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ECOSYSTEM RESTORATION AND FEDERAL LAND POLICY:

REEXAMINATION IN LIGHT OF THE AMERICAN CHESTNUT RESTORATION EFFORT

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The suite of federal laws defining the goals and policies regarding ecosystem and biodiversity management on federal lands begin with the presumption in natural systems that "if it ain't broke, don't fix it." These laws presume that waiting and studying the system will (1) enable us to develop a comprehensive plan of action that will prevent or minimize future harm and (2) waiting will not cause further harm.

Beginning with the National Environmental Policy Act ("NEPA")[2] and continuing with the various laws defining the terms of ecosystem management on federal lands,[3] those laws have required strict scrutiny of new actions to assure that they do not disrupt existing conditions, which are deemed "natural." This presumption is reflected in the requirement under the NEPA regulations that every environmental impact statement include consideration of the "no-action" alternative.[4] Although the leading federal law directly aimed at biodiversity conservation, the Endangered Species Act,[5] recognizes the need for active intervention and management in calling for the development and implementation of recovery plans for threatened and endangered species, even that Act focuses heavily upon the prevention of human activities adversely affecting those species or their critical habitat. In fact, prohibitions on "taking" individuals can often prevent application of actions to restore habitat and support the species (Bean 2003). In many cases, if not the majority of cases, the underlying presumption in favor of leaving "Mother Nature" alone without a good showing that we will not unduly disturb her is a good approximation of reality, insofar as it has been human activities that have caused much of the environmental disruption that has been observed to date.

However, human influence has become so pervasive globally that the presumption against human activity is no longer valid in many cases. Human intervention is often necessary to maintain or restore damaged ecosystems and species populations. In these cases, human intervention is required to manage a "natural system" to preserve the system's existing characteristics or to restore the system (Flannery 2001). In these cases, the laws designed to prevent injury by requiring that the government wait and study before acting can also deter or prevent altogether ameliorative actions. For example, human introduction of pests and diseases can threaten species and disrupt ecosystems without human intervention. Introduction of the chestnut blight reduced a species which formerly was found throughout the hardwood forests of the eastern North America and comprised as much as 25 to 50% of the forest composition where it was dominant to a shrub growing from root sprouts (Oak 2002; Rhoades 2001; Russell 1987). Human introduction of the wholly adelgid threatens the hemlock. Human suppression of fire in the United States has so disrupted natural ecosystems based upon repetitive small fires that many areas are threatened with

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[2] 42 U.S.C. §§ 4321-4370f.

[3] These include, *inter alia*, the National Forest Management Act, 16 U.S.C. §§ 1600-1614, the Federal Land Policy and Management Act, 43 U.S.C. §§ 1701-1785, and the Wilderness Act, 16 U.S.C. §§ 1131-1136.

[4] *See* 40 C.F.R. § 1504(d).

[5] 16 U.S.C. §§ 1531-1544.

wildfires that would destroy the system rather than restore it. In these cases, human action is required to restore or maintain the balance.

The presumption against action, coupled with the requirement for comprehensive study and planning before taking action, can be particularly problematic for restoration actions. The complexity of natural systems and limitations on knowledge often makes it difficult or impossible, as a practical matter, to develop a comprehensive plan of action *ab initio* in cases of restoration. In natural systems, restoration often requires adaptive management using the process of circumscribed trial and error followed by modified trial and error.

Without the creation and consistent application of exceptions to the no action presumption of current federal laws, land managers can feel that their hands are tied and they are unable to undertake the required restoration actions quickly. Even where exceptions are applied, land managers may act at the risk that a federal court will second guess their action. Because additional study entails both cost and delay, requirements for study before restoration can deter any ameliorative action altogether or delay it until a species has become threatened or endangered and weathered the storm of listing under the Endangered Species Act. Where other political pressures demand some action, Congress has therefore occasionally intervened to provide relaxed or expedited standards to allow restoration programs. For example, in 1982, Congress created the experimental population concept in ESA to allow more flexibility to encourage or assist programs for reintroduction of threatened or endangered species.[6] More recently, in 2003, Congress enacted the Healthy Forests Restoration Act[7] to relax certain procedural requirements applicable to efforts to reduce excess fuel in forests using logging to prevent fires that threaten fire ecosystems as well as human homes (creating the political demand for some action).

These measures have been controversial. Moreover, at best, they represent Band-Aids dealing with limited aspects of a more pervasive problem that will emerge more frequently as human populations and influences increase outside of reserved forest and parkland areas. A more systematic approach is required to deal with the issue of actions to restore damaged species and ecosystems on federal lands. An opportunity now exists to develop a more systematic approach in the context of implementing the recommendations contained in the NEPA Task Force Report to CEQ: Modernizing NEPA Implementation (CEQ 2003). That report called for measures broadening use of exceptions to the presumptions against action and establishment of an adaptive management work group to explore increased use of adaptive management techniques. The experience and challenges posed by American chestnut restoration could inform this process. This paper will, therefore, examine the problems with the existing federal model and possible solutions in the context of the efforts of the American Chestnut Foundation to restore the American chestnut as a dominant forest tree in the east.

THE AMERICAN CHESTNUT RESTORATION EFFORTS

The American chestnut (*Castanea dentata* [Marsh.] Borkh.) was, for the last 2000 years, a major component of the forests of eastern North America. Its range extended from central Alabama north to Vermont, New Hampshire and Maine and west from southern Ontario through Ohio, southern Indiana, Kentucky, and Tennessee (Russell 1987). It was a co-dominant in the Oak-Chestnut Forest (now known as the Oak Hickory Forest) that formerly covered much of the northern and eastern Appalachian region (Kircher & Morrison 1988 at p. 58). In the heart of its range, the chestnut could comprise 25 to 50% of

[6] 16 U.S.C. § 1539(j); Endangered Species Act Amendments of 1982, Publ. L. No. 97-304, 96 Stat. 1411, 1422, § 6; *see* H.R. Report No. 97-567, at 17, 33-35, *reprinted at* 1982 U.S.C.C.A.N. 2807, 2817, 283333-2835.
[7] Pub. L. 108-148, 117 Stat. 1888 (Dec. 3, 2003), *codified at* 16 U.S.C. §§ 6501-6591.

the forest cover (Oak 2002; Rhoades 2001; Russell 1987). It represented up to 70 percent of the wood volume on some slope forests. (Paillet 2002).

As a dominant species, it played an important ecological and economic role. Its nuts were prolific and consistently produced. As such, they provided mast supporting many species of wildlife (Wright & Kirkland 1999-2000; Lord 1998-1999; Morgan & Schweitzer 1999-2000). It was a valuable source of lumber for furniture, construction fencing and poles, and was used in tanning (Buttrick 1915; Russell 1987). Its nuts were also widely used and marketed for a human food, being widely used for chestnut stuffing (Buttrick 1915). According to the author's grandfather, its nuts were sweeter and much tastier than the chestnuts available today.

In 1904 the fungus, *Cryphonectria parasitica* (Murrill) Barr, was introduced from Asia to the Bronx New York, causing the chestnut blight (Oak 2002). The blight rapidly spread throughout the range of the American chestnut, killing 50 to 99 percent of American chestnut trees by 1940 (Oak 2002). Today, the American chestnut has been virtually extirpated throughout its range as a canopy tree.

The American chestnut persists as an understory or shrub species as a result of root sprouting. Virtually all trees produced from sprouting are eventually killed by the blight, although a few persist to produce some seeds. As a result of its sprouting behavior, the American chestnut "is in a somewhat unique situation among candidates for species restoration" in that "probably millions of sprouts" remain, despite the extirpation of the tree. As a result, the chestnut "is ranked G-4" "widespread, abundant and apparently secure globally" but presenting "some cause for long-term concern" (Irwin 2003).

The disappearance of the chestnut as a canopy tree, nevertheless, has had "profound" ecological implications (Oak 2002). Its disappearance has been implicated in the decline of oaks, particularly in the southern Appalachian region (Oak 2002). Because its nut production was more prolific and reliable and its nuts more nutritious than its replacement, the acorn, its disappearance, like the disappearance of other keystone species, has likely had wide implications for many wildlife species (Lord 1998-1999). The decline of the Allegheny woodrat (*Neotoma magister*), a species that has been federally listed as endangered, has been attributed to the disappearance of the American chestnut (Wright & Kirkland 1999-2000). Numbers of eastern wild turkeys have also likely been depressed (Morgan & Schweitzer 1999-2000).

