

*Southern Appalachian Ecosystem
Restoration Focus Areas*





Southern Appalachian Ecosystem *Restoration Focus Areas*

- ❖ Restoration of healthy stream systems within healthy watersheds
- ❖ Restoration of rare native communities
- ❖ Restoration of fire-dependent ecosystems
- ❖ Restoration of diversity in low-diversity forest stands
- ❖ Restoration of viable native plant communities by controlling invasive species



Restoration of Healthy Stream Systems
within Healthy Watersheds

Restoration of Healthy Stream Systems *within Healthy Watersheds*

- ❖ This focus area represented the most widely-supported and one of the highest-priority focus areas for landscape-scale restoration activities.
- ❖ Healthy stream systems were identified as a desired condition that encompassed several important restoration goals, including improvement of water quality and enhancement of riparian habitats.
- ❖ The streams and surrounding watersheds of the Southern Appalachians shape the landscape of the area and were recognized as part of the defining character of the mountain ecosystems.

Restoration of Healthy Stream Systems *within Healthy Watersheds*

Broad objectives for stream system restoration cover both instream and surrounding riparian environments and include:

- ❖ reduced sedimentation,
- ❖ improved habitat for aquatic species,
- ❖ protection of high-value occurrences of hemlock and replacement species for declining hemlocks on riparian sites, and
- ❖ mitigation of harmful acid deposition from abandoned mines.





Restoration of Healthy Stream Systems *within Healthy Watersheds*

- ❖ In addition to supporting important biodiversity needs, the protection and restoration of healthy stream systems also reflected concerns about potential effects of extreme variations associated with climate change and growing impacts from urban expansion.

Restoration of Healthy Stream Systems *within Healthy Watersheds*

- ❖ By incorporating a watershed-level focus for restoration activities, there could be a synergistic effect that addresses multiple restoration goals at an appropriate scale.







Restoration of Healthy Stream Systems *within Healthy Watersheds*

Potential restoration activities for reducing sedimentation sources include:

- ❖ establishing a sustainable road system that can be adequately maintained into the future [this includes incorporating appropriate road repairs, maintenance activities, and closing or decommissioning of roads];
- ❖ mitigating erosion at dispersed and developed recreation sites through re-design or closures of damaging sites;
- ❖ decommissioning or re-designing user-created trails;
- ❖ preventing illegal off-road vehicle use; and
- ❖ expanding the use of best management practices for land-disturbing activities.

Restoration of Healthy Stream Systems *within Healthy Watersheds*

Potential aquatic habitat improvement projects:

- ❖ replacing culverts and improving stream crossings
- ❖ re-stocking native species such as brook trout and introducing large woody debris where appropriate.
- ❖ expanded protection measures for key stands of hemlock as well as replacement with other species to restore the ecological function of degraded hemlock stands in riparian areas.
- ❖ acquisition of private lands along headwaters and undeveloped waterways
- ❖ the initiation of citizen workshops, Adopt-a-Stream cleanups, “Kids in the Creek” educational opportunities, and other volunteer partnerships to promote healthy streams.

Restoration of Healthy Stream Systems *within Healthy Watersheds*

Potential barriers to restoring healthy stream systems include:

- ❖ funding;
- ❖ private land ownership;
- ❖ uncontrolled sedimentation sources;
- ❖ increasing regional development;
- ❖ traditional use of Forest Service roads for access to inholdings, recreation opportunities, scenic drives, and other local uses;
- ❖ and the sheer magnitude of the problem.

Restoration of Healthy Stream Systems *within Healthy Watersheds*

Potential next steps:

- ❖ Conduct simplified watershed assessments on each Forest to identify top priorities;
- ❖ survey road systems to determine current conditions, sediment sources, and greatest problem areas;
- ❖ inventory streams for highest priority aquatic passage improvements;
- ❖ look for stewardship opportunities tied to other vegetation work;
- ❖ develop new partnerships or community involvement projects on each National Forest for stream cleanups, monitoring, or education;
- ❖ and build on the nation-wide Forest Service focus on water, kids, and climate change as overarching issues important to the Chief.

*Restoration of Diversity in Low-Diversity
Forest Stands*



Restoration of Diversity in Low-Diversity Forest Stands

- ❖ The objective of this restoration focus area is to increase diversity in species composition and structure of low-diversity forest stands.



Restoration of Diversity in Low-Diversity Forest Stands

- ❖ Many forested areas that were re-planted or naturally regenerated after timber harvesting and other disturbances have become dominated by even-aged single species such as white pine, yellow poplar, or loblolly pine and do not provide the diverse habitat that typifies native communities in the Southern Appalachians.
- ❖ The intent of this focus area is to restore species and structural diversity to low-diversity, virtually monoculture stands.





