CONSERVATION AND ECOLOGY OF THE ENDANGERED PYGMY BLUETONGUE, TILIQUA ADELAIDENSIS (SQUAMATA: SCINCIDAE)

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The endangered pygmy bluetongue lizard (Tiliqua adelaidensis) is known only from small patches of native grassland in the mid-north of South Australia. It has been found to exclusively inhabit spider burrows, which are used as retreats, basking sites and ambush points. Microhabitat choices limit both the distribution and abundance of this lizard. Current population trends indicate that pygmy bluetongues are not facing the threat of steady population decline, but are threatened by catastrophic events which can destroy subpopulations irrespective of size. Cultivation is the primary cause of these catastrophes.

THE ORIGIN OF THE MODERN AMPHIBIAN GROUPS

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KEY WORDS: Amphibia, Lissamphibia, Temnospondyli, Microsauria, relationships, evolution

Molecular phylogenics suggest that the three extant amphibian groups form a monophyletic Lissamphibia and that they shared a long common history after their divergence from the stem-amniotes in the Lower Carboniferous. This is consistent with their origin from a single Palaeozoic stem-group. The interrelationships of the Salientia, Caudata and Gymnophiona are more ambiguous although an immediate Salientia-Caudata relationship is more likely. The character-conflicts involved suggest that the two dichotomies giving rise to the three groups were closely spaced in time. At least one, probably both, of these dichotomies were pre-Triassic. It is unlikely that the stem-lineage of lissamphibians was unrepresented in the amphibian-rich tropical freshwater lowland faunas of the Permo-Carboniferous and hence likely that the closest Palaeozoic relatives will form a stem-group to the Lissamphibia rather than a sister-group, the latter relationship implying no representation of the stem-group in the fossil record. On this basis, nectrideans, lycosorphians and microsaurns share fewer lissamphibian characters than dissorophoid temnospondyls and show no ‘nesting’ of such characters in the way that the temnospondyils do, and that one would expect in a lissamphibian stem-group. In systematic analysis, dense taxonomic representation of any group is necessary for ‘nesting’ of lissamphibian characters to be apparent. Amphibamidae are probably the closest relatives of the Lissamphibia which are more likely to have arisen from a metamorphosing group.

THE MAP OF DISTRIBUTION AND HABITATS OF AMPHIBIANS AND REPTILES IN NORTH RUSSIA

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KEY WORDS: Amphibia, Reptilia, habitat, zoogeography

A map (scale 1:4,000,000) of amphibian and reptile distribution in northern Russia was compiled. As a territorial base, a map of tundra and forest tundra (animal’s principal habitats) of Russia was used. This work was done with the goal of demonstrating the possibilities of zoogeographical methods in mapping the various groups of animals. The distribution and population density of Lacerta vivipara, Rana terrestris, R. temporaria, R. cruenta, Hynobias keyserlingii, and Vipera berus are shown on the map. Our map differs from most others because it includes not only distribution and population density, but also types of environment. The structure of vegetation cover, relief, size of wetlands, humidity, and degree of human impact are represented on the map. Owing to use of a special compiling map of the animals’ habitats as a basis for the map of herpetological complexes, we could analyse the distribution of these animals on the northern boundary of the area. In addition, it was possible to assess the role of amphibians and reptiles in the structure of vertebrate communities. The latter is especially important for understanding the laws within communities of animals living in extreme conditions.

PREY BIOMASS DISTRIBUTIONS IN DESERT LIZARDS OF THE EAST KARAKUM

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KEY WORDS: Lizards, prey

Individual prey biomass distributions in 10 lizard species of the east Karakum (Repetsk) were studied. When observing diurnal and nocturnal lizards separately, one can see that large reptiles of some biotopes capture prey with greater absolute individual biomass (mg) than small ones do. On non-stabilized sands, small food objects are eaten by diurnal lizards more often than by true nocturnal ones. Among terrestrial and semi-arboREAL diurnal lizards, values of relative individual prey biomass (prey biomass as a percent of biomass of the lizards which captured invertebrates) are usually greater for small reptiles compared to rather big ones, and for widely foraging lizards compared to sit-and-wait ones. True nocturnal geckos of non-stabilized sands (i.e. terrestrial Teratoscincus scincus and semi-arboreal Crossobamon
Any anthropogenic influence on nature leads to changing some aspects of individual and ecosystem functions, and stimulates adaptive and compensatory processes. During the last decade a pronounced decrease of amphibian populations in technogenous regions of Ukraine, such as around Dnipropetrovsk, has been observed. We researched Rana ridibunda, Bombina bombina and Pelobates fuscus populations in that area. Decreasing young anuran numbers, aging populations, and changes in sex and size-weight population structures were found in biotopes contaminated by wastes from chemical and metallurgical plants, in comparison with biotopes in the Dniprovsko-Orlisky Nature Reserve. As this takes place, relative weights of liver, lungs, heart and kidneys increase, which reflects intensified metabolism. Some biochemical indices of amphibian metabolism from industrially contaminated sites were observed to change. The influence of industrial wastewater caused phospholipid and cholesterol growth in anuran liver and skin, while energy stored as lipids – triglycerides and cholesterol esters – decreased. Simultaneously, under contamination impact some indices of protein metabolism changed: glutamic acid increased in the liver’s protein as well as urea and rest nitrogen in amphibian blood serum. As a whole, changes of metabolism occur in one direction; that is a contributory factor to the adaptation and resistance to anthropogenic impact.

* DECLINING AMPHIBIAN POPULATIONS UNDER ANTHROPOGENIC INFLUENCE IN UKRAINE

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Carried out by the Ukrainian Declining Amphibian Population Task Force, working group studies of amphibian populations reveal specific groups of basic factors affecting amphibians in Ukraine. Among chemical pollution, landscape degradation, urbanization and recreation, the first has a pronounced influence, manifested in 100% death of spawn and up to 70% larval death in water bodies close to chemical and metallurgical plants. The industrial pollution causes a modification of amphibian metabolism that is reflected in changes of cholesterol, phospholipids, triglycerides, free and bound amino acids, DNA and RNA levels in organs and tissues, and in alterations of liver microsomal cytochromes b5 and P450. It is necessary to note that amphibian resistance to pollution impacts varies among species. In descending order of resistance, they ranked as follows: Rana ridibunda,