The importance of the chestnut to human and natural systems has created incentives for several programs that hope to restore the American chestnut by creating blight resistant strains and reintroducing these strains throughout the chestnut's former range. Although these programs are collaborative and involve the joint efforts of individuals and private institutions, universities and state and local government agencies, the efforts have been privately led.

Four restoration methods are being pursued. The first effort, which is described here at length and appears poised to begin implementation of the actual restoration effort, is that of the American Chestnut Foundation; that effort involves backcrossing American chestnuts with oriental chestnuts to incorporate blight resistance. A second effort, which also appears promising, is using recombinant techniques to attempt to incorporate blight resistance directly into the DNA of the American chestnut. The American Chestnut Cooperators' Foundation is involved in a program of breeding the more blight resistant American chestnuts that can be found in the wild. Other efforts seek to utilize viruses that cause the blight fungus to become hypovirulent.

The American Chestnut Foundation was founded in 1984 to pursue the backcross restoration method. The Foundation's efforts have now approached the point where reintroduction and restoration of American chestnut appears feasible in the near future. The Foundation has established a program which

involved crossing the American chestnut with the Chinese chestnut and then backcrossing the progeny (F_1) with American chestnuts found flowering in the wild three times. After each backcross, the Foundation selected only the trees with blight characteristics and the phenotypic characteristics of the American Chestnut. This has produces trees that are genetically 15/16 American and blight resistant. The F_1- B_3 generation is then intercrossed two times, again selecting for blight resistance and the American chestnut phenotype, to produce offspring that are homozygous for resistance and otherwise include predominantly American chestnut genes. The objective of this program is to produce "backcross trees [that] will fall within the range of American chestnut taxonomic characteristics as understood from monographs and voucher specimens, [although] known to carry alleles from Chinese chestnut. [Its hybrid origin will not be recognizable except for its] blight resistance and on a DNA level." This breeding program has now produced the B_3-F_2 trees for seed orchards that will produce the B_3-F_3 nuts that will be planted in the forests as part of the final restoration effort, described below (Hebard 2002, 2003; Irwin 2003; Burnham 1991).

The next step in this effort will entail reintroducing American chestnut into the forest by planting B_3-F_3 seedlings from the seed orchards. How this will proceed has not been settled, but it will involve a series of steps employing adaptive management techniques. It will likely first entail installing experimental small plantations on existing openings on federal, state and other public or institutional lands. These plantations and any impacts will be monitored. Moreover, since the ecology and needs of the American chestnut are not fully known, a certain amount of experimentation will be needed to determine optimum planting techniques, favorable soil characteristics and the need for management techniques, including possibly controlled burning (Klinger 2000; Perry 2003) The American chestnut is released in sunlight, so the creation of clearings in forests will likely be required. After the plantations prove successful, the reintroduction will occur on a larger scale.

Resistant chestnuts created by other methods for will also likely be poised for use in reintroduction in the near future. Genetically engineered American chestnuts containing genes that may create blight resistance have also been created by the second method and may be ready for introduction by the end of the decade. Inoculation of American chestnuts with the hypovirulent virus may also proceed in federal lands.

The introduction of the backcrossed American chestnuts and other resistant strains can proceed without procedural impediments on state, institutional and private lands. However, it may run afoul of the federal presumption against action when attempted on federal lands. As discussed more fully below, existing law provides mechanisms that ought to allow the flexibility to allow these efforts to proceed without significant delay or cost. However, third party litigants who are concerned about possible adverse effects, the courts, and land managers who are concerned about the threat of litigation or otherwise unwilling to depart from standard operating procedures may impose costly environmental impact study procedures that could slow reintroduction efforts on federal lands or make some infeasible. A consistent federal policy designed to reverse the presumption against taking action in cases of reintroduction and restorations could help avoid these costs and delays and better serve the underlying intent of NEPA and other federal laws intended to incorporate environmental concerns into federal decision making.

WHAT IS NEEDED IN A RESTORATION EFFORT

In assessing how federal laws might be applied to restoration efforts and what form a federal restoration policy might take, it is helpful first to consider the characteristics of an effective restoration project. These characteristics have described by a variety of authorities in a variety of contexts (Adams *et al.* 1998; Frelich & Puettman 1999; Harker *et al.* 1999; Henry & Lucash 2000-2001; Gjerstad, D. 2000-

2001) and can be applicable to efforts to restore the American chestnut (Craddock, J. H. 2000-2001; Irwin 2003).

All restoration programs require affirmative actions to reintroduce a species, to restore habitat or site conditions, and to manage the species and site after introduction both to maintain the species or system that has been restored and to make any changes found to be necessary. Physical site modification and planting or release of native or formerly native species will be required and physical management to maintain or restore soil conditions or control plants or animals following introduction will usually be required.

In most cases, reintroductions must be initiated with limited knowledge of the ecology, threats and requirements of the species or system to be restored. This requires that any restoration be preceded by study of the historic or paleohistoric records. The American Chestnut Foundation has been gathering this information since its inception. However, much of the information is simply unavailable and cannot be obtained without actual experience in the field.

Adaptive management techniques will be required throughout the reintroduction effort. Reintroduction, itself, will require at least two steps. The initial step of limited reintroduction or restoration will often involve planting test plots or releasing a limited number of individuals in somewhat controlled conditions and monitoring these areas. The American Chestnut Foundation has developed seed orchards for its backcrosses using several strains of American chestnut, with the American chestnut genetic material being gathered from a variety of trees in several different regions. Trees from seed orchards containing the "local" genetic material will be planted in these test plots. In this step, information on techniques for restoration, the needs of the species or system being restored, management techniques, possible threats to the restoration and impacts, if any, of the restoration can be identified. The techniques and management can then be adapted to structure the actual reintroduction.

The actual reintroduction will involve planting the American chestnuts at sites throughout each relevant region to encourage the widespread introduction. This step will involve site selection, site preparation and planting guidelines based on the experience in the test plots. The reintroduced species will require monitoring and will likely require management. For example, fire likely played an important role in chestnut ecology, such that controlled burns may be required for site preparation and management (Perry 2003). Use of herbicides to control competing vegetation may also benefit American chestnut restoration. Monitoring will be required to determine issues such both the success of the reintroduction, and the genetic and phenotypic characteristics of new trees, the impacts of the reintroduction and possible modifications of management techniques. Corrective actions will likely often be required.

LEGAL AND PRACTICAL BARRIERS TO REINTRODUCTION ON FEDERAL LANDS

Although the basic structure of federal environmental laws and regulations governing the use of our public lands begins with the presumption that new actions should be deferred and studied pending implementation, these laws and regulations provide sufficient flexibility to structure a program that will allow restoration programs such as that proposed for the American chestnut to be readily implemented without excessive cost or delay. In many cases, however, the opportunity to use this flexibility is squandered due to the unwillingness of federal managers or regulators to take advantage of these opportunities, whether due to fear of making a mistake, an unwillingness to depart from standard operating procedures, or concern regarding possible litigation. Flexibility can also be hampered by litigation brought by groups equally unwilling to depart from standard operating procedure, often due to suspicion regarding the motivation of the federal managers or, more frequently, their political superiors.

Courts, too, contribute to this confusion, upholding actions to expedite restoration activities in some cases and halting these activities to require additional costly process in virtually identical situations.

These conflicting results could be avoided with the formal adoption of a consistent federal policy applicable across all agencies towards the treatment of species or ecosystem restoration plans under federal law. Sufficient flexibility likely exists within the existing statutory framework to allow such a policy to be implemented by regulation, Executive Order or as formal guidance. The new federal policy should explicitly provide flexibility and encourage immediate implementation of restoration actions employing adaptive management under existing law, regulation and guidance. Adoption of a consistent, interagency, written policy would have several advantages. It would limit the discretion of the federal officials unwilling to take a risk or depart from standard operating procedure. It would provide written direction to courts that would help avoid the types of conflicting results that typify the current legal landscape and support the concerns of the federal officials whose inaction so often stymies proactive restoration. Finally, if it includes adequate safeguards against abuse, it might serve to alleviate the concerns among the groups who bring the litigation. Care must be taken in crafting such a policy to assure that it is, not, in fact, subject to abuses, but too much care in that regard could eviscerate the intent of the policy. The outline and justification for such a policy, using the American chestnut restoration as a model, are provided here.

