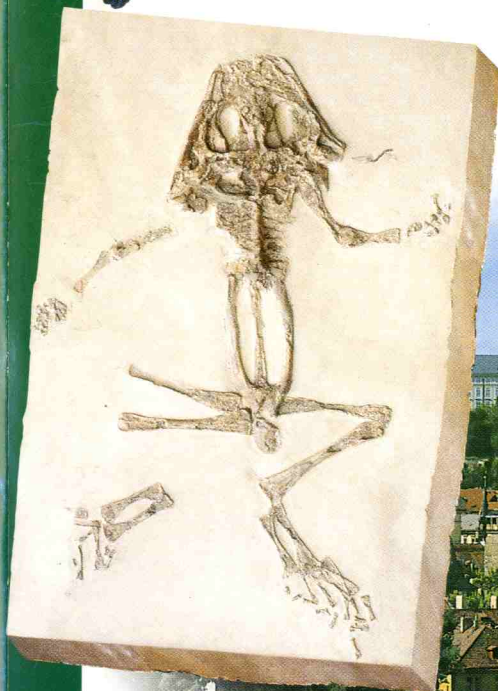
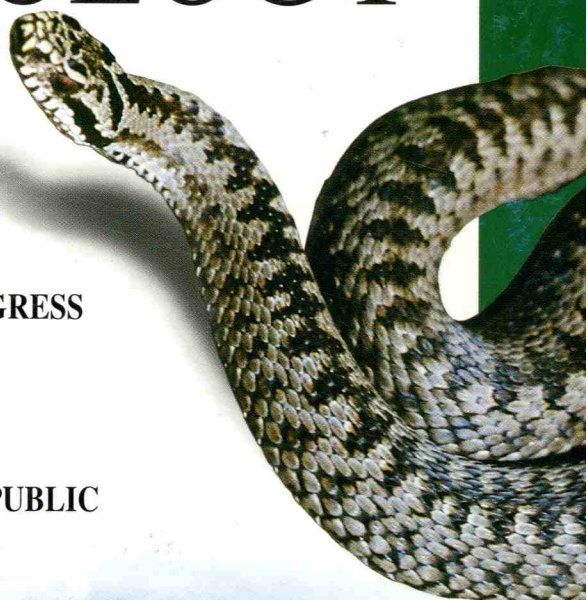
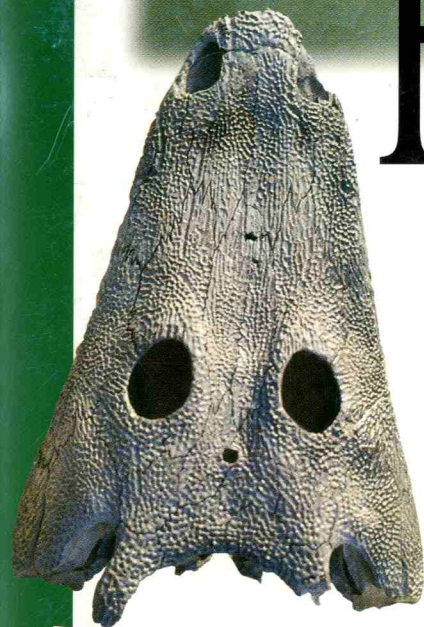


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DEEP GENETIC DIVERGENCE WITHIN A MORPHOLOGICALLY CONSERVATIVE GROUP OF NEOTROPICAL SALAMANDERS, THE *BOLITOGLOSSA RUFESCENS* COMPLEX

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KEY WORDS: Caudata, systematics, evolution

Salamanders of the *Bolitoglossa rufescens* group are characterized by a distinctive, phylogenetically derived morphology, including pad-like paedomorphic hands and feet, reduced cranial ossification and reduced dentition. Presence or absence of maxillary teeth was used to diagnose two units within this group, *B. occidentalis* and *B. rufescens*. Based on previous allozyme analyses those units are para- or polyphyletic, and the several lineages are deeply divergent. A morphometric analysis of geographic variation within the group reveals a large amount of intra- and interpopulational variability, and no clear differentiation of groups. High amounts of cytochrome-b differentiation among populations supports the hypothesis of relationships derived from allozymes. The phylogenetic patterns obtained using both allozyme and mtDNA suggest an ancient divergence among geographic groups with independence of their morphological traits. A new taxonomic arrangement congruent with the phylogenetic hypothesis is proposed.

