006 Thessaloniki, Greece)

Abstract

The composition of the macrobenthic assemblages of the Evros Delta (North Aegean Sea) have been investigated by means of 35 replicate quantitative samples. The information collected from the numerical analysis of the faunal samples and the analysis of the other data, showed the presence of one single community which is differentiated in 3 groups of station reflecting mainly the salinity values and the granulometric composition of the sediment. This community is described on the basis of its biological parameters and compared to the corresponding brackish water assemblages from other European areas.

Macro-Diversity and its propensity to extinction

S. C. Tsakas

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at Irvine, Department of Ecology and Evolutionary Biology,
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Abstract

The purpose of this research was the investigation of how diversity correlates with longevity over a lengthy geological time span. The fossil records of phanerozoic clades for the last 350 myr showed that on the whole taxonomic groups, both terrestrial and aquatic, with lower and less fluctuated diversity survived longer. In addition they tended to sustain fewer casualties during the mass extinction events occurring during that period and particularly the more severe one, the Permian-Triassic. These findings fall out of the conventional wisdom which positively associates diversity with survival-longevity, and are of major evolutionary-ecological concern. Application of the speciation burst hypothesis (Tsakas and David, 1986, Genet. Sel. Evol., 18, 351) offers an explanation based on population genetics. Additionally, some of the implications of this trend on macro-evolution and macro-ecology will be presented.

INSTITUTION HIERARCHIQUE DE L'UNIVERSITE DE BRUXELLES
ELEMENTS APPLICABLES PAR LES DIVERS CONCERNES LA FAUNE DE GRÈCE

J. M. MARGARITIS

FIRST RECORD OF THE GHOST CRAB OCYPODE SP. FROM GREECE

By

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ABSTRACT

The ghost crab, Ocypode sp., is an almost cosmopolitan species. In the Mediterranean there is an "interruption" of the distribution range between Asia Minor and the Atlantic coast where the genus reappears. As far as can be ascertained, no record of the genus Ocypode exists in Greece.

In the context of a sea turtle survey in the Dodecanese islands, colonies of the ghost crab, were found on the islands of Rhodes and Karpathos.

The zoogeographical implications of this discovery should be examined.

LA REGULATION HIERARCHIQUE EN ECOLOGIE ET BIOGEOGRAPHIE:
ELEMENTS APPORTES PAR DES DONNEES CONCERNANT LA FAUNE DE GRECE

par

J.Th. Matsakis

En référence principalement aux définitions et mises au point de BLONDEL (1986, 1987) en ce qui concerne la biogéographie et à la problématique discutée par O NEILL, DeANGELIS, WAIDE et ALLEN (1986) en ce qui concerne l'écologie, on aborde l'analyse, dans une optique de "régulation" hiérarchisée, de données faunistiques relevées dans la région égéenne. Admettant a priori que la diversité taxonomique représente une expression majeure de l'organisation à 3 échelons successifs au moins, on essaie d'analyser ces données, dans le contexte de la régulation hiérarchisée, à travers ces 3 échelons.

Le matériel discuté est représenté par des "groupes taxonomiques", espèces, genres, familles et ordres de vertébrés [reptiles] et invertébrés [arthropodes du sol, orthoptères] recensés dans les Cyclades, en Crète et en Ikarie (d'après des données bibliographiques rassemblées dans le cadre de l'Inventaire de la faune de Grèce, d'une part; des relevés écologiques effectués dans le cadre d'une série de programmes de courte durée de l'Université d'Athènes, d'autre part; données de divers auteurs).

L'analyse porte surtout sur l'échelle spatiale et temporelle, mais l'échelle "changement" - fluctuations saisonnières et annuelles uniquement - est également considérée dans le cas de l'organisation écologique. La gradation de la discontinuité (suivant MARGALEFF 1969 et MATSAKIS 1989), rapprochée plus ou moins de la stabilité stratifiée, discutée par O NEILL et al. (1987), tout comme les gradients spatiaux majeurs en relation avec la bioclimatique, sont examinés sous le rapport de leur implication dans l'individualisation des échelons successifs. Les données concernant les Cyclades et la Crète semblent offrir respectivement une illustration remarquable de l'importance de ces deux références-types, mais toujours dans le cadre de la régulation hiérarchisée.