Several environmental laws are applicable or potentially applicable to implementation of the American chestnut restoration on federal lands or similar efforts. As the fundamental environmental law governing all government planning and any federal action, NEPA[8] can apply and will be the focus of this article. The National Forest Management Act ("NFMA"),[9] although potentially applicable on National Forest lands used in the effort, will likely apply only in the context of NEPA. The Endangered Species Act ("ESA")[10] although inapplicable to the American chestnut restoration, is the federal law most applicable to restoration efforts and will be discussed because of the experience that has been gained under ESA regarding some of the difficulties in applying reforms encouraging voluntary action. A variety of federal laws are potentially applicable to the introduction of genetically engineered blight resistant American chestnuts, depending upon the genes introduced. The Federal Insecticide, Fungicide and Rodenticide Act ("FIFRA")[11] is potentially applicable to the efforts to use of the virus to induce hypovirulence in the chestnut blight fungus. The laws governing genetically modified organisms ("GMOs") and pesticide regulation are beyond the scope of this article.

NEPA - Establishing the Structure of Environmental Decision-Making Governing Restoration.

The National Environmental Policy Act has often been described as the foundation or the cornerstone of modern American environmental law. Enacted in 1970, it was the first major federal environmental law enacted in the "environmental decade" and has profoundly affected the development of environmental policy. It established:

> the continuing policy of the Federal Government . . . to use all practicable means and measures . . . in a manner calculated . . . to create and maintain conditions under which man and nature can exist in productive harmony. . .[12]

[8] 42 U.S.C. §§ 4321-4370f.
[9] 16 U.S.C. §§ 1600-1614.
[10] 16 U.S.C. §§ 1531-1544.
[11] 7 U.S.C. §§ 136-136y.
[12] 42 U.S.C. § 4331(a).

NEPA's basic structure is simple. It seeks to require all government agencies to incorporate environmental consideration into all aspects of their planning, using an interdisciplinary approach. It seeks to do this through two mechanisms. First, it requires that each federal agency to use an interdisciplinary approach to incorporate environmental considerations into its planning and "include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on," *inter alia*, the environmental impacts, unavoidable adverse environmental effects, and alternatives to the proposed actions.[13] The United States Supreme Court has noted:

> NEPA has twin aims. First, it "places upon an agency the obligation to consider every significant aspect of the environmental impact of a proposed action." [citation omitted] Second, it ensures that the agency will inform the public that it has indeed considered environmental concerns in its decisionmaking process. [citation omitted]. Congress in enacting NEPA, however, did not require agencies to elevate environmental concerns over other appropriate considerations. [citation omitted].[14]

NEPA created the President's Council on Environmental Quality ("CEQ") to serve as an independent group overseeing all programs to assure consideration of environmental impacts of all federal policies. CEQ was given the authority oversee the environmental impact assessment requirements by promulgating rules governing agency implementation, overseeing agency implementation and resolving disputes. CEQ's regulations, thus, govern the structure under which restoration projects must be reviewed and assessed.[15]

CEQ regulations provide that agencies should "[i]nterpret and administer the policies, regulations, and public laws of the United States in accordance with the policies set forth in the Act and in these regulations."[16] Each agency must also adopt its own "procedures" incorporating the CEQ's requirements and supplementing those regulations as necessary.[17] The regulations call for "[i]ntegrat[ing] the requirements of NEPA with other planning and environmental review procedures required by law or by agency practice so that all such procedures run concurrently rather than consecutively."[18]

The central element of the NEPA process is the preparation of an environmental impact statement, assessing impacts across a range of media and concerns, developing alternatives, identifying mitigating measures and identifying unavoidable impacts.[19] Although the scope of the "statement" required by law is unspecified, in application, preparation of an EIS has become an expensive and time-consuming venture, involving analysis of multiple potential impacts and development of multiple alternatives. Moreover, these costly ventures often result in delay, since CEQ regulations mandate that an agency defer actions that will adversely affect the environment *or limit alternative choices* while the process is unfolding.[20]

Moreover, the EIS process, as applied, involves a top-down, comprehensive planning process that assumes that knowledge of impacts and effects of alternatives either exists or can be gathered before

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[13] 42 U.S.C. § 4332.
[14] *Baltimore Gas & Electric Co. v. Natural Resources Defense Council, Inc.*, 462 U.S. 87, 97, 103 S.Ct. 2246, 2252 (1983).
[15] These regulations appear at 40 C.F.R. Parts 1500-1517.
[16] 40 C.F.R. § 1500.2(a).
[17] 40 C.F.R. §§ 1505.1, 1507.3.
[18] 40 C.F.R. § 1500.2(c).
[19] 40 C.F.R. §§ 1501.7 (scoping); 1502.1-1502.25 (requirements for EIS preparation); 1503.1-1503.4 (public comment and response); 1505.2 (preparation of record of decision).
[20] 40 C.F.R. § 1506.1.

implementation. This assumption is invalid in many restoration projects, where use of adaptive management techniques may better serve the underlying statutory intent of environmental protection.

NEPA is intended to be a tool to assure that environmental concerns are incorporated into decision-making, not a mechanism to slow down and make actions more costly. CEQ has, therefore, by regulation, established several mechanisms to expedite the NEPA process, and federal agencies have incorporated these elements into their regulations, guidance and procedures. Thus, before undertaking an EIS, in many cases, agencies will undertake a less costly and less time consuming "mini-EIS" known an environmental assessment. This is described by one court considering a private proposal involving a mechanism reducing conflicts between private development and efforts to restore endangered species, as follows:

> NEPA is not designed to prevent all possible harm to the environment; it foresees that decisionmakers may choose to inflict such harm, for perfectly good reasons. Rather, NEPA is designed to influence the decisionmaking process; its aim is to make government officials notice environmental considerations and take them into account. By regulation, an agency considering whether an action would require preparation of an EIS must prepare a brief, preliminary evaluation, called an environmental assessment ("EA").[21]

The CEQ regulations also require all federal agencies to designate categories of actions that "do not normally require either an environmental impact statement or an environmental assessment."[22] A number of these "categorical exemptions" appear to apply to the American chestnut restoration and could enable these efforts, despite the overall presumption in favor of inaction.

Agency Procedures Relevant to Restoration: NEPA Compliance and Categorical Exclusion as Applied to the American Chestnut Restoration Efforts on Federal Lands

Although many federal agencies own and manage lands that may be involved in restoration efforts, most federal lands that might be involved in restoration efforts for the American chestnut will be managed by either the National Park Service ("NPS") or the United States Forest Service.[23] Accordingly, the impact of NEPA and the federal presumption against action must be examined in the context of the regulations and guidelines of those two agencies. These regulations and guidelines provide sufficient flexibility to authorize the initiation of restoration employing adaptive management avoiding the presumption against initiating actions without delay. However, as will be discussed further below, they do not provide sufficiently clear or consistent guidance to avoid the risk that these efforts could be derailed by public opposition, concerns of individual agency personnel or litigation.

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[21] *Center for Biological Diversity v. United States Fish & Wildlife Service*, 202 F. Supp. 2d 594, 647 (W.D. Tex. 2002); *see* 40 C.F.R. §§ 1501.4(b).

[22] 40 C.F.R. §§ 1507.3(b)(2)(ii); 1508.4.

[23] Most other significant federal lands fall under the jurisdiction the Bureau of Land Management (BLM"). However, lands under BLM jurisdiction are found primarily in the West, outside of the range of the American chestnut. The Department of Defense also manages extensive lands held as military bases, training areas and target and bombing ranges. DOD has developed a program for ecosystem management for its lands with the assistance of The Nature Conservancy (Leslie *et al.* 1996). However, DOD has not yet been actively engaged in the American chestnut restoration project. Moreover, DOD has a different mission than land management agencies and faces less significant budget constraints than do other land managers, such that it can readily retain outside contractors, such that delay and cost is less likely to deter restorative action.

