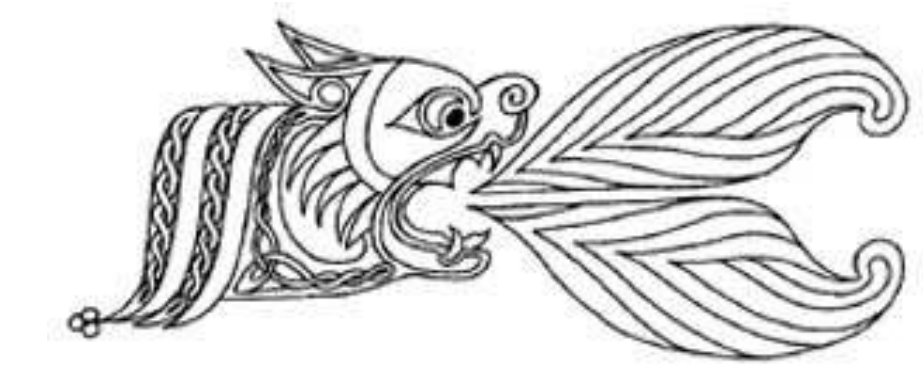
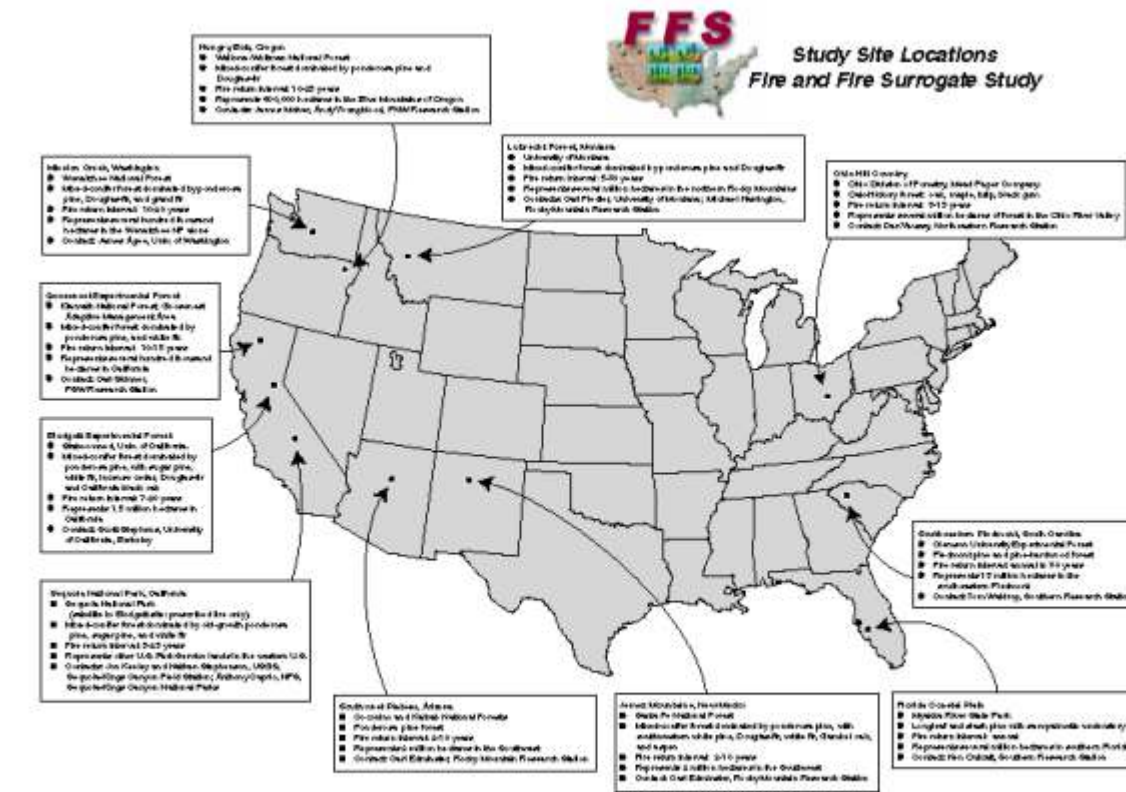




