

Citizens' Call for Ecological Forest Restoration: Forest Restoration Principles and Criteria

From the beech woods blanketing Vermont's Green Mountains to the towering Redwoods in California, forests are among the most precious and beloved places on our continent. Forests provide pure air; clean, abundant water; climate control; and countless other ecosystem services that are vital to the survival and quality of human life as well as the fish and wildlife with whom we share the planet. Forests are critical to both our physical well-being and our spiritual renewal.

Regrettably, centuries of intensive resource extraction, development and short-sighted management activities, and invading exotic species have fundamentally altered most of America's forests. The results are loss of fish and wildlife habitat, reduced water quality, increased floods, the conversion of biologically rich old-growth and native forests to sterile tree plantations, failing ecosystems, and economic and social harm to the communities and workers who depend on forest resources.

There is an urgent need to reverse these declines by preserving the remaining wild forests and repairing the damage from past mismanagement. We share a vision of ecological restoration that encompasses all natural ecological processes and native fish, wildlife and plant species while enhancing the human connection to the natural world. This restoration must be done carefully and with humility, recognizing that ecosystems are complex and our understanding of them is limited.

Human communities depend on the natural environment. Preserving wild forests and investing in degraded landscapes through thoughtful, science-based restoration is necessary to ensure that the benefits of forests are available to both present and future generations. A new focus on forest protection and restoration will foster a just, conservation-based economy creating and sustaining family-wage jobs within the capacity and resiliency of healthy forest ecosystems.

Therefore, the undersigned citizens and organizations call for ecological forest restoration in accordance with the following Restoration Principles and Criteria.

20/20 Vision, DC
Appalachian Voices, NC
Alabama Environmental Council, AL
Alliance for Sustainable Jobs and the Environment, OR
Allegheny Defense Project, PA
Alliance for the Wild Rockies, MT
Ambience Project, MT
American Lands Alliance, DC
American Wildlands, MT
Aspen Wilderness Workshop, CO

Audubon Minnesota, MN
Beausoleil Mediation Service, OR
Bradford Environmental Research Institute
Buckeye Forest Council, OH
California Wilderness Coalition, CA
Cascadia Fire Ecology Education Project, OR
Cascadia Wildlands Project, OR
Center for Biological Diversity, AZ
Center for Environmental Economic Development, CA
Center for Native Ecosystems, CO
Cherokee Forest Voices, TN
Chiricahua-Dragoon Conservation Alliance, AZ
CLEAN (Citizens of Lee Environmental Action Network), VA
Coalition for Jobs and the Environment, VA
Colorado Wild, CO
Committee for the High Desert, ID
Defenders of Wildlife, DC
Devil's Fork Trail Club, VA
Dogwood Alliance, NC
Environmental Protection Information Center, CA
Environment Council of Rhode Island, RI
The Empty Bell, MA
Forest Conservation Council, NM
Forest Ecology Network, ME
Forest Guardians, NM
Forest Stewards Guild, NM
Forest Trust, NM
Friends of the Boundary Waters Wilderness, MN
Friends of the Clearwater, ID
Friends of Wild River, NM
Georgia Forest Watch, GA
Gifford Pinchot Task Force, WA
Gila Regional Information Project, NM
GilaWoodNet, NM
Grass Lakes West Consulting, WA
Greater Wyoming Valley Audubon Society, PA
Great Basin Mine Watch, NV
Habitat Education Center, WI
Headwaters, OR
Healing Harvest Forest Foundation, VA
Heartwood, IN
Hells Canyon Preservation Council, OR

High Country Citizens' Alliance, CO
High Uintas Preservation Council, UT
Idaho Conservation League, ID
Indiana Forest Alliance, IN
John Muir Project, CA
Kentucky Heartwood, KY
Kettle Range Conservation Group, WA
Klamath Forest Alliance, OR
Klamath-Siskiyou Wildlands Center, OR
Kalmiopsis Audubon Society, OR
League Of Wilderness Defenders-Blue Mountains Biodiversity Project, OR
Massachusetts Audubon Society, MA
Missouri Forest Alliance, MO
National Catholic Rural Life Conference, IA
National Forest Protection Alliance, MT
Native Forest Network, MT
New Mexico Wilderness Alliance, NM
North Coast Restoration Jobs Initiative, CA
Northwest Ecosystem Alliance, WA
Olympic Forest Coalition, WA
Oregon Natural Resources Council, OR
Pacific Rivers Council, OR
Patrick Environmental Awareness Group
Pennsylvania Wildlands Recovery Project, PA
Prescott National Forest Friends, AZ
Quiet Use Coalition, CO
Rainforest Action Network, CA
Resource Stewardship Council, IN
RESTORE: The North Woods, ME
San Luis Valley Ecosystem Council, CO
Santa Fe Forest Watch, NM
Selkirk Conservation Alliance, ID
Serpentine Art and Nature Commons, Inc., NY
Sinapu, CO
Sisters Forest Planning Committee, OR
Sky Island Alliance, AZ
Soda Mountain Wilderness Council, OR
South Carolina Forest Watch, SC
Southern Appalachian Biodiversity Project, NC
Southern Appalachian Forest Coalition, NC