C'est la régulation de la diversité régionale, successivement au niveau de petites îles, de sous-ensembles et d'ensembles d'îles de Cyclades d'une part, le long de Crète d'autre part, qui semble apporter des indications en faveur d'une hiérarchisation suivant 3 échelons biogéographiques successifs. C'est la régulation des densités de divers constituants et des profils bioclimatiques correspondants dans diverses stations d'Ikarie et des Cyclades, au cours d'une saison donnée d'une part, de 2 ou 3 saisons d'autre part, qui semble s'articuler suivant 3 échelons écologiques successifs.

Enfin, on souligne, une fois encore et à la lumière des enseignements dégagés, la portée limitée - et déjà contestée par plusieurs auteurs - du concept de la concurrence, de la régulation strictement démographique ou génétique-spécifique et celui du système clos auquel est censé correspondre une biocénose.

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Summary

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M.RAMPINI, G.SALTINI

S.E.M. egg shell morphology of 6 cave Orthopteran species of the genus Dolichopoda from Greece. (Orth.: Rhabdophoridae).

Egg shell morphology has been investigated by means of SEM, in 6 cave Orthoptera of the genus Dolichopoda, living in Greece. As to the general structural organization our screening confirms a common basic pattern for all the Rhabdophoridae, in agreement with data from previous SEM observations on this family. Peculiar features of taxonomic value, such as, the morphology of the polygonal cells in the reticulated outer envelope of the egg, have been described in order to outline the extent of species affinity. On this basis and on the basis of the overall morphology of the adults we can group D. petrochilosi, D. vandeli, D. insignis, and D. makrikapa showing a great affinity, and separate, on the contrary D. cassagnau and D. stariotisi which are markedly different.

Graziella Mura and ROBERTA Sisi

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Poster Exhibition

Abstract

NOTES ON THE BIOLOGY OF TWO ANOSTRACAN SPECIES CO-OCCURRING IN
LATIUM: Chirocephalus kerkyrensis and Ch.diaphanus.

Chirocephalus kerkyrensis (Crustacea, Anostraca), a fairy shrimp species known at present only from Corfu (Greece) and Latium (Italy), usually inhabits plain forest temporary ponds in the Mediterranean mixed wood. Its life cycle is described in a pond of the Castel Porziano Reserve (Rome), where it occurs together with the congeneric species Ch.diaphanus. Ecological requirements of the two species and the traits of their life cycles are speculated and discussed.

A contribution to zoogeography and ecology of Dalmatian
Coleopterous Insects

Summary

229 species of beetles collected by the author have been studied from an ecological and biogeographical stand-point. 12 (5,2%) were new for Dalmatia, 103 new for at least one island. The ecological categories (and N° of species) are the following: a) based on environment: psammophilous (7 sp.); psammohalophilous (7); halophilous (1); muddy places (6); lapidicolous (7); xerophilous (15); corticicolous (12); fungicolous (1); nidicolous (5); nests of mammals (5); myrmecophilous (3); synanthropic (3); sclerophyllous forest (6); maqui (2); deciduous forest (4); all remaining species euryoikous. b) based on feeding habits: phytophagous (c. 40 sp.); carnivorous (c. 40); necrophagous (9); saprophagous (13); coprophagous (14); remaining species omnivorous. The zoogeographical categories which can be only with a large approximation recognized (and relative N° of species) are the following: cosmopolitan (3); holarctic (4); palearctic (23); western palearctic (37); southern palearctic (6); Mediterranean (23); Euro-Mediterranean (8); partial Mediterranean (17); Euro-Maghrebian (4); Euro-Siberian (5); European (8); Euro-Anatolian (7); Euro-Anatolian-Turanian (5); partial European (24); Centro-South-European (9); Centro-Mediterranean-European (5); transionic (6); transadriatic (10); Balcanian endemics (10). Besides widely diffused species, European s.lato and Mediterranean s.lato are the most represented. The great number of categories - some of which of difficult delimitation - is due to the peculiar position of Dalmatia and its islands, extended from sea level to c. 1200 m, and their climatic characteristics, which have allowed a colonization by elements coming from all parts of Europe and Mediterranean Basin since remote epochs (also prior to Miocene). The old age of both North- and South Aegeis is responsible of the number of distributional types, which vary according to families and their habits (geophilous, planticolous, apterous vs. winged etc.).

