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**Notes on the life history of the southern two-lined salamander,
Eurycea cirrigera, in West Virginia**

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Resources Research Institute, The Pennsylvania State University, University Park, PA 16801 and MICHAEL J. DEMCHIK, Jefferson High School, Rte 1, Box 83, Shenandoah Junction, WV 25442. The effect of soil horizon on *Quercus rubra* growth.

Soil horizon below the organic matter in western Pennsylvania have low levels of soil bases and high levels of toxic aluminum. A high school class in Jefferson County, West Virginia planted germinating *Quercus rubra* (red oak) acorns in 10 cm plastic pots in three blocks with six replicates of five soil horizon combinations: organic layer, A-horizon, B-horizon, layered organic/A/B horizons and layered A/B horizons. The oaks planted in the organic layer and the layered organic/A/B horizons tended to grow to a larger final size (leaf area and number of leaves) than the other treatments taken as a whole. No difference in height growth and no mortality was found. This suggests that while red oaks grow more quickly (at least during part of the season) in the organic soil layer, they can still avoid mortality in the mineral soil horizons (in this idealized laboratory experiment). These results are supported by field observations in high disturbance areas.

REBECCA J. BLEVINS and ERIC A. E. GARBER, Department of Chemistry, West Virginia State College, Institute, WV 25112-1000. Anaerobic bacterial tolerance and reduction of arsenate in soil near a coal-burning plant near Parkersburg, WV.

Arsenic in its most common stable, soluble inorganic form is arsenate. Arsenate is similar to phosphate in structure and therefore can substitute for it in biological pathways. The ADP-arsenate compound is unstable and readily hydrolyses uncoupling ATP synthesis in oxidative phosphorylation. Arsenate is released into the environment by the burning of fossil fuels, the smelting of metals, and the use of arsenic containing pesticides.

The wide use of arsenic containing pesticides in farming during the early part of the century has poisoned the groundwater and has made it a health concern today in Lingerwood, ND. Remediation is needed in order to restore clean water stores. Understanding the chemistry and bioenergetics of how arsenic-resistant bacteria survive in high levels of arsenic could potentially lead to cost effective remediation techniques. Some arsenic-resistant bacteria reduce arsenate to arsenite. It has been proposed that under anaerobic conditions arsenic compounds could substitute for terminal electron acceptor in oxidative phosphorylation. Anaerobic bacteria resistant to arsenate from twenty different sites near a coal-burning plant in Parkersburg, WV have been isolated. The tolerance level of the isolates towards varying concentrations of arsenate on agar plates and in liquid media will be measured. Gram stains will be done to indicate variability of surviving bacteria. Growth rates will be determined along with their ability to catalyze the reduction of arsenite. The colorimetric procedure of Lakso et al. (1979) will be used to confirm the production of arsenite.

TIMOTHY R. BROPHY and THOMAS K. PAULEY, Department of Biological Sciences, Marshall University, Huntington, WV 25755. Notes on the life history of the southern two-lined salamander, *Eurycea cirrigera*, in West Virginia.

Studies were conducted during the spring of 1994 at a first-order stream in Wayne County, West Virginia to determine population density, range of horizontal movements, and reproductive characteristics of *Eurycea cirrigera*. Population density was 0.77 salamanders/m² and horizontal movements ranged from 1.1 m to 32.6 m. Adult males had an average snout-to-vent length (SVL) of 42.75 ± 2.59 mm and adult females had an average SVL of 42.29 ± 1.38 mm. Males had significantly wider heads and lacked well-developed cirri.

BETH A. PAULEY AND THOMAS K.



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