Superior Wilderness Action Network, MN
Swan View Coalition, MT
Taking Responsibility for the Earth and Environment, VA
Tennessee Citizens for Wilderness Planning, TN
The Clinch Coalition, VA
The Ecology Center, MT
The Four Corners Institute, NM
The Lands Council, WA
The Larch Company, OR
The Northern Appalachian Restoration Project/The Northern Forest Forum, NH
Tradelocal
Umpqua Watersheds, OR
Dr. Peter Stacey, Department of Biology, University of New Mexico, NM
Upper Gila Watershed Alliance, NM
Vermont Natural Resources Council, VT
Vermont Forest Watch, VT
Virginia Forest Watch, VA
Western Colorado Congress, CO
Western North Carolina Alliance, NC
West Virginia Highlands Conservancy, WV
Wild Alabama, AL
Wildlands Project, AZ
WildLaw, AL
Wildlands CPR, MT
Wild Watershed, NM
White Mountains Conservation League, NM
The Wilderness Society, DC
World Wildlife Fund, DC

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Section I: Overview

Decision-makers, scientists, and the interested public have recognized that there is an urgent need to restore forest ecosystems after decades of intensive logging, fire suppression, road building, grazing, mining, and invasions by exotic species. These damaging activities have compacted soils, channelized streams, fragmented forests, suppressed natural fire, assisted the spread of some invasive species, and caused the loss of native species and their habitat.

Years of effort by scientists, forest practitioners, environmentalists, restoration workers and others have helped develop restoration methods and techniques. There are both good and bad restoration projects that have become models for what to do, or not to do. Job programs are being developed around the country to create a workforce focused on restoring ecosystems rather than on resource extraction. Local governments and citizens are working together to restore watersheds that provide drinking water for their communities. Restoration programs and ideas continue to be developed to help us understand how to restore forests.

At the same time, there are serious questions as to whether many proposed "restoration" activities are really beneficial to the landscape. Due to recent pressure from decision-makers to address forest fires in the West, federal agencies are developing plans to implement environmentally questionable "restoration" projects on a national scale. The National Fire Plan has funded fuel reduction projects (many of them commercial timber sales) in endangered species habitat, roadless areas, and old growth forests, even in regions where there is no scientific evidence that forests are at risk from catastrophic fires. An increase in use by the Forest Service of the commercial timber sale program to "restore" federal lands poses risks that inappropriate logging will adversely affect fish and wildlife habitat and ecologically sensitive landscapes.

The Citizens Call for Ecological Forest Restoration is proposed as a national policy statement to guide sound ecological restoration policy and projects. The Restoration Principles seek to articulate a collective vision of forest restoration, informed by science, that clearly defines what the undersigned citizens and groups can support. These scientifically credible principles and criteria will provide a yardstick with which to evaluate proposed forest restoration policies and projects. While this document was developed to respond to restoration policy and projects on federal lands, the principles and criteria are relevant to other land ownerships, as well. By including social criteria, the Restoration Principles also help to bridge the gap between ecological restoration ___what's good for the land, what's within the capacity of ecosystems -- and what is good for communities and workers.

These Forest Restoration Principles and Criteria are based on values and principles that were developed by a diverse group of forest activists and forest ecologists from around the U.S. with input from representatives of forest practitioners and community forest groups who participated in the Forest Activist Summit on Forest Restoration in Boulder Colorado, February 16-18, 2001.

This diverse group was brought together because of the recognition that, to develop and implement a sound restoration agenda, the conservation community must learn from and work with both scientists and those who do the restoration work on the ground. At Boulder, forest ecologists set the scientific basis for the discussion that generated these principles. Forest practitioner, labor, and community forestry advocates then added their traditional, experiential and methodological knowledge, and provided focus on the socioeconomic and hands-on aspects of restoration. A Second Annual Forest Restoration Summit was held February 15-17, 2002 to bring together forest activists, forest practitioners and community forestry advocates to further the conversation about implementing ecological restoration. Participants shared their different experiences with restoration — from those promoting restoration projects on the ground to those fighting damaging restoration projects and working to reform policy - and spent time tackling some of the difficult issues that often divide us as well as the issues that build common ground. The summit provided an opportunity to begin building alliances amongst organizations that share an interest in promoting ecological restoration.