Restoration of Diversity in Low-Diversity Forest Stands

- ❖ Other objectives in restoring diversity include consideration of hydrologic functions (since many sites were barren when reforested), use of site-adapted species, and consideration of long-term economics.

Restoration of Diversity in Low-Diversity Forest Stands

Potential activities that could restore diversity include:

- ❖ commercial and pre-commercial thinning,
- ❖ release of desired but suppressed vegetation
- ❖ prescribed fires,
- ❖ treatment of non-native invasives as part of the prescription when thinning.

Restoration of Diversity in Low-Diversity Forest Stands

Additional biological considerations:

- ❖ consideration of wildlife value,
- ❖ potential for future insect and disease infestations,

Restoration of Diversity in Low-Diversity Forest Stands

Potential types of projects:

- ❖ demonstration projects
- ❖ stewardship contracts,
- ❖ demonstration of alternative logging systems that have low impact,
- ❖ development of a restoration template,
- ❖ utilization of timber stand improvement dollars,
- ❖ and treatment of non-native invasives as part of the prescription when thinning.

Restoration of Diversity in Low-Diversity Forest Stands

Possible barriers:

- ❖ aesthetic impacts,
- ❖ economics of harvest opportunities,
- ❖ markets for the wood,
- ❖ ecological constraints,
- ❖ lack of advanced regeneration,
- ❖ degraded site quality,
- ❖ availability of planting stock from nurseries,
- ❖ accessibility to monoculture stands,
- ❖ and workforce or infrastructure capability for small diameter harvests.

Restoration of Diversity in Low-Diversity Forest Stands

Potential next steps:

- ❖ Identify site-specific projects,
- ❖ get internal and external buy-in and support,
- ❖ survey markets for wood needs.

*Restoration of Viable Native Plant Communities by
Controlling Invasive Species*



Restoration of Viable Native Plant Communities by Controlling Invasive Species

Objectives:

- ❖ preventing new infestations from being established,
- ❖ treating high risk stands or plant communities,
- ❖ protecting “clean” areas or areas of high value or ecological sensitivity (such as riparian areas, bogs, and rare species habitat), and
- ❖ starting control in the backcountry and working toward the edges.