NPS Procedures and Categorical Exclusions: The Management Policies of the National Park Service incorporate a variety of policies that encourage ecosystem and species restoration and would facilitate the reintroduction of the American chestnut on Park Service Lands (US Dep't of Interior 2000). These policies appear to reverse the general presumption against action for restoration and could serve as the kernel of a more general model.

The Park Service policies encouraging restoration arise from the mandate contained in the National Park Service Organic Act that the Service

> promote and regulate the use of . . . national parks, monuments, and reservations. . . by such means and measures as conform to the fundamental purpose . . .to conserve the scenery and the natural and historic objects and the wild life therein . . .and by such means as will leave them unimpaired for the enjoyment of future generations.[24]

The Park Service has broadly interpreted the non-impairment mandate to include any impact that would impair resources including past and external impacts and to require monitoring and affirmative action to address those impacts.[25] The Service's prohibition against intervention in natural or physical processes excludes efforts "[t]o restore natural ecosystem functioning that has been disrupted by past or ongoing human activities;" and the Service has adopted a restoration policy mandating action unless otherwise directed:

> The Service will re-establish natural functions and processes in human-disturbed components of natural systems in parks unless otherwise directed by Congress ...Impacts to natural systems resulting from human disturbances include the introduction of exotic species; the contamination of air, water, and soil; changes to hydrologic patterns and sediment transport; the acceleration of erosion and sedimentation; and the disruption of natural processes. The Service will seek to return human-disturbed areas to the natural conditions and processes characteristic of the ecological zone in which the damaged resources are situated. The Service will use the best available technology, within available resources, to restore the biological and physical components of these systems, accelerating both their recovery and the recovery of landscape and biological-community structure and function. Efforts may include, for example:
>
> - Removal of exotic species;
> - Removal of contaminants and non-historic structures or facilities;
> - Restoration of abandoned mineral lands, abandoned or unauthorized roads, areas over-grazed by domestic animals, or disrupted natural waterways and/or shoreline processes;
> - Restoration of native plants and animals.[26]

The Service's Policies further encourage establishment of public-public and public-private partnerships to accomplish these goals.[27]

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[24] 16 U.S.C. § 1.

[25] U.S. Department of the Interior, National Park Service, Management Policies 2001 ("*NPS 2001 Policies*"). NPSD1416, §§ 1.4.5, 1.4.7, 1.5(2000). The Park Service is in the process of updating its Management Policies, 70 Fed. Reg. 60852 (October 19, 2005), *see* U.S. Department of the Interior, National Park Service, Draft 2006 NPS Management Policies ("*Draft NPS 2006 Policies*"), *found at* http://parkplanning.nps.gov/document.cfm?projectId=13746&documentID=12825 (last visited October 20, 2005), §§ 1.4.4 - 1.4.7.

[26] *NPS 2001 Policies, supra.* §§ 4.1.5, 4.1; *see also, id.* § 4.4.1. These policies remain substantially unchanged under the proposed revisions to the policies. *See Draft NPS 2006 Policies, supra*, §§ 4.1.5, 4.1; *see also, id*. § 4.4.1.

[27] *NPS 2001 Policies, supra,* §§ 4.1.4, 4.2*; Draft NPS 2006 Policies, supra,* §§ 4.1.4, 4.2.

The NPS management principles broadly encourage restoration of natural populations, genetic diversity for those population and natural system and include specific standards governing restoration of extirpated species.[28] Fire management is encouraged and integrated pest management is allowed to protect rare, threatened and endangered or unique populations. The guidelines' requirement to restore native species and to remove or exclude exotic species creates some ambiguity for restoration of the American chestnut using the back-cross or genetic engineering methods, in that the Chinese chestnut genes might be considered exotic. However, the facts that, even in the back-crosses, the exotic genetic materials will constitute less than 10% of the genes and the plants will phenotypically be American chestnut, suggest that the new species should better be considered native. Moreover, the guidelines specifically provide that an exotic species may be introduced where all measures have been taken to minimize harm and the species is "[a] closely related race, subspecies, or hybrid of an extirpated native species; or [a]n improved variety of a native species in situations in which the natural variety cannot survive current, human-altered environmental conditions; or [u]sed to control another, already-established exotic species."[29] These exceptions, coupled with the mandate to restore systems and species would seem to encompass all of the methods for chestnut restoration.

The Park Service has incorporated its presumption in favor of restoration activity into its NEPA policies. However, these policies are not as well developed as its management guidelines. The Park Service categorically excludes a variety of actions related to restoration projects from requirements for an EIS or EA. These include: "[d]esignation of environmental study areas and research natural areas," "[s]tabilization by planting native plant species in disturbed areas," "[r]estoration of noncontroversial native species into suitable habitats within their historic range and elimination of exotic species," "removal of park resident individuals of non-threatened/endangered species which pose a danger to visitors, threaten park resources or become a nuisance in areas surrounding a park, when such removal is included in an approved resource management plan", and grant programs related to these activities.[30]

Forest Service Procedures and Categorical Exclusions: The Forest Service lacks a comprehensive restoration policy. The Service has a native plants policy, favoring use of native plants. The Service has also established the following categorical exclusion from NEPA documentation for planting native species:

> Regeneration of an area to native tree species, including site preparation which does not involve the use of herbicides or result in vegetation type conversion. Examples include but are not limited to: a) Planting seedlings of superior trees in a progeny test site to evaluate genetic worth and b) Planting trees or mechanical seed dispersal of native tree species following a fire, flood, or landslide.[31]

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[28] *NPS 2001 Policies, supra.* §§ 4.4.1, 4.4.1.2, 4.4.2.2 (*see discussion, infra)*; *Draft NPS 2006 Policies, supra*, § 4.4.1, 4.4.1.2, 4.4.2.2.

[29] *NPS 2001 Policies, supra.* §§ 4.4.4. The new guidelines allow introduction of "exotic" species where "when all feasible and prudent measures to minimize the risk of harm have been taken, and

- it is a closely related race, subspecies, or hybrid of an extirpated native species, or
- it is an improved variety of a native species in situations in which the natural variety cannot survive current, human-altered environmental conditions. . . *Draft NPS 2006 Policies, supra*, § 4.4.4.

[30] United States Department of the Interior, Department of Interior Manual, National Environmental Policy Act Implementing Procedures for the National Park Service, 516 DM 6, App.7, § 7.4E(3),(4),(6)(7), F(1), *found at* http://elips.doi.gov/elips/release/3511.htm.

[31] Forest Service Handbook ("FSH") 1909.15 - Environmental Policy and Procedures Handbook ¶ 31.2(5) , *found at* http://www.fs.fed.us/emc/nepa/includes/epp.htm#c31. By regulation, the Forest Service designates its NEPA procedures in the Forest Service Handbook. 36 C.F.R. § 200.4.

The reference to planting seedlings "of superior trees . . . to evaluate genetic worth" makes it clear that this categorical exclusion would apply to the American Chestnut Foundation's backcross American chestnuts that are reintroduced into their native range. The exclusion should also apply to American chestnuts that have been genetically engineered and reintroduced. This express inclusion of improved varieties in the categorical exclusion for planting native species contrasts with the NPS exception of hybrids from the prohibition of exotic species. However, the result appears the same - - a uniform policy allowing planting of trees necessary for the restoration without needing an EA or EIS. On the other hand, the provision of the exclusion precluding use of herbicides will limit effective methods that could be employed in the reintroduction, since control of competing species is often required to allow effective establishment of American chestnut seedlings. The Park Service has no corresponding limitation in its policies encouraging restoration.

Other Forest Service categorical exclusions include limited wildlife habitat and aquatic habitat improvement projects (FSH). Ironically, these and other categorical exclusions established by the Forest Service are inapplicable where a threatened or endangered species listed under the Endangered Species Act is involved.[32] The categorical exclusions also do not apply when steep slopes, highly erosive soils, wetlands, floodplains, municipal watersheds, or Congressionally designated areas, thus excluding many other areas where it would be most important to pursue restoration actions expeditiously. Thus, although the categorical exclusion for planting native plants would appear to reverse the presumption against action under Federal law for the American chestnut reintroduction, the limited applicability of the various exclusions would exclude perhaps the majority of restoration projects.