Successful ecosystem restoration must address ecological, economic, and social needs including community development and the well-being of the restoration workforce. While emphasizing that the primary goal of restoration is to enhance ecological integrity by restoring natural processes and resiliency, this document proposes three core and interrelated Restoration Principles to set the context for restoration:

- (1) ecological forest restoration;
- (2) ecological economics, and
- (3) communities and work force.

In order to implement ecologically-sound restoration all three core principles must be working together. The core principles are then followed by several specific restoration principles and criteria and relevant methodologies. Principles and criteria provide a transparent and verifiable (on-the-ground) approach to guide and evaluate the efficacy of restoration projects, programs, and policies with respect to the core principles.

The Restoration Principles guide the process of restoring ecological integrity through the use of restoration assessments that are conducted at the ecoregion, intermediate and site specific levels. The Principles outline specific restoration methods and criteria for adaptive management through monitoring and evaluation of restoration projects.

The Principles also address the importance of an economic and institutional framework that accounts for non-market ecological services, such as clean air and water, and that encourages the long-term viability of communities by operating within the capacity and resiliency of forest ecosystems, fostering a culture of environmental sustainability, and meeting human needs. This includes the development of a high-skill, high-wage workforce to perform quality restoration work that proactively engages people through socially just and economically viable training and

employment systems.

While these Principles do not address regional ecological differences, they do provide a national vision and guidance for the establishment of a sound restoration agenda, as well as tools to implement responsible ecological forest restoration on-the-ground. We hope that this document will encourage the sharing of information and development of alliances among organizations and citizens that are necessary for successful forest restoration. Most of all, we view the Citizens Call for Ecological Forest Restoration as a call to action. We have decades of restoration work ahead. It is vital that we begin now to make the long-term investment in the protection and restoration of our forests that is necessary to secure their lasting value for future generations.

Section II: Core Forest Restoration Principles (Ecological, Economic, Communities and Workforce)

Sound forest restoration requires an integrated, multi-disciplinary approach rooted in conservation biology and ecosystem restoration principles that include preserving and protecting intact landscapes (particularly those that serve as reference or baseline conditions); allowing the land to heal itself; and, where necessary, helping it to do so through active restoration. Through thoughtful strategies employed over time, we can reestablish sustainable human connections to the land, creating quality restoration jobs and encouraging conservation-based economies.

1) Ecological Forest Restoration Principle — *enhance ecological integrity by restoring natural processes and resiliency*

The primary goal of forest restoration is to enhance ecological integrity by restoring natural processes and resiliency. Effective forest restoration should reestablish fully functioning ecosystems. Ecological integrity can be thought of as the ability of an ecosystem to support and maintain a balanced, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of natural habitats within a region (Karr and Dudley 1981). A restoration approach based on ecological integrity incorporates the advantages of historical models while recognizing that ecosystems are dynamic and change over time.

2) Ecological Economics Core Principle — *develop and employ the use of economic incentives that protect or restore ecological integrity*

Intact forest ecosystems provide the natural capital, including clean air and water, upon which all life and all human economies depend. Restoration of these natural systems is an investment in regaining the natural capital that has been diminished by decades of logging, road building, mining, grazing, fire suppression, and invasion by exotic species. An economic and institutional

framework that fully accounts for these non-market ecological services should be created in order to recognize the value of intact ecological systems and to guide restoration efforts.

Sound restoration must balance achieving restoration goals with the cost of restoration, while giving priority to ecological effectiveness. However, because ecologically sound forest restoration is a long-term natural process that will not always provide short-term benefits and may not pay for itself, a timeframe for economic analysis must be utilized that recognizes the long term benefits of restoration (e.g., clean water, restored fire regimes). Economic incentives that drive the degradation of forests must be replaced with restoration incentives that protect and restore ecological integrity.

3) Communities and Workforce Core Principle — *make use of or train a highly-skilled, well-compensated workforce to conduct restoration*

Ecological restoration is an important component of an ecologically sound, socially-just forest economy. It has the potential to support the long-term viability of communities within the capacity and resiliency of forest ecosystems, while fostering a culture of environmental sustainability.