Fire and Fire Surrogate Treatments for Ecosystem Restoration



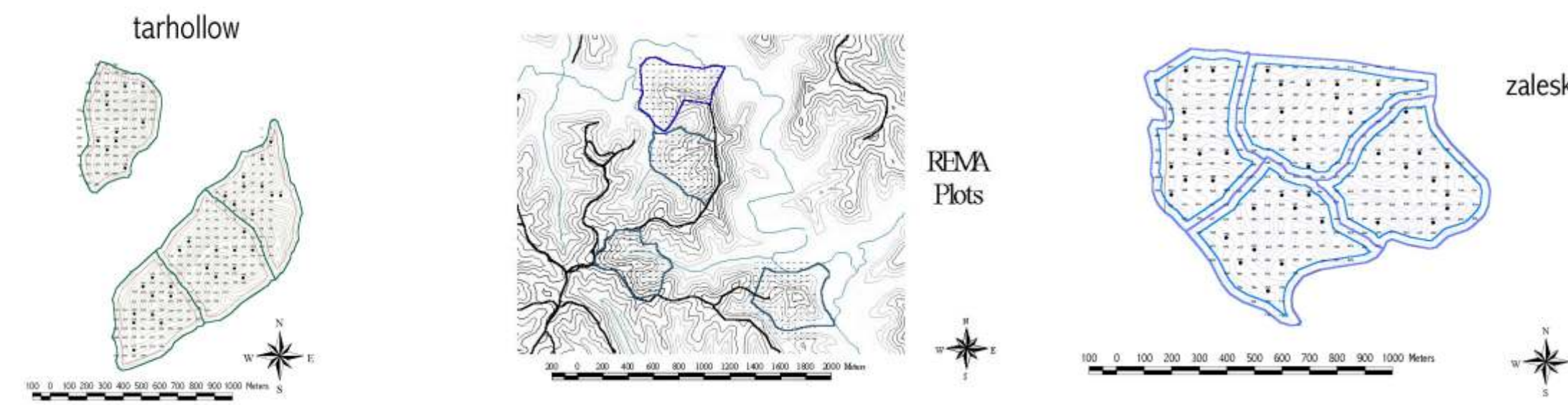
The National Study



In January 2000, the USDA/USDI Joint Fire Science Program (JFSP) awarded funding for a five-year "National study of the consequences of fire and fire surrogate treatments" (FFS). A network steering committee representing 11 sites from the Pacific Northwest to southern Florida designed the study as an integrated network of long-term interdisciplinary research sites utilizing a common "core" design to facilitate broad applicability of results.

Each participating site will apply the same four treatments, replicated at least three times, and measure the same set of core response variables with a common plot design and over the same relative time period. Because communication among sites will be facilitated by a network structure, participating scientists will gain perspective from other sites as they carry out their own site-specific work, and will be able to analyze their data within a richer context.

