

## ECOLOGY

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### ABSTRACTS

**Vegetation Gradients on Wizard Island, a Volcanic Cinder Cone in Crater Lake, Oregon.** ADOLPH FALLER III and MARION T. JACKSON, Indiana State University.—Wizard Island, which covers about one-half square mile, is a volcanic cone extending about 760 feet above the present level of Crater Lake. Continuous belt transects 43.56 ft wide were run across the island in each of the four main compass directions to determine vegetation changes with respect to elevation, exposure and substrate. Eighty-seven species of vascular plants are known to occur on the island, including 17 new species reported in this study.

Forest associations include a rather dense *Tsuga mertensiana*-*Abies magnifica* var. *shastensis*-*Pinus monticola* forest which encircles the base of the cone; moreover, a less dense stand of similar composition occurs on the western lava flow. A scattered *Pinus albicaulis*-dominated stand encircles the windswept crater rim of the cinder cone.

Diversity indices indicate that floral richness follows the environmental gradients with respect to both slope aspect and elevation. In order of decreasing diversity were the north-facing slope, east-facing slope, west-facing slope and south-facing slope. With respect to elevation, the cinder covered mid-slopes had the greatest diversity on all aspects, followed by scoriaceous upper slopes and lava flows in that order. An excellent direct correlation exists between soil moisture levels and density and diversity of the herbaceous stratum.

Factors controlling vegetation distribution on the upper cone are low soil moisture, slope instability, low soil nutrient supply and summer temperature extremes. On the gently-sloping, angular basaltic lava flows, trees reaching 40" DBH, 135 ft tall and upwards of 500 years old were relatively common.

**Beckville Woods: A Remnant of the Presettlement Forest Mosaic of the Tipton Till Plain.** W. E. MYERS and R. O. PETTY, University of Wyoming and Wabash College.—A Phytosociological study was made of 23 acres of oldgrowth forest in eastern Montgomery County, Indiana. The Beckville Woods is shown to be a relatively undisturbed stand in which wetland segregates of the mixed mesophytic forest interdigitate with upland climax associates on Brookston silt loam. A full tally is presented with stand attributes given for the 41 tree species present within the stand. The study further emphasizes the landscape gradient and the disposition of species in response to soil moisture levels which produces a mosaic of community types. The high species diversity, high density and large stems (to 60 inches *dbh*, 52 stems over 36 inches *dbh*), plus the presence of 3 discernible community types (Beech-Maple, Oak-

Hickory and Red Maple-Elm) make this forest remnant a valuable segment of the remaining natural history resources of the state.

**Kramer Woods: An Old-Growth Stand On The Ohio River Terrace.** DAMIAN SCHMELZ, Purdue University, Lafayette, Indiana.—The 212 acre stand is located in Spencer County, Indiana. In a full tally of 21 acres, 34 species with *dbh* over 4 inches were recorded; 2 more species with *dbh* over 2 inches were represented. *Quercus shumardii* contributed 17% of stand density and 30% of stand basal area. Density and basal area factors combined, *Q. shumardii* had an importance value of 23.5%, *Carya ovata-laciniosa* 13.5%, *Quercus palustris* 9.4%, *Liquidambar styraciflua* 8.4%, *Ulmus americana* 7.5%, *Quercus bicolor* 6.3%, and *Fraxinus pennsylvanica* 4.7%. The largest stems were those of the three *Quercus* species mentioned, one *Q. shumardii* measuring 51.5 inches *dbh*. Reproduction was predominately *C. ovata-laciniosa*, *F. pennsylvanica*, and *U. americana*. The stand differed markedly from other Indiana bottomland stands in species composition, in higher average stem diameter, and in lower stand density; it was similar in stand basal area and in size-class distribution.

**Creel Census of Lake Michigan Shoreline.** H. E. McREYNOLDS, U.S. Forest Service, Milwaukee, Wisconsin.—During late spring and summer, Lake Michigan fishermen along the Indiana shoreline are concentrated in two small localities (Gary area and Michigan City). Pressure is six times as high at Michigan City as it is at Gary. Fishing at other shoreline points is negligible. The catch approximates 1.0 fish per hour. Yellow perch comprise 90% of the total catch during this period, distantly followed by bluegill and carp. Game fish are insignificant in the catch.

#### Other papers read

**Preliminary Report on Thermal Effluent Effects at the IPALCO Plant on the White River with Special Reference to Fishes.** MAX A. PROFITT, Indiana State University.