*

DEMOGRAPHY OF A CRITICALLY ENDANGERED POPULATION

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KEY WORDS: Lacertidae, conservation biology,
demography, survival analysis, recovery plans

This long term study, on the ocellated lizard (*Lacerta lepida*) of Berlenga Island, started in 1985. The objective is to detect differences in survival and fitness with the individual genetic profile. Severe abnormal mortality during the last three years transformed the small population of around 100 adults to a critically endangered population of only 25. Animals from this population reach sexual maturity at two or three years and have a maximum age of 13 years with a mean annual fecundity of 14 eggs. We compare several demographic parameters with some mainland populations. We use the Cormack-Jolly-Seber model and its generalizations to do survival analysis. We compare several models, built with environmental factors, using the Akaike Information Criterion. These procedures lead to more adequate and more parsimonious models with less bias and more precise

survival estimates in order to detect the main factors responsible for the decline. This fast-declining population now has a recovery plan.
[This project is granted by the Natural Reserve of Berlenga-Institute for Nature Conservation (RNB-ICN)]

*

FOOD ANALYSIS OF GREEN FROGS (*RANA ESCULENTA* "COMPLEX", ANURA) FROM THE PETROVARADINSKI RIT MARSH, YUGOSLAVIA

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KEY WORDS: *Rana esculenta* complex, food, Yugoslavia

During a three-year research of the Petrovaradinski rit marsh, which extended through all three seasons of anuran activity (spring, summer and autumn), 30 specimens each of *Rana ridibunda*, *R. kl. esculenta* and *R. lessonae* were collected. The Petrovaradinski rit marsh (UTM DR 10) is situated in a region periodically flooded by the Danube River and is under great influence of anthropogenic factors. Prey analysis through the three seasons has shown a qualitative and quantitative dominance of Invertebrata, especially terrestrial insects. Remains of the representatives of Vertebrata were found as well, but their quantity was considerably smaller. Besides analysis of diet, indices that suggest the role and importance of certain food resources were calculated; the results were used for calculation of niche breadth and overlap, as well as for comparative analysis of diet through seasons.

*

REVISION OF THE AFRICAN WATER SNAKES OF THE GENUS *GRAYIA* GÜNTHER (SERPENTES: COLUBRIDAE)

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KEY WORDS: *Grayia*, revision, taxonomy, Africa, sexual dimorphism

At present, four species of the genus *Grayia* are recognised. They all share the same aquatic habits, banded pattern and many anatomical characters (e.g., hemipenial structure, anatomy of vertebrae, etc.). In order to clarify the taxonomic relationships among these African forms, 42 meristical, biometrical and anatomical characters were used on more than 400 specimens, including all existing type-specimens. The four species (*G. ornata*, *G. smithii*, *G. tholloni* and *G.*

caesar) all appear to be valid, although no simple external discriminating character to distinguish *G. tholloni* from *G. caesar* can be provided. In *G. ornata* a lineated form exists showing a slightly higher number of ventrals and subcaudals compared with the typical banded form. However, due to sympatric occurrence and overall resemblance, no distinction at the specific or subspecific level is undertaken. Differences in coloration and in lepidosis among *G. smithii* suggest the presence of Central African and West African forms. Although some differences appear to be clinal, a subspecific distinction must be evaluated. Further analysis of the data is necessary. In many aspects *G. tholloni* is intermediate between *G. ornata* and *G. smithii* on one hand, and *G. caesar* on the other hand. *G. caesar* is the most isolated form of the genus, and its attribution to a different subgenus is justifiable. Compared to the other species it has the highest sexual dimorphism in lepidosis (with *G. ornata* having the smallest dimorphism). *G. caesar* shows also a distinct type of sexual dimorphism at the level of the anal scale: entire in all males, and divided in 15 of the 16 females studied.

*

BIG GIRLS AND LITTLE BOYS: SEXUAL SIZE DIMORPHISM AND ITS ECOLOGICAL IMPLICATIONS IN THE CARPET PYTHON, *MORELIA SPILOTA*

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KEY WORDS: *Python*, sexual size dimorphism, insular populations

Comparative analyses suggest that sexual size dimorphism (SSD) in snakes evolves via sexual selection (e.g., large male body size in species with male-male combat) and natural selection (dietary divergence between the sexes). However, phylogenetic conservatism of mating systems and SSD makes it difficult to demonstrate clear functional relationships. Species that display geographic variation in these variables provide the best opportunity to investigate the reproductive and ecological correlates of SSD. *Morelia spilota* occupies many different habitats and displays extraordinary intraspecific variation in mating systems, diets and SSD. In *M. s. variegata*, males engage in vigorous battles during the mating season, and grow much larger than females. In *M. s. spilota*, males tolerate each other's presence and form large mating aggregations; males and females are similar in body sizes. Current studies on *M. s. imbricata* show that males tolerate each other's presence, and are much smaller than females. This disparity is maximised in an insular population. Male reproductive tactics and the degree of SSD vary among nearby populations of *M. s.*

imbricata, apparently depending on the abundance of prey (and hence, of reproductive females).