A highly-skilled, well-compensated workforce is essential for restoration to meet high ecological standards. Building the restoration economy requires a commitment to regional training capacity (multi-jurisdiction and interdisciplinary), skill certification, consistent funding over decades and assuring workers rights to organize and bargain collectively. The process of advancing ecological restoration must be open, inclusive and transparent, and should contribute to breaking down class, culture, gender, language and religious barriers.

Section III: Ecological Forest Restoration Principles and Criteria

1) Restoration Project Planning Principle — *document all restoration projects in the context of a restoration assessment and appropriate restoration approaches that restore ecological integrity*

All restoration projects must be planned and implemented in the context of a restoration assessment (see Restoration Assessment Principles below) and using appropriate restoration approach (see Restorations Approaches Principles below) to restore and enhance ecological integrity. Because ecological systems are inherently complex and dynamic, it is impossible to accurately predict all the consequences of our actions, even well intentioned restoration actions. The more controversial or experimental the project is, the smaller the scale it should be. If there is high risk and weak scientific support, the burden of proof falls upon the proponents.

Restoration Planning Criteria

All Restoration Project Planning should use the following criteria:

- a) Take a thoughtful, careful, and conservative approach.
- b) Utilize best available science and incorporate experiential and indigenous knowledge where applicable.
- c) Make use of an adaptive and public process that regularly incorporates revisions from monitoring and evaluation.
- d) Prescriptions for active restoration must be clearly applied to those factors that are currently limiting ecosystem recovery and integrity. Priorities identified during the assessment should not be abandoned in order to meet other objectives not directly aimed at ecosystem integrity and resilience.
- e) Restoration treatments must use the least intrusive techniques that will be effective in order to avoid negative cumulative effects to watersheds and wildlife, except under special circumstances where high level of intrusiveness is needed to restore ecological integrity (e.g. road obliteration, see section IV, 2).
- f) Comply with and uphold all applicable local, state and federal laws and regulations.
- g) Incorporate and/or improve recovery plans for threatened and endangered species.
- h) Budgets must include realistic and dedicated funding for and an institutional commitment to assessment, monitoring and evaluation, with systems designed and in place before activities commence.
- i) Assess the workforce and community capacity for carrying out restoration work, and recommend actions to meet Quality Jobs Criteria below.

2) Forest Restoration Assessment Principle — *conduct a restoration assessment prior to restoration activities*

A restoration assessment must be done prior to implementing a restoration project or beginning restoration activities. The assessment is conducted to determine if any restoration activities are needed and is used to (1) identify the root causes of ecosystem degradation at the ecoregional, intermediate and site level (see related criteria below), (2) determine appropriate methods for restoring degraded systems, and (3) create a spatially-explicit prioritization of restoration needs across multiple spatial scales. The assessment and corresponding actions are then followed by sufficient monitoring that measures progress towards restoring a degraded system so that it is more resilient to disturbance and can persist in the absence of further human intervention.

The restoration assessment should first be conducted within the context of a broader ecoregional assessment designed to determine the status and condition of ecological

integrity across the ecoregion and the appropriate spatial layout of core reserves, landscape connectivity, and restoration areas needed to maintain or enhance integrity.¹

This broader ecoregional assessment is then used to identify the contribution that intermediate (e.g. watersheds) or site specific assessments play across the ecoregion. Individual sites can therefore be assessed within the context of broader spatial priorities for their contribution in restoration or preservation across multiple scales (i.e., stepping down the spatial hierarchy from ecoregion to watershed to site).

A. Ecoregional Level Assessment Criteria (Broad Scale Assessment)

- a) Use published ecoregional classifications to identify the ecoregion within which the site occurs.
- b) Determine the status and condition of ecological integrity attributes across the ecoregion (e.g., what are the major forest types or species in decline and what are the root causes of such declines?)
- c) Identify core refugia, landscape connectivity, and restoration areas needed to maintain or restore integrity across the ecoregion.²

B. Intermediate Spatial Scale Assessment Criteria

- a) Identify the specific unit used in an intermediate spatial assessment — the unit of analysis should be defined based on the integrity needs addressed (examples include landscape, watershed, subbasin, river basin, mountain range).
- b) Focus on extending high-integrity areas and connecting them at the intermediate scale, wherever connectivity was characteristic of the natural landscape as recognized by the ecoregional assessment.
- c) Determine the need and efficacy for performing restoration objectives at intermediate spatial scales - e.g., are treatments needed at the scale of the landscape or is it best to start at some other unit?
- d) Evaluate cumulative impacts and address how a site-specific project will affect ecological integrity at intermediate-scales.