The Forest Service policies also provide a model consistent with NEPA's intent to incorporate sound environmental planning public participation into decision making even in cases where an EA or EIS is not required. The regulations require that "scoping" in all cases to determine whether an action properly falls within a categorical exclusion or requires further study, a requirement applicable only to cases where an EIS is required under CEQ regulations.[33] Under the Forest Service policy:

> Scoping includes refining the proposed action, determining the responsible official and lead and cooperating agencies, identifying preliminary issues, and identifying interested and affected persons. The results of scoping are used to identify public involvement methods, refine issues, select an interdisciplinary team, establish analysis criteria, and explore possible alternatives and their probable environmental effects.[34]

Moreover, while some CE's allow actions to proceed without any documentation, the Forest Service CE's that would apply to these restoration actions require records and a decision document to maintain accountability and transparency for the action. These actions require that the "decision to proceed must be documented in a decision memo" and that

> [a]s a minimum, the project or case file should include any records prepared, such as: (1) the names of interested and affected people, groups, and agencies contacted; (2) the determination that no extraordinary circumstances exist; (3) a copy of the decision memo (sec. 30.5 (2); (4) a list of the people notified of the decision; (5) a copy of the notice required 36 CFR Part 217, or

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[32] Categorical exclusions do not apply where extraordinary circumstances apply and the presence of threatened or endangered species is defined to constitute extraordinary circumstances. FSH 1909.15, ¶ 30.3, *found at* http://www.fs.fed.us/emc/nepa/includes/epp.htm#c31

[33] *Id.*, ¶ 30.3(3).

[34] *Id.,* ¶ 11.

any other notice used to inform interested and affected persons of the decision to proceed with or to implement an action that has been categorically excluded.[35]

Alternative Federal Restoration Models

There are examples of alternative federal models that expressly apply to restoration actions and mandate action that has been categorically excluded from the predominant presumption against action. Restoration actions are authorized and even required without the NEPA procedures in the case of endangered and threatened species under the federal Endangered Species Act ("ESA")36 and for contaminated sites and spills under the Comprehensive Environmental Liability and Compensation Act ("CERCLA").37 Although these programs provide some examples of mechanisms whereby the delays and costs incident to the predominant model might be avoided while preventing abuses and still incorporating environmental planning and public participation into federal programs, they also provide examples of some of the pitfalls in trying to balance these considerations. In some cases, in trying to strike this balance, these programs, particularly the CERCLA program, have generated even greater costs and delays for some restoration programs. Both programs provide examples of the problems incident to the top down, comprehensive planning approach that predominates under the existing federal model. Finally, both provide examples of how even a well structured program can be undercut by the tendency of agency personnel or the courts to apply the standard model, notwithstanding contrary directions.

The Restoration Model under the Endangered Species Act: The federal Endangered Species Act ("ESA")[38] and the NEPA procedures and reforms developed by the United States Fish & Wildlife Service ("FWS")[39] provides an alternative to the predominant NEPA model, but also presents examples of some of the pitfalls of an alternative model. Under this ESA model, restoration projects for threatened or endangered species or their habitat is mandated and delays can be avoided. However, in the absence of clear guidance or policy, the policies to encourage rapid and flexible action have been hampered by unwillingness of individual agency personnel to depart from the traditional model, public controversy and inconsistent court rulings. Moreover, the "top down" and comprehensive planning approach envisioned under ESA makes its application to the American chestnut restoration and many other restoration programs problematic, at best.

ESA uses the "fine filter" approach to biodiversity conservation, seeking to protect biodiversity by protecting nationally endangered and threatened species and their habitat, with the stated purpose of conserving "the ecosystems upon which endangered species and threatened species depend."[40] ESA accomplishes this goal both by limiting actions and requiring affirmative restoration. Thus, ESA protects the individuals within threatened and endangered species directly, through its prohibition against "taking"[41] and requires the development and implementations of recovery plans for the species. Prohibited "takings" include activities which have an "incidental" adverse effect on a threatened or endangered species. However, the Act authorizes issuance incidental take permits allowing a property owner to conduct otherwise lawful activities in the presence of listed species, but requires each non-federal entity to develop an Habitat Conservation Plan calling for affirmative action to conserve the species or habitat. ESA also seeks to protect the land constituting critical habitat for endangered species.

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[35] *Id.*, ¶ 31.2.
[36] 16 U.S.C. §§ 1531-1544.
[37] 42 U.S.C. §§ 9601-9675.
[38] 16 U.S.C. §§ 1531-1544.
[39] The Fish and Wildlife Service and the National Marine Fisheries Service administer ESA.
[40] *Id.* § 1531(b).
[41] *Id.* § 1538.

To that end: (1) ESA requires that critical habitat be designated;[42] (2) the Act requires that each federal agency aid in the conservation of endangered species,[43] and assure that programs that it administers, including grant, permit, construction and management programs, will not jeopardize the continued existence of threatened or endangered species or "result in the destruction or adverse modification of" their critical habitat;[44] and (3) ESA requires both the United States Forest Service and the United States Department of the Interior ("DOI") to develop a broader affirmative program to conserve "fish, wildlife, and plants including those which are endangered species or threatened species" and authorizes those agencies to acquire land as a part of that program.[45]

ESA's affirmative obligations to develop and implement recovery plans and to conserve endangered and threatened species and their habitat represents a departure for certain restoration programs from the dominant federal presumption against taking affirmative action. Moreover, FWS has adopted a series of categorical exclusions which, on their face, would appear to allow a policy of permitting restoration activities to proceed without the delays and costs incident to development of either an EIS or EA. FWS' NEPA Guidance provides categorical exclusions for "[t]he reintroduction or supplementation (e.g., stocking) of native, formerly native, or established species into suitable habitat within their historic or established range, where no or negligible environmental disturbances are anticipated."[46] Similarly, FWS provides categorical exclusions for "restoration of wetland, riparian, instream, or native habitats, which result in no or only minor changes in the use of the Affected local area." Prescribed burning "for habitat improvement purposes" when carried out consistent with the law, fire management activities, is categorically excluded.[47] ESA and other FWS permit actions are excluded from NEPA requirements "when such permits cause no or negligible environmental disturbance." Incidental take permits that "individually or cumulatively, have minor or negligible effect on species covered in the habitat conservation plans as also excluded.[48] The issuance of recovery plans is excluded,[49] but any habitat conservation plan normally requires an EA under these procedures.[50]

Notwithstanding these departures from the predominant "wait and study" federal model, the structure of the ESA program suffers from a number of limitations, some of which have been addressed by recent reforms and some of which persist despite those reforms. ESA's "fine filter" approach leaves significant gaps in biodiversity conservation. It only addresses threatened and endangered species and does not address many important biodiversity features that require restoration. The frequency of the American chestnut's occurrence makes it less likely that it could be listed as threatened and endangered, despite the ecological importance of restoration of this keystone species as a canopy tree producing nuts. Moreover, ESA still envisions a top-down, comprehensive planning process that is inconsistent with the needs of many restoration projects. The listing process, requiring "best available science," is a prolonged and often contentious process that entails substantial delays. This has resulted in substantial backlogs that keep even those species eligible for listing off of the list for long periods of time. In theory, although not in practice, designation of critical habitat and recovery plans must be developed at the beginning of the process, when sufficient information is often unavailable, rather than through an adaptive management

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[42] *Id.* § 1533(a)(3).
[43] *Id.* § 1537(a)(1).
[44] *Id.* § 1537(a)(2); *Tennessee Valley Authority v. Hill*, 437 U.S. 153 (1978).
[45] 16 U.S.C. § 1534.
[46] Department of Interior Manual, National Environmental Policy Act Implementing Procedures for the Fish and Wildlife Services, 516 D.M. 6, Appendix 1, § 1.4 B(6), 62 Fed. Reg. 2375 (January 16, 1997)*, also found at* http://elips.doi.gov/elips/release/3511.htm..
[47] *Id.*, 516 D.M. 6, Appendix 1, §§ 1.4 B(3), (4), (5).
[48] *Id.*, 516 D.M. 6, Appendix 1, §§ 1.4 C(1), (2).
[49] *Id.*, 516 D.M. 6, Appendix 1, § 1.4 D.
[50] *Id.*, 516 D.M. 6, Appendix 1, § 1.5.

process. Finally, ESA suffers from lack of flexibility, particularly with respect to the prohibition against takings, such that listing of a species would impair property uses and would create disincentives for private conservation efforts (Bean 2003; Taylor 2002). The flat prohibition against takings and requirements for incidental take permits, with the possible requirement for an EIS for such permits, also deters habitat restoration activities that would benefit the species in the long run but might incidentally "take" individuals.

