



United States Department of Agriculture
Forest Service
Research & Development
Southern Research Station
Science Update SRS-70

Center for Bottomland Hardwoods Research

Providing the scientific basis for managing southern bottomland hardwood and wetland forests, including their stream ecosystems, for a sustained yield of forest products and other ecological values

Bottomlands include a diverse set of forest types, found mostly in the floodplains of rivers and their streams on the broad coastal plain stretching from Virginia to Texas. Comprehensive knowledge of species biology and system ecology is needed to develop better tools to restore and manage bottomland hardwood forests—and their associated wetlands—if this valuable resource is to persist.



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Regeneration and Reproductive Biology

www.srs.fs.usda.gov/cbhr/research/studies/studies.php#RRB



- Examines natural regeneration processes and the benefits of silvicultural practices on establishment and growth of natural and artificial reproduction in key tree species
- Investigates the flowering, pollination, seed production, and germination ecology of overstory, midstory, and understory plant species
- Studies the influence of environmental factors such as light and soil moisture on fundamental aspects of seedling physiology and growth
- Expands understanding of seed storage physiology in hardwood species, most notably oaks
- Develops protocols to establish and assess the quality of planting stock for bottomland hardwood plantations
- Investigates seed bank dynamics of native and invasive plant species in floodplains

Stand Management and Forest Health

www.srs.fs.usda.gov/cbhr/research/studies/studies.php#SMFH



- Formulates environmentally sound silvicultural practices that improve tree growth and quality beyond the sapling stage
- Produces information and quantitative tools to help predict the development of stands in response to silvicultural practices
- Develops practical techniques to detect and control insects and diseases
- Studies the life history, genetics, and ecology of nonnative pests to facilitate detection, identification, and control strategies
- Determines optimal silvicultural methods for growing hardwood biomass for biofuels

Aquatic and Terrestrial Fauna

www.srs.fs.usda.gov/cbhr/research/studies/studies.php#EATF



- Validates new methods for monitoring population trends and habitat quality in support of warmwater fishes, freshwater mussels, crayfishes, amphibians, reptiles, and birds
- Advances the use of survey data for making inferences about resource health, and for detecting trends in diversity and abundance over time
- Investigates the effects of natural disturbance and land management practices on biological communities
- Studies the life history, genetics, status, and distribution of poorly known organisms, with an emphasis on sensitive species

Ecosystem Processes and Restoration

www.srs.fs.usda.gov/cbhr/research/studies/studies.php#EPR



- Examines methods to restore animal and plant communities and assesses how restored systems compare with natural ones
- Studies the ecology, population genetics, pathology, seed physiology, and dispersal of endangered plants, such as the endangered pondberry (*Lindera melissifolia*)
- Investigates the regional water balance and how watershed processes affect forest development in a region—the Lower Mississippi River Alluvial Valley—dominated by agriculture
- Advances technical understanding of forested wetland productivity and nutrient dynamics
- Examines the effects of natural resources management on watershed processes of the upland forests in the Interior Highlands of Arkansas
- Pursues techniques for restoring forest stands, including vertical structure and species diversity, on lands formerly used for agriculture

Partnerships Our research is conducted in partnership with other scientists and land managers at universities and colleges, state forestry and wildlife agencies, national forests, forest products companies, and non-governmental organizations.

Science Delivery We provide science-based information on bottomland hardwood, and associated upland, ecosystems to land managers, scientists, and the public through general and technical publications, analytical modeling tools, short courses, workshops, webinars, tours, and presentations aimed at disseminating our research results to those who put them into practice.

PHOTOS TOP TO BOTTOM: Cherrybark oak acorns • Cottonwood harvest • Longnose gar • Students study ecology
FRONT: Nuttall oak seedling. All photos by USDA Forest Service.