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seedlings of the plant species examined. Emerged seedlings in the field suffered more mortality by herbivory than by pathogens. A fungal pathogen of *Ipomoea* leaves reduced photosynthetic rates and depressed fitness. The selective action of fungi on these plants influences community composition.

1:20 **NORTON, BRIEN E., and DONALD J. BERMANT, Utah State University, Logan, Plant replacement and population interactions of perennials in salt desert shrub vegetation.**

At the Desert Experimental Range in southwestern Utah the U.S. Forest Service has charted permanent quadrats at intervals since 1935. Quadrats are 9.3 m^2 located in exclosures and grazed communities, and provide data on plant cover, density, dispersion patterns and succession. *Ceratoides lanata* and *Artemisia spinescens* exhibit longevities beyond 40 years; *Atriplex confertifolia* is more short-lived and more susceptible to replacement by other perennials. Total cover has increased from 4.5% to about 10% in 40 years. Demographic changes are oriented to old plant locations in preference to bare patches. Biotic factors appear more important than climate in determining successional steps.

1:40 **BRAGG, THOMAS B., University of Nebraska at Omaha, Succession of woody plants on unburned bluestem prairie in the Kansas Flint Hills.**

Woody plant cover averaged 72% on all soils after 55 years of succession; the rate of invasion was greatest on rock-outcrops and deep, lower-slope soils. *Amorpha canescens, Ceanothus ovatus,* and *Rosa spp.* declined as invading woody plant cover increased. *Symphoricarpos orbiculatus, Cornus drummondii,* and *Rhus glabra* invaded initially but were subsequently succeeded by *Juniperus virginiana* and *Ulmus.* Mature forests were dominated by *Celtis occidentalis* and *Ulmus spp.* in the lowland and by *Quercus muehlenbergii* and *Ulmus spp.* on slopes and rock-outcrops. Soil and topography were shown to affect both the species composition of the seral stages and the rate of succession.

2:00 **PETERSON, K.M. and W.D. BILLINGS, Duke University, Durham, Geomorphic processes and vegetational change along the Meade River sand bluffs, arctic Alaska.**

Geomorphic process, which are active within the region of sand deposits on the Alaskan arctic coastal plain, produce changes in local vegetation primarily through changes in soil moisture. Wind and water erosion produce patterns in topography and vegetation similar to those produced in temperate regions. However, these patterns are augmented by, and interact with, patterns produced by processes characteristic of permafrost regions such as polygonization and thermokarst erosion. Through time, anastomosing vegetational patterns result from the integration of local linear and cyclic ecosystemic changes. Reduction of vegetational cover on dry river bluffs is strongly influenced by caribou and ground squirrel activity.

2:20 **REYNOLDS, PHILLIP E. and PATRICIA IRVIN, Stockton State College, Pomona, New Jersey, Biomass data for oak stump sprounts in a young cut-over pitch pine stand located in the New Jersey Pine Barrens.**

Various measurements of stump-sprout regeneration were made for black (*Quercus velutina*), scarlet (*Q. coccinea*), blackjack (*Q. marlandica*), post (*Q. stellata*), and white (*Q. alba*) oaks in a pine-oak stand one year after the 30 year old upland sandy pitch pine (*Pinus rigida*) stand had been silvically treated. The stand is located on the Stockton State College campus. These measurements indicate that the present pine-oak stand, in which blackjack and post oaks predominate, will convert to an oak-pine stand, in which white, scarlet, and black oaks will dominate in the abscence of further treatment.

2:40 **GHOLZ, HENRY L., G.M. HAWK, and A. CAMPBELL, Oregon State University, Corvallis, Secondary succession studies in the Douglas-fir region: component biomass and leaf area development after clearcutting on a small western Oregon watershed.**

On a series of 36 successional study plots, wood biomass, foliar biomass and the leaf area index one year after clearcutting averaged 1/650, 1/23 and 1/29 of pre-logging levels. Large local differences were observed corresponding to pre-logging stand characteristics and unevenly distributed logging disturbance. The dryer ridge tops, originally with a more open canopy, now support the greatest woody biomass, mainly in the stems of deep rooted residual shrubs, in contrast with the shallow rooted more herbaceous riparian zone. This structural pattern seems important in the control of many ecosystem functions.

3:00 **DENSLOW, JULIE S., University of Wisconsin, Madison, Secondary succession and plant speciation in a tropical rain forest.**

Succession within the first year following disturbance was studied in old fields of divergent use-histories in the rain forest of northern Antioquia, Colombia. Bray and Curtis ordinations of the stands were consistent with previous findings on the importance of previous vegetation and usage patterns in determining species composition. Closer examination suggests that similar species of the family Melastomaceae optimize performance at different points along this synthetic gradient emphasizing the importance of temporally heterogeneous environments in promoting the high species diversity of the tropics.

3:20 **CROW, THOMAS R., Institute of Tropical Forestry, Rio Piedras, Puerto Rico, The impact of periodic disturbance on the development of a montane rain forest in Puerto Rico.**

Measurements over a 30-year period in a *Dacryodes-Sloanea* forest indicate two distinctly different phases in