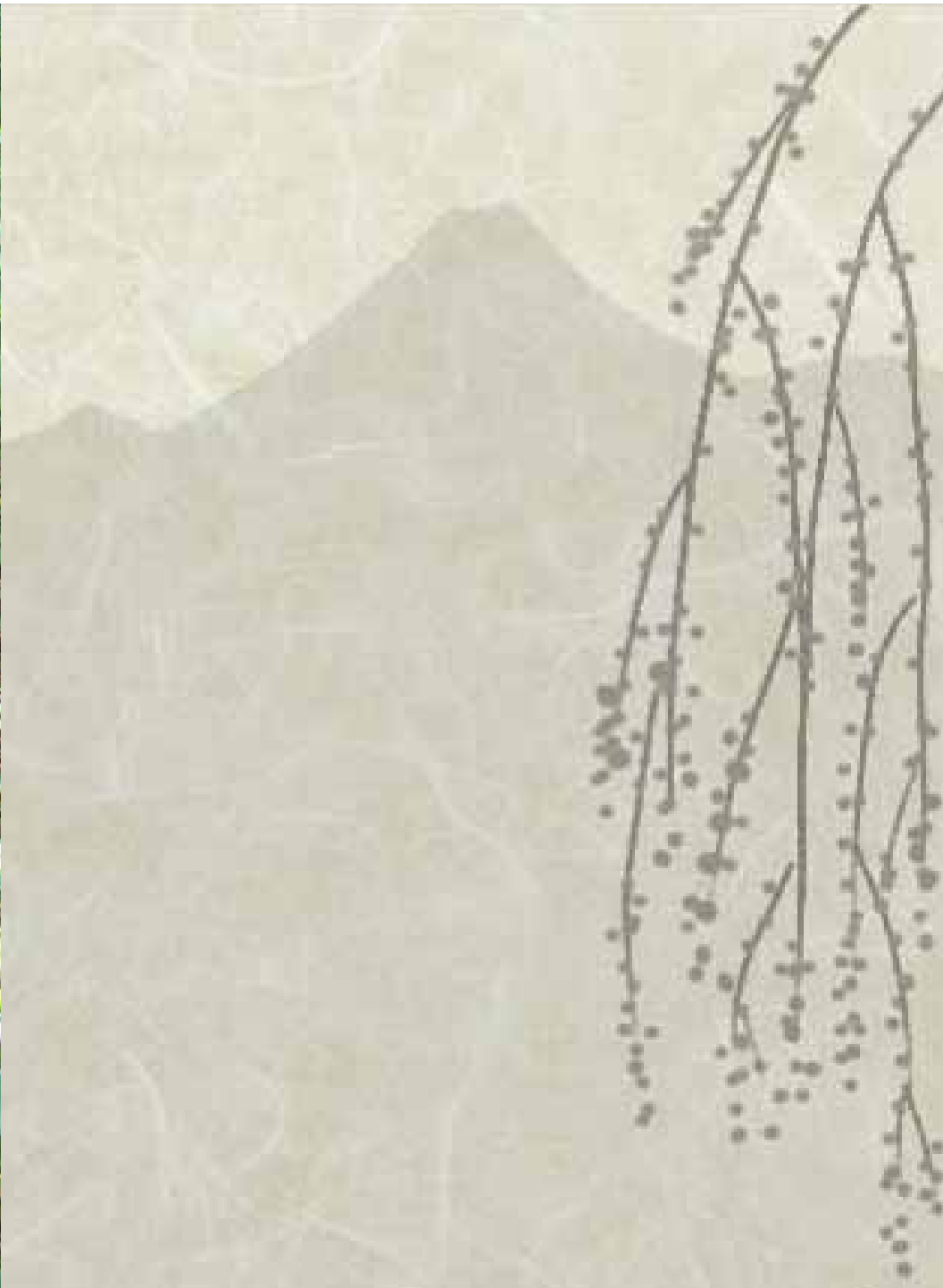


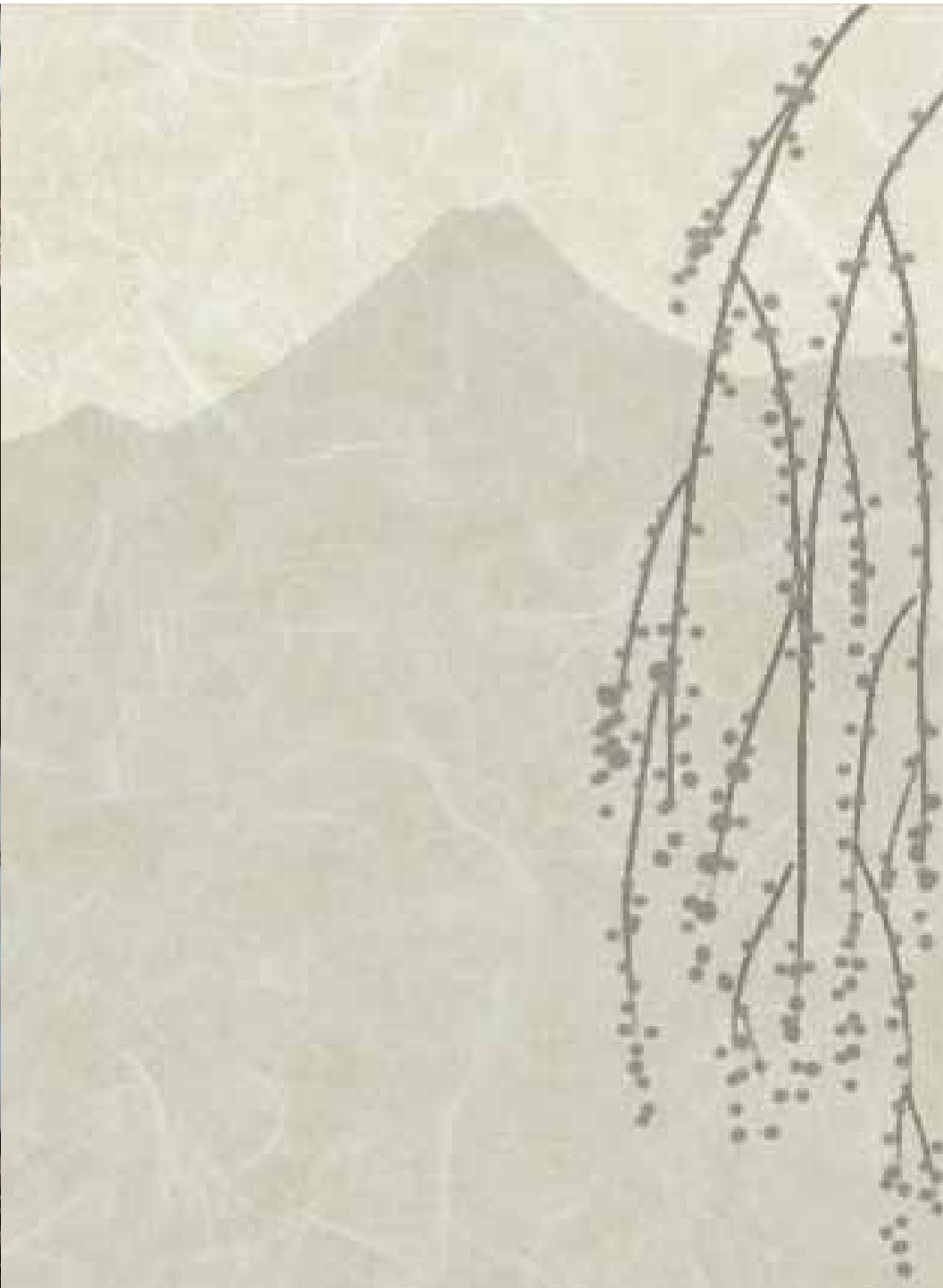
Restoration of Viable Native Plant Communities by Controlling Invasive Species