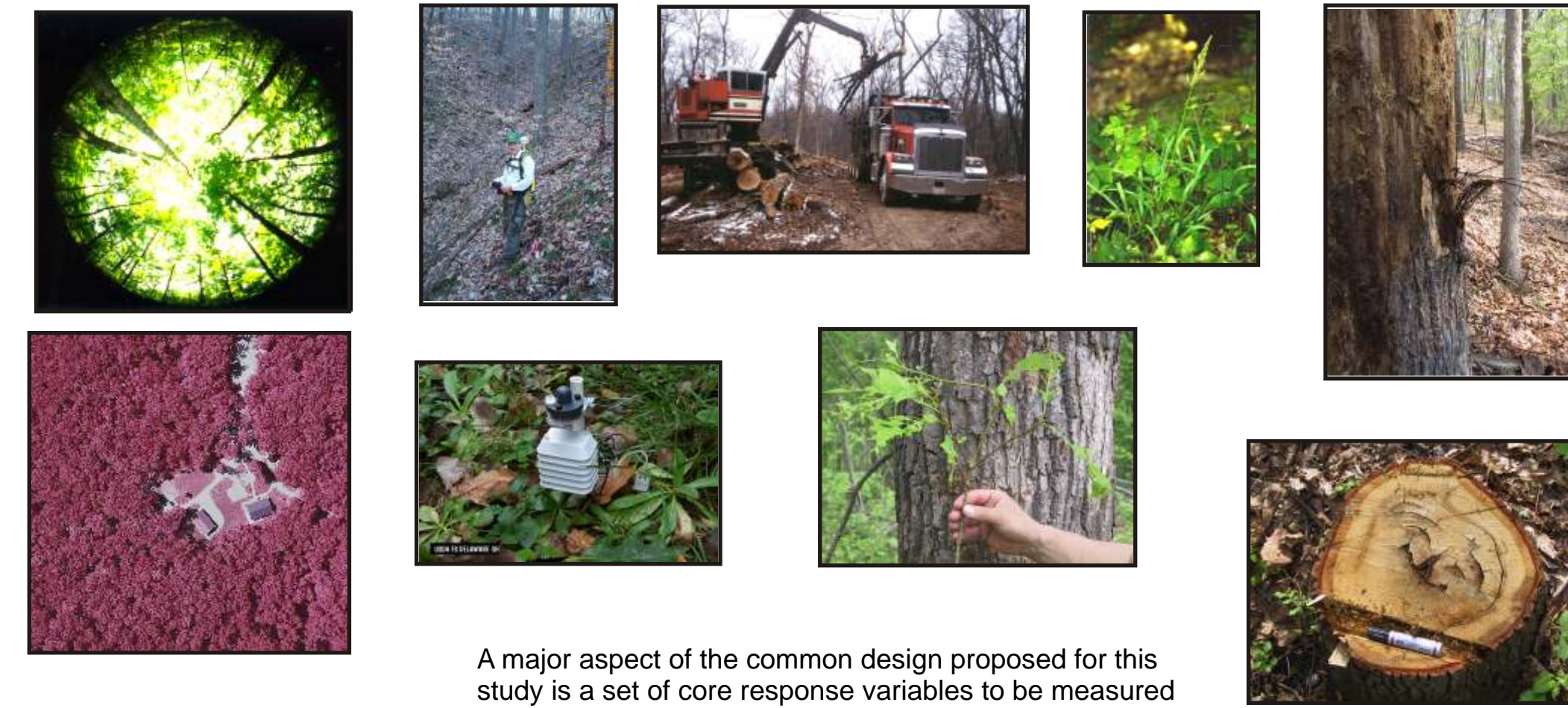
Treatment Units



Treatment units are whole, discrete stands or portions of larger stands all having irregular boundaries. These four treatments span a useful range both in terms of realistic management options and anticipated ecological effects.

Treatments will be guided by a desired future condition or target stand condition. The desired future condition is defined in terms of the tree component of the ecosystem and live and dead fuel characteristics.

Response Variables



A major aspect of the common design proposed for this study is a set of core response variables to be measured at all the research sites. Core variables encompass several broad disciplinary areas, including vegetation, fuel and fire behavior, soils and forest floor, wildlife, pathology, and treatment costs and utilization economics. Disciplinary groups have developed the core variables and associated measurement protocols, including coordinating across groups to ensure consistency, compatibility, and non-duplication of data collection efforts. Within-unit sampling of all variables will be keyed to a 50-m square grid of permanent sample points to be established and maintained in each treatment unit. Spatial referencing of all data to the grid will facilitate both spatial and cross-disciplinary analyses.

