162 MOHAMED, KAMAL I. State University of New York at Oswego -Agronomically important witchweeds: How did they evolve.

Striga hermonthica and *S. asiatica* are perhaps the most serious parasitic weeds in the world. They are widespread pathogens of sorghum, millet, rice, and maize. *Striga hermonthica* is confined to Africa and the Arabian Peninsula. It drastically reduces grain production in the Sahel where few crops can be supported by the physical environment. *Striga asiatica* occurs in Africa, southeast Asia, and the United States of America. It is far more widespread than *S. hermonthica* because it is autogamous. Phylogenetic studies and field observation suggest that these species evolved from other non-weedy species. The two species are true weeds and associated only with agroecosystems. They are seldom found growing far from crop plants. *Striga hermonthica* and *S. asiatica* are never found in native grasslands throughout most of their range. *Striga hermonthica* could have evolved in the Sahel, the center of origin of its main host sorghum. *Striga asiatica* is more likely to have evolved in southern Africa where it is known as a serious pest of sorghum and maize. This is supported by its recent discovery in Kenya and Togo. The two species spread along with their hosts as contaminant of seeds.

163 WELDY, TROY W.[1,2] and DONNA M.E. WARE[1]. [1]College of William & Mary, [2]Vassar College -
Vascular flora of the Corrotoman River watershed, Lancaster Co., Virginia.

The Corrotoman River watershed, located entirely within Lancaster Co., Virginia, covers a land area of more than 85 square miles on the northernmost peninsula in the Virginia Coastal Plain, the Northern Neck. The vascular flora of the area was surveyed from March 1994 to September 1995. A total of 825 taxa representing 435 genera of 122 families were documented, including 265 county records, 60 Northern Neck records, 4 coastal plain records, and 1 state record. Highlighting the study was the discovery of *Cypripedium kentuckiense*, newly reported by this study for the state of Virginia and Atlantic Coastal Plain. Eleven species documented have previously been determined as uncommon or rare in Virginia (Ludwig 1995), with nine of these being county records. Vegetational analyses were done for representative forest stands (Bitterlich method). Analyses of soil samples from local areas with mountain-coastal plain disjuncts revealed that some of these species occur on soils that are not calcium-rich. Phytogeographic analysis showed that over 40% of the native species have an overall range that extends west beyond the Mississippi, but fail to reach the Pacific Coast. Another 25% are non-native. The geographic northern limit of southern species in the Virginia coastal plain was reassessed. The generalization made by Harvill (1965) and North (1983) that a significant number of these species reach their northern limit on the Middle Neck (the peninsula immediately south of the Northern Neck) is still valid.

CASE, MARTHA A.[1], TROY W. WELDY[2], HENRY T. MLODOZENIEC[1], AND LISA E.
164 WALLACE[1]. [1]Dept. Biology, The College of William & Mary, Williamsburg, VA 23187 and [2]Dept. Biology, Vassar College, Poughkeepsie, NY 12601-A long way from home: The current status of *Cypripedium kentuckiense* including a significant range extension to eastern Virginia.

Cypripedium kentuckiense is a globally threatened species that is a likely candidate for the federal endangered and threatened species list. It is morphologically very similar to *C. parviflorum* var. *pubescens*, but differs in size, labellum coloration, and habitat specificity. Recently, a disjunct population of *C. kentuckiense* was discovered on the Northern Neck peninsula in eastern Virginia. Prior to this study, the easternmost population of *C. kentuckiense* was thought to occur in eastern Kentucky. In order to evaluate the Virginia population, multivariate and univariate analyses were conducted on 13 morphological characters obtained from 54 living specimens. These specimens included individuals from the Virginia population, specimens of *C. parviflorum* var. *pubescens* from five states, and specimens from five previously determined populations of *C. kentuckiense*. The morphological characteristics of the Virginia population are most consistent with those of *C. kentuckiense*, not *C. parviflorum* var. *pubescens*. In addition, element occurrence records were obtained from state heritage offices to provide updated estimates of the number of known populations of *C. kentuckiense* throughout its range. These records indicate that there may be as few as 156 populations of *C. kentuckiense*. Historical factors that may have produced this disjunction are discussed.

165 HEACOCK, CHARLES H. University of Tennessee-A study of freshwater mussels (Bivalvia: Unionidae) of Little River, Blount County, Tennessee.