Some of these problems were resolved by a number of reforms initiated under DOE Secretary Bruce Babbitt in the Clinton Administration (Bean 2003; Taylor 2002), some of which might facilitate the American chestnut restoration, could they be applied. The Candidate Conservation program seeks to encourage proactive programs to eliminate the necessity for regulatory controls by encouraging private conservation activity directed to unlisted species that would qualify for listing to reduce the threats to such declining species, and thus avoid listing. The requirements and procedures are incorporated into Candidate Conservation Agreements ("CCAs"); CCAs assure non-federal landowners that they can continue agreed-upon activities even if the species becomes listed in the future, and thereby avoid regulatory controls (Bean 2003; Ruhl 2004).[51] The program does not, however, apply to or encourage similar activities by federal landowners. Safe Harbor Agreements encourage voluntary actions by landowners to protect endangered species, in return for protection against future changes (Bean 2003; Taylor 2002; Ruhl 2004).[52] FWS has recently proposed amendments to its permitting rules that, if adopted, would provide greater flexibility for habitat enhancement activities both in these programs and enhancement programs on federal lands, allowing incidental takes incident to programs that enhance habitat.[53]

The Candidate Conservation with Assurances mechanism, coupled with the categorical exclusion of habitat conservation activities might be an ideal mechanism to encourage the restoration of the American chestnut, which might be in danger of becoming threatened. However, the policy does not apply to federal lands. Moreover, problems have emerged in the application of reforms. Whether because of unwillingness to depart from the traditional model for federal action or concern regarding judicial review, federal managers have often been unwilling to apply these models. Rather than expedite implementation, FWS has often delayed implementation with long review, excessive requirements in the agreements, and insistence on studies regarding impacts and effects. At times, reforms have been slowed by insistence on a showing that individuals not be taken, despite a clear expectation that the species would benefit from habitat improvement. This unwillingness to depart from business as usual has led some parties to abandon projects and others to indicate an unwillingness to use the reform mechanisms in the future (Bean 2003). Moreover, at times, the concerns of the managers have been confirmed by inconsistent results in the courts. *Compare Center for Biological Diversity v. United States Fish and Wildlife Service,* 202 F. Supp. 2d 594 (W. D. Tex. 2002) (upholding incidental take permit where permittee protected off-site conservation areas providing superior habitat for endangered species and rejecting claim that alternative reducing size of on-site disturbance should have been more fully developed and required) *with, Gerber v. Norton,* 294 F.3d 173 (D.C. Cir. 2002) (overturning incidental take permit where permittee protected off-site conservation area providing superior habitat, with court relying on failure to provide adequate comment and failure to adopt on-site plan that would minimize area of disturbance).

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[51] United States Department of the Interior, Announcement of Final Policy for Candidate Conservation Agreements with Assurances, 64 Fed. Reg.32,726 (June 17, 1999).

[52] United States Department of the Interior, Announcement of Final Safe Harbor Policy, 64 Fed. Reg.32,717 (June 17, 1999).

[53] United States Fish & Wildlife Service, Proposed Revisions to the Regulations Applicable to Permits Issued Under the Endangered Species Act, 68 Fed. Reg. 53327 (May 3, 2003).

The Restoration Model under the Comprehensive Environmental Liability and Compensation Act: The approach adopted by the United States Environmental Protection Agency ("EPA") in pursuing hazardous substances remediation under the Comprehensive Environmental Liability and Compensation Act ("CERCLA")[54] presents a useful model in two senses. The EPA model, as spelled out in the statute and the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP")[55] provides an example of a case where the establishment of requirements and safeguards governing a restoration action can allow actions to proceed immediately without the delays built into existing statutes such as NEPA. The law and EPA regulations spell out the procedures required for restoration and NEPA compliance is not required, due to the fact that the procedures developed were found to offer equivalent protections. The experience under CERCLA and the NCP, however, also presents a model of mistakes to be avoided, in that, although those requirements allow immediate implementation, the procedures and safeguards required for longer term actions have been widely criticized as excessive, causing excessive cost and delay.

Under CERCLA, where there is an immediate need to proceed to prevent continuing harm, EPA may proceed immediately to implement a "removal action" without the extensive study and public participation required for a full "remedial action" that will achieve final cleanup.[56] If a planning horizon of greater than six months is required, somewhat more participation and study is required, more equivalent to an EA. However, response other than investigation and monitoring is limited to actions costing less than $2,000,000 and lasting one year unless EPA finds that continuing timely action is otherwise necessary to protect health or the environment.[57] In many cases, restoration will be achieved without further action. However, in other cases, a full Remedial Investigation and Feasibility Study ("RI/FS"), involving study of alternatives often greater than entailed in an EIS, is required. In its promulgation of the first version of the NCP, EPA determined that compliance with other federal laws, such as NEPA, was not required, but that these procedures created equivalent protections.[58] Other federal agencies pursuing cleanup pursuant to the NCP have consistently determined that NEPA compliance is not required.

The CERCLA determination offers a helpful precedent, not because that model should be replicated for species and ecosystem restoration, but because it presents a situation where an agency has determined that NEPA and other federal procedural requirements are inapplicable because the action at issue (1) involves restoration and (2) incorporates requirements that will prevent abuse. The CERCLA model for study and procedures, particularly for the RI/FS, however, is unduly costly and has been widely criticized for causing the undue costs and delay that undermine the statutory goal of achieving restoration quickly and effectively. The optimal restoration model would incorporate the CERCLA model of establishing safeguards to achieve the goals of permitting rapid and effective restoration and excluding these actions from procedural requirements such as NEPA, while not creating a whole new set of requirements for study and procedure that will create greater delay and greater cost.

Problems with Existing Mechanisms to Facilitate American Chestnut Restoration

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[54] 42 U.S.C. §§ 9601-9675.

[55] 40 C.F.R. pt. 300.

[56] 40 C.F.R. § 300.415.

[57] 42 U.S.C. § 9604(c).

[58] United States Environmental Protection Agency. 1985. Preamble. The National Oil and Hazardous Substances Contingency Plan, 50 Fed. Red. 47912, 1985 WL 126730 (Nov. 20, 1985). In the 1986 Amendments to that CERCLA, Congress further spelled out where compliance with other laws was required, specifying that permits not be required, 42 U.S.C. § 9621(e) but requiring that applicable and appropriate substantive (but not procedural) requirements apply to final cleanups, *id.* § 9621(d).

The existing categorical exclusions in Park Service and Forest Service policies should allow reintroduction and restoration to proceed using adaptive management techniques without the need for an EIS or EA. However, there are a number of potential problems that could arise to inhibit that action. These problems could also inhibit other types of ecological restoration programs.

The existing exclusions are far from uniform. Moreover, they are not uniformly applied in the field. This is likely due to the lack of any clear standards or uniform policy governing ecological restoration on federal lands. Without clear guidance, as under ESA, agency personnel will often fall back on the more traditional "wait and study" approach that will delay and may prevent restoration actions.

There is also often a lack of trust that is exacerbated by a lack of clear, transparent standards. The public often mistrusts the government. Moreover, stakeholder groups mistrust one another. Without clear guidance indicated when and how a restoration action will take place, these groups may demand more process and study. These demands may further induce agency personnel to delay action and study the problem further. The lack of trust may also generate litigation when the agency does proceed with a restoration action which raises a concern for some interest group.

The lack of clear guidance and a clear policy favoring restoration action over the 'no action' alternative will also affect the courts. In the absence of a clear articulated and clear policy, the courts will also fall back on the traditional model. In fact, the judicial reliance upon precedent may force such a result without clear guidance on an alternative model that has been adopted by the agencies. This lack of guidance will create inconsistent results, as have appeared in the application of the ESA reforms noted above.

All of these threads are apparent in appeals from actions of the Forest Service. The lack of trust noted above has generated an explosion of litigation, including litigation against restoration programs. Between 1997 and 2002, 3737 appeals from Forest Service action were filed before the United States Courts of Appeals, including 139 appeals challenging restoration programs and 97 challenging prescribed burn programs often necessary for ecological restoration and possibly necessary for American chestnut restoration (Malmsheimer *et al.* 2004). This explosion of litigation, in part, motivated Congress to pass the Healthy Forests Restoration Act[59] to allow restoration activities employing logging in order to address the adverse impacts of years of fire suppression.

