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Preliminary Survey of the Collemba of Magazine Mountain, Logan Co., Arkansas

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In conclusion, the data described here constitute an extension of the observation by Bohlender *et al.* (1987) on PR of UV-induced chromatid deletions in hamster X *Xenopus* hybrid cells, and support the notion that PR mechanisms in vertebrate cells do not remove pyrimidine dimers from all vertebrate DNA's with equal efficiency.

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A PRELIMINARY SURVEY OF THE COLLEMBOLA OF MAGAZINE MOUNTAIN, LOGAN CO., ARKANSAS

The order Collembola includes small, wingless insects with characteristic abdominal appendages and mouthparts that are enclosed within a gnathal pouch. The first, third and fourth segments of the six-segmented abdomen are modified to form the specialized jumping organs characteristic of the order. Collembola range in size from .25 mm to 1 mm. Development is direct in that newly eclosed individuals differ from adults only in size, body proportions and usually absence of pigment. Collembola molt throughout life, the number of instars ranging from two to 50. They may be found in any habitat from near polar conditions and extreme high altitudes to sea level (Christiansen and Bellinger, *The Collembola of North America, North of the Rio Grande*, Grinnell College, Grinnell, Iowa, 1981. p. 20). Classification is based almost entirely on external morphology and mouthpart structure.

Little information was available about the order in Arkansas. Previous work in Arkansas has shown 15 species to occur in the state (Christiansen and Bellinger, 1981, pp. 495-1110). There have been lists of collembolan fauna published from 10 other states (Christiansen and Bellinger, 1981). The Tennessee list (Copeland, T.P., A Preliminary List of the Collembola of East Tennessee, *Journal of The Tennessee Academy of Science*, 35[4] October, 1960, pp. 238-243) recorded 34 genera and 77 species. To further investigate the collembolan fauna in Arkansas, berlese samples were taken from seven study sites representing a diversity of habitats in the Magazine Mountain area from October 1985 through September 1988. The study sites consisted of: north-facing bluffs with limestone outcroppings, sphagnum moss from a boggy area, a dry upland forest trail, rotting leaf litter along a small stream, moss samples, rotting logs, a drainage ravine with deep forest liter, and a hollow, rotting stump. Collembola were collected from the samples, cleared and slide mounted according to the methods outlined by Christiansen and Bellinger (1981) to facilitate examination under oil immersion (1000X). Approximately 1500 slides have been processed and classified from the sites. Findings include members from five families, 28 genera and 59 species. This represents 57 new state records. Voucher collections will be placed in the University of Arkansas Insect Collection. Determinations were made by the authors and by Drs. Kenneth Christiansen, Peter F. Bellinger and Richard J. Snider.

SPECIES LIST

Suborder: Arthropleona
Family: Hypogasturidae

Anurida (Micranurida) harti Christiansen and Bellinger
Hypogastura (Ceratophysella) armata (Nicolet)
Hypogastura (Ceratophysella) denticulata (Bagnall)
Hypogastura (Ceratophysella) glancei (Hammer)

Family: Entomobryidae

Entomobrya (Entomobrya) multifasciata (Tullberg)
Orchesella celsa Christiansen and Tucker
Orchesella villosa (Linnaeus)
Lepidocyrtus pallidus Reuter
Pseudosinella violenta (Folsom)

Hypogastura (Hypogastura) lima Christiansen and Bellinger
Hypogastura (Mitchellania) vulgaris Yosii
Hypogastura (Schoetella) albamaculata Scott
Neanura (Crossodonthina) serrata Folsom
Neanura (Neanura) barberi (Handschin)
Neanura (Neanura) muscorum (Templeton)
Paranura anops Christiansen and Bellinger
Paranura caeca Folsom
Paranura colorata Mills
Paranura quadrilobata Hammer
Pseudachortus (Pseudachortus) complexus (MacGillivray)
Pseudachortus (Pseudachortus) sextatalis Macnama
Xenylla welchi Folsom

Family: Onychiuridae

Onychiurus (Onychiurus) ramosus Folsom
Onychiurus (Protophoria) armatus (Tullberg)
Onychiurus (Protophoria) pseudoarmatus Folsom
Onychiurus (Protophoria) uenoi Yosii
Onychiurus n. sp.
Tullbergia (Tullbergia) mala Christiansen and Bellinger

