

tion was examined in five specimens by blood culture technique (performed with Wolf & Quimby amphibian medium supplemented with phytohaemagglutinin). The three males and two females were all diploid with $2n = 26$. No sex chromosomes could be distinguished. Chromosome No. 10 bears a distinct secondary constriction in the long arm. Ten well-spread metaphase plates were selected for quantitative estimations of the relative length and the centromere index for each chromosome pair. Apart from some specific deviations, the figures showed good correlation to those earlier reported for *R. ridibunda* and *R. esculenta* from Central Europe. The relative length of chromosome No. 4 diverges, as does the centromere index of chromosome Nos. 7 and 9 (and possibly of the shortest chromosomes, Nos. 12 and 13). The present figures show more numerous deviations from the figures presented for Japanese specimens of *R. nigromaculata* and *R. brevipoda*. The present results suggest that the isolated Swedish population of *R. lessonae* might exhibit some chromosomal differences compared with the corresponding form in Central Europe.

TEMPERATURE REGULATION IN LIZARDS (*LACERTA VIVIPARA*, *L. AGILIS* AND *L. PITUYSENSIS*)

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Seasonal variations, as well as interspecific differences, which correlate the geographical (climatic) distribution, have been found in the body temperatures and in the critical thermal minimum, but not in the oxygen consumption, of three species of *Lacerta*.

In the field *L. vivipara* and *L. agilis* from Denmark, and *L. pituysensis* from Spain had mean body temperatures of 32.3°C, 33.7°C and 32.6°C respectively when measured in May. This is significantly below the corresponding figures measured in July/August when they were 34.0°C, 34.6°C and 35.8°C. In the laboratory *L. vivipara* and *L. agilis* had mean preferred temperatures of 32.1°C and 33.3°C respectively in May, and lower than the 33.4°C and 34.3°C in July/August.

In May and in July/August the critical thermal minimum of *L. vivipara* (N Europe) was 1.6°C and 2.5°C, significantly lower than the corresponding values for *L. agilis*

(Middle Europe), which were 3.6°C and 4.2°C respectively. The oxygen consumption was determined in May, July/August and in December (after two months of hibernation). The lowest Q_{10} values and the smallest oxygen uptake were measured in December, when the oxygen consumption at 35°C in *L. vivipara* and *L. agilis* was 44.8 and 39.3 cm³/100g/hr respectively, against the 68.5 and 53.3 cm³/100g/hr measured in July/August.

The mean preferred temperature and the oxygen consumption of the three species of *Lacerta* did not differ, when measured before and after acclimation to 16°C, 26°C and 32°C. In the critical thermal minimum, the 16°C acclimation caused a fall, while the 26°C and the 32°C acclimation caused a rise in all three species. These results are correlated with the ecology of the species studied.

GROWTH IN *RANA TEMPORARIA* AND *R. ARVALIS*

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The growth in two frog species (*Rana temporaria* and *Rana arvalis*) was studied by means of: (1) The size distribution in the catch from pitfalls operated continuously for 2½ years. Due to individual variation in growth, a year-class could only be followed up to one year of age with this method. (2) Individual growth records from marked adult frogs recaptured during the same growth season. (3) Ditto, but recaptured during successive summers. All measurements are snout-urostyle. The study area is located in S Sweden (55°40'N, 13°30'E).

During the growth season, the mean growth in adult frogs was 0.03 mm per day (*Rana arvalis*, N = 19) and 0.08 mm per day (*R. temporaria*, N = 53). There was no difference between males and females. *R. temporaria* virtually ceased growing after 1st September. Too few captures made a similar analysis of *R. arvalis* impossible. In the catch from the pitfalls, the size-class of young-of-the-year was distinct. Young *R. arvalis* grew significantly from July to August but not from August to September (means of 17.2, 20.7 and 21.3 mm resp.). Young *R. temporaria* grew significantly from July through September but not from September to October (means of 14.3, 22.0, 23.6 and 24.0 mm resp.). When