

the neotropics cannot be explained by the prevailing model of Pleistocene "refugia," (c) many areas of endemism--and their biotas--are older than the Pleistocene, and (d) the rate change in lithospheric complexity constitutes a deterministic causal explanation for spatial and temporal variation in speciation rates and patterns of species diversity.

GIBSON, ARTHUR C. Department of Biology, University of California, Los Angeles, CA 90024. -Plant disjunctions in arid and semiarid North America--a search for multi-area cladograms.

Current reconstructions of the floristic history of arid and semiarid North America are primarily based on patterns of extant plant ranges and infragenetic disjunctions. Unfortunately, because phylogenetic relationships of Mexican species are poorly understood, much of this reconstruction has been of the narrative type. In fact, to date most systematic treatments of Mexican taxa have not hypothesized the phylogenetic relationships of each species but have instead lumped taxa into series, sections, and subgenera and then discussed the interrelationships of these higher taxa. To begin an earnest attempt to uncover coincident phylogenetic and areal patterns, one can analyze the phylogenetic model of Mexican columnar cacti (tribe Pachycereae), which occur in many interesting dry forests and desertscrubs, have noteworthy patterns of endemism and disjunction, and have a recent phylogenetic model of the species based on synapomorphies. In these cacti, the clades radiate from southern Mexico in various directions, so that the northern deserticolous taxa are derived versions of species found in the nearby dry tropical forests to the south. Genera of trees and shrubs in other families that co-occur with columnar cacti are analyzed with Pachycereae to identify any recurrent patterns of disjunction or speciation and possible multi-area cladograms. An overview of other disjunction patterns in arid and semiarid Mexico is made to determine whether plant disjunctions can be used in a rigorous way to elucidate the climatic and vegetational history of Mexico and the arid southwestern United States.

Poster Session

CLARK, CURTIS. Biological Sciences, California State Polytechnic University, Pomona CA 91768. - Herbarium label-writing on a "mainframe" computer.

Most of the drudgery of writing herbarium labels is in retyping information that does not change from one label to the next, and typing duplicate labels. The ability of computers to store information can alleviate much of this. Full-screen word-processing systems are designed for such use, but not all herbaria have these available. Our system uses instead a "mainframe" computer, of the type available on most college campuses. An interactive BASIC-language program takes input from a worker at a terminal and writes it on a file which is then sent to a word-processing program of the RUNOFF type for final manipulation into herbarium labels. We have found that a "user-friendly" program must have certain features: (1) a HELP command, (2) a standard order for inputting information, but the ability to deviate from

it at any time, (3) the ability to proof the information at any time, and (4) the ability to selectively erase information at any time. Our program has been used successfully in a one-quarter beginning plant taxonomy course. It prints labels in a standard format, which can be changed by altering one section of the program. Listings of the program will be available.

JOTCHAM, J.R. and D.W. SMITH. Department of Botany & Genetics, University of Guelph, Guelph, Ontario, Canada. N1G 2W1. -A numerical analysis of Ericaceae.

Numerical analyses were applied to a previously published data set of 60 characters for 52 genera of Ericaceae (Stevens, 1971). The classification methods applied included polythetic agglomerative and polythetic divisive (2-way indicator species analysis) procedures. The ordination methods included principal components analysis and detrended correspondence analysis. The resulting clusters were tested using multiple discriminant analysis. All analyses were performed with commercially available software. The results did not completely coincide, but they essentially agree with Stevens' treatment of the family, especially at the subfamily level. The Pyroloideae and Monotropoideae are usually well within the family boundaries as defined, but the Wittsteinioideae are a definite outlier with this data set. The ordination diagrams did not show clearly disjunct clusters in most cases, but the genera of any one subfamily tended to group together.

MACDONALD, S. ELLEN and C.C. CHINNAPPA. Department of Biology, University of Calgary, Calgary, Alberta Canada. T2N 1N4 - Morphological variation within an isolated population of *Stellaria longipes* Goldie (Caryophyllaceae) on the Athabasca sand dunes.

Stellaria arenicola Raup is considered to be a species (within the *S. longipes* complex) endemic to the Athabasca sand dunes in northern Saskatchewan. This unique area is characterized by shifting sands, unusual moisture conditions and intense insolation. These isolated populations share a combination of morphological characters which are distinct from other members of the *S. longipes* complex. This widely distributed complex is known to be plastic with respect to: number of flowers, habit, length of stem, leaf shape and pigmentation. The *arenicola* type is identified by its spreading habit and large yellow capsules with reflexed teeth. Twenty subpopulations of *S. longipes* (including the *arenicola* type) were studied in the Thomson Bay dune field. Morphological features including habit, capsule characteristics, stem length, pigmentation, number of flowers, leaf shape and size, and flower size and sex were characterized in each population. A gradation from the *longipes* form to the typical *arenicola* form is evident. There is great variability in capsule color and size. Environmental parameters including shading, sand accumulation, soil water potential and other soil characteristics (nutrients, organic matter and particle size) were determined for each site. The association of morphological features with microhabitat characteristics will be presented.