A survey of freshwater mussels of Little River, Blount County, Tennessee, was conducted from January 1993 to October 1995. The study area included 20 sites and covered 42.9 river kilometers.

Additional collections were made, in November 1993, below the original study area. A total of 8 native unionid taxa were collected. The most abundant were *Fusconaia barnesiana* (Lea, 1838) and *Villosa iris* (Lea, 1829). The collections of A. E. Ortmann (1914-1915), P. W. Parmalee (1973-1991), and L. B. Starnes and A. E. Bogan (1988) are presented for a comparison.

166 HUTCHESON, H. JOEL and JAMES H. OLIVER, JR. Georgia Southern University, and The University of Georgia--The question of fluctuating asymmetry in a polytypic species of terrestrial ectoparasitic arthropod having a broad geographic distribution.

The blacklegged tick, *Ixodes scapularis* Say, vector of the agent of Lyme disease in eastern North America, has unusually high geographic variation relative to that known for other ticks and terrestrial ectoparasitic arthropods. Thus, high heterozygosity and low fluctuating asymmetry would be expected for this widely distributed polytypic species. The purpose of this study was to examine fluctuating asymmetry in blacklegged ticks from Minnesota, Massachusetts, Maryland, Missouri, North Carolina, Georgia, and F_1 progeny of reciprocal crosses between ticks from Massachusetts and Georgia. Departures from r-l normality, means ≠ 0 and homogeneity of variance were tested, in addition to r-l differences among group means, for 19 bilateral morphological characters of nymphs. Only differences of tibia IV lengths indicated fluctuating asymmetry. Differences for those from Missouri ticks were smaller ($P < 0.05$) than those of other groups and had the most variation (≈ 0.025 to 0.030 mm). Eleven other characters revealed directional asymmetry. The virtual absence of fluctuating asymmetry in *Ixodes scapularis* nymphs supports the contention of a general inverse relationship between levels of fluctuating asymmetry and heterozygosity, and suggests the *I. ricinus* complex (and closely related groups) may have lower fluctuating asymmetry and higher heterozygosity than that reported for other ticks.

167 WINSTEAD, JOE E. and NATHAN E. McWHORTER. Dept. Biol. Western Kentucky University, Bowling Green, KY 42101 - Comparisons of caloric values of two major Orthopterans from early successional fields in south central Kentucky.

Caloric values of members of the Tettigoniidae were consistently higher (avg. Of 5144 gm cal/gm ash free dry wt.) when compared to grasshoppers of the Acrididae (avg. Of 4789 gm cal) collected from grass and forb habitats over a three month period in 1995. Comparable differences in caloric values between these two groups are known in the literature but the energy values determined in this study are much lower than indicated from other studies. Although the Tettigonidae sampled contained higher energy values they were much smaller in terms of thorax lengths, a difference that was apparent early in their development and was maintained culminating in maturity where the thorax was only about 60% of the average 27 mm length of the Acrididae sampled. ICP analysis of mineral content indicated that the Tettigoniidae contained almost 40% less Calcium and 12 % less Magnesium than the Acrididae collected between July and September. The differences in energy levels, mineral content, and size raise interesting questions involving foraging strategies of potential predators and our understanding of ecosystem energetics.

168 CLAYTOR, TEDRA M. AND JAMES E. JOY. Marshall University - Mosquitoes of West Virginia.

Nineteen species of larval mosquitoes were collected from 451 sites in 50 of West Virginia's 55 counties over a four year period (1992-1995). *Anopheles punctipennis* (at 24.4% of the collection sites), *Culex restuans* (19.3%), and *Cx. territans* (18.0%) were the most commonly encountered species. *Aedes abserratus* is reported from the state for the first time. *Aedes triseriatus*, a known vector for the LaCross encephalitis virus, was found at 9.9% of the sites.

169 McGRANE, ARLENE[1] AND CAHRYN H. GREENBERG[2]. [1]Forest Resources and Conservation, University of Florida, Gainesville, FL 32611, and [2]USDA Forest Service, Southern Research Station, Bent Creek Research and Demonstration Forest, Asheville, NC 28806 - Abundance and biomass of surface-active arthropods under different silvicultural practices in xeric scrub.

Surface-active arthropods were sampled using pitfall traps in four different forest treatments in xeric Florida scrub: (1) intense burning and salvage logged, (2) clearcut followed by rollar chopping, (3) clearcut followed by bracke-seeding, and (4) mature forest naturally regenerated. Arthropods were classified by taxa and by mean