It is entirely possible and even likely that the proposals of the American Chestnut Foundation to proceed with its American chestnut restoration on Park and Forest Service lands using adaptive management techniques will be able to proceed without an EA or EIS under existing categorical exclusions and without controversy or litigation. It is a popular native species unlikely to arouse opposition. Nevertheless, there are some characteristics of the restoration that could generate controversy and, in turn, inhibit both reliance on the categorical exclusion and efficient, early restoration action.

It is possible that some stakeholders could contend that the backcrossed American chestnut is a new species and possible, but less likely that those concerned about alien invasive species could object to the reintroduction. Such an objection bears some risk of bringing the reintroduction program outside of the Park Service's categorical exclusion, which applies to "noncontroversial" native species. However, the facts that oriental chestnuts and hybrids have been widely introduced in the past and that the current backcross is phenotypically and largely genetically American chestnut make it unlikely that such an objection could prevail.

[59] Pub. L. 108-148, 117 Stat. 1888 (Dec. 3, 2003), *codified at* 16 U.S.C. §§ 6501-6591.

The foregoing possibilities raise greater concern for the restoration of the genetically engineered American chestnut, even though the genetic makeup of that species would be American chestnut, but for four genes. Genetically modified organisms have spawned significant controversy, particularly in Europe. Although the relatively insignificant modifications introduced by genetic engineering make it less likely that the blight-resistant American chestnut could be considered a "new" species, significant controversy could deter either agency's willingness to rely on categorical exclusions. Moreover, litigation is often a throw of the dice, particularly in the absence of clear written guidance.

Preparation of sites for planting blight resistant American chestnuts and management activities may also be unnecessarily restricted by limitations on the categorical exclusions. Because American chestnut requires sun, site preparation may require canopy opening *(i.e.* logging), which could arouse opposition or litigation. The amount of canopy opening may be limited. Use of herbicides and fire management would assist establishment of American chestnut and suppression of competing species. Deer management will be required. Many planting sites might be restricted. For example, chestnuts frequently appeared on slopes. Some of these methods might be deemed to bring the restoration efforts outside of the Forest Service categorical exclusions.

On balance, though, existing categorical exclusions should support a properly managed program, if constrained, restoration of the American chestnut. Nevertheless, there is a risk of some controversy. These risks and the often unnecessary limitations upon the existing categorical exclusions suggest that a more consistent and unambiguous restoration policy will be useful. These risks could generate even greater risks for other restoration efforts, which would also benefit from a firm interagency federal policy favoring action on restoration over inaction, embodied in regulation or clear policy cutting across agency jurisdictions and programs.

AN ALTERNATIVE MODEL FOR ENVIRONMENTAL RESTORATION PROJECTS

An alternative to the current model that would better advance the underlying intent of NEPA in addressing ecological restoration activities would treat the "restoration action" in the same manner as the "no action" alternative to treated in other cases, allowing that action to proceed while requiring a justification for failing to act. This alternative could be achieved by regulation or by policy, including a policy regarding categorical exclusions. It could also be achieved through appropriate legislation.

While this approach is conceptually simple and consistent with the intent of NEPA, it becomes somewhat more difficult in application. The "no action" alternative is readily defined as "doing nothing" or "carrying on as usual." However, there is an infinite variety of positive actions that one could take. Thus, one must define what type of action constitutes a restoration action. This requires, initially, a definition of the goal of the action. It also requires definition of the quality of the action - - the action must be reasonably calculated to achieve that goal (Henry & Lucash 2000-2001).

A clear and somewhat limited definition of a restoration action is also necessary to prevent abuse. Many actions to advance interests other than restoration of the environment can be pretextually labeled as a "restoration" action. For example, many of the concerns regarding removal of accumulated fuel in forests arise from the fear that other forest harvests will be dressed up as fuel reduction programs where the real intent is to maximize profit by maximizing the amount of wood harvested. On the other hand, going too far to address these concerns can result in excessive restrictions which undermine the intent of expediting restoration, as has occurred under the CERCLA program.

Finally, some limitation in the types of restoration action that should proceed rather than waiting and studying alternatives is warranted in cases where the restoration may have an adverse impact on other

important values. In these cases, a collision with other values may favor a more deliberative, if costly process. For example, where predator reintroduction would threaten human safety or threaten major impacts on economic interests, more study can be necessary before proceeding.

Many of the differences in categorical exclusions found in existing agency procedures may be explained as each individual agency's response to the foregoing concerns. However, the existing approaches are *ad hoc* and often inconsistent. We need more consistent, focused approach. Some guidelines for such an approach are suggested below.

The presumption that a restoration action should be treated as a "no action" situation and proceed would be triggered upon a finding that the procedure has certain characteristics. The categorical exclusions established by the Fish and Wildlife Service for restoration projects and the Park Service Guidance on restoration projects[60] include criteria that might be applied. The first such criterion should relate to the objective of the project. A restoration action should have the goal of restoring a native species or habitat that has existed in the site during historic times that has been removed or adversely affected by human activities or the results of human activities. Restoration should not, however, be limited to cases where the harm has already occurred. It should also include actions to protect native species and habitats from harm that is reasonably expected. For example, removal of vegetation infected with sudden oak death (a disease that may also threaten chestnut restoration) should proceed immediately rather than waiting and studying the impact of removal. This should include efforts to allow systems to adapt to human induced changes that are inevitable, such as the changes that will likely be associated with human induced climate change. Because systems are in a state of change even absent human influence, the exception to the wait and study presumption should, initially be limited to restoration of ecosystems or species that were native in historic times. Whether restoration megafauna of the type that became extinct in the Pleistocene extinction, an issue that may face Park managers in the future (Flannery 2001, pp. 345-346), would be included should await development of further knowledge.

A second criterion should address the manner in which the action will be carried out. To proceed without an EIS or EA, the restoration action must be carried out in a manner consistent with accepted practices, given the present state of knowledge. This does not mean that success must be assured. Knowledge of restoration is necessarily limited. For that reason, to qualify for the "categorical exclusion, the restoration action should employ adaptive management. Procedures for monitoring, reassessment and adjustment should be in place. In other words, procedural mechanisms must be in place to assure use of the best science available rather than a determination of the answers before action.

Finally, limitations should be included to assure that restoration action will not create major adverse disruption of important or valued human or natural systems. The establishment of limitations presents the greatest challenge. Arguably, it is overprotective limitations that currently inhibit restoration actions and that have created many of the inefficiencies in the CERCLA program as well as the ESA. Any limitation should have a defined threshold and not use vague terms that provide insufficient guidance to courts and agency person. For example, federal restoration actions should be subject to the same types of controls that would apply to non-federal lands. Annual limitations on the size of areas in which all vegetation would be removed might constitute another type of limitation. The policy should be clear, however, that the presumption would favor restoration and that doubt should be resolved in favor of proceeding rather than vice versa. In some cases, time or cost thresholds may be appropriate, as is the case with CERCLA removal actions.

Thus, a qualified restoration action would be one where (1) the project was designed to restore a system or species that had been removed or adversely affected by human disturbance or other disturbance related

[60] NPS Management Policies, *id.* § 4.4.2.2.

to human activity, (2) the restoration must be reasonably calculated to address or reduce effects of that disturbance (Henry & Lucash 2000-2001), and (3) the project is supported by a reasonable management plan that, if implemented, will not result in a serious threat to human safety, other environmental resources or property that cannot be adequately compensated with money damages, (4) procedures had been established for monitoring and adaptive management, and (5) the project did not any specifically established limitation or threshold established to conserve other important values.

This approach is consistent with the recommendation of the NEPA Task Force Recommendations to the Council on Environmental Quality (CEQ 2003). That report recommended establishing an adaptive management work group to broaden use of that tool in NEPA implementation. It recommended broadening use of categorical exclusions, while incorporating monitoring and adaptive management to gather data regarding categorical exclusions. It also recommended better integrating NEPA into other programs including the Endangered Species Act consultation program. Adopting a consistent, interagency approach to restoration would be consistent with all these recommendations. It would also better effectuate the intent of NEPA that federal actions proceed in a manner that will protect and enhance the natural environment and encourage proactive, privately led programs such as the American chestnut restoration.