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University of Padova

PECULIAR TURTLES AND THEIR DISTRIBUTION IN GREECE

by

P.F. Keymar

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PARASITIC FAUNAS OF LIZARDS FROM MEDITERRANEAN INSULAR ECOSYSTEMS (*)

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Abstract

Emys orbicularis on the Ionian Island Kephallinia proved to form a dwarf population regionally. A statistical analysis of growth data from more than 100 specimen randomly collected is presented. Male specimen regularly reach some 90 mm, females not more than 100 mm.

The Testudo (Geochelone) marginata population from the Mani peninsula seems to perform different growth modes compared to those from other parts of Greece. A high percentage of dwarf specimen with striking differences in carapax shape can be found there. Ecology of those turtles also differs in some aspects.

A comparative study of the helminth communities in lizards living in isolated ecosystems of the European Mediterranean area, has been started. Lizards from Balearic Islands (Spain) (**) and from Cyclad Islands (Greece) (***) have been studied. From Balearic Islands, two species have been sampled: Podarcis lilfordi (Günther, 1874) living in the rocky islets surrounding Mallorca and Menorca islands; Podarcis pityusensis (Boscá, 1883) living in Eivissa and Formentera islands and rocky islets surrounding them. From Cyclad islands, specimens of Podarcis erhardii (Bedriaga, 1876) living in Naxos island, have been sampled.

Preliminary results show a greater species diversity of helminth community in lizards living in Balearic islands than in lizards living in Naxos island (the sample of this island is only 10 specimens). P. pityusensis shows a great species diversity than P. lilfordi. Global prevalences are high, near 80% for P. pityusensis and P. erhardii and near 74% for P. lilfordi. From a zoogeographical view, we notice the absence of any species of the genus Parapharyngodon (Chatterjii, 1933) (Nematoda: Oxyuroidea) in helminth fauna of P. erhardii, and also the presence and high prevalence in that lizard of Skrjabinelazia sp. (Nematoda: Seuratidae). It is also remarkable the constant presence of Paradistomum mutabile (Molin, 1859) (Digenea: Dicrocoeliidae). This helminth is, in Spain, a strict insular species having not been found in continental populations of lizards.

* Work financed by project PB 87-0707-C02-01. D.G.I.C.Y.T. (Spain)

** Licences of the Conselleria d'Agricultura i Pesca de les Illes Balears, numbers 6399, 7027, 3990.

*** We would like to thank Dr. Efstratios Valakos (Univ. of Athens) for the loan of herpetological material.

SUMMARY (Poster)

THE JACKAL (*Canis aureus* L., 1758) IN SOUTHERN GREECE

During the 1989 a survey was carried out concerning the status and the distribution of the jackal in Southern Greece. From the collected data a sharp decline on distribution is obvious.

In Sterea Hellas district the jackal is nearly eradicated with the exception of very few areas mainly in Fokis Prefecture.

The only non-fragmented jackal population in S. Greece inhabits the area of Southern Peloponnese across the Western foothills of Parnon Mountain, Mani peninsula and Southern foothills of Taygetos Mountain. Other important jackal area is in Northern Peloponnese mainly at the foothills of Panahaiko and Klocos Mountains. Some, probably isolated, populations also exist in other areas.

The jackal is confined to areas of dense vegetation, generally at low altitude. Destruction of the habitat seems to be the main reason of the jackal decline, probably in combination with the bounty system existing until 1980.

Ioannidis Y. & Giannatos G.

SUMMARY (Poster)

THE STATUS OF BROWN BEAR (*Ursus arctos* L. 1758) IN GREECE

During the Summer and Autumn of 1988, an attempt was made to evaluate the current status of Brown Bear in Greece.

The Bear occupies two separate areas. The Western population is in connection with the Yugoslavian and probably with the Albanian population while the Eastern is connected with the Bulgarian. The distance between the two populations is about 220 Km. The Western population inhabits the forested area of Northern and Central Pindos Mountain Range and the Mountains Varnous & Vitsi, up to Askio Mt. The Eastern population occupies the forested area of Rodopi Mt. and the Northern slopes of Mt. Falacron. A few individuals also exist in the Mts. of Vrodou, N. Menikio and Lailias Hunting Reserve.

An attempt to evaluate the approximate population size was also made, based on confirmed informations given by local people and mainly on signs collected during the field work. The estimated population was found to be about 120 adults.

The bear is threatened by poaching, intensive logging and habitat destruction all over its range. More than 10 bears were killed during the Autumn and Winter of 1989-1990.