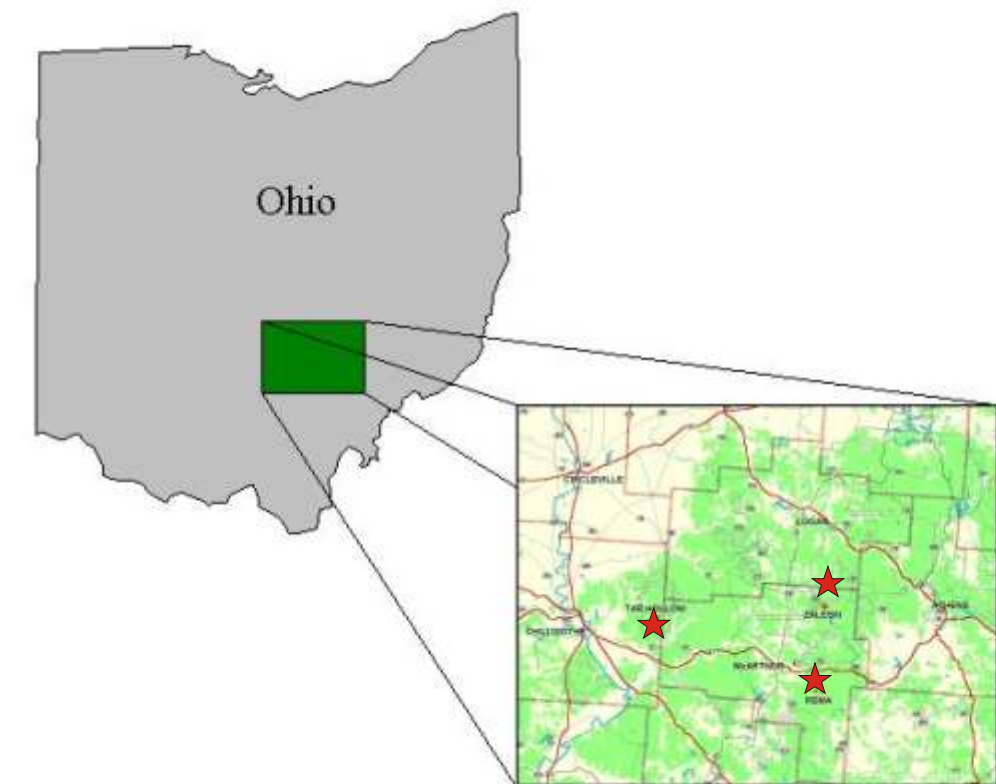
While fire may remove down woody material, it may also reduce foraging habitat for birds and numerous macro-invertebrate species. Measuring both the effects of fire and/or thinning on oak regeneration and on components of biodiversity may help to identify thresholds that would be useful for fine-tuning management to achieve more holistic objectives. Measuring the economics and effects of fire and/or thinning on soils, forest plants, trees, forest pathogens, and wildlife, should help identify ecological tradeoffs inherent in the application of management activities. Since the Ohio Hills project will collect both ecological and economic data on common sites under similar conditions, managers will be able to assess tradeoffs between these two broad classes of information.

Research Partners

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The Ohio Hills Research Site



Raccoon ecological management area (REMA)
Zaleski state forest (ZAL)
Tar hollow state forest (TAR)

The Ohio Hills site is located on the Raccoon Ecological Management Area (REMA), and the Tar Hollow (TAR) and Zaleski (ZAL) State Forests in southeastern Ohio. The study is a complete randomized design of four treatments and three replications, resulting in 12 experimental units.