C. Site-Specific Assessment Criteria

- a) Determine the importance of the site within the larger landscape context.
- b) Identify the specific ecological processes, species, or functions at risk.
- c) Document the types of restoration treatments needed to maintain or restore ecological integrity.

¹ Examples of ecoregional assessment criteria can be found in Scott et al. 1993 (Gap Analysis), Noss and Cooperrider 1994 (Saving Nature's Legacy), Ricketts et al. 1999, or obtained from published regional assessments available for most ecoregions.

² Such assessments are readily available for most ecoregions - see Ricketts et al. For examples - if they are not available, then proceed to intermediate level assessments.

- d) Establish clear links to the spatial and temporal issues identified in the ecoregional and intermediate assessments.
- e) Link site-specific information to the role the site plays in determining resiliency and integrity at the watershed, landscape and global scales.
- f) Determine the role that individual target sites play within the watershed or landscape based on conservation biology principles (e.g., is an area an important corridor for wildlife? the only old-growth forest in the region? critical habitat for an area-limited species?).
- g) Evaluate cumulative impacts and address how a site-specific project will affect ecological integrity at broader scales.
- h) Evaluate the appropriate restoration methods (protection, passive or active restoration) based on ecological need, importance of the site in the watershed or landscape, and the timing and resources needed to restore ecological integrity.
- i) Focus on projects with a high likelihood of successful ecological results and low risks or where risks of inaction jeopardize important ecological values of the site.
- j) Give consideration to areas of greatest need/areas where threats are the greatest.
- k) Give extra consideration to the presence of populations of at-risk species.
- l) Assessments must include data that indicate:
 - i) Baseline (current) conditions.
 - ii) Associated ecological reference conditions (reference sites or ecological conditions that support(ed) native biodiversity and ecological processes) that account for resilient and dynamic systems (e.g., flood or wind prone areas, areas experiencing population cycling and periodic fire events). Ecological reference conditions must inform restoration and are selected to define, achieve, and maintain ecological integrity.
 - iii) Control sites based on reference conditions or landscapes.

3) Ecological Restoration Approaches Principle — *determine the appropriate use of protection, passive and active restoration based on restoration assessments*

Restoration projects are designed to move forest ecosystems toward a higher level of ecological integrity. The restoration plan chosen for a particular place should be based on the most effective techniques recognized through the restoration assessment (see related principle) while favoring the least intrusive or intensive methods that will effectively move the area toward ecological integrity. This approach will usually produce the best results for the least amount of time and effort, promoting efficient use of restoration resources. It is important to note that there will be projects where short-term treatment impacts should be accepted because the project will result in long-term positive gains in ecological integrity (e.g., removal of roads, barriers to fish passage, removal of exotic species).

In some cases, effective restoration may require taking action in areas of relatively high ecological integrity. In other cases the best approach will be to focus restoration efforts on more degraded

landscapes. Factors such as broad based support among restoration stakeholders and the potential for restoration of landscape linkages between ecologically intact areas may lead to restoration efforts that are more time consuming and costly, but are necessary to achieve restoration objectives. Restoration assessments can be valuable in resolving such issues.

There are three approaches and related criteria that define the range of forest restoration methods used to restore ecological integrity.

A. Protection of areas of high ecological integrity — *protect areas of high ecological integrity*

Protection is emphasized for relatively intact natural areas and core refugia where restoration is largely unnecessary. Protection of areas of high ecological integrity will provide critical sources of biodiversity, and/or reference landscapes needed as a source of baseline information.

Areas of high ecological integrity that may serve as core refugia include: rare community types (as identified in the Natural Heritage database, for example), intact old-growth forests, native forest ecosystems operating within the bounds of historic disturbance regimes, intact watersheds and large roadless areas, Wilderness areas, unimpaired streams and other aquatic habitats of high conservation value. ³

Criteria for Protection of Areas with High Ecological Integrity

- a) Identifying and protecting areas that currently exhibit high ecological integrity must be the first priority of restoration plans.
- b) Active restoration should not be applied in these areas unless it can be shown that there is a high degree of scientific and stakeholder support, and that there are no other means for restoring or maintaining ecological integrity.

