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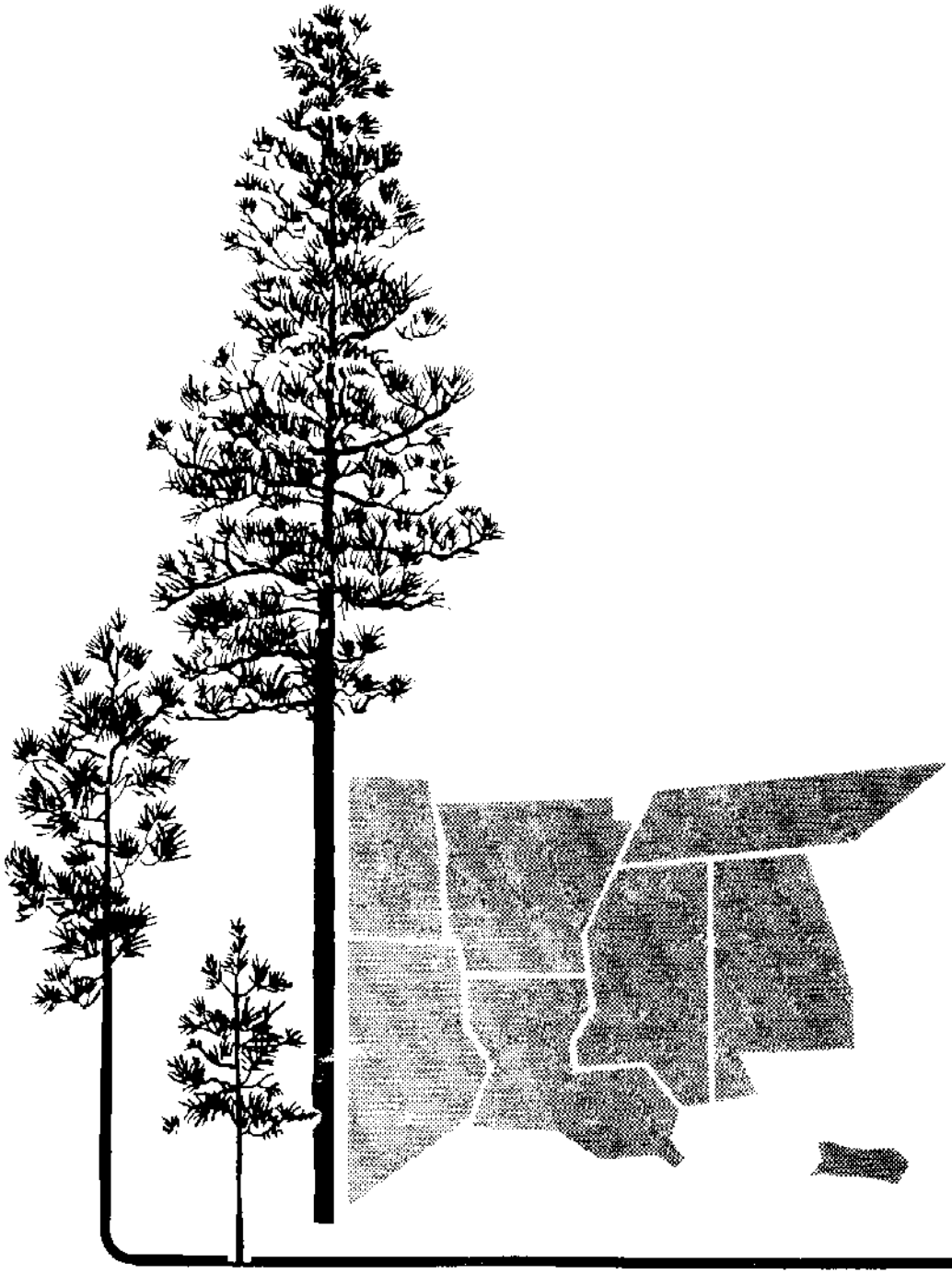

Southern Forest Experiment Station

Sampling and Modelling Visual Component Dynamics of Forested Areas

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ABSTRACT

A scaling device and sample design have been employed to assess vegetative screening of forested stands as part of an extensive forest inventory. Referenced in a poster presentation are results from East Texas pine and oak-pine stands and Alabama forested areas. Refinements for optimizing measures to distinguish differences in scenic beauty, disturbances, and stand structure are discussed.

SUMMARY

Estimating verifiable and repeatable judgment of vegetative screening for studies of forest aesthetics, hiding cover for wildlife, and as a measure of forest disturbance has been difficult, particularly in field surveys of extensive areas. A scaling device and sample design have been developed to estimate within-stand visual components in forested areas: visual penetration, tree bole screening, and foliage, twig, and small stem screening. The scaling device, a "screenometer," is a clear plastic plate (7.5 inches by 2 inches), scored with divisions, and held 14 inches from the eye. Visual components are estimated at fixed distances from the observer.

Methods are discussed in Rudis (1985) and Rudis and others (1988). Data are presented in Rudis and others (in preparation). Associated with this study, but published elsewhere, are reports on a dispersed recreation inventory of Alabama's forests (Rudis 1983), recreation use and recreation opportunity preferences of Alabama forest users (Rudis 1987), and psychological utility of visual penetration measures in scenic beauty models (Ruddell and others 1989).

Sampling at a 50-foot radius from an observer position with a "screenometer" provides a minimum distance to distinguish forested plots with and without recent disturbances and to maximize correlations with scenic beauty valuation in East Texas pine and oak-pine stands.

Data from a broad-scale survey of 3,700 forested plots in Alabama suggest a conceptual model of visual components over time as follows: a rapid decline in visual penetration as vegetation approaches viewing height, followed by a gradual rise in visual penetration with increasing stand age and average stand diameter. As stands mature, expanding tree canopies and periodic disturbances reduce foliage, twig, and small stem screening. Tree bole screening is negligible to age 8 in even-aged stands -- or to an average stand diameter of 2 inches at breast height among all-aged stands. Tree bole screening increases with stand age and larger average stand diameter. Stands with recent cutting, livestock grazing, and recent burning have more visual penetration than stands without such disturbances.

Ocular estimation of vegetative screening is used commonly to estimate aesthetic impacts of forest management practices, to classify recreation opportunities, and to assess wildlife hiding cover and understory biomass. With the aid of a "screenometer," vegetative screening can be objectively inventoried and quantified. Differences at 50 feet from the observer are more closely associated with differences in scenic beauty and stand disturbances than shorter distances, and are logically related to differences in stand structure.

The broad-scale survey of visual components in Alabama forests provides an important conceptual model for regional simulation. Variability among stands, however, is sufficiently diverse to preclude model prediction of visual vegetative screening based on stand age, average stand diameter, and stand disturbances. Subdivision of screenometer sectors, inventory of more detailed components, and better knowledge of stand establishment, timing and duration of disturbances, and environmental conditions, should improve prediction of vegetative screening from other survey measures in sampled areas.

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