BIBLIOGRAPHY

Adams, C. et al. 1998. Stream Corridor Restoration: Principles, Processes and Practices, USDA *et al.*

Baltimore Gas & Electric Co. v. Natural Resources Defense Council, Inc., 462 U.S. 87, 103 S.Ct.2246 (1983).

Bean, M.J. 2003. The ESA - Second Generation Approaches to Species Conservation, Challenges to Making Second Generation Approaches Work. American Bar Association Section of Environment, Energy and Resources 11th Section Fall Meeting. American Bar Association. Chicago, IL, p. 883-892.

Burnham, C.R. 1991. A Minnesota story: Restoration of the American chestnut. Reprinted in J. Am. Chestnut Found. 17(1):16-27 (2003).

Buttrick, P.L. 1915. Commercial uses of chestnut. Reprinted in J. Am. Chestnut Found. 13(1):21-28 (1999).

Center for Biological Diversity v. United States Fish and Wildlife Service, 202 F. Supp. 2d 594 (W. D. Tex. 2002).

Council on Environmental Quality. 2003. The NEPA task force report to the Council on Environmental Quality: modernizing NEPA implementation. http://ceq.eh.doe.gov/ntf/report/finalreport.pdf

Council on Environmental Quality Regulations, 40 C.F.R. Parts 1500-1517.

Craddock, J.H. 2000-2001. The American Chestnut Foundation Symposium on Species Restoration. Journal of the American Chestnut Foundation 14(2):7-9.

Endangered Species Act, 16 U.S.C. §§ 1531-1544.

Endangered Species Act Amendments of 1982, Publ. L. No. 97-304, 1982 U.S.C.C.A.N. (96 Stat.) 1411, 1422, § 6; *and* H.R. Report No. 97-567, at 17, 33-35, *reprinted at* 1982 U.S.C.C.A.N. 2807, 2817, 283333-2835.

Federal Insecticide, Fungicide and Rodenticide Act ("FIFRA"), 7 U.S.C. §§ 136-136y.

Federal Land Policy and Management Act, 43 U.S.C. §§ 1701-1785.

Flannery, T. 2001. The eternal frontier: An ecological history of North America and its peoples. Grove Press, New York, New York.

Frelich, L.E., and K.J. Puettman. 1999. Restoration ecology. Maintaining biodiversity in forest ecosystems, Hunter, M.L. (ed.). Cambridge University Press.

Gerber v. Norton, 294 F.3d 173 (D.C. Cir. 2002).

Gjerstad, D. 2000-2001. The longleaf alliance: a regional restoration effort. J. Am. Chestnut Found. 14(2):24-27.

Harker, E., G. Libby, K. Harker, S. Evans, and M. Evans. 1999. Landscape restoration handbook, 2nd edition. Audubon International Lewis Publishers, New York.

Hebard, F.V. 2001. Meadowview notes 2000-2001. J. Am. Chestnut Found. 15(1):7-17.

Hebard, F.V. 2002. Meadowview notes 2001-2002. J. Am. Chestnut Found. 16(1):7-18.

Hebard, F.V. 2003. Meadowview notes 2002-2003. J. Am. Chestnut Found. 17(1):7-14.

Henry, V.G. and C.F. Lucash. 2000-2001. Species restoration - lessons from Red Wolf reintroductions. J. Am. Chestnut Found. 14(2):35-39.

Irwin, H. 2003. The road to American chestnut restoration. J. Am. Chestnut Found. 16(2):6-13.

Klinger, C. 2000. Starting chestnuts in the forest. Northern Nut Grower's Association 91st Annual Report, reprinted in J. Am. Chestnut Found. 15(2):40-45.

Kricher, J.C. and G. Morrison. 1988. Eastern forests. Houghton Mifflin Company, Boston.

Leslie, M., G. Meffe, D. Hardesty, and J. Adams. 1996. Conserving biodiversity on military lands - A handbook for natural resource managers. Department of Defense - Biodiversity Initiative, The Nature Conservancy.

Lord, W. 1998-1999. William Lord's wildlife connection essays. Reprinted in J. Am. Chestnut Found. 13(2):12-16 (1999-2000).

Malmsheimer, R.W., D. Keele, and D.W. Floyd. 2004. National forest litigation in the US courts of appeal. J. For. 102(2):20-25.

Morgan, J.J. and S.H. Schweitzer. 1999-2000. The importance of the American chestnut to the eastern wild turkey. Journal of the American Chestnut Foundation 13(2):22-29.

National Environmental Policy Act , 42 U.S.C. §§ 4321-4370f.

National Forest Management Act, 16 U.S.C. §§ 1600-1614.

National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. pt. 300.

National Park Service Organic Act, 16 U.SC. § 1.

Oak, S.W. 2002. From the Bronx to Birmingham: Impact of chestnut blight and management practices on forest health risks in the Southern Appalachian Mountains. J. Am. Chestnut Found. 16(1):32-41.

Paillet, F.L. 2002. Chestnut ecology–A personal perspective. J. Am. Chestnut Found. 15(2):20-31.

Perry, J. and C. Ison. 2003. The impact of fire on chestnut in the central hardwood region. J. Am. Chestnut Found. 17(1):34-41.

Rhoades, C.C. 2001. Pre-blight abundance of American chestnut in Kentucky. J. Am. Chestnut Found. 15(1):36-44.

Ruhl, J.B. 2004. Past, present, and future trends in Endangered Species Act. Public Lands and Resources Law Review, *accepted for publication*.

Russell, E.W.B. 1987. Pre-blight distribution of Castanea dentata (Marsh.) Borkh. Bull. Torrey Bot. Club 114(2):183-190.

Taylor, M.E. 2002. Moving away from command and control: The evolution of incentives to conserve endangered species on private lands. Proceedings of the 3rd Goddard Forum. The Pennsylvania State University. To be published in McKinstry, R.B. (ed.). Biodiversity: Addressing a global issue locally: A policy perspective on what biodiversity is, why we care, and the shape and importance of state, local and private policies and programs. Environmental Law Institute, Washington, D.C.

Teich, G.M.R., J. Vaughn, and H.J. Cortner. 2004. National trends in the use of forest service administrative appeals. J. For. 102(2):14-19.

United States Department of the Interior, Announcement of Final Policy for Candidate Conservation Agreements with Assurances, 64 Fed. Reg.32,726 (June 17, 1999).

United States Department of the Interior, Announcement of Final Safe Harbor Policy, 64 Fed. Reg.32,717 (June 17, 1999).

United States Department of the Interior, Department of Interior Manual, National Environmental Policy Act Implementing Procedures for the Fish and Wildlife Services, 516 D.M. 6, Appendix 1, 62 Fed. Reg. 2375 (January 16, 1997).

United States Department of the Interior, Department of Interior Manual, National Environmental Policy Act Implementing Procedures for the National Park Service, 516 DM 6, App.7, *found at* http://elips.doi.gov/elips/release/3511.htm.

United States Department of the Interior, National Park Service. 2000. Management Policies 2001. NPSD1416.

United States Department of the Interior, National Park Service. 2005. Draft 2006 NPS Management Policies, *found at* http://parkplanning.nps.gov/document.cfm?pr5ojectId=13746&documentID=12825.

United States Environmental Protection Agency. 1985. Preamble to the Promulgation of the 1985 National Oil and Hazardous Substances Contingency Plan, 50 Fed. Red. 47912, 1985 WL 126730 (Nov. 20, 1985).

United States Fish & Wildlife Service, Proposed Revisions to the Regulations Applicable to Permits Issued Under the Endangered Species Act, 68 Fed. Reg. 53327 (May 3, 2003).

United States Forest Service, Forest Service Handbook, FSH 1909.15-92-1, Environmental Policy and Procedures ¶ 31.2(5), found at http://www.fs.fed.us/emc/nepa/includes/epp.htm#c31

Wilderness Act, 16 U.S.C. §§ 1131-1136.

Wright, J., and G.L. Kirkland. 1999-2000. A possible role for the chestnut blight in the decline of the Allegheny woodrat. J. Am. Chestnut Found. 13(2):30-35.