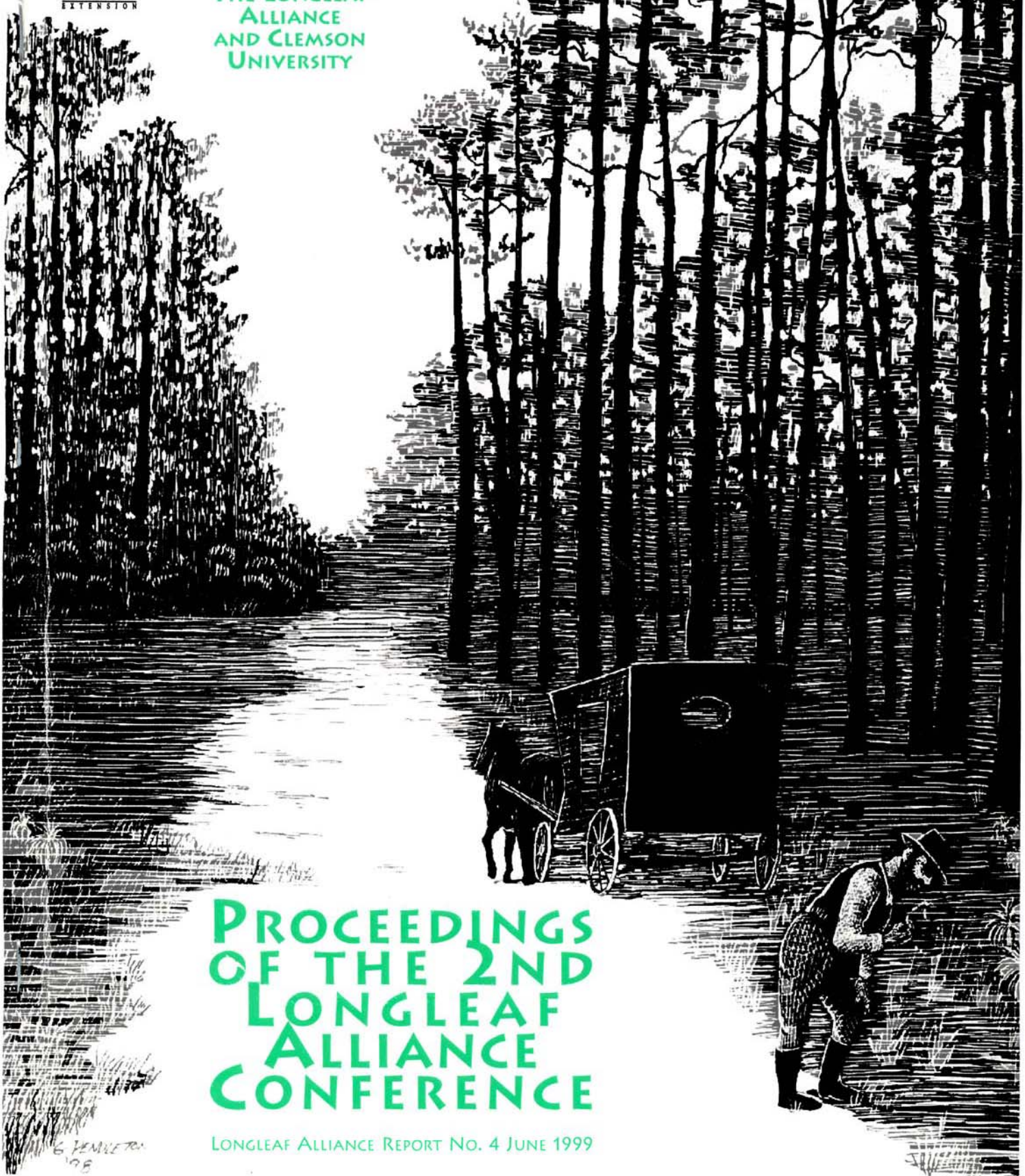




THE LONGLEAF ALLIANCE

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Carbon – fine-root allocation and transformations at ecosystem scales (C-Fates): a test of a conceptual model of belowground dynamics in longleaf pine forest

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ABSTRACT: Understanding root patterns and processes has been hindered because of their difficulty associated with belowground investigations. Because the soil is opaque, observing roots results in their destruction or the modification in the root environment in ways that are likely to affect the observations. In addition, root growth and mortality are less seasonal than aboveground parts. This is particularly acute in longleaf pine-wiregrass savannas due to the evergreen nature of the community and the mild winters (sometimes referred to “dormant” season although roots growth continues). Thus, developing ways to study roots that independently assess belowground processes is key to their understanding. In addition, roots are likely to play a more important role in regulating nutrient cycling (particularly C and N) in fire-dominated systems because fire burns the aboveground litter. Understanding the controls on belowground dynamics is important to understanding the ecology of longleaf pine communities. In this poster we present a conceptual model of belowground dynamics including pools, fluxes, and controls. We also describe an experiment that investigates the importance of leaf scorch, fertility, and root herbivory on fine root production and turnover. Data from this experiment will be used to more quantitatively evaluate dynamics of longleaf pine forests below the soil surface, and better understand the ecology of management impacts on productivity.