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A PRELIMINARY ESTIMATE OF THE POPULATION AND BIOMASS DENSITY OF THE GLASS LIZARD *OPHISAURUS APODUS* IN YUGOSLAVIA.

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INTRODUCTION

Despite its apparent common occurrence within some areas of its range, little is known of the biology and ecology of the glass lizard *Ophisaurus apodus*, a large (>400g) legless anguid found from central and southern Europe to central Asia (Obst, 1981). In a laboratory study Hailey (1984) investigated thermoregulation and activity metabolism whilst Meek (1986) measured body temperatures of animals in the field. However, for an understanding of a species ecology estimates of population and biomass densities are essential particularly in indicating how successful a species is in exploiting its habitat. Density estimates in reptiles have largely concerned lizards, the majority dealing with smaller species (Turner, 1977); this paper gives details of a preliminary survey of the densities of a population of *Ophisaurus apodus* in Yugoslavia.

METHOD

The field work was carried out in a scrub area in Croatia, Yugoslavia in 1986. Lizards were initially captured over a two day period and marked using Tippex fluid applied to the area between the lateral body folds after which the animals were released. A further two day sampling period was then carried out and the numbers of new and recaptures noted.

An estimate of the population density in a 1.8ha area was calculated using Baileys (1952) method regarded as suitable when the number of recaptures re low (i.e. less than 20). This has the form

$$d = a\,(n+1)/r+1$$

where the density estimated 'd' is derived from the total number of marked anaimals 'a', the total captures in the second sample 'n' and the number of recaptures 'r'. A 95% confidence interval based on Bailey's (1952) method for calculating the variance of the data has been obtained using

$$1.96 \times \sqrt{\frac{a^2\,(n+1)\,(n-r)}{(r+1)^2\,(r+2)}}$$

This is the method frequently employed for sampling lizards that are difficult to catch (Turner, 1977). Among the assumptions that should be taken into account with this method are 1) there is no appreciable recruitment during the study period, 2) mortality between marked and unmarked animals does not differ, 3) animals do not lose their marks, and 4) marked and unmarked animals have an equal chance of being captured. These are believed to be satisfied for this survey.

RESULTS

Initially, 17 lizards were marked with 21 lizards captured in the second sampling phase, 5 of which were recaptured. This gives a population density estimate of 34.6 ± 21.8 ha^{-1}. The mean body mass of the total number of captured lizards on th study area (n = 44) was 283g thus a biomass density estimate of 9,799g ha^{-1} was obtained. Figure 1 shows the biomass frequency distribution of the sample including lizards not included in the density estimates.

DISCUSSION

The small sample size and wide spread of the confidence interval show that the estimates can only be regarded as tentative. Nevertheless the population density value is close to the geometric mean density of lizards calculated by Turner (1977) of 51 ha^{-1} although often the densities of lizards are very much higher than this (>1000ha ^{1}) in productive environments (Turner, 1977). However, more instructive in indicating habitat productivity is biomass density which for *Ophisaurus* is probably above average for lizards but apparently lower than calculated for the sympatric *Testudo hermanni* of at least 24,183g ha^{-1} (Meek, 1985).

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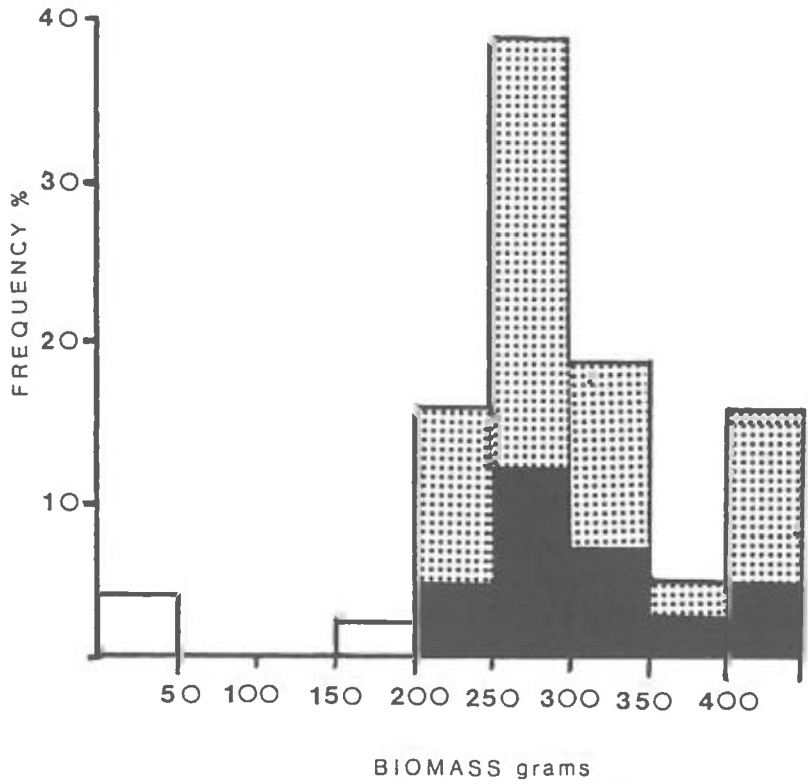

Figure 1. Biomass frequency distribution (%) of *Ophisaurus apodus* (n = 44). Solid histograms indicate males, stipple histograms females and open histograms hatchlings and juveniles. Based on this sample the male-female ratio is 1:2.15 and adult-juvenile ratio 13.7:1.

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