Family: Isotomidae

Folsomia candida Willem
Folsomia decaxtophalma Ford
Folsomia fimetaria (Linnaeus)
Isotoma subviridis Folsom
Isotoma trispinata McGillivray
Isotoma viridis Bourlet
Isotomurus palustris Muller
Isotomiella minor Schuffer
Proisotoma (Appendisotoma) vesiculata Folsom
Tetracanthella ethelae complex Wray
Tetracanthella bellingeri Deharveng

Sinella (Sinella) avita Christiansen
Sinella (Sinella) barri Christiansen
Tomocerus (Pogonognathellus) bidentatus Folsom
Tomocerus (Plutomurus) brevimumronatus Denis
Tomocerus (Pogonognathellus) flavescens Tullberg
Tomocerus (Tomocerine) lamelliferus Mills
Tomocerus (Tomolonus) reductus (Mills)
Tomocerus (Tomocerus) vulgaris Tullberg
Tomocerus (Plutomurus) wilkeyi Christiansen
Willowsia bushi (Lubbock)
Willowsia nigromaculata (Lubbock)

Suborder: Symphypleona

Family: Sminthuridae

Dicyrtoma (Ptenothrix) atra (Linnaeus)
Dicyrtoma (Ptenothrix) castanea Snider
Dicyrtoma (Ptenothrix) quadrangularis, Mills
Neosminthurus bakeri, Snider
Sminthurides (Sminthurides) malagreni (Tullberg)
Sminthurides (Sminthurides) welcheseli Christiansen and Bellinger
Sminthurinus henshawi (Folsom)
Sminthurinus n. sp.
Sphyrotheca minnesotensis (Guthrie)

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REPRODUCTION IN THE WOOD FROG, *RANA SYLVATICA* (ANURA: RANIDAE), FROM ARKANSAS

The reproductive biology of the wood frog, *Rana sylvatica*, has received considerable scrutiny throughout much of its broad range in North America (see review in Davis and Folkerts, 1986). Interestingly, ever since the wood frog was first discovered in Arkansas over 50 years ago (Black, 1933, 1938), very little other than recent new county records (Cline and Tumilson, 1985; Plummer and Godwin, 1979; Robison and Douglas, 1977; Schuier *et al.*, 1972; Trauth *et al.*, 1987; Turnipseed, 1980, 1981) has been published on this species in the state. Within the Ozark Mountains of Arkansas (specifically the Boston Mountains and portions of the Springfield and Salem Plateaus), wood frogs have been found from Washington County in the west to Independence County in the east and from Baxter and Marion counties in the north to Pope County in the south. The Arkansas populations of *R. sylvatica* represent the southwesternmost extent of the species' range in North America; consequently, data on the reproductive biology of *R. sylvatica* in Arkansas can contribute to a better assessment of geographic and intraspecific variability in reproductive parameters (Berven, 1988; Berven and Gill, 1983) in this wide-ranging species. In the present study, we report on the breeding cycle in *R. sylvatica* from northcentral Arkansas.

From early February to late May, 1987 and 1988, breeding activity in *R. sylvatica* was monitored in Stone County; frequent visits to breeding sites in three other counties (Baxter, Marion, and Searcy) were also made. The primary study site consisted of two small farm ponds situated near each other (ca. 50 m apart). The surrounding habitat, located within the Sylamore Ranger District (SRD) of the Ozark-St. Francis National Forest, lies at an elevation of around 380 m and is geomorphically characterized by narrow, rounded ridges and steep, deeply-cut ravines. The forest type consists of a mixture of shortleaf pine and oak-hickory climax communities. We collected egg masses and adult and larval *R. sylvatica* from February to May, 1987, and egg masses and adults in February, 1988. Individual egg masses were placed in containers of 10% formalin, whereas adults were killed in a 20% chloretoe solution and fixed in 10% formalin. Oviductal eggs within expanded ovisacs of females were excised and measured with an ocular micrometer to the nearest 0.01 mm using a dissecting microscope at a magnification of 10X. Ten eggs per ovisac were examined; 10 egg diameters from 10 randomly-selected egg masses were also measured as above. Eggs, larvae and adults were stored in 70% ethanol and deposited in the Arkansas State University Museum of Zoology. Statistical data (means) are accompanied by \pm two standard errors.

Late winter precipitation coincided with the initiation of immigration to ponds and the so-called explosive breeding activity in *R. sylvatica*. We recorded a peak breeding period from early-to-late February, 1987, and from early February to the first week in March, 1988. The earliest male calling activity and deposition of egg masses were in two isolated SRD forest ponds on 7 February 1987; in 1988, the earliest calling and egg deposition in any pond were 1 February. At the primary study site, the first amplexic pairs were observed in pond #1 (chicken house pond),