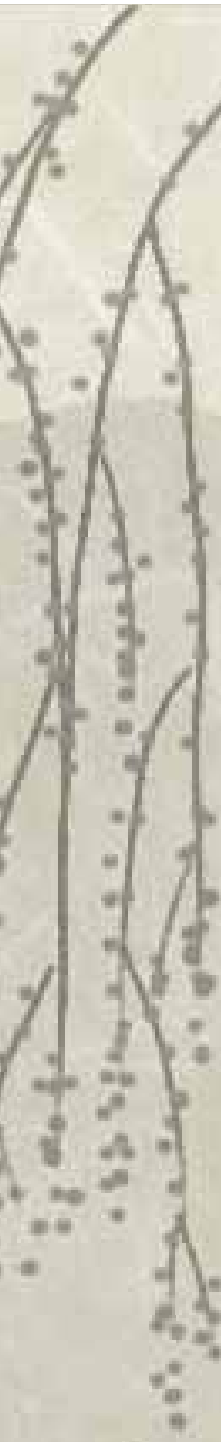
Proposed activities:

- ❖ complete the planning exercise from the Region 8 Invasive Species Strategy,
- ❖ conduct watershed assessments to determine the most critical situations,
- ❖ require weed-free hay for all livestock uses,
- ❖ require equipment cleaning for vehicles moving into and out of infestations,
- ❖ work with relevant industries to acquire sources of clean hay and gravel.
- ❖ increased use of native species in re-vegetation efforts and wildlife openings wherever possible and the use of seed mixtures uncontaminated by invasive species.









Restoration of Viable Native Plant Communities by Controlling Invasive Species

Possible barriers :

- ❖ spread of infestations across multiple land ownerships and jurisdictions,
- ❖ lack of knowledge or concern by the public,
- ❖ detection efforts are too slow to enable tactical responses,
- ❖ multi-year treatments needed to achieve results,
- ❖ unsuitability of many herbicides for use in riparian areas, and
- ❖ lack of landscape-scale coordination.

Restoration of Viable Native Plant Communities by Controlling Invasive Species

Additional information is needed on:

- ❖ infestations on private lands,
- ❖ finer-resolution data on more species,
- ❖ an integrated set of priorities,
- ❖ success stories and effective treatments, new treatment options,
- ❖ responses to global climate change,
- ❖ early detection.

Restoration of Viable Native Plant Communities by Controlling Invasive Species

Potential next steps:

- ❖ Conduct outreach and education for the general public,
- ❖ do risk assessment/threat matrix,
- ❖ do advance planning for potential gypsy moth spread,
- ❖ conduct outreach to nurseries, landscapers, and crafter industries.

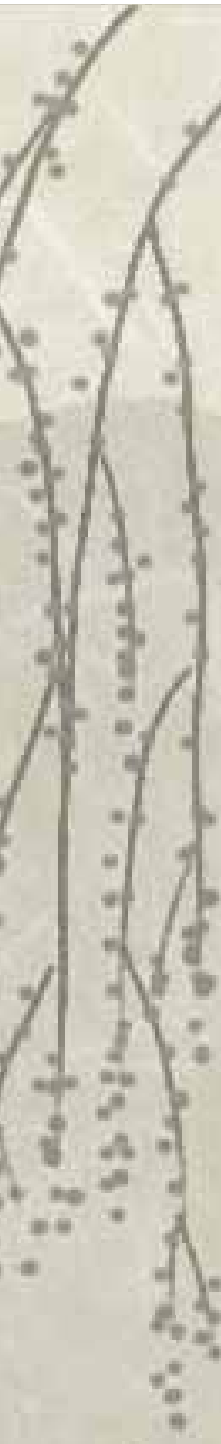




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