*

MORTALITY DIFFERENCES BETWEEN SEXES ASSOCIATED WITH BREEDING IN AMPHIBIANS

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KEY WORDS: *Ambystoma*, *Pseudacris*, sexual selection, breeding, calling, mortality

According to Darwin's theory of sexual selection, individuals of one sex (usually male) may evolve traits and behaviors such as "gaudy colouration, power of song" which increase their probability of mating but reduce their probability of survival. Most male frogs call to attract mates. This behavior is energetically costly, and can attract predators as well as mates. We tested for differences between the sexes in mortality associated with breeding in two frogs, *Pseudacris nigrata* and *P. ornata*, as well as two amphibians that bred in the same pond at the same times but do not vocalize to attract mates, the salamanders *Ambystoma talpoideum* and *A. tigrinum*. Mortality was measured by using a drift fence with pitfall traps to census the number of individuals that entered and left a breeding pond each year for 18 years. Average annual mortality at the breeding pond was significantly higher for males than for females for the frogs (*P. nigrata*: males 73%, females 60%, $P=0.03$; *P. ornata*: males 66%, females 46%, $P=0.004$), but not for the salamanders (*A. talpoideum*: males 40%, females 40%, $P=0.90$; *A. tigrinum*: males 43%, females 52%, $P=0.30$). These results are consistent with the hypothesis that calling incurs a cost in terms of mortality.

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ENHANCEMENT OF SOUND RECEPTION INSIDE BURROWS OF FROGS OF THE GENUS *EUSOPHUS* (LEPTODACTYLIDAE)

Mario PENNA

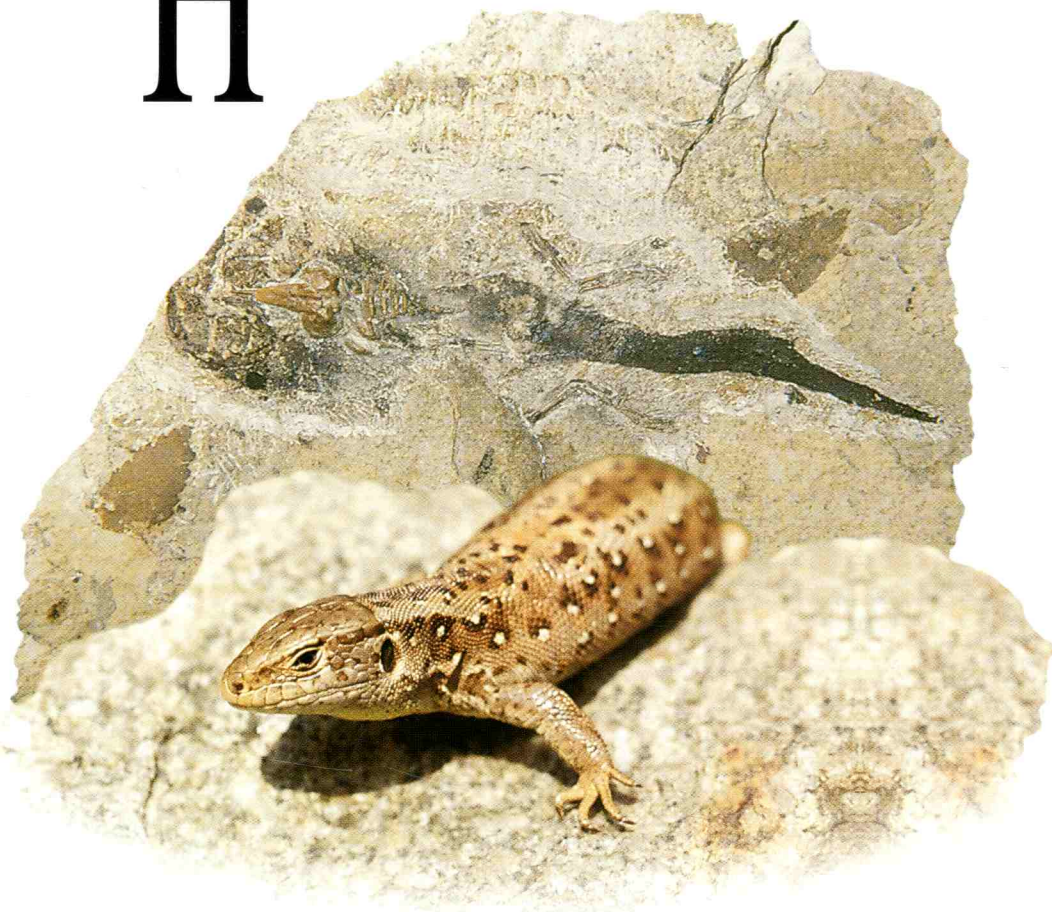
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KEY WORDS: Amphibia, Leptodactylidae, sound communication, vocal behavior

The extent and variation of the amplification effect of burrows on the reception of sounds by the frog *E. emiliopugini* from southern Chile was investigated. Amplification, inside burrows, of neighbor's calls and of calls and pure tones played back through a speaker positioned in the vicinity of burrows were measured with tie-clip microphones placed inside and outside 12 cavities occupied by males. The vocalizations of 10



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