Mertzanis G., Grivas C., Ioannidis Y., Bousbouras D.,
Giannatos G., Papaioannou H., Poirazidis C.

NEW DATA ON THE DISTRIBUTION OF THE MEADOW VIPER, *Vipera ursinii* (BONAPARTE, 1835) AND THE ADDER, *Vipera berus* (LINNAEUS, 1758) IN GREECE. (Reptilia, Serpentes, Viperidae)

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Abstract

Although it is long known that *Vipera ursinii* and *Vipera berus* occur in the other Balkan countries, these two species have been recently added to the Greek herpetofauna, and their range in Greece is still poorly known.

In this paper we present five new locality records, three for *V. ursinii* and two for *V. berus* based on collected or observed individuals of these two snake species. Two more records, one for each species, are questionable and need further verification. All new records come from subalpine meadows and other types of highlands of the northern and central Greek mainland. Older records derived from the literature are also taken into account to give an overall estimation of the distribution status of the two vipers in Greece.

Our records of *V. ursinii* from central Greece (Sterea) and *V. berus* from Lakmos mountain (Pindos mountain range, Epirus), are the southernmost known for Greece and Europe, extending the two species ranges southwards by approximately 100 and 40km respectively. We think that it is quite possible for both *V. ursinii* and *V. berus* to have a broader distribution in the mountains of the Pindos and Rhodopi mountain ranges as well as in other mountains of the central and northern Greece.

Moreover, our data indicate that at least in two cases the two species occur sympatrically but they obviously use different microhabitats.

As far as the subspecific position of the animals recorded is concerned it is clear that the adders recorded belong to *V. b. bosniensis* BOETTGER, 1889, while the meadow vipers at least of the Pindos range are very close to the new subspecies *V. u. graeca* NILSON & ANDRÉN, 1988.

WILD GOATS (CAPRA AEGAGRUS) IN GREECE :
DISTRIBUTION AND STATUS

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The wild goat (Capra aegagrus) is the principal progenitor of the domestic goat. On some Greek islands, live unique forms of wild goat, the last remaining populations in Europe. The Samaria National Park in the White Mountains of Crete, is part of the natural range of the Agrimi or Kri Kri (C. a. cretensis), where it is now estimated at 500 animals. Hybridization with domestic goats is a major threat to this population. On Antimilos or Erimomilos Island, Cyclades, exist 400-500 wild goats of the subspecies C. a. pictus and on Yioura Island, Northern Sporades, 300 individuals of C. a. dorcas or jourensis. It is certain that these two populations have hybridized with domestic goats. Another form of the wild goat existed on the Island of Samothrace, in the North Aegean Sea, but has been extinct in the recent past.

Since 1858, hybrids have been observed in the White Mountains. During the years 1928-1945, a few agrimi from this area were introduced on Theodorou Island (68 Ha). A few agrimi from Theodorou were transported to Dias Island (1250 Ha) in 1957, where they were hybridized with domestic goats, to Agii Pantes Island (30 Ha) in 1951, Moni Island (160 Ha) in 1961 and Sapientza Island (850 Ha) in 1983. From Agii Pantes they were transported to Atalandi Island (180 Ha) in 1984. On continental Greece, 25 hybrid agrimi are present in Parnitha National Park derived from an introduction in 1963. Based on the phenotype, it is believed that all agrimi populations, but those on Dias and in Parnitha, are pure.

In 1983, the Theodorou population was 104 animals, and in January 1990, 300 animals were present on Dias, 90 on Agii Pantes, 120 on Moni, 16 on Atalandi, and 47 on Sapientza Islands.

Management recommendations :

1. Destroy all feral goats and hybrids in Samaria National Park, on Antimilos and Yioura Islands.
2. Extend the boundaries of Samaria National Park to include nearby gorges which support important agrimi populations. Study the effects of poaching and disturbance by tourist activities on the agrimi in this area.
3. Reestablish the agrimi to Idi Mountain, Crete and genetically revive the introduced populations with animals from White Mountains only, to reduce inbreeding effects.
4. Maintain all populations to natural carrying capacity levels, and cease supplementary feeding.
5. Preserve a part of Dias hybrid population for comparative studies.
6. Establish a National Park or Wildlife Refuge on Antimilos and Yioura Islands.
7. Study extensively the population genetics of each population of the wild goat.
8. Maintain the population of each subspecies to several hundred animals to ensure genetic diversity and survival of the unique Greek wild goat.