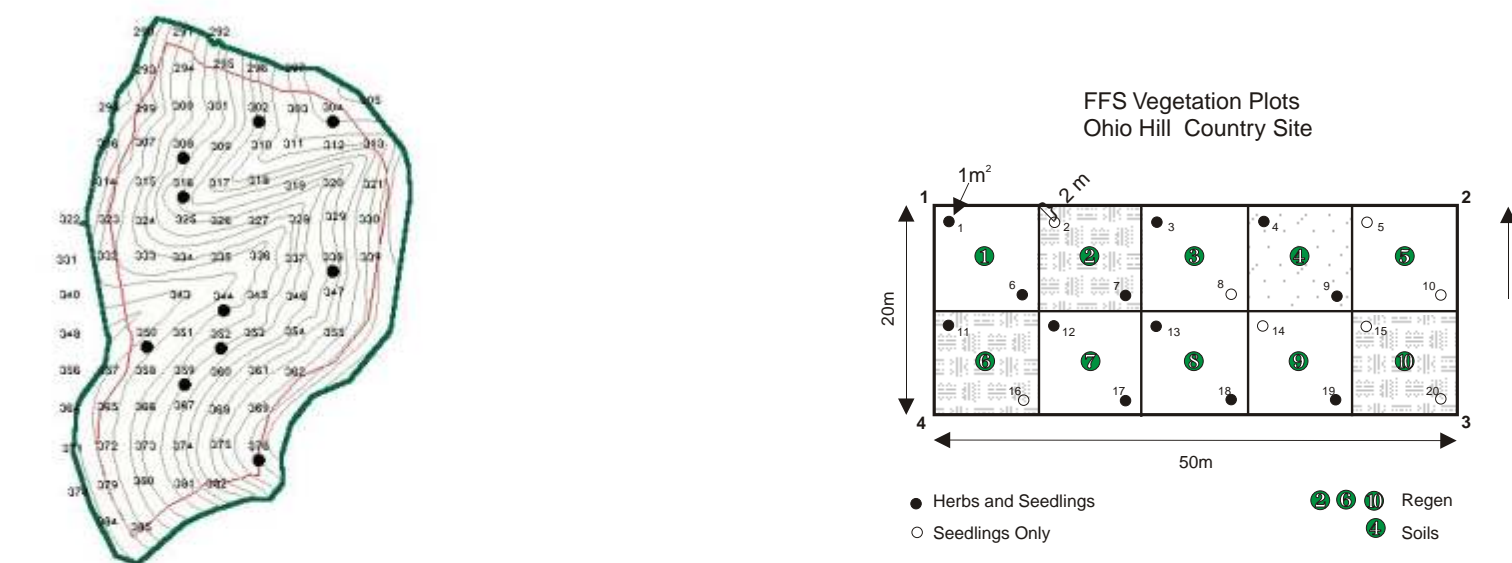
The REMA is a 17,000 acre tract of land, owned by the Mead Corporation and co-managed under a Memorandum of Understanding (MOU) with the Forest Service, Northeastern Research Station. The Vinton Furnace Experimental Forest (VFEF) is located within the boundaries of the REMA and is operated under a separate MOU between the Mead Corporation and the Forest Service, Northeastern Research Station. The VFEF serves as "field headquarters" for the study. The research areas in the Zaleski State Forest and Tar Hollow State Forest are managed by the Ohio Department of Natural Resources (ODNR), Division of Forestry, and are being used for research purposes under a special use permit, and a MOU between ODNR and the Forest Service, Northeastern Research Station.

Treatments



The four treatments implemented at each replication are:
1) untreated control
2) prescribed fire only, with a second prescribed fire four years following the first
3) commercial thinning from below to 60 sq. ft. of basal area; no use of prescribed fire
4) commercial thinning from below to 60 sq. ft. of basal area followed by prescribed fire, with a second prescribed fire four years following the first

Grid point & Plot layout



Grid points were established within a geographic information system (GIS) in an ordinal orientation and transferred as waypoints to a GPS. Grid points were located on the ground with the GPS and marked with tagged pins and buried monuments.

Ten 20x 50 m plots were located within each treatment area across a moisture gradient identified within a GIS using an Integrated Moisture Index (IMI). Previous studies have shown a close relationship between IMI and plant associations.

Companion Studies

- Root development & mycorrhizal Analysis of black oak & red maple
Carolyn McQuattie, USDA FS, Delaware, OH, 740-368-0062, cmcquattie@fs.fed.us
- Fuel bed characterization & prescribed fire monitoring
Dr. Patrick Brose, USDA FS, Irving, PA, 814-563-1040, pbrose@fs.fed.us
- Impacts of white-tailed deer on acorns & oak regeneration
Dr. Dave Apsley, Ohio State University, 740-286-2177, dapsley@postoffice.ag.ohio-state.edu

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References & acknowledgements

Yaussy, Daniel A. 2001. Study Plan And Establishment Report. Consequences Of Fire And Fire Surrogate Treatments: The Ohio Hills Site. http://www.fs.fed.us/ne/delaware/4153/ffs/ohio_studyplan.pdf
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