B. Passive restoration — *cease activities that have been determined by a restoration assessment to impede natural recovery processes.*

Cessation of degrading activities is a priority when it has been determined by a restoration assessment to impede natural recovery processes. Passive restoration should take

³ Core refugia is more specifically defined as any area that is maintained in its natural state and within which natural disturbance events are either allowed to proceed without interference or are mimicked through management. Examples include GAP 1 designated protected areas defined by Scott et al. 1993 to include wilderness, national parks and monuments, and other areas (e.g., roadless, intact watersheds — see DellaSala et al. 2001) where disturbances by humans are minimal (Scott et al. 1993). Core refugia provide many ecosystem services not found in human-disturbed landscapes, including habitat for species (e.g., Threatened and Endangered species) sensitive to human disturbances, and serve as controls or restoration blueprints from which to gauge the efficacy of restorative practices, and areas operating within the bounds of historic ecosystem processes (Noss and Cooperrider 1994, DellaSala et al. 1996).

precedent where it is vital to eliminate or reduce the root causes of ecosystem degradation, including stopping destructive logging, road-building, livestock grazing, mining, building of dams and water diversions, off-road vehicle use, and alteration of fire regimes. This form of restoration, which should be based on thoughtful analysis and planning, must be distinguished from passive management, which has been criticized as mere neglect.

Passive Restoration Criteria

- a) Passive restoration should be employed in areas where removal of degrading activities will allow natural recovery to occur.
- b) Passive restoration can be employed alone, or prior to active restoration.
- c) Active restoration that fails to incorporate appropriate passive techniques is unlikely to succeed.

C. Active restoration — *reintroduce natural processes or species through direct intervention*

Direct human intervention to reintroduce (or secure) natural processes or at-risk species, or regionally extirpated species in cases where ecosystem composition, structure and function are degraded or hindered by factors such as compacted soils, channelized streams, invasive species, or fire suppression. Active restoration methods include, but are not limited to, prescribed burning, road obliteration, removal of barriers to fish passage and water diversions, invasive species control, fuel treatment and riparian restoration.

Active Restoration Criteria

- a) Focus on areas of greatest risk to ecological integrity and processes.
- b) Implement in situations where inaction might lead to the destruction or loss of natural processes or permanent decline of a species, stream function or rare habitat type, or where it can be demonstrated that active restoration will greatly accelerate the return to a higher state of ecological integrity.
- c) Apply active restoration judiciously in areas of high ecological integrity based on degree of degradation and ecological need.
- d) Emphasize the least risky interventions that are likely to provide the greatest ecological benefit, while minimizing management-induced ecological risks and costs.
- e) Provide benefits in areas that exhibit moderate loss of ecological integrity but still support key ecological elements and processes.
- f) Incorporate appropriate passive techniques.

5) Community Protection Zone Principle — *distinguish between fuels treatment that restore ecological integrity vs. those that serve primarily to protect property and human life*

A clear distinction must be made between fuels treatments to restore ecological integrity and

treatments to protect property and lives by reducing fuels in the community protection zone (a limited zone between rural communities and undeveloped forestlands). Treatments protecting property and lives in the community protection zone may address the human safety issue, but should not be considered forest restoration by itself. Mechanical fuel treatment can be a step forward toward forest restoration if planned and implemented in the context of a restoration assessment. However, it must be recognized that fuels treatments alone do not address the wide range of ecological issues included in a comprehensive restoration plan and may result in degraded soils, native vegetation and wildlife habitat.

Community Protection Zone Criteria:

- a) Home-site treatments in the community protection zone must be undertaken primarily within a 20 - 60 meter (66-200 feet) intensive treatment zone where fires most directly threaten structures and human life (Cohen 2000).
- b) Defensible community space will be based on a community protection zone needs assessment that addresses such issues as forest type, soil moisture, slope, aspect, etc. This area may include public and private lands and may be created within an additional treatment zone up to 500 meters (which includes the 60 meter home-site treatment zone) for fire fighter safety and protection of other flammable community values (Nowicki 2002).
- c) Treatments to create defensible space may include thinning small diameter trees, pruning, mowing, roof cleaning, as well as replacement of flammable landscape and building materials (Cohen 2000, Fire Wise 2001).
- d) Home-site treatment is sufficient for survival of a home during a forest fire. It is critical that these treatments be implemented for a community protection plan to be successful. Priority should be given to home-site treatments when resources are limited. Federal cost share grants for home-site treatment should be increased and maintained until a comprehensive program is completed.
- e) Long-term management of the community defensible space should be a cooperative partnership between the relevant agencies, communities, and homeowners beginning with the initial community protection zone needs assessment and following through to future maintenance and should account for appropriate access to structures for fire fighting, fire resistant landscaping, and consideration of construction standards and proper zoning laws for all land ownerships.

4) Adaptive Management Principle - *monitoring and evaluation must be assured before restoration proceeds, and be incorporated into the cost of the project.*

Ecological forest restoration of any type, at any scale is a process of adaptive management. Due to high levels of complexity, uncertainty and risk, any restoration requires an approach that is careful, flexible and able to respond to change and new information. Acceptable restoration

projects must include a transparent public process that provides for: assessment, implementation, monitoring, evaluation and adaptation.

Monitoring and Evaluation Criteria:

- a) Have clearly stated objectives, as well as specific indicators and measures for determining effectiveness;
- b) Be an integral component of the restoration project;
- c) Be incorporated into the essential costs of the project;
- d) Provide a process for all-party and scientific input;

- e) Compile data, models, and analyses related to ecological restoration efforts in comparable formats and collect them in a central location;
- f) Make data available to the public in a user-friendly format in both on-line and written display formats. Such information will indicate how data will be used in the restoration process;
- g) Require that project implementation promptly respond to monitoring and evaluation results, as well as new information. This may include adapting or altering implementation plans and/or taking corrective actions; and
- h) Require that processes for carrying out assessments, planning, monitoring and evaluation of restoration efforts involve all local, regional and national stakeholders.

Section IV. Ecological Economics Principle and Criteria

Economic Framework Principle - *develop and employ positive incentives to encourage ecologically sound restoration.*

Develop positive incentives to encourage ecologically based restoration activities and eliminate incentives that encourage activities, that are ecologically degrading. Incentives are needed to protect and restore ecological integrity within an ecological and institutional framework that accounts for the benefits and costs associated with restoring natural capital. As such, incentives which encourage activities that degrade the ecological health of the landscape, are inconsistent with improving the ecological integrity of the landscape, or otherwise cause ecological damage, must be eliminated.

Economic Incentives Criteria

- a) Investments in restoring ecosystems should be applied across land ownerships in cooperation with willing landowners and should be tiered to regional and local ecological needs.
- b) Successful restoration on public lands requires reforming federal agency funding mechanisms and contracting procedures to remove incentives for ecologically and socially

damaging activities. Such reforms should include the following:

- i) Specific appropriations must commit consistent, adequate multi-year funding for all aspects of restoration - assessment, implementation, monitoring, evaluation and adaptation.
 - ii) The current timber sale program continues to give priority to economic interests and is not appropriate for restoring forests. However restoration by-products derived from ecologically based restoration projects may have value secondarily. Contracting mechanisms therefore must be developed that are driven by ecological objectives.
 - iii) Contracts for restoration work on public lands must be awarded on best value rather than lowest bid criteria. Best value should be based on desired ecological, community and workforce objectives, which ensure contractors possess the necessary skills and capacities to carry out high quality work, have successfully performed such work in the past, and provide social and economic benefits to communities.
 - iv) Preference for best value contracts on public lands should not exclude any business or group of persons, but should be given to local crews and small businesses, underserved communities, and mobile workers, who can demonstrate direct knowledge and experience of the ecosystem in which the work will be done. Procurement mechanisms should encourage contractors to include a training and employment component that will increase the capacity of existing displaced timber workers and mobile workers to access and perform high-skill, long duration work. The Mobile Workforce consists of economically disadvantaged, under-represented and culturally diverse crews of migrant and community-based forest workers who perform services such as tree-planting, thinning, brush disposal, prescribed burning, trail construction, etc.
- c) For public lands, restoration funding should not include off-budget funds generated from commercial activities.
 - d) Restoration on private lands requires outreach to landowners with information about the ecological importance of their lands within the context of the larger landscape, and resources for technical and financial assistance to help landowners restore these lands.
 - i) Private forestland owners should be encouraged (including financial support for small landowners) to pursue Forest Stewardship Council certification to promote sound forestry on private lands.
 - ii) Cooperative forestry programs should provide private forestland owners with access to education, training and incentives for participation in restorative forestry methods. Agencies must inform low-income and minority landowners of such opportunities.
 - iii) A low-interest, revolving loan fund should be established to cover up-front costs to encourage landowners to shift to longer timber rotations.
 - iv) Public funding sources and tax incentives for habitat restoration projects for Threatened and Endangered species and imperiled forest habitats should be established.
 - v) Federal Land and Water Conservation Funds should be appropriated for the acquisition, protection and restoration of priority habitats.

Section V. Communities and Workforce Principle and Criteria

Community/Workforce Sustainability Principle - *effective restoration depends on strong, healthy and diverse communities and a skilled, committed workforce.*

Restoration must foster a sustainable human relationship to the land that promotes ecological integrity, social and economic justice for workers and communities, and a culture of preservation and restoration. In turn, effective restoration depends on strong, healthy and diverse communities and a skilled, committed workforce.

A. Sustainability Criteria

- a) Restoration and economic development must prioritize the long-term interests of communities over short-term and non-local economic interests.
- b) Government, interest groups and communities should cooperate to promote policies and programs that build community capacity for ecologically sound restoration, including workforce and small business development that:
 - i) Are based on landscape-scale assessments of restoration needs, and are scaled appropriately within the carrying capacity of the land and regional economy.
 - ii) Have the flexibility to adapt over time to new information
 - iii) Directly and proactively address barriers to equal access such as differences based on class, culture, language and religion.
 - iv) Provide for intergenerational exchange and other proactive strategies to engage and empower youth and elders.
 - v) Are designed to add maximum value to restoration by-products at the community level.

B. Quality Jobs Criteria

- a) Restoration contracts should recognize and foster a multi-disciplinary, high-skilled workforce of trained, certified restoration technicians and applied ecologists, and provide stable, full-season employment.
- b) Restoration workers should be compensated with a family living wage at levels commensurate with their knowledge and skills, set as a functional minimum,
- c) Restoration must be supported by regional training and skill certification systems (e.g. apprenticeship programs), with stable funding, that provide for multi-disciplinary skill development to broaden career opportunities.
- d) Employment and training systems must be equally accessible to the existing diverse workforce. Restoration contracts and regional training systems must be linked by

recognized skill standards and associated wage and benefit standards.

- e) Contracting, employment and training systems must promote the efficient and fair utilization of local, regional and mobile workers in a way that most effectively meets ecological integrity as well as social goals.
- f) Restoration workers at all wage and skill levels must be guaranteed the right to organize and bargain collectively.

2) Participatory Principle — *encourage involvement of a diversity of communities, interest groups, agencies and other stakeholders at all levels.*

Meaningful involvement of a diversity of communities, interest groups, agencies and other stakeholders (at local, regional, and national levels) should be achieved through open, inclusive and transparent decision-making processes with recognition of and respect for differences.

Participatory Criteria

- a) Adaptive processes for carrying out assessments, planning, monitoring and evaluation of restoration efforts on public lands should be all-party processes to the extent feasible; that is, open to and proactively inclusive of all stakeholders at local, regional and national levels.
- b) No one interest or community should be afforded control of or undue influence on public-land management decision-making.
- c) Adaptive all-party processes should strive to build consensus around ecological, social and economic principles and practices by focusing on common values, mutual goals and the resolution of conflicts based on class, culture, language and religion.

Section VI. Conclusion

The Forest Restoration Principles and Criteria stress that the primary goal of forest restoration is to enhance ecological integrity by restoring natural processes and resiliency. Restoration projects must be based on comprehensive restoration assessments that address a broad range of restoration questions, not only reducing fuels. The science of forest restoration is in its infancy. The results of restoring forests may not produce demonstrable changes in ecological integrity for decades and, in some cases, for centuries (e.g., restoring an old-growth forest recently clearcut). Because ecosystems are complex and not completely understood, caution is warranted.

It is very important that all three methods of ecological forest restoration be considered — Protection, Passive and Active Restoration. The Restoration Principles are also clear that economic incentives must be eliminated which are inconsistent with improving the ecological integrity of the landscape, or otherwise cause ecological damage. Restoration may not, and may never pay for itself. A long-term investment must be made in order to restore forest ecosystems after decades of forest mismanagement.

The National Fire Plan, stewardship contracting projects and other restoration projects focus too greatly on reducing fuels, while not taking the steps necessary to accomplish true ecological restoration. Land managers, under pressure to reduce fuels, are planning projects to aggressively thin public lands without establishing restoration objectives to restore ecological integrity. Current restoration practices may be contributing to the need for ecological forest restoration. The undersigned call on decision-makers to ensure that proposed policies and projects will restore ecological integrity to our forests.

The Forest Restoration Principles and Criteria also emphasize the role communities and workers play in implementing ecologically sound restoration. Ecological forest restoration is an integral part in creating sustainable communities - restoring not only ecological integrity but also the human connection to the landscape. In order for ecologically sound restoration to take place, we must have strong, healthy and diverse communities and a skilled, committed workforce.

The Citizens Call for Ecological Forest Restoration establishes a vision for restoring natural processes and native species in forested ecosystems. Ecologically sound forest restoration provides us with the opportunity to both heal the land and heal communities. To ensure that this vision becomes reality, we must continue efforts to bring community forestry and conservation groups together. We must commit to thoughtful, science-based restoration to ensure that future generations can experience and enjoy intact